# ]

Seat No.

## S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology APPLIED MATHEMATICS – I

Day & Date: Saturday, 07-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Use of calculator is allowed.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

3)

### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) The particular integral of  $(D^3 - 3D^2 + 4)y = e^{2x}$  is \_\_\_\_\_.

| a) | $\frac{x^2}{6}e^{2x}$ | b) | $\frac{x}{12}e^{2x}$ |
|----|-----------------------|----|----------------------|
| c) | $\frac{x^3}{6}e^{2x}$ | d) | $\frac{e^{2x}}{12}$  |

The Laplace transform of *t* cosh *t* is \_\_\_\_\_.

- 2) The complete solution of  $(D^4 + 2D^3 + D^2)y = 0$  is \_\_\_\_\_.
  - a)  $y = (C_1 + C_2 x + C_3 x^2 + C_4 x^3)e^{-x}$
  - b)  $y = (C_1 + C_2 x) + (C_3 + C_4 x)e^{-x}$
  - c)  $y = (C_1 + C_2 x)e^x + (C_3 + C_4 x)e^{-x}$
  - d) None of these

|    | a) $\frac{s^2 - 1}{(s^2 + 1)^2}$   | b)                       | $-\frac{s^2-1}{(s^2+1)^2}$                |
|----|--|--------------------------|---|
|    | c) $\frac{s^2+1}{(s^2-1)^2}$   | d)                       | $-\frac{s^2+1}{(s^2-1)^2}$                |
| 4) | $L^{-1}\left\{\frac{s+s^{2}}{s^{3}}\right\} = \underline{\qquad}.$<br>a) $t + t^{2}$                             | b)                       | t+1                                       |
| 5) | C) $t^2 + 1$   | a)                       | $t^{2} - 1$                               |
| 5) | $L^{-1}\left\{\frac{3}{(s-4)^2+25}\right\} = \underline{\qquad}.$<br>a) $e^{4t} \sin 4t$<br>c) $e^{-4t} \cos 4t$ | b)<br>d)                 | $e^{-4t}\sin 5t$<br>$e^{4t}\cos 4t$       |
| 6) | $Z\{3^k\}, k \ge 0$ , is<br>a) $\frac{1}{Z-3}$   | b)                       | Z(Z-3)                                    |
|    | c) $\frac{1}{Z-3}$   | u)                       | None of these                             |
| 7) | The inverse z-transform of $\frac{Z}{Z+a}$ , $ Z  \ge$<br>a) $a^k$<br>c) $(-a)^{k+1}$                            | > <i>a,i</i><br>b)<br>d) | $k \ge 0$ is<br>$a^{k+1}$<br>$(-a)^k$     |
| 8) | If $\sum XY = 9.7$ , $\sum X^2 = 21.62 \& \sum Y^2 = a$ ) 0.02<br>c) 0.5170                                      | 16.2<br>b)<br>d)         | 8 then the value of r is<br>0.2<br>0.0517 |
|    |  |                          |   |

# SLR-FM-344

Set

Max. Marks: 70

Marks: 14

|     |  |                                   | SLR-FM-344  |
|-----|--|-----------------------------------|---|
|     |  |                                   | Set P   |
| 9)  | If average arrival rate in a queue is 6<br>rate is 10 per hour, which one of the<br>customers in the line including the cu<br>a) 0.3<br>c) 1.2 | ∂ pe<br>folle<br>usto<br>b)<br>d) | r hour and the average service<br>owing is the average number of<br>mer being served?<br>0.6<br>1.5 |
| 10) | For a certain data the regression equation $6x + y - 31 = 0$ then the value of 'r' a) 0.5 c) 0.2   | uatio<br>is, _<br>b)<br>d)        | ons are $3x + 2y - 26 = 0$ &<br>-0.5<br>-0.2  |
| 11) | If x is poisson variate such that $p(x = parameter is$<br>a) 1<br>c) 3   | = 1)<br>b)<br>d)                  | P = P(x = 2) then the poissons<br>2   |
| 12) | A continuous random variable has the<br>function $f(x) = kx(1-x), 0 \le x \le 1$<br>a) 2<br>c) 5   | the<br>b)<br>d)                   | blowing probability density<br>n $k = $<br>3<br>6   |
| 13) | If $f(x) = x^2$ is expanded as cosine s<br>a) $\frac{\pi^2}{3}$<br>c) $\frac{2\pi^2}{3}$   | serie<br>b)<br>d)                 | tes in $(0, \pi)$ then constant term is<br>$\frac{\pi^3}{3}$<br>$\frac{3\pi^2}{2}$                  |
| 14) | If $f(x) = \sqrt{1 - \cos x}$ then the fourier<br>a) 0<br>c) $\frac{2\sqrt{2}}{\pi}$   | coei<br>b)<br>d)                  | fficient <i>bn</i> in the interval $(0, 2\pi)$ is<br>$\frac{2}{\pi}$<br>$\frac{4}{\pi}$             |

|                |                                  | SLR-FM-  | 344   |
|----------------|----------------------------------|--|-------|
| Seat<br>No.    |                                  | Set  | Ρ     |
|                |                                  | S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>APPLIED MATHEMATICS – I   |       |
| Day &<br>Time: | k Da<br>10                       | ate: Saturday, 07-12-2019 Max. Mark<br>:00 AM To 01:00 PM  | s: 56 |
| Instru         | ucti                             | <ul> <li>ons: 1) All questions are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>3) Use of calculator is allowed.</li> </ul>  |       |
| Q.2            | So<br>a)<br>b)<br>c)<br>d)<br>e) | Ive any three of the following questions.<br>Solve $(D^2 + 9) = \cos 2x \cos x$<br>Solve $(D^2 - 2D + 5)y = e^{2t} \sin t$<br>Find the inverse Laplace transform of $\frac{s+2}{s^2(s+3)}$<br>Find the Laplace transform of $t e^{-2t} \sin 4t$<br>Find $Z\{e^{-ak} \sin bk\}$         | 09    |
| Q.3            | So<br>a)<br>b)                   | Ive any three of the following questions.<br>Solve $(D^3 - 8)y = x^3 + x$<br>Find the inverse Laplace transform of<br>$Log\left[\sqrt{\frac{s^2 + 1}{s^2 + 4}}\right]$   | 09    |
|                | c)<br>d)<br>e)                   | Express the following function in terms of unit step function and find<br>Laplace transform $f(t) = \begin{cases} \cos t, & 0 < t < \pi \\ \sin t, & t > \pi \end{cases}$ .<br>Find Inverse z-transform of $\frac{1}{(z-5)^3}$ , $ z  > 5$ .<br>Find the z-transform of $\sin(3k+5)$ . |       |
| Q.4            | So<br>a)<br>b)                   | Ive any two of the following questions.<br>Solve $(D^2 + 3D + 2)y = e^{e^x} + 2$ .<br>Solve $y''' + 2y'' - y' - 2y = 0$ given $y(0) = y'(0) = 0$ and $y''(0) = 6$ by using Laplace transform method.   | 10    |
|                | C)                               | Obtain $2^{-1} \left\{ \frac{1}{(z - 1/2)(z - 1/3)} \right\}$ When<br>i) $\frac{1}{3} <  z  < \frac{1}{2}$<br>ii) $\frac{1}{2} <  z $  |       |
| <b>-</b> -     | _                                | Section – II   |       |
| Q.5            | So<br>a)                         | Find half range sine series for $f(x)$ where<br>$f(x) = \begin{cases} x & , & 0 < x \le \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$ Hence, deduce that $\frac{\pi^2}{8} = \frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \cdots$                                 | 09    |

- b) The life of army shoes is normally distributed with mean 8 months and standard deviation 2 months. If 5000 pairs are issued, how many pairs would be expected to need replacement after 2 months. [Given: Area from z = 0 to z = 2 is 0.4772]
- **c)** For the data

| <i>x</i> : | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
|------------|---|---|----|----|----|----|----|----|----|
| <i>y</i> : | 9 | 8 | 10 | 12 | 11 | 13 | 14 | 16 | 15 |

Find the correlation coefficient

d) The two regression equations are given by x + 2y - 5 = 0 and 2x + 3y - 8 = 0 then find mean values of x and y and the coefficient of correlation between x and y.

**e)** Find Fourier expansion of  $f(x) = \sqrt{1 - \cos x}$  in  $(-\pi, \pi)$ 

#### Q.6 Solve any three of the following questions.

a) Find the value of K, if f(x) is probability density function,

$$f(x) = \begin{cases} k \cdot x e^{-4x^2}, & x > 0\\ 0, & x \le 0 \end{cases}$$

- **b)** The number of arrivals of customers during any day follows poisson distribution with mean of five. What is the probability that the total number of customers on two days selected at random is less than two?
- c) In a distribution which is exactly normal 7% of the items are under 35 and 89% items are under 63. Find the mean and standard deviation of the distribution.

[Given that for area 0.43 SNV z= 1.48 & for area 0.39 SNV z=1.23]

**d)** The following table gives age (*x*) in years of cars and annual maintenance cost (*y*) in hundred

| <i>x</i> : | 1  | 3  | 5  | 7  | 9  |
|------------|----|----|----|----|----|
| <i>y</i> : | 15 | 18 | 21 | 23 | 22 |

Estimate maintenance cost for a 4 year old car.

e) Expand  $\pi x - x^2$  as a sine series  $(0, \pi)$ .

#### Q.7 Solve any two of the following questions.

- a) A warehouse has only one loading dock manned by a three person crew. Trucks arrive at the loading dock at an average rate of 4 trucks per hour and the arrival rate is Poisson distributed. The loading of a truck take 10 min. on an average and can be assumed to be exponentially distributed. The operation cost of truck is ₹ 20 per hour and the members of the loading crew are paid @ ₹ 6 per hour. Would you advice the truck owner to add another crew of three persons?
- **b)** Obtain a fourier series for f(x) where

$$\begin{array}{rcl} f(x) &=& 0, & -5 \leq x < 0 \\ &=& 3, & 0 < x \leq 5 \end{array}$$

If period of f(x) is 10. Hence show that

$$\frac{\pi}{1} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + - - -$$

- c) Customers arrive at a clinic according to a poission process with mean interval of 25 min. The physician needs on an average 20 min for a patient to examine.
  - i) Find the expected number of patients at the clinic and in the queue.
  - ii) Find percentage of patients who are not required to wait.

10

09

**SLR-FM-344** 

Set

|       |                   | 3) Use of calculator is allowed.  | ma                                | N3.   |
|-------|-------------------|---|-----------------------------------|---|
|       |                   | MCQ/Objective Ty  | /pe                               | Questions   |
| Durat | tion: 3           | 0 Minutes   |                                   | Marks: 14   |
| Q.1   | <b>Choc</b><br>1) | be the correct alternatives from the<br>If $\sum XY = 9.7, \sum X^2 = 21.62 \& \sum Y^2 = 323$<br>a) 0.02<br>c) 0.5170                        | <b>e o</b><br>16.23<br>b)<br>d)   | otions and rewrite the sentence.148 then the value of r is0.20.0517                                 |
|       | 2)                | If average arrival rate in a queue is 6<br>rate is 10 per hour, which one of the<br>customers in the line including the c<br>a) 0.3<br>c) 1.2 | 6 pe<br>follo<br>usto<br>b)<br>d) | r hour and the average service<br>owing is the average number of<br>mer being served?<br>0.6<br>1.5 |
|       | 3)                | For a certain data the regression eq<br>6x + y - 31 = 0 then the value of 'r'<br>a) 0.5<br>c) 0.2   | uatio<br>is, _<br>b)<br>d)        | ons are $3x + 2y - 26 = 0$ &<br>-0.5<br>-0.2  |
|       | 4)                | If x is poisson variate such that $p(x parameter is$<br>a) 1<br>c) 3  | = 1)<br>b)<br>d)                  | P = P(x = 2) then the poissons<br>2   |
|       | 5)                | A continuous random variable has the<br>function $f(x) = kx(1-x), 0 \le x \le 1$<br>a) 2<br>c) 5  | ne fo<br>the<br>b)<br>d)          | Nowing probability density<br>n $k = $<br>3<br>6  |
|       | 6)                | If $f(x) = x^2$ is expanded as cosine s<br>a) $\frac{\pi^2}{3}$<br>c) $\frac{2\pi^2}{3}$  | serie<br>b)<br>d)                 | s in $(0, \pi)$ then constant term is<br>$\frac{\pi^3}{3}$<br>$\frac{3\pi^2}{2}$                    |
|       | 7)                | If $f(x) = \sqrt{1 - \cos x}$ then the fourier<br>a) 0<br>c) $\frac{2\sqrt{2}}{\pi}$  | coef<br>b)<br>d)                  | ficient <i>bn</i> in the interval $(0, 2\pi)$ is<br>$\frac{2}{\pi}$<br>$\frac{4}{\pi}$              |

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology **APPLIED MATHEMATICS – I** 

Day & Date: Saturday, 07-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks

Seat

No.

# **SLR-FM-344**



Max. Marks: 70

Set Q

The particular integral of  $(D^3 - 3D^2 + 4)y = e^{2x}$  is \_\_\_\_\_. a)  $\frac{x^2}{6}e^{2x}$  b)  $\frac{x}{12}e^{2x}$ 8)

C) 
$$\frac{x^3}{6}e^{2x}$$
 d)  $\frac{e^{2x}}{12}$ 

The complete solution of  $(D^4 + 2D^3 + D^2)y = 0$  is \_\_\_\_\_. a)  $y = (C_1 + C_2 x + C_3 x^2 + C_4 x^3)e^{-x}$ b)  $y = (C_1 + C_2 x) + (C_3 + C_4 x)e^{-x}$ c)  $y = (C_1 + C_2 x)e^x + (C_3 + C_4 x)e^{-x}$ d) None of these 9)

| 10) | The Laplace transform of $t \cosh t$ is          |    |                            |
|-----|--|----|----------------------------|
|     | a) $\frac{s^2 - 1}{(s^2 + 1)^2}$                 | b) | $-\frac{s^2-1}{(s^2+1)^2}$ |
|     | c) $\frac{s^2+1}{(s^2-1)^2}$                     | d) | $-\frac{s^2+1}{(s^2-1)^2}$ |
| 11) | $L^{-1}\left\{\frac{s+s^2}{3}\right\} = $        |    |                            |
|     | a) $t + t^2$                                     | b) | <i>t</i> + 1               |
|     | c) $t^2 + 1$                                     | d) | $t^{2} - 1$                |
| 12) | $L^{-1}\left\{\frac{s-4}{(s-4)^2+25}\right\} = $ |    |                            |
|     | a) $e^{4t} \sin 4t$                              | b) | $e^{-4t} \sin 5t$          |
|     | c) $e^{-4t}\cos 4t$                              | d) | $e^{4t}\cos 4t$            |
| 13) | $Z\{3^k\}, k \ge 0$ , is                         |    |                            |
|     | a) $\frac{1}{Z-3}$                               | b) | Z(Z - 3)                   |
|     |  |    |                            |

c) 
$$\frac{Z}{Z-3}$$
 d) None of these  
14) The inverse z-transform of  $\frac{Z}{Z+a}$ ,  $|Z| > a, k \ge 0$  is \_\_\_\_\_.  
a)  $a^k$  b)  $a^{k+1}$   
c)  $(-a)^{k+1}$  d)  $(-a)^k$ 

|                |   | SLR-FM-344                    |
|----------------|---|-------------------------------|
| Seat<br>No.    | t   | Set Q                         |
|                | S.E. (Part – I) (New/Old) (CBCS) Examina<br>Information Technology<br>APPLIED MATHEMATICS   | tion Nov/Dec-2019<br>y<br>– I |
| Day 8<br>Time: | & Date: Saturday, 07-12-2019<br>e: 10:00 AM To 01:00 PM   | Max. Marks: 56                |
| Instru         | <ul><li>ructions: 1) All questions are compulsory.</li><li>2) Figures to the right indicate full marks.</li><li>3) Use of calculator is allowed.</li></ul>  |                               |
| Q.2            | Solve any three of the following questions.<br>a) Solve $(D^2 + 9) = \cos 2x \cos x$<br>b) Solve $(D^2 - 2D + 5)y = e^{2t} \sin t$<br>c) Find the inverse Laplace transform of $\frac{s+2}{s^2(s+3)}$<br>d) Find the Laplace transform of $t e^{-2t} \sin 4t$   | 09                            |
| Q.3            | Solve any three of the following questions.<br>a) Solve $(D^3 - 8)y = x^3 + x$<br>b) Find the inverse Laplace transform of<br>$Log\left[\sqrt{\frac{s^2 + 1}{s^2 + 4}}\right]$  | 09                            |
|                | c) Express the following function in terms of unit step<br>Laplace transform $f(t) = \begin{cases} \cos t, & 0 < t < \pi \\ \sin t, & t > \pi \end{cases}$ .<br>d) Find Inverse z-transform of $\frac{1}{(z-5)^3}$ , $ z  > 5$ .<br>e) Find the z-transform of $\sin(3k+5)$ .   | o function and find           |
| Q.4            | Solve any two of the following questions.<br>a) Solve $(D^2 + 3D + 2)y = e^{e^x} + 2$ .<br>b) Solve $y''' + 2y'' - y' - 2y = 0$ given $y(0) = y'(0)$ using Laplace transform method.<br>c) Obtain $Z^{-1}\left\{\frac{1}{(z - 1/2)(z - 1/3)}\right\}$ When<br>i) $\frac{1}{3} <  z  < \frac{1}{2}$<br>ii) $\frac{1}{2} <  z $ | = 0  and  y''(0) = 6  by      |
| 0.5            | Solve any three of the following questions  | ۵۵                            |
| G.7            | a) Find half range sine series for $f(x)$ where<br>$f(x) = \begin{cases} x & , & 0 < x \le \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$ Hence, deduce that $\frac{\pi^2}{8} = \frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \cdots$   | 09                            |

- b) The life of army shoes is normally distributed with mean 8 months and standard deviation 2 months. If 5000 pairs are issued, how many pairs would be expected to need replacement after 2 months. [Given: Area from z = 0 to z = 2 is 0.4772]
- **c)** For the data

| <i>x</i> : | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
|------------|---|---|----|----|----|----|----|----|----|
| <i>y</i> : | 9 | 8 | 10 | 12 | 11 | 13 | 14 | 16 | 15 |

Find the correlation coefficient

d) The two regression equations are given by x + 2y - 5 = 0 and 2x + 3y - 8 = 0 then find mean values of x and y and the coefficient of correlation between x and y.

**e)** Find Fourier expansion of  $f(x) = \sqrt{1 - \cos x}$  in  $(-\pi, \pi)$ 

#### Q.6 Solve any three of the following questions.

a) Find the value of K, if f(x) is probability density function,

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[Given that for area 0.43 SNV z= 1.48 & for area 0.39 SNV z=1.23]

d) The following table gives age (x) in years of cars and annual maintenance cost (y) in hundred

| <i>x</i> : | 1  | 3  | 5  | 7  | 9  |
|------------|----|----|----|----|----|
| <i>y</i> : | 15 | 18 | 21 | 23 | 22 |

Estimate maintenance cost for a 4 year old car.

e) Expand  $\pi x - x^2$  as a sine series  $(0, \pi)$ .

#### Q.7 Solve any two of the following questions.

- a) A warehouse has only one loading dock manned by a three person crew. Trucks arrive at the loading dock at an average rate of 4 trucks per hour and the arrival rate is Poisson distributed. The loading of a truck take 10 min. on an average and can be assumed to be exponentially distributed. The operation cost of truck is ₹ 20 per hour and the members of the loading crew are paid @ ₹ 6 per hour. Would you advice the truck owner to add another crew of three persons?
- **b)** Obtain a fourier series for f(x) where

$$\begin{array}{rcl} f(x) &=& 0, & -5 \leq x < 0 \\ &=& 3, & 0 < x \leq 5 \end{array}$$

If period of f(x) is 10. Hence show that

$$\frac{1}{1} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + - - -$$

- c) Customers arrive at a clinic according to a poission process with mean interval of 25 min. The physician needs on an average 20 min for a patient to examine.
  - i) Find the expected number of patients at the clinic and in the queue.
  - ii) Find percentage of patients who are not required to wait.

10

09

**SLR-FM-344** 

Set

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology

# APPLIED MATHEMATICS – I

Day & Date: Saturday, 07-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Use of calculator is allowed.

## **MCQ/Objective Type Questions**

Duration: 30 Minutes

Seat

No.

| 1) | $L^{-1}\left\{\frac{s-4}{(s-4)^2+25}\right\} = $             |            |                                 |
|----|--|------------|---------------------------------|
|    | a) $e^{4t} \sin 4t$  | b)         | $e^{-4t}\sin 5t$                |
|    | c) $e^{-4t}\cos 4t$  | d)         | $e^{4t}\cos 4t$                 |
| 2) | $Z\{3^k\}, k \ge 0$ , is                                     |            |                                 |
|    | a) $\frac{1}{z-3}$   | b)         | Z(Z-3)                          |
|    | c) $\frac{Z}{Z-3}$   | d)         | None of these                   |
| 3) | The inverse z-transform of $\frac{Z}{Z+a}$ , $ Z $           | > a,       | $k \ge 0$ is                    |
|    | a) $a^k$   | b)         | $a^{k+1}$                       |
|    | c) $(-a)^{k+1}$  | d)         | $(-a)^k$                        |
| 4) | If $\sum XY = 9.7$ , $\sum X^2 = 21.62$ & $\sum Y^2 = 21.62$ | 16.2       | 8 then the value of r is        |
|    | a) 0.02<br>c) 0.5170   | d)         | 0.2<br>0.0517                   |
| 5) | If average arrival rate in a queue is                        | ⊶)<br>6 ne | or hour and the average service |
| 0) | rate is 10 per hour, which one of the                        | e foll     | owing is the average number of  |
|    | customers in the line including the c                        | usto       | omer being served?              |
|    | a) 0.3<br>c) 1.2   | (d<br>(b   | 1.5                             |
| 6) | For a certain data the regression ec                         | ,<br>uati  | ons are $3x + 2y - 26 = 0$ &    |
| ,  | 6x + y - 31 = 0 then the value of 'r                         | is,        |                                 |
|    | a) 0.5   | b)         | -0.5                            |
| 7) | $C_{1} = 0.2$  | u)<br>_ 1  | -0.2                            |
| 7) | parameter is $p(x)$  | = 1        | y = P(x = 2) then the poissons  |
|    | a) 1   | b)         | 2                               |
| 8) | c) 3<br>A continuous random variable bas t                   | d)<br>bo f | 4                               |
| 0) | function $f(x) = kx(1-x), 0 \le x \le 2$                     | the        | $m k = \underline{\qquad}.$     |
|    | a) 2   | b)         | 3                               |
|    | c) 5   | d)         | 6                               |

# SLR-FM-344

Set

R

Max. Marks: 70

Marks: 14



| 9)  | If $f(x) = x^2$ is expanded as cosine<br>a) $\frac{\pi^2}{3}$  | series in $(0, \pi)$ then constant term is<br>b) $\frac{\pi^3}{3}$         |
|-----|--|--|
|     | c) $\frac{2\pi^2}{3}$  | d) $\frac{3\pi^2}{2}$  |
| 10) | If $f(x) = \sqrt{1 - \cos x}$ then the fourier<br>a) 0   | coefficient <i>bn</i> in the interval $(0, 2\pi)$ is<br>b) $\frac{2}{\pi}$ |
|     | $c)  \frac{2\sqrt{2}}{\pi}$  | d) $\frac{4}{\pi}$   |
| 11) | The particular integral of $(D^3 - 3D^2)$<br>a) $\frac{x^2}{6}e^{2x}$  | + 4) $y = e^{2x}$ is<br>b) $\frac{x}{12}e^{2x}$                            |
|     | c) $\frac{x^3}{6}e^{2x}$   | d) $\frac{e^{2x}}{12}$   |
| 12) | The complete solution of $(D^4 + 2D^3)$<br>a) $y = (C_1 + C_2 x + C_3 x^2 + C_4 x^3)e^{-x}$<br>b) $y = (C_1 + C_2 x) + (C_3 + C_4 x)e^{-x}$<br>c) $y = (C_1 + C_2 x)e^x + (C_3 + C_4 x)e^{-x}$<br>d) None of these | $(x^2 + D^2)y = 0$ is  |
| 13) | The Laplace transform of $t \cosh t$ is<br>a) $\frac{s^2-1}{(s^2+1)^2}$  | b) $-\frac{s^2-1}{(s^2+1)^2}$  |
|     | c) $\frac{s^2+1}{(s^2-1)^2}$   | d) $-\frac{s^2+1}{(s^2-1)^2}$  |
| 14) | $L^{-1}\left\{\frac{s+s^2}{s^3}\right\} = \underline{\qquad}.$   | b) $t + 1$   |

a) 
$$t + t^2$$
  
b)  $t + 1$   
c)  $t^2 + 1$   
d)  $t^2 - 1$ 

|                |  | SLR-FM-3   | 344   |
|----------------|--|--|-------|
| Seat<br>No.    | t  | Set  | R     |
|                | S.E. (Part – I) (New/Old) (CBCS<br>Information T<br>APPLIED MATH   | ) Examination Nov/Dec-2019<br>echnology<br>IEMATICS – I                    |       |
| Day 8<br>Time: | & Date: Saturday, 07-12-2019<br>: 10:00 AM To 01:00 PM   | Max. Marks   | s: 56 |
| Instru         | uctions: 1) All questions are compulsory.<br>2) Figures to the right indicate ful<br>3) Use of calculator is allowed.  | l marks.   |       |
| Q.2            | Solve any three of the following questi<br>a) Solve $(D^2 + 9) = \cos 2x \cos x$<br>b) Solve $(D^2 - 2D + 5)y = e^{2t} \sin t$<br>c) Find the inverse Laplace transform of $t e^{-2t}$ s<br>d) Find the Laplace transform of $t e^{-2t}$ s   | ons.<br>$\frac{s+2}{s^2(s+3)}$ in 4t                                       | 09    |
| Q.3            | Solve any three of the following questi<br>a) Solve $(D^3 - 8)y = x^3 + x$<br>b) Find the inverse Laplace transform of $Log\left[\sqrt{\frac{s^2 + 1}{s^2 + 4}}\right]$  | ons.   | 09    |
| 0.4            | c) Express the following function in term<br>Laplace transform $f(t) = \begin{cases} \cos t, & 0 \\ \sin t, & t \end{cases}$<br>d) Find Inverse z-transform of $\frac{1}{(Z-5)^3}$ , $ z $<br>e) Find the z-transform of $\sin(3k+5)$ .  | is of unit step function and find<br>$< t < \pi$<br>$> \pi$<br>> 5.        | 10    |
| Q.4            | <b>a)</b> Solve any two of the following question<br><b>a)</b> Solve $(D^2 + 3D + 2)y = e^{e^x} + 2$ .<br><b>b)</b> Solve $y''' + 2y'' - y' - 2y = 0$ given $y$<br>using Laplace transform method.<br><b>c)</b> Obtain $Z^{-1}\left\{\frac{1}{(z - 1/2)(z - 1/3)}\right\}$ W<br>i) $\frac{1}{3} <  z  < \frac{1}{2}$<br>ii) $\frac{1}{2} <  z $<br>Section | <b>ns.</b><br>y(0) = y'(0) = 0 and $y''(0) = 6$ by<br>hen<br><b>n – II</b> | 10    |
| Q.5            | Solve any three of the following question<br>a) Find half range sine series for $f(x)$ we<br>$f(x) = \begin{cases} x & , & 0 < x \le \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$ Hence, deduce that $\frac{\pi^2}{8} = \frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2}$   | <b>ons.</b><br>here<br>+ …   | 09    |

- b) The life of army shoes is normally distributed with mean 8 months and standard deviation 2 months. If 5000 pairs are issued, how many pairs would be expected to need replacement after 2 months. [Given: Area from z = 0 to z = 2 is 0.4772]
- **c)** For the data

| <i>x</i> : | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
|------------|---|---|----|----|----|----|----|----|----|
| <i>y</i> : | 9 | 8 | 10 | 12 | 11 | 13 | 14 | 16 | 15 |

Find the correlation coefficient

d) The two regression equations are given by x + 2y - 5 = 0 and 2x + 3y - 8 = 0 then find mean values of x and y and the coefficient of correlation between x and y.

**e)** Find Fourier expansion of  $f(x) = \sqrt{1 - \cos x}$  in  $(-\pi, \pi)$ 

#### Q.6 Solve any three of the following questions.

a) Find the value of K, if f(x) is probability density function,

$$f(x) = \begin{cases} k \cdot x e^{-4x^2}, & x > 0\\ 0, & x \le 0 \end{cases}$$

- **b)** The number of arrivals of customers during any day follows poisson distribution with mean of five. What is the probability that the total number of customers on two days selected at random is less than two?
- c) In a distribution which is exactly normal 7% of the items are under 35 and 89% items are under 63. Find the mean and standard deviation of the distribution.

[Given that for area 0.43 SNV z= 1.48 & for area 0.39 SNV z=1.23]

**d)** The following table gives age (x) in years of cars and annual maintenance cost (y) in hundred

| <i>x</i> : | 1  | 3  | 5  | 7  | 9  |
|------------|----|----|----|----|----|
| <i>y</i> : | 15 | 18 | 21 | 23 | 22 |

Estimate maintenance cost for a 4 year old car.

e) Expand  $\pi x - x^2$  as a sine series  $(0, \pi)$ .

#### Q.7 Solve any two of the following questions.

- a) A warehouse has only one loading dock manned by a three person crew. Trucks arrive at the loading dock at an average rate of 4 trucks per hour and the arrival rate is Poisson distributed. The loading of a truck take 10 min. on an average and can be assumed to be exponentially distributed. The operation cost of truck is ₹ 20 per hour and the members of the loading crew are paid @ ₹ 6 per hour. Would you advice the truck owner to add another crew of three persons?
- **b)** Obtain a fourier series for f(x) where

$$\begin{array}{rcl} f(x) &=& 0, & -5 \leq x < 0 \\ &=& 3, & 0 < x \leq 5 \end{array}$$

If period of f(x) is 10. Hence show that

$$\frac{\pi}{1} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + - - -$$

- c) Customers arrive at a clinic according to a poission process with mean interval of 25 min. The physician needs on an average 20 min for a patient to examine.
  - i) Find the expected number of patients at the clinic and in the queue.
  - ii) Find percentage of patients who are not required to wait.

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09

**SLR-FM-344** 

Set

## Seat No.

Day & Date: Saturday, 07-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Use of calculator is allowed.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) For a certain data the regression equations are 3x + 2y - 26 = 0 &
  - 6x + y 31 = 0 then the value of 'r' is, b) -0.5 a) 0.5 c) 0.2
- 2) If x is poisson variate such that p(x = 1) = P(x = 2) then the poissons parameter is \_\_\_\_\_.
  - a) 1 3 d) 4 C)

3) A continuous random variable has the following probability density function  $f(x) = kx(1-x), 0 \le x \le 1$  then k =\_\_\_\_\_. a) 2 b) 3

C) 5 d) 6

If  $f(x) = x^2$  is expanded as cosine series in  $(0, \pi)$  then constant term is \_\_\_\_\_. 4) b)  $\frac{\pi^{3}}{2}$ a)  $\frac{\pi^2}{2}$ 

c) 
$$\frac{2\pi^2}{3}$$
 d)  $\frac{3\pi^2}{2}$ 

5) If  $f(x) = \sqrt{1 - \cos x}$  then the fourier coefficient *bn* in the interval  $(0, 2\pi)$  is \_\_\_\_\_. b)  $\frac{2}{\pi}$ a) <sup>0</sup>

d)  $\frac{4}{\pi}$ c)  $\frac{2\sqrt{2}}{\pi}$ 

The particular integral of  $(D^3 - 3D^2 + 4)y = e^{2x}$  is \_\_\_\_\_. 6) b)  $\frac{x}{12}e^{2x}$ a)  $\frac{x^2}{6}e^{2x}$ d)  $\frac{e^{2x}}{12}$ c)  $\frac{x^3}{6}e^{2x}$ 

- The complete solution of  $(D^4 + 2D^3 + D^2)y = 0$  is \_\_\_\_\_. 7)
  - a)  $y = (C_1 + C_2 x + C_3 x^2 + C_4 x^3) e^{-x}$
  - b)  $y = (C_1 + C_2 x) + (C_3 + C_4 x)e^{-x}$
  - c)  $y = (C_1 + C_2 x)e^x + (C_3 + C_4 x)e^{-x}$
  - d) None of these

# SLR-FM-344

Set

Max. Marks: 70

d) -0.2

b) 2

Marks: 14

SLR-FM-344 Set S

| 8)  | The Laplace transform of $t \cosh t$ is                                     |                  |   |
|-----|---|------------------|---|
|     | a) $\frac{s^2 - 1}{(s^2 + 1)^2}$  | b)               | $-\frac{s^2-1}{(s^2+1)^2}$                                    |
|     | c) $\frac{s^2+1}{(s^2-1)^2}$  | d)               | $-\frac{s^2+1}{(s^2-1)^2}$                                    |
| 9)  | $L^{-1}\left\{\frac{s+s^2}{s^3}\right\} = \_$                               |                  |   |
|     | a) $t + t^2$  | b)               | t + 1   |
|     | c) $t^2 + 1$  | a)               | $t^2 - 1$   |
| 10) | $L^{-1}\left\{\frac{s-4}{(s-4)^2+25}\right\} = $                            |                  |   |
|     | a) $e^{4t} \sin 4t$   | b)               | $e^{-4t}\sin 5t$  |
|     | c) $e^{-4t}\cos 4t$   | d)               | $e^{4t}\cos 4t$   |
| 11) | $Z\{3^k\}, k \ge 0$ , is  |                  |   |
| ·   | a) $\frac{1}{Z-3}$  | b)               | Z(Z - 3)  |
|     | c) $\frac{Z}{Z-3}$  | d)               | None of these   |
| 12) | The inverse z-transform of $\frac{Z}{Z_{1}}$ , $ Z  > 2$                    | > a, k           | $x \ge 0$ is  |
|     | a) $a^k$  | b)               | $a^{k+1}$   |
|     | c) $(-a)^{k+1}$   | d)               | $(-a)^k$  |
| 13) | If $\sum XY = 9.7$ , $\sum X^2 = 21.62$ & $\sum Y^2 =$                      | 16.28            | B then the value of r is                                      |
|     | a) 0.02   | b)               | 0.2   |
|     | c) 0.5170   | d)               | 0.0517  |
| 14) | If average arrival rate in a queue is rate is 10 per hour, which one of the | 6 pei<br>e follo | hour and the average service<br>wing is the average number of |

- customers in the line including the customer being served? a) 0.3 b) 0.6
- a) 0.3 b) 0.6 c) 1.2 d) 1.5

| Seat<br>No.    |                                   |  |  |   |                                       | Set                   | S     |
|----------------|-----------------------------------|--|--|---|---------------------------------------|-----------------------|-------|
|                | ļ                                 | S.E. (Part – I) (N   | lew/Old) (CB<br>Information<br>APPLIED MA  | CS) Exami<br>n Technolo<br>THEMATIO   | nation Nov/l<br>ogy<br>CS – I         | Dec-2019              |       |
| Day 8<br>Time: | . Da<br>10:                       | te: Saturday, 07-1<br>00 AM To 01:00 P   | 2-2019<br>M  |   |                                       | Max. Marks            | s: 56 |
| Instru         | ictio                             | ons: 1) All question<br>2) Figures to<br>3) Use of calo  | ns are compulso<br>the right indicate<br>culator is allowed  | ry.<br>e full marks.<br>I.  |                                       |                       |       |
| Q.2            | Sol<br>a)<br>b)<br>c)<br>d)       | ve any three of the<br>Solve $(D^2 + 9) =$<br>Solve $(D^2 - 2D +$<br>Find the inverse L<br>Find the Laplace  | the following quadratic cos $2x \cos x$<br>$5)y = e^{2t} \sin t$<br>Laplace transform<br>transform of $t e^{-1}$   | estions.<br>n of $\frac{s+2}{s^2(s+3)}$   |                                       |                       | 09    |
| Q.3            | e)<br>Sol<br>a)<br>b)             | Find $Z\{e^{-ak} \sin bk\}$<br><b>ve any three of th</b><br>Solve $(D^3 - 8)y =$<br>Find the inverse L<br>$Log\left[\sqrt{\frac{s}{5}}\right]$   | $= following que = x^{3} + x$ $= x^{3} + x^{3} + x$ $= x^{3} + x^{3} + x$ $= x^{3} + x^{3} $ | estions.<br>n of  |                                       |                       | 09    |
| Q.4            | c)<br>d)<br>e)<br>Sol<br>a)<br>b) | Express the follow<br>Laplace transform<br>Find Inverse z-transform<br>Find the z-transform<br><b>ve any two of the</b><br>Solve $(D^2 + 3D + Solve y''' + 2y'' - using Laplace transform$ | ving function in t<br>in $f(t) = \begin{cases} \cos t \\ \sin t \\ \sin t \\ \cos t \end{cases}$<br>ansform of $\frac{1}{(z-5)^3}$<br>rm of $\sin(3k+5)$<br><b>following ques</b><br>$2)y = e^{e^x} + 2$<br>y' - 2y = 0 given<br>in form method.   | erms of unit :<br>$0 < t < \pi$<br>$t > \pi$<br>, $ z  > 5$ .<br>).<br>stions.<br>en $y(0) = y'(0)$ | step function ar $(0) = 0$ and $y''($ | nd find<br>(0) = 6 by | 10    |
|                | c)                                | Obtain $Z^{-1} \begin{cases} \frac{1}{(z-1)^2} \\ \frac{1}{3} <  z  < \frac{1}{2} \\ \frac{1}{2} <  z  \end{cases}$<br>ii) $\frac{1}{2} <  z $   | $\frac{1}{\frac{1}{1/2}(z-1/3)}$   | When  |                                       |                       |       |
| Q.5            | Sol<br>a)                         | Ve any three of the<br>Find half range sing $f(x) = \begin{cases} x & x \\ \pi - x, \end{cases}$<br>Hence, deduce the  | Second formula for the series for $f(x)$<br>$0 < x \le \frac{\pi}{2}$<br>$\frac{\pi}{2} < x < \pi$<br>$at \frac{\pi^2}{8} = \frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{3^2}$   | etion – II<br>estions.<br>() where<br>$\frac{1}{5^2} + \cdots$                                      |                                       |                       | 09    |

- b) The life of army shoes is normally distributed with mean 8 months and standard deviation 2 months. If 5000 pairs are issued, how many pairs would be expected to need replacement after 2 months. [Given: Area from z = 0 to z = 2 is 0.4772]
- c) For the data

| <i>x</i> : | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
|------------|---|---|----|----|----|----|----|----|----|
| <i>y</i> : | 9 | 8 | 10 | 12 | 11 | 13 | 14 | 16 | 15 |

Find the correlation coefficient

d) The two regression equations are given by x + 2y - 5 = 0 and 2x + 3y - 8 = 0 then find mean values of x and y and the coefficient of correlation between x and y.

**e)** Find Fourier expansion of  $f(x) = \sqrt{1 - \cos x}$  in  $(-\pi, \pi)$ 

#### Q.6 Solve any three of the following questions.

a) Find the value of K, if f(x) is probability density function,

$$f(x) = \begin{cases} k \cdot x e^{-4x^2}, & x > 0\\ 0, & x \le 0 \end{cases}$$

- **b)** The number of arrivals of customers during any day follows poisson distribution with mean of five. What is the probability that the total number of customers on two days selected at random is less than two?
- c) In a distribution which is exactly normal 7% of the items are under 35 and 89% items are under 63. Find the mean and standard deviation of the distribution.

[Given that for area 0.43 SNV z= 1.48 & for area 0.39 SNV z=1.23]

d) The following table gives age (x) in years of cars and annual maintenance cost (y) in hundred

| <i>x</i> : | 1  | 3  | 5  | 7  | 9  |
|------------|----|----|----|----|----|
| <i>y</i> : | 15 | 18 | 21 | 23 | 22 |

Estimate maintenance cost for a 4 year old car.

e) Expand  $\pi x - x^2$  as a sine series  $(0, \pi)$ .

#### Q.7 Solve any two of the following questions.

- a) A warehouse has only one loading dock manned by a three person crew. Trucks arrive at the loading dock at an average rate of 4 trucks per hour and the arrival rate is Poisson distributed. The loading of a truck take 10 min. on an average and can be assumed to be exponentially distributed. The operation cost of truck is ₹ 20 per hour and the members of the loading crew are paid @ ₹ 6 per hour. Would you advice the truck owner to add another crew of three persons?
- **b)** Obtain a fourier series for f(x) where

$$\begin{array}{rcl} f(x) &=& 0, & -5 \leq x < 0 \\ &=& 3, & 0 < x \leq 5 \end{array}$$

If period of f(x) is 10. Hence show that

$$\frac{t}{1} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + - - -$$

- c) Customers arrive at a clinic according to a poission process with mean interval of 25 min. The physician needs on an average 20 min for a patient to examine.
  - i) Find the expected number of patients at the clinic and in the queue.
  - ii) Find percentage of patients who are not required to wait.

09

**SLR-FM-344** 

Set

## S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology **DISCRETE MATHEMATICAL STRUCTURE**

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### **MCQ/Objective Type Questions**

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

d)

Tautology

- The expression 'Q if p' indicates which of the following connectives. 1) b) Conditional
  - Biconditional a)
  - Exclusive OR c)
- $T \rightarrow P$  is equivalent to \_\_\_\_\_. 2)
  - Ρ b) Т a)  $\neg P$ c) d) F
- PCNF is 3)
  - Conjunction of elementary product a)
  - Conjunction of minterms b)
  - Conjunction of maxterms c)
  - Disjunction of elementary sum d)
- If S = {  $\phi$ , {  $\phi$  }, {  $\phi$  }} then what is cardinality of S? 4)
  - a) 0 b) 3 2 d) 4 C)
- 5) If Let S be the relation from Y to Z and R is the relation from A to B the composition  $R \circ S$  is from \_\_\_\_\_.
  - b) Z to B A to Z a)
  - c) Y to B d) None of these
- If the relation R is represented by matrix and if we replace 0 by 1 and 1 by 6) 0 then resultant matrix represents \_
  - Complement of R Inverse of R a) b)
  - Domain of R c) d) Range of R
- 7) Relation matrix of the relation is given below.
  - Γ1 1 11 1 1 0 1 0 1
  - Only reflexive property a)
  - b) Only symmetric property
  - All properties except Irreflexive c)
  - Only antisymmetric property d)

Max. Marks: 70

Marks: 14

SLR-FM-345

# Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM **Duration: 30 Minutes**

Seat No.

Set P

| 8)  | A subset f of A x B is said to be a function from A to B if domain of f is A and first element of order pairs of f |   |                   |  |  |  |
|-----|--|---|-------------------|--|--|--|
|     | a)<br>c)   | do not repeat<br>repeat   | b)<br>d)          | do not exist<br>members of B                         |  |  |
| 9)  | A la<br>a)<br>c)   | ttice h ⟨A, ≤⟩ is bounded iff it has<br>a minimum element<br>both | s<br>b)<br>d)     | <br>a maximum element<br>None                        |  |  |
| 10) | A po<br>mee<br>a)  | poset $h < A, \le >$ is a iff even<br>et and a join.<br>group     | ery p<br>b)       | pair of elements in A have both a                    |  |  |
|     | c)   | lattice   | d)                | None   |  |  |
| 11) | Abe<br>a)<br>c)  | lian group satisfies additional<br>transitive<br>identity         | b)<br>d)          | property than group.<br>Inverse<br>Commutative       |  |  |
| 12) | A to<br>a)<br>c)   | tally ordered set is also called a<br>ring<br>chain               | b)<br>d)          | <br>Field<br>None                                    |  |  |
| 13) | A<br>a)<br>c)  | is a complemented distrib<br>boolean function<br>modular lattice  | utive<br>b)<br>d) | e lattice.<br>complete lattice<br>boolean expression |  |  |
| 14) | Eve<br>a)<br>c)  | ry cyclic group is<br>an abelian group<br>not a group             | b)<br>d)          | may not abelian group<br>None                        |  |  |

#### S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology **DISCRETE MATHEMATICAL STRUCTURE**

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

#### Section – I

#### Q.2 Solve any three.

- Explain Tautological Implication and show that  $(P^{\wedge}Q) => (P \rightarrow Q)$ . a)
- Convert the given formula into prefix and suffix form. b)  $A^{\vee} ((\neg B \rightarrow C)^{\wedge} (\neg D \leftrightarrow E))$
- Define equivalence relation and equivalence class along with an example. C)
- Define duality law and prove that "If A has dual as A\* and B has dual as B\* d) and  $A \Leftrightarrow B$  the prove that  $A^* \Leftrightarrow B^*$
- Show that  $S \,^{\vee} R$  is a valid conclusion from the following premises: e)  $P \lor Q, P \to R, Q \to S$

#### Q.3 Solve any one.

- Explain the following terms a)
  - Tautology and contradiction 1)
  - 2) Set inclusion and equality of sets
  - Relative complement of A with respect to B 3)
  - Partition and covering of sets 4)
- Define minterm, PDNF, maxterm and PCNF and obtain PDNF and PCNF b) of  $(P \land O) \lor (\neg P \land O \land R)$  without constructing truth table.

#### Q.4 Solve the following.

- Given a set  $S = \{1, 2, 3, 4, 5\}$ . Find the equivalence relation on S which a) generates the partition { {1,2,4},{3},{5}}. Draw graph of the relation.
- Let A= {4,5,6,7,8}. State whether following are covering or partition along b) with reason.
  - 1)  $\{\{4,5\},\{6\},\{7,8,4\}\}$
  - 2) {{4},{7,6},{5}}
  - 3)  $\{\{4,5\},\{7\},\{6,8\}\}$
  - 4)  $\{\{4,5\},\{5,6\},\{4,7,8\}\}$

Max. Marks: 56

Set

SLR-FM-345

Seat

No.

**08** 

08

## Section – II

## Q.5 Solve any three.

- a) Explain Lattices properties.
- b) What are the different type of functions?
- c) Which of the partially ordered sets in figures (a), (b) and (c) are lattices? Justify your answer.



d) What is group code? Define groups.

## Q.6 Solve the following questions.

- a) Let A = {1, 2, 3, 4}, B = {a, b, c}, C = {x, y, z}. Consider the relations R from A to B and S from B to C as follows: R = {(1, b), (3, a) (3, b), (4, c)} and S={(a, y), (c, x), (a, z) }
  - 1) Draw the diagrams of R and S.
  - 2) Find the matrix of each relation R, S (composition)  $R \circ S$ .
  - 3) Write R-1 and the composition  $R \circ S$  as sets of ordered pairs.
- **b)** Define Group, Semi group and moniod with example.

12

SLR-FM-345 Set P

#### No. S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology **DISCRETE MATHEMATICAL STRUCTURE** Day & Date: Tuesday, 10-12-2019 Max. Marks: 70

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### **MCQ/Objective Type Questions**

#### **Duration: 30 Minutes**

Seat

#### Choose the correct alternatives from the options and rewrite the sentence. Q.1

- A subset f of A x B is said to be a function from A to B if domain of f is A 1) and first element of order pairs of f
  - b) do not exist a) do not repeat
    - c) repeat
- 2) A lattice  $h \langle A, \leq \rangle$  is bounded iff it has \_
  - a minimum element a) b) a maximum element
  - c) both d) None
- 3) A poset  $h < A \le is$  a \_\_\_\_\_\_ iff every pair of elements in A have both a meet and a join.
  - group b) a)
  - lattice c)
- 4) Abelian group satisfies additional \_\_\_\_\_ property than group.
  - transitive a) c) identity
- 5) A totally ordered set is also called a \_
  - a) ring
  - c) chain d)

6) А is a complemented distributive lattice.

- boolean function a)
- modular lattice C)
- 7) Every cyclic group is \_\_\_\_

9)

- a) an abelian group b) c) not a group d) None
- The expression 'Q if p' indicates which of the following connectives. 8)
  - a) Biconditional b) Conditional d) Tautology
  - c) Exclusive OR
  - $T \rightarrow P$  is equivalent to \_\_\_\_\_. a) Ρ b) d) F
  - $\neg P$ c)

Marks: 14 14



SLR-FM-345

- Ring
- d) None

d) members of B

- b) Inverse
- d) Commutative

b) complete lattice

d) boolean expression

may not abelian group

- None

#### Field b)

Т



#### 10) PCNF is \_\_\_\_\_.

- a) Conjunction of elementary product
- b) Conjunction of minterms
- c) Conjunction of maxterms
- d) Disjunction of elementary sum

### 11) If $S = \{ \phi, \{ \phi \}, \{ \phi, \{ \phi \} \} \}$ then what is cardinality of S?

- a) 0 b) 3
- c) 2 d) 4
- 12) If Let S be the relation from Y to Z and R is the relation from A to B the composition  $R \circ S$  is from \_\_\_\_\_.
  - a) A to Z

- b) Z to B
- c) Y to B d) None of these
- 13) If the relation R is represented by matrix and if we replace 0 by 1 and 1 by 0 then resultant matrix represents \_\_\_\_\_.
  - a) Complement of R
    b) Inverse of R
    c) Domain of R
    d) Range of R
    - ) Domain of R d) Range of R
- 14) Relation matrix of the relation is given below.

| 1 | 1 | 1] |
|---|---|----|
| 1 | 0 | 1  |
| 1 | 1 | 0] |

- a) Only reflexive property
- b) Only symmetric property
- c) All properties except Irreflexive
- d) Only antisymmetric property

## S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology DISCRETE MATHEMATICAL STRUCTURE

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

#### Section – I

#### Q.2 Solve any three.

- **a)** Explain Tautological Implication and show that  $(P^{A}Q) => (P \rightarrow Q)$ .
- **b)** Convert the given formula into prefix and suffix form.  $A^{\vee} ((\neg B \rightarrow C)^{\wedge} (\neg D \leftrightarrow E))$
- c) Define equivalence relation and equivalence class along with an example.
- d) Define duality law and prove that "If A has dual as A\* and B has dual as B\* and  $A \Leftrightarrow B$  the prove that  $A^* \Leftrightarrow B^*$
- e) Show that  $S \lor R$  is a valid conclusion from the following premises:  $P \lor Q, P \to R, Q \to S$

#### Q.3 Solve any one.

- a) Explain the following terms
  - 1) Tautology and contradiction
  - 2) Set inclusion and equality of sets
  - 3) Relative complement of A with respect to B
  - 4) Partition and covering of sets
- **b)** Define minterm, PDNF, maxterm and PCNF and obtain PDNF and PCNF of  $(P \land Q) \lor (\neg P \land Q \land R)$  without constructing truth table.

#### Q.4 Solve the following.

- a) Given a set  $S = \{1,2,3,4,5\}$ . Find the equivalence relation on S which generates the partition  $\{\{1,2,4\},\{3\},\{5\}\}$ . Draw graph of the relation.
- **b)** Let A= {4,5,6,7,8}. State whether following are covering or partition along with reason.
  - $1) \quad \{\{4,5\},\{6\},\{7,8,4\}\}$
  - 2)  $\{\{4\},\{7,6\},\{5\}\}$
  - 3)  $\{\{4,5\},\{7\},\{6,8\}\}$
  - $4) \quad \{\{4,5\},\{5,6\},\{4,7,8\}\}$

Max. Marks: 56

08

08

12

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Seat No. Set Q

## Section – II

#### Q.5 Solve any three.

- Explain Lattices properties. a)
- What are the different type of functions? b)
- Which of the partially ordered sets in figures (a), (b) and (c) are lattices? c) Justify your answer.



d) What is group code? Define groups.

#### Q.6 Solve the following questions.

- Let A =  $\{1, 2, 3, 4\}$ , B =  $\{a, b, c\}$ , C =  $\{x, y, z\}$ . Consider the relations R from a) A to B and S from B to C as follows:  $R = \{(1, b), (3, a), (3, b), (4, c)\}$  and  $S=\{(a, y), (c, x), (a, z)\}$ 
  - 1) Draw the diagrams of R and S.
  - 2) Find the matrix of each relation R, S (composition)  $R \circ S$ .
  - 3) Write R-1 and the composition  $R \circ S$  as sets of ordered pairs.
- b) Define Group, Semi group and moniod with example.

12

**SLR-FM-345** 



Set Q

# S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology **DISCRETE MATHEMATICAL STRUCTURE** Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### **MCQ/Objective Type Questions**

## **Duration: 30 Minutes**

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- If Let S be the relation from Y to Z and R is the relation from A to B the 1) composition  $R \circ S$  is from \_\_\_\_\_.
  - a) A to Z
  - Y to B c)
- If the relation R is represented by matrix and if we replace 0 by 1 and 1 by 2) 0 then resultant matrix represents \_\_\_\_

<u>[1</u> 1

1 0 1

1

1 0

- Complement of R Inverse of R a) b)
- Domain of R c) d) Range of R

3) Relation matrix of the relation is given below.

- Only reflexive property a)
- Only symmetric property b)
- All properties except Irreflexive C)
- Only antisymmetric property d)
- A subset f of A x B is said to be a function from A to B if domain of f is A 4) and first element of order pairs of f
  - do not repeat b) do not exist a)
  - c) repeat d) members of B

5) A lattice  $h \langle A, \leq \rangle$  is bounded iff it has

- a minimum element b) a maximum element a)
  - c) both d) None
- A poset  $h < A, \leq >$  is a \_\_\_\_\_ iff every pair of elements in A have both a 6) meet and a join.
  - group a) b) Ring c) lattice
    - d) None
- 7) Abelian group satisfies additional \_ property than group.
  - transitive b) Inverse a)
  - C) identity d) Commutative
- 8) A totally ordered set is also called a \_
  - ring b) Field a) c) d) None
    - chain

Seat No.

# SLR-FM-345

Max. Marks: 70

Marks: 14

14

Set

b) Z to B

- d) None of these

#### 9) A \_\_\_\_\_ is a complemented distributive lattice. b) complete lattice

- boolean function a) modular lattice
- c)
- 10) Every cyclic group is \_\_\_\_\_
  - a) an abelian group
  - c) not a group d) None
- The expression 'Q if p' indicates which of the following connectives. 11) b) Conditional
  - a) Biconditional
    - d) Tautology
- 12)  $T \rightarrow P$  is equivalent to \_\_\_\_\_.

c) Exclusive OR

- a) P b) T
- c) ¬P d) F
- 13) PCNF is \_\_\_\_
  - Conjunction of elementary product a)
  - Conjunction of minterms b)
  - Conjunction of maxterms c)
  - Disjunction of elementary sum d)
- 14) If  $S = \{ \phi, \{ \phi \}, \{ \phi, \{ \phi \} \} \}$  then what is cardinality of S?
  - 0 b) 3 a) c) 2 d) 4

d) boolean expression

b) may not abelian group

**SLR-FM-345** 

Set R

#### S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology DISCRETE MATHEMATICAL STRUCTURE

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

- **Instructions:** 1) All questions are compulsory.
  - 2) Figure to the right indicates full marks.3) Assume suitable data if required.

#### Section – I

#### Q.2 Solve any three.

- **a)** Explain Tautological Implication and show that  $(P^{A}Q) => (P \rightarrow Q)$ .
- **b)** Convert the given formula into prefix and suffix form.  $A^{\vee} ((\neg B \rightarrow C)^{\wedge} (\neg D \leftrightarrow E))$
- c) Define equivalence relation and equivalence class along with an example.
- d) Define duality law and prove that "If A has dual as A\* and B has dual as B\* and  $A \Leftrightarrow B$  the prove that  $A^* \Leftrightarrow B^*$
- e) Show that  $S \lor R$  is a valid conclusion from the following premises:  $P \lor Q, P \to R, Q \to S$

#### Q.3 Solve any one.

- a) Explain the following terms
  - 1) Tautology and contradiction
  - 2) Set inclusion and equality of sets
  - 3) Relative complement of A with respect to B
  - 4) Partition and covering of sets
- **b)** Define minterm, PDNF, maxterm and PCNF and obtain PDNF and PCNF of  $(P \land Q) \lor (\neg P \land Q \land R)$  without constructing truth table.

#### Q.4 Solve the following.

- a) Given a set  $S = \{1,2,3,4,5\}$ . Find the equivalence relation on S which generates the partition  $\{\{1,2,4\},\{3\},\{5\}\}$ . Draw graph of the relation.
- **b)** Let A= {4,5,6,7,8}. State whether following are covering or partition along with reason.
  - $1) \quad \{\{4,5\},\{6\},\{7,8,4\}\}$
  - 2)  $\{\{4\},\{7,6\},\{5\}\}$
  - 3)  $\{\{4,5\},\{7\},\{6,8\}\}$
  - $4) \quad \{\{4,5\},\{5,6\},\{4,7,8\}\}$

Max. Marks: 56

Set

**08** 

)

08

SLR-FM-345

## Seat No.

### Section – II

#### Q.5 Solve any three.

- a) Explain Lattices properties.
- b) What are the different type of functions?
- c) Which of the partially ordered sets in figures (a), (b) and (c) are lattices? Justify your answer.



d) What is group code? Define groups.

#### Q.6 Solve the following questions.

- a) Let A = {1, 2, 3, 4}, B = {a, b, c}, C = {x, y, z}. Consider the relations R from A to B and S from B to C as follows: R = {(1, b), (3, a) (3, b), (4, c)} and S={(a, y), (c, x), (a, z) }
  - 1) Draw the diagrams of R and S.
  - 2) Find the matrix of each relation R, S (composition)  $R \circ S$ .
  - 3) Write R-1 and the composition  $R \circ S$  as sets of ordered pairs.
- **b)** Define Group, Semi group and moniod with example.

12

R

16

# SLR-FM-345

Set

#### Max. Marks: 70 Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book. 2) Figures to the right indicate full marks. 3) Assume suitable data if necessary. **MCQ/Objective Type Questions Duration: 30 Minutes** Q.1 Choose the correct alternatives from the options and rewrite the sentence. A poset $h < A, \leq >$ is a iff every pair of elements in A have both a 1) meet and a join. a) group b) Ring lattice d) None c) 2) Abelian group satisfies additional \_\_\_\_ property than group. a) transitive b) Inverse d) Commutative c) identity 3) A totally ordered set is also called a rina Field a) b) c) chain d) None A \_\_\_\_\_ is a complemented distributive lattice. 4) b) complete lattice

## No. S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology

**DISCRETE MATHEMATICAL STRUCTURE** 

Seat

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

# SLR-FM-345

Marks: 14

- a) boolean function
- c) modular lattice d) boolean expression
- 5) Every cyclic group is \_\_\_\_\_
  - a) an abelian group not a group c)
- b) may not abelian group
- d) None
- The expression 'Q if p' indicates which of the following connectives. 6)
  - b) Conditional Biconditional a) c)
    - **Exclusive OR** Tautology d)
- $T \rightarrow P$  is equivalent to \_\_\_\_\_. 7)
  - Ρ b) T a) ¬Ρ d) F c)
- 8) PCNF is
  - Conjunction of elementary product a)
  - Conjunction of minterms b)
  - Conjunction of maxterms c)
  - d) Disjunction of elementary sum
- 9) If S = {  $\phi$ , {  $\phi$  }, {  $\phi$  }} then what is cardinality of S?
  - 0 b) 3 a)
  - d) 4 2 C)

Set S

- 10) If Let S be the relation from Y to Z and R is the relation from A to B the composition  $R \circ S$  is from \_\_\_\_\_.
  - a) A to Z

- b) Z to B d) None of these
- Y to B C) 11) If the relation R is represented by matrix and if we replace 0 by 1 and 1 by
  - 0 then resultant matrix represents \_ a) Complement of R b) Inverse of R
    - Domain of R c) d) Range of R
- 12) Relation matrix of the relation is given below.

$$\begin{bmatrix} 1 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$$

- a) Only reflexive property
- b) Only symmetric property
- c) All properties except Irreflexive
- Only antisymmetric property d)
- 13) A subset f of A x B is said to be a function from A to B if domain of f is A and first element of order pairs of f
  - a) do not repeat
  - repeat C)
- b) do not exist
- d) members of B
- 14) A lattice  $h \langle A, \leq \rangle$  is bounded iff it has a)
  - a minimum element
  - c) both

- b) a maximum element
- d) None

# S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology

DISCRETE MATHEMATICAL STRUCTURE

Day & Date: Tuesday, 10-12-2019

Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

#### Section – I

#### Q.2 Solve any three.

- **a)** Explain Tautological Implication and show that  $(P^{A}Q) => (P \rightarrow Q)$ .
- **b)** Convert the given formula into prefix and suffix form.  $A^{\vee} ((\neg B \rightarrow C)^{\wedge} (\neg D \leftrightarrow E))$
- c) Define equivalence relation and equivalence class along with an example.
- d) Define duality law and prove that "If A has dual as A\* and B has dual as B\* and  $A \Leftrightarrow B$  the prove that  $A^* \Leftrightarrow B^*$
- e) Show that  $S \lor R$  is a valid conclusion from the following premises:  $P \lor Q, P \to R, Q \to S$

#### Q.3 Solve any one.

- a) Explain the following terms
  - 1) Tautology and contradiction
  - 2) Set inclusion and equality of sets
  - 3) Relative complement of A with respect to B
  - 4) Partition and covering of sets
- **b)** Define minterm, PDNF, maxterm and PCNF and obtain PDNF and PCNF of  $(P \land Q) \lor (\neg P \land Q \land R)$  without constructing truth table.

#### Q.4 Solve the following.

- a) Given a set  $\tilde{S}$ = {1,2,3,4,5}. Find the equivalence relation on S which generates the partition { {1,2,4},{3},{5}}. Draw graph of the relation.
- **b)** Let A= {4,5,6,7,8}. State whether following are covering or partition along with reason.
  - $1) \quad \{\{4,5\},\{6\},\{7,8,4\}\}$
  - 2)  $\{\{4\},\{7,6\},\{5\}\}$
  - 3)  $\{\{4,5\},\{7\},\{6,8\}\}$
  - $4) \quad \{\{4,5\},\{5,6\},\{4,7,8\}\}$



Set

**SLR-FM-345** 

**08** 

12



Set S

#### Q.5 Solve any three.

- a) Explain Lattices properties.
- b) What are the different type of functions?
- c) Which of the partially ordered sets in figures (a), (b) and (c) are lattices? Justify your answer.



d) What is group code? Define groups.

#### Q.6 Solve the following questions.

- a) Let A = {1, 2, 3, 4}, B = {a, b, c}, C = {x, y, z}. Consider the relations R from A to B and S from B to C as follows: R = {(1, b), (3, a) (3, b), (4, c)} and S={(a, y), (c, x), (a, z) }
  - 1) Draw the diagrams of R and S.
  - 2) Find the matrix of each relation R, S (composition)  $R \circ S$ .
  - 3) Write R-1 and the composition  $R \circ S$  as sets of ordered pairs.
- **b)** Define Group, Semi group and moniod with example.

Set

Max. Marks: 70

Ρ

#### S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

2) Figures to the right indicates full marks.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- is a type of transmission impairment in which the signal loses 1) strength due to the resistance of the transmission medium. b)
  - Distortion a) c) Noise

Attenuation d) Decibel

Simplex

- 2) A television broadcast is an example of transmission.
  - Half-duplex b) a)
  - c) Full-duplex Automatic d)

#### 3) Multiplexing is

- The process of increasing bandwidth on a channel a)
- b) A technique that enables more than one data source to share the use of a common link.
- Mailing letters at the Post Office c)
- d) The capability to share frequency by time
- 4) The core for an optical fiber has
  - a) Lower index of refraction than air
  - b) Lower index of refraction than the cladding
  - c) A higher index of refraction than the cladding
  - d) None of these
- 5) Repeater operates at which layer of OSI model?
  - a) Application layer b) Presentation layer
  - c) Physical layer d) Transport layer
- 6) The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called
  - a) Piggybacking
    - Cyclic redundancy check b)
  - None of the mentioned c) Fletcher's checksum d)
- 7) Which ARQ mechanism deals with the transmission of only damaged or lost frames despite the other multiple frames by increasing the efficiency & its utility in noisy channels?
  - a) Go-Back-N ARQ
- b) Selective Repeat ARQ All of the above
- c) Stop-and-Wait ARQ d)
- 8) Which one of the following task is not done by data link layer?
  - a) Framing
  - Flow control c)

- Error control b)
- d) Channel coding

Marks: 14



- 9) In the \_\_\_\_\_ method, after the station finds the line idle, it sends its frame immediately. If the line is not idle, it continuously senses the line until it finds it idle.
  - a) p-persistent

- b) nonpersistent
- c) 1-persistent
- d) none of the above

Set

- IEEE 802.4 standard represents 10)
  - a) Overview and Architecture b) c) Token Ring
    - Token bus d) Virtual LAN and Security
- In \_\_\_\_\_, each station is forced to send only at the beginning of the time 11) slot.
  - a) Pure ALOHA

- b) Slotted ALOHA
- c) Both (a) and (b) d) Neither (a) nor (b)
- \_ routing table contains information entered manually. 12) Α\_\_\_
  - Static b) Dynamic a) c) Hierarchical
    - d) Non static
- When a host on network A sends a message to a host on network B, which 13) address does the router look at?
  - a) Logical

- Physical b)
- c) Port
- None of the above d)
- 14) The \_\_\_\_\_ address uniquely defines a host on the Internet.
  - a) IP Port b) d)
  - c) Specific

Physical

Explain Selective Repeat protocol with neat diagram. b) Q.4 Explain the various methods used for framing of data with detailed explanation of 80 each method. Section – II

# b)

Q.2

Q.5

Q.6

Q.7

a)

b)

c)

d)

a)

b)

- Explain Manchester and Differential Manchester encoding techniques. c)
- Describe transmission characteristics of Twisted Pair Cable. d)

Write a short note on Network Laver Design Issues.

Explain IEEE Std. 802.3 in detail with its Frame Format.

Explain the working of Switch with diagram.

Explain Link State Routing Algorithm with example.

#### Q.3 Attempt any one.

Attempt any three.

Attempt any one.

detail.

Explain Flooding and its uses.

Explain CSMA/CD with diagram.

- Explain OSI Reference Model with neat diagram. a)

What do you mean by Congestion? Explain Leaky Bucket Algorithm in

- Attempt any three. a) Explain the functions of Physical Layer and Data Link Layer. Describe A Simplex Stop-and-Wait Protocol.
- Section I

2) Figures to the right indicates full marks.

## S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

Seat No.

# **SLR-FM-346**



Max. Marks: 56

12

80

12

80

| Instru  | uction            | s: 1) Q. No. 1 is compulsory and sho<br>Book.  | ould b                             | e solved in first 30 minutes in answe   | ۶r |  |  |  |  |
|---|-------------------|--|------------------------------------|---|----|--|--|--|--|
| 2) Figures to the right indicates full marks. |                   |  |                                    |   |    |  |  |  |  |
|   |                   | MCQ/Objective Ty   | vpe C                              | Questions   |    |  |  |  |  |
| Durat   | ion: 3            | 0 Minutes  |                                    | Marks:  | 14 |  |  |  |  |
| Q.1   | <b>Choc</b><br>1) | <ul> <li>bse the correct alternatives from th</li> <li>Which one of the following task is no</li> <li>a) Framing</li> <li>c) Flow control</li> </ul> | <b>e opt</b><br>ot don<br>b)<br>d) | ions and rewrite the sentence.<br>e by data link layer?<br>Error control<br>Channel coding                    | 14 |  |  |  |  |
|   | 2)                | In the method, after the statio<br>immediately. If the line is not idle, it of<br>finds it idle.<br>a) p-persistent<br>c) 1-persistent               | n find<br>contin<br>b)<br>d)       | ls the line idle, it sends its frame<br>uously senses the line until it<br>nonpersistent<br>none of the above |    |  |  |  |  |
|   | 3)                | IEEE 802.4 standard represents<br>a) Overview and Architecture<br>c) Token Ring  | b)<br>d)                           | Token bus<br>Virtual LAN and Security   |    |  |  |  |  |
|   | 4)                | In, each station is forced to se<br>slot.<br>a) Pure ALOHA<br>c) Both (a) and (b)  | end oi<br>b)<br>d)                 | nly at the beginning of the time<br>Slotted ALOHA<br>Neither (a) nor (b)                                      |    |  |  |  |  |
|   | 5)                | <ul><li>A routing table contains inform</li><li>a) Static</li><li>c) Hierarchical</li></ul>  | natior<br>b)<br>d)                 | n entered manually.<br>Dynamic<br>Non static  |    |  |  |  |  |
|   | 6)                | <ul><li>When a host on network A sends a r<br/>address does the router look at?</li><li>a) Logical</li><li>c) Port</li></ul>                         | nessa<br>b)<br>d)                  | age to a host on network B, which<br>Physical<br>None of the above  |    |  |  |  |  |
|   | 7)                | The address uniquely defines<br>a) IP<br>c) Specific   | a ho:<br>b)<br>d)                  | st on the Internet.<br>Port<br>Physical   |    |  |  |  |  |
|   | 8)                | is a type of transmission impa<br>strength due to the resistance of the<br>a) Distortion<br>c) Noise   | airmer<br>trans<br>b)<br>d)        | nt in which the signal loses<br>mission medium.<br>Attenuation<br>Decibel                                     |    |  |  |  |  |
|   | 9)                | A television broadcast is an example a) Half-duplex  | e of<br>b)                         | transmission.<br>Simplex  |    |  |  |  |  |

### S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION

Day & Date: Thursday, 12-12-2019

- Ins

Time: 10:00 AM To 01:00 PM

#### Page **4** of **12**

# **SLR-FM-346**

Max. Marks: 70

c) Full-duplex Automatic d)

Seat No.


# SLR-FM-346 Set Q

- 10) Multiplexing is \_\_\_\_\_.
  - a) The process of increasing bandwidth on a channel
  - b) A technique that enables more than one data source to share the use of a common link.
  - c) Mailing letters at the Post Office
  - d) The capability to share frequency by time
- 11) The core for an optical fiber has \_\_\_\_\_
  - a) Lower index of refraction than air
  - b) Lower index of refraction than the cladding
  - c) A higher index of refraction than the cladding
  - d) None of these

a) Application layer

- 12) Repeater operates at which layer of OSI model?
  - b) Presentation layer
  - c) Physical layer
- d) Transport layer
- 13) The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called \_\_\_\_\_.
  - a) Piggybacking
- b) Cyclic redundancy check
- c) Fletcher's checksum d)
  - d) None of the mentioned
- 14) Which ARQ mechanism deals with the transmission of only damaged or lost frames despite the other multiple frames by increasing the efficiency & its utility in noisy channels?
  - a) Go-Back-N ARQ
  - c) Stop-and-Wait ARQ
- b) Selective Repeat ARQ
- d) All of the above

Explain Selective Repeat protocol with neat diagram. b) Q.4 Explain the various methods used for framing of data with detailed explanation of 80 each method. Section – II Q.5 Attempt any three. 12

What do you mean by Congestion? Explain Leaky Bucket Algorithm in

# d)

a)

b)

a)

b)

c)

d)

a)

b)

Attempt any one.

detail.

Q.6

Q.7

Day & Date: Thursday, 12-12-2019

Time: 10:00 AM To 01:00 PM

Attempt any three.

Q.3

Explain Flooding and its uses.

Explain CSMA/CD with diagram.

**Instructions:** 1) All questions are compulsory.

- Attempt any one.
- Explain OSI Reference Model with neat diagram. a)

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION

Section – I

- Explain Manchester and Differential Manchester encoding techniques. c) Describe transmission characteristics of Twisted Pair Cable.
- Explain the functions of Physical Layer and Data Link Layer. Describe A Simplex Stop-and-Wait Protocol.

Write a short note on Network Laver Design Issues.

Explain IEEE Std. 802.3 in detail with its Frame Format.

Explain the working of Switch with diagram.

Explain Link State Routing Algorithm with example.

2) Figures to the right indicates full marks.

Set Q

Max. Marks: 56

12

80

80

80

Seat No.

Q.2

# Set

Seat No.

## S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
  - 2) Figures to the right indicates full marks.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Repeater operates at which layer of OSI model?
  - a) Application layer
  - c) Physical laver
- Presentation layer b) Transport layer d)
- 2) The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called b)
  - a) Piggybacking c)
    - Fletcher's checksum d)
- 3) Which ARQ mechanism deals with the transmission of only damaged or lost frames despite the other multiple frames by increasing the efficiency & its utility in noisy channels?
  - a) Go-Back-N ARQ
  - c) Stop-and-Wait ARQ
- Selective Repeat ARQ b) All of the above d)

Token bus

Virtual LAN and Security

- Which one of the following task is not done by data link layer? 4)
  - Error control a) Framing b)
  - c) Flow control d) Channel coding
- In the \_\_\_\_\_ method, after the station finds the line idle, it sends its frame 5) immediately. If the line is not idle, it continuously senses the line until it finds it idle.
  - a) p-persistent b) nonpersistent
  - none of the above C) 1-persistent d)
- 6) IEEE 802.4 standard represents
  - a) Overview and Architecture b)
    - Token Ring d) c)
- 7) In \_\_\_\_\_, each station is forced to send only at the beginning of the time slot.
  - a) Pure ALOHA Slotted ALOHA b)
  - c) Both (a) and (b) d) Neither (a) nor (b)
- routing table contains information entered manually. 8) А Dynamic
  - Static b) a)
  - Non static c) Hierarchical d)

R

Max. Marks: 70



Cyclic redundancy check None of the mentioned

- 9) When a host on network A sends a message to a host on network B, which address does the router look at?
  - a) Logical c) Port

- b) Physical
- None of the above d)
- The \_\_\_\_\_ address uniquely defines a host on the Internet. 10)
  - a) IP Port b) c) Specific
    - d) Physical
- 11) \_\_\_\_\_ is a type of transmission impairment in which the signal loses strength due to the resistance of the transmission medium.
  - a) Distortion b) Attenuation
  - c) Noise d) Decibel
- 12) A television broadcast is an example of transmission.
  - Half-duplex a) b)
  - c) Full-duplex d)
- Multiplexing is \_\_\_\_ 13)
  - The process of increasing bandwidth on a channel a)
  - b) A technique that enables more than one data source to share the use of a common link.
  - Mailing letters at the Post Office C)
  - d) The capability to share frequency by time
- 14) The core for an optical fiber has \_\_\_\_\_
  - a) Lower index of refraction than air
  - b) Lower index of refraction than the cladding
  - c) A higher index of refraction than the cladding
  - d) None of these

Set

- Simplex
- Automatic

| <b>npt any one.</b><br>What do you mean by Congestion? Explain Leaky Bucket Algorithm in<br>detail.<br>Explain IEEE Std. 802.3 in detail with its Frame Format. | 80 |
|---|----|
| in Link State Routing Algorithm with example.   | 08 |
|   |    |
|   |    |
|   |    |
|   |    |

Describe transmission characteristics of Twisted Pair Cable. d) Q.3 Attempt any one. 80 Explain OSI Reference Model with neat diagram. a) Explain Selective Repeat protocol with neat diagram. b) Q.4 Explain the various methods used for framing of data with detailed explanation of 80 each method.

Explain Manchester and Differential Manchester encoding techniques.

#### Q.2 Attempt any three. Explain the functions of Physical Layer and Data Link Layer.

a)

b)

c)

Q.5

Seat

No.

Day & Date: Thursday, 12-12-2019

## Time: 10:00 AM To 01:00 PM **Instructions:** 1) All questions are compulsory. 2) Figures to the right indicates full marks. Section – I

Describe A Simplex Stop-and-Wait Protocol.

## S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION

Section – II

- Attempt any three.
- Explain Flooding and its uses. a)
- Explain CSMA/CD with diagram. b)
- Write a short note on Network Layer Design Issues. c)
- Explain the working of Switch with diagram.
- d)

## Q.6

- Attem a) 1

- C b) E
- Q.7 Expla

## **SLR-FM-346**

Max. Marks: 56

Set

R

12

# SLR-FM-346 Set

Seat No.

## S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
  - 2) Figures to the right indicates full marks.

## **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

b)

Token bus

Virtual LAN and Security

- 1) IEEE 802.4 standard represents \_\_\_\_\_
  - a) Overview and Architecture
  - c) Token Ring d)
- 2) In \_\_\_\_\_, each station is forced to send only at the beginning of the time slot. b) Slotted ALOHA
  - a) Pure ALOHA
    - c) Both (a) and (b) d) Neither (a) nor (b)

#### 3) routing table contains information entered manually. Α

- Static Dynamic a) b)
- c) Hierarchical d) Non static
- 4) When a host on network A sends a message to a host on network B, which address does the router look at?
  - a) Logical b) Physical
    - c) Port d) None of the above
- The \_\_\_\_\_ address uniquely defines a host on the Internet. 5)
  - a) IP Port b) Physical
  - c) Specific d)
- \_\_\_\_ is a type of transmission impairment in which the signal loses 6) strength due to the resistance of the transmission medium.
  - a) Distortion b) Attenuation
  - Noise Decibel d) C)
- 7) A television broadcast is an example of transmission.
  - Half-duplex Simplex b) a)
  - Full-duplex Automatic c) d)
- Multiplexing is \_\_\_\_\_. 8)
  - a) The process of increasing bandwidth on a channel
  - b) A technique that enables more than one data source to share the use of a common link.
  - Mailing letters at the Post Office C)
  - d) The capability to share frequency by time



Max. Marks: 70



Marks: 14

- a) Lower index of refraction than air
- b) Lower index of refraction than the cladding
- c) A higher index of refraction than the cladding
- d) None of these

9)

- 10) Repeater operates at which layer of OSI model?a) Application layerb) Prese
  - b) Presentation layer
  - c) Physical layer d)
- d) Transport layer
- 11) The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called \_\_\_\_\_.
  - a) Piggybacking
- b) Cyclic redundancy check

**SLR-FM-346** 

Set

- c) Fletcher's checksum
- d) None of the mentioned
- 12) Which ARQ mechanism deals with the transmission of only damaged or lost frames despite the other multiple frames by increasing the efficiency & its utility in noisy channels?
  - a) Go-Back-N ARQ
- b) Selective Repeat ARQ
- c) Stop-and-Wait ARQ
- d) All of the above
- 13) Which one of the following task is not done by data link layer?
  - a) Framing
- b) Error control
- c) Flow control
- d) Channel coding
- 14) In the \_\_\_\_\_ method, after the station finds the line idle, it sends its frame immediately. If the line is not idle, it continuously senses the line until it finds it idle.
  - a) p-persistentc) 1-persistent

- b) nonpersistent
- d) none of the above

Page **11** of **12** 

Write a short note on Network Laver Design Issues. c) Explain the working of Switch with diagram. d) Q.6 Attempt any one. What do you mean by Congestion? Explain Leaky Bucket Algorithm in a) detail.

each method. Section – II Q.5 Attempt any three.

Explain IEEE Std. 802.3 in detail with its Frame Format.

Explain Link State Routing Algorithm with example.

c)

Day & Date: Thursday, 12-12-2019

Time: 10:00 AM To 01:00 PM

Attempt any three.

Describe A Simplex Stop-and-Wait Protocol. b)

2) Figures to the right indicates full marks.

- Describe transmission characteristics of Twisted Pair Cable. d)
- Q.3 Attempt any one.

Explain Flooding and its uses.

Explain CSMA/CD with diagram.

**Instructions:** 1) All questions are compulsory.

- a) Explain the functions of Physical Layer and Data Link Layer.
- Explain Manchester and Differential Manchester encoding techniques.

Section – I

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION

a)

b)

b)

Q.7

# a)

- Explain OSI Reference Model with neat diagram.
- Explain Selective Repeat protocol with neat diagram. b) Q.4 Explain the various methods used for framing of data with detailed explanation of

# **SLR-FM-346**

Q.2



Max. Marks: 56

12

80

80

12

80

| SLR-FM-347 |
|------------|
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| Seat<br>No.    |   |   | Set                          | Ρ     |  |  |  |  |
|----------------|---|---|------------------------------|-------|--|--|--|--|
|                | S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019<br>Information Technology |   |                              |       |  |  |  |  |
| Day &<br>Time: | Date<br>10:0  | te: Saturday,14-12-2019<br>00 AM To 01:00 PM  | Max. Marks                   | s: 70 |  |  |  |  |
| Instru         | ctio  | ons: 1) Q.No.1 is compulsory and should be solved<br>Book.<br>2) Figures to the right indicate full mark.   | in first 30 Minutes in answe | er    |  |  |  |  |
|                |   |   | one                          |       |  |  |  |  |
| Durati         | on: 3   | 30 Minutes  | Marks                        | s: 14 |  |  |  |  |
| Q.1            | Cho   | oose the correct alternatives from the options ar   | d rewrite the sentence.      | 14    |  |  |  |  |
|                | 1)  | 8 to 1 multiplexer integrated circuit is  |                              |       |  |  |  |  |
|                |   | a) 74153 b) 74193<br>c) 74154 d) 74157  | 3                            |       |  |  |  |  |
|                | 2)  | Data flow modeling uses module item   | •                            |       |  |  |  |  |
|                | -)  | a) Initial Construct b) Alway   | vs Construct                 |       |  |  |  |  |
|                |   | c) Assignment d) None   | of these                     |       |  |  |  |  |
|                | 3)  | Minimized expression of $f(A, B, C) = \sum m(1,3,5,6,7)$  | is                           |       |  |  |  |  |
|                |   | a) $A + BC$ b) $AC + C$ c) $AB + C$ d) None   | of these                     |       |  |  |  |  |
|                | 4)  | The lexical convention used in Vervlog HDL is   |                              |       |  |  |  |  |
|                | •)  | a) C Language b) C++  |                              |       |  |  |  |  |
|                |   | c) FORTRAN d) None  | of these                     |       |  |  |  |  |
|                | 5)  | Counting of clock pulses can be done by using IC  | <br>3                        |       |  |  |  |  |
|                |   | c) 7490 d) 7515   |                              |       |  |  |  |  |
|                | 6)  | AND, OR, NOT can be implemented by  |                              |       |  |  |  |  |
|                |   | a) NAND or NOR b) XOR   |                              |       |  |  |  |  |
|                | 7)  | C) Both (a) & (b) $C$ (b) $C$ (b) $C$ (b) $C$ (c) $C$ | or these                     |       |  |  |  |  |
|                | 7)  | a) $\Sigma m (2, 3, 6, 7) = \Sigma m (0, 1, 4, 5)$ are  | 0.1.4.5)                     |       |  |  |  |  |
|                |   | c) $\pi M(2,3,6,7)$ d) None   | of these                     |       |  |  |  |  |
|                | 8)  | Number of select lines required for 32 to 1 multiple  | exer is                      |       |  |  |  |  |
|                |   | a) 2 b) 3   |                              |       |  |  |  |  |
|                | 0)  | C) 4 U) 5   | tor                          |       |  |  |  |  |
|                | 9)  | a) 6 b) 5   | lei                          |       |  |  |  |  |
|                |   | c) 4 d) 3   |                              |       |  |  |  |  |
|                | 10)   | 2's complement of 8-bit number 25 is  | 2004                         |       |  |  |  |  |
|                |   | a) 11100110 b) 11100<br>c) 00011001 d) 11100  | JUU1<br>)111                 |       |  |  |  |  |

Set P

a) NAND or EX-OR OR or EX-NOR b) c) AND or EX-OR NOR or EX-OR d)

11) The output of a logic gate is 1 when all its inputs are at logic 0, the gate is

- 12) A ring counter consisting of five Flip-Flops will have \_\_\_\_\_.
  - 5 states 10 states a) b)
  - Infinite C) 32 states d)
- 13) Which flip-flop has Race-around condition \_
  - S-R a) b)
  - \_\_\_\_. J-K T Flip-flop d) D Flip-flop C)
- In a JK Flip-Flop, toggle means \_\_\_\_\_. 14)
  - $Q = 1, \overline{Q} = 0$ a)
  - b)  $Q = 0, \overline{Q} = 1$

either \_\_\_\_\_.

- Change the Output to opposite state C)
- No change in output d)

| Seat<br>No.    |  | Set        | Ρ    |
|----------------|--|------------|------|
|                | S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec<br>Information Technology<br>DIGITAL LOGIC DESIGN   | -2019      |      |
| Day &<br>Time: | Date: Saturday,14-12-2019<br>10:00 AM To 01:00 PM  | Max. Marks | : 56 |
| Instru         | <ul> <li>actions: 1) All questions are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>Section - I</li> </ul>   |            |      |
| Q.2            | <ul> <li>Attempt any Four</li> <li>a) Minimize f(A, B, C, D) = πM(1, 2, 5, 6, 10, 12, 15)</li> <li>b) Perform by 2's complement method: 32 - 23.</li> <li>c) Implement AND, OR, NOT gate using NOR gates.</li> <li>d) Design &amp; explain 1-bit comparator. Draw diagram of 2-bit comparely Implement 1:16 de-multiplexer using 1:4.</li> </ul> | irator.    | 16   |
| Q.3            | <ul> <li>Attempt any Two</li> <li>a) Explain 7-segment display using 7447.</li> <li>b) Explain data-flow and behavioral-model in Verilog HDL.</li> <li>c) Design &amp; Explain Full Subtractor.</li> </ul>   |            | 12   |
|                | Section - II   |            |      |
| Q.4            | <ul> <li>Attempt any Four</li> <li>a) Explain S-R flip-flop.</li> <li>b) Write Verilog HDL program for 4-bit up-counter.</li> <li>c) Write Verilog HDL program for full-adder using behavioral mode</li> <li>d) Explain J-K flip-flop.</li> <li>e) Write a HDL code for full subtractor.</li> </ul>  | l.         | 16   |
| Q.5            | <ul> <li>Attempt any Two</li> <li>a) Explain Shift Register with any Two modes of operation.</li> <li>b) Write Verilog HDL code for 8:1 multiplexer.</li> <li>c) Design and Explain mod-10 asynchronous counter.</li> </ul>  |            | 12   |

| No.    |        |               |   |                 |                                      |
|--------|--------|---------------|---|-----------------|--------------------------------------|
|        | S      | S.E. (        | (Part - I) (New/Old) (CB                        | CS) Exa         | mination Nov/Dec-2019                |
|        |        |               |   | on Techn        | nology                               |
| Day 8  | & Date | e Sat         | DIGITAL L<br>turday 14-12-2019                  |                 | ESIGN<br>Max Marke <sup>,</sup> 7(   |
| Time   | : 10:0 | 0 AM          | To 01:00 PM                                     |                 | Wax. Walks. / C                      |
| Instru | uctio  | <b>ns:</b> 1) | ) Q.No.1 is compulsory and                      | should be       | solved in first 30 Minutes in answer |
|        |        | 2             | Book.<br>) Figures to the right indicate        | e full mark     |                                      |
|        |        | -             |   | e Type (        | Questions                            |
| Durat  | ion: 3 | 30 Mir        | nutes   |                 | Marks: 14                            |
| Q.1    | Cho    | ose t         | he correct alternatives fro                     | m the opt       | tions and rewrite the sentence. 14   |
|        | 1)     | Num           | ber of select lines required                    | for 32 to 1     | multiplexer is                       |
|        |        | a)            | 2   | d)              | 3<br>E                               |
|        |        | C)            | 4   | u)              | 5                                    |
|        | 2)     | How           | many flip-flops are required                    | d for mod-      | 16 counter                           |
|        |        | a)            | 6   | b)              | 5                                    |
|        |        | 0)            | 4   | u)              | 3                                    |
|        | 3)     | 2's           | complement of 8-bit number                      | 25 is           |                                      |
|        |        | a)            | 11100110  | b)              | 11100001                             |
|        |        | C)            | 00011001  | a)              | 11100111                             |
|        | 4)     | The           | output of a logic gate is 1 w                   | hen all its     | inputs are at logic 0, the gate is   |
|        |        | eitne         |   | b)              |                                      |
|        |        | c)            | AND or EX-OR                                    | d)              | NOR or EX-OR                         |
|        | 5)     | ν<br>Δrir     | na counter consisting of five                   | ,<br>Flin-Flons | will have                            |
|        | 5)     | a)            | 5 states  | b)              | 10 states                            |
|        |        | c)            | 32 states                                       | d)              | Infinite                             |
|        | 6)     | Whi           | ch flin-flon has Race-around                    | ,<br>condition  |                                      |
|        | 0)     | a)            | S-R   | b)              | <br>                                 |
|        |        | c)            | T Flip-flop                                     | d)              | D Flip-flop                          |
|        | 7)     | In a          | JK Flip-Flop, toggle means                      |                 |                                      |
|        | • /    | a)            | $0 = 1, \overline{0} = 0$                       | ·               |                                      |
|        |        | b)            | $\overline{Q} = 0, \overline{\overline{Q}} = 1$ |                 |                                      |
|        |        | c)            | Change the Output to oppo                       | osite state     |                                      |
|        |        | d)            | No change in output                             |                 |                                      |
|        | 8)     | 8 to          | 1 multiplexer integrated circ                   | uit is          | :                                    |
|        |        | a)            | 74153   | b)              | 74193                                |
|        |        | c)            | 74154   | d)              | 74151                                |
|        | 9)     | Data          | a flow modeling uses                            | module ite      | em.                                  |
|        |        | a)            | Initial Construct                               | b)              | Always Construct                     |
|        |        | C)            | Assignment                                      | d)              | None of these                        |

Seat

Set Q

| 10) | Minimized expression of $f(A, B, C)$<br>a) $A + BC$  | $= \sum_{a} m(1, b)$  | 3,5,6,7) is<br>AC + B                |
|-----|--|-----------------------|--------------------------------------|
|     | C) AB + C  | a)                    | None of these                        |
| 11) | <ul><li>The lexical convention used in Ve</li><li>a) C Language</li><li>c) FORTRAN</li></ul>         | rylog HD<br>b)<br>d)  | L is<br>C++<br>None of these         |
| 12) | Counting of clock pulses can be d<br>a) 7447<br>c) 7490  | one by u<br>b)<br>d)  | sing IC<br>74148<br>75151            |
| 13) | <ul><li>AND, OR, NOT can be implement</li><li>a) NAND or NOR</li><li>c) Both (a) &amp; (b)</li></ul> | ed by<br>b)<br>d)     | XOR<br>None of these                 |
| 14) | Max-terms of $f(A, B, C) = \sum m(0, 1, a)$<br>a) $\sum m (2, 3, 6, 7)$<br>c) $\pi M (2, 3, 6, 7)$   | 4, 5) are<br>b)<br>d) | <br>πM (0, 1, 4, 5)<br>None of these |

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Set Q

| Seat<br>No.    |  | Set        | Q     |
|----------------|--|------------|-------|
|                | S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec<br>Information Technology<br>DIGITAL LOGIC DESIGN   | -2019      |       |
| Day 8<br>Time: | & Date: Saturday,14-12-2019<br>10:00 AM To 01:00 PM  | Max. Marks | s: 56 |
| Instru         | <ul> <li>Jctions: 1) All questions are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>Section - I</li> </ul>   |            |       |
| Q.2            | Attempt any Foura)Minimize $f(A, B, C, D) = \pi M(1, 2, 5, 6, 10, 12, 15)$ b)Perform by 2's complement method: 32 - 23.c)Implement AND, OR, NOT gate using NOR gates.d)Design & explain 1-bit comparator. Draw diagram of 2-bit comparely implement 1:16 de-multiplexer using 1:4.                   | irator.    | 16    |
| Q.3            | <ul> <li>Attempt any Two</li> <li>a) Explain 7-segment display using 7447.</li> <li>b) Explain data-flow and behavioral-model in Verilog HDL.</li> <li>c) Design &amp; Explain Full Subtractor.</li> </ul>   |            | 12    |
|                | Section - II   |            |       |
| Q.4            | <ul> <li>Attempt any Four</li> <li>a) Explain S-R flip-flop.</li> <li>b) Write Verilog HDL program for 4-bit up-counter.</li> <li>c) Write Verilog HDL program for full-adder using behavioral model</li> <li>d) Explain J-K flip-flop.</li> <li>e) Write a HDL code for full subtractor.</li> </ul> | l.         | 16    |
| Q.5            | <ul> <li>Attempt any Two</li> <li>a) Explain Shift Register with any Two modes of operation.</li> <li>b) Write Verilog HDL code for 8:1 multiplexer.</li> <li>c) Design and Explain mod-10 asynchronous counter.</li> </ul>  |            | 12    |

| SLR-FM-347 | , |
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| Seat<br>No.    |   |  |   |                            | Se  | t R    |  |  |  |
|----------------|---|--|---|----------------------------|---|--------|--|--|--|
|                | S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019<br>Information Technology |  |   |                            |   |        |  |  |  |
| Day &<br>Time: | Date: \$<br>10:00 /   | Saturday,14<br>AM To 01:0                    | 4-12-2019<br>0 PM                               |                            | Max. Mar  | ks: 70 |  |  |  |
| Instru         | ctions  | : 1) Q.No.1<br>Book.                         | is compulsory and                               | should be s                | solved in first 30 Minutes in answ                                | ver    |  |  |  |
|                |   | 2) Figures                                   | s to the right indicat                          | e full mark.               |   |        |  |  |  |
| Duratio        | on: 30 l  | Minutes                                      | WCQ/Objectiv                                    | ve Type Q                  | uestions<br>Mar   | ks: 14 |  |  |  |
| Q.1            | Choos   | e the corre                                  | ect alternatives fro                            | om the opti                | ons and rewrite the sentence.                                     | 14     |  |  |  |
|                | 1) C  | ounting of<br>a) 7447<br>c) 7490             | clock pulses can be                             | e done by us<br>b)<br>d)   | sing IC<br>74148<br>75151   |        |  |  |  |
|                | 2) A  | ND, OR, N<br>a) NAND<br>c) Both (a           | OT can be impleme<br>or NOR<br>ı) & (b)         | ented by<br>b)<br>d)       | XOR<br>None of these  |        |  |  |  |
| :              | 3) M  | lax-terms o<br>a) ∑m (2,<br>c) πM (2,3       | f f(A, B, C) = $\sum m(0, 3, 6, 7)$<br>3, 6, 7) | 1, 4, 5) are _<br>b)<br>d) | <br>πM (0, 1, 4, 5)<br>None of these                              |        |  |  |  |
|                | 4) N  | umber of s<br>a) 2<br>c) 4                   | elect lines required                            | for 32 to 1 i<br>b)<br>d)  | multiplexer is<br>3<br>5  |        |  |  |  |
| :              | 5) H<br>a)<br>c)  | ow many fl<br>) 6<br>) 4                     | ip-flops are require                            | d for mod-1<br>b)<br>d)    | 6 counter<br>5<br>3   |        |  |  |  |
|                | 6) 2'<br>a)<br>c)   | <i>s</i> complem) 111001<br>000110           | ent of 8-bit numbe<br>10<br>001                 | r 25 is<br>b)<br>d)        | <br>11100001<br>11100111  |        |  |  |  |
|                | 7) T<br>ei  | he output o<br>ither<br>a) NAND<br>c) AND or | of a logic gate is 1 v<br>or EX-OR<br>r EX-OR   | vhen all its i<br>b)<br>d) | nputs are at logic 0, the gate is<br>OR or EX-NOR<br>NOR or EX-OR |        |  |  |  |
| 1              | 8) A<br>a)<br>c)  | ring counte<br>5 state<br>32 state           | er consisting of five<br>s<br>es                | Flip-Flops v<br>b)<br>d)   | will have<br>10 states<br>Infinite                                |        |  |  |  |
| 2              | 9) W<br>a)<br>c)  | /hich flip-flc<br>) S-R<br>) T Flip-f        | op has Race-aroun<br>Iop                        | d condition _<br>b)<br>d)  | J-K<br>D Flip-flop  |        |  |  |  |

Set R

- 10) In a JK Flip-Flop, toggle means \_\_\_\_\_.
  - a)  $Q = 1, \overline{Q} = 0$
  - b)  $Q = 0, \overline{Q} = 1$
  - c) Change the Output to opposite state
  - d) No change in output
- 11) 8 to 1 multiplexer integrated circuit is \_\_\_\_\_
  - a) 74153 b) 74193 c) 74154 d) 74151
- 12) Data flow modeling uses \_\_\_\_\_ module item.
  - a) Initial Construct b) Always Construct

AC + B

c) Assignment d) None of these

13) Minimized expression of  $f(A, B, C) = \sum m(1,3,5,6,7)$  is \_\_\_\_\_.

- a) A + BC b)
- c) AB + C d) None of these
- 14) The lexical convention used in Verylog HDL is \_\_\_\_\_.
  - a) C Language b) C++
  - c) FORTRAN d) None of these

|                |                                     |   |  |   | -    |      |
|----------------|-------------------------------------|---|--|---|------|------|
| Seat<br>No.    |                                     |   |  | S   | et   | R    |
|                | S                                   | .E. (Part - I) (N   | ew/Old) (CBCS) Exam<br>Information Techno<br>DIGITAL LOGIC DES   | ination Nov/Dec-2019<br>logy<br>SIGN        |      |      |
| Day 8<br>Time: | & Date<br>10:00                     | : Saturday,14-12-<br>) AM To 01:00 PN   | 2019<br>I  | Max. Ma                                     | arks | : 56 |
| Instru         | uction                              | <b>s:</b> 1) All question<br>2) Figures to th   | s are compulsory.<br>ne right indicate full marks.<br><b>Section - I</b>   |   |      |      |
| Q.2            | Atter<br>a)<br>b)<br>c)<br>d)<br>e) | npt any Four<br>Minimize f(A, B, C<br>Perform by 2's c<br>Implement AND,<br>Design & explain<br>Implement 1:16 c    | $(D) = \pi M(1, 2, 5, 6, 10, 12)$<br>complement method: 32 - 23<br>OR, NOT gate using NOR<br>1-bit comparator. Draw dia<br>de-muitiplexer using 1:4. | 15)<br>gates.<br>Igram of 2-bit comparator. |      | 16   |
| Q.3            | Atter<br>a)<br>b)<br>c)             | <b>npt any Two</b><br>Explain 7-segme<br>Explain data-flov<br>Design & Explair                                      | nt display using 7447.<br>v and behavioral-model in V<br>v Full Subtractor.  | erilog HDL.                                 |      | 12   |
|                |                                     |   | Section - II   |   |      |      |
| Q.4            | Atter<br>a)<br>b)<br>c)<br>d)<br>e) | npt any Four<br>Explain S-R flip-f<br>Write Verilog HD<br>Write Verilog HD<br>Explain J-K flip-f<br>Write a HDL cod | lop.<br>L program for 4-bit up-cour<br>L program for full-adder us<br>op.<br>e for full subtractor.  | iter.<br>ng behavioral model.               |      | 16   |
| Q.5            | Atter<br>a)<br>b)<br>c)             | n <b>pt any Two</b><br>Explain Shift Ree<br>Write Verilog HD<br>Design and Expl                                     | gister with any Two modes<br>L code for 8:1 multiplexer.<br>ain mod-10 asynchronous o  | of operation.<br>counter.                   |      | 12   |

Page **9** of **12** 

| 7 |
|---|
|   |

| Seat<br>No.    |               |                                |  |   |                   |                    |   | Set         | S     |
|----------------|---------------|--------------------------------|--|---|-------------------|--------------------|---|-------------|-------|
|                | S             | 6.E. (                         | Part - I) (I   | New/Old) (C<br>Informat<br>DIGITAI                          | BCS) E<br>ion Teo | xan<br>hnc         | nination Nov/Dec-<br>blogy<br>SIGN      | 2019        |       |
| Day &<br>Time: | Date<br>10:00 | e: Sat<br>0 AM                 | urday,14-12<br>To 01:00 P  | 2-2019<br>PM  | 20010             | 55                 |   | Max. Marks  | s: 70 |
| Instru         | ictior        | ו <b>s:</b> 1)<br>2)           | Q.No.1 is o<br>Book.   | compulsory an   | d should          | be s               | olved in first 30 Minute                | es in answe | r     |
|                |               | (ے                             |  |   |                   |                    |   |             |       |
| Durati         | ion: 3        | 0 Min                          | lutes  | NCQ/Object  | ive iyp           | eQ                 | uestions                                | Marks       | · 14  |
|                | Cho           |                                | he correct   | alternatives f  | rom tha           | onti               | and rowrite the e                       |             |       |
| Q.1            | 1)            | 2's c                          | omplement  | t of 8-bit number   | er 25 is          | ορτισ              | ons and rewrite the s                   | sentence.   | 14    |
|                | - ,           | a)<br>c)                       | 11100110<br>00011001   |   |                   | b)<br>d)           | 11100001<br>11100111                    |             |       |
|                | 2)            | The                            | output of a  | logic gate is 1   | when all          | its ir             | puts are at logic 0, the                | e gate is   |       |
|                |               | eithe<br>a)<br>c)              | er<br>NAND or E<br>AND or E>   | EX-OR<br>K-OR   |                   | b)<br>d)           | OR or EX-NOR<br>NOR or EX-OR            |             |       |
|                | 3)            | A rin<br>a)<br>c)              | g counter c<br>5 states<br>32 states   | consisting of fiv   | e Flip-Flo        | ops v<br>b)<br>d)  | vill have<br>10 states<br>Infinite      |             |       |
|                | 4)            | Whic<br>a)<br>c)               | ch flip-flop h<br>S-R<br>T Flip-flop   | nas Race-arour  | nd condit         | ion _<br>b)<br>d)  | <br>J-K<br>D Flip-flop                  |             |       |
|                | 5)            | In a (<br>a)<br>b)<br>c)<br>d) | JK Flip-Flop<br>$Q = 1, \overline{Q} =$<br>$Q = 0, \overline{Q} =$<br>Change th<br>No change | p, toggle mean<br>= 0<br>1<br>e Output to op<br>e in output | s<br>posite sta   | ate                |   |             |       |
|                | 6)            | 8 to<br>a)<br>c)               | 1 multiplexe<br>74153<br>74154   | er integrated ci  | rcuit is          | b)<br>d)           | 74193<br>74151                          |             |       |
|                | 7)            | Data<br>a)<br>c)               | flow mode<br>Initial Con<br>Assignme   | ling uses<br>struct<br>nt                                   | module            | e iter<br>b)<br>d) | n.<br>Always Construct<br>None of these |             |       |
|                | 8)            | Minir<br>a)<br>c)              | mized expre<br>A + BC<br>AB + C  | ession of f(A, B  | $(,C) = \sum n$   | n(1,3<br>b)<br>d)  | ,5,6,7) is<br>AC + B<br>None of these   |             |       |
|                | 9)            | The<br>a)<br>c)                | lexical conv<br>C Langua<br>FORTRAN  | vention used in<br>ge<br>N                                  | Verylog           | HDL<br>b)<br>d)    | is<br>C++<br>None of these              |             |       |
|                | 10)           | Cour<br>a)                     | nting of cloo<br>7447  | ck pulses can b   | be done b         | by us<br>b)        | ing IC<br>74148                         |             |       |

75151

d)

c) 7490



| 11) | AND<br>a)<br>c) | , OR, NOT can be implemented b<br>NAND or NOR<br>Both (a) & (b) | b)<br>d) | XOR<br>None of these |
|-----|-----------------|---|----------|----------------------|
| 12) | Max-            | terms of f(A, B, C) = $\sum m(0, 1, 4, 5)$                      | are _    |                      |
|     | a)              | $\sum m (2, 3, 6, 7)$   | b)       | πM (0, 1, 4, 5)      |
|     | c)              | $\pi M (2, 3, 6, 7)$  | d)       | None of these        |
| 13) | Num             | ber of select lines required for 32                             | to 1 r   | nultiplexer is       |
|     | a)              | 2   | b)       | 3                    |
|     | c)              | 4   | d)       | 5                    |
| 14) | How             | many flip-flops are required for m                              | iod-16   | 6 counter            |
|     | a)              | 6   | b)       | 5                    |
|     | c)              | 4   | d)       | 3                    |

| Seat<br>No.    |                                     |  |   | Set        | S     |
|----------------|-------------------------------------|--|---|------------|-------|
|                | S                                   | .E. (Part - I) (N  | ew/Old) (CBCS) Examination Nov/I<br>Information Technology<br>DIGITAL LOGIC DESIGN  | Dec-2019   |       |
| Day 8<br>Time: | & Date<br>10:00                     | : Saturday,14-12-<br>) AM To 01:00 PM  | -2019<br>/  | Max. Marks | 56 56 |
| Instru         | uction                              | <b>s:</b> 1) All question<br>2) Figures to th  | s are compulsory.<br>he right indicate full marks.<br><b>Section - I</b>  |            |       |
| Q.2            | Atter<br>a)<br>b)<br>c)<br>d)<br>e) | npt any Four<br>Minimize f(A, B, C<br>Perform by 2's c<br>Implement AND,<br>Design & explain<br>Implement 1:16 c     | $G(D) = \pi M(1, 2, 5, 6, 10, 12, 15)$<br>omplement method: 32 - 23.<br>OR, NOT gate using NOR gates.<br>In 1-bit comparator. Draw diagram of 2-bit co<br>de-muitiplexer using 1:4. | omparator. | 16    |
| Q.3            | Atter<br>a)<br>b)<br>c)             | <b>npt any Two</b><br>Explain 7-segme<br>Explain data-flow<br>Design & Explair                                       | ent display using 7447.<br>v and behavioral-model in Verilog HDL.<br>n Full Subtractor.   |            | 12    |
|                |                                     |  | Section - II  |            |       |
| Q.4            | Atter<br>a)<br>b)<br>c)<br>d)<br>e) | npt any Four<br>Explain S-R flip-f<br>Write Verilog HD<br>Write Verilog HD<br>Explain J-K flip-fl<br>Write a HDL cod | flop.<br>L program for 4-bit up-counter.<br>L program for full-adder using behavioral m<br>lop.<br>e for full subtractor.   | nodel.     | 16    |
| Q.5            | Atter<br>a)<br>b)<br>c)             | n <b>pt any Two</b><br>Explain Shift Reg<br>Write Verilog HD<br>Design and Expl                                      | gister with any Two modes of operation.<br>L code for 8:1 multiplexer.<br>ain mod-10 asynchronous counter.  |            | 12    |

## Set S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology **COMPUTER GRAPHICS**

Day & Date: Tuesday, 17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- Figures to the right indicate full marks.
- 3) All Questions are compulsory.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

3)

Seat

No.

#### Q.1 Choose the correct alternatives from the options.

- 1) The process of introducing changes in the shape size and orientation of the object is called as . b)
  - a) Transformation
  - c) Surface Removal d)
- 2) is repositioning the coordinates along a circular path, in the x-y plane by making an angle with the axes.
  - a) Combined transformation
  - c) Scaling
  - DVST stands for \_\_\_\_\_.
    - a) Digital view storing table
    - c) Direct view storage tube
- b) Direct visual storage tube
- Digital view storage tube d)
- 4) The side effect of scan conversion is
  - a) Aliasing b) Anti aliasing
  - c) Both a & b d) None of these
- 5) Vector display is well suited for \_\_\_\_\_
  - a) Animation b) Cartoons Line drawing applications All of the above d) C)
- 6) Edge fill algorithm uses \_\_\_\_\_ process.
  - a) Iterative process **Binary process** b)
  - Non recursive process None of the above d) C)
- Identify the incorrect statement : 7)
  - Bresenham's line drawing algorithm uses increment integer a) calculations.
  - In Bresenham's algorithm error term is initialized to 0 b)
  - In Bresenham's algorithm, while generating a circle, it is easy to c) generate one octant first and other by successive reflection.
  - d) None of the above
  - algorithm is proposed originally by catmull.
    - Z-buffer a) c) Warnock

8)

- b) Y-buffer
- d) Back-face

# **SLR-FM-348**

Ρ

Max. Marks: 70

Marks: 14

14

Projections

- Clipping
- b) d)
- Rotation
  - Translation

Set P 9) In Warnock algorithm, if polygon is totally outside the window is \_\_\_\_\_. a) Contained b) Disjoint c) Intersecting d) Surrounding If the curve passes through all the control point, then it is \_\_\_\_\_. 10) a) Interpolation b) Approximation None of above c) Both a& b d) Parametric curve are 11) a) Axis independent Axis dependent b) c) Both a & b d) None of above 12) If a point is above and left of clipping rectangle, then it has \_\_\_\_\_ region code. a) 0000 b) 0101 c) 1001 d) 1010 Mid-point subdivision algorithm used for \_\_\_\_\_ 13) a) Point clipping Polygon clipping b) c) Line clipping d) Text clipping Post segment function is used to make 14) a) Segment append Delete segment b) c) Segment visible Segment invisible d)

Seat No.

## S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology COMPUTER GRAPHICS

Day & Date: Tuesday, 17-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures drawn by pencil, ruler only indicate full marks.

3) Do not use pen to draw and label the diagrams.

#### Section – I

#### Q.2 Attempt any three of the following.

- a) Comment on the raster and random display mechanism used in graphic terminals.
- **b)** Discuss the merits and demerits of the DDA algorithm .Write the pseudo code for the DDA Algorithm.
- c) Explain rotation about an arbitrary point.
- d) Write a simple seed fill algorithm in detail for 4 connected boundary defined regions.

#### Q.3 Attempt any one of the following.

State the basic principle of the midpoint circle drawing algorithm. Using the midpoint circle algorithm, calculate first pixels in one octant.

OR

Write a scaling matrix with scaling factors 2, 3 and 1 in x, y and z directions, respectively. Apply the transformation matrix on a unit cube situated at the origin.

## Q.4 Attempt the following.

- a) Using the homogenous coordinate transformation matrix, rotate the triangle ABC with A= (2,3), B=(5,5) and C= (4.3) by an angle 45 degree about the point (1,1).
- **b)** Explain the working of CRT in detail with diagram.

#### Section – II

# Q.5Answer any three.12a)Describe halftoning in detail.1b)Describe non parametric curves in detail.1c)Explain z- buffer algorithm in detail.1d)Explain B-spline curve and its properties.0Q.6Describe mid-point subdivision algorithm with example.08OROR08

**Q.7** Explain curve generation and curve representation in detail. **08** 

Max. Marks: 56

Set

**08** 

12

| Seat<br>No.      |                         |   |   |                            |  | Set      | Q     |
|------------------|-------------------------|---|---|----------------------------|--|----------|-------|
|                  | S.E.                    | (Part – I) (I   | New/Old) (CBCS)<br>Information T<br>COMPUTER (                      | ) Exa<br>echi<br>3RA       | amination Nov/Dec-20<br>nology<br>PHICS                  | 19       |       |
| Day &<br>Time: 1 | Date: 1<br>10:00 A      | uesday, 17-1<br>M To 01:00 P  | 2-2019<br>M   |                            | Max  | . Marks  | s: 70 |
| Instruc          | ctions:                 | <ol> <li>Q. No. 1 is<br/>Book.</li> <li>Figures to</li> <li>All Question</li> </ol> | compulsory and she<br>the right indicate ful<br>ons are compulsory. | ould k<br>I mar            | be solved in first 30 minutes<br>ks.                     | s in ans | wer   |
|                  |                         | Ν   | ICQ/Objective T   | vpe                        | Questions  |          |       |
| Duratio          | on: 30 M                | <br>Minutes   | ·····   | 1                          |  | Marks    | s: 14 |
| <b>Q.1 C</b>     | Choose<br> )<br>a)      | e the correct a<br>algorithm<br>Z-buffer<br>Warpock                                 | alternatives from the is proposed original                          | ne op<br>ly by<br>b)<br>d) | <b>tions.</b><br>catmull.<br>Y-buffer<br>Back-face       |          | 14    |
| 2                | 2) In<br>a)<br>c)       | Warnock algo<br>Contained<br>Intersecting   | prithm, if polygon is t   | otally<br>b)<br>d)         | outside the window is<br>Disjoint<br>Surrounding         |          |       |
| 3                | 3) If<br>a)<br>c)       | the curve pas<br>Interpolatio<br>Both a& b  | ses through all the c<br>n  | ontro<br>b)<br>d)          | I point, then it is<br>Approximation<br>None of above    |          |       |
| 4                | l) P<br>a<br>c          | arametric curv<br>) Axis indepe<br>) Both a & b                                     | e are<br>endent   | b)<br>d)                   | Axis dependent<br>None of above                          |          |       |
| 5                | 5) If<br>co<br>a<br>c   | a point is abo<br>ode.<br>) 0000<br>) 1001  | ve and left of clipping   | g rect<br>b)<br>d)         | angle, then it has re<br>0101<br>1010                    | gion     |       |
| 6                | 6) M<br>a<br>c          | id-point subdi <sup>.</sup><br>) Point clippiı<br>) Line clippin                    | vision algorithm used<br>ng<br>g                                    | d for _<br>b)<br>d)        | Polygon clipping<br>Text clipping                        |          |       |
| 7                | 7) P<br>a)<br>c)        | ost segment fu<br>Segment a<br>Segment vi   | unction is used to ma<br>opend<br>sible                             | ake _<br>b)<br>d)          | Delete segment<br>Segment invisible                      |          |       |
| 8                | 3) Ti<br>th<br>a)<br>c) | he process of<br>e object is cal<br>Transforma<br>Surface Re                        | introducing changes<br>led as<br>tion<br>moval                      | bin th<br>b)<br>d)         | e shape size and orientatio<br>Projections<br>Clipping   | n of     |       |
| g                | 9)<br>pl<br>a)<br>c)    | is reposi<br>ane by making<br>Combined t<br>Scaling                                 | tioning the coordinat<br>g an angle with the a<br>ransformation     | es al<br>ixes.<br>b)<br>d) | ong a circular path, in the x<br>Rotation<br>Translation | -у       |       |

DVST stands for \_\_\_\_\_.

a) Digital view storing table

a) Aliasing

10)

- c) Direct view storage tube
- b) Direct visual storage tube

**SLR-FM-348** 

Set

- w storage tube d) Dig
- d) Digital view storage tube
- 11) The side effect of scan conversion is
  - b) Anti aliasing
  - c) Both a & b d) None of these
- 12) Vector display is well suited for \_\_\_\_\_
  - a) Animationc) Line drawing applications
- b) Cartoons
- d) All of the above
- 13) Edge fill algorithm uses \_\_\_\_\_ process.
  - a) Iterative process b) Binary process
  - c) Non recursive process d) None of the above
- 14) Identify the incorrect statement :
  - a) Bresenham's line drawing algorithm uses increment integer calculations.
  - b) In Bresenham's algorithm error term is initialized to 0
  - c) In Bresenham's algorithm, while generating a circle, it is easy to generate one octant first and other by successive reflection.
  - d) None of the above

Max. Marks: 56

Seat No.

## S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology COMPUTER GRAPHICS

Day & Date: Tuesday, 17-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures drawn by pencil, ruler only indicate full marks.

3) Do not use pen to draw and label the diagrams.

#### Section – I

## Q.2 Attempt any three of the following.

- a) Comment on the raster and random display mechanism used in graphic terminals.
- **b)** Discuss the merits and demerits of the DDA algorithm .Write the pseudo code for the DDA Algorithm.
- c) Explain rotation about an arbitrary point.
- d) Write a simple seed fill algorithm in detail for 4 connected boundary defined regions.

## Q.3 Attempt any one of the following.

State the basic principle of the midpoint circle drawing algorithm. Using the midpoint circle algorithm, calculate first pixels in one octant.

OR

Write a scaling matrix with scaling factors 2, 3 and 1 in x, y and z directions, respectively. Apply the transformation matrix on a unit cube situated at the origin.

## Q.4 Attempt the following.

- a) Using the homogenous coordinate transformation matrix, rotate the triangle ABC with A= (2,3), B=(5,5) and C= (4.3) by an angle 45 degree about the point (1,1).
- **b)** Explain the working of CRT in detail with diagram.

## Section – II

# Q.5 Answer any three. 12 a) Describe halftoning in detail. 12 b) Describe non parametric curves in detail. 12 c) Explain z- buffer algorithm in detail. 12 d) Explain B-spline curve and its properties. 08 Q.6 Describe mid-point subdivision algorithm with example. 08 OR 08 08

Explain back face removal algorithm and antialiasing technique in detail.

Q.7Explain curve generation and curve representation in detail.08

12

80

| ıra | tion: 3           | 30 Minutes  | Marks:   |
|-----|-------------------|---|--|
| 1   | <b>Choo</b><br>1) | ose the correct alternatives from the optionVector display is well suited fora) Animationb) Cac) Line drawing applicationsd) All  | <b>is.</b><br>rtoons<br>of the above   |
|     | 2)                | Edge fill algorithm uses process.a) Iterative processb) Birc) Non recursive processd) No  | ary process<br>ne of the above   |
|     | 3)                | <ul> <li>Identify the incorrect statement :</li> <li>a) Bresenham's line drawing algorithm use calculations.</li> <li>b) In Bresenham's algorithm error term is in c) In Bresenham's algorithm, while generate generate one octant first and other by su</li> <li>d) None of the above</li> </ul> | s increment integer<br>nitialized to 0<br>ing a circle, it is easy to<br>accessive reflection. |
|     | 4)                | algorithm is proposed originally by cate<br>a) Z-buffer b) Y-t<br>c) Warnock d) Ba  | null.<br>ouffer<br>ck-face   |
|     | 5)                | In Warnock algorithm, if polygon is totally our<br>a) Contained b) Dis<br>c) Intersecting d) Su   | side the window is<br>joint<br>rrounding   |
|     | 6)                | If the curve passes through all the control po<br>a) Interpolation b) Ap<br>c) Both a& b d) No  | int, then it is<br>proximation<br>ne of above  |
|     | 7)                | Parametric curve area) Axis independentb) Axc) Both a & bd) No  | s dependent<br>ne of above   |
|     | 8)                | If a point is above and left of clipping rectang<br>code.<br>a) 0000 b) 010<br>c) 1001 d) 10  | le, then it has region<br>01<br>10   |
|     | 9)                | Mid-point subdivision algorithm used for  |  |

## 2) Figures to the right indicate full marks.

3) All Questions are compulsory.

## **MCQ/Objective Type Questions**

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology **COMPUTER GRAPHICS** 

00 Minut Du

Day & Date: Tuesday, 17-12-2019

Book.

Time: 10:00 AM To 01:00 PM

Seat

No.

#### Q.

- a) Point clipping c) Line clipping
- Polygon clipping b)
  - Text clipping d)

# **SLR-FM-348**

Set

R

14

14

Max. Marks: 70

10) Post segment function is used to make \_\_\_\_\_

a) Segment append

c)

b) Delete segment

**SLR-FM-348** 

Set

- Segment visible
- d) Segment invisible
- 11) The process of introducing changes in the shape size and orientation of the object is called as \_\_\_\_\_.
  - a) Transformation
- b) Projections
- c) Surface Removal
- d) Clipping
- 12) \_\_\_\_\_ is repositioning the coordinates along a circular path, in the x-y plane by making an angle with the axes.
  - a) Combined transformation
  - c) Scaling
- b) Rotation
- d) Translation
- 13) DVST stands for \_\_\_\_\_.
  - a) Digital view storing table
  - c) Direct view storage tube
- b) Direct visual storage tube
- d) Digital view storage tube
- 14) The side effect of scan conversion is \_\_\_\_
  - a) Aliasing
  - c) Both a & b

- b) Anti aliasing
- d) None of these

## Seat No.

## S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology COMPUTER GRAPHICS

Day & Date: Tuesday, 17-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures drawn by pencil, ruler only indicate full marks.

3) Do not use pen to draw and label the diagrams.

#### Section – I

#### Q.2 Attempt any three of the following.

- a) Comment on the raster and random display mechanism used in graphic terminals.
- b) Discuss the merits and demerits of the DDA algorithm .Write the pseudo code for the DDA Algorithm.
- c) Explain rotation about an arbitrary point.
- d) Write a simple seed fill algorithm in detail for 4 connected boundary defined regions.

#### Q.3 Attempt any one of the following.

State the basic principle of the midpoint circle drawing algorithm. Using the midpoint circle algorithm, calculate first pixels in one octant.

OR

Write a scaling matrix with scaling factors 2, 3 and 1 in x, y and z directions, respectively. Apply the transformation matrix on a unit cube situated at the origin.

#### Q.4 Attempt the following.

- a) Using the homogenous coordinate transformation matrix, rotate the triangle ABC with A= (2,3), B=(5,5) and C= (4.3) by an angle 45 degree about the point (1,1).
- **b)** Explain the working of CRT in detail with diagram.

#### Section – II

#### Q.5 Answer any three. 12 a) Describe halftoning in detail. b) Describe non parametric curves in detail. c) Explain z- buffer algorithm in detail. d) Explain B-spline curve and its properties. Describe mid-point subdivision algorithm with example. **08** Q.6 OR Explain back face removal algorithm and antialiasing technique in detail.

Q.7 Explain curve generation and curve representation in detail. **08** 

**08** 

12

R

Max. Marks: 56

| NU.            |                 |   |  |                                  |  |
|----------------|-----------------|---|--|----------------------------------|--|
|                | S.              | .E. (F                                    | Part – I) (New/Old) (CBCS)<br>Information Te<br>COMPUTER G   | Exa<br>echi<br>iRA               | amination Nov/Dec-2019<br>nology<br>PHICS                          |
| Day &<br>Time: | & Date<br>10:00 | e: Tue<br>0 AM                            | sday, 17-12-2019<br>To 01:00 PM  |                                  | Max. Marks: 70   |
| Instru         | uctior          | ns: 1)<br>2)<br>3)                        | Q. No. 1 is compulsory and sho<br>Book.<br>Figures to the right indicate full<br>All Questions are compulsory. | ould k<br>mari                   | be solved in first 30 minutes in answer<br>ks.                     |
|                |                 |   | MCQ/Objective Ty   | vpe (                            | Questions  |
| Durat          | ion: 3          | 0 Min                                     | utes   | -                                | Marks: 14  |
| Q.1            | Choc<br>1)      | ose th<br>If the<br>a) I<br>c) I          | e correct alternatives from th<br>curve passes through all the co<br>nterpolation<br>Both a& b                 | <b>e op</b><br>ontro<br>b)<br>d) | tions. 14<br>I point, then it is<br>Approximation<br>None of above |
|                | 2)              | Para<br>a) /<br>c) I                      | metric curve are<br>Axis independent<br>Both a & b   | b)<br>d)                         | Axis dependent<br>None of above                                    |
|                | 3)              | lf a p<br>code<br>a) (<br>c) <sup>-</sup> | point is above and left of clipping<br>2000<br>1001  | b)<br>d)                         | angle, then it has region<br>0101<br>1010                          |
|                | 4)              | Mid- <sub> </sub><br>a) l<br>c) l         | point subdivision algorithm used<br>⊃oint clipping<br>_ine clipping  | l for _<br>b)<br>d)              | <br>Polygon clipping<br>Text clipping                              |
|                | 5)              | Post<br>a) S<br>c) S                      | segment function is used to ma<br>Segment append<br>Segment visible  | ke _<br>b)<br>d)                 | Delete segment<br>Segment invisible                                |
|                | 6)              | The<br>the c<br>a)<br>c)                  | process of introducing changes<br>bject is called as<br>Transformation<br>Surface Removal                      | in th<br>b)<br>d)                | e shape size and orientation of<br>Projections<br>Clipping         |
|                | 7)              | plane<br>a) (<br>c) (                     | _ is repositioning the coordinate<br>e by making an angle with the a<br>Combined transformation<br>Scaling     | es ale<br>xes.<br>b)<br>d)       | ong a circular path, in the x-y<br>Rotation<br>Translation         |
|                | 8)              | DVS<br>a) I<br>c) I                       | T stands for<br>Digital view storing table<br>Direct view storage tube   | b)<br>d)                         | Direct visual storage tube<br>Digital view storage tube            |
|                | 9)              | The<br>a)<br>c) I                         | side effect of scan conversion is<br>Aliasing<br>3oth a & b  | b)<br>d)                         | <br>Anti aliasing<br>None of these                                 |

Set S

10) Vector display is well suited for \_\_\_\_\_.

a) Animation

- b) Cartoons
- c) Line drawing applications
- d) All of the above
- Edge fill algorithm uses \_\_\_\_\_ process. 11)
  - a) Iterative process c) Non recursive process
- Binary process b)
- None of the above d)

**SLR-FM-348** 

Set S

- 12) Identify the incorrect statement :
  - a) Bresenham's line drawing algorithm uses increment integer calculations.
  - b) In Bresenham's algorithm error term is initialized to 0
  - c) In Bresenham's algorithm, while generating a circle, it is easy to generate one octant first and other by successive reflection.
  - d) None of the above
- 13) algorithm is proposed originally by catmull. a) Z-buffer
  - b) Y-buffer
  - c) Warnock d) Back-face
- In Warnock algorithm, if polygon is totally outside the window is \_\_\_\_\_. 14)
  - a) Contained

b) Disioint

Intersecting c)

Surrounding d)

## S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019 Information Technology COMPUTER GRAPHICS

Day & Date: Tuesday, 17-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures drawn by pencil, ruler only indicate full marks.

3) Do not use pen to draw and label the diagrams.

#### Section – I

#### Q.2 Attempt any three of the following.

- a) Comment on the raster and random display mechanism used in graphic terminals.
- b) Discuss the merits and demerits of the DDA algorithm .Write the pseudo code for the DDA Algorithm.
- c) Explain rotation about an arbitrary point.
- d) Write a simple seed fill algorithm in detail for 4 connected boundary defined regions.

#### Q.3 Attempt any one of the following.

State the basic principle of the midpoint circle drawing algorithm. Using the midpoint circle algorithm, calculate first pixels in one octant.

OR

Write a scaling matrix with scaling factors 2, 3 and 1 in x, y and z directions, respectively. Apply the transformation matrix on a unit cube situated at the origin.

#### Q.4 Attempt the following.

- a) Using the homogenous coordinate transformation matrix, rotate the triangle ABC with A= (2,3), B=(5,5) and C= (4.3) by an angle 45 degree about the point (1,1).
- **b)** Explain the working of CRT in detail with diagram.

#### Section – II

#### Q.5 Answer any three. 12 a) Describe halftoning in detail. b) Describe non parametric curves in detail. c) Explain z- buffer algorithm in detail. d) Explain B-spline curve and its properties. Describe mid-point subdivision algorithm with example. **08** Q.6 OR Explain back face removal algorithm and antialiasing technique in detail.

Q.7 Explain curve generation and curve representation in detail. **08** 

Max. Marks: 56

**08** 

**SLR-FM-348** 



12

# S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Q.1

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.

**APPLIED MATHEMATICS – II** 

- 2) Answer MCQ / objective type questions on page no 3 only. Don't forget to mention, Q. P. Set (P/Q/R/S) on Top of page.
- Figures to the right indicates full marks.
- 4) Use of non-programmable calculator is allowed.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

sentence. The first approximation to real root of the equation  $x - \cos x = 0$  by 1)

Choose the correct alternatives from the options and rewrite the

- Regula falsi method is \_\_\_\_\_. a) 0.6851 b) 1.6851
- c) 0.6581 d) 0.8651
- 2) Identify, which of the following method has quadratic convergence?
  - a) Regula falsi method
  - c) Both a and b
- The number of strips required in Weddel's rule is 3)
  - A multiple of 10 a) A Multiple of 6 b) c) A Multiple of 3 d) A multiple of 2

b)

d)

- 4) Identify the method of solving simultaneous linear equations in which the coefficient matrix is expressed as the product of a lower and upper triangular matrices.
  - a) Gauss-Jacobi's method
  - c) Gauss-Elimination method
- b) Gauss-Jordan method d) Factorization method

Newton - Raphson method

Romberg's method

5) For the data

| t:    | 0 | 0.5  | 1   | 1.5  | 2 |
|-------|---|------|-----|------|---|
| f(t): | 0 | 0.25 | 1   | 2.25 | 4 |
|       | 0 |      | . 1 | rd   |   |

The value of  $\int_0^2 f(t) dt$  by Simpson's  $\frac{1}{3}^{rd}$  rule is \_\_\_\_\_. a) 2.66668 b) 2.66667

c) 2.66669

d) None

- If  $I_1$  and  $I_2$  denotes approximate value of  $I = \int_a^b f(x) dx$  in the Romberg's 6) method then I = .
  - a)  $I_2 \left[\frac{I_2 I_1}{3}\right]$ b)  $I_2 + \left[\frac{I_1 + I_2}{3}\right]$ d) c)  $\frac{1}{4}[3I_2 - I_1]$ None

# SLR-FM-350

Set

Max. Marks: 70

Marks: 14

|     |  |                              | SLR-FM-350   |
|-----|--|------------------------------|--|
|     |  |                              | Set P  |
| 7)  | The dominant eigen value of the ma<br>a) 0.3722<br>c) 5.3723   | trix A<br>b)<br>d)           | $ = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} $ is<br>-5.3723<br>10.7445              |
| 8)  | Which of the following is true for fuz.<br>a) $\overline{A \cup B} = \overline{A} \cup \overline{B}$<br>c) $\overline{A} \subseteq A$                                    | zy se<br>b)<br>d)            | ts?<br>$\overline{A \cap B} = \overline{A} \cup \overline{B}$ $A \subseteq \overline{A}$ |
| 9)  | The scalar cardinality of fuzzy set A<br>$A(x) = 1 + \frac{x}{10}, x \in \{0, -1, -2, -3, -4\}$<br>a) 3<br>c) 4  | defin<br>} is<br>b)<br>d)    | ed by the membership function<br><br>3.5<br>4.5  |
| 10) | In extension principle the gradiation<br>a) $[f(A)](y) = Max\{A(x)\} \ y = f(x)$<br>b) $[f(A)](y) = Min\{A(x)\} \ y = f(x)$<br>c) $[f(A)](y) = A(x)$<br>d) None of these | of im<br>)<br>)              | ages are defined as  |
| 11) | Consider the fuzzy set defined by the $B(x) = e^{-x}, x \in [0, \infty)$ , then level set a) (0,1)<br>c) (0,1]   | e me<br>et of fu<br>b)<br>d) | mbership function<br>uzzy set B is<br>[0,1]<br>[0,1)                                     |
| 12) | If A is a fuzzy number then boundar<br>a) Unbounded<br>c) Finite   | y of A<br>b)<br>d)           | is<br>Bounded<br>None of these   |
| 13) | Feasible solution satisfies<br>a) Only constraints<br>c) Both a and b  | <br>b)<br>d)                 | Only non-negative restrictions<br>None of these  |
| 14) | The assignment problem is said to b<br>a) Rectangular matrix<br>c) Unit matrix   | be bal<br>b)<br>d)           | anced if it is<br>Triangular matrix<br>Square matrix                                     |

| Seat |  |
|------|--|
| No.  |  |

## S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **APPLIED MATHEMATICS – II**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Use of non-programmable calculator is allowed.

## Section – I

#### Q.2 Attempt any three.

- Find a real root of the equation  $e^x = x^3 + \cos 25x$  take  $x_0 = 4.5$  by using a) Newton – Raphson method correct to 3 decimal places.
- Find positive root of the equation  $x \log_{10} x = 1.2$  by using false-position b) method correct to 3 decimal places.
- Solve the system of equations by using Gauss-Jacobi method. C)
- x y + z = 1. -3x + 2y - 3z = -6, 2x - 5y + 4z = 5d) Solve the system of equations by using Gauss-Jacobi method.

8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3v + 12z = 35

- Using Power method find eigen values and corresponding eigen vectors. e)
  - $A = \begin{bmatrix} 5 & 0 & 1 \\ 0 & -2 & 0 \\ 1 & 0 & 5 \end{bmatrix} \qquad Take \ x_0 = \begin{bmatrix} 1 & 0 & 0 \end{bmatrix}^T$ Perform 5 iterations.

#### Q.3 Attempt any three.

Solve the system of education by using Gauss-Seidal method (perform 3 a) iterations)

$$83x + 11y - 4z = 95$$
,  $7x + 52y + 13z = 104$   $3x + 8y + 29z = 71$ 

- Evaluate  $\int_{4}^{5.2} \log_e x \, dx$  by using Trapezoidal rule take n = 6. Evaluate  $\int_{0}^{1/2} \int_{0}^{1/2} \frac{\sin xy}{1+xy} dx \, dy$ b)
- c)

By using Simpson's rule with  $h = k = \frac{1}{4}$ 

- By using Weddel's rule find  $\int_0^{0.6} e^{-x^2} dx$  by taking n = 6 d)
- Find the double root of the equation  $x^3 x^2 x + 1 = 0$  Choosing  $x_0 = 0.8$ e) by using generalized Newton-Raphson method.

#### Q.4 Attempt any two.

Apply factorization method to solve the equations. a)

$$3x + 2y + 7z = 4$$
,  $2x + 3y + z = 5$ ,  $3x + 4y + z = 7$ 

b) Perform two iterations of Newton-Raphson method to find a solution of the system.

(x)  $x^2 + xy = 6$ ,  $x^2 - y^2 = 3$  Take  $x_0 = y_0 = 1$ Evaluate by using Romberg's method.

 $I = \int_0^1 \frac{dx}{1+x^2}$  Take h = 0.5, 0.25, 0.125 respectively.

Max. Marks: 56

09

10

#### Section – II

#### Attempt any three from the following Q.5

- Let A, B be fuzzy sets defined on universal set a)  $X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3\}$  as  $A = \frac{1}{-5} + \frac{0.75}{-4} + \frac{0.20}{-3} + \frac{0.8}{-2} + \frac{0.32}{-1} + \frac{0.28}{0} + \frac{0.9}{1} + \frac{0.65}{2} + \frac{1}{3}$  $B = \frac{0}{-5} + \frac{0.80}{-4} + \frac{0.20}{-3} + \frac{0.70}{-2} + \frac{0.20}{-1} + \frac{0.15}{0} + \frac{1}{1} + \frac{0.60}{2} + \frac{1}{3}$ Find S(A,B), S(B,A)
- Find strong  $\alpha$  cuts of the fuzzy set A defined by the membership function. b)

$$A(x) = \begin{cases} \frac{x - 10}{20}, & 10 \le x \le 30\\ \frac{40 - x}{10}, & 30 < x \le 40\\ 0, & \text{otherwise} \end{cases}$$

For  $\alpha = 0, 0.3, 0.9$ 

- c)
- Verify which of the following fuzzy sets are fuzzy numbers. i)  $A = \frac{1}{1} + \frac{0.5}{2} + \frac{0.6}{3} + \frac{0.7}{4} + \frac{0.8}{5}$ 
  - $B(x) = \log x, x \in [1, 2.72]$ ii)

iii) Customer Relationship Management (CRM).

- Let A be a Fuzzy set defined on universal set d)  $X = \{-3, -2, -1, 0, 1, 2, 3\}$  by the membership function.  $A(x) = \frac{x+3}{10}$ ,  $\forall x \in X$  and f be a function defined on X as  $f(x) = 2x^2 + 10$ . Then find f(A).
- Solve Max  $Z = 3x_1 + 4x_2$  subject to constraints e)

$$x_1 - x_2 \le 1, -x_1 + x_2 \le 2, x_1, x_2 \ge 0$$

#### Attempt any three from the following Q.6

A building firm possesses four cranes each of which has a distance (km) a) from four different construction sites as shown in following table.

|     |     | II  |    | IV  |
|-----|-----|-----|----|-----|
| C 1 | 90  | 75  | 75 | 80  |
| C 2 | 35  | 85  | 55 | 65  |
| C 3 | 125 | 95  | 90 | 105 |
| C 4 | 45  | 110 | 95 | 115 |

Place the cranes [one for each construction site] in such a way that the overall distance required for the transfer is as small as possible.

**b)** Solve the fuzzy equation A + X = B where A, B are fuzzy numbers defined by the membership functions.

$$A(x) = \begin{cases} \frac{x-9}{2}, & 9 \le x \le 11\\ \frac{14-x}{3}, & 11 < x \le 14\\ 0, & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} x - 5, & 5 \le x \le 6\\ \frac{9 - x}{3}, & 6 < x \le 9\\ 0, & \text{otherwise} \end{cases}$$

09

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Set
Page 5 of 20

- c) Let A be a fuzzy set defined on universal set  $x = \{0,1,2,3,4,5\}$  by the membership function  $A(x) = e^{-x}, \forall x \in X$ . Then fuzzy cardinality of A.
- **d)** Let A, B be any two fuzzy sets defined on universal set X and  $\alpha, \beta \in [0,1]$ . Then prove that
  - i)  ${}^{\alpha}(A \cap B) = {}^{\alpha}A \cap {}^{\alpha}B$
  - ii) If  $\alpha \leq \beta$  then  ${}^{\beta}A \subseteq {}^{\alpha}B$
- e) Let A be a fuzzy set defined on universal set [-1, 1] By the membership function

$$A(x) = \begin{cases} x+1, & -1 \le x \le 0\\ 1-x, & 0 < x \le 1 \end{cases}$$

Find:

i) Boundary of A.

ii) Core of A.

### Q.7 Attempt any two from the following

- a) Solve  $Max Z = 3x_1 + 5x_2 + 4x_3$  subject to constraints
- $2x_1 + 3x_2 \le 8$ ,  $2x_2 + 5x_3 \le 10$ ,  $3x_1 + 2x_2 + 4x_3 \le 15$   $x_1, x_2, x_3 \ge 0$ b) Let A, B be the fuzzy numbers defined by the membership functions.
- (x-1)

$$A(x) = \begin{cases} \frac{x}{4}, & 1 \le x \le 15 \\ 6 - x, & 5 < x \le 6 \\ 0, & \text{otherwise} \end{cases}$$
$$\left(\frac{x - 6}{4}, & 6 \le x \le 10 \end{cases}$$

$$B(x) = \begin{cases} 4 & , & 0 \le x \le 10 \\ 11 - x, & 10 < x \le 11 \\ 0, & \text{otherwise} \end{cases}$$

Find MAX(A, B)

c) Let A, B be the fuzzy numbers defined by the membership functions

$$A(x) = \begin{cases} \frac{x+5}{2}, & -5 \le x \le -3\\ \frac{-x}{3}, & -3 < x \le 0\\ 0, & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x}{2}, & 0 \le x \le 2\\ \frac{5-x}{3}, & 2 < x \le 5\\ 0, & \text{otherwise} \end{cases}$$

Find a fuzzy number A.B

10

SLR-FM-350 Set P

# S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

Day & Date: Friday,22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.

**APPLIED MATHEMATICS – II** 

- 2) Answer MCQ / objective type questions on page no 3 only. Don't forget to mention, Q. P. Set (P/Q/R/S) on Top of page.
- 3) Figures to the right indicates full marks.
- 4) Use of non-programmable calculator is allowed.

Choose the correct alternatives from the options and rewrite the

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Q.1

sentence. 1) Which of the following is true for fuzzy sets? a)  $\overline{A \cup B} = \overline{A} \cup \overline{B}$ b)  $\overline{A \cap B} = \overline{A} \cup \overline{B}$ c)  $\bar{A} \subseteq A$ d)  $A \subseteq \overline{A}$ The scalar cardinality of fuzzy set A defined by the membership function 2)  $A(x) = 1 + \frac{x}{10}, x \in \{0, -1, -2, -3, -4\}$  is \_\_\_\_\_. a) 3 b) 3.5 c) 4 d) 4.5 3) In extension principle the gradiation of images are defined as \_\_\_\_\_. a)  $[f(A)](y) = Max\{A(x)\} \ y = f(x)$ b)  $[f(A)](y) = Min\{A(x)\} \ y = f(x)$ c) [f(A)](y) = A(x)d) None of these Consider the fuzzy set defined by the membership function 4)  $B(x) = e^{-x}, x \in [0, \infty)$ , then level set of fuzzy set B is \_\_\_\_\_. a) (0,1) b) [0,1] c) (0,1] d) [0,1)If A is a fuzzy number then boundary of A is \_ 5) Bounded a) Unbounded b) c) Finite d) None of these 6) Feasible solution satisfies \_\_\_\_\_ a) Only constraints b) Only non-negative restrictions c) Both a and b None of these d) 7) The assignment problem is said to be balanced if it is \_ **Rectangular matrix** Triangular matrix b) a) c) Unit matrix Square matrix d)

SLR-FM-350

Set Q

Max. Marks: 70

Seat No.

Marks: 14

8) The first approximation to real root of the equation  $x - \cos x = 0$  by Regula falsi method is \_\_\_\_\_.

- a) 0.6851 b) 1.6851
- c) 0.6581 d) 0.8651

9) Identify, which of the following method has guadratic convergence?

- Regula falsi method b) Newton - Raphson method Romberg's method Both a and b d)
- c) The number of strips required in Weddel's rule is 10)
  - a) A Multiple of 6

A multiple of 10 b)

A multiple of 2

- c) A Multiple of 3
- Identify the method of solving simultaneous linear equations in which the 11) coefficient matrix is expressed as the product of a lower and upper triangular matrices.

d)

- a) Gauss-Jacobi's method
- c) Gauss-Elimination method
- Gauss-Jordan method b) d) Factorization method

12) For the data

a)

| t:    | 0 | 0.5  | 1 | 1.5  | 2 |
|-------|---|------|---|------|---|
| f(t): | 0 | 0.25 | 1 | 2.25 | 4 |

The value of  $\int_0^2 f(t)dt$  by Simpson's  $\frac{1}{3}$  rule is \_\_\_\_\_. a) 2.66668 b) 2.66667 d) c) 2.66669 None

If  $I_1$  and  $I_2$  denotes approximate value of  $I = \int_a^b f(x) dx$  in the Romberg's 13) method then I =

| a) | $I_2 - \left[\frac{I_2 - I_1}{3}\right]$ | b) | $I_2 + \left[\frac{I_1 + I_2}{3}\right]$ |
|----|--|----|--|
| c) | $\frac{1}{4}[3I_2 - I_1]$                | d) | None                                     |

The dominant eigen value of the matrix  $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$  is \_\_\_\_\_. 14)

- a) 0.3722
- 10.7445 c) 5.3723 d)

Set

-5.3723

b)

**SLR-FM-350** 

| Seat |  |
|------|--|
| No.  |  |

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **APPLIED MATHEMATICS – II**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Use of non-programmable calculator is allowed.

### Section – I

#### Q.2 Attempt any three.

- Find a real root of the equation  $e^x = x^3 + \cos 25x$  take  $x_0 = 4.5$  by using a) Newton – Raphson method correct to 3 decimal places.
- Find positive root of the equation  $x \log_{10} x = 1.2$  by using false-position b) method correct to 3 decimal places.
- Solve the system of equations by using Gauss-Jacobi method. c)
- x y + z = 1. -3x + 2y - 3z = -6, 2x - 5y + 4z = 5d) Solve the system of equations by using Gauss-Jacobi method.

8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3v + 12z = 35

- Using Power method find eigen values and corresponding eigen vectors. e)
  - $A = \begin{bmatrix} 5 & 0 & 1 \\ 0 & -2 & 0 \\ 1 & 0 & 5 \end{bmatrix} \qquad Take \ x_0 = \begin{bmatrix} 1 & 0 & 0 \end{bmatrix}^T$ Perform 5 iterations.

#### Q.3 Attempt any three.

Solve the system of education by using Gauss-Seidal method (perform 3 a) iterations)

$$83x + 11y - 4z = 95$$
,  $7x + 52y + 13z = 104$   $3x + 8y + 29z = 71$ 

- Evaluate  $\int_{4}^{5.2} \log_e x \, dx$  by using Trapezoidal rule take n = 6. Evaluate  $\int_{0}^{1/2} \int_{0}^{1/2} \frac{\sin xy}{1+xy} dx \, dy$ b)
- c)

By using Simpson's rule with  $h = k = \frac{1}{4}$ 

- By using Weddel's rule find  $\int_0^{0.6} e^{-x^2} dx$  by taking n = 6 d)
- Find the double root of the equation  $x^3 x^2 x + 1 = 0$  Choosing  $x_0 = 0.8$ e) by using generalized Newton-Raphson method.

#### Q.4 Attempt any two.

Apply factorization method to solve the equations. a)

$$3x + 2y + 7z = 4$$
,  $2x + 3y + z = 5$ ,  $3x + 4y + z = 7$ 

Perform two iterations of Newton-Raphson method to find a solution of the b) system.

(x)  $x^2 + xy = 6$ ,  $x^2 - y^2 = 3$  Take  $x_0 = y_0 = 1$ Evaluate by using Romberg's method.

 $I = \int_{0}^{1} \frac{dx}{1+x^2}$  Take h = 0.5, 0.25, 0.125 respectively.

Max. Marks: 56

09

10

### Section – II

### Q.5 Attempt any three from the following

- a) Let A, B be fuzzy sets defined on universal set  $X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3\} \text{ as}$   $A = \frac{1}{-5} + \frac{0.75}{-4} + \frac{0.20}{-3} + \frac{0.8}{-2} + \frac{0.32}{-1} + \frac{0.28}{0} + \frac{0.9}{1} + \frac{0.65}{2} + \frac{1}{3}$   $B = \frac{0}{-5} + \frac{0.80}{-4} + \frac{0.20}{-3} + \frac{0.70}{-2} + \frac{0.20}{-1} + \frac{0.15}{0} + \frac{1}{1} + \frac{0.60}{2} + \frac{1}{3}$ Find S(A,B), S(B,A)
- **b)** Find strong  $\alpha$  cuts of the fuzzy set A defined by the membership function.

$$A(x) = \begin{cases} \frac{x - 10}{20}, & 10 \le x \le 30\\ \frac{40 - x}{10}, & 30 < x \le 40\\ 0, & \text{otherwise} \end{cases}$$

For  $\alpha = 0, 0.3, 0.9$ 

- c) Verify which of the following fuzzy sets are fuzzy numbers.
  - i)  $A = \frac{1}{1} + \frac{0.5}{2} + \frac{0.6}{3} + \frac{0.7}{4} + \frac{0.8}{5}$
  - ii)  $B(x) = \log x, x \in [1, 2.72]$

iii) Customer Relationship Management (CRM).

- d) Let A be a Fuzzy set defined on universal set  $X = \{-3, -2, -1, 0, 1, 2, 3\}$  by the membership function.  $A(x) = \frac{x+3}{10}, \forall x \in X \text{ and } f \text{ be a function defined on } X \text{ as } f(x) = 2x^2 + 10.$ Then find f(A).
- e) Solve Max  $Z = 3x_1 + 4x_2$  subject to constraints

$$x_1 - x_2 \le 1, -x_1 + x_2 \le 2, x_1, x_2 \ge 0$$

### Q.6 Attempt any three from the following

a) A building firm possesses four cranes each of which has a distance (km) from four different construction sites as shown in following table.

|     |     |     |    | IV  |
|-----|-----|-----|----|-----|
| C 1 | 90  | 75  | 75 | 80  |
| C 2 | 35  | 85  | 55 | 65  |
| C 3 | 125 | 95  | 90 | 105 |
| C 4 | 45  | 110 | 95 | 115 |

Place the cranes [one for each construction site] in such a way that the overall distance required for the transfer is as small as possible.

**b)** Solve the fuzzy equation A + X = B where A, B are fuzzy numbers defined by the membership functions.

$$A(x) = \begin{cases} \frac{x-9}{2}, & 9 \le x \le 11\\ \frac{14-x}{3}, & 11 < x \le 14\\ 0, & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} x - 5, & 5 \le x \le 6\\ \frac{9 - x}{3}, & 6 < x \le 9\\ 0, & \text{otherwise} \end{cases}$$

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Set

Page 10 of 20

- c) Let A be a fuzzy set defined on universal set  $x = \{0,1,2,3,4,5\}$  by the membership function  $A(x) = e^{-x}, \forall x \in X$ . Then fuzzy cardinality of A.
- **d)** Let A, B be any two fuzzy sets defined on universal set X and  $\alpha, \beta \in [0,1]$ . Then prove that
  - i)  $^{\alpha}(A \cap B) = {}^{\alpha}A \cap {}^{\alpha}B$
  - ii) If  $\alpha \leq \beta$  then  ${}^{\beta}A \subseteq {}^{\alpha}B$
- e) Let A be a fuzzy set defined on universal set [-1, 1] By the membership function

$$A(x) = \begin{cases} x+1, & -1 \le x \le 0\\ 1-x, & 0 < x \le 1 \end{cases}$$

Find:

i) Boundary of A.

ii) Core of A.

### Q.7 Attempt any two from the following

- a) Solve  $Max Z = 3x_1 + 5x_2 + 4x_3$  subject to constraints  $2x_1 + 3x_2 \le 8$ ,  $2x_2 + 5x_3 \le 10$ ,  $3x_1 + 2x_2 + 4x_3 \le 15$   $x_1, x_2, x_3 \ge 0$
- **b)** Let A, B be the fuzzy numbers defined by the membership functions.

$$A(x) = \begin{cases} \frac{x-1}{4}, & 1 \le x \le 15\\ 6-x, & 5 < x \le 6\\ 0, & \text{otherwise} \end{cases}$$
$$\left(\frac{x-6}{4}, & 6 \le x \le 10\right)$$

$$B(x) = \begin{cases} \frac{1}{4}, & 6 \le x \le 10\\ 11 - x, & 10 < x \le 11\\ 0, & \text{otherwise} \end{cases}$$

Find MAX(A, B)

c) Let A, B be the fuzzy numbers defined by the membership functions

$$A(x) = \begin{cases} \frac{x+5}{2}, & -5 \le x \le -3\\ \frac{-x}{3}, & -3 < x \le 0\\ 0, & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x}{2}, & 0 \le x \le 2\\ \frac{5-x}{3}, & 2 < x \le 5\\ 0, & \text{otherwise} \end{cases}$$

Find a fuzzy number A.B

Set Q

**SLR-FM-350** 

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology APPLIED MATHEMATICS – II

Day & Date: Friday,22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.

- 2) Answer MCQ / objective type questions on page no 3 only. Don't forget to mention, Q. P. Set (P/Q/R/S) on Top of page.
- 3) Figures to the right indicates full marks.
- 4) Use of non-programmable calculator is allowed.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

2)

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No.

# Q.1 Choose the correct alternatives from the options and rewrite the sentence.

1) For the data

|   | -                       |              |                      |   |   |                 |   |
|---|-------------------------|--------------|----------------------|---|---|-----------------|---|
| t:                                      | 0                       | 0.5          | 1                    | 1.5   | 2                                       |                 |   |
| f(t):                                   | 0                       | 0.25         | 1                    | 2.25  | 4                                       |                 |   |
| The value o                             | $\int_0^2 f(t)$         | dt by Sim    | pson's $\frac{1}{3}$ | <sup>rd</sup> rule is _                               |   |                 |   |
| a) 2.66668                              | 3                       |              | Ĺ                    | ) 2.666   | 667                                     |                 |   |
| c) 2.66669                              | 9                       |              | C                    | l) None   | 9                                       |                 |   |
| If $I_1$ and $I_2$ c method ther        | lenotes<br>n I =        | approxima    | ate value            | of $I = \int_a^b$                                     | f(x)dx i                                | in the Romberg' | S |
| a) $I_2 - \left[\frac{I_2}{I_2}\right]$ | $\frac{-I_1}{3}$        |              | b                    | ) $I_2 +$   | $\left[\frac{I_1 + I_2}{3}\right]$      |                 |   |
| c) $\frac{1}{4}[3I_2 -$                 | <i>I</i> <sub>1</sub> ] |              | C                    | l) None   | )                                       |                 |   |
| The domina                              | nt eiger                | n value of t | he matri             | $\mathbf{x} A = \begin{bmatrix} 1 \\ 3 \end{bmatrix}$ | $\begin{bmatrix} 2\\4 \end{bmatrix}$ is | ·               |   |

3) The dominant eigen value of the matrix  $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$  is \_\_\_\_\_ a) 0.3722 b) -5.3723 c) 5.3723 d) 10.7445

4) Which of the following is true for fuzzy sets? a)  $\overline{A \cup B} = \overline{A} \cup \overline{B}$ b)  $\overline{A \cap B} = \overline{A} \cup \overline{B}$ c)  $\overline{A} \subseteq A$ d)  $A \subseteq \overline{A}$ 

5) The scalar cardinality of fuzzy set A defined by the membership function  $A(x) = 1 + \frac{x}{10}, x \in \{0, -1, -2, -3, -4\}$  is \_\_\_\_\_. a) 3 b) 3.5 c) 4 d) 4.5

Max. Marks: 70

Marks: 14

14

Set R

Set 6) In extension principle the gradiation of images are defined as \_\_\_\_\_. a)  $[f(A)](y) = Max\{A(x)\}\ y = f(x)$ b)  $[f(A)](y) = Min\{A(x)\} \ y = f(x)$ c) [f(A)](y) = A(x)d) None of these Consider the fuzzy set defined by the membership function 7)  $B(x) = e^{-x}, x \in [0, \infty)$ , then level set of fuzzy set B is \_\_\_\_\_. a) (0,1) b) [0,1] c) (0,1] d) [0,1)8) If A is a fuzzy number then boundary of A is \_\_\_\_\_ Bounded a) Unbounded b) c) Finite None of these d) Feasible solution satisfies 9) a) Only constraints b) Only non-negative restrictions c) Both a and b None of these d) 10) The assignment problem is said to be balanced if it is a) Rectangular matrix Triangular matrix b) c) Unit matrix d) Square matrix 11) The first approximation to real root of the equation  $x - \cos x = 0$  by Regula falsi method is \_\_\_\_. a) 0.6851 b) 1.6851 0.8651 c) 0.6581 d) Identify, which of the following method has guadratic convergence? 12) a) Regula falsi method b) Newton - Raphson method c) Both a and b d) Romberg's method 13) The number of strips required in Weddel's rule is a) A Multiple of 6 A multiple of 10 b) c) A Multiple of 3 d) A multiple of 2 Identify the method of solving simultaneous linear equations in which the 14) coefficient matrix is expressed as the product of a lower and upper triangular matrices. a) Gauss-Jacobi's method b) Gauss-Jordan method c) Gauss-Elimination method d) Factorization method

**SLR-FM-350** 

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### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **APPLIED MATHEMATICS – II**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Use of non-programmable calculator is allowed.

### Section – I

#### Q.2 Attempt any three.

- Find a real root of the equation  $e^x = x^3 + \cos 25x$  take  $x_0 = 4.5$  by using a) Newton – Raphson method correct to 3 decimal places.
- Find positive root of the equation  $x \log_{10} x = 1.2$  by using false-position b) method correct to 3 decimal places.
- Solve the system of equations by using Gauss-Jacobi method. C)
- x y + z = 1. -3x + 2y - 3z = -6, 2x - 5y + 4z = 5d) Solve the system of equations by using Gauss-Jacobi method.

8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3v + 12z = 35

- Using Power method find eigen values and corresponding eigen vectors. e)
  - $A = \begin{bmatrix} 0 & -2 & 0 \\ 1 & 0 & 5 \end{bmatrix} \qquad Take \ x_0 = \begin{bmatrix} 1 & 0 & 0 \end{bmatrix}^T$ Perform 5 iterations.

#### Q.3 Attempt any three.

Solve the system of education by using Gauss-Seidal method (perform 3 a) iterations)

$$83x + 11y - 4z = 95$$
,  $7x + 52y + 13z = 104$   $3x + 8y + 29z = 71$ 

- Evaluate  $\int_{4}^{5.2} \log_e x \, dx$  by using Trapezoidal rule take n = 6. Evaluate  $\int_{0}^{1/2} \int_{0}^{1/2} \frac{\sin xy}{1+xy} dx \, dy$ b)
- c)

By using Simpson's rule with  $h = k = \frac{1}{4}$ 

- By using Weddel's rule find  $\int_0^{0.6} e^{-x^2} dx$  by taking n = 6 d)
- Find the double root of the equation  $x^3 x^2 x + 1 = 0$  Choosing  $x_0 = 0.8$ e) by using generalized Newton-Raphson method.

#### Q.4 Attempt any two.

Apply factorization method to solve the equations. a)

$$3x + 2y + 7z = 4$$
,  $2x + 3y + z = 5$ ,  $3x + 4y + z = 7$ 

b) Perform two iterations of Newton-Raphson method to find a solution of the system.

(x)  $x^2 + xy = 6$ ,  $x^2 - y^2 = 3$  Take  $x_0 = y_0 = 1$ Evaluate by using Romberg's method.

 $I = \int_0^1 \frac{dx}{1+x^2}$  Take h = 0.5, 0.25, 0.125 respectively.

Max. Marks: 56

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10

### Section – II

### Q.5 Attempt any three from the following

- a) Let A, B be fuzzy sets defined on universal set  $X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3\} \text{ as}$   $A = \frac{1}{-5} + \frac{0.75}{-4} + \frac{0.20}{-3} + \frac{0.8}{-2} + \frac{0.32}{-1} + \frac{0.28}{0} + \frac{0.9}{1} + \frac{0.65}{2} + \frac{1}{3}$   $B = \frac{0}{-5} + \frac{0.80}{-4} + \frac{0.20}{-3} + \frac{0.70}{-2} + \frac{0.20}{-1} + \frac{0.15}{0} + \frac{1}{1} + \frac{0.60}{2} + \frac{1}{3}$ Find S(A,B), S(B,A)
- **b)** Find strong  $\alpha$  cuts of the fuzzy set A defined by the membership function.

$$A(x) = \begin{cases} \frac{x - 10}{20}, & 10 \le x \le 30\\ \frac{40 - x}{10}, & 30 < x \le 40\\ 0, & \text{otherwise} \end{cases}$$

For  $\alpha = 0, 0.3, 0.9$ 

- c) Verify which of the following fuzzy sets are fuzzy numbers.
  - i)  $A = \frac{1}{1} + \frac{0.5}{2} + \frac{0.6}{3} + \frac{0.7}{4} + \frac{0.8}{5}$
  - ii)  $B(x) = \log x, x \in [1, 2.72]$

iii) Customer Relationship Management (CRM).

- d) Let A be a Fuzzy set defined on universal set  $X = \{-3, -2, -1, 0, 1, 2, 3\}$  by the membership function.  $A(x) = \frac{x+3}{10}, \forall x \in X \text{ and } f \text{ be a function defined on } X \text{ as } f(x) = 2x^2 + 10.$ Then find f(A).
- e) Solve Max  $Z = 3x_1 + 4x_2$  subject to constraints

$$x_1 - x_2 \le 1, -x_1 + x_2 \le 2, x_1, x_2 \ge 0$$

### Q.6 Attempt any three from the following

a) A building firm possesses four cranes each of which has a distance (km) from four different construction sites as shown in following table.

|     |     |     |    | IV  |
|-----|-----|-----|----|-----|
| C 1 | 90  | 75  | 75 | 80  |
| C 2 | 35  | 85  | 55 | 65  |
| C 3 | 125 | 95  | 90 | 105 |
| C 4 | 45  | 110 | 95 | 115 |

Place the cranes [one for each construction site] in such a way that the overall distance required for the transfer is as small as possible.

**b)** Solve the fuzzy equation A + X = B where A, B are fuzzy numbers defined by the membership functions.

$$A(x) = \begin{cases} \frac{x-9}{2}, & 9 \le x \le 11\\ \frac{14-x}{3}, & 11 < x \le 14\\ 0, & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} x - 5, & 5 \le x \le 6\\ \frac{9 - x}{3}, & 6 < x \le 9\\ 0, & \text{otherwise} \end{cases}$$

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- c) Let A be a fuzzy set defined on universal set  $x = \{0,1,2,3,4,5\}$  by the membership function  $A(x) = e^{-x}, \forall x \in X$ . Then fuzzy cardinality of A.
- **d)** Let A, B be any two fuzzy sets defined on universal set X and  $\alpha, \beta \in [0,1]$ . Then prove that
  - i)  ${}^{\alpha}(A \cap B) = {}^{\alpha}A \cap {}^{\alpha}B$
  - ii) If  $\alpha \leq \beta$  then  ${}^{\beta}A \subseteq {}^{\alpha}B$
- e) Let A be a fuzzy set defined on universal set [-1, 1] By the membership function

$$A(x) = \begin{cases} x+1, & -1 \le x \le 0\\ 1-x, & 0 < x \le 1 \end{cases}$$

Find:

i) Boundary of A.

ii) Core of A.

### Q.7 Attempt any two from the following

- a) Solve  $Max Z = 3x_1 + 5x_2 + 4x_3$  subject to constraints
- $2x_1 + 3x_2 \le 8$ ,  $2x_2 + 5x_3 \le 10$ ,  $3x_1 + 2x_2 + 4x_3 \le 15$   $x_1, x_2, x_3 \ge 0$ b) Let A, B be the fuzzy numbers defined by the membership functions.
  - $\int \frac{x-1}{4}, \quad 1 \le x \le 15$

$$A(x) = \begin{cases} 6 - x, & 5 < x \le 6\\ 0, & \text{otherwise} \end{cases}$$
$$B(x) = \begin{cases} \frac{x - 6}{4}, & 6 \le x \le 10\\ 11 - x, & 10 < x \le 11\\ 0, & \text{otherwise} \end{cases}$$

Find MAX(A, B)

c) Let A, B be the fuzzy numbers defined by the membership functions

$$A(x) = \begin{cases} \frac{x+5}{2}, & -5 \le x \le -3\\ \frac{-x}{3}, & -3 < x \le 0\\ 0, & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x}{2}, & 0 \le x \le 2\\ \frac{5-x}{3}, & 2 < x \le 5\\ 0, & \text{otherwise} \end{cases}$$

Find a fuzzy number A.B

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# SLR-FM-350 Set R

# S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

Information Technology **APPLIED MATHEMATICS – II** 

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Q.1

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.

- 2) Answer MCQ / objective type questions on page no 3 only. Don't forget to mention, Q. P. Set (P/Q/R/S) on Top of page.
- 3) Figures to the right indicates full marks.
- 4) Use of non-programmable calculator is allowed.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

sentence. 1) In extension principle the gradiation of images are defined as \_\_\_\_\_.

Choose the correct alternatives from the options and rewrite the

- a)  $[f(A)](y) = Max\{A(x)\}\ y = f(x)$
- b)  $[f(A)](y) = Min\{A(x)\} \ y = f(x)$
- c) [f(A)](y) = A(x)
- d) None of these

#### 2) Consider the fuzzy set defined by the membership function

 $B(x) = e^{-x}, x \in [0, \infty)$ , then level set of fuzzy set B is \_\_\_\_\_.

|    |       | L ' |    |       |
|----|-------|-----|----|-------|
| a) | (0,1) |     | b) | [0,1] |
| C) | (0 11 |     | d) | [0 1) |

|   | 0) (0,1]                             | u)   | [0,1) |  |
|---|--------------------------------------|------|-------|--|
| ) | If A is a fuzzy number then boundary | of A | is    |  |

- 3) a) Unbounded b) Bounded
  - c) Finite None of these d)
- 4) Feasible solution satisfies
  - a) Only constraints b) Only non-negative restrictions
  - c) Both a and b None of these d)

The assignment problem is said to be balanced if it is \_\_\_\_\_ 5)

- a) Rectangular matrix b) Triangular matrix
  - c) Unit matrix d) Square matrix
- 6) The first approximation to real root of the equation  $x - \cos x = 0$  by Regula falsi method is \_\_\_\_\_.
  - a) 0.6851 b) 1.6851
  - c) 0.6581 d) 0.8651

#### Identify, which of the following method has quadratic convergence? 7) a) Regula falsi method

- Newton Raphson method b)
- Romberg's method d)

#### The number of strips required in Weddel's rule is 8)

a) A Multiple of 6 c) A Multiple of 3

c) Both a and b

- A multiple of 10 b)
- d) A multiple of 2

# **SLR-FM-350**



Max. Marks: 70

Set

Marks: 14

- 9) Identify the method of solving simultaneous linear equations in which the coefficient matrix is expressed as the product of a lower and upper triangular matrices.
  - a) Gauss-Jacobi's methodc) Gauss-Elimination method
- b) Gauss-Jordan methodd) Factorization method

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10) For the data

c) 4

| ,   | . 01     |                                      | a                           |              |                      |   |                                  | _                |
|-----|----------|--------------------------------------|-----------------------------|--------------|----------------------|---|----------------------------------|------------------|
|     |          | t:                                   | 0                           | 0.5          | 1                    | 1.5   | 2                                |                  |
|     | Γ        | f(t):                                | 0                           | 0.25         | 1                    | 2.25  | 4                                |                  |
|     | The      | e value o                            | $\int_0^2 f(t)$             | dt by Sim    | pson's $\frac{1}{3}$ | <sup>·d</sup> rule is _                               |                                  |                  |
|     | a)<br>c) | 2.66668<br>2.66668                   | 3<br>9                      |              | b<br>c               | ) 2.66<br>) None                                      | 667<br>9                         |                  |
| 11) | If $I_1$ | and $I_2$ c                          | lenotes                     | approxima    | ate value            | of $I = \int_{a}^{b}$                                 | f(x)dx i                         | in the Romberg's |
|     | me       | thod the                             | n I =                       |              |                      | Ju  |                                  | · ·              |
|     | a)       | $I_2 - \left[\frac{I_2}{I_2}\right]$ | $\frac{-I_1}{3}$ ]          |              | b                    | ) $I_2 +$   | $\left[\frac{I_1+I_2}{3}\right]$ |                  |
|     | c)       | $\frac{1}{4}[3I_2 -$                 | $I_1$ ]                     |              | С                    | l) None   | 9                                |                  |
| 12) | The      | e domina                             | nt eiger                    | value of t   | he matri             | $\mathbf{x} A = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$ | <sup>2</sup> ] is                | ·                |
|     | a)       | 0.3722                               |                             |              | b                    | ) -5.37   | '23                              |                  |
|     | c)       | 5.3723                               |                             |              | c                    | Í) 10.74  | 445                              |                  |
| 13) | Wh       | nich of the                          | e followi                   | ng is true   | for fuzzy            | sets?   |                                  |                  |
| ,   | a)       | $\overline{A \cup B} =$              | $\bar{A} \cup \bar{B}$      | 0            | b                    | $\overline{A \cap B}$                                 | $\bar{B} = \bar{A} \cup \bar{B}$ | Ī                |
|     | C)       | $\bar{A} \subseteq A$                |                             |              | C                    | $A \subseteq A$                                       | Ā                                |                  |
| 14) | The      | e scalar o                           | cardinali                   | ty of fuzzy  | set A de             | fined by  | the mem                          | bership function |
|     | A(x      | $x) = 1 + \frac{1}{2}$               | $\frac{x}{10}$ , $x \in \{$ | 0, -1, -2, - | −3, −4} is           | S   |                                  |                  |
|     | a)       | 3                                    | 10                          |              | b                    | ) 3.5   |                                  |                  |

d)

4.5

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### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **APPLIED MATHEMATICS – II**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicates full marks.
- 3) Use of non-programmable calculator is allowed.

### Section – I

#### Q.2 Attempt any three.

- Find a real root of the equation  $e^x = x^3 + \cos 25x$  take  $x_0 = 4.5$  by using a) Newton – Raphson method correct to 3 decimal places.
- Find positive root of the equation  $x \log_{10} x = 1.2$  by using false-position b) method correct to 3 decimal places.
- Solve the system of equations by using Gauss-Jacobi method. C)
- x y + z = 1. -3x + 2y - 3z = -6, 2x - 5y + 4z = 5d) Solve the system of equations by using Gauss-Jacobi method.

8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3v + 12z = 35

- Using Power method find eigen values and corresponding eigen vectors. e)
  - $A = \begin{bmatrix} 5 & 0 & 1 \\ 0 & -2 & 0 \\ 1 & 0 & 5 \end{bmatrix} \qquad Take \ x_0 = \begin{bmatrix} 1 & 0 & 0 \end{bmatrix}^T$ Perform 5 iterations.

#### Q.3 Attempt any three.

Solve the system of education by using Gauss-Seidal method (perform 3 a) iterations)

$$83x + 11y - 4z = 95$$
,  $7x + 52y + 13z = 104$   $3x + 8y + 29z = 71$ 

- Evaluate  $\int_{4}^{5.2} \log_e x \, dx$  by using Trapezoidal rule take n = 6. Evaluate  $\int_{0}^{1/2} \int_{0}^{1/2} \frac{\sin xy}{1+xy} dx \, dy$ b)
- c)

By using Simpson's rule with  $h = k = \frac{1}{4}$ 

- By using Weddel's rule find  $\int_0^{0.6} e^{-x^2} dx$  by taking n = 6 d)
- Find the double root of the equation  $x^3 x^2 x + 1 = 0$  Choosing  $x_0 = 0.8$ e) by using generalized Newton-Raphson method.

#### Q.4 Attempt any two.

Apply factorization method to solve the equations. a)

$$3x + 2y + 7z = 4$$
,  $2x + 3y + z = 5$ ,  $3x + 4y + z = 7$ 

b) Perform two iterations of Newton-Raphson method to find a solution of the system.

(x)  $x^2 + xy = 6$ ,  $x^2 - y^2 = 3$  Take  $x_0 = y_0 = 1$ Evaluate by using Romberg's method.

 $I = \int_0^1 \frac{dx}{1+x^2}$  Take h = 0.5, 0.25, 0.125 respectively.

Max. Marks: 56

09

10

### Section – II

#### Attempt any three from the following Q.5

- Let A, B be fuzzy sets defined on universal set a)  $X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3\}$  as  $A = \frac{1}{-5} + \frac{0.75}{-4} + \frac{0.20}{-3} + \frac{0.8}{-2} + \frac{0.32}{-1} + \frac{0.28}{0} + \frac{0.9}{1} + \frac{0.65}{2} + \frac{1}{3}$  $B = \frac{0}{-5} + \frac{0.80}{-4} + \frac{0.20}{-3} + \frac{0.70}{-2} + \frac{0.20}{-1} + \frac{0.15}{0} + \frac{1}{1} + \frac{0.60}{2} + \frac{1}{3}$ Find S(A,B), S(B,A)
- Find strong  $\alpha$  cuts of the fuzzy set A defined by the membership function. b)

$$A(x) = \begin{cases} \frac{x - 10}{20}, & 10 \le x \le 30\\ \frac{40 - x}{10}, & 30 < x \le 40\\ 0, & \text{otherwise} \end{cases}$$

For  $\alpha = 0, 0.3, 0.9$ 

- c)
- Verify which of the following fuzzy sets are fuzzy numbers. i)  $A = \frac{1}{1} + \frac{0.5}{2} + \frac{0.6}{3} + \frac{0.7}{4} + \frac{0.8}{5}$ 
  - $B(x) = \log x, x \in [1, 2.72]$ ii)

iii) Customer Relationship Management (CRM).

- Let A be a Fuzzy set defined on universal set d)  $X = \{-3, -2, -1, 0, 1, 2, 3\}$  by the membership function.  $A(x) = \frac{x+3}{10}$ ,  $\forall x \in X$  and f be a function defined on X as  $f(x) = 2x^2 + 10$ . Then find f(A).
- Solve Max  $Z = 3x_1 + 4x_2$  subject to constraints e)

$$x_1 - x_2 \le 1, -x_1 + x_2 \le 2, x_1, x_2 \ge 0$$

#### Attempt any three from the following Q.6

A building firm possesses four cranes each of which has a distance (km) a) from four different construction sites as shown in following table.

|     |     |     |    | IV  |
|-----|-----|-----|----|-----|
| C 1 | 90  | 75  | 75 | 80  |
| C 2 | 35  | 85  | 55 | 65  |
| C 3 | 125 | 95  | 90 | 105 |
| C 4 | 45  | 110 | 95 | 115 |

Place the cranes [one for each construction site] in such a way that the overall distance required for the transfer is as small as possible.

**b)** Solve the fuzzy equation A + X = B where A, B are fuzzy numbers defined by the membership functions.

$$A(x) = \begin{cases} \frac{x-9}{2}, & 9 \le x \le 11\\ \frac{14-x}{3}, & 11 < x \le 14\\ 0, & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} x - 5, & 5 \le x \le 6\\ \frac{9 - x}{3}, & 6 < x \le 9\\ 0, & \text{otherwise} \end{cases}$$

09

**SLR-FM-350** 

Set

- c) Let A be a fuzzy set defined on universal set  $x = \{0,1,2,3,4,5\}$  by the membership function  $A(x) = e^{-x}, \forall x \in X$ . Then fuzzy cardinality of A.
- **d)** Let A, B be any two fuzzy sets defined on universal set X and  $\alpha, \beta \in [0,1]$ . Then prove that
  - i)  ${}^{\alpha}(A \cap B) = {}^{\alpha}A \cap {}^{\alpha}B$
  - ii) If  $\alpha \leq \beta$  then  ${}^{\beta}A \subseteq {}^{\alpha}B$
- e) Let A be a fuzzy set defined on universal set [-1, 1] By the membership function

$$A(x) = \begin{cases} x+1, & -1 \le x \le 0\\ 1-x, & 0 < x \le 1 \end{cases}$$

Find:

i) Boundary of A.

ii) Core of A.

### Q.7 Attempt any two from the following

- a) Solve  $Max Z = 3x_1 + 5x_2 + 4x_3$  subject to constraints
- $2x_1 + 3x_2 \le 8$ ,  $2x_2 + 5x_3 \le 10$ ,  $3x_1 + 2x_2 + 4x_3 \le 15$   $x_1, x_2, x_3 \ge 0$ b) Let A, B be the fuzzy numbers defined by the membership functions.

$$A(x) = \begin{cases} \frac{x-1}{4}, & 1 \le x \le 15\\ 6-x, & 5 < x \le 6\\ 0, & \text{otherwise} \end{cases}$$

$$\begin{pmatrix} x-6\\ 0 \le x \le 10 \end{cases}$$

$$B(x) = \begin{cases} \frac{x-6}{4}, & 6 \le x \le 10\\ 11-x, & 10 < x \le 11\\ 0, & \text{otherwise} \end{cases}$$

Find MAX(A, B)

c) Let A, B be the fuzzy numbers defined by the membership functions

$$A(x) = \begin{cases} \frac{x+5}{2}, & -5 \le x \le -3\\ \frac{-x}{3}, & -3 < x \le 0\\ 0, & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x}{2}, & 0 \le x \le 2\\ \frac{5-x}{3}, & 2 < x \le 5\\ 0, & \text{otherwise} \end{cases}$$

Find a fuzzy number A.B

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# SLR-FM-350 Set S

| Seat |  |
|------|--|
| No.  |  |

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology THEORY OF COMPUTATION

Day & Date: Saturday,23-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
  - 1) Which of the following statements are correct?
    - a) An alphabet is a finite sequence of distinct symbols.
    - b) A word is a finite sequence of symbols over a given alphabet.
    - c) A language is a possibly infinite set of words over a given alphabet
    - d) An infinite language can be regular.
  - 2) a \* (ab) \* (abc) \* Which of the following regular expressions denote the same language as the above regular expression?
    - a) (a + ab + abc) \* b) a \* (a + b) \* (a + b + c) \*
    - c)  $a * (^ + ab) * (^ + abc) * d$  None
  - 3) Consider the following Context-Free Grammar (CFG) G:

 $S \rightarrow XX \mid Y \mid X \rightarrow aXc \mid aYc \mid Y \rightarrow Yb \mid ^{$ 

Which of the following statements about the language L(G) generated by G are correct?

- a)  $\land \in L(G)$  b) aabbbccac  $\in L(G)$
- c) Both d) None
- 4) While converting the context free grammar into CNF normal form, which of the following is not necessary?
  - a) Elimination of null production
  - b) Elimination of unit production
  - c) Elimination of useless production
  - d) None of these
- 5) The regular expression with all strings of 0's and 1's with at-least two consecutive 0's, is \_\_\_\_\_.
  - a)  $1+(10)^*$  b)  $(0+1)^*00 (0+1)^*$
  - c) (0+1)\*011 d) 0\*1\*2\*
- A parse tree for a string in L(G) is a tree where \_\_\_\_\_.
  - a) The root is the start symbol for g
  - b) the leaf nodes are the terminal symbols of g
  - c) all of these
  - d) None

Set P

Max. Marks: 70

Marks: 14

Set P

- 7) Which of the following languages CANNOT be defined by Finite Automata?
  - a) {ab, abab, ababab, abababab,.....}

  - c) {a, aa, aba, abba, abbba, abbbba, ...}
  - d) {a, b, aa, bb, aaa, bbb, aaaa, bbbb,....}
- 8) PDA \_\_\_\_\_\_ accept the language of palindrome without middle marker input symbol.
  - a) May
- b) Can
- c) May not d) Can not
- 9) Push down machine represents \_\_\_\_
  - a) Type 0 Grammar b) Type 1 grammar
  - c) Type 2 Grammar d) Type 3 grammar
- 10) Pumping lemma is generally used for proving that \_\_\_\_\_.
  - a) given grammar is regular
  - b) given grammar is not regular
  - c) whether two given regular expressions are equivalent or not
  - d) None of these
- 11) The  $\delta^*$  for the TM is defined by \_\_\_\_\_
  - a)  $\delta^*: Q X ([U \{\Delta\}) \rightarrow Q U\{ha, hr\} X ([U \{\Delta\}) X \{L, R, S\})$
  - b)  $\delta^* : Q X \Sigma \to Q U \{ha, hr\} X ([U \{\Delta\}) X \{L, R, S\})$
  - c)  $\delta^* QX([U \{\Delta\}) \rightarrow QX([U \{\Delta\})X\{L,R,S\})$
  - d)  $\delta^*: Q X[U \{^\} \rightarrow Q U \{ ha, hr \} X ([U \{ \Delta \}))$
- 12) Universal TM influenced the concept of \_\_\_\_\_.
  - a) stored program computers
  - b) Computability
  - c) interpretative implementation of programming lang
  - d) All
- 13) The Tape of Turing Machine is used as \_\_\_\_\_.
  - a) Input storage device
  - b) Output storage device
  - c) Infinite and read-write internal memory
  - d) All of these
- 14) TM is called as \_\_\_\_\_.
  - a) Acceptor

- b) Calculator
- c) Both a) and b)
- d) None of these

### Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology THEORY OF COMPUTATION

Day & Date: Saturday,23-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

Section – I

#### Attempt any three of the following questions. Q.2

- Derive  $A = \{a^m b^n c^n \mid m, n \ge 0\}$ a)
- Compare between NFA and DFA. b)
- $L = \{ x \mid x \text{ contains substring } 010 \}$ C)
- What is dangling else phenomenon in programming language? d)

#### Attempt any two of the following questions. Q.3

- Consider the grammar: S -> aS | aSbS| epsilon a) where S is the only non-terminal, and epsilon is the null string. Find if grammar is ambiguous, by giving derivation and parse trees for the string aab.
- b) Convert NFA to DFA ( $\varepsilon$  is null value  $\land$ )



### Section – II

#### Attempt any three of the following questions. Q.4 Prove that $L = \{a^n b^n c^n \mid n \ge 0\}$ in not regular.

- What is pumping lemma? Explain the need of pumping lemma. b)
- Explain the basic model working of PDA. c)
- Construct a PDA for the language generated by the following grammar. d)  $S \rightarrow aSA \mid a$  $A \rightarrow bB$ 
  - B→b

c)

a)

Compare NPDA and DPDA e)





Max. Marks: 56

16

12

12



Set

Set P

### Q.5 Attempt any two of the following questions.

- Design PDA for accepting palindrome where the  $\Sigma = \{a, b\}$ . Design TM for accepting language L=  $\{0^n \ 1^n | n \ge 0\}$ . a)
- b)
- Explain the following. C)
  - 1) TM with multiple track.
  - 2) TM with semi infinite tape.

| Seat<br>No.   |  |  |  |  |  | Set       | Q     |
|---|--|--|--|--|--|-----------|-------|
| S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>THEORY OF COMPUTATION |  |  |  |  |  |           |       |
| Day & Date: Saturday,23-11-2019 Max. Marks: 70<br>Time: 02:30 PM To 05:30 PM                              |  |  |  |  |  |           | s: 70 |
| Instruc   | ctions: 1)<br>2)   | Q. No. 1 is<br>answer bo<br>Figures to   | s compulsory and it<br>ok.<br>the right indicate fu  | t should<br>Ill mark                         | d be solved in first 30 m<br>ks.                 | inutes in |       |
|   |  | Μ  | CQ/Objective   | Гуре (                                       | Questions  |           |       |
| Duratio   | n: 30 Min  | utes   | -  |  |  | Mark      | s: 14 |
| Q.1 C   | hoose th   | ne correct a   | alternatives from  | the opt                                      | tions and rewrite the                            |           | 14    |
| S   | entence.   |  |  |  | in due as a colitic acceleration in the          |           |       |
| 1   | ) PDA<br>input   | t symbol   | ccept the language   | e or pai                                     | indrome without middle                           | marker    |       |
|   | a) I   | May  |  | b)   | Can  |           |       |
|   | c) I   | May not  |  | d)   | Can not  |           |       |
| 2   | ) Push   | n down mac   | hine represents  |  |  |           |       |
|   | a) _   | Type 0 Grai  | mmar   | b)   | Type 1 grammar                                   |           |       |
|   | C)   | Type 2 Grai  | nmar   | d)   | Type 3 grammar                                   |           |       |
| 3   | ) Pum<br>a) (<br>b) (<br>c) (<br>d) I  | ping lemma<br>given gramı<br>given gramı<br>whether two<br>None of the   | i is generally used<br>mar is regular<br>mar is not regular<br>given regular exp<br>se   | for pro <sup>.</sup><br>ressior              | ving that  |           |       |
| 4   | <ul> <li>The a</li> <li>a) a</li> <li>b) a</li> <li>c) a</li> <li>d) a</li> </ul>  | $\delta^* \text{ for the T} \\ \delta^* : Q X ([U \\ \delta^* : Q X \sum_{-} \delta^* QX([U \\ \delta^* : Q X [U \\ \delta^* : Q X [V \\ $ | $ \begin{array}{l} \text{M is defined by} \\ \underline{\{\Delta\}} \end{array} \rightarrow Q \ U\{ha, hr \} \\ \rightarrow Q \ U\{ha, hr \} \ X \ ([ \\ \}) \end{array} \\ \begin{array}{l} \rightarrow Q \ X \ ([ U\{\Delta\}) \} \\ \end{array} \\ \underline{\}} \rightarrow Q \ U\{ha, hr \} \ D \ A \ A \ A \ A \ A \ A \ A \ A \ A$ | } X ( [U<br>U {∆}) ⊥<br>X {L, R,<br>X ([U {∠ | <br>{Δ}) X {L, R, S}<br>X {L, R, S}<br>S}<br>Δ}) |           |       |
| 5   | ) Univ<br>a) s<br>b) (<br>c) i<br>d) /   | ersal TM int<br>stored prog<br>Computabili<br>interpretativ<br>All   | fluenced the conce<br>ram computers<br>ity<br>e implementation o   | pt of  | ramming lang                                     |           |       |
| 6   | <ul> <li>6) The Tape of Turing Machine is used as</li> <li>a) Input storage device</li> <li>b) Output storage device</li> <li>c) Infinite and read-write internal memory</li> <li>d) All of these</li> </ul> |  |  |  |  |           |       |
| 7   | <ul> <li>TM is</li> <li>a) /</li> <li>c) I</li> </ul>  | s called as _<br>Acceptor<br>Both a) and   | <br>b)   | b)<br>d)                                     | Calculator<br>None of these                      |           |       |

# Seat

b) A word is a finite sequence of symbols over a given alphabet.
c) A language is a possibly infinite set of words over a given alphabet
d) An infinite language can be regular.
a \* (ab) \* (abc) \* Which of the following regular expressions denote the same language as the above regular expression?
a) (a + ab + abc) \*
b) a \* (a + b) \* (a + b + c) \*
c) a \* (^ + ab) \* (^ + abc) \*
d) None

**SLR-FM-351** 

Set

- 10) Consider the following Context-Free Grammar (CFG) G: S→XX | Y X→aXc | aYc Y→Yb | ^ Which of the following statements about the language L(G) generated by G are correct?
  a) ∧ ∈ L(G)
  b) aabbbccac ∈ L(G)
  - c) Both d) None

Which of the following statements are correct?

a) An alphabet is a finite sequence of distinct symbols.

- 11) While converting the context free grammar into CNF normal form, which of the following is not necessary?
  - a) Elimination of null production
  - b) Elimination of unit production
  - c) Elimination of useless production
  - d) None of these

8)

9)

- 12) The regular expression with all strings of 0's and 1's with at-least two consecutive 0's, is \_\_\_\_\_.
  - a) 1+(10)\*
- b) (0 + 1)\*00 (0 + 1)\*
- c) (0+1)\*011 d) 0\*1\*2\*
- 13) A parse tree for a string in L(G) is a tree where \_\_\_\_\_.
  - a) The root is the start symbol for g
  - b) the leaf nodes are the terminal symbols of g
  - c) all of these
  - d) None
- 14) Which of the following languages CANNOT be defined by Finite Automata?
  - a) {ab, abab, ababab, abababab,.....}

  - c) {a, aa, aba, abba, abbba, abbbba,...}
  - d) {a, b, aa, bb, aaa, bbb, aaaa, bbbb,.....}

# S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology THEORY OF COMPUTATION

Day & Date: Saturday,23-11-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

#### Q.2 Attempt any three of the following questions.

- Derive  $A = \{a^m b^n c^n \mid m, n \ge 0\}$ a)
- Compare between NFA and DFA. b)
- $L = \{ x \mid x \text{ contains substring } 010 \}$ c)
- What is dangling else phenomenon in programming language? d)

#### Attempt any two of the following questions. Q.3

- Consider the grammar: S -> aS | aSbS| epsilon a) where S is the only non-terminal, and epsilon is the null string. Find if grammar is ambiguous, by giving derivation and parse trees for the string aab.
- b) Convert NFA to DFA ( $\varepsilon$  is null value  $\wedge$ )





#### Attempt any three of the following questions. Q.4

- Prove that  $L = \{a^n b^n c^n \mid n \ge 0\}$  in not regular. a)
- What is pumping lemma? Explain the need of pumping lemma. b)
- Explain the basic model working of PDA. c)
- Construct a PDA for the language generated by the following grammar. d)  $S \rightarrow aSA \mid a$  $A \rightarrow bB$ 
  - B→b
- Compare NPDA and DPDA e)





12

16

12

Max. Marks: 56

Set

**SLR-FM-351** 

## Set Q

### Q.5 Attempt any two of the following questions.

- Design PDA for accepting palindrome where the  $\Sigma = \{a, b\}$ . Design TM for accepting language L=  $\{0^n \ 1^n | n \ge 0\}$ . a)
- b)
- c) Explain the following.
  - TM with multiple track. 1)
  - TM with semi infinite tape. 2)

### answer book. 2) Figures to the right indicate full marks. MCQ/Objective Type Questions The regular expression with all strings of 0's and 1's with at-least two consecutive 0's, is \_\_\_\_\_. a) 1+(10)\* $(0 + 1)^*00 (0 + 1)^*$ b) c) (0+1)\*011 d) 0\*1\*2\* A parse tree for a string in L(G) is a tree where \_\_\_\_\_. a) The root is the start symbol for g b) the leaf nodes are the terminal symbols of g c) all of these d) None Which of the following languages CANNOT be defined by Finite Automata? a) {ab. abab. ababab. abababab......} c) {a, aa, aba, abba, abbba, abbbba, abbbbba,...} d) {a, b, aa, bb, aaa, bbb, aaaa, bbbb,....} input symbol. a) May b) Can d) Can not c) May not 5) Push down machine represents \_\_\_\_ b) Type 1 grammar a) Type 0 Grammar c) Type 2 Grammar Type 3 grammar d) Pumping lemma is generally used for proving that . a) given grammar is regular

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology THEORY OF COMPUTATION

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Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- 1)
- 2)
- 3)

### 4) PDA \_\_\_\_\_\_ accept the language of palindrome without middle marker

- 6)

  - given grammar is not regular b)
  - c) whether two given regular expressions are equivalent or not
  - d) None of these
- 7) The  $\delta^*$  for the TM is defined by \_\_\_\_
  - a)  $\delta^*: Q X ([U \{\Delta\}) \rightarrow Q U\{ha, hr\} X ([U \{\Delta\}) X \{L, R, S\})$
  - b)  $\delta^* : Q X \Sigma \rightarrow Q U \{ha, hr\} X ([U \{\Delta\}) X \{L, R, S\})$
  - c)  $\delta^* QX([U \{\Delta\}) \rightarrow QX([U \{\Delta\})X\{L,R,S\})$
  - d)  $\delta^*: Q X[U \{^\} \rightarrow Q U \{ ha, hr \} X ([U \{ \Delta \}))$

**SLR-FM-351** 

Set R

Max. Marks: 70

Marks: 14

- 8) Universal TM influenced the concept of \_\_\_\_\_.
  - a) stored program computers
  - b) Computability
  - c) interpretative implementation of programming lang
  - d) All
- 9) The Tape of Turing Machine is used as \_\_\_\_\_.
  - a) Input storage device
  - b) Output storage device
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- 10) TM is called as \_\_\_\_\_.
  - a) Acceptor b) Calculator
  - c) Both a) and b) d) None of these
- 11) Which of the following statements are correct?
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  - a) (a + ab + abc) \* b) a \* (a + b) \* (a + b + c) \*
  - c) a \* (^ + ab) \* (^ + abc) \* d) None
- 13) Consider the following Context-Free Grammar (CFG) G: S→XX | Y X→aXc | aYc Y→Yb | ^ Which of the following statements about the language L(G) generated by G are correct?
  a) ∧ ∈ L(G)
  b) aabbbccac ∈ L(G)
  - c) Both d) None
- 14) While converting the context free grammar into CNF normal form, which of the following is not necessary?
  - a) Elimination of null production
  - b) Elimination of unit production
  - c) Elimination of useless production
  - d) None of these

Set

### Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology THEORY OF COMPUTATION

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**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

#### Q.2 Attempt any three of the following questions.

- Derive  $A = \{a^m b^n c^n \mid m, n \ge 0\}$ a)
- Compare between NFA and DFA. b)
- $L = \{ x \mid x \text{ contains substring } 010 \}$ C)
- What is dangling else phenomenon in programming language? d)

#### Attempt any two of the following questions. Q.3

- Consider the grammar:  $S \rightarrow aS \mid aSbS \mid epsilon$ a) where S is the only non-terminal, and epsilon is the null string. Find if grammar is ambiguous, by giving derivation and parse trees for the string aab.
- b) Convert NFA to DFA ( $\varepsilon$  is null value  $\land$ )



### Section – II

#### Attempt any three of the following questions. Q.4 Prove that $L = \{a^n b^n c^n \mid n \ge 0\}$ in not regular.

- What is pumping lemma? Explain the need of pumping lemma. b)
- Explain the basic model working of PDA. c)
- Construct a PDA for the language generated by the following grammar. d)  $S \rightarrow aSA \mid a$  $A \rightarrow bB$ 
  - B→b

c)

a)

Compare NPDA and DPDA e)



q1

Max. Marks: 56

16

12



Set

R



Set R

### Q.5 Attempt any two of the following questions.

- Design PDA for accepting palindrome where the  $\Sigma = \{a, b\}$ . Design TM for accepting language L=  $\{0^n \ 1^n | n \ge 0\}$ . a)
- b)
- Explain the following. C)
  - 1) TM with multiple track.
  - 2) TM with semi infinite tape.

|             |                  | S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-20<br>Information Technology<br>THEORY OF COMPUTATION  | 019             |
|-------------|------------------|--|-----------------|
| Day<br>Time | & Dat<br>e: 02:3 | te: Saturday,23-11-2019 N<br>30 PM To 05:30 PM   | /lax. Marks: 70 |
| Insti       | ructio           | <ul> <li><b>ons:</b> 1) Q. No. 1 is compulsory and it should be solved in first 30 m answer book.</li> <li>2) Figures to the right indicate full marks.</li> </ul>   | inutes in       |
|             |                  | MCQ/Objective Type Questions   |                 |
| Dura        | ation: 3         | 30 Minutes   | Marks: 14       |
| Q.1         | Cho              | oose the correct alternatives from the options and rewrite the   | 14              |
|             | 1)               | Pumping lemma is generally used for proving that<br>a) given grammar is regular<br>b) given grammar is not regular<br>c) whether two given regular expressions are equivalent or not<br>d) None of these   |                 |
|             | 2)               | The $\delta^*$ for the TM is defined by<br>a) $\delta^*: Q X ([U \{\Delta\}) \rightarrow Q U\{ha, hr\} X ([U \{\Delta\}) X \{L, R, S\})$<br>b) $\delta^*: Q X \sum \rightarrow Q U \{ha, hr\} X ([U \{\Delta\}) X \{L, R, S\})$<br>c) $\delta^* Q X ([U \{\Delta\}) \rightarrow Q X ([U \{\Delta\}) X \{L, R, S\})$<br>d) $\delta^*: Q X [U \{^\} \rightarrow Q U \{ha, hr\} X ([U \{\Delta\}))$ |                 |
|             | 3)               | <ul> <li>Universal TM influenced the concept of</li> <li>a) stored program computers</li> <li>b) Computability</li> <li>c) interpretative implementation of programming lang</li> <li>d) All</li> </ul>  |                 |
|             | 4)               | <ul> <li>The Tape of Turing Machine is used as</li> <li>a) Input storage device</li> <li>b) Output storage device</li> <li>c) Infinite and read-write internal memory</li> <li>d) All of these</li> </ul>  |                 |
|             | 5)               | TM is called asa) Acceptorb) Calculatorc) Both a) and b)d) None of these   |                 |
|             | 6)               | <ul> <li>Which of the following statements are correct?</li> <li>a) An alphabet is a finite sequence of distinct symbols.</li> <li>b) A word is a finite sequence of symbols over a given alphabet</li> <li>c) A language is a possibly infinite set of words over a given alp</li> <li>d) An infinite language can be regular.</li> </ul>   | habet           |
|             | 7)               | a * (ab) * (abc) * Which of the following regular expressions deno<br>same language as the above regular expression?   | ote the         |

Seat No. **SLR-FM-351** 

Set S

a) (a + ab + abc) \* b) a \* (a + b) \* (a + b + c) \* c) a \* (^ + ab) \* (^ + abc) \* d) None

Set 8) Consider the following Context-Free Grammar (CFG) G:  $S \rightarrow XX \mid Y \quad X \rightarrow aXc \mid aYc \quad Y \rightarrow Yb \mid ^{$ Which of the following statements about the language L(G) generated by G are correct? a)  $\land \in L(G)$ b) aabbbccac  $\in$  L(G) c) Both d) None 9) While converting the context free grammar into CNF normal form, which of the following is not necessary? a) Elimination of null production b) Elimination of unit production c) Elimination of useless production d) None of these 10) The regular expression with all strings of 0's and 1's with at-least two consecutive 0's, is . a) 1+(10)\* b)  $(0 + 1)^*00 (0 + 1)^*$ c) (0+1)\*011 d) 0\*1\*2\* 11) A parse tree for a string in L(G) is a tree where \_\_\_\_\_. a) The root is the start symbol for q b) the leaf nodes are the terminal symbols of q c) all of these d) None Which of the following languages CANNOT be defined by Finite 12) Automata? a) {ab, abab, ababab, abababab,.....} c) {a, aa, aba, abba, abbba, abbbba, abbbbba,...} d) {a, b, aa, bb, aaa, bbb, aaaa, bbbb,....} 13) PDA \_\_\_\_\_\_ accept the language of palindrome without middle marker input symbol.

- a) May b) Can
- c) May not d) Can not
- 14) Push down machine represents \_\_\_\_\_
  - a) Type 0 Grammar b) Type 1 grammar
  - c) Type 2 Grammar d) Type 3 grammar

**SLR-FM-351** 

### Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology THEORY OF COMPUTATION

Day & Date: Saturday,23-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

#### Q.2 Attempt any three of the following questions.

- Derive  $A = \{a^m b^n c^n \mid m, n \ge 0\}$ a)
- Compare between NFA and DFA. b)
- $L = \{ x \mid x \text{ contains substring } 010 \}$ C)
- What is dangling else phenomenon in programming language? d)

#### Attempt any two of the following questions. Q.3

- Consider the grammar: S -> aS | aSbS| epsilon a) where S is the only non-terminal, and epsilon is the null string. Find if grammar is ambiguous, by giving derivation and parse trees for the string aab.
- b) Convert NFA to DFA ( $\varepsilon$  is null value  $\land$ )

Minimize following DFA.



### Section – II

#### Attempt any three of the following questions. Q.4 Prove that $L = \{a^n b^n c^n \mid n \ge 0\}$ in not regular.

- What is pumping lemma? Explain the need of pumping lemma. b)
- Explain the basic model working of PDA. c)
- Construct a PDA for the language generated by the following grammar. d)  $S \rightarrow aSA \mid a$  $A \rightarrow bB$ 
  - B→b

c)

a)

Compare NPDA and DPDA e)





a.b

**SLR-FM-351** 

Set

Max. Marks: 56

S





Set S

16

### Q.5 Attempt any two of the following questions.

- Design PDA for accepting palindrome where the  $\Sigma = \{a, b\}$ . Design TM for accepting language L=  $\{0^n \ 1^n | n \ge 0\}$ . a)
- b)
- Explain the following. C)
  - 1) TM with multiple track.
  - 2) TM with semi infinite tape.

answer book. 2) Figures to right indicate full marks. **MCQ/Objective Type Questions** In 8085 name the 16 bit registers? b) Program counter d) None of these 8085 Microprocessor is enclosed with pins DIP (Dual in line package). 20 40 b) a) 26 d) 36 Register b) Direct a) Immediate c) d) Register relative MOV b) PUSH a) DAS d) POP c) The instruction that subtracts 1 from the contents of the specified b) SUBB SUB d) DEC minimum b) maximum compatibility mode d) control mode C) In 8086 microprocessor one of the following statements is not true . Coprocessor is interfaced in MAX mode Coprocessor is interfaced in MIN mode I/O can be interfaced in MAX / MIN mode Supports pipelining forward b) return

Information Technology MICROPROCESSOR

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

**Duration: 30 Minutes** 

2)

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1)
  - a) Stack pointer
  - c) Both a & b
  - C)

#### The instruction, MOV AX, 0005H belongs to the address mode \_\_\_\_\_. 3)

- 4) Which of the following is not a data copy/transfer instruction?
- 5) register/memory location is \_\_\_\_
  - a) INC
  - c)
- 6) The RD, WR, M/IO is the heart of control for a \_\_\_\_\_mode.
  - a)

7)

- a)
- b)
- c)
- d)
- A Instruction at the end of interrupt service program takes the 8) execution back to the interrupted program.
  - a)
  - data d) line C)
- In 8086 microprocessor the following has the highest priority among all 9) type interrupts.
  - a) NMI
  - Type 255 C)

- b) DIV 0
- d) Over flow

SLR-FM-352



Max. Marks: 70

Marks: 14



- either input or output ports d) both input and output ports C)
- The unit that executes all the numeric processor instructions in 8087 is \_\_\_\_\_. 11)
  - a) Control unit b) ALU c)
    - Numeric extension unit d) None of the mentioned
- 12) The 8087 can operate on memory operands of following data types\_\_\_\_\_.
  - Word integer, short integer and long integer a)
  - b) Packed BCD, short real and long real
  - c) Temporary real

input port

10)

a)

- d) All of the above
- 13) The management of the memory system required to ensure the smooth execution of the running process is done by.
  - Control unit b) memory a)
  - d) bus interface unit C) memory management unit
- 14) The fetching of program from secondary memory to place it in physical memory, during the execution of CPU is called \_\_\_\_\_.
  - a) mapping

b) swapping in

swapping out c)

d) pipe lining

### Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MICROPROCESSOR

Day & Date: Monday, 25-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

### Section – I

### Q.2 Attempt any three.

- a) Explain the features of 8085 Microprocessor.
- **b)** Draw and explain architecture diagram of 8085.
- c) Describe addressing modes of 8086 with suitable example.
- d) Explain the data transfer and arithmetic instructions with examples.
- e) Explain briefly any 4 assembler directives.

### Q.3 Attempt any two.

- a) With a neat diagram explain 8086 Architecture.
- **b)** Sketch the minimum mode configuration of 8086 and explain the operation briefly.
- c) Given that, (DS) = 2000 H, (BX) = 2124 H, (DI) = 4A39 H, Displacement = E260.

Determine the effective (or offset) address and physical address, if applicable, resulting from these registers and addressing modes:

- 1) Immediate
- 2) Direct
- 3) Register assuming BX
- 4) Register Indirect assuming BX

### Section – II

### Q.4 Attempt any three.

- a) Write a note on Interrupt service Routine with a diagram.
- b) Write the features and operating modes of DMA Controller 8257.
- c) Describe Bit Set/Reset mode (BSR mode) of 8255.
- d) Explain the following data types of numeric data processor 8087.
  - 1) Word integer
  - 2) Short Integer
  - 3) Long Integer
  - 4) Packed BCD
- e) Write the features of 80386 Microprocessor.

### Q.5 Attempt any two.

- a) Explain the Maskable and Non-maskable Interrupt (8259) with example.
- **b)** Describe the Block diagram of 8087 numeric data processor.
- c) Describe the features and architecture of 80286 processor.

Max. Marks: 56

16

12

12

16

SLR-FM-352

Set P

| Seat |  |
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### S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MICROPROCESSOR

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to right indicate full marks.

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- A Instruction at the end of interrupt service program takes the 1) execution back to the interrupted program.
  - a) forward b) return
  - d) line C) data
- In 8086 microprocessor the following has the highest priority among all 2) type interrupts.
  - a) NMI b) DIV 0
  - Type 255 d) Over flow C)
- 3) Port C of 8255 can function independently as
  - b) output port input port a) either input or output ports d) both input and output ports C)
- The unit that executes all the numeric processor instructions in 8087 is \_\_\_\_\_. 4)
  - Control unit b) ALU a)
  - d) None of the mentioned c) Numeric extension unit
- 5) The 8087 can operate on memory operands of following data types\_\_\_\_\_.
  - Word integer, short integer and long integer a)
  - b) Packed BCD, short real and long real
  - c) Temporary real
  - d) All of the above
- 6) The management of the memory system required to ensure the smooth execution of the running process is done by.
  - Control unit b) memorv a)
  - d) bus interface unit c) memory management unit
- 7) The fetching of program from secondary memory to place it in physical memory, during the execution of CPU is called .
  - mapping b) swapping in a)
  - swapping out d) pipe lining c)
- 8) In 8085 name the 16 bit registers?
  - a) Stack pointer Program counter b) None of these
  - c) Both a & b d)
  - 8085 Microprocessor is enclosed with pins DIP (Dual in line package).

20

36

b)

d)

- 40
- 26 c)

a)

9)

Max. Marks: 70

Set

Marks: 14


- The instruction, MOV AX, 0005H belongs to the address mode . 10)
  - Register a)

C)

Immediate

- b) Direct
- d) Register relative
- Which of the following is not a data copy/transfer instruction? 11)
  - a) MOV b) PUSH
  - DAS d) POP c)
- 12) The instruction that subtracts 1 from the contents of the specified register/memory location is \_\_\_\_\_
  - b) SUBB INC a)
  - d) DEC SUB C)
- 13) The RD, WR, M/IO is the heart of control for a \_\_\_\_\_mode.
  - minimum b) maximum a) c)
    - compatibility mode d) control mode
- In 8086 microprocessor one of the following statements is not true \_\_\_\_\_. 14)
  - Coprocessor is interfaced in MAX mode a)
  - Coprocessor is interfaced in MIN mode b)
  - I/O can be interfaced in MAX / MIN mode C)
  - d) Supports pipelining

## Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MICROPROCESSOR

Day & Date: Monday, 25-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

### Section – I

### Q.2 Attempt any three.

- a) Explain the features of 8085 Microprocessor.
- b) Draw and explain architecture diagram of 8085.
- c) Describe addressing modes of 8086 with suitable example.
- d) Explain the data transfer and arithmetic instructions with examples.
- e) Explain briefly any 4 assembler directives.

### Q.3 Attempt any two.

- a) With a neat diagram explain 8086 Architecture.
- b) Sketch the minimum mode configuration of 8086 and explain the operation briefly.
- c) Given that, (DS) = 2000 H, (BX) = 2124 H, (DI) = 4A39 H, Displacement = E260.

Determine the effective (or offset) address and physical address, if applicable, resulting from these registers and addressing modes:

- 1) Immediate
- 2) Direct
- 3) Register assuming BX
- 4) Register Indirect assuming BX

### Section – II

### Q.4 Attempt any three.

- a) Write a note on Interrupt service Routine with a diagram.
- b) Write the features and operating modes of DMA Controller 8257.
- c) Describe Bit Set/Reset mode (BSR mode) of 8255.
- d) Explain the following data types of numeric data processor 8087.
  - 1) Word integer
  - 2) Short Integer
  - 3) Long Integer
  - 4) Packed BCD
- e) Write the features of 80386 Microprocessor.

### Q.5 Attempt any two.

- a) Explain the Maskable and Non-maskable Interrupt (8259) with example.
- **b)** Describe the Block diagram of 8087 numeric data processor.
- c) Describe the features and architecture of 80286 processor.

Max. Marks: 56

16

12

12

Set

## SLR-FM-352

## Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MICROPROCESSOR

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to right indicate full marks.

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The instruction that subtracts 1 from the contents of the specified 1) register/memory location is \_\_\_\_ SUBB
  - a) INC
  - b) SUB C) d) DEC
- 2) The RD, WR, M/IO is the heart of control for a \_\_\_\_\_mode.
  - a) minimum b) maximum
  - C) compatibility mode d) control mode
- 3) In 8086 microprocessor one of the following statements is not true \_\_\_\_\_.
  - Coprocessor is interfaced in MAX mode a)
  - Coprocessor is interfaced in MIN mode b)
  - I/O can be interfaced in MAX / MIN mode C)
  - d) Supports pipelining
- 4) Instruction at the end of interrupt service program takes the A execution back to the interrupted program.
  - forward a) b) return
  - data d) line c)
- 5) In 8086 microprocessor the following has the highest priority among all type interrupts.
  - NMI b) DIV 0 a)
  - Type 255 d) Over flow c)
- Port C of 8255 can function independently as \_ 6)
  - b) output port input port a) C)
    - d) both input and output ports either input or output ports
- 7) The unit that executes all the numeric processor instructions in 8087 is .
  - b) ALU Control unit c) Numeric extension unit d) None of the mentioned
- The 8087 can operate on memory operands of following data types\_\_\_\_\_. 8)
  - a) Word integer, short integer and long integer
  - b) Packed BCD, short real and long real
  - Temporary real C)

a)

d) All of the above

Max. Marks: 70

Set

R

Marks: 14

9) The management of the memory system required to ensure the smooth execution of the running process is done by.

- Control unit a)
- b) memory
- memory management unit C)
- d) bus interface unit

**SLR-FM-352** 

Set R

- 10) The fetching of program from secondary memory to place it in physical memory, during the execution of CPU is called
  - a) mapping swapping out

c) Both a & b

c)

C)

- b) swapping in
- pipe lining d)
- 11) In 8085 name the 16 bit registers?
  - a) Stack pointer
- b) Program counter
- d) None of these
- 12) 8085 Microprocessor is enclosed with \_ \_\_ pins DIP (Dual in line package).
  - 20 40 a) b)
  - 26 d) 36 C)
- 13) The instruction, MOV AX, 0005H belongs to the address mode \_\_\_\_\_.
  - Register a)

- b) Direct
- Immediate d) Register relative
- 14) Which of the following is not a data copy/transfer instruction?
  - a) MOV c) DAS

- b) PUSH
- d) POP

## Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MICROPROCESSOR

Day & Date: Monday, 25-11-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

### Section – I

### Q.2 Attempt any three.

- a) Explain the features of 8085 Microprocessor.
- b) Draw and explain architecture diagram of 8085.
- c) Describe addressing modes of 8086 with suitable example.
- d) Explain the data transfer and arithmetic instructions with examples.
- e) Explain briefly any 4 assembler directives.

### Q.3 Attempt any two.

- a) With a neat diagram explain 8086 Architecture.
- **b)** Sketch the minimum mode configuration of 8086 and explain the operation briefly.
- c) Given that, (DS) = 2000 H, (BX) = 2124 H, (DI) = 4A39 H, Displacement = E260.

Determine the effective (or offset) address and physical address, if applicable, resulting from these registers and addressing modes:

- 1) Immediate
- 2) Direct
- 3) Register assuming BX
- 4) Register Indirect assuming BX

### Section – II

### Q.4 Attempt any three.

- a) Write a note on Interrupt service Routine with a diagram.
- b) Write the features and operating modes of DMA Controller 8257.
- c) Describe Bit Set/Reset mode (BSR mode) of 8255.
- d) Explain the following data types of numeric data processor 8087.
  - 1) Word integer
  - 2) Short Integer
  - 3) Long Integer
  - 4) Packed BCD
- e) Write the features of 80386 Microprocessor.

### Q.5 Attempt any two.

- a) Explain the Maskable and Non-maskable Interrupt (8259) with example.
- **b)** Describe the Block diagram of 8087 numeric data processor.
- c) Describe the features and architecture of 80286 processor.

Max. Marks: 56

16

12

12

16

SLR-FM-352

| Seat |  |
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| No.  |  |

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MICROPROCESSOR

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to right indicate full marks.

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

c)

a)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Port C of 8255 can function independently as 1)
  - a) input port b) output port c)
    - either input or output ports d) both input and output ports
- The unit that executes all the numeric processor instructions in 8087 is \_\_\_\_\_. 2) b) ALU
  - Control unit a)
- d) None of the mentioned
- 3) The 8087 can operate on memory operands of following data types\_\_\_\_\_.
  - Word integer, short integer and long integer a)
  - Packed BCD, short real and long real b)
  - Temporary real c)
  - d) All of the above
- 4) The management of the memory system required to ensure the smooth execution of the running process is done by.
  - Control unit a) C) memory management unit

Numeric extension unit

- b) memory d) bus interface unit
- The fetching of program from secondary memory to place it in physical 5) memory, during the execution of CPU is called \_
  - a) mapping
  - b) swapping in c) swapping out d) pipe lining
- 6) In 8085 name the 16 bit registers?
  - a) Stack pointer c) Both a & b
    - b) Program counter d) None of these
- 7) 8085 Microprocessor is enclosed with \_ \_ pins DIP (Dual in line package).
  - 20 40 b)
  - 26 C) d) 36

### 8) The instruction, MOV AX, 0005H belongs to the address mode .

- Register b) Direct a)
- Immediate d) Register relative c)
- 9) Which of the following is not a data copy/transfer instruction? b) PUSH
  - MOV a) d) POP
  - c) DAS

Max. Marks: 70

Marks: 14





Set S

- 10) The instruction that subtracts 1 from the contents of the specified register/memory location is \_\_\_\_
  - a) INC SUBB b)
  - SUB d) DEC C)
- 11) The RD, WR, M/IO is the heart of control for a \_\_\_\_\_mode.
  - minimum b) maximum a) C)
    - compatibility mode d) control mode
- In 8086 microprocessor one of the following statements is not true \_\_\_\_\_. 12)
  - Coprocessor is interfaced in MAX mode a)
  - Coprocessor is interfaced in MIN mode b)
  - I/O can be interfaced in MAX / MIN mode c)
  - d) Supports pipelining
- 13) A Instruction at the end of interrupt service program takes the execution back to the interrupted program.
  - forward b) return a)
  - C) data d) line
- In 8086 microprocessor the following has the highest priority among all 14) type interrupts.
  - a) NMI
  - C) Type 255

- b) DIV 0
- d) Over flow

## Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MICROPROCESSOR

Day & Date: Monday, 25-11-2019

Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figure to the right indicates full marks.

### Section – I

### Q.2 Attempt any three.

- a) Explain the features of 8085 Microprocessor.
- **b)** Draw and explain architecture diagram of 8085.
- c) Describe addressing modes of 8086 with suitable example.
- d) Explain the data transfer and arithmetic instructions with examples.
- e) Explain briefly any 4 assembler directives.

### Q.3 Attempt any two.

- a) With a neat diagram explain 8086 Architecture.
- b) Sketch the minimum mode configuration of 8086 and explain the operation briefly.
- c) Given that, (DS) = 2000 H, (BX) = 2124 H, (DI) = 4A39 H, Displacement = E260.

Determine the effective (or offset) address and physical address, if applicable, resulting from these registers and addressing modes:

- 1) Immediate
- 2) Direct
- 3) Register assuming BX
- 4) Register Indirect assuming BX

### Section – II

### Q.4 Attempt any three.

- a) Write a note on Interrupt service Routine with a diagram.
- b) Write the features and operating modes of DMA Controller 8257.
- c) Describe Bit Set/Reset mode (BSR mode) of 8255.
- d) Explain the following data types of numeric data processor 8087.
  - 1) Word integer
  - 2) Short Integer
  - 3) Long Integer
  - 4) Packed BCD
- e) Write the features of 80386 Microprocessor.

### Q.5 Attempt any two.

- a) Explain the Maskable and Non-maskable Interrupt (8259) with example.
- **b)** Describe the Block diagram of 8087 numeric data processor.
- c) Describe the features and architecture of 80286 processor.

Max. Marks: 56

16

12

12

16

Set

## SLR-FM-352

| ie. 02.3    | 0 PIVI 10 05.30 PIVI   |                      |   |           |
|-------------|--|----------------------|---|-----------|
| tructio     | <b>ns:</b> 1) Q. No. 1 is compulsory and sh<br>Book.   | rould b              | be solved in first 30 minutes                           | in answer |
|             | 2) Figures to the right indicate fu  | ıll marl             | <b>(</b> S.   |           |
|             | MCQ/Objective 1  | Гуре                 | Questions   |           |
| ation: 3    | 30 Minutes   |                      |   | Marks: 14 |
| Cho<br>sent | ose the correct alternatives from t<br>ence.   | the op               | tions and rewrite the                                   | 14        |
| 1)          | A graph having an edge from each   | vertex               | to every other vertex is cal                            | led       |
|             | a<br>a) Tightly Connected<br>c) Weakly Connected   | b)<br>d)             | Strongly Connected<br>Loosely Connected                 |           |
| 2)          | Other name for directed graph is _<br>a) Direct graph<br>c) Dir-graph  | <br>b)<br>d)         | Digraph<br>None of these                                |           |
| 3)          | In Binary trees nodes with no succe<br>a) End nodes<br>c) Final nodes  | essor a<br>b)<br>d)  | are called<br>Terminal nodes<br>Last nodes              |           |
| 4)          | A connected graph T without any c<br>a) free graph<br>c) non cycle graph   | ycles i<br>b)<br>d)  | s called<br>no cycle graph<br>circular graph            |           |
| 5)          | Every node N in a binary tree T exe<br>called the of N.<br>a) Antecedents<br>c) Forerunner   | cept th<br>b)<br>d)  | e root has a unique parent<br>Predecessor<br>Precursor  |           |
| 6)          | In a graph if E= (u, v) means<br>a) u is adjacent to v but v is not a<br>b) e begins at u and ends at v<br>c) u is processor and v is success<br>d) both b and c | <br>djacer<br>sor    | nt to u   |           |
| 7)          | Sequential representation of binary<br>a) Array with pointers<br>c) Two dimentional arrays   | / tree u<br>b)<br>d) | uses<br>Single linear array<br>Three dimentional arrays |           |
| 8)          | In a graph if e= [u, v], Then u and v<br>a) End points of e<br>c) Neighbours   | / are c<br>b)<br>d)  | alled<br>Adjacent nodes<br>All of the above             |           |

Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

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# **SLR-FM-353**

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Max. Marks: 70

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| 9)  | Αb                         | A binary tree whose every node has either zero or two children is called  |                              |  |  |  |  |
|-----|----------------------------|---|------------------------------|--|--|--|--|
|     | a)<br>c)                   | complete binary tree<br>extended binary tree  | b)<br>d)                     | binary search tree<br>data structure           |  |  |  |
| 10) | Wh<br>a)<br>b)<br>c)<br>d) | nich indicates pre-order traversal?<br>Left sub-tree, Right sub-tree and<br>Right sub-tree, Left sub-tree and<br>Root, Left sub-tree, Right sub-tre<br>Right sub-tree, root, Left sub-tre | d root<br>d root<br>ee<br>ee |  |  |  |  |
| 11) | A t<br>a)<br>c)            | erminal node in a binary tree is ca<br>Root<br>Child  | alled _<br>b)<br>d)          | Leaf<br>Branch                                 |  |  |  |
| 12) | The<br>orc<br>a)<br>c)     | e post order traversal of binary tre<br>ler traversal.<br>ABFCDE<br>ABDECF  | ee is [<br>b)<br>d)          | DEBFCA. Find out the pre<br>ADBFEC<br>ABDCEF   |  |  |  |
| 13) | Wh<br>a)<br>c)             | nich of the following data structure<br>Graph<br>Binary tree  | e is lin<br>b)<br>d)         | ear type?<br>Trees<br>Stack                    |  |  |  |
| 14) | To<br>stru<br>a)<br>c)     | represent hierarchical relationshi<br>ucture is suitable?<br>Dequeue<br>Tree  | p betv<br>b)<br>d)           | ween elements, Which data<br>Priority<br>Graph |  |  |  |

Set P

12

## SLR-FM-353

Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Answer any four.

- a) Evaluate the expression 5 6 2 + \* 12 4 / , show stepwise evaluation using stack.
- **b)** Write a c function insert and delete operations for simple queue.
- c) Write an algorithm to insert new node at END position of doubly linked list.
- d) What are applications of linked list? Explain them
- A binary trees T have 9 nodes. The inorder and preorder traversals of T yeild the following sequences of nodes.
   Inorder: E A C K F H D B G
   Preorder: F A E K C D H G B
   Draw the diagram of the tree.
- f) Write a note on threaded binary trees

### Q.3 Answer any two questions.

- a) Write an algorithm to evaluate a postfix expression with example.
- **b)** Write a program for addition of two polynomials.
- **c)** Write an algorithm for
  - 1) Insert a node at middle position of single linked list.
  - 2) Insert a node at end position of single linked list.

### Section – II

### Q.4 Answer any four.

- a) Define B- Tree. List the properties of B-tree.
- b) What are the differences between B and B+ tree?
- c) Define AVL tree? Explain deletion of node in AVL tree with suitable example.
- d) Define the graph and explain adjacency list and adjacency matrix representation of graph.
- e) Write Dijkstra's algorithm to solve shortest path problem.
- f) Define following terminologies of graph with examples.
  - 1) Pendant node b) Directed graph
  - 3) Isolated graphd) Cyclic graph

### Q.5 Answer any two questions.

- a) Build step by step B+ tree for following elements of order 5
   C, H, A, B, K, L, D, E, Q, W, M, S, T, N, P, Z, Y
- b) Draw a tree for following elements using AVL trees.3, 5, 11, 8, 4, 1,12, 7, 2, 6, 10
- c) Write a c function for BFS and DFS of a graph.

Max. Marks: 56

Set

12

16

| me  | e: 02:3       | 0 PN                       | 1 To 05:30 PM  |                             |  |
|-----|---------------|----------------------------|--|-----------------------------|--|
| str | ructior       | <b>າຣ:</b> 1<br>2          | ) Q. No. 1 is compulsory and sho<br>Book.<br>2) Figures to the right indicate full   | ould b<br>mark              | e solved in first 30 minutes in answ<br>s      |
|     |               | 2                          |  | main                        | Junctions                                      |
| ura | tion: 3       | 0 Mi                       | nutes  | her                         | Marks:   |
| .1  | Choo<br>sente | ose t<br>ence              | the correct alternatives from th   | e opt                       | ions and rewrite the                           |
|     | 1)            | ln a<br>a)<br>c)           | a graph if e= [u, v], Then u and v a<br>End points of e<br>Neighbours  | are ca<br>b)<br>d)          | alled<br>Adjacent nodes<br>All of the above    |
|     | 2)            | A b                        | inary tree whose every node has  | eithe                       | r zero or two children is called               |
|     |               | a)<br>c)                   | complete binary tree<br>extended binary tree   | b)<br>d)                    | binary search tree<br>data structure           |
|     | 3)            | Wh<br>a)<br>b)<br>c)<br>d) | ich indicates pre-order traversal?<br>Left sub-tree, Right sub-tree and<br>Right sub-tree, Left sub-tree and<br>Root, Left sub-tree, Right sub-tre<br>Right sub-tree, root, Left sub-tre | d root<br>d root<br>ee<br>e |  |
|     | 4)            | A te<br>a)<br>c)           | erminal node in a binary tree is ca<br>Root<br>Child   | alled _<br>b)<br>d)         | Leaf<br>Branch                                 |
|     | 5)            | The<br>ord<br>a)<br>c)     | e post order traversal of binary tre<br>er traversal.<br>ABFCDE<br>ABDECF  | e is [<br>b)<br>d)          | DEBFCA. Find out the pre<br>ADBFEC<br>ABDCEF   |
|     | 6)            | Wh<br>a)<br>c)             | ich of the following data structure<br>Graph<br>Binary tree  | is lin<br>b)<br>d)          | ear type?<br>Trees<br>Stack                    |
|     | 7)            | To<br>stru<br>a)<br>c)     | represent hierarchical relationshi<br>ucture is suitable?<br>Dequeue<br>Tree   | p betv<br>b)<br>d)          | ween elements, Which data<br>Priority<br>Graph |
|     | 8)            | Ag<br>a_                   | raph having an edge from each v<br><br><br>  | ertex                       | to every other vertex is called                |

i ignity Connected a) D) Strongly Connected d) Weakly Connected Loosely Connected c)

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### Seat No.

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Tir

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Max. Marks: 70

Set Q

14

- 9) Other name for directed graph is \_\_\_\_
  - a) Direct graphb)c) Dir-graphd)
    - b) Digraphd) None of these
- 10) In Binary trees nodes with no successor are called \_\_\_\_\_.
  - a) End nodes b) Terminal nodes
  - c) Final nodes d) Last nodes
- 11) A connected graph T without any cycles is called \_\_\_\_\_
  - a) free graph

- b) no cycle graph
- c) non cycle graph d) circular graph
- 12) Every node N in a binary tree T except the root has a unique parent called the \_\_\_\_\_ of N.
  - a) Antecedents

- b) Predecessord) Precursor
- c) Forerunner
- 13) In a graph if E= (u, v) means \_\_\_\_
  - a) u is adjacent to v but v is not adjacent to u
  - b) e begins at u and ends at v
  - c) u is processor and v is successor
  - d) both b and c
- 14) Sequential representation of binary tree uses \_\_\_\_\_.
  - a) Array with pointers
  - c) Two dimentional arrays
- b) Single linear arrayd) Three dimentional arrays



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### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Answer any four.

- a) Evaluate the expression 5 6 2 + \* 12 4 / , show stepwise evaluation using stack.
- **b)** Write a c function insert and delete operations for simple queue.
- c) Write an algorithm to insert new node at END position of doubly linked list.
- d) What are applications of linked list? Explain them
- A binary trees T have 9 nodes. The inorder and preorder traversals of T yeild the following sequences of nodes. Inorder: E A C K F H D B G
   Preorder: F A E K C D H G B
   Draw the diagram of the tree.
- f) Write a note on threaded binary trees

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- a) Write an algorithm to evaluate a postfix expression with example.
- **b)** Write a program for addition of two polynomials.
- **c)** Write an algorithm for
  - 1) Insert a node at middle position of single linked list.
  - 2) Insert a node at end position of single linked list.

### Section – II

### Q.4 Answer any four.

- a) Define B- Tree. List the properties of B-tree.
- b) What are the differences between B and B+ tree?
- c) Define AVL tree? Explain deletion of node in AVL tree with suitable example.
- d) Define the graph and explain adjacency list and adjacency matrix representation of graph.
- e) Write Dijkstra's algorithm to solve shortest path problem.
- f) Define following terminologies of graph with examples.
  - 1) Pendant node b) Directed graph
  - 3) Isolated graphd) Cyclic graph

### Q.5 Answer any two questions.

- a) Build step by step B+ tree for following elements of order 5
   C, H, A, B, K, L, D, E, Q, W, M, S, T, N, P, Z, Y
- b) Draw a tree for following elements using AVL trees.
  3, 5, 11, 8, 4, 1,12, 7, 2, 6, 10
- c) Write a c function for BFS and DFS of a graph.

Max. Marks: 56

16

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12

|                                     | -              |  |
|-------------------------------------|----------------|--|
| , Left sub-tree and roo             | t              |  |
| -tree, Right sub-tree               |                |  |
| , root, Left sub-tree               |                |  |
| a binary tree is called<br>b)<br>d) | Leaf<br>Branch |  |
|                                     |                |  |
|                                     |                |  |
|                                     |                |  |

Book. 2) Figures to the right indicate full marks. MCQ/Objective Type Questions Q.1 Choose the correct alternatives from the options and rewrite the sentence. Every node N in a binary tree T except the root has a unique parent 1) called the \_\_\_\_\_ of N. a) Antecedents b) Predecessor c) Forerunner d) Precursor 2) In a graph if E= (u, v) means \_\_\_\_\_ a) u is adjacent to v but v is not adjacent to u b) e begins at u and ends at v c) u is processor and v is successor d) both b and c Sequential representation of binary tree uses 3) a) Array with pointers Single linear array b) c) Two dimentional arrays d) Three dimentional arrays 4) In a graph if e = [u, v], Then u and v are called \_\_\_\_\_. End points of e b) Adjacent nodes a) Neighbours d) All of the above c) A binary tree whose every node has either zero or two children is called 5) binary search tree

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

**Duration: 30 Minutes** 

- complete binary tree b) a)
- extended binary tree data structure d) C)
- Which indicates pre-order traversal? 6)
  - a) Left sub-tree, Right sub-tree and root
    - b) Right sub-tree
    - c) Root, Left sub
    - d) Right sub-tree
- 7) A terminal node in
  - a) Root c) Child

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Max. Marks: 70

R

**SLR-FM-353** Set R The post order traversal of binary tree is DEBFCA. Find out the pre order traversal. a) ABFCDE b) ADBFEC c) ABDECF d) ABDCEF Which of the following data structure is linear type? a) Graph Trees b) c) Binary tree d) Stack To represent hierarchical relationship between elements, Which data structure is suitable? a) Dequeue b) Priority c) Tree d) Graph A graph having an edge from each vertex to every other vertex is called a \_\_ a) Tightly Connected b) Strongly Connected c) Weakly Connected Loosely Connected

d)

Other name for directed graph is \_\_\_\_ 12) a) Direct graph Digraph b)

8)

9)

10)

11)

c) Dir-graph d) None of these

#### 13) In Binary trees nodes with no successor are called \_\_\_\_\_

- **Terminal nodes** a) End nodes b) c) Final nodes d) Last nodes
- A connected graph T without any cycles is called \_\_\_\_\_ 14)

#### a) free graph no cycle graph b)

c) non cycle graph d) circular graph

12

## **SLR-FM-353**

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### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Answer any four.

- a) Evaluate the expression 5 6 2 + \* 12 4 / , show stepwise evaluation using stack.
- **b)** Write a c function insert and delete operations for simple queue.
- c) Write an algorithm to insert new node at END position of doubly linked list.
- d) What are applications of linked list? Explain them
- A binary trees T have 9 nodes. The inorder and preorder traversals of T yeild the following sequences of nodes. Inorder: E A C K F H D B G
   Preorder: F A E K C D H G B
   Draw the diagram of the tree.
- f) Write a note on threaded binary trees

### Q.3 Answer any two questions.

- a) Write an algorithm to evaluate a postfix expression with example.
- **b)** Write a program for addition of two polynomials.
- **c)** Write an algorithm for
  - 1) Insert a node at middle position of single linked list.
  - 2) Insert a node at end position of single linked list.

### Section – II

### Q.4 Answer any four.

- a) Define B- Tree. List the properties of B-tree.
- b) What are the differences between B and B+ tree?
- c) Define AVL tree? Explain deletion of node in AVL tree with suitable example.
- d) Define the graph and explain adjacency list and adjacency matrix representation of graph.
- e) Write Dijkstra's algorithm to solve shortest path problem.
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### Q.5 Answer any two questions.

- a) Build step by step B+ tree for following elements of order 5
   C, H, A, B, K, L, D, E, Q, W, M, S, T, N, P, Z, Y
- b) Draw a tree for following elements using AVL trees.3, 5, 11, 8, 4, 1,12, 7, 2, 6, 10
- c) Write a c function for BFS and DFS of a graph.

Max. Marks: 56

Set

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| Day o<br>Time | & Date<br>: 02:30 | : Tu<br>) PN   | esday, 26-11-2019<br>1 To 05:30 PM   |                             |   | Max. Marks: 70 |  |
|---------------|-------------------|--|--|-----------------------------|---|----------------|--|
| Instr         | uctior            | <b>is:</b> 1   | ) Q. No. 1 is compulsory and sho<br>Book.  | uld b                       | e solved in first 30 min                  | utes in answer |  |
|               |                   | 2  | ?) Figures to the right indicate full  | mark                        | S.  |                |  |
|               |                   |  | MCQ/Objective Ty   | vpe C                       | Questions                                 |                |  |
| Dura          | tion: 3           | 0 Mi   | nutes  |                             |   | Marks: 14      |  |
| Q.1           | Choo              | ose t  | the correct alternatives from th   | e opt                       | ions and rewrite the                      | 14             |  |
|               | sente<br>1)       | wh<br>a)<br>b)<br>c)<br>d)   | a.<br>ich indicates pre-order traversal?<br>Left sub-tree, Right sub-tree and<br>Right sub-tree, Left sub-tree and<br>Root, Left sub-tree, Right sub-tre<br>Right sub-tree, root, Left sub-tre | d root<br>d root<br>ee<br>e |   |                |  |
|               | 2)                | A te<br>a)<br>c)   | erminal node in a binary tree is ca<br>Root<br>Child   | alled _<br>b)<br>d)         | Leaf<br>Branch                            |                |  |
|               | 3)                | Th∉<br>ord<br>a)<br>c)   | e post order traversal of binary tre<br>er traversal.<br>ABFCDE<br>ABDECF  | e is E<br>b)<br>d)          | DEBFCA. Find out the<br>ADBFEC<br>ABDCEF  | pre            |  |
|               | 4)                | Which of the following data structure is linear type?                                      |  |                             |   |                |  |
|               |                   | a)<br>c)   | Graph<br>Binary tree   | b)<br>d)                    | Trees<br>Stack                            |                |  |
|               | 5)                | To represent hierarchical relationship between elements, Which data structure is suitable? |  |                             |   |                |  |
|               |                   | a)<br>c)   | Dequeue<br>Tree  | b)<br>d)                    | Priority<br>Graph                         |                |  |
|               | 6)                | A graph having an edge from each vertex to every other vertex is called                    |  |                             |   |                |  |
|               |                   | a<br>a)<br>c)  | Tightly Connected<br>Weakly Connected  | b)<br>d)                    | Strongly Connected<br>Loosely Connected   |                |  |
|               | 7)                | Oth<br>a)<br>c)  | er name for directed graph is<br>Direct graph<br>Dir-graph   | b)<br>d)                    | Digraph<br>None of these                  |                |  |
|               | 8)                | In E<br>a)<br>c)   | Binary trees nodes with no succes<br>End nodes<br>Final nodes  | ssor a<br>b)<br>d)          | re called<br>Terminal nodes<br>Last nodes |                |  |

# S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Seat No.

## **SLR-FM-353**

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- 9) A connected graph T without any cycles is called \_\_\_\_\_.
  - a) free graph

c) Forerunner

b) no cycle graph

Predecessor

- c) non cycle graph
- Every node N in a binary tree T except the root has a unique parent 10) called the \_\_\_\_\_ of N.
  - a) Antecedents b)
    - d) Precursor
- 11) In a graph if E = (u, v) means \_\_\_\_\_.
  - a) u is adjacent to v but v is not adjacent to u
  - b) e begins at u and ends at v
  - c) u is processor and v is successor
  - d) both b and c

#### Sequential representation of binary tree uses \_\_\_\_ 12)

- a) Array with pointers
- c) Two dimentional arrays d)
- Single linear array b)
  - Three dimentional arrays
- 13) In a graph if e= [u, v], Then u and v are called \_\_\_\_\_
  - a) End points of e
  - Neighbours C)

- Adjacent nodes b)
- d) All of the above
- A binary tree whose every node has either zero or two children is called 14)
  - a) complete binary tree
  - c) extended binary tree
- b) binary search tree
- d) data structure





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### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Answer any four.

- a) Evaluate the expression 5 6 2 + \* 12 4 / , show stepwise evaluation using stack.
- **b)** Write a c function insert and delete operations for simple queue.
- c) Write an algorithm to insert new node at END position of doubly linked list.
- d) What are applications of linked list? Explain them
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   Preorder: F A E K C D H G B
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- **b)** Write a program for addition of two polynomials.
- **c)** Write an algorithm for
  - 1) Insert a node at middle position of single linked list.
  - 2) Insert a node at end position of single linked list.

### Section – II

### Q.4 Answer any four.

- a) Define B- Tree. List the properties of B-tree.
- b) What are the differences between B and B+ tree?
- c) Define AVL tree? Explain deletion of node in AVL tree with suitable example.
- d) Define the graph and explain adjacency list and adjacency matrix representation of graph.
- e) Write Dijkstra's algorithm to solve shortest path problem.
- f) Define following terminologies of graph with examples.
  - 1) Pendant node b) Directed graph
  - 3) Isolated graphd) Cyclic graph

### Q.5 Answer any two questions.

- a) Build step by step B+ tree for following elements of order 5
   C, H, A, B, K, L, D, E, Q, W, M, S, T, N, P, Z, Y
- b) Draw a tree for following elements using AVL trees.
  3, 5, 11, 8, 4, 1,12, 7, 2, 6, 10
- c) Write a c function for BFS and DFS of a graph.

Max. Marks: 56

Set

16

12

16

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **COMPUTER NETWORKS** Day & Date: Wednesday, 27-11-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### **MCQ/Objective Type Questions**

### **Duration: 30 Minutes**

a)

C)

c)

Prefix

Suffix

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. In classless addressing, the \_\_\_\_\_ is the varying part (similar to the hosted) 1)

- 2) In a block, the prefix length is /22; what is the mask?
  - 255.255.252.0 a)
  - c) 255.255.0.0
- 3) An endpoint of an inter-process communication flow across a computer network is called .
  - a) Pipe
  - Port c)
- 4) The server program normally uses \_\_\_\_\_ port number.
  - Dynamic a)
  - An ephemeral c)
- How can you connect to a server xyz.com over port number 1234? 5)
  - Telnet 1234 xyz.com a)
    - b) Telnet xyz.com 1234 d) Connect 1234 xyz.com Connect xyz.com 1234
- A \_\_\_\_\_ is a program providing services to the \_\_\_\_\_ program. 6)
  - a) Server-client b) Client-Server
  - Server-Server d) None c)
- FTP uses One port number (21) is used for \_\_\_\_\_ and another one for \_\_\_\_\_ 7) Direct sequence.
  - a) Data transfer, control connection
  - Socket connection, data transfer b)
  - Control connection, data transfer c)
  - Control connection, socket connection d)
- The DHCP server issues a passive open command on UDP port number 8) and waits for a client.
  - 67 a) b) 68 69 d) 70 c)
- If DHCP client and server are on different networks there is a need of an 9) intermediary called as \_\_\_\_\_.
  - Second client b) Primary server a) Relay agent C)
    - d) Bridge

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Set

Marks: 14

14

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- b) 255.255.255.0
- d) None of the mentioned
- b) Socket

b) host id

d) None

- d) None of the mentioned
- b) Well known

### d) None



- 10) After sending DHCPDISCOVER message, the client goes to the \_\_\_\_\_ state.
  - a) Selecting

a) a linear list

c) a graph

c)

a) c)

- b) Init
- Requesting d) None of these
- 11) In the DNS the names are defined in the \_\_\_\_\_ structure.
  - b) an inverted tree
  - d) a linked list
- 12) \_\_\_\_\_ is more powerful and complex than \_\_\_\_
  - a) POP3;IMAP4
  - c) SMTP;POP3

- b) IMAP4;POP3d) None of these
- 13) For control connection, FTP uses the \_\_\_\_\_ character set.a) Regular ASCIIb) EBCDIC
  - Regular ASCII NVT ASCII
    - d) All of these
- 14) When the sender is connected to the mail server via the LAN or a WAN we need only \_\_\_\_\_.
  - a) Two MTAs
  - c) Two UAs and a pair of MTAs
- b) Two UAs and two pairs of MTAs
- d) None of these

| Seat<br>No.    | :   |   |  | Set  | Ρ     |  |  |  |
|----------------|---|---|--|--|-------|--|--|--|
|                | S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>COMPUTER NETWORKS |   |  |  |       |  |  |  |
| Day &<br>Time: | & Dat<br>: 02:3   | e: Wednesday, 2<br>0 PM To 05:30 F  | 7-11-2019<br>M   | Max. Marks   | s: 56 |  |  |  |
| Instru         | uctio   | <b>ns:</b> 1) All questio<br>2) Figures to  | ns are compulsory.<br>the right indicate full mark   | S.   |       |  |  |  |
|                |   |   | Section – I  |  |       |  |  |  |
| Q.2            | Solv<br>a)<br>b)<br>c)<br>d)  | <b>e any three.</b><br>What is IP addre<br>What are the thr<br>Explain connect<br>Differentiate bet               | ssing? Explain Sub netting<br>ee phases a in TCP conne<br>on oriented concurrent ser<br>veen Iterative and concurr   | y with example.<br>ction?<br>ver with suitable diagram.<br>ent programs.         | 12    |  |  |  |
| Q.3            | Solv<br>a)<br>b)<br>c)  | <b>e any two.</b><br>Explain TCP flov<br>Explain cogitatio<br>Explain TCP ser                                     | <b>any two.</b><br>Explain TCP flow control with Sliding window protocol.<br>Explain cogitation control with open loop and closed loop.<br>Explain TCP services. |  |       |  |  |  |
|                |   |   | Section – II   |  |       |  |  |  |
| Q.4            | Atte<br>a)<br>b)<br>c)<br>d)<br>e)  | mpt any four qu<br>Explain BOOTP<br>Explain the diffe<br>Explain Out of B<br>List out in detail<br>Explain DNS qu | estions.<br>and the operations on BO<br>ent options provided by TI<br>and Signaling and Escape<br>the three steps of FTP file<br>ery and DNS response me         | OTP.<br>ELNET.<br>character concepts in TELNET.<br>transfer.<br>ssage in detail. | 12    |  |  |  |
| Q.5            | Atte<br>a)<br>b)<br>c)  | mpt any two que<br>Explain the arch<br>Explain DHCP C<br>Describe and ex<br>1) SSH Protoc                         | estions.<br>tecture of E-Mail along wit<br>peration and Configuration<br>plain<br>of stack<br>OR   | h neat diagrams of all scenarios.<br>n.  | 16    |  |  |  |
|                |   | <li>2) SSH packet</li>  | iormat.  |  |       |  |  |  |

|                  | MCQ/Objective T   | уре                | Questions  |
|------------------|---|--------------------|--|
| ration: 3        | 30 Minutes  |                    | Marks: 14  |
| <b>Cho</b><br>1) | <b>ose the correct alternatives from t</b><br>The DHCP server issues a passive<br>and waits for a client.<br>a) 67<br>c) 69 | b)<br>d)           | ptions and rewrite the sentence. 14<br>n command on UDP port number<br>68<br>70      |
| 2)               | If DHCP client and server are on dir<br>intermediary called as<br>a) Second client<br>c) Relay agent                        | fferei<br>b)<br>d) | nt networks there is a need of an<br>Primary server<br>Bridge                        |
| 3)               | After sending DHCPDISCOVER me<br>a) Selecting<br>c) Requesting  | essa<br>b)<br>d)   | ge, the client goes to the state.<br>Init<br>None of these                           |
| 4)               | In the DNS the names are defined i<br>a) a linear list<br>c) a graph  | n the<br>b)<br>d)  | e structure.<br>an inverted tree<br>a linked list                                    |
| 5)               | <ul> <li> is more powerful and complet</li> <li>a) POP3;IMAP4</li> <li>c) SMTP;POP3</li> </ul>                              | ex tha<br>b)<br>d) | an<br>IMAP4;POP3<br>None of these  |
| 6)               | For control connection, FTP uses th<br>a) Regular ASCII<br>c) NVT ASCII   | ne<br>b)<br>d)     | character set.<br>EBCDIC<br>All of these   |
| 7)               | <ul><li>When the sender is connected to the need only</li><li>a) Two MTAs</li><li>c) Two UAs and a pair of MTAs</li></ul>   | ne ma<br>b)<br>d)  | ail server via the LAN or a WAN we<br>Two UAs and two pairs of MTAs<br>None of these |
| 8)               | In classless addressing, the is<br>a) Prefix<br>c) Suffix   | s the<br>b)<br>d)  | varying part (similar to the hosted)<br>host id<br>None                              |
| 9)               | In a block, the prefix length is /22; v a) $2552552520$   | vhat               | is the mask?<br>255 255 255 0  |

### S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Information Technology COMPUTER NETWORKS**

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

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Seat

No.

- Q.1 e. 14

- *'e* 
  - 1)
    - c) 255.255.0.0 d) None of the mentioned

**SLR-FM-354** 



Set

Max. Marks: 70



- 10) An endpoint of an inter-process communication flow across a computer network is called \_\_\_\_\_.
  - Pipe a)

C)

- b) Socket
- Port d) None of the mentioned
- 11) The server program normally uses \_\_\_\_\_ port number.
  - b) Well known a) Dynamic An ephemeral c)
    - d) None
- 12) How can you connect to a server xyz.com over port number 1234?
  - a) Telnet 1234 xyz.com b) Telnet xyz.com 1234
  - Connect xyz.com 1234 d) Connect 1234 xyz.com C)
- А \_\_\_\_ is a program providing services to the \_\_\_\_\_ program. 13)
  - b) Client-Server Server-client a)
  - Server-Server d) None c)
- 14) FTP uses One port number (21) is used for \_\_\_\_\_ and another one for \_\_\_\_\_ Direct sequence.
  - a) Data transfer, control connection
  - b) Socket connection, data transfer
  - Control connection, data transfer c)
  - Control connection, socket connection d)

| Seat<br>No.   |                                    |  |  |  | Set        | Q     |  |  |
|---|------------------------------------|--|--|--|------------|-------|--|--|
| S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>COMPUTER NETWORKS |                                    |  |  |  |            |       |  |  |
| Day &<br>Time:  | & Dat<br>: 02:3                    | e: Wednesday, 2<br>0 PM To 05:30 F   | 7-11-2019<br>M   |  | Max. Marks | s: 56 |  |  |
| Instru  | uctio                              | <b>ns:</b> 1) All questio<br>2) Figures to   | ns are compulsory.<br>the right indicate full  | marks.   |            |       |  |  |
|   |                                    |  | Section  | -1   |            |       |  |  |
| Q.2   | Solv<br>a)<br>b)<br>c)<br>d)       | e any three.<br>What is IP addre<br>What are the thr<br>Explain connect<br>Differentiate bet   | essing? Explain Sub r<br>ee phases a in TCP o<br>on oriented concurre<br>ween Iterative and co                                     | etting with example.<br>connection?<br>nt server with suitable diagr<br>ncurrent programs.       | am.        | 12    |  |  |
| Q.3   | Solv<br>a)<br>b)<br>c)             | <b>e any two.</b><br>Explain TCP flow control with Sliding window protocol.<br>Explain cogitation control with open loop and closed loop.<br>Explain TCP services. |  |  |            |       |  |  |
|   |                                    |  | Section  | - 11   |            |       |  |  |
| Q.4   | Atte<br>a)<br>b)<br>c)<br>d)<br>e) | mpt any four qu<br>Explain BOOTP<br>Explain the diffe<br>Explain Out of B<br>List out in detail<br>Explain DNS que   | estions.<br>and the operations of<br>rent options provided<br>and Signaling and Es<br>the three steps of FT<br>ery and DNS respons | n BOOTP.<br>by TELNET.<br>cape character concepts in<br>P file transfer.<br>e message in detail. | TELNET.    | 12    |  |  |
| Q.5   | Atte<br>a)<br>b)<br>c)             | mpt any two que<br>Explain the arch<br>Explain DHCP C<br>Describe and ex<br>1) SSH Protoc  | estions.<br>Tecture of E-Mail alor<br>Operation and Configu<br>plain<br>ol stack   | ng with neat diagrams of all<br>ration.<br><b>OR</b>   | scenarios. | 16    |  |  |
|   |                                    |  | ionnal.  |  |            |       |  |  |

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **COMPUTER NETWORKS**

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 1)

- How can you connect to a server xyz.com over port number 1234?
  - Telnet 1234 xyz.com b) Telnet xyz.com 1234 a)
- Connect xyz.com 1234 d) Connect 1234 xyz.com c)
- 2) Α \_\_\_ is a program providing services to the \_\_\_\_\_ program.
  - a) Server-client Server-Server c)
- FTP uses One port number (21) is used for \_\_\_\_\_ and another one for \_\_\_\_\_ 3) Direct sequence.
  - a) Data transfer, control connection
  - Socket connection, data transfer b)
  - Control connection, data transfer c)
  - Control connection, socket connection d)
- The DHCP server issues a passive open command on UDP port number 4) and waits for a client.
  - 67 b) 68 a)
  - C) 69 d) 70
- If DHCP client and server are on different networks there is a need of an 5) intermediary called as \_\_\_\_\_.
  - Second client a) b) Primary server
  - d) Bridge C) Relay agent

After sending DHCPDISCOVER message, the client goes to the \_\_\_\_\_ state. 6)

- Selecting b) Init a) Requesting
- d) None of these c)
- 7) In the DNS the names are defined in the \_\_\_\_\_ structure.
  - a) a linear list b) an inverted tree c)
  - a graph d) a linked list
- is more powerful and complex than 8)
  - b) IMAP4:POP3 a) POP3;IMAP4
  - SMTP;POP3 d) None of these c)
- For control connection, FTP uses the \_\_\_\_\_ character set. 9) b) EBCDIC
  - Regular ASCII a) c)
    - NVT ASCII d) All of these

Set



b) Client-Server d) None

Seat No.

14

Marks: 14



- When the sender is connected to the mail server via the LAN or a WAN we 10) need only \_
  - Two MTAs a)

- b) Two UAs and two pairs of MTAs
- C) Two UAs and a pair of MTAs
- d) None of these
- 11) In classless addressing, the \_\_\_\_\_ is the varying part (similar to the hosted)
  - a) Prefix b) host id
  - Suffix d) None c)
- 12) In a block, the prefix length is /22; what is the mask?
  - b) 255.255.255.0
  - 255.255.0.0 d) None of the mentioned c)
- 13) An endpoint of an inter-process communication flow across a computer network is called \_\_\_\_\_.
  - Pipe a) Port

c)

a) 255.255.252.0

- b) Socket
- d) None of the mentioned
- 14) The server program normally uses \_\_\_\_\_ port number.
  - a) Dynamic
  - c) An ephemeral

b) Well known d) None

| Seat           |   |   |  |   | Set    | R     |  |  |
|----------------|---|---|--|---|--------|-------|--|--|
| NO.            |   |   |  |   |        |       |  |  |
|                | S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>COMPUTER NETWORKS |   |  |   |        |       |  |  |
| Day 8<br>Time: | & Dat<br>02:3   | e: Wednesday, 2<br>0 PM To 05:30 F  | 7-11-2019<br>M   | Max.  | Marks  | 56 56 |  |  |
| Instru         | uctio   | <b>ns:</b> 1) All questio<br>2) Figures to  | ns are compulsory.<br>the right indicate full ma   | irks.   |        |       |  |  |
|                |   |   | Section –  |   |        |       |  |  |
| Q.2            | Solv<br>a)<br>b)<br>c)<br>d)  | <b>e any three.</b><br>What is IP addre<br>What are the thr<br>Explain connect<br>Differentiate bet               | ssing? Explain Sub net<br>ee phases a in TCP con<br>on oriented concurrent s<br>ween Iterative and conc  | ing with example.<br>nection?<br>server with suitable diagram.<br>urrent programs.      |        | 12    |  |  |
| Q.3            | Solv<br>a)<br>b)<br>c)  | <b>e any two.</b><br>Explain TCP flov<br>Explain cogitatic<br>Explain TCP ser                                     | <b>any two.</b><br>Explain TCP flow control with Sliding window protocol.<br>Explain cogitation control with open loop and closed loop.<br>Explain TCP services. |   |        |       |  |  |
|                |   |   | Section –  | I   |        |       |  |  |
| Q.4            | Atte<br>a)<br>b)<br>c)<br>d)<br>e)  | mpt any four qu<br>Explain BOOTP<br>Explain the diffe<br>Explain Out of B<br>List out in detail<br>Explain DNS qu | estions.<br>and the operations on E<br>rent options provided by<br>and Signaling and Esca<br>the three steps of FTP f<br>ery and DNS response r                  | OOTP.<br>TELNET.<br>pe character concepts in TELN<br>le transfer.<br>nessage in detail. | NET.   | 12    |  |  |
| Q.5            | Atte<br>a)<br>b)<br>c)  | mpt any two que<br>Explain the arch<br>Explain DHCP C<br>Describe and ex<br>1) SSH Protoc<br>2) SSH packet        | estions.<br>tecture of E-Mail along<br>peration and Configurat<br>plain<br>ol stack<br>O<br>format.  | with neat diagrams of all scena<br>ion.<br><b>R</b>                                     | arios. | 16    |  |  |

| 1 11 11 | . 02.0           | 011                     |  |                                    |   |
|---------|------------------|-------------------------|--|------------------------------------|---|
| Insti   | uctio            | <b>ns:</b> 1            | l) Q. No. 1 is compulsory and she<br>book.   | ould                               | be solved in first 30 minutes in answer   |
|         |                  | 2                       | ) Figures to the right indicate full   | mar                                | ks.   |
|         |                  |                         | MCQ/Objective Ty   | /pe (                              | Questions   |
| Dura    | tion: 3          | 80 M                    | inutes   |                                    | Marks: 14   |
| Q.1     | <b>Cho</b><br>1) | ose<br>Afte<br>a)<br>c) | <b>the correct alternatives from th</b><br>er sending DHCPDISCOVER me<br>Selecting<br>Requesting | n <b>e o</b> j<br>ssag<br>b)<br>d) | ptions and rewrite the sentence. 14<br>le, the client goes to the state.<br>Init<br>None of these |
|         | 2)               | In tl<br>a)<br>c)       | ne DNS the names are defined ir<br>a linear list<br>a graph                                      | n the<br>b)<br>d)                  | structure.<br>an inverted tree<br>a linked list   |
|         | 3)               | a)<br>c)                | is more powerful and comple:<br>POP3;IMAP4<br>SMTP;POP3  | x tha<br>b)<br>d)                  | n<br>IMAP4;POP3<br>None of these  |
|         | 4)               | For<br>a)<br>c)         | control connection, FTP uses the<br>Regular ASCII<br>NVT ASCII                                   | e<br>b)<br>d)                      | character set.<br>EBCDIC<br>All of these  |
|         | 5)               | Wh<br>nee<br>a)<br>c)   | en the sender is connected to the<br>d only<br>Two MTAs<br>Two UAs and a pair of MTAs            | e ma<br>b)<br>d)                   | il server via the LAN or a WAN we<br>Two UAs and two pairs of MTAs<br>None of these               |
|         | 6)               | In c<br>a)<br>c)        | lassless addressing, the is<br>Prefix<br>Suffix  | the v<br>b)<br>d)                  | varying part (similar to the hosted)<br>host id<br>None   |
|         | 7)               | In a<br>a)<br>c)        | block, the prefix length is /22; w<br>255.255.252.0<br>255.255.0.0                               | hat i<br>b)<br>d)                  | s the mask?<br>255.255.255.0<br>None of the mentioned   |
|         | 8)               | An<br>netv<br>a)<br>c)  | endpoint of an inter-process com<br>work is called<br>Pipe<br>Port                               | b)<br>d)                           | ication flow across a computer<br>Socket<br>None of the mentioned                                 |
|         | 9)               | The<br>a)<br>c)         | e server program normally uses _<br>Dynamic<br>An ephemeral                                      | b)<br>d)                           | _ port number.<br>Well known<br>None  |
|         | 10)              | Hov<br>a)<br>c)         | v can you connect to a server xy:<br>Telnet 1234 xyz.com<br>Connect xyz.com 1234                 | z.cor<br>b)<br>d)                  | n over port number 1234?<br>Telnet xyz.com 1234<br>Connect 1234 xyz.com                           |
|         |                  |                         |  |                                    |   |

### S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **COMPUTER NETWORKS**

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

## **SLR-FM-354**

Set

S

Max. Marks: 70

Seat No.

Set S

- 11) A \_\_\_\_\_ is a program providing services to the \_\_\_\_\_ program.
  - Server-client a)

c)

C)

- b) Client-Server
- Server-Server d) None
- 12) FTP uses One port number (21) is used for \_\_\_\_\_ and another one for \_\_\_\_\_ Direct sequence.
  - Data transfer, control connection a)
  - Socket connection, data transfer b)
  - Control connection, data transfer c)
  - d) Control connection, socket connection
- The DHCP server issues a passive open command on UDP port number 13) \_ and waits for a client.
  - a) b) 68
  - c) 69 d) 70
- 14) If DHCP client and server are on different networks there is a need of an intermediary called as \_\_\_\_\_.
  - Second client a)
    - b) Primary server Relay agent d) Bridge
- 67

| Seat<br>No.   |                                    |   |  |  | Set        | S     |  |  |
|---|------------------------------------|---|--|--|------------|-------|--|--|
| S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>COMPUTER NETWORKS |                                    |   |  |  |            |       |  |  |
| Day &<br>Time:  | & Dat<br>: 02:3                    | e: Wednesday, 2<br>0 PM To 05:30 F  | 7-11-2019<br>M   |  | Max. Marks | s: 56 |  |  |
| Instru  | uctio                              | <b>ns:</b> 1) All questio<br>2) Figures to  | ns are compulsory.<br>the right indicate full  | marks.   |            |       |  |  |
|   |                                    |   | Section  | - I  |            |       |  |  |
| Q.2   | Solv<br>a)<br>b)<br>c)<br>d)       | <b>e any three.</b><br>What is IP addre<br>What are the thr<br>Explain connect<br>Differentiate bet   | ssing? Explain Sub n<br>ee phases a in TCP c<br>on oriented concurrer<br>ween Iterative and co                                     | etting with example.<br>onnection?<br>nt server with suitable diagr<br>ncurrent programs.        | ram.       | 12    |  |  |
| Q.3   | Solv<br>a)<br>b)<br>c)             | <b>Te any two.</b><br>Explain TCP flow control with Sliding window protocol.<br>Explain cogitation control with open loop and closed loop.<br>Explain TCP services. |  |  |            |       |  |  |
|   |                                    |   | Section  | - 11   |            |       |  |  |
| Q.4   | Atte<br>a)<br>b)<br>c)<br>d)<br>e) | mpt any four qu<br>Explain BOOTP<br>Explain the diffe<br>Explain Out of B<br>List out in detail<br>Explain DNS que  | estions.<br>and the operations or<br>ent options provided<br>and Signaling and Es<br>the three steps of FTI<br>ery and DNS respons | n BOOTP.<br>by TELNET.<br>cape character concepts in<br>P file transfer.<br>e message in detail. | TELNET.    | 12    |  |  |
| Q.5   | Atte<br>a)<br>b)<br>c)             | mpt any two que<br>Explain the arch<br>Explain DHCP C<br>Describe and ex<br>1) SSH Protoc   | estions.<br>tecture of E-Mail alor<br>peration and Configu<br>plain<br>ol stack  | ng with neat diagrams of all<br>ration.<br><b>OR</b>   | scenarios. | 16    |  |  |
|   |                                    | <li>2) 33 packet</li>   | ionnal.  |  |            |       |  |  |

| T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 |
|---|
| Information Technology                                |
| PRINCIPLES OF OPERATING SYSTEMS                       |

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if necessary.
- 3) Figure must be drawn wherever necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) In Priority scheduling a priority number (integer) is associated with each process. The CPU is allocated to the process with the highest priority (smallest integer = highest priority). The problem of. Starvation? Low priority processes may never execute, is resolved by \_\_\_\_\_.
  - a) Terminating the process b)
  - Aging c) Mutual Exclusion d) Semaphore

#### 2) A major problem with priority scheduling is

- a) Definite blocking b) Starvation
- c) Low priority d) None of these
- scheduler selects the jobs from the pool of jobs and loads into the 3) ready queue.

a) Long term Medium term

- b) Short term None of these d)
- Saving the state of the old process and loading the saved state of the new 4) process is called
  - a) Context Switch
  - c) Multi programming
- b) State None of these d)

5) A thread

c)

- Is a lightweight process where the context switching is low a)
- Is a lightweight process where the context switching is high b)
- Is used to speed up paging c)
- d) None of these
- In the running state \_\_\_\_\_ 6)
  - a) Only the process which has control of the processor is found
  - b) All the processes waiting for I/O to be completed are found
  - c) All the processes waiting for the processor are found
  - d) None of these

Max. Marks: 70

Marks: 14

- 7) The kernel of the operating system remains in the primary memory because
  - a) It is mostly called (used)
  - It manages all interrupt calls b)
  - It controls all operations in process c)
  - d) It is low level
- 8) If all page frames are initially empty, and a process is allocated 3 page frames in real memory and references its pages in the order 1 2 3 2 4 5 2 3 2 4 1 and the page replacement is FIFO, the total number of page faults caused by the process will be
  - 10 b) 7 a) c) 8
    - d) 9
- 9) Situations where two or more processes are reading or writing some shared data and the final results depends on the order of usage of the shared data, are called
  - a) Race conditions c) Mutual exclusion
- b) Critical section d) Dead locks

Set

- 10) allocates the largest hole (free fragment) available in the
  - memory. a) Best Fit

- b) Worst Fit
- First Fit None of these c) d)

11) Let S and Q be two semaphores initialized to 1, where P0 and P1 processes the following statements wait(S); wait(Q); ---; signal(S);signal(Q) and wait(Q); wait(S);—;signal(Q);signal(S); respectively. The above situation depicts a \_

- a) Semaphore b) Deadlock
- Signal d) c) Interrupt
- The process related to process control, file management, device 12) management, information about system and communication that is requested by any higher level language can be performed by \_\_\_\_\_.
  - a) Editors b) Compilers Caching
  - System Call d) c)
- 13) The solution to Critical Section Problem is: Mutual Exclusion, Progress and Bounded Waiting.
  - a) The statement is false. b) The statement is true.
  - c) The statement is contradictory d) None of these
- 14) A critical region
  - a) is a piece of code which only one process executes at a time
  - b) is a region prone to deadlock
  - c) is a piece of code which only a finite number of processes execute
  - d) is found only in Windows NT operation system

| NU.           |                              |  |           |       |
|---------------|------------------------------|--|-----------|-------|
|               |                              | T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-20<br>Information Technology<br>PRINCIPLES OF OPERATING SYSTEMS   | )19       |       |
| Day a<br>Time | & Da<br>: 02::               | te: Friday, 06-12-2019 I<br>30 PM To 05:30 PM  | Max. Mark | s: 56 |
| Instr         | uctio                        | <ul> <li><b>ons:</b> 1) All questions are compulsory.</li> <li>2) Assume suitable data if necessary.</li> <li>3) Figure must be drawn wherever necessary.</li> </ul>   |           |       |
|               |                              | Section – I  |           |       |
| Q.2           | Atte<br>a)<br>b)<br>c)<br>d) | empt the following question.<br>Explain in detail the evolution of an operating system.<br>Explain all the operations on processes.<br>Explain with example round robin and multilevel scheduling algori<br>What is critical section problem, explain Peterson's solution. | thm.      | 12    |
| Q.3           | Atte<br>a)<br>b)             | empt any one of the following question.<br>Explain any two classic problem of synchronization.<br>Explain with figure process concepts, process state, and PCB.  |           | 08    |
| Q.4           | Wri<br>a)<br>b)              | <b>te a note on (any two)</b><br>Algorithm Evaluation<br>Monitors  |           | 08    |

What operating system do c)

### Section – II

| Q.5 | Attempt the following.                                    |  |    |  |
|-----|---|--|----|--|
|     | a)  | Explain the deadlock system model and deadlock characterization.   |    |  |
|     | b) Explain with example optimal and LRU page replacement. |  |    |  |
|     | c)  | c) Explain the background and demand paging w.r.t. virtual memory. |    |  |
|     | d)  | What is paging? Explain the basic method of paging with example.   |    |  |
| Q.6 | Attempt any one   |  |    |  |
|     | a)  | ) Explain the following w.r.t. deadlock avoidance.                 |    |  |
|     |   | 1) Safe state  |    |  |
|     |   | 2) Resource Allocation Graph                                       |    |  |
|     |   | 3) Bnaker's algorithm  |    |  |
|     | b)  | Explain the most common techniques for structuring page table.     |    |  |
| Q.9 | Atte  | mpt the following. (Any two)                                       | 08 |  |

- Copy on write Recovery from deadlock a) b)
- Swapping c)

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## Seat No.

12

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Set P

| Seat |  |
|------|--|
| No.  |  |

### T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if necessary.
- 3) Figure must be drawn wherever necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Marks: 14

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) If all page frames are initially empty, and a process is allocated 3 page frames in real memory and references its pages in the order 1 2 3 2 4 5 2 3 2 4 1 and the page replacement is FIFO, the total number of page faults caused by the process will be \_
  - b) 7 a) 10
  - d) 9 c) 8
- 2) Situations where two or more processes are reading or writing some shared data and the final results depends on the order of usage of the shared data, are called

a) Race conditions

- b) Critical section c) Mutual exclusion d) Dead locks
- 3) allocates the largest hole (free fragment) available in the memory.
  - a) Best Fit

- b) Worst Fit
- First Fit None of these C) d)
- Let S and Q be two semaphores initialized to 1, where P0 and P1 4) processes the following statements wait(S);wait(Q); ---; signal(S);signal(Q) and wait(Q); wait(S);—;signal(Q);signal(S); respectively. The above situation depicts a
  - a) Semaphore b) Deadlock c) Signal d) Interrupt
- 5) The process related to process control, file management, device management, information about system and communication that is requested by any higher level language can be performed by .
  - a) Editors Compilers b)
  - c) System Call d) Caching
- The solution to Critical Section Problem is: Mutual Exclusion, Progress 6) and Bounded Waiting.
  - a) The statement is false. b) The statement is true.
  - c) The statement is contradictory d) None of these

Max. Marks: 70
#### 7) A critical region

- a) is a piece of code which only one process executes at a time
- b) is a region prone to deadlock
- c) is a piece of code which only a finite number of processes execute
- d) is found only in Windows NT operation system
- 8) In Priority scheduling a priority number (integer) is associated with each process. The CPU is allocated to the process with the highest priority (smallest integer = highest priority). The problem of. Starvation? Low priority processes may never execute, is resolved by . Aging
  - a) Terminating the process
  - c) Mutual Exclusion
- Semaphore d)

b)

- 9) A major problem with priority scheduling is
  - a) Definite blocking Starvation b) c) Low priority d)
  - None of these
- 10) scheduler selects the jobs from the pool of jobs and loads into the ready queue.
  - a) Long term

c) Medium term

b) Short term d) None of these SLR-FM-355

Set

- Saving the state of the old process and loading the saved state of the new 11) process is called \_
  - a) Context Switch
- b) State
- c) Multi programming
- d) None of these

- 12) A thread
  - Is a lightweight process where the context switching is low a)
  - b) Is a lightweight process where the context switching is high
  - c) Is used to speed up paging
  - d) None of these
- 13) In the running state
  - Only the process which has control of the processor is found a)
  - b) All the processes waiting for I/O to be completed are found
  - c) All the processes waiting for the processor are found
  - d) None of these
- The kernel of the operating system remains in the primary memory 14) because
  - a) It is mostly called (used)
  - b) It manages all interrupt calls
  - It controls all operations in process c)
  - d) It is low level

## T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS Day & Date: Friday, 06-12-2019 Max. Marks: 56 Time: 02:30 PM To 05:30 PM **Instructions:** 1) All questions are compulsory. 2) Assume suitable data if necessary. 3) Figure must be drawn wherever necessary. Section – I Attempt the following question. Explain in detail the evolution of an operating system. Explain all the operations on processes. Explain with example round robin and multilevel scheduling algorithm. What is critical section problem, explain Peterson's solution.

#### Q.3 Attempt any one of the following question.

- Explain any two classic problem of synchronization. a)
- Explain with figure process concepts, process state, and PCB. b)

#### Write a note on (any two) Q.4

- Algorithm Evaluation a)
- Monitors b)

Q.2

a)

b)

c)

d)

C) What operating system do

## Section – II

| Q.5 | Attempt the following.                         |  |
|-----|--|--|
|     | a) Example in the shear all and severations as |  |

- Explain the deadlock system model and deadlock characterization. a)
- Explain with example optimal and LRU page replacement. b)
- Explain the background and demand paging w.r.t. virtual memory. c)
- What is paging? Explain the basic method of paging with example. d)

#### Q.6 Attempt any one

- Explain the following w.r.t. deadlock avoidance. a)
  - 1) Safe state
  - 2) **Resource Allocation Graph**
  - 3) Bnaker's algorithm
- Explain the most common techniques for structuring page table. b)

#### Q.9 Attempt the following. (Any two)

- a) Copy on write
- Recovery from deadlock b)
- Swapping c)

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# T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

PRINCIPLES OF OPERATING SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if necessary.
- 3) Figure must be drawn wherever necessary.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

Marks: 14

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) A thread
  - Is a lightweight process where the context switching is low a)
  - Is a lightweight process where the context switching is high b)
  - c) Is used to speed up paging
  - d) None of these
- 2) In the running state \_\_\_\_\_
  - a) Only the process which has control of the processor is found
  - b) All the processes waiting for I/O to be completed are found
  - c) All the processes waiting for the processor are found
  - d) None of these
- 3) The kernel of the operating system remains in the primary memory because
  - a) It is mostly called (used)
  - b) It manages all interrupt calls
  - c) It controls all operations in process
  - d) It is low level

4) If all page frames are initially empty, and a process is allocated 3 page frames in real memory and references its pages in the order 1 2 3 2 4 5 2 3 2 4 1 and the page replacement is FIFO, the total number of page faults caused by the process will be .

| a)     | 10 | - | b) | 7 |
|--------|----|---|----|---|
| $\sim$ | 0  |   | ۲P | 0 |

- c) 8 d) 9
- Situations where two or more processes are reading or writing some 5) shared data and the final results depends on the order of usage of the shared data, are called \_\_\_\_\_.
  - a) Race conditions b) Critical section
  - Dead locks c) Mutual exclusion d)
- \_ allocates the largest hole (free fragment) available in the 6) memory.
  - a) Best Fit Worst Fit b)
  - c) First Fit d) None of these





Max. Marks: 70

Page 8 of 12

- 7) Let S and Q be two semaphores initialized to 1, where P0 and P1 processes the following statements wait(S);wait(Q); ---; signal(S);signal(Q) and wait(Q); wait(S);—;signal(Q);signal(S); respectively. The above situation depicts a
  - a) Semaphore Deadlock b)
  - c) Signal d) Interrupt
- The process related to process control, file management, device 8) management, information about system and communication that is requested by any higher level language can be performed by .
  - a) Editors Compilers b)
  - c) System Call d) Caching
- 9) The solution to Critical Section Problem is: Mutual Exclusion, Progress and Bounded Waiting .
  - a) The statement is false.
    - b) The statement is true.
  - The statement is contradictory C) d)
- 10) A critical region
  - a) is a piece of code which only one process executes at a time
  - b) is a region prone to deadlock
  - c) is a piece of code which only a finite number of processes execute
  - d) is found only in Windows NT operation system

11) In Priority scheduling a priority number (integer) is associated with each process. The CPU is allocated to the process with the highest priority (smallest integer = highest priority). The problem of. Starvation? Low priority processes may never execute, is resolved by \_\_\_\_

a) Terminating the process

- c) Mutual Exclusion
- A major problem with priority scheduling is 12)
  - a) Definite blocking b)
  - c) Low priority None of these
- 13) scheduler selects the jobs from the pool of jobs and loads into the ready queue.
  - a) Long term b) Short term
  - c) Medium term d) None of these
- Saving the state of the old process and loading the saved state of the new 14) process is called
  - Context Switch a)
  - Multi programming C)
- b) State None of these d)

None of these

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- Aging b)
  - Semaphore d)
  - Starvation
  - d)

#### T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS Day & Date: Friday, 06-12-2019 Max. Marks: 56 Time: 02:30 PM To 05:30 PM **Instructions:** 1) All questions are compulsory. 2) Assume suitable data if necessary. 3) Figure must be drawn wherever necessary. Section – I Attempt the following question. a) Explain in detail the evolution of an operating system. Explain all the operations on processes. b) Explain with example round robin and multilevel scheduling algorithm. C) What is critical section problem, explain Peterson's solution. d) Attempt any one of the following question. Explain any two classic problem of synchronization. a) Explain with figure process concepts, process state, and PCB. b)

#### Write a note on (any two) Q.4

- Algorithm Evaluation a)
- Monitors b)

Q.2

Q.3

C) What operating system do

#### Section – II

| Q.5 | Atte            | empt the following.  | 12 |
|-----|-----------------|--|----|
|     | a)              | Explain the deadlock system model and deadlock characterization. |    |
|     | b)              | Explain with example optimal and LRU page replacement.           |    |
|     | C)              | Explain the background and demand paging w.r.t. virtual memory.  |    |
|     | d)              | What is paging? Explain the basic method of paging with example. |    |
| Q.6 | Attempt any one |  |    |
|     | a)              | Explain the following w.r.t. deadlock avoidance.                 |    |
|     | -               | 1) Safe state  |    |
|     |                 | 2) Resource Allocation Graph                                     |    |
|     |                 | 3) Bnaker's algorithm  |    |
|     | b)              | Explain the most common techniques for structuring page table.   |    |
| Q.9 | Atte            | empt the following. (Any two)                                    | 08 |

- Copy on write a)
- Recovery from deadlock b)
- Swapping c)

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## T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if necessary.
- 3) Figure must be drawn wherever necessary.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- allocates the largest hole (free fragment) available in the 1) memory.
  - Best Fit a)
  - c) First Fit

- 2) Let S and Q be two semaphores initialized to 1, where P0 and P1 processes the following statements wait(S);wait(Q); ---; signal(S);signal(Q) and wait(Q); wait(S);—;signal(Q);signal(S);
  - respectively. The above situation depicts a \_
  - a) Semaphore b) c) Signal d)
- 3) The process related to process control, file management, device management, information about system and communication that is requested by any higher level language can be performed by \_\_\_\_\_.
  - a) Editors b) Compilers
  - Caching c) System Call d)
- The solution to Critical Section Problem is: Mutual Exclusion, Progress 4) and Bounded Waiting.
  - a) The statement is false.
    - b) The statement is true. The statement is contradictory None of these d)
- 5) A critical region

c)

- a) is a piece of code which only one process executes at a time
- b) is a region prone to deadlock
- c) is a piece of code which only a finite number of processes execute
- d) is found only in Windows NT operation system
- 6) In Priority scheduling a priority number (integer) is associated with each process. The CPU is allocated to the process with the highest priority (smallest integer = highest priority). The problem of. Starvation? Low priority processes may never execute, is resolved by \_\_\_\_\_.
  - a) Terminating the process b)
  - c) Mutual Exclusion
- Aging Semaphore d)
- 7) A major problem with priority scheduling is
  - a) Definite blocking Starvation b) c) Low priority
    - d) None of these



Marks: 14

Max. Marks: 70

- Worst Fit
- b)
- d) None of these
  - Interrupt
  - Deadlock

8) \_\_\_\_\_ scheduler selects the jobs from the pool of jobs and loads into the ready queue.

a) Long term

b) Short term

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- c) Medium term d) None of these
- 9) Saving the state of the old process and loading the saved state of the new process is called \_\_\_\_\_.
  - a) Context Switch
- b) State
- c) Multi programming d) None of these
- 10) A thread \_\_\_\_\_
  - a) Is a lightweight process where the context switching is low
  - b) Is a lightweight process where the context switching is high
  - c) Is used to speed up paging
  - d) None of these
- 11) In the running state \_\_\_\_
  - a) Only the process which has control of the processor is found
  - b) All the processes waiting for I/O to be completed are found
  - c) All the processes waiting for the processor are found
  - d) None of these
- 12) The kernel of the operating system remains in the primary memory because \_\_\_\_\_.
  - a) It is mostly called (used)
  - b) It manages all interrupt calls
  - c) It controls all operations in process
  - d) It is low level
- 13) If all page frames are initially empty, and a process is allocated 3 page frames in real memory and references its pages in the order 1 2 3 2 4 5 2 3 2 4 1 and the page replacement is FIFO, the total number of page faults caused by the process will be
  - a) 10 b) 7
  - c) 8 d) 9
- 14) Situations where two or more processes are reading or writing some shared data and the final results depends on the order of usage of the shared data, are called \_\_\_\_\_.
  - a) Race conditions
- b) Critical sectiond) Dead locks
- c) Mutual exclusion d)

# T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS e: Friday, 06-12-2019 Max.

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

| Instru | uctio                        | <ul> <li>ns: 1) All questions are compulsory.</li> <li>2) Assume suitable data if necessary.</li> <li>3) Figure must be drawn wherever necessary.</li> </ul>   |    |
|--------|------------------------------|--|----|
|        |                              | Section – I  |    |
| Q.2    | Atte<br>a)<br>b)<br>c)<br>d) | mpt the following question.<br>Explain in detail the evolution of an operating system.<br>Explain all the operations on processes.<br>Explain with example round robin and multilevel scheduling algorithm.<br>What is critical section problem, explain Peterson's solution.                  | 12 |
| Q.3    | Atte<br>a)<br>b)             | mpt any one of the following question.<br>Explain any two classic problem of synchronization.<br>Explain with figure process concepts, process state, and PCB.   | 08 |
| Q.4    | Writ<br>a)<br>b)<br>c)       | <b>e a note on (any two)</b><br>Algorithm Evaluation<br>Monitors<br>What operating system do   | 08 |
|        |                              | Section – II   |    |
| Q.5    | Atte<br>a)<br>b)<br>c)<br>d) | <b>mpt the following.</b><br>Explain the deadlock system model and deadlock characterization.<br>Explain with example optimal and LRU page replacement.<br>Explain the background and demand paging w.r.t. virtual memory.<br>What is paging? Explain the basic method of paging with example. | 12 |
| Q.6    | Attea)                       | <ul> <li>mpt any one</li> <li>Explain the following w.r.t. deadlock avoidance.</li> <li>1) Safe state</li> <li>2) Resource Allocation Graph</li> <li>3) Bnaker's algorithm</li> <li>Explain the most common techniques for structuring page table.</li> </ul>                                  | 08 |
| Q.9    | Atte<br>a)<br>b)             | mpt the following. (Any two)<br>Copy on write<br>Recovery from deadlock  | 08 |

c) Swapping

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Max. Marks: 56

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| on: 3      | 0 Mi   | nutes   |                     | Marks   |
|------------|--|---|---------------------|---|
| Choc<br>1) | o <b>se t</b><br>A m<br>a)<br>b)<br>c)<br>d) | he correct alternatives from the<br>acro prototype statement declare<br>Name of the macro<br>Name and kinds of its parameter<br>Both a & b<br>None of the above | e opt               | ions and rewrite the sentence.  |
| 2)         | Whi<br>linki<br>a)<br>c)                     | ch of the following loading methon<br>ng?<br>Relocating loader<br>Dynamic loading   | d use<br>b)<br>d)   | es various cards for relocation &<br>Direct-linking loader<br>None of these |
| 3)         | Inst<br>a)<br>c)                             | ruction cost of ADD 4(R0), *12(R <sup>2</sup><br>2<br>4   | 1) is _<br>b)<br>d) | 3<br>5  |
| 4)         | Pee<br>a)<br>b)<br>c)<br>d)                  | phole optimization uses which of<br>Redundant instruction eliminatio<br>Algebraic transformations<br>Use of machine idioms<br>All of these                      | the fo              | ollowing transformations?   |
| 5)         | Prol<br>a)<br>c)                             | blem oriented language used in la<br>Specification gap<br>Both a & b  | angua<br>b)<br>d)   | age processing affects<br>Execution gap<br>Semantic gap                     |
| 6)         | Whi<br>a)<br>c)                              | ch of the following is a Phrase-str<br>$A ::= \pi$<br>A ::= Bt t  | ructui<br>b)<br>d)  | Te grammar?<br>$\alpha ::= \beta$<br>$\alpha A\beta ::= \alpha \pi \beta$   |
| 7)         | Whi<br>proo<br>a)<br>c)                      | ch table is used to process forwa<br>gram?<br>Symbol Table & CRT<br>FRT   | rd ref<br>b)<br>d)  | erences during assembly of a<br>SRT<br>All of these                         |
| 8)         | Pars<br>a)<br>c)                             | sing table used for Predictive pars<br>Subset construction algorithm<br>Shift-reduce algorithm  | ser ca<br>b)<br>d)  | an be constructed by using<br>First & follow algorithm<br>None of these     |

Information Technology SYSTEM SOFTWARE

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### MCQ/Objective Type Questions

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Q.1

# T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019

14

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Max. Marks: 70

s: 14

|     |  |                      | SLR-FM-356                              |
|-----|--|----------------------|---|
|     |  |                      | Set P                                   |
| 9)  | Compilers are<br>a) Recursive<br>c) Re-enterable                         | b)<br>d)             | Non-reusable<br>Serially usable         |
| 10) | Number of digits used for Opcode i<br>a) 1<br>c) 3                       | n m/c i<br>b)<br>d)  | nstruction format are<br>2<br>None      |
| 11) | Regular expressions are used as ir<br>a) Assembler<br>c) LEX             | nput for<br>b)<br>d) | <br>Syntax analysis<br>YACC             |
| 12) | Which of the following is not an adv<br>a) START<br>c) EQU               | vanced<br>b)<br>d)   | assembler directive?<br>ORIGIN<br>LTORG |
| 13) | Action & Goto tables are part of<br>a) Predictive parser<br>c) LR parser | b)<br>d)             | Shift-reduce parser<br>None of these    |
| 14) | Which of the following is not a part a) Machine program                  | of Obje<br>b)        | ect modules?<br>Relocation table        |

c) Linking table

d) None of these

| Sea<br>No.    | t  |   | Set  | Ρ     |  |  |
|---------------|--|---|--|-------|--|--|
|               | T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>SYSTEM SOFTWARE |   |  |       |  |  |
| Day a<br>Time | & Da<br>: 02:  | ate: Monday, 09-12-2019<br>:30 PM To 05:30 PM   | Max. Marks   | 3: 56 |  |  |
| Instr         | ucti   | ons: 1) All questions are comp<br>2) Figure to the right indic  | ulsory.<br>ates full marks.  |       |  |  |
|               |  |   | Section – I  |       |  |  |
| Q.2           | Att<br>a)<br>b)<br>c)<br>d)<br>e)  | empt any Four.<br>What is a execution gap? Illus<br>What is a language processor<br>List the aspects of compilatior<br>How is input buffering useful?<br>What are the organizational is   | trate.<br>? Give examples.<br>sues in assembler design?  | 08    |  |  |
| 03            | ری<br>۸++  | omnt any Two  |  | 10    |  |  |
| <b>Q</b> .5   | a)<br>b)<br>c)   | List the language processing a<br>Compare between:<br>1) Problem and procedure o<br>2) Compilers and assembler<br>State and elaborate on the co   | activities and explain each in detail.<br>riented languages<br>s<br>mponents of assembly language programming?           | ?     |  |  |
|               |  | Illustrate each.  |  |       |  |  |
| Q.4           | Att<br>a)<br>b)<br>c)  | empt any One.<br>What are sentinels? Illustrate<br>Explain the concept of Nested<br>Explain the role of a analyzer  | their use.<br>macro. How do they work?<br>n compilers.   | 10    |  |  |
|               |  |   | Section – II   |       |  |  |
| Q.5           | Att<br>a)<br>b)<br>c)<br>d)<br>e)  | empt any Four.<br>Give the characteristics of a b<br>What are pre address codes?<br>What are the situations under<br>What is relocation factor? What<br>List the different loader schem   | asic block.<br>which relocation is required?<br>at values is it permitted to take?<br>es.                                | 08    |  |  |
| Q.6           | Att  | empt any Two.   |  | 10    |  |  |
|               | a)<br>b)<br>c)   | <ul> <li>How relocation factor is calcul<br/>and find relocation factor.</li> <li>Develop a design of a linker in<br/>Explain steps involved in designation</li> <li>Compile and go loader</li> <li>Direct linking loaders</li> </ul> | ated? Take examples of different situations<br>form of an algorithm?<br>gn of –  |       |  |  |
| Q.7           | Att  | empt any One.   |  | 10    |  |  |
|               | a)<br>b)<br>c)   | List the cards used in Direct L<br>What are Subroutine linkages<br>scheme.<br>What is Peephole Optimizatio  | nking Loaders and give functions of each.<br>? Give its involvement in Relocating Loader<br>n? Give its characteristics. |       |  |  |

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#### Information Technology SYSTEM SOFTWARE Day & Date: Monday, 09-12-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM **Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Figures to the right indicate full marks. **MCQ/Objective Type Questions** Choose the correct alternatives from the options and rewrite the sentence. Parsing table used for Predictive parser can be constructed by using 1) Subset construction algorithm First & follow algorithm b) a) Shift-reduce algorithm None of these c) d) 2) Compilers are \_\_\_\_\_. Recursive a) b) Non-reusable

**Duration: 30 Minutes** 

Seat

No.

## Q.1

c) Re-enterable d) Serially usable

#### Number of digits used for Opcode in m/c instruction format are \_\_\_\_\_. 3)

- a) 1 b) 2
- c) 3 d) None
- 4) Regular expressions are used as input for \_
  - a) Assembler b) Syntax analysis LEX YACC c) d)
- Which of the following is not an advanced assembler directive? 5)
  - START ORIGIN b) a)
  - c) EQU d) LTORG
- Action & Goto tables are part of \_\_\_\_ 6)
  - a) Predictive parser b) Shift-reduce parser LR parser d) None of these c)
- 7) Which of the following is not a part of Object modules?
  - Machine program Relocation table a) b)
  - Linking table None of these d) C)
- A macro prototype statement declares \_\_\_\_\_. 8)
  - Name of the macro a)
  - b) Name and kinds of its parameters
  - Both a & b c)
  - None of the above d)
- Which of the following loading method uses various cards for relocation & 9) linkina?
  - Relocating loader a) b) **Direct-linking loader**
  - Dynamic loading d) None of these c)

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Marks: 14

14

Set T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019

Set | C

- Instruction cost of ADD 4(R0), \*12(R1) is \_ 10)
  - 3 2 b) a) 5
  - C) 4 d)
- Peephole optimization uses which of the following transformations? 11)
  - Redundant instruction elimination a)
  - Algebraic transformations b)
  - Use of machine idioms c)
  - d) All of these

#### 12) Problem oriented language used in language processing affects \_\_\_\_\_.

- a) Specification gap
  - b) Execution gap
- c) Both a & b d) Semantic gap
- 13) Which of the following is a Phrase-structure grammar?
  - a)  $A := \pi$ b)  $\alpha ::= \beta$
  - d)  $\alpha A\beta ::= \alpha \pi \beta$ c) A ::= Bt|t
- Which table is used to process forward references during assembly of a 14) program?
  - a) Symbol Table & CRT
  - c) FRT

- b) SRT
- d) All of these

| Sea<br>No.  | t  |  |   | Set   | Q     |  |
|-------------|--|--|---|---|-------|--|
|             | T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>SYSTEM SOFTWARE |  |   |   |       |  |
| Day<br>Time | & Da<br>: 02:  | ite: Monday, 09-12<br>30 PM To 05:30 P   | -2019<br>M  | Max. Marks  | s: 56 |  |
| Instr       | ucti   | ons: 1) All questio<br>2) Figure to t  | ns are compulsory.<br>ne right indicates full marks.  |   |       |  |
|             |  |  | Section – I   |   |       |  |
| Q.2         | Att<br>a)<br>b)<br>c)<br>d)  | empt any Four.<br>What is a executi<br>What is a languag<br>List the aspects of<br>How is input buffe<br>What are the organism | on gap? Illustrate.<br>Je processor? Give example<br>f compilation.<br>Pring useful?  | S.<br>Ier design?   | 08    |  |
| 0.2         | ۰)<br>میں  | what are the orga  |   |   | 10    |  |
| Q.3         | a)<br>b)<br>c)   | List the language<br>Compare betwee<br>1) Problem and<br>2) Compilers an<br>State and elabora                                  | processing activities and ex<br>n:<br>procedure oriented languag<br>d assemblers<br>te on the components of ass             | plain each in detail.<br>es<br>sembly language programming'               | ?     |  |
|             | ,  | Illustrate each.   | ·   | ,                                   |       |  |
| Q.4         | Att<br>a)<br>b)<br>c)  | empt any One.<br>What are sentine<br>Explain the conce<br>Explain the role o   | s? Illustrate their use.<br>pt of Nested macro. How do<br>f a analyzer in compilers.  | they work?  | 10    |  |
|             |  |  | Section – II  |   |       |  |
| Q.5         | Att<br>a)<br>b)<br>c)<br>d)<br>e)  | empt any Four.<br>Give the characte<br>What are pre add<br>What are the situ<br>What is relocation<br>List the different I     | ristics of a basic block.<br>ress codes?<br>ations under which relocation<br>factor? What values is it pe<br>pader schemes. | n is required?<br>rmitted to take?  | 08    |  |
| Q.6         | Att  | empt any Two.  |   |   | 10    |  |
|             | a)<br>b)<br>c)   | How relocation fa<br>and find relocatio<br>Develop a design<br>Explain steps inve<br>1) Compile and<br>2) Direct linking       | ctor is calculated? Take exa<br>n factor.<br>of a linker in form of an algo<br>olved in design of –<br>go loader<br>loaders | mples of different situations   |       |  |
| Q.7         | Att  | empt any One.  |   |   | 10    |  |
|             | a)<br>b)<br>c)   | List the cards use<br>What are Subrou<br>scheme.<br>What is Peephole   | d in Direct Linking Loaders a<br>ine linkages? Give its involv<br>Optimization? Give its char                               | and give functions of each.<br>ement in Relocating Loader<br>acteristics. |       |  |

|             |                  |                           | Information Te<br>SYSTEM SO   | echn<br>FTW                       | ology<br>ARE   |
|-------------|------------------|---------------------------|---|-----------------------------------|--|
| Day<br>Time | & Date:<br>02:3  | e: Mo<br>80 PN            | onday, 09-12-2019<br>1 To 05:30 PM  |                                   | Max. Marks: 70   |
| Insti       | ructio           | <b>ns:</b> 1              | ) Q. No. 1 is compulsory and sho  | uld b                             | e solved in first 30 minutes in answer   |
|             |                  | 2)                        | Figures to the right indicate fu  | ıll ma                            | arks.  |
|             |                  |                           | MCQ/Objective Ty  | pe Q                              | uestions   |
| Dura        | ation: 3         | 30 Mi                     | nutes   |                                   | Marks: 14  |
| Q.1         | <b>Cho</b><br>1) | ose t<br>Prol<br>a)<br>c) | <b>he correct alternatives from the</b><br>olem oriented language used in la<br>Specification gap<br>Both a & b | <b>e opt</b><br>angua<br>b)<br>d) | ions and rewrite the sentence. 14<br>age processing affects<br>Execution gap<br>Semantic gap |
|             | 2)               | Whi<br>a)<br>c)           | ch of the following is a Phrase-st<br>$A ::= \pi$<br>A ::= Bt t   | ructu<br>b)<br>d)                 | $\begin{array}{l} \alpha ::= \beta \\ \alpha A\beta ::= \alpha \pi \beta \end{array}$        |
|             | 3)               | Whi<br>prog<br>a)<br>c)   | ch table is used to process forwa<br>gram?<br>Symbol Table & CRT<br>FRT   | rd ref<br>b)<br>d)                | ferences during assembly of a<br>SRT<br>All of these   |
|             | 4)               | Pars<br>a)<br>c)          | sing table used for Predictive pars<br>Subset construction algorithm<br>Shift-reduce algorithm                  | ser ca<br>b)<br>d)                | an be constructed by using<br>First & follow algorithm<br>None of these                      |
|             | 5)               | Con<br>a)<br>c)           | npilers are<br>Recursive<br>Re-enterable  | b)<br>d)                          | Non-reusable<br>Serially usable  |
|             | 6)               | Nun<br>a)<br>c)           | nber of digits used for Opcode in<br>1<br>3   | m/c i<br>b)<br>d)                 | nstruction format are<br>2<br>None   |
|             | 7)               | Reg<br>a)<br>c)           | jular expressions are used as inp<br>Assembler<br>LEX   | ut for<br>b)<br>d)                | Syntax analysis<br>YACC  |
|             | 8)               | Whi<br>a)<br>c)           | ch of the following is not an adva<br>START<br>EQU  | nced<br>b)<br>d)                  | assembler directive?<br>ORIGIN<br>LTORG  |
|             | 9)               | Acti<br>a)<br>c)          | on & Goto tables are part of<br>Predictive parser<br>LR parser  | b)<br>d)                          | Shift-reduce parser<br>None of these   |
|             | 10)              | Whi<br>a)<br>c)           | ch of the following is not a part of<br>Machine program<br>Linking table  | f Obj∉<br>b)<br>d)                | ect modules?<br>Relocation table<br>None of these  |

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019

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Set R

#### 11) A macro prototype statement declares \_\_\_\_\_.

- a) Name of the macro
- b) Name and kinds of its parameters
- c) Both a & b
- d) None of the above
- 12) Which of the following loading method uses various cards for relocation & linking?
  - a) Relocating loader b)
    - b) Direct-linking loader

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Set R

- c) Dynamic loading d) None of these
- 13) Instruction cost of ADD 4(R0), \*12(R1) is \_\_\_\_
  - a) 2 b) 3
  - c) 4 d) 5
- 14) Peephole optimization uses which of the following transformations?
  - a) Redundant instruction elimination
  - b) Algebraic transformations
  - c) Use of machine idioms
  - d) All of these

| Seat          | t  |  | Set                   | R     |  |  |
|---------------|--|--|-----------------------|-------|--|--|
|               | T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>SYSTEM SOFTWARE |  |                       |       |  |  |
| Day &<br>Time | & Da<br>: 02:  | ate: Monday, 09-12-2019<br>::30 PM To 05:30 PM   | Max. Marks            | s: 56 |  |  |
| Instr         | ucti   | <ul><li>ions: 1) All questions are compulsory.</li><li>2) Figure to the right indicates full marks.</li></ul>  |                       |       |  |  |
|               |  | Section – I  |                       |       |  |  |
| Q.2           | Att<br>a)<br>b)<br>c)<br>d)<br>e)  | tempt any Four.<br>What is a execution gap? Illustrate.<br>What is a language processor? Give examples.<br>List the aspects of compilation.<br>How is input buffering useful?<br>What are the organizational issues in assembler design?                                   |                       | 08    |  |  |
| 0 2           | ۰)<br>۸.++   |  |                       | 10    |  |  |
| Q.3           | a)<br>b)<br>c)   | <ul> <li>List the language processing activities and explain each in detai<br/>Compare between:</li> <li>1) Problem and procedure oriented languages</li> <li>2) Compilers and assemblers</li> <li>State and elaborate on the components of assembly language p</li> </ul> | I.<br>programming?    | ?     |  |  |
|               | -  | Illustrate each.   |                       |       |  |  |
| Q.4           | Att<br>a)<br>b)<br>c)  | tempt any One.<br>What are sentinels? Illustrate their use.<br>Explain the concept of Nested macro. How do they work?<br>Explain the role of a analyzer in compilers.  |                       | 10    |  |  |
|               |  | Section – II   |                       |       |  |  |
| Q.5           | Att<br>a)<br>b)<br>c)<br>d)<br>e)  | tempt any Four.<br>Give the characteristics of a basic block.<br>What are pre address codes?<br>What are the situations under which relocation is required?<br>What is relocation factor? What values is it permitted to take?<br>List the different loader schemes.       |                       | 08    |  |  |
| Q.6           | Att<br>a)  | tempt any Two.<br>How relocation factor is calculated? Take examples of different<br>and find relocation factor.   | situations            | 10    |  |  |
|               | c)   | Explain steps involved in design of –<br>1) Compile and go loader<br>2) Direct linking loaders   |                       |       |  |  |
| Q.7           | Att  | tempt any One.   |                       | 10    |  |  |
|               | a)<br>b)<br>c)   | List the cards used in Direct Linking Loaders and give functions<br>What are Subroutine linkages? Give its involvement in Relocatin<br>scheme.<br>What is Peephole Optimization? Give its characteristics.   | of each.<br>ng Loader |       |  |  |

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| NO.         |                   |  |
|-------------|-------------------|--|
|             |                   | T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>SYSTEM SOFTWARE   |
| Day<br>Time | & Date<br>: 02:3  | Monday, 09-12-2019 Max. Marks: 70<br>PM To 05:30 PM  |
| Instr       | uctio             | <b>:</b> 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.  |
|             |                   | <ol><li>Figures to the right indicate full marks.</li></ol>  |
|             |                   | MCQ/Objective Type Questions   |
| Dura        | tion: 3           | Minutes Marks: 14  |
| Q.1         | <b>Choo</b><br>1) | e the correct alternatives from the options and rewrite the sentence.14Number of digits used for Opcode in m/c instruction format areb)2b)2b)2c)3d)None                                    |
|             | 2)                | Regular expressions are used as input for<br>) Assembler b) Syntax analysis<br>) LEX d) YACC   |
|             | 3)                | Vhich of the following is not an advanced assembler directive?)STARTb)ORIGINc)EQUd)LTORG   |
|             | 4)                | Action & Goto tables are part of<br>Predictive parser b) Shift-reduce parser<br>Character b) None of these   |
|             | 5)                | Vhich of the following is not a part of Object modules?)Machine program)Linking table)d)   |
|             | 6)                | <ul> <li>macro prototype statement declares</li> <li>Name of the macro</li> <li>Name and kinds of its parameters</li> <li>Both a &amp; b</li> <li>None of the above</li> </ul>             |
|             | 7)                | Vhich of the following loading method uses various cards for relocation &nking?)Relocating loader)Direct-linking loader)Dynamic loadingd)None of these                                     |
|             | 8)                | nstruction cost of ADD 4(R0), *12(R1) is<br>b) 2 b) 3<br>c) 4 d) 5   |
|             | 9)                | Peephole optimization uses which of the following transformations? <ul> <li>Redundant instruction elimination</li> <li>Algebraic transformations</li> <li>Use of machine idioms</li> </ul> |

Seat No.

d)

All of these

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Set S



- 10) Problem oriented language used in language processing affects \_\_\_\_\_.
  - a) Specification gap
- b) Execution gap
- Both a & b d)
- d) Semantic gap
- 11) Which of the following is a Phrase-structure grammar?
  - a)  $A ::= \pi$  b)  $\alpha ::= \beta$
  - c) A ::= Bt|t d)  $\alpha A\beta ::= \alpha \pi \beta$
- 12) Which table is used to process forward references during assembly of a program?
  - a) Symbol Table & CRT
  - c) FRT
- b) SRT d) All of these
- 13) Parsing table used for Predictive parser can be constructed by using \_\_\_\_\_.
  - a) Subset construction algorithmc) Shift-reduce algorithm
- b) First & follow algorithmd) None of these
- 14) Compilers are \_\_\_\_\_.

C)

- a) Recursive
- c) Re-enterable

- b) Non-reusable
- d) Serially usable

| No.                           |  |   |   |   |  | Set             | Э         |
|-------------------------------|--|---|---|---|--|-----------------|-----------|
|                               | T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>SYSTEM SOFTWARE |   |   |   |  |                 |           |
| Day a<br>Time<br><b>Instr</b> | & Da<br>: 02:<br><b>ucti</b>   | te: Monday, 09-12<br>30 PM To 05:30 P<br><b>ons:</b> 1) All questio<br>2) Figure to t   | 2-2019<br>PM<br>Ins are comput<br>he right indica   | sory.<br>tes full marks.  |  | 1ax. Marks      | 56 :: 56  |
|                               |  |   | S   | ection – I  |  |                 |           |
| Q.2                           | Att<br>a)<br>b)<br>c)<br>d)<br>e)  | empt any Four.<br>What is a executi<br>What is a langua<br>List the aspects of<br>How is input buff<br>What are the org                   | ion gap? Illusti<br>ge processor?<br>of compilation.<br>ering useful?<br>anizational iss        | rate.<br>Give examples.<br>ues in assembler                     | design?  |                 | 08        |
| Q.3                           | Att<br>a)<br>b)<br>c)  | empt any Two.<br>List the language<br>Compare betwee<br>1) Problem and<br>2) Compilers ar<br>State and elabora<br>Illustrate each.        | e processing a<br>en:<br>I procedure ori<br>nd assemblers<br>ate on the com                     | ctivities and expla<br>ented languages<br>ponents of assen      | in each in detail.<br>nbly language prog                   | gramming        | <b>10</b> |
| Q.4                           | Att<br>a)<br>b)<br>c)  | empt any One.<br>What are sentine<br>Explain the conce<br>Explain the role c  | lls? Illustrate the<br>pt of Nested i<br>of a analyzer ir                                       | neir use.<br>macro. How do th<br>n compilers.                   | ey work?   |                 | 10        |
|                               |  |   | S   | ection – II   |  |                 |           |
| Q.5                           | Att<br>a)<br>b)<br>c)<br>d)<br>e)  | empt any Four.<br>Give the characte<br>What are pre add<br>What are the situ<br>What is relocation<br>List the different                  | eristics of a ba<br>dress codes?<br>lations under v<br>n factor? Wha<br>loader scheme           | sic block.<br>which relocation is<br>t values is it perm<br>es. | required?<br>itted to take?                                |                 | 08        |
| Q.6                           | Att<br>a)<br>b)<br>c)  | empt any Two.<br>How relocation fa<br>and find relocation<br>Develop a design<br>Explain steps inv<br>1) Compile and<br>2) Direct linking | actor is calcula<br>on factor.<br>o of a linker in<br>olved in design<br>go loader<br>l loaders | ted? Take examp<br>form of an algorith<br>n of –                | nm?  | ations          | 10        |
| Q.7                           | Atte<br>a)<br>b)<br>c)   | empt any One.<br>List the cards use<br>What are Subrou<br>scheme.<br>What is Peephole   | ed in Direct Lir<br>itine linkages?<br>e Optimization   | iking Loaders and<br>Give its involvem<br>? Give its charact    | d give functions of e<br>lent in Relocating L<br>eristics. | each.<br>.oader | 10        |

SLR-FM-356 Sot S

Seat

# T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

**DESIGN & ANALYSIS OF ALGORITHMS** 

Day & Date: Wednesday, 11-12-2019

Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

#### **Duration: 30 Minutes**

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 1) Which of the following is true about Huffman code?

- Huffman code may become lossy in some cases a)
- Huffman code may not be lossless in some cases b)
- In Huffman code, no code is prefix of other code C)
- None of the above d)
- 2) The time complexity of binary search is
  - O(1) b) O(log n) a) c) O(n) d) O(n logn)
- For a given graph, minimum cost of Spanning tree is \_\_\_\_\_ 3)

4 5 7 b) 6 a) C) 12 d) 10 Algorithm sum(A[],n) 4) { sum = 0;for i = 1 to n sum = sum + A[i];return sum; } Step count of the algorithm is b) n+3 a) n 2n+3 C) d) 2n+2 For messages with given frequencies (2, 3, 5, 7, 9, 13), what will be total 5) decode time \_\_\_\_\_. a) 39 93 b) 89 d) 132 C) If Deadlines are (2, 2, 3, 3, 3) of 5 jobs, how many maximum jobs can be 6) completed? 3

2 b) a) 4 C) d) 5 SLR-FM-357

Max. Marks: 70

Marks: 14



1 3 2

Set 7) Kruskal's algorithm is for finding . a) All pairs shortest path Single source shortest path b) Minimum cost spanning tree C) d) Minimum cost tour The correct matching for the following pairs are \_\_\_\_\_. 8) Optimal Binary Search Tree 1. Backtracking A. NP Complete B. 2. Dynamic Programming C. Hamilton Cycle 3. Branch and Bound a) A-3, B-2, C-1 b) A-2, B-3, C-1 c) A-2, B-1, C-4 d) none 9) In flow shop scheduling OFT stands for \_ **Optimal Find Time Organized Finish Time** b) a) **Optimal Finish Time** d) None c) 10) Dynamic programming works on principle of \_ a) Optimality b) Feasible solutions Constraint d) None c) 11) If two queen are placed at positions (i, j) and (k, l). They are on the same diagnol iff a) |j-k|=|i-k| b) |j-l|=|i-k| |i-j|=|k-l| d) None c) Graph coloring problem is which type of algorithm design strategy. 12) a) Dynamic Programming b) **Greedy Method** c) Backtracking d) None 13) Travelling Sales Man problem belongs to which of the class? Р b) NP a) c) Linear d) None of the mentioned 14) The hardest of NP problems can be \_ NP-complete NP-hard b) a) None of the mentioned c) Ρ d)

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## Seat No.

## T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DESIGN & ANALYSIS OF ALGORITHMS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Assume suitable data if necessary.

#### Section - I

## Q.2 Attempt any three of the following questions.

- **a)** Plot the graph of functions n, logn, nlogn,  $n^2$ ,  $n^3$  for n=1, 2, 3, 4, 5.
- b) Find an optimal binary tree merge pattern for 10 files whose lengths are
  i) 28, 32, 12, 5, 84, 53, 91, 35, 3, 11
- c) If a shopkeeper wants to return amount of Rs. 27 using the coins of Rs. 1, 2, 5, 10 with availability of coins are 1, 2, 5, 5 respectively. What are different ways in which shopkeeper will return amount. Which will be the optimal solution in terms of minimum number of coins?
- d) Find step count of the following algorithm

```
Algorithm Mult (a, b, c, n)
{
    for i:= 1 to n do
    for j= 1 to n do
    {
        c[i, j] := 0;
        for k= 1 to n do
            c[i,j] := c[i,j] + a[i,j] * b[i,j]
    }
}
```

## Q.3 Attempt any one of the following questions.

0

A

В

C

3

a) Write an algorithm for assigning programs to more than one tape. Find an optimal placement for 10 programs on four tapes where programs are of length 12, 5, 6, 7, 13, 8, 23, 19, 20, 23.

4

6

D

2

E

F

8

**b)** Find minimum cost spanning tree using Prime's algorithm.



**08** 

Set

Max. Marks: 56

#### Section – II

06

10

2

20

#### Q.5 Attempt any three of the following questions.

- a) Write a note on reliability design with example.
- b) Solve 0/1 Knapsack problem using dynamic programming M=6, n=3 profit= {1, 2, 5} and weight= {2, 3, 5}.
- c) Find all pair shortest path using dynamic programming.

d) Write brief note on P, NP, NP - complete and NP – Hard problems.

1

03

#### Q.6 Attempt any one of the following questions.

Use optimal binary search tree to generate a tree on following data N=4 and identifier (a1,a2,a3,a4)=(do,if,int,while) p(1:4)=(3,31,1) and q(0:4)=(2,3,1,1,1)

3

OR

Given  $W[1:6] = \{5,10,12,13,15,18\}$ , m=30 and n=6. Find all possible subsets of w that sum to m. draw the portion of the state space tree that is generated.

Q.7 Find minimum cost path from s to t multistage graph using backward approach. 08



Ρ

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Set

# T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **DESIGN & ANALYSIS OF ALGORITHMS**

Day & Date: Wednesday, 11-12-2019

Time: 02:30 PM To 05:30 PM

**Duration: 30 Minutes** 

Seat

No.

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

d) none

None

**Organized Finish Time** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14 1) The correct matching for the following pairs are \_ Optimal Binary Search Tree 1. Backtracking Α. **NP** Complete **Dynamic** Programming B. 2. C. Hamilton Cycle 3. Branch and Bound b) A-2, B-3, C-1

- A-3, B-2, C-1 a)
- C) A-2, B-1, C-4

2) In flow shop scheduling OFT stands for \_

- **Optimal Find Time** a) b) d)
- **Optimal Finish Time** c)

3) Dynamic programming works on principle of

- Optimality Feasible solutions b) a)
- Constraint d) None C)
- If two queen are placed at positions (i, j) and (k, l). They are on the same 4) diagnol iff
  - |j-k|=|i-k| b) |j-l|=|i-k| a)
  - |i-j|=|k-l| d) None c)
- Graph coloring problem is which type of algorithm design strategy. 5)
  - Dynamic Programming **Greedy Method** a) b)
    - Backtracking d) None c)
- Travelling Sales Man problem belongs to which of the class? 6)
  - a) Ρ b) NP
  - Linear d) None of the mentioned c)
- 7) The hardest of NP problems can be \_
  - b) NP-hard NP-complete a)
  - c) d) Ρ None of the mentioned
- Which of the following is true about Huffman code? 8)
  - Huffman code may become lossy in some cases a)
  - Huffman code may not be lossless in some cases b)
  - In Huffman code, no code is prefix of other code c)
  - None of the above d)
- 9) The time complexity of binary search is
  - O(1) O(log n) a) b) O(n logn) c) O(n)d)

SLR-FM-357



Max. Marks: 70

Marks: 14

|     |  |             | Set Q                              |
|-----|--|-------------|------------------------------------|
| 10) | For a given graph, minimum cost of   | Spanni      | ing tree is                        |
|     | 4  | 1<br>3<br>5 |                                    |
|     | a) 7   | b)          | 6                                  |
|     | c) 12  | a)          | 10                                 |
| 11) | Algorithm sum(A[],n)   |             |                                    |
|     | <pre>sum = 0; for i = 1 to n     sum = sum + A[i]; return sum; }</pre>   |             |                                    |
|     | Step count of the algorithm is   |             |                                    |
|     | a) n   | b)          | n+3                                |
|     | c) 2n+3  | a)          | 2n+2                               |
| 12) | For messages with given frequencies  | s (2, 3,    | , 5, 7, 9, 13), what will be total |
|     | a) 39  | b)          | 93                                 |
|     | c) 89  | d)          | 132                                |
| 13) | If Deadlines are (2, 2, 3, 3, 3) of 5 jol<br>completed?  | os, hov     | w many maximum jobs can be         |
|     | a) 2   | b)          | 3                                  |
|     | c) 4   | d)          | 5                                  |
| 14) | <ul> <li>Kruskal's algorithm is for finding</li> <li>a) All pairs shortest path</li> <li>b) Single source shortest path</li> </ul> | <u> </u> .  |                                    |

- c) Minimum cost spanning treed) Minimum cost tour

Set

## Seat No.

T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DESIGN & ANALYSIS OF ALGORITHMS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Assume suitable data if necessary.

#### Section – I

## Q.2 Attempt any three of the following questions.

- **a)** Plot the graph of functions n, logn, nlogn,  $n^2$ ,  $n^3$  for n=1, 2, 3, 4, 5.
- b) Find an optimal binary tree merge pattern for 10 files whose lengths are
  i) 28, 32, 12, 5, 84, 53, 91, 35, 3, 11
- c) If a shopkeeper wants to return amount of Rs. 27 using the coins of Rs. 1, 2, 5, 10 with availability of coins are 1, 2, 5, 5 respectively. What are different ways in which shopkeeper will return amount. Which will be the optimal solution in terms of minimum number of coins?
- d) Find step count of the following algorithm

```
Algorithm Mult (a, b, c, n)
{
    for i:= 1 to n do
    for j= 1 to n do
    {
        c[i, j] := 0;
        for k= 1 to n do
            c[i,j] := c[i,j] + a[i,j] * b[i,j]
    }
}
```

## Q.3 Attempt any one of the following questions.

- a) Write an algorithm for assigning programs to more than one tape. Find an optimal placement for 10 programs on four tapes where programs are of length 12, 5, 6, 7, 13, 8, 23, 19, 20, 23.
- **b)** Find minimum cost spanning tree using Prime's algorithm.





12

Q.4 Draw binary search tree for given elements. Calculate average number of comparisons for successful search and unsuccessful search. 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

#### Section – II

06

10

2

20

#### **Q.5** Attempt any three of the following questions.

- a) Write a note on reliability design with example.
- **b)** Solve 0/1 Knapsack problem using dynamic programming
  - M=6, n=3 profit= {1, 2, 5} and weight= {2, 3, 5}.
- c) Find all pair shortest path using dynamic programming.

**d)** Write brief note on P, NP, NP - complete and NP – Hard problems.

1

03

#### Q.6 Attempt any one of the following questions.

Use optimal binary search tree to generate a tree on following data N=4 and identifier (a1,a2,a3,a4)=(do,if,int,while) p(1:4)=(3,31,1) and q(0:4)=(2,3,1,1,1)

3

OR

Given  $W[1:6] = \{5,10,12,13,15,18\}$ , m=30 and n=6. Find all possible subsets of w that sum to m. draw the portion of the state space tree that is generated.

Q.7 Find minimum cost path from s to t multistage graph using backward approach. 08



12

08

08

## SLR-FM-357 Set Q

| Dura | tion: 3   | 30 Mi                       | nutes  |                        | Marks  | s: 14 |
|------|---|-----------------------------|--|------------------------|--|-------|
| Q.1  | <ul> <li>Choose the correct alternatives from the options and rewrite the sentence.</li> <li>For messages with given frequencies (2, 3, 5, 7, 9, 13), what will be total decode time .</li> </ul> |                             |  |                        |  | 14    |
|      |   | a)<br>c)                    | 39<br>89   | b)<br>d)               | 93<br>132  |       |
|      | 2)  | If Do<br>com                | eadlines are (2, 2, 3, 3, 3) of 5 job<br>npleted?<br>2   | s, ho<br>b)            | w many maximum jobs can be                                       |       |
|      |   | а)<br>С)                    | 4  | d)                     | 5  |       |
|      | 3)  | Kru<br>a)<br>b)<br>c)<br>d) | skal's algorithm is for finding<br>All pairs shortest path<br>Single source shortest path<br>Minimum cost spanning tree<br>Minimum cost tour |                        |  |       |
|      | 4)  | The<br>A.<br>B.<br>C.       | correct matching for the following<br>Optimal Binary Search Tree<br>NP Complete<br>Hamilton Cycle  | pair<br>1.<br>2.<br>3. | s are<br>Backtracking<br>Dynamic Programming<br>Branch and Bound |       |
|      |   | a)<br>c)                    | A-3, B-2, C-1<br>A-2, B-1, C-4   | b)<br>d)               | A-2, B-3, C-1<br>none  |       |
|      | 5)  | In fl<br>a)<br>c)           | ow shop scheduling OFT stands f<br>Optimal Find Time<br>Optimal Finish Time  | or<br>b)<br>d)         | <br>Organized Finish Time<br>None                                |       |
|      | 6)  | Dyn<br>a)<br>c)             | amic programming works on princ<br>Optimality<br>Constraint  | ciple<br>b)<br>d)      | of<br>Feasible solutions<br>None                                 |       |
|      | 7)  | lf tw<br>diag<br>a)<br>c)   | vo queen are placed at positions (i<br>gnol iff<br> j-k = i-k <br> i-j = k-l   | , j) a<br>b)<br>d)     | nd (k, l). They are on the same<br> j-l = i-k <br>None           |       |
|      | 8)  | Gra<br>a)<br>c)             | ph coloring problem is which type<br>Dynamic Programming<br>Backtracking   | of al<br>b)<br>d)      | gorithm design strategy.<br>Greedy Method<br>None                |       |

## T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

**DESIGN & ANALYSIS OF ALGORITHMS** 

Day & Date: Wednesday, 11-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

# **SLR-FM-357**

Max. Marks: 70

Set

R





Set R

08

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## **SLR-FM-357**

# T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019

Information Technology

**DESIGN & ANALYSIS OF ALGORITHMS** 

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Assume suitable data if necessary.

## Section - I

## Q.2 Attempt any three of the following questions.

- **a)** Plot the graph of functions n, logn, nlogn,  $n^2$ ,  $n^3$  for n=1, 2, 3, 4, 5.
- b) Find an optimal binary tree merge pattern for 10 files whose lengths are
  i) 28, 32, 12, 5, 84, 53, 91, 35, 3, 11
- c) If a shopkeeper wants to return amount of Rs. 27 using the coins of Rs. 1, 2, 5, 10 with availability of coins are 1, 2, 5, 5 respectively. What are different ways in which shopkeeper will return amount. Which will be the optimal solution in terms of minimum number of coins?
- d) Find step count of the following algorithm

```
Algorithm Mult (a, b, c, n)
{
    for i:= 1 to n do
    for j= 1 to n do
    {
        c[i, j] := 0;
        for k= 1 to n do
            c[i,j] := c[i,j] + a[i,j] * b[i,j]
    }
}
```

## Q.3 Attempt any one of the following questions.

- a) Write an algorithm for assigning programs to more than one tape. Find an optimal placement for 10 programs on four tapes where programs are of length 12, 5, 6, 7, 13, 8, 23, 19, 20, 23.
- **b)** Find minimum cost spanning tree using Prime's algorithm.



12

08

Max. Marks: 56

Set

Seat No.



#### Section – II

#### Q.5 Attempt any three of the following questions.

- a) Write a note on reliability design with example.
- b) Solve 0/1 Knapsack problem using dynamic programming M=6, n=3 profit= {1, 2, 5} and weight= {2, 3, 5}.
- c) Find all pair shortest path using dynamic programming.

d) Write brief note on P, NP, NP - complete and NP – Hard problems.

#### Q.6 Attempt any one of the following questions.

Use optimal binary search tree to generate a tree on following data N=4 and identifier (a1,a2,a3,a4)=(do,if,int,while) p(1:4)=(3,31,1) and q(0:4)=(2,3,1,1,1)

OR O and n (

Given  $W[1:6] = \{5,10,12,13,15,18\}$ , m=30 and n=6. Find all possible subsets of w that sum to m. draw the portion of the state space tree that is generated.

Q.7 Find minimum cost path from s to t multistage graph using backward approach. 08





12

R

**SLR-FM-357** 

Set

| luffman code may not be lossless in some cases<br>n Huffman code, no code is prefix of other code<br>None of the above |                     |                       |  |  |  |  |
|--|---------------------|-----------------------|--|--|--|--|
| ime complexity of binary sea<br>O(1)<br>O(n)   | arch is<br>b)<br>d) | O(log n)<br>O(n logn) |  |  |  |  |
| given graph, minimum cost of Spanning tree is  |                     |                       |  |  |  |  |
|  |                     |                       |  |  |  |  |
| 7<br>12  | b)<br>d)            | 6<br>10               |  |  |  |  |
|  |                     |                       |  |  |  |  |

| a) Optimality<br>c) Constraint   | b) Feasible solutions<br>d) None                               |  |  |  |  |
|--|--|--|--|--|--|
| If two queen are placed at positions (i, j) and (k, l). They are on the same diagnol iff   |  |  |  |  |  |
| a)  j-k = i-k <br>c)  i-j = k-l  | b)  j-l = i-k <br>d) None                                      |  |  |  |  |
| Graph coloring problem is which type<br>a) Dynamic Programming<br>c) Backtracking  | e of algorithm design strategy.<br>b) Greedy Method<br>d) None |  |  |  |  |
| Travelling Sales Man problem belongs to which of the class?  |  |  |  |  |  |
| c) Linear  | d) None of the mentioned                                       |  |  |  |  |
| The hardest of NP problems can be<br>a) NP-complete<br>c) P  | b) NP-hard<br>d) None of the mentioned                         |  |  |  |  |
| <ul> <li>Which of the following is true about Huffman code?</li> <li>a) Huffman code may become lossy in some cases</li> <li>b) Huffman code may not be lossless in some cases</li> <li>c) In Huffman code, no code is prefix of other code</li> <li>d) None of the above</li> </ul> |  |  |  |  |  |
| The time complexity of binary search<br>a) O(1)  | n is<br>b) O(log n)  |  |  |  |  |
| c) O(n)  | d) O(n logn)   |  |  |  |  |

- **Duration: 30 Minutes**
- **MCQ/Objective Type Questions** Marks: 14

#### T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **DESIGN & ANALYSIS OF ALGORITHMS**

Day & Date: Wednesday, 11-12-2019

Time: 02:30 PM To 05:30 PM

Seat

No.

Q.1

1)

2)

3)

4)

5)

6)

7)

8)

a) c)

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

Dynamic programming works on principle of

Choose the correct alternatives from the options and rewrite the sentence. 14

## **SLR-FM-357**

Set S

Max. Marks: 70

|     |   |  |                                | Set  | S |
|-----|---|--|--------------------------------|--|---|
| 9)  | Algo<br>{<br>s<br>fc<br>re<br>}<br>Step<br>a)<br>c) | prithm sum(A[],n)<br>um = 0;<br>or i = 1 to n<br>sum = sum + A[i];<br>eturn sum;<br>o count of the algorithm is<br>n<br>2n+3                 | b)<br>d)                       | n+3<br>2n+2  |   |
| 10) | For<br>dece<br>a)<br>c)                             | messages with given frequencies<br>ode time<br>39<br>89  | (2, 3<br>b)<br>d)              | , 5, 7, 9, 13), what will be total<br>93<br>132                  |   |
| 11) | lf De<br>com<br>a)<br>c)                            | eadlines are (2, 2, 3, 3, 3) of 5 jobs<br>pleted?<br>2<br>4  | s, ho <sup>,</sup><br>b)<br>d) | w many maximum jobs can be<br>3<br>5                             |   |
| 12) | Krus<br>a)<br>b)<br>c)<br>d)                        | skal's algorithm is for finding<br>All pairs shortest path<br>Single source shortest path<br>Minimum cost spanning tree<br>Minimum cost tour |                                |  |   |
| 13) | The<br>A.<br>B.<br>C.                               | correct matching for the following<br>Optimal Binary Search Tree<br>NP Complete<br>Hamilton Cycle  | pair:<br>1.<br>2.<br>3.        | s are<br>Backtracking<br>Dynamic Programming<br>Branch and Bound |   |
|     | a)<br>c)  | A-3, B-2, C-1<br>A-2, B-1, C-4   | b)<br>d)                       | A-2, B-3, C-1<br>none  |   |
| 14) | In flo<br>a)<br>c)                                  | ow shop scheduling OFT stands fo<br>Optimal Find Time<br>Optimal Finish Time   | or<br>b)<br>d)                 | <br>Organized Finish Time<br>None                                |   |

08

Page **15** of **16** 

# SLR-FM-357

## Seat No.

## T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

DESIGN & ANALYSIS OF ALGORITHMS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Assume suitable data if necessary.

## Section - I

## Q.2 Attempt any three of the following questions.

- a) Plot the graph of functions n, logn, nlogn,  $n^2$ ,  $n^3$  for n=1, 2, 3, 4, 5.
- b) Find an optimal binary tree merge pattern for 10 files whose lengths are
   i) 28, 32, 12, 5, 84, 53, 91, 35, 3, 11
- c) If a shopkeeper wants to return amount of Rs. 27 using the coins of Rs. 1, 2, 5, 10 with availability of coins are 1, 2, 5, 5 respectively. What are different ways in which shopkeeper will return amount. Which will be the optimal solution in terms of minimum number of coins?
- d) Find step count of the following algorithm

```
Algorithm Mult (a, b, c, n)
{
    for i:= 1 to n do
    for j= 1 to n do
        {
            c[i, j] := 0;
            for k= 1 to n do
                c[i,j] := c[i,j] + a[i,j] * b[i,j]
        }
}
```

## Q.3 Attempt any one of the following questions.

- a) Write an algorithm for assigning programs to more than one tape. Find an optimal placement for 10 programs on four tapes where programs are of length 12, 5, 6, 7, 13, 8, 23, 19, 20, 23.
- **b)** Find minimum cost spanning tree using Prime's algorithm.



12

**08** 

Max. Marks: 56

Set



#### Section – II

06

10

2

20

#### Q.5 Attempt any three of the following questions.

- a) Write a note on reliability design with example.
- b) Solve 0/1 Knapsack problem using dynamic programming M=6, n=3 profit= {1, 2, 5} and weight= {2, 3, 5}.
- c) Find all pair shortest path using dynamic programming.

d) Write brief note on P, NP, NP - complete and NP – Hard problems.

1

03

#### Q.6 Attempt any one of the following questions.

Use optimal binary search tree to generate a tree on following data N=4 and identifier (a1,a2,a3,a4)=(do,if,int,while) p(1:4)=(3,31,1) and q(0:4)=(2,3,1,1,1)

3

#### OR

Given  $W[1:6] = \{5,10,12,13,15,18\}$ , m=30 and n=6. Find all possible subsets of w that sum to m. draw the portion of the state space tree that is generated.

Q.7 Find minimum cost path from s to t multistage graph using backward approach. 08



12

S

**SLR-FM-357** 

Set
| Seat |  |
|------|--|
| No.  |  |
|      |  |

#### T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATABASE ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - Which one of the following is used to define the structure of the relation, 1) deleting relations and relating schemas?
    - DML(Data Manipulation Language) a)
    - DDL(Data Definition Language) b)
    - c) Querv
    - **Relational Schema** d)
  - 2) Which one of the following provides the ability to query information from the database and to insert tuples into, delete tuples from, and modify tuples in the database?
    - a) DML(Data Manipulation Language)
    - DDL(Data Definition Language) b)
    - Querv C)
    - d) **Relational Schema**
  - Create table employee (name varchar, id integer) What type of statement 3) is this?
    - a) DML b) DDL
    - View d) Integrity constraint c)
  - Select \* from employee What type of statement is this? 4)
    - a) DML b) DDL
    - View C) d) Integrity constraint
  - 5) The basic data type char(n) is a \_\_\_\_\_ length character string and varchar(n) is \_\_\_\_\_ length character.
    - a) Fixed, equal b) Equal, variable
    - Fixed, variable d) Variable, equal c)
  - SQL view is said to be updatable (that is, inserts, updates or deletes can 6) be applied on the view) if which of the following conditions are satisfied by the query defining the view?
    - The from clause has only one database relation a)
    - The guery does not have a group by or having clause b)
    - The select clause contains only attribute names of the relation, and C) does not have any expressions, aggregates, or distinct specification
    - All of the mentioned d)

Set

Max. Marks: 70

Marks: 14

Which of the following is used at the end of the view to reject the tuples 7) which do not satisfy the condition in where clause? b) Check a) With C) With check d) All of the mentioned 8) For the view Create view instructor info as select ID, name, building from instructor, department where instructor.dept name= department.dept name; If we insert tuple into the view as insert into instructor info values ('69987', 'White' 'Taylor'); What will be the values of the other attributes in instructor and department relations? a) Default value b) Null c) Error statement d) 0 9) Create view faculty as Select ID, name, dept name from instructor; Find the error in this query. a) Instructor b) Select View ...as d) None of the mentioned C) 10) In the \_\_\_\_\_ normal form, a composite attribute is converted to individual attributes a) First b) Second d) Fourth c) Third 11) A table on the many side of a one to many or many to many relationship must: a) Be in Second Normal Form (2NF) b) Be in Third Normal Form (3NF) Have a single attribute key c) d) Have a composite key 12) Tables in second normal form (2NF): a) Eliminate all hidden dependencies b) Eliminate the possibility of a insertion anomalies c) Have a composite key d) Have all non key fields depend on the whole primary key 13) Which-one of the following statements about normal forms is FALSE? BCNF is stricter than 3 NF a) b) Lossless, dependency - preserving decomposition into 3 NF is always possible Loss less, dependency - preserving decomposition into BCNF is c) always possible d) Any relation with two attributes is BCNF 14) Functional Dependencies are the types of constraints that are based on \_\_\_ Key b) Key revisited a) C) Superset key d) None of these

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Set

## T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

### DATABASE ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

#### Q.2 Solve any three of the following.

- a) Differentiate between the following.
  - update and insert 1)
  - 2) primary key and foreign key
  - 3) grant and revoke
  - row and column 4)
- b) Define DBMS. Explain the DBMS languages with examples: DDL, DML, and DCL.
- c) Define E-R Diagram. Draw E-R diagram with Customer, Loan and Payment sets.
- d) Explain any four Aggregate functions with examples.

#### Q.3 Solve any Two.

- a) Write query for the following:
  - To create a table from a table 1)
  - 2) To eliminate duplicate rows
  - 3) To add a new column in the table
  - To sort data in a table 4)
- **b)** What are the features of good relational design? Explain First Normal Form with suitable example.
- c) Describe in detail concepts of Data Mining and Information Retrieval Explain with suitable example.

#### Section – II

#### Q.4 Solve any three of the following.

- a) Explain shadow paging.
- b) Explain Static Hashing and Dynamic Hashing.
- c) Explain conflict serializability with example.
- d) How Multiple Granularity takes place in Concurrency Control?

#### Q.5 Solve any Two.

- a) Consider schedule S with transaction T1 and T2. T1 transfer Rs. 150 from account A to C and T2 adds Rs. 50 into account A. Prepare concurrent schedule with two phase locking protocol.
- **b)** What is deadlock? Explain necessary conditions for deadlock and methods for handling it.
- c) Define Failure. Explain Log based Recovery.

#### Max. Marks: 56

12

16

12

**SLR-FM-358** 



### T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATABASE ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- For the view 1)
  - Create view instructor info as

select ID, name, building

from instructor, department

where instructor.dept name= department.dept name;

If we insert tuple into the view as insert into instructor info values ('69987', 'White' 'Taylor');

What will be the values of the other attributes in instructor and department relations?

- a) Default value b) Null
- c) Error statement d) 0
- 2) Create view faculty as Select ID, name, dept name from instructor;

Find the error in this query.

- a) Instructor c) View ...as
- 3) In the \_\_\_\_\_ normal form, a composite attribute is converted to individual attributes
  - a) First Second b)
  - c) Third d) Fourth
- A table on the many side of a one to many or many to many relationship 4) must: .
  - a) Be in Second Normal Form (2NF)
  - b) Be in Third Normal Form (3NF)
  - Have a single attribute key c)
  - d) Have a composite key
- Tables in second normal form (2NF): 5)
  - Eliminate all hidden dependencies a)
  - Eliminate the possibility of a insertion anomalies b)
  - Have a composite key c)
  - Have all non key fields depend on the whole primary key d)

Max. Marks: 70

Marks: 14

- b) Select
- d) None of the mentioned

Set

- 6) Which-one of the following statements about normal forms is FALSE?
  - a) BCNF is stricter than 3 NF
  - b) Lossless, dependency preserving decomposition into 3 NF is always possible
  - Loss less, dependency preserving decomposition into BCNF is always possible
  - d) Any relation with two attributes is BCNF
- 7) Functional Dependencies are the types of constraints that are based on \_\_\_\_\_.

a) Key

C)

- b) Key revisited
- d) None of these
- 8) Which one of the following is used to define the structure of the relation, deleting relations and relating schemas?
  - a) DML(Data Manipulation Language)
  - b) DDL(Data Definition Language)
  - c) Query
  - d) Relational Schema

Superset key

- 9) Which one of the following provides the ability to query information from the database and to insert tuples into, delete tuples from, and modify tuples in the database?
  - a) DML(Data Manipulation Language)
  - b) DDL(Data Definition Language)
  - c) Query

View

c)

c)

- d) Relational Schema
- 10) Create table employee (name varchar, id integer) What type of statement is this?
  - a) DML b) DDL
    - d) Integrity constraint
- 11) Select \* from employee What type of statement is this?
  - a) DML b) DDL
  - c) View d) Integrity constraint
- 12) The basic data type char(n) is a \_\_\_\_\_ length character string and varchar(n) is \_\_\_\_\_ length character.
  - a) Fixed, equal b) Equal, variable
  - c) Fixed, variable d) Variable, equal
- 13) SQL view is said to be updatable (that is, inserts, updates or deletes can be applied on the view) if which of the following conditions are satisfied by the query defining the view?
  - a) The from clause has only one database relation
  - b) The query does not have a group by or having clause
  - c) The select clause contains only attribute names of the relation, and does not have any expressions, aggregates, or distinct specification
  - d) All of the mentioned
- 14) Which of the following is used at the end of the view to reject the tuples which do not satisfy the condition in where clause?
  - a) With b) Check
    - With check d) All of the mentioned

## T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

### DATABASE ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

#### Q.2 Solve any three of the following.

- a) Differentiate between the following.
  - update and insert 1)
  - 2) primary key and foreign key
  - 3) grant and revoke
  - row and column 4)
- b) Define DBMS. Explain the DBMS languages with examples: DDL, DML, and DCL.
- c) Define E-R Diagram. Draw E-R diagram with Customer, Loan and Payment sets.
- d) Explain any four Aggregate functions with examples.

#### Q.3 Solve any Two.

- a) Write query for the following:
  - To create a table from a table 1)
  - 2) To eliminate duplicate rows
  - 3) To add a new column in the table
  - 4) To sort data in a table
- b) What are the features of good relational design? Explain First Normal Form with suitable example.
- c) Describe in detail concepts of Data Mining and Information Retrieval Explain with suitable example.

#### Section – II

#### Q.4 Solve any three of the following.

- a) Explain shadow paging.
- b) Explain Static Hashing and Dynamic Hashing.
- c) Explain conflict serializability with example.
- d) How Multiple Granularity takes place in Concurrency Control?

#### Q.5 Solve any Two.

- a) Consider schedule S with transaction T1 and T2. T1 transfer Rs. 150 from account A to C and T2 adds Rs. 50 into account A. Prepare concurrent schedule with two phase locking protocol.
- **b)** What is deadlock? Explain necessary conditions for deadlock and methods for handling it.
- c) Define Failure. Explain Log based Recovery.

#### Max. Marks: 56

12

16

12

16

**SLR-FM-358** 

Set

| Seat |  |
|------|--|
| No.  |  |

#### T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATABASE ENGINEERING

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - The basic data type char(n) is a length character string and 1) varchar(n) is \_\_\_\_\_ length character.
    - a) Fixed, equal
    - b) Equal, variable c) Fixed, variable d) Variable, equal
  - SQL view is said to be updatable (that is, inserts, updates or deletes can 2) be applied on the view) if which of the following conditions are satisfied by the query defining the view?
    - The from clause has only one database relation a)
    - The guery does not have a group by or having clause b)
    - The select clause contains only attribute names of the relation, and c) does not have any expressions, aggregates, or distinct specification
    - All of the mentioned d)
  - 3) Which of the following is used at the end of the view to reject the tuples which do not satisfy the condition in where clause?
    - a) With

4)

b) Check d) All of the mentioned

- With check c)
- For the view
  - Create view instructor info as

select ID, name, building

from instructor, department

where instructor.dept name= department.dept name;

If we insert tuple into the view as insert into instructor info values ('69987', 'White' 'Taylor');

What will be the values of the other attributes in instructor and department relations?

- a) Default value b) Null d) 0
- c) Error statement
- Create view faculty as 5) Select ID, name, dept name from instructor; Find the error in this query.
  - Instructor a)
  - View ...as c)

- b) Select
- None of the mentioned d)

Max. Marks: 70

Marks: 14



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- 6) In the \_\_\_\_\_ normal form, a composite attribute is converted to individual attributes
  - a) First b) Second
  - c) Third d) Fourth
- 7) A table on the many side of a one to many or many to many relationship must: \_\_\_\_\_.
  - a) Be in Second Normal Form (2NF)
  - b) Be in Third Normal Form (3NF)
  - c) Have a single attribute key
  - d) Have a composite key
- 8) Tables in second normal form (2NF): \_\_\_\_\_.
  - a) Eliminate all hidden dependencies
  - b) Eliminate the possibility of a insertion anomalies
  - c) Have a composite key
  - d) Have all non key fields depend on the whole primary key
- 9) Which-one of the following statements about normal forms is FALSE?
  - a) BCNF is stricter than 3 NF
  - b) Lossless, dependency preserving decomposition into 3 NF is always possible
  - c) Loss less, dependency preserving decomposition into BCNF is always possible
  - d) Any relation with two attributes is BCNF
- 10) Functional Dependencies are the types of constraints that are based on .
  - a) Key
- b) Key revisited
- c) Superset key d) None of these
- 11) Which one of the following is used to define the structure of the relation, deleting relations and relating schemas?
  - a) DML(Data Manipulation Language)
  - b) DDL(Data Definition Language)
  - c) Query
  - d) Relational Schema
- 12) Which one of the following provides the ability to query information from the database and to insert tuples into, delete tuples from, and modify tuples in the database?
  - a) DML(Data Manipulation Language)
  - b) DDL(Data Definition Language)
  - c) Query

a)

- d) Relational Schema
- 13) Create table employee (name varchar, id integer) What type of statement is this?
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## T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

### DATABASE ENGINEERING

Day & Date: Friday,13-12-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

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- **b)** Define DBMS. Explain the DBMS languages with examples: DDL, DML, and DCL.
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- a) Write query for the following:
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### T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATABASE ENGINEERING

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**Duration: 30 Minutes** 

Seat No.

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  - A table on the many side of a one to many or many to many relationship 2) must:
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    - b) Be in Third Normal Form (3NF)
    - Have a single attribute key c)
    - d) Have a composite key
  - 3) Tables in second normal form (2NF):
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    - d) Have all non key fields depend on the whole primarv key
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  - 5) Functional Dependencies are the types of constraints that are based on
    - Kev a)

C)

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  - a) DML(Data Manipulation Language)
  - DDL(Data Definition Language) b)
  - Querv c)
  - **Relational Schema** d)

Superset key

Max. Marks: 70

Marks: 14



- 7) Which one of the following provides the ability to guery information from the database and to insert tuples into, delete tuples from, and modify tuples in the database?
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  - View c)

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- 10) The basic data type char(n) is a \_\_\_\_\_ length character string and varchar(n) is \_\_\_\_\_ length character.
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  - d) All of the mentioned
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  - With a)

b) Check

With check C)

d) All of the mentioned

13) For the view

Create view instructor info as

select ID, name, building

from instructor, department

where instructor.dept name= department.dept name;

If we insert tuple into the view as insert into instructor info values ('69987', 'White' 'Taylor');

What will be the values of the other attributes in instructor and department relations?

- Default value b) Null a) d) 0
- Error statement c)
- 14) Create view faculty as Select ID, name, dept name from instructor; Find the error in this query.
  - a) Instructor
  - c) View ...as

- b) Select
- d) None of the mentioned

- b) DDL

**SLR-FM-358** 

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#### Seat <u>No.</u> T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019

#### DATABASE ENGINEERING Day & Date: Friday,13-12-2019 Time: 02:30 PM To 05:30 PM

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2) Figures to the right indicate full marks.

#### Section – I

Information Technology

#### Q.2 Solve any three of the following.

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  - 2) primary key and foreign key
  - 3) grant and revoke
  - 4) row and column
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  - 2) To eliminate duplicate rows
  - 3) To add a new column in the table
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- **b)** What are the features of good relational design? Explain First Normal Form with suitable example.
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#### Section – II

#### Q.4 Solve any three of the following.

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- **b)** What is deadlock? Explain necessary conditions for deadlock and methods for handling it.
- c) Define Failure. Explain Log based Recovery.

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Max. Marks: 56

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| Seat<br>No.      |   |  |                                 |                                |             |                   |   | Set    | Ρ     |
|------------------|---|--|---------------------------------|--------------------------------|-------------|-------------------|---|--------|-------|
|                  | T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology |  |                                 |                                |             |                   |   |        |       |
|                  | _   | CON  | PUTE                            | ER ORGAN                       | IZATIO      | DN 8              |   |        |       |
| Day &<br>Time: ( | Date<br>02:30   | : Monday,<br>PM To 0                                 | 16-12<br>5:30 P                 | -2019<br>M                     |             |                   | Max.  | Marks  | s: 70 |
| Instru           | ction   | s: 1) Q. N<br>book<br>2) Figu                        | lo. 1 is<br>res to t            | compulsory a                   | and sho     | uld b<br>mark     | e solved in first 30 minutes                                  | in ans | wer   |
|                  |   | 2) i igu   | M                               | ICO/Object                     |             | no (              | Juestions   |        |       |
| Duratio          | on: 30  | ) Minutes  | IV                              |                                | IVE IY      | he d              |   | Mark   | s: 14 |
| Q.1 (            | Choo  | se the co  | orrect a                        | alternatives f                 | rom the     | e opt             | ions.   |        | 14    |
| 1                | 1)  | Processo<br>a) ALU<br>c) Cont                        | rs of a<br>rol unit             | ll computers,                  | whethe      | r mic<br>b)<br>d) | ro, mini or mainframe must<br>Primary Storage<br>All of above | have _ | ·     |
| 2                | 2)  | The gene<br>a) 1 <sup>st</sup><br>c) 3 <sup>rd</sup> | ration                          | based on VLS                   | SI micro    | proce<br>b)<br>d) | essor<br>2 <sup>nd</sup><br>4 <sup>th</sup>                   |        |       |
| 3                | 3)  | Non-resto<br>a) True                                 | oring a                         | gorithm need                   | s more      | hard<br>b)        | ware than restoring algorith<br>False                         | m.     |       |
| 2                | 4)  | Cache m<br>a) CPU<br>c) CPU                          | emory<br>and R<br>and H         | placed betwe<br>AM<br>ard Disk | en          | b)<br>d)          | RAM and ROM<br>None of these                                  |        |       |
| 5                | 5)  | The time   | betwee                          | en the start ar                | nd the c    | ompl              | etion of an event also referr                                 | ed     |       |
|                  |   | to as<br>a) Exec<br>c) Start                         | <br>ution ti<br>time            | me                             |             | b)<br>d)          | Delay time<br>None of the above                               |        |       |
| 6                | 6)  | In the me<br>size also                               | mory h<br>increa                | nierarchy, as t<br>ses.        | he spee     | ed of             | operation increases the me                                    | mory   |       |
| _                | 7)  | a) True  |                                 |                                | on o sifi o | D)                |   |        |       |
| 1                | ()  | a) Utility<br>c) Optin                               | ve bee<br>v softwa<br>nizing (  | are's<br>compilers             | specific    | b)<br>d)          | Speed up utilities<br>None of the mentioned                   |        |       |
| 8                | 8)  | Each stag<br>a) 1<br>c) 3                            | ge in pi                        | pelining shou                  | ld be co    | omple<br>b)<br>d) | eted within cycle.<br>2<br>4                                  |        |       |
| ç                | 9)  | Which of<br>a) Oper<br>c) Pipel                      | the foll<br>and fet<br>ine flus | lowing is not a<br>tch<br>sh   | a pipelin   | e sta<br>b)<br>d) | age?<br>Execute<br>Memory Access                              |        |       |
| 1                | 10)   | The impo<br>a) ILP<br>c) Perfo                       | rtant fe                        | eature of the \<br>e           | /LIW is     | b)<br>d)          | Cost effectiveness None of the mentioned                      |        |       |

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**SLR-FM-359** 

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- 11) The algorithm followed in most of the systems to perform out of order execution is \_\_\_\_\_.
  - a) Tomasulo's algorithm
- b) Score carding

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- c) Reader-writer algorithm d) None of the above
- 12) Alternative way of a snooping-based coherence protocol, is called a \_\_\_\_\_.
  - Memory protocol b) Directory protocol
  - c) Register protocol
- d) None of above
- 13) Symmetric multiprocessors (SMP) is \_\_\_\_\_.
  - a) Small number of cores
  - b) Share single memory with uniform memory latency
  - c) Both a and b

a)

- d) None of the above
- 14) Which are the Three situations in which a data hazard can occur?
  - a) Read after write (RAW), a true dependency
  - b) Write after read (WAR), an anti-dependency
  - c) Write after write (WAW), an output dependency
  - d) All of above

### Seat No.

#### T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology COMPUTER ORGANIZATION & ARCHITECTURE

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three.

- a) Describe in detail the Generations of Computers and explain the upward compatibility in terms of computer.
- **b)** Write the IEEE-754 Floating Point Formats.
- c) Define Computer architecture. Illustrate the seven dimensions of an ISA.
- d) What is dependability? Explain two main measures of dependability.

#### Q.3 Attempt any two.

- a) Solve 17/3 using Non Restoring Method of division Algorithm.
- **b)** 1) Solve (+5 X +2) using booths algorithm.
  - 2) With a neat diagram describe the Memory Map architecture of ARC processor.

#### c) Write short notes.

- 1) Cache Memory
- 2) Memory hierarchy

#### Section – II

#### Q.4 Attempt any three.

- a) With a neat diagram explain the classic five stage pipeline for a RISC Processor.
- **b)** Illustrate the Data hazard types: RAW, WAR and WAW.
- c) Explain the Advanced Techniques for instruction delivery and Speculation.
- d) With a neat diagram describe structural hazard in five stage pipeline.

#### Q.5 Attempt any two.

- a) Illustrate the Basic Pipeline Scheduling and Loop Unrolling technique in detail.
- **b)** What are the techniques used to reduce branch costs? Explain the dynamic branch prediction used for same.
- c) Explain following protocols under Cache Coherence and Message Passing Mechanisms.
  - 1) Snoopy Bus Protocols
  - 2) Directory based Protocols

Max. Marks: 56

12

12

16

| Seat<br>No.        |  |   |                                 |   | Set                 | Q          |  |  |
|--------------------|--|---|---------------------------------|---|---------------------|------------|--|--|
|                    | T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology  |   |                                 |   |                     |            |  |  |
| Day & I<br>Time: ( | Date: Monday, 16-1<br>02:30 PM To 05:30 F  | 2-2019<br>PM  |                                 | Max.  | Marks               | s: 70      |  |  |
| Instruc            | c <b>tions:</b> 1) Q. No. 1 is<br>book.<br>2) Figures to   | s compulsory and sho<br>the right indicates full  | uld b<br>marł                   | e solved in first 30 minutes  | in ans <sup>.</sup> | wer        |  |  |
|                    |  | MCQ/Objective Tv  | ne (                            | Juestions   |                     |            |  |  |
| Duratio            | n: 30 Minutes  |   | pee                             |   | Marks               | s: 14      |  |  |
| <b>Q.1 C</b><br>1  | Choose the correct<br>) Each stage in p<br>a) 1<br>c) 3  | alternatives from the<br>pipelining should be co  | e opt<br>omple<br>b)<br>d)      | <b>ions.</b><br>eted within cycle.<br>2<br>4                          |                     | 14         |  |  |
| 2                  | <ol> <li>Which of the fo</li> <li>a) Operand fe</li> <li>c) Pipeline flu</li> </ol>  | llowing is not a pipelin<br>etch<br>ısh   | e sta<br>b)<br>d)               | age?<br>Execute<br>Memory Access                                      |                     |            |  |  |
| 3                  | 3) The important f<br>a) ILP<br>c) Performan   | feature of the VLIW is ce   | b)<br>d)                        | Cost effectiveness<br>None of the mentioned                           |                     |            |  |  |
| 4                  | <ul> <li>The algorithm f</li> <li>execution is</li> <li>a) Tomasulo':</li> <li>c) Reader-wr</li> </ul>                           | followed in most of the<br><br>s algorithm<br>iter algorithm  | syst<br>b)<br>d)                | ems to perform out of order<br>Score carding<br>None of the above     |                     |            |  |  |
| 5                  | <ul> <li>Alternative way</li> <li>a) Memory pr</li> <li>c) Register pr</li> </ul>  | v of a snooping-based<br>rotocol<br>rotocol   | cohe<br>b)<br>d)                | erence protocol, is called a _<br>Directory protocol<br>None of above |                     |            |  |  |
| 6                  | <ul> <li>Symmetric mul</li> <li>a) Small num</li> <li>b) Share sing</li> <li>c) Both a and</li> <li>d) None of the</li> </ul>    | tiprocessors (SMP) is<br>ber of cores<br>le memory with unifor<br>l b<br>e above                        | <br>m me                        | emory latency   |                     |            |  |  |
| 7                  | <ul> <li>Which are the</li> <li>a) Read after</li> <li>b) Write after</li> <li>c) Write after</li> <li>d) All of abov</li> </ul> | Three situations in whi<br>write (RAW), a true do<br>read (WAR), an anti-c<br>write (WAW), an outp<br>e | ich a<br>epen<br>deper<br>ut de | data hazard can occur?<br>dency<br>ndency<br>pendency                 |                     |            |  |  |
| 8                  | <ol> <li>Processors of a<br/>a) ALU</li> <li>c) Control unit</li> </ol>  | all computers, whether<br>it  | r mic<br>b)<br>d)               | ro, mini or mainframe must<br>Primary Storage<br>All of above         | have _              | <u> </u> . |  |  |
| 9                  | 9) The generation<br>a) 1 <sup>st</sup><br>c) 3 <sup>rd</sup>  | based on VLSI micro   | proce<br>b)<br>d)               | essor<br>2 <sup>nd</sup><br>4 <sup>th</sup>                           |                     |            |  |  |

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- Non-restoring algorithm needs more hardware than restoring algorithm. 10)
  - a) True

- False b)
- 11) Cache memory placed between \_\_\_\_
  - a) CPU and RAM RAM and ROM b)
  - c) CPU and Hard Disk d) None of these
- 12) The time between the start and the completion of an event also referred to as \_\_\_\_\_. Delay time b)
  - a) Execution time
  - None of the above c) Start time d)
- 13) In the memory hierarchy, as the speed of operation increases the memory size also increases.
  - a) True False b)
- 14) have been developed specifically for pipelined systems.
  - Utility software's a)
- Speed up utilities b) None of the mentioned
- c) Optimizing compilers d)

| Seat |  |
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#### T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology COMPUTER ORGANIZATION & ARCHITECTURE

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- **b)** Illustrate the Data hazard types: RAW, WAR and WAW.
- c) Explain the Advanced Techniques for instruction delivery and Speculation.
- d) With a neat diagram describe structural hazard in five stage pipeline.

#### Q.5 Attempt any two.

- a) Illustrate the Basic Pipeline Scheduling and Loop Unrolling technique in detail.
- **b)** What are the techniques used to reduce branch costs? Explain the dynamic branch prediction used for same.
- c) Explain following protocols under Cache Coherence and Message Passing Mechanisms.
  - 1) Snoopy Bus Protocols
  - 2) Directory based Protocols

Max. Marks: 56

12

16

12

|             |                  | T.E. (Part – I) (New) (CBCS)<br>Information  | Exam<br>Techr         | ination Nov/Dec-2019<br>hology  |
|-------------|------------------|--|-----------------------|---|
|             |                  | COMPUTER ORGANIZAT   |                       | & ARCHITECTURE  |
| Day<br>Time | & Dat<br>e: 02:3 | te: Monday, 16-12-2019<br>30 PM To 05:30 PM  |                       | Max. Marks: 70  |
| Inst        | ructio           | <b>ns:</b> 1) Q. No. 1 is compulsory and s book.   | hould t               | be solved in first 30 minutes in answer                               |
|             |                  |  |                       | ns.   |
| Dura        | ation: (         | 30 Minutes   | туре                  | Marks: 14   |
| Q.1         | Cho              | oose the correct alternatives from   | the op                | tions. 14   |
|             | 1)               | The time between the start and the to as<br>a) Execution time<br>c) Start time   | e comp<br>b)<br>d)    | letion of an event also referred<br>Delay time<br>None of the above   |
|             | 2)               | In the memory hierarchy, as the sp<br>size also increases.<br>a) True  | beed of<br>b)         | operation increases the memory<br>False                               |
|             | 3)               | <ul> <li>have been developed spect</li> <li>a) Utility software's</li> <li>c) Optimizing compilers</li> </ul>  | ifically<br>b)<br>d)  | for pipelined systems.<br>Speed up utilities<br>None of the mentioned |
|             | 4)               | Each stage in pipelining should be<br>a) 1<br>c) 3   | compl<br>b)<br>d)     | eted within cycle.<br>2<br>4  |
|             | 5)               | Which of the following is not a pipe<br>a) Operand fetch<br>c) Pipeline flush  | eline sta<br>b)<br>d) | age?<br>Execute<br>Memory Access                                      |
|             | 6)               | The important feature of the VLIW<br>a) ILP<br>c) Performance  | is<br>b)<br>d)        | Cost effectiveness<br>None of the mentioned                           |
|             | 7)               | The algorithm followed in most of t<br>execution is<br>a) Tomasulo's algorithm<br>c) Reader-writer algorithm   | the sys<br>b)<br>d)   | tems to perform out of order<br>Score carding<br>None of the above    |
|             | 8)               | Alternative way of a snooping-base<br>a) Memory protocol<br>c) Register protocol   | ed coh<br>b)<br>d)    | erence protocol, is called a<br>Directory protocol<br>None of above   |
|             | 9)               | <ul> <li>Symmetric multiprocessors (SMP)</li> <li>a) Small number of cores</li> <li>b) Share single memory with unit</li> <li>c) Both a and b</li> </ul> | is<br>form m          | emory latency   |

d) None of the above

**SLR-FM-359** 

Set R

### Seat No.

#### 10) Which are the Three situations in which a data hazard can occur?

- a) Read after write (RAW), a true dependency
- b) Write after read (WAR), an anti-dependency
- c) Write after write (WAW), an output dependency
- d) All of above

#### 11) Processors of all computers, whether micro, mini or mainframe must have \_\_\_\_.

- a) ALU b) F c) Control unit d) A
  - b) Primary Storaged) All of above

RAM and ROM

**SLR-FM-359** 

Set R

- 12) The generation based on VLSI microprocessor \_\_\_\_\_.
  - a) 1<sup>st</sup> b) 2<sup>nd</sup>
  - c)  $3^{rd}$  d)  $4^{th}$
- 13) Non-restoring algorithm needs more hardware than restoring algorithm.a) Trueb) False

b)

- 14) Cache memory placed between \_\_\_\_
  - a) CPU and RAM
  - c) CPU and Hard Disk d) None of these

| Seat |  |
|------|--|
| No.  |  |

#### T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology COMPUTER ORGANIZATION & ARCHITECTURE

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three.

- a) Describe in detail the Generations of Computers and explain the upward compatibility in terms of computer.
- **b)** Write the IEEE-754 Floating Point Formats.
- c) Define Computer architecture. Illustrate the seven dimensions of an ISA.
- d) What is dependability? Explain two main measures of dependability.

#### Q.3 Attempt any two.

- a) Solve 17/3 using Non Restoring Method of division Algorithm.
- **b)** 1) Solve (+5 X +2) using booths algorithm.
  - 2) With a neat diagram describe the Memory Map architecture of ARC processor.

#### c) Write short notes.

- 1) Cache Memory
- 2) Memory hierarchy

#### Section – II

#### Q.4 Attempt any three.

- a) With a neat diagram explain the classic five stage pipeline for a RISC Processor.
- **b)** Illustrate the Data hazard types: RAW, WAR and WAW.
- c) Explain the Advanced Techniques for instruction delivery and Speculation.
- d) With a neat diagram describe structural hazard in five stage pipeline.

#### Q.5 Attempt any two.

- a) Illustrate the Basic Pipeline Scheduling and Loop Unrolling technique in detail.
- **b)** What are the techniques used to reduce branch costs? Explain the dynamic branch prediction used for same.
- c) Explain following protocols under Cache Coherence and Message Passing Mechanisms.
  - 1) Snoopy Bus Protocols
  - 2) Directory based Protocols

Max. Marks: 56

R

12

16

12

|               |                   |                             | COMPUTER ORGANIZATIO   | ON 8                            | ARCHITECTURE  |
|---------------|-------------------|-----------------------------|--|---------------------------------|---|
| Day &<br>Time | & Date<br>: 02:30 | e: Mo<br>D PN               | onday, 16-12-2019<br>1 To 05:30 PM   |                                 | Max. Marks: 70  |
| Instr         | uction            | <b>is:</b> 1                | ) Q. No. 1 is compulsory and sho book.   | uld b                           | e solved in first 30 minutes in answer                              |
|               |                   | 2                           | ) Figures to the right indicates full  | mark                            | KS.   |
|               |                   |                             | MCQ/Objective Ty   | pe C                            | Questions   |
| Dura          | tion: 3           | 0 Mi                        | nutes  |                                 | Marks: 14   |
| Q.1           | <b>Choo</b><br>1) | ose t<br>The                | the correct alternatives from the<br>e important feature of the VLIW is  | e opt                           | ions. 14  |
|               |                   | a)<br>c)                    | ILP<br>Performance   | b)<br>d)                        | Cost effectiveness<br>None of the mentioned                         |
|               | 2)                | The<br>exe                  | e algorithm followed in most of the ecution is   | syst                            | ems to perform out of order   |
|               |                   | a)<br>C)                    | Reader-writer algorithm  | d)                              | None of the above   |
|               | 3)                | Alte<br>a)<br>c)            | ernative way of a snooping-based<br>Memory protocol<br>Register protocol   | cohe<br>b)<br>d)                | erence protocol, is called a<br>Directory protocol<br>None of above |
|               | 4)                | Syr<br>a)<br>b)<br>c)<br>d) | nmetric multiprocessors (SMP) is<br>Small number of cores<br>Share single memory with unifor<br>Both a and b<br>None of the above                              | <br>m me                        | emory latency   |
|               | 5)                | Wh<br>a)<br>b)<br>c)<br>d)  | ich are the Three situations in wh<br>Read after write (RAW), a true d<br>Write after read (WAR), an anti-<br>Write after write (WAW), an outp<br>All of above | ich a<br>epen<br>Jeper<br>ut de | data hazard can occur?<br>dency<br>ndency<br>pendency               |
|               | 6)                | Pro<br>a)<br>c)             | cessors of all computers, whethe ALU<br>Control unit   | r mic<br>b)<br>d)               | ro, mini or mainframe must have<br>Primary Storage<br>All of above  |
|               | 7)                | Th∈<br>a)<br>c)             | e generation based on VLSI micro<br>1 <sup>st</sup><br>3 <sup>rd</sup>   | proce<br>b)<br>d)               | essor<br>2 <sup>nd</sup><br>4 <sup>th</sup>                         |
|               | 8)                | Nor<br>a)                   | n-restoring algorithm needs more<br>True   | hard<br>b)                      | ware than restoring algorithm.<br>False                             |
|               | 9)                | Cao<br>a)<br>c)             | che memory placed between<br>CPU and RAM<br>CPU and Hard Disk  | b)<br>d)                        | RAM and ROM<br>None of these  |

## Seat No. T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

### **SLR-FM-359**

4

4

Set S



a) Execution time c) Start time

Delay time b)

**SLR-FM-359** 

Set

S

- d) None of the above
- 11) In the memory hierarchy, as the speed of operation increases the memory size also increases.
  - a) True

a)

- b) False
- have been developed specifically for pipelined systems. 12)
  - b) Speed up utilities
  - Utility software's c) Optimizing compilers None of the mentioned d)
- Each stage in pipelining should be completed within \_\_\_\_\_ cycle. 13) a) 1
  - b) 2 c) 3 d) 4
- Which of the following is not a pipeline stage? 14)
  - a) Operand fetch b) Execute
  - c) Pipeline flush d) Memory Access

| Seat |  |
|------|--|
| No.  |  |

#### T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology COMPUTER ORGANIZATION & ARCHITECTURE

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three.

- a) Describe in detail the Generations of Computers and explain the upward compatibility in terms of computer.
- **b)** Write the IEEE-754 Floating Point Formats.
- c) Define Computer architecture. Illustrate the seven dimensions of an ISA.
- d) What is dependability? Explain two main measures of dependability.

#### Q.3 Attempt any two.

- a) Solve 17/3 using Non Restoring Method of division Algorithm.
- **b)** 1) Solve (+5 X +2) using booths algorithm.
  - 2) With a neat diagram describe the Memory Map architecture of ARC processor.

#### c) Write short notes.

- 1) Cache Memory
- 2) Memory hierarchy

#### Section – II

#### Q.4 Attempt any three.

- a) With a neat diagram explain the classic five stage pipeline for a RISC Processor.
- **b)** Illustrate the Data hazard types: RAW, WAR and WAW.
- c) Explain the Advanced Techniques for instruction delivery and Speculation.
- d) With a neat diagram describe structural hazard in five stage pipeline.

#### Q.5 Attempt any two.

- a) Illustrate the Basic Pipeline Scheduling and Loop Unrolling technique in detail.
- **b)** What are the techniques used to reduce branch costs? Explain the dynamic branch prediction used for same.
- c) Explain following protocols under Cache Coherence and Message Passing Mechanisms.
  - 1) Snoopy Bus Protocols
  - 2) Directory based Protocols

Max. Marks: 56

12

16

12

#### T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology UNIX OPERATING SYSTEM Day & Date: Friday, 22-11-2019 Max. Marks: 70 Time: 10:00 AM To 01:00 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Figures to the right indicate full marks. 3) Assume data wherever necessary. **MCQ/Objective Type Questions Duration: 30 Minutes** Q.1 **Choose Correct Options.** \_\_\_\_\_ is a unique tag, usually a number, identifies the file within the file 1) svstem.

- File identifier a)
- File type C)

2)

- To create a file .
- allocate the space in file system a)
- make an entry for new file in directory b)
- allocate the space in file system & make an entry for new file in C) directory

File name

d) None of the mentioned

b)

none of the mentioned d)

#### 3) By using the specific system call, we can \_\_\_\_

- a) open the file b) read the file
- write into the file d) all of the mentioned c)
- 4) File type can be represented by \_
  - a) file name b) file extension
  - c) file identifier d) none of the mentioned
- What is the mounting of file system? 5)
  - crating of a filesystem a)
  - deleting a filesystem b)
  - attaching portion of the file system into a directory structure c)
  - removing portion of the file system into a directory structure d)
- Which of the following commands can be used to change default 6) permissions for files and directories at the time of creation?
  - a) chmod b) chown
  - umask d) chgrp C)
- Which of the following option of Is command can be used to view file inode 7) number?
  - a) I b) - o c) - a d) - i

## SLR-FM-360

Marks: 14

Set P

- 8) What is the name of the method that kernel uses to minimize the frequency of disk access by maintaining a pool of internal data buffer to increase the response time and throughput?
  - a) poolingc) buffer cache
- b) spooling
- d) swapping

b) fork

- 9) The address of a page table in memory is pointed by \_\_\_\_\_
  - stack pointer b) page table base register
  - c) page register d) program counter
- 10) A parent process calling \_\_\_\_\_ system call will be suspended until children processes terminate.
  - a) wait

a)

- c) exit d) exec
- 11) What is the command to change the group ownership of a file?
  - a) cgrp b) chgrp
  - c) change d) group
- 12) What is the command to count the number of characters in a file?
  - a) grep b) wc
  - c) count d) cut
- 13) Virtual memory is normally implemented by \_\_\_\_\_
  - a) demand paging b) buses
  - c) virtualization d) all of the mentioned
- 14) A swapper manipulates \_\_\_\_\_ whereas the pager is concerned with individual \_\_\_\_\_ of a process.
  - a) the entire process, parts
  - b) all the pages of a process, segments
  - c) the entire process, pages
  - d) none of the mentioned

| Day<br>Time | & Date: Friday, 22-11-2019 Max. Ma<br>:: 10:00 AM To 01:00 PM   | rks: 56 |  |  |  |  |  |
|-------------|---|---------|--|--|--|--|--|
| Instr       | <ul><li>Instructions: 1) All questions are compulsory.</li><li>2) Figures to the right indicate full marks.</li><li>3) Assume data wherever necessary.</li></ul>  |         |  |  |  |  |  |
|             | Section – I   |         |  |  |  |  |  |
| Q.2         | <ul> <li>Attempt any Four.</li> <li>a) Write a program that creates a new process to copy files.</li> <li>b) Describe the concept of Context of a process?</li> <li>c) What is buffer header? Draw the diagram of buffer header &amp; explain it's fields.</li> <li>d) What is superblock? What are the fields it consists of?</li> </ul> | 16      |  |  |  |  |  |
|             | e) What is system call? Explain any two system calls for the file system.   |         |  |  |  |  |  |
| Q.3         | What OPEN system call does? Write an algorithm for opening a file.  | 06      |  |  |  |  |  |
| Q.4         | <ul> <li>Answer any one from the following questions.</li> <li>a) Describe various scenarios for retrieval of a buffer.</li> <li>b) Write a note on File and Record Locking.</li> </ul>   | 06      |  |  |  |  |  |
|             | Section – II  |         |  |  |  |  |  |
| Q.5         | <ul> <li>Answer any four from the following questions.</li> <li>a) Write an algorithm for allocating a region.</li> <li>b) What is a Process Group? What does setpgrp() system call.</li> <li>c) Explain an algorithm for process scheduling.</li> <li>d) Describe Fork Swap.</li> <li>e) Explain in short Terminal Drivers.</li> </ul>   | 12      |  |  |  |  |  |
| Q.6         | <ul> <li>Answer any one from the following questions.</li> <li>a) Describe in detail the relationship of data structures for demand paging.</li> <li>b) Explain an algorithm for the exec system call.</li> </ul>   | 08      |  |  |  |  |  |
| Q.7         | <b>Answer the following question.</b><br>What is Swapping? Describe in detail swapping process out of main memory.  | 08      |  |  |  |  |  |

## T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology UNIX OPERATING SYSTEM

Seat

No.

## **SLR-FM-360**

Set

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#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology UNIX OPERATING SYSTEM

Day & Date: Friday, 22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume data wherever necessary.

#### **MCQ/Objective Type Questions**

#### **Duration: 30 Minutes** Q.1 Choose Correct Options.

a)

#### What is the name of the method that kernel uses to minimize the 1) frequency of disk access by maintaining a pool of internal data buffer to increase the response time and throughput?

- pooling a)
- buffer cache C)
- 2) The address of a page table in memory is pointed by \_\_\_\_\_. stack pointer
- page register c) A parent process calling system call will be suspended until 3) children processes terminate.
  - a) wait b) fork
  - c) exit d) exec
- 4) What is the command to change the group ownership of a file?
  - b) chgrp cgrp a)
  - c) change d) group
- What is the command to count the number of characters in a file? 5)
  - grep b) wc a)
  - C) count d) cut

Virtual memory is normally implemented by 6)

- demand paging a) b) buses
- virtualization c) d) all of the mentioned
- A swapper manipulates \_\_\_\_\_ whereas the pager is concerned with 7) individual \_\_\_\_\_ of a process.
  - a) the entire process, parts
  - all the pages of a process, segments b)
  - the entire process, pages C)
  - d) none of the mentioned
- 8) \_\_\_\_ is a unique tag, usually a number, identifies the file within the file system.
  - a) File identifier
  - File type C)

- b) File name
- d) None of the mentioned

SLR-FM-360

### Seat No.

Max. Marks: 70

Marks: 14

14

Set

- b) spooling
- d) swapping

- b) page table base register
- d) program counter

Set Q

9) To create a file \_\_\_\_\_.

c)

a) file name

- allocate the space in file system a)
- make an entry for new file in directory b)
- allocate the space in file system & make an entry for new file in c) directory
- none of the mentioned d)
- 10) By using the specific system call, we can \_\_\_\_
  - open the file a) write into the file
- b) read the file
- d) all of the mentioned
- File type can be represented by \_\_\_\_ 11)
  - b) file extension
  - d) none of the mentioned file identifier c)
- What is the mounting of file system? 12)
  - a) crating of a filesystem
  - deleting a filesystem b)
  - attaching portion of the file system into a directory structure c)
  - removing portion of the file system into a directory structure d)
- Which of the following commands can be used to change default 13) permissions for files and directories at the time of creation?
  - a) chmod b) chown
  - C) umask d) chgrp
- 14) Which of the following option of Is command can be used to view file inode number?
  - a) I b) - o d) - i c) - a

80

| Day<br>Time | Day & Date: Friday, 22-11-2019 Max. Marks: 56<br>Time: 10:00 AM To 01:00 PM |   |                       |  |  |  |  |
|-------------|---|---|-----------------------|--|--|--|--|
| Instr       | uctio   | <ul> <li><b>ons:</b> 1) All questions are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>3) Assume data wherever necessary.</li> </ul>  |                       |  |  |  |  |
|             |   | Section – I   |                       |  |  |  |  |
| Q.2         | Atte<br>a)<br>b)<br>c)<br>d)  | write a program that creates a new process to copy files.<br>Describe the concept of Context of a process?<br>What is buffer header? Draw the diagram of buffer header & explained<br>fields.<br>What is superblock? What are the fields it consists of?            | <b>16</b><br>ain it's |  |  |  |  |
|             | e)  | What is system call? Explain any two system calls for the file syst   | em.                   |  |  |  |  |
| Q.3         | Wha   | at OPEN system call does? Write an algorithm for opening a file.  | 06                    |  |  |  |  |
| Q.4         | Ans<br>a)<br>b)   | swer any one from the following questions.<br>Describe various scenarios for retrieval of a buffer.<br>Write a note on File and Record Locking.   | 06                    |  |  |  |  |
|             | Section – II  |   |                       |  |  |  |  |
| Q.5         | Ans<br>a)<br>b)<br>c)<br>d)<br>e)   | wer any four from the following questions.<br>Write an algorithm for allocating a region.<br>What is a Process Group? What does setpgrp() system call.<br>Explain an algorithm for process scheduling.<br>Describe Fork Swap.<br>Explain in short Terminal Drivers. | 12                    |  |  |  |  |
| Q.6         | Ans<br>a)   | swer any one from the following questions.<br>Describe in detail the relationship of data structures for demand p   | <b>08</b><br>aging.   |  |  |  |  |

Information Technology UNIX OPERATING SYSTEM

Explain an algorithm for the exec system call. b)

#### Q.7 Answer the following question.

What is Swapping? Describe in detail swapping process out of main memory.

Seat No. T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

# Set

**SLR-FM-360** 

|             |                   | T.E.                                  | (Part – II) (New) (CBCS) E<br>Information Te<br>UNIX OPERATI   | ixar<br>ech<br>NG | nination Nov/Dec-2019<br>nology<br>SYSTEM                                   |
|-------------|-------------------|---------------------------------------|--|-------------------|---|
| Day<br>Time | & Date<br>: 10:0  | e: Frio<br>0 AM                       | day, 22-11-2019<br>To 01:00 PM   |                   | Max. Marks: 70  |
| Instr       | uctior            | <b>ns:</b> 1)                         | ) Q. No. 1 is compulsory and sh book.  | ould              | be solved in first 30 minutes in answer                                     |
|             |                   | 2<br>3                                | ) Figures to the right indicate full<br>) Assume data wherever necess  | mai<br>ary.       | rks.  |
|             |                   |                                       | MCQ/Objective Ty   | pe (              | Questions   |
| Dura        | tion: 3           | 30 Mir                                | nutes  |                   | Marks: 14   |
| Q.1         | <b>Choo</b><br>1) | ose C<br>Wha<br>a)<br>c)              | <b>Correct Options.</b><br>at is the command to change the<br>cgrp<br>change   | gro<br>b)<br>d)   | 14<br>up ownership of a file?<br>Chgrp<br>Group                             |
|             | 2)                | Wha<br>a)<br>c)                       | at is the command to count the n<br>grep<br>count  | umb<br>b)<br>d)   | er of characters in a file?<br>wc<br>cut                                    |
|             | 3)                | Virtu<br>a)<br>c)                     | al memory is normally implement<br>demand paging<br>virtualization   | nted<br>b)<br>d)  | by<br>buses<br>all of the mentioned   |
|             | 4)                | A sw<br>indiv<br>a)<br>b)<br>c)<br>d) | vapper manipulates wher<br>vidual of a process.<br>the entire process, parts<br>all the pages of a process, segr<br>the entire process, pages<br>none of the mentioned | eas<br>nent       | the pager is concerned with<br>s  |
|             | 5)                | syste<br>a)<br>c)                     | is a unique tag, usually a nun<br>em.<br>File identifier<br>File type  | ber<br>b)<br>d)   | , identifies the file within the file<br>File name<br>None of the mentioned |
|             | 6)                | To c<br>a)<br>b)<br>c)<br>d)          | reate a file<br>allocate the space in file system<br>make an entry for new file in dir<br>allocate the space in file system<br>directory<br>none of the mentioned      | ecto<br>1 & n     | ry<br>nake an entry for new file in   |
|             | 7)                | By u<br>a)<br>c)                      | ising the specific system call, we open the file write into the file   | e car<br>b)<br>d) | n<br>read the file<br>all of the mentioned                                  |
|             | 8)                | File<br>a)<br>c)                      | type can be represented by<br>file name<br>file identifier   | b)<br>d)          | file extension<br>none of the mentioned                                     |

#### Page **7** of **12**

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Set R

### Seat No.



- 9) What is the mounting of file system?
  - a) crating of a filesystem
  - b) deleting a filesystem
  - attaching portion of the file system into a directory structure c)
  - removing portion of the file system into a directory structure d)
- 10) Which of the following commands can be used to change default permissions for files and directories at the time of creation?
  - a) Chmod b) chown
  - c) Umask d) charp
- Which of the following option of Is command can be used to view file inode 11) number?
  - a) I b) - o
  - c) a d) - i

What is the name of the method that kernel uses to minimize the 12) frequency of disk access by maintaining a pool of internal data buffer to increase the response time and throughput?

- a) Pooling
- b) spooling c) buffer cache d) swapping
- 13) The address of a page table in memory is pointed by \_\_\_\_\_
  - a) stack pointer b) page table base register
  - page register C)
- d) program counter
- A parent process calling \_\_\_\_\_ system call will be suspended until 14)
  - children processes terminate.
    - a) wait c)
      - exit
- b) Fork
- d) Exec

Page **9** of **12** 

| Day & Date: Friday, 22-11-2019 Max. Mark<br>Time: 10:00 AM To 01:00 PM |  |                 |  |  |
|--|--|-----------------|--|--|
| Insti  | <ul> <li>ructions: 1) All questions are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>3) Assume data wherever necessary.</li> </ul>   |                 |  |  |
| Section – I  |  |                 |  |  |
| Q.2  | <ul> <li>Attempt any Four.</li> <li>a) Write a program that creates a new process to copy files.</li> <li>b) Describe the concept of Context of a process?</li> <li>c) What is buffer header? Draw the diagram of buffer header &amp; explain it's fields.</li> <li>d) What is superblock? What are the fields it consists of?</li> <li>e) What is system call? Explain any two system calls for the file system.</li> </ul> | 16              |  |  |
| Q.3  | What OPEN system call does? Write an algorithm for opening a file.   | 06              |  |  |
| Q.4  | <ul> <li>Answer any one from the following questions.</li> <li>a) Describe various scenarios for retrieval of a buffer.</li> <li>b) Write a note on File and Record Locking.</li> </ul>  | 06              |  |  |
| Section – II   |  |                 |  |  |
| Q.5  | <ul> <li>Answer any four from the following questions.</li> <li>a) Write an algorithm for allocating a region.</li> <li>b) What is a Process Group? What does setpgrp() system call.</li> <li>c) Explain an algorithm for process scheduling.</li> <li>d) Describe Fork Swap.</li> <li>e) Explain in short Terminal Drivers.</li> </ul>  | 12              |  |  |
| Q.6  | <ul> <li>Answer any one from the following questions.</li> <li>a) Describe in detail the relationship of data structures for demand paging</li> <li>b) Explain an algorithm for the exec system call.</li> </ul>   | 08              |  |  |
| Q.7  | Answer the following question.<br>What is Swapping? Describe in detail swapping process out of main memory   | <b>08</b><br>⁄. |  |  |

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

UNIX OPERATING SYSTEM

## **SLR-FM-360**

Set R

Seat No.

#### Max. Marks: 70 book. 2) Figures to the right indicate full marks. 3) Assume data wherever necessary. **MCQ/Objective Type Questions Duration: 30 Minutes** Q.1 Choose Correct Options. Which of the following commands can be used to change default 1) permissions for files and directories at the time of creation? chmod b) chown a) c) umask d) charp 2) number? a) - I b) - o d) - i c) - a What is the name of the method that kernel uses to minimize the 3) increase the response time and throughput? a) pooling b) spooling c) buffer cache d) swapping The address of a page table in memory is pointed by \_\_\_\_\_ 4) stack pointer b) page table base register a) d) program counter page register C)

#### A parent process calling \_\_\_\_\_ system call will be suspended until 5) children processes terminate.

- a) wait b) fork c) d) exec exit
- 6) What is the command to change the group ownership of a file?
  - b) charp a) carp
  - c) change d) group
- 7) What is the command to count the number of characters in a file?
  - a) grep b) wc
  - c) count d) cut
- Virtual memory is normally implemented by \_ 8) b) buses
  - demand paging a) C)
    - Virtualization d) all of the mentioned

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology UNIX OPERATING SYSTEM

Day & Date: Friday, 22-11-2019 Time: 10:00 AM To 01:00 PM

Seat

No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

- - Which of the following option of Is command can be used to view file inode
  - frequency of disk access by maintaining a pool of internal data buffer to

## SLR-FM-360

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Marks: 14

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- 9) A swapper manipulates \_\_\_\_\_ whereas the pager is concerned with individual \_\_\_\_\_ of a process.
  - a) the entire process, parts
  - b) all the pages of a process, segments
  - c) the entire process, pages
  - d) none of the mentioned
- 10) \_\_\_\_\_ is a unique tag, usually a number, identifies the file within the file system.
  - a) File identifier

b) File name

c) File type

- d) None of the mentioned
- 11) To create a file \_\_\_\_\_.

a) file name

c) file identifier

C)

- a) allocate the space in file system
- b) make an entry for new file in directory
- c) allocate the space in file system & make an entry for new file in directory
- d) none of the mentioned

write into the file

- 12) By using the specific system call, we can \_\_\_\_\_.
  - a) open the file
    - b) read the filed) all of the mentioned
- 13) File type can be represented by \_\_\_\_\_
  - b) file extension
    - d) none of the mentioned
- 14) What is the mounting of file system?
  - a) crating of a filesystem
  - b) deleting a filesystem
  - c) attaching portion of the file system into a directory structure
  - d) removing portion of the file system into a directory structure

## Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology UNIX OPERATING SYSTEM

Day & Date: Friday, 22-11-2019 Time: 10:00 AM To 01:00 PM

#### **Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume data wherever necessary.

#### Section – I

| Q.2 | Attempt any Four.                 |  | 16 |
|-----|-----------------------------------|--|----|
|     | a)                                | Write a program that creates a new process to copy files.  |    |
|     | b)                                | Describe the concept of Context of a process?  |    |
|     | c)                                | What is buffer header? Draw the diagram of buffer header & explain it's fields.  |    |
|     | d)                                | What is superblock? What are the fields it consists of?  |    |
|     | e)                                | What is system call? Explain any two system calls for the file system.   |    |
| Q.3 | Wh                                | at OPEN system call does? Write an algorithm for opening a file.   | 06 |
| Q.4 | Ans<br>a)<br>b)                   | swer any one from the following questions.<br>Describe various scenarios for retrieval of a buffer.<br>Write a note on File and Record Locking.  | 06 |
|     |                                   | Section – II   |    |
| Q.5 | Ans<br>a)<br>b)<br>c)<br>d)<br>e) | swer any four from the following questions.<br>Write an algorithm for allocating a region.<br>What is a Process Group? What does setpgrp() system call.<br>Explain an algorithm for process scheduling.<br>Describe Fork Swap.<br>Explain in short Terminal Drivers. | 12 |
| Q.6 | Ans<br>a)<br>b)                   | swer any one from the following questions.<br>Describe in detail the relationship of data structures for demand paging.<br>Explain an algorithm for the exec system call.  | 08 |
| Q.7 | <b>Ans</b><br>Wh                  | swer the following question.<br>at is Swapping? Describe in detail swapping process out of main memory.  | 08 |



Max. Marks: 56

**SLR-FM-360** 

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### Seat No.

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE ENGINEERING

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
  - 1) With regard to Evolutionary development, identify the correct statement.
    - a) Evolutionary development usually comes in two flavors; exploratory development, and throwaway prototyping.
    - b) Very large projects are natural candidates for an evolutionary development based approach.
    - c) Exploratory development is used in situations where most of the requirements are well understood in advance.
    - d) One of the strong points of evolutionary development is that it facilitates easy project management, through the high volume of documentation it generates.
  - A simple way of looking at the spiral software life-cycle model is as a waterfall model with each phase proceeded by \_\_\_\_\_.
    - a) Build-and-fix b) Freezing
    - c) Synchronization d)
  - 3) What are the Drawbacks of RAD Model?
    - a) Require sufficient number of Human Resources to create enough number of teams
    - b) Developers and Customers are not committed, system result in failure
    - c) Both a and b
    - d) None of the above
  - 4) Which one of the following is TRUE?
    - a) The requirements document also describes how the requirements that are listed in the document are implemented efficiently.
    - b) Consistency and completeness of functional requirements are always achieved in practice.
    - c) Prototyping is a method of requirements validation.
    - d) Requirements review is carried out to find the errors in system design.
  - 5) What are the contents we should contain in the feasibility report?
    - a) A statement of user requirements.
    - b) The cost and benefits of development.
    - c) A conclusion and recommendations.
    - d) All of the above

Max. Marks: 70



Marks: 14

Risk analysis

|     | SLR-FM-361   |
|-----|--|
|     | Set P  |
| 6)  | If a control switch is passed as an argument this is an example of<br>coupling.<br>a) Content b) Common<br>c) Control  |
| 7)  | Function oriented design process consists of         a) Data Flow Design       b) Structural decomposition         c) Detailed Design       d) All of the above  |
| 8)  | A test case design technique that makes use of a knowledge of the<br>internal program logica) Black Box Testingb) White Box Testingc) Unit Testingd) None of these   |
| 9)  | A stub is a dummy version of the module of the module undertesting.a) Superordinatec) Coordinated) All of the above  |
| 10) | Which testing is concerned with behavior of whole product as perspecified requirements?a) Acceptance testingb) Component testingc) System testingd) Integration testing  |
| 11) | Project Planning involves defining the process to be followed<br>a) Estimates b) Detailed schedule<br>c) Plan for quality d) All of the above  |
| 12) | <ul> <li>Which of the following items should not be included in the software project management plan?</li> <li>a) The techniques and case tools to be used</li> <li>b) The life cycle model to be used</li> <li>c) The organizational structure of the development organization, project responsibilities, managerial objectives and priorities</li> <li>d) None of the above</li> </ul> |
| 13) | Agile Manifesto has Key values and 12 principles.<br>a) 5 b) 8<br>c) 4 d) 12   |
| 14) | <ul> <li>An Agile approach advocates which of the following approaches?</li> <li>a) Get something "quick and dirty" delivered, to save time</li> <li>b) Get something simple released as quickly as possible</li> <li>c) Get something business-valuable delivered as quickly as possible, consistent with the right level of quality</li> </ul>   |

d) Get something delivered once it has been fully documented and the documentation has been signed off as complete

| Seat |  |
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### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE ENGINEERING

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Attempt any three of the following questions.

- a) Define Software Engineering. Distinguished between Generic product and Customized product.
- **b)** Explain Rational unified process model.
- c) Give the structure of software requirement document in IEEE format.
- d) Describe the design terms: Coupling and Cohesion with example.
- e) What is software architecture? Explain Role of Software Architecture.

### Q.3 Attempt any two of the following questions.

- a) What are the software process models? Explain with neat diagram the iterative development model.
- **b)** Write a short note on:
  - 1) Problem partitioning
  - 2) Abstraction
  - 3) Top-Down and Bottom-up Design strategies
- c) What is DFD? Write the DFD for "Online food ordering system" by using DFD Conventions.

### Section – II

### Q.4 Attempt any three of the following questions.

- a) What are the two phases of testing process? Explain White-Box Testing Method.
- **b)** Describe the Risk Management Planning in software project.
- c) Write a note on software configuration management process.
- d) With a neat diagram explain Iterative Project Management Life Cycle in detail.
- e) Describe Adaptive Project Management Life Cycle Model with a neat diagram.

### Q.5 Attempt any two of the following questions.

- a) What factors should be taken into account when selecting staff to work on a software development project?
- b) Describe Object Oriented Software testing methods in detail.
- c) What is Agile Project Management and explain its key values and principles.

Max. Marks: 56

16

12

12

|             |                  | T.E.                                       | Part – II) (New) (CB)<br>Informat<br>SOFTWAR  | CS) Exam<br>ion Techn   | ination Nov/Dec-20<br>lology<br>EERING  | 19               |
|-------------|------------------|--|---|---|---|------------------|
| Day<br>Time | & Date<br>: 10:0 | e: Satu<br>0 AM <sup>·</sup>               | urday, 23-11-2019<br>To 01:00 PM  |   | M   | ax. Marks: 70    |
| Instr       | uctior           | ns: 1)<br>2)                               | Q. No. 1 is compulsory a<br>answer book.<br>Figures to the right indic  | and it should<br>ate full mark  | be solved in first 30 min<br>s.   | utes in          |
|             |                  |  | MCQ/Object  | ive Type (  | Questions   |                  |
| Dura        | tion: 3          | 80 Min                                     | utes  |   |   | Marks: 14        |
| Q.1         | Choo             | ose th                                     | e correct alternatives f  | rom the opt   | tions and rewrite the   | 14               |
|             | 1)               | A tes<br>interr                            | t case design technique<br>nal program logic  | that makes  | use of a knowledge of th  | е                |
|             |                  | a) E<br>c) l                               | Black Box Testing<br>Jnit Testing   | b)<br>d)  | White Box Testing<br>None of these  |                  |
|             | 2)               | A stu                                      | ib is a dummy version of  | the   | _ module of the module (  | under            |
|             |                  | a) S<br>c) (                               | ig.<br>Superordinate<br>Coordinate  | b)<br>d)  | Subordinate<br>All of the above   |                  |
|             | 3)               | Whic<br>spec<br>a) /<br>c) \$              | th testing is concerned w<br>ified requirements?<br>Acceptance testing<br>System testing  | ith behavior<br>b)<br>d)  | of whole product as per<br>Component testing<br>Integration testing   |                  |
|             | 4)               | Proje<br>a) E<br>c) F                      | ect Planning involves defi<br>Estimates<br>Plan for quality   | ining the pro<br>b)<br>d)   | cess to be followed<br>Detailed schedule<br>All of the above  |                  |
|             | 5)               | Whic<br>proje<br>a)<br>b)<br>c)<br>r<br>d) | th of the following items s<br>oct management plan?<br>The techniques and case<br>The life cycle model to be<br>The organizational structor<br>responsibilities, manager<br>None of the above   | should not be<br>tools to be<br>used<br>ure of the de<br>ial objectives   | e included in the software<br>used<br>evelopment organization,<br>s and priorities  | ∍<br>project     |
|             | 6)               | Agile<br>a) 5<br>c) 4                      | Manifesto has<br>5<br>1   | Key values<br>b)<br>d)  | and 12 principles.<br>8<br>12   |                  |
|             | 7)               | An A<br>a) (<br>b) (<br>c) (<br>d) (       | gile approach advocates<br>Get something "quick and<br>Get something simple rel<br>Get something business-<br>consistent with the right le<br>Get something delivered<br>documentation has been | which of the<br>d dirty" delive<br>eased as qu<br>valuable del<br>evel of qualit<br>once it has l<br>signed off a | e following approaches?<br>ered, to save time<br>lickly as possible<br>ivered as quickly as pose<br>ty<br>been fully documented a<br>s complete | sible,<br>nd the |

# Set Q

### Seat No.

**SLR-FM-361** 

### 8) With regard to Evolutionary development, identify the correct statement.

 Evolutionary development usually comes in two flavors; exploratory development, and throwaway prototyping.

**SLR-FM-361** 

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- b) Very large projects are natural candidates for an evolutionary development based approach.
- c) Exploratory development is used in situations where most of the requirements are well understood in advance.
- d) One of the strong points of evolutionary development is that it facilitates easy project management, through the high volume of documentation it generates.
- 9) A simple way of looking at the spiral software life-cycle model is as a waterfall model with each phase proceeded by \_\_\_\_\_.
  - a) Build-and-fix b) Freezing
  - c) Synchronization d) Risk analysis
- 10) What are the Drawbacks of RAD Model?
  - a) Require sufficient number of Human Resources to create enough number of teams
  - b) Developers and Customers are not committed, system result in failure
  - c) Both a and b
  - d) None of the above
- 11) Which one of the following is TRUE?
  - a) The requirements document also describes how the requirements that are listed in the document are implemented efficiently.
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  - c) A conclusion and recommendations.
  - d) All of the above
- If a control switch is passed as an argument this is an example of \_\_\_\_\_\_ coupling.
  - a) Content b) Common
  - c) Control d) Data
- 14) Function oriented design process consists of \_\_\_\_\_
  - a) Data Flow Design
- b) Structural decomposition
- c) Detailed Design
- d) All of the above

| Seat |  |
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| No.  |  |

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE ENGINEERING

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Attempt any three of the following questions.

- a) Define Software Engineering. Distinguished between Generic product and Customized product.
- b) Explain Rational unified process model.
- c) Give the structure of software requirement document in IEEE format.
- d) Describe the design terms: Coupling and Cohesion with example.
- e) What is software architecture? Explain Role of Software Architecture.

### Q.3 Attempt any two of the following questions.

- a) What are the software process models? Explain with neat diagram the iterative development model.
- **b)** Write a short note on:
  - 1) Problem partitioning
  - 2) Abstraction
  - 3) Top-Down and Bottom-up Design strategies
- c) What is DFD? Write the DFD for "Online food ordering system" by using DFD Conventions.

### Section – II

### Q.4 Attempt any three of the following questions.

- a) What are the two phases of testing process? Explain White-Box Testing Method.
- b) Describe the Risk Management Planning in software project.
- c) Write a note on software configuration management process.
- d) With a neat diagram explain Iterative Project Management Life Cycle in detail.
- e) Describe Adaptive Project Management Life Cycle Model with a neat diagram.

### Q.5 Attempt any two of the following questions.

- a) What factors should be taken into account when selecting staff to work on a software development project?
- b) Describe Object Oriented Software testing methods in detail.
- c) What is Agile Project Management and explain its key values and principles.

Max. Marks: 56

16

12

12

# T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

**Duration: 30 Minutes** 

Seat

No.

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

Information Technology SOFTWARE ENGINEERING

Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- 1) What are the contents we should contain in the feasibility report?
  - a) A statement of user requirements.
  - b) The cost and benefits of development.
  - c) A conclusion and recommendations.
  - d) All of the above
- 2) If a control switch is passed as an argument this is an example of \_\_\_\_\_ coupling.
  - a) Content b) Common
  - Control d) Data c)

3) Function oriented design process consists of

- Data Flow Design Structural decomposition b) a) d) All of the above
- Detailed Design c)
- A test case design technique that makes use of a knowledge of the 4) internal program logic \_\_\_\_\_.
  - Black Box Testing b) White Box Testing a)
  - Unit Testing d) None of these c)
- 5) A stub is a dummy version of the module of the module under testing.
  - a) Superordinate b) Subordinate
    - c) Coordinate d) All of the above
- 6) Which testing is concerned with behavior of whole product as per specified requirements?
  - a) Acceptance testing Component testing b)
  - c) System testing d) Integration testing

Project Planning involves defining the process to be followed 7)

- a) Estimates c) Plan for quality
- **Detailed schedule** b)
  - All of the above d)

Max. Marks: 70

Marks: 14

14

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#### 8) Which of the following items should not be included in the software project management plan?

- a) The techniques and case tools to be used
- The life cycle model to be used b)
- The organizational structure of the development organization, project c) responsibilities, managerial objectives and priorities

**SLR-FM-361** 

Set

- d) None of the above
- Agile Manifesto has \_\_\_\_\_ Key values and 12 principles. 9)
  - a) 5 b) 8 12
  - d) c) 4
- An Agile approach advocates which of the following approaches? 10)
  - a) Get something "guick and dirty" delivered, to save time
  - b) Get something simple released as guickly as possible
  - c) Get something business-valuable delivered as quickly as possible, consistent with the right level of quality
  - d) Get something delivered once it has been fully documented and the documentation has been signed off as complete
- 11) With regard to Evolutionary development, identify the correct statement.
  - a) Evolutionary development usually comes in two flavors; exploratory development, and throwaway prototyping.
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  - c) Exploratory development is used in situations where most of the requirements are well understood in advance.
  - One of the strong points of evolutionary development is that it d) facilitates easy project management, through the high volume of documentation it generates.
- 12) A simple way of looking at the spiral software life-cycle model is as a waterfall model with each phase proceeded by \_
  - a) Build-and-fix

- Freezing b)
- c) Synchronization d) **Risk analysis**
- 13) What are the Drawbacks of RAD Model?
  - a) Require sufficient number of Human Resources to create enough number of teams
  - b) Developers and Customers are not committed, system result in failure
  - Both a and b C)
  - d) None of the above
- 14) Which one of the following is TRUE?
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  - Prototyping is a method of requirements validation. C)
  - d) Requirements review is carried out to find the errors in system design.

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### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE ENGINEERING

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

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- e) What is software architecture? Explain Role of Software Architecture.

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- a) What are the software process models? Explain with neat diagram the iterative development model.
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  - 1) Problem partitioning
  - 2) Abstraction
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- c) What is DFD? Write the DFD for "Online food ordering system" by using DFD Conventions.

### Section – II

### Q.4 Attempt any three of the following questions.

- a) What are the two phases of testing process? Explain White-Box Testing Method.
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- c) Write a note on software configuration management process.
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- e) Describe Adaptive Project Management Life Cycle Model with a neat diagram.

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- b) Describe Object Oriented Software testing methods in detail.
- c) What is Agile Project Management and explain its key values and principles.

Max. Marks: 56

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### Seat No.

**Duration: 30 Minutes** 

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE ENGINEERING

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

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### MCQ/Objective Type Questions

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
  - 1) Which testing is concerned with behavior of whole product as per specified requirements?
    - a) Acceptance testing b) Component testing d) Integration testing
    - c) System testing d) Integration testing
  - 2) Project Planning involves defining the process to be followed \_\_\_\_\_
    - a) Estimates

c) Plan for quality

- b) Detailed scheduled) All of the above
- 3) Which of the following items should not be included in the software project management plan?
  - a) The techniques and case tools to be used
  - b) The life cycle model to be used
  - c) The organizational structure of the development organization, project responsibilities, managerial objectives and priorities
  - d) None of the above
- 4) Agile Manifesto has \_\_\_\_\_ Key values and 12 principles.
  - a) 5 b) 8
  - c) 4 d) 12
- 5) An Agile approach advocates which of the following approaches?
  - a) Get something "quick and dirty" delivered, to save time
  - b) Get something simple released as quickly as possible
  - c) Get something business-valuable delivered as quickly as possible, consistent with the right level of quality
  - d) Get something delivered once it has been fully documented and the documentation has been signed off as complete
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  - a) Evolutionary development usually comes in two flavors; exploratory development, and throwaway prototyping.
  - b) Very large projects are natural candidates for an evolutionary development based approach.
  - c) Exploratory development is used in situations where most of the requirements are well understood in advance.
  - d) One of the strong points of evolutionary development is that it facilitates easy project management, through the high volume of documentation it generates.

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Marks: 14

14

Max. Marks: 70

- A simple way of looking at the spiral software life-cycle model is as a waterfall model with each phase proceeded by \_\_\_\_\_.
  - a) Build-and-fix

b) Freezing

**Risk analysis** 

**SLR-FM-361** 

Set

- c) Synchronization
- 8) What are the Drawbacks of RAD Model?
  - a) Require sufficient number of Human Resources to create enough number of teams

d)

- b) Developers and Customers are not committed, system result in failure
- c) Both a and b
- d) None of the above
- 9) Which one of the following is TRUE?
  - a) The requirements document also describes how the requirements that are listed in the document are implemented efficiently.
  - b) Consistency and completeness of functional requirements are always achieved in practice.
  - c) Prototyping is a method of requirements validation.
  - d) Requirements review is carried out to find the errors in system design.
- 10) What are the contents we should contain in the feasibility report?
  - a) A statement of user requirements.
  - b) The cost and benefits of development.
  - c) A conclusion and recommendations.
  - d) All of the above
- 11) If a control switch is passed as an argument this is an example of \_\_\_\_\_\_ coupling.
  - a) Content
- b) Common
- c) Control d) Data
- 12) Function oriented design process consists of \_
  - b) Structural decomposition
  - a) Data Flow Designc) Detailed Design
- d) All of the above
- 13) A test case design technique that makes use of a knowledge of the internal program logic \_\_\_\_\_.
  - a) Black Box Testing b) White Box Testing
  - c) Unit Testing d) None of these
- 14) A stub is a dummy version of the \_\_\_\_\_ module of the module under testing.
  - a) Superordinate
  - c) Coordinate

- b) Subordinate
- d) All of the above

| Seat |  |
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### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE ENGINEERING

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Attempt any three of the following questions.

- a) Define Software Engineering. Distinguished between Generic product and Customized product.
- **b)** Explain Rational unified process model.
- c) Give the structure of software requirement document in IEEE format.
- d) Describe the design terms: Coupling and Cohesion with example.
- e) What is software architecture? Explain Role of Software Architecture.

### Q.3 Attempt any two of the following questions.

- a) What are the software process models? Explain with neat diagram the iterative development model.
- **b)** Write a short note on:
  - 1) Problem partitioning
  - 2) Abstraction
  - 3) Top-Down and Bottom-up Design strategies
- c) What is DFD? Write the DFD for "Online food ordering system" by using DFD Conventions.

### Section – II

### Q.4 Attempt any three of the following questions.

- a) What are the two phases of testing process? Explain White-Box Testing Method.
- **b)** Describe the Risk Management Planning in software project.
- c) Write a note on software configuration management process.
- d) With a neat diagram explain Iterative Project Management Life Cycle in detail.
- e) Describe Adaptive Project Management Life Cycle Model with a neat diagram.

### Q.5 Attempt any two of the following questions.

- a) What factors should be taken into account when selecting staff to work on a software development project?
- b) Describe Object Oriented Software testing methods in detail.
- c) What is Agile Project Management and explain its key values and principles.

Max. Marks: 56

16

12

12

Page **1** of **12** 

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **OBJECT ORIENTED MODELING AND DESIGN** Max. Marks: 70 Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book. 2) Figures to the right indicate full marks. **MCQ/Objective Type Questions Duration: 30 Minutes** Marks: 14 Q.1 A) Choose the correct alternatives from the options and rewrite the **08** sentence. 1) In analysis phase of OMT we consider \_\_\_\_\_ models. a) 7 b) 9 c) 3 d) 2 \_\_\_\_\_ are real world elements in an object oriented environment, that 2) may have a physical or a conceptual existence. b) Application a) Class Structure d) Object c) Inheritance defines a relationship. 3) a) is-a b) for-a Into d) onto c) Polymorphism means the ability to take \_\_\_\_\_ forms. 4) a) Single b) Only two c) Only quadruple d) Multiple 5) In a dynamic model a state is represented by \_\_\_\_\_ a) rounded rectangle Square b) c) Diamond d) Ellipse 6) \_\_\_\_ are some occurrences that can trigger state transition of an object or a group of objects. States b) Links a) associations d) Events C) 7) Α \_\_\_\_\_ denotes a change in the state of an object. a) Link b) Association Transition d) Activity c) Interaction diagram is a combination of diagrams. 8)

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

d) Object and class

No.

Seat

# **SLR-FM-362**

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06

#### Say True or False b)

- Class diagram represents instances of objects. Generalization is an is-kind relation. 1)
- 2)
- An actor instigates use cases. 3)
- Transitions are shown in sequence diagram. 4)
- 5) White diamond is used to indicate aggregations
- 6) Packages are combinations of all diagrams.

12

### Seat No.

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING AND DESIGN

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Attempt any four of the following questions.

- a) What are the basic stages in Object Modeling Technique?
- **b)** Define abstraction and illustrate its use.
- c) What are links? How are they different from associations?
- d) Compare between Object model and dynamic model.
- e) With an example bring out the exact meaning of the concept 'Aggregation'.

### Q.3 Attempt any two of the following questions.

- a) What is a role name? Illustrate with the help of an appropriate OMT model.
- **b)** How is the tripod combined in the object design phase? and how do we arrive at Implementation for Object diagram compiler?
- c) Draw the three models of Analysis phase of OMT for a banking system.

### Section – II

### Q.4 Attempt any four of the following questions.

- a) What are the basic building blocks of Unified Modeling Language?
- b) Define interfaces and packages and illustrate their use.
- c) What are Instances? How are they different from Classes?
- d) Compare between Component and Deployment UML diagrams.
- e) With an example bring out the exact meaning of the concept 'Patterns and Framework'.

### Q.5 Attempt any two of the following questions.

- a) Reproduce a Use case diagram for a Hospital Management System?
- **b)** Draw a sequence diagram of an admission procedure conducted by a college.
- c) Draw a deployment diagram for the work conducted in a Library of your city.

Max. Marks: 56

12

16

| Seat |  |
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### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING AND DESIGN

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

### **Duration: 30 Minutes**

- Q.1 A) Choose the correct alternatives from the options and rewrite the 08 sentence.
  1) In a dynamic model a state is represented by \_\_\_\_\_.
  a) rounded rectangle b) Square
  - a) rounded rectangleb) Squarec) Diamondd) Ellipse
  - 2) \_\_\_\_\_ are some occurrences that can trigger state transition of an object or a group of objects.
    - a) States b) Links
    - c) associations d) Events
  - 3) A \_\_\_\_\_ denotes a change in the state of an object.
    - a) Link b) Association c) Transition d) Activity
  - 4) Interaction diagram is a combination of \_\_\_\_\_ diagrams.
    - a) Use case and deployment
    - b) Sequence and collaboration
    - c) Collaboration and Deployment
    - d) Object and class

### 5) In analysis phase of OMT we consider \_\_\_\_\_ models.

- a) 7 b) 9 c) 3 d) 2
- 6) \_\_\_\_\_ are real world elements in an object oriented environment, that may have a physical or a conceptual existence.
  - a) Classb) Applicationc) Structured) Object
- 7) Inheritance defines a \_\_\_\_\_ relationship.
  - a) is-a b) for-a
    - c) Into d) Onto
- 8) Polymorphism means the ability to take \_\_\_\_\_ forms.
  - a) Single b) Only two
  - c) Only quadruple d) Multiple



Max. Marks: 70

Marks: 14



#### b) Say True or False

- Transitions are shown in sequence diagram.
   White diamond is used to indicate aggregations
   Packages are combinations of all diagrams.
   Class diagram represents instances of objects.
   Generalization is an is-kind relation.

- An actor instigates use cases. 6)

Set

Max. Marks: 56

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING AND DESIGN

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Seat No.

### Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Attempt any four of the following questions.

- a) What are the basic stages in Object Modeling Technique?
- **b)** Define abstraction and illustrate its use.
- c) What are links? How are they different from associations?
- d) Compare between Object model and dynamic model.
- e) With an example bring out the exact meaning of the concept 'Aggregation'.

### Q.3 Attempt any two of the following questions.

- a) What is a role name? Illustrate with the help of an appropriate OMT model.
- **b)** How is the tripod combined in the object design phase? and how do we arrive at Implementation for Object diagram compiler?
- c) Draw the three models of Analysis phase of OMT for a banking system.

### Section – II

### Q.4 Attempt any four of the following questions.

- a) What are the basic building blocks of Unified Modeling Language?
- b) Define interfaces and packages and illustrate their use.
- c) What are Instances? How are they different from Classes?
- d) Compare between Component and Deployment UML diagrams.
- e) With an example bring out the exact meaning of the concept 'Patterns and Framework'.

### Q.5 Attempt any two of the following questions.

- a) Reproduce a Use case diagram for a Hospital Management System?
- b) Draw a sequence diagram of an admission procedure conducted by a college.
- c) Draw a deployment diagram for the work conducted in a Library of your city.

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| Seat<br>No.    |             |                    | S  | et   | R    |
|                |             | T.E                | E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>OBJECT ORIENTED MODELING AND DESIGN  |      |      |
| Day &<br>Time: | Dat<br>10:0 | e: Mo<br>0 AN      | Max. Max. Max. Max. Max. Max. Max. Max.  | arks | : 70 |
| Instru         | ictio       | <b>ns:</b> 1<br>2` | ) Q. No. 1 is compulsory and it should be solved in first 30 minutes in book.<br>Figures to the right indicate full marks.   | ans  | wer  |
|                |             | ,                  | MCQ/Objective Type Questions   |      |      |
| Durati         | on: (       | 30 Mi              | nutes M  | arks | : 14 |
| Q.1            | A)          | Cho                | ose the correct alternatives from the options and rewrite the  |      | 80   |
|                |             | <b>sen</b> t<br>1) | t <b>ence.</b><br>Inheritance defines a relationship.<br>a) is-a b) for-a<br>c) Into d) onto   |      |      |
|                |             | 2)                 | Polymorphism means the ability to take forms.a) Singleb) Only twoc) Only quadrupled) Multiple  |      |      |
|                |             | 3)                 | In a dynamic model a state is represented by<br>a) rounded rectangle b) Square<br>c) Diamond d) Ellipse  |      |      |
|                |             | 4)                 | are some occurrences that can trigger state transition of an object or a group of objects. a) States b) Links c) associations d) Events  |      |      |
|                |             | 5)                 | <ul> <li>A denotes a change in the state of an object.</li> <li>a) Link b) Association</li> <li>c) Transition d) Activity</li> </ul>   |      |      |
|                |             | 6)                 | <ul> <li>Interaction diagram is a combination of diagrams.</li> <li>a) Use case and deployment</li> <li>b) Sequence and collaboration</li> <li>c) Collaboration and Deployment</li> <li>d) Object and class</li> </ul> |      |      |
|                |             | 7)                 | In analysis phase of OMT we consider models.<br>a) 7 b) 9<br>c) 3 d) 2   |      |      |
|                |             | 8)                 | <ul> <li>are real world elements in an object oriented environment, tha may have a physical or a conceptual existence.</li> <li>a) Class</li> <li>b) Application</li> <li>c) Structure</li> <li>d) Object</li> </ul>   | t    |      |

# Set R

06

#### Say True or False b)

- Generalization is an is-kind relation. 1)
- 2) An actor instigates use cases.
- 3) Transitions are shown in sequence diagram.4) White diamond is used to indicate aggregations
- 5) Packages are combinations of all diagrams.
- 6) Class diagram represents instances of objects.

Max. Marks: 56

### Seat No.

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING AND DESIGN

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

| Instructions: 1) | All questions are | compulsory. |
|------------------|-------------------|-------------|
|------------------|-------------------|-------------|

2) Figures to the right indicate full marks.

#### Section – I

### Q.2 Attempt any four of the following questions.

- a) What are the basic stages in Object Modeling Technique?
- **b)** Define abstraction and illustrate its use.
- c) What are links? How are they different from associations?
- d) Compare between Object model and dynamic model.
- e) With an example bring out the exact meaning of the concept 'Aggregation'.

#### Q.3 Attempt any two of the following questions.

- a) What is a role name? Illustrate with the help of an appropriate OMT model.
- **b)** How is the tripod combined in the object design phase? and how do we arrive at Implementation for Object diagram compiler?
- c) Draw the three models of Analysis phase of OMT for a banking system.

#### Section – II

### Q.4 Attempt any four of the following questions.

- a) What are the basic building blocks of Unified Modeling Language?
- b) Define interfaces and packages and illustrate their use.
- c) What are Instances? How are they different from Classes?
- d) Compare between Component and Deployment UML diagrams.
- e) With an example bring out the exact meaning of the concept 'Patterns and Framework'.

### Q.5 Attempt any two of the following questions.

- a) Reproduce a Use case diagram for a Hospital Management System?
- **b)** Draw a sequence diagram of an admission procedure conducted by a college.
- c) Draw a deployment diagram for the work conducted in a Library of your city.



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Max. Marks: 70

Marks: 14

Set S

# SLR-FM-362

| Seat |  |
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| No.  |  |
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### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING AND DESIGN

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

- Q.1 A) Choose the correct alternatives from the options and rewrite the 08 sentence.
  1) A \_\_\_\_\_ denotes a change in the state of an object.
  a) Link b) Association
  - c) Transition d) Activity
  - 2) Interaction diagram is a combination of \_\_\_\_\_ diagrams.
    - a) Use case and deployment
    - b) Sequence and collaboration
    - c) Collaboration and Deployment
    - d) Object and class
  - 3) In analysis phase of OMT we consider \_\_\_\_\_ models.
    - a) 7 b) 9 c) 3 d) 2
  - 4) \_\_\_\_\_ are real world elements in an object oriented environment, that may have a physical or a conceptual existence.
    - a) Class b) Application
    - c) Structure d) Object
  - 5) Inheritance defines a \_\_\_\_\_ relationship.
    - a) is-a b) for-a
    - c) Into d) onto
  - 6) Polymorphism means the ability to take \_\_\_\_\_ forms.
    - a) Single b) Only two
    - c) Only quadruple d) Multiple
  - 7) In a dynamic model a state is represented by \_\_\_\_\_.
    - a) rounded rectangle b) Square
    - c) Diamond d) Ellipse
  - are some occurrences that can trigger state transition of an object or a group of objects.
    - a) States b) Links
    - c) associations d) Events



#### b) Say True or False

- 1)
- Packages are combinations of all diagrams. Class diagram represents instances of objects. Generalization is an is-kind relation. 2)
- 3)
- 4) An actor instigates use cases.
- 5)
- Transitions are shown in sequence diagram. White diamond is used to indicate aggregations 6)

### Seat No.

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING AND DESIGN

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Attempt any four of the following questions.

- a) What are the basic stages in Object Modeling Technique?
- **b)** Define abstraction and illustrate its use.
- c) What are links? How are they different from associations?
- d) Compare between Object model and dynamic model.
- e) With an example bring out the exact meaning of the concept 'Aggregation'.

#### Q.3 Attempt any two of the following questions.

- a) What is a role name? Illustrate with the help of an appropriate OMT model.
- **b)** How is the tripod combined in the object design phase? and how do we arrive at Implementation for Object diagram compiler?
- c) Draw the three models of Analysis phase of OMT for a banking system.

#### Section – II

### Q.4 Attempt any four of the following questions.

- a) What are the basic building blocks of Unified Modeling Language?
- b) Define interfaces and packages and illustrate their use.
- c) What are Instances? How are they different from Classes?
- d) Compare between Component and Deployment UML diagrams.
- e) With an example bring out the exact meaning of the concept 'Patterns and Framework'.

### Q.5 Attempt any two of the following questions.

- a) Reproduce a Use case diagram for a Hospital Management System?
- **b)** Draw a sequence diagram of an admission procedure conducted by a college.
- c) Draw a deployment diagram for the work conducted in a Library of your city.



Max. Marks: 56

16

16

12

Set

### T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **ARTIFICIAL INTELLIGENCE**

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) What is Artificial intelligence?
  - Putting your intelligence into Computer a)
  - Programming with your own intelligence b)
  - c) Making a Machine intelligent
  - d) Putting more memory into Computer
- Which is not the commonly used programming language for AI? 2) Java b)
  - a) PROLOG
  - c) LISP d) Perl
  - e) Java script
- What is state space? 3)
  - a) The whole problem
  - b) Your Definition to a problem
  - c) Problem you design
  - d) Representing your problem with variable and parameter
  - e) A space where You know the solution
- A production rule consists of . 4)
  - a) A set of Rule
  - b) A sequence of steps
  - c) Both (a) and (b)
  - d) Arbitrary representation to problem
  - e) Directly getting solution
- 5) Which search method takes less memory?
  - a) Depth-First Search
- **Breadth-First search** b) d) Linear Search
- c) Both (a) and (b) e) Optimal search
- 6) A heuristic is a way of trying \_
  - To discover something or an idea embedded in a program a)
  - To search and measure how far a node in a search tree seems to be b) from a goal
  - To compare two nodes in a search tree to see if one is better than C) the other
  - Only (a) and (b) d)
  - Only (a), (b) and (c) e)

Max. Marks: 70

Marks: 14

- 7) A\* algorithm is based on
  - a) Breadth-First-Search
  - c) Best-First-Search
  - e) Bulkworld Problem
- 8) Which is the best way to go for Game playing problem?
  - Linear approach a)

c)

- Random approach
- e) Stratified approach
- 9) How do you represent "All dogs have tails?"
  - a)  $Y_x$ : dog(x)àhastail(x)
  - C)  $\gamma_x$ : dog(y)àhastail(x)
- $\Upsilon_{x}$ : dog(x)àhastail(y)
- d)
- e)  $Y_x$ : dog(x)àhasatail(y)
- 10) Which is not a property of representation of knowledge?
  - **Representational Verification** Representational Adequacy b) a)
    - c) Inferential Adequacy d)
    - e) Acquisitional Efficiency
- 11) What are you predicating by the logic:  $Y_x$ :  $\in y$ : loyalto(x, y).
  - a) Everyone is loyal to some one
  - b) Everyone is loyal to all
  - c) Everyone is not loyal to someone
  - d) Everyone is loyal
  - e) Everyone is not loyal
- Which is not Familiar Connectives in First Order Logic? 12)
  - and iff a) b)
  - c) or d) not
  - e) either a or
- 13) Which is not a type of First Order Logic (FOL) Sentence?
  - a) Atomic sentences
- b) Complex sentences
- Quantified sentence
- d) **Quality Sentence**
- e) Simple sentence
- 14) Which is not a Goal-based agent?
  - Inference a) Planning c)

C)

- b) Search
- d) Conclusion
- Dynamic Search e)

- **SLR-FM-363** Set
- d) Hill climbing

**Depth-First-Search** 

Heuristic approach

- d) **Optimal approach**
- - b)
  - $\gamma_x$ : dog(x)àhasatail(x)

b)

b)

- - Inferential Efficiency

| Seat |  |
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| No.  |  |

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### Section – I

#### Q.2 Attempt any Three. 12 What is Heuristic search? List the algorithms that use Heuristics. a) A\* may go into over and under estimations - Justify. b) List the different Knowledge representation approaches. C) Illustrate 'DFID' with an appropriate example. d) What are AI systems? List their characteristics. e) 80 Q.3 Attempt any Two. Write and illustrate with an example the 'Hill Climbing' algorithm. a) Compare and contrast between A\* and AO\* algorithms. b) Compare between Beam search and Taboo search algorithms. C) Q.4 Attempt any One 80 What are the characteristics of problems? Illustrate each characteristic. a) What is beam stack search? How is it attained? b) Section – II

| Q.5 | Atte | empt any Four.  | 12 |
|-----|------|---|----|
|     | a)   | Give the semantic network for 'Ragging is prohibited'.            |    |
|     | b)   | Compare between monotonic and non-monotonic reasoning.            |    |
|     | C)   | Where are measures of belief and disbelief used? Illustrate.      |    |
|     | d)   | What are expert systems?  |    |
|     | e)   | What are scripts? Write a brief script for an encounter.          |    |
| Q.6 | Atte | empt any Two.   | 08 |
|     | a)   | What is constraint satisfaction? State the steps involved.        |    |
|     | b)   | What is fuzzy logic? How is it used?                              |    |
|     | C)   | Illustrate the working of cut operator in Prolog with an example. |    |
| Q.6 | Atte | empt any One.   | 08 |
|     | a)   | State Baye's Theorem. How is it related to certainty factors?     |    |
|     | b)   | Compare between procedure and declarative Knowledge.              |    |

Set P

Max. Marks: 56

# T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

# **ARTIFICIAL INTELLIGENCE**

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- Figures to the right indicate full marks.
- Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which is the best way to go for Game playing problem?
  - Linear approach a)

b)

d)

d)

- Random approach c) e) Stratified approach
- 2) How do you represent "All dogs have tails?"
  - $\gamma_x$ : dog(x)àhastail(x) a)
  - $\gamma_x$ : dog(y)àhastail(x) c)
  - e)  $Y_x$ : dog(x)àhasatail(y)
- 3) Which is not a property of representation of knowledge? **Representational Adequacy** b)
  - **Representational Verification** a)
  - Inferential Adequacy C)
  - Acquisitional Efficiency e)
- 4) What are you predicating by the logic:  $Y_x$ :  $\in y$ : loyalto(x, y).
  - Everyone is loyal to some one a)
  - b) Everyone is loyal to all
  - c) Everyone is not loyal to someone
  - d) Everyone is loyal
  - e) Everyone is not loyal
- 5) Which is not Familiar Connectives in First Order Logic?
  - iff a) and b)
  - d) C) or not
  - either a or e)
- Which is not a type of First Order Logic (FOL) Sentence? 6)
  - Atomic sentences a)
- Complex sentences b) d) **Quality Sentence**
- Quantified sentence c) e) Simple sentence
- 7) Which is not a Goal-based agent?
  - a) Inference
  - c) Planning

- b) Search
- d) Conclusion
- **Dynamic Search** e)

- Heuristic approach b)
- d) Optimal approach

 $\gamma_x$ : dog(x)àhastail(y)

Inferential Efficiency

 $Y_x$ : dog(x)àhasatail(x)

SLR-FM-363



Max. Marks: 70

Marks: 14

Set Q

**SLR-FM-363** 

- 8) What is Artificial intelligence?
  - a) Putting your intelligence into Computer
  - b) Programming with your own intelligence
  - c) Making a Machine intelligent
  - d) Putting more memory into Computer
- 9) Which is not the commonly used programming language for Al?
  - b) Java

d)

c) LISP

Perl

e) Java script

a) PROLOG

- 10) What is state space?
  - a) The whole problem
  - b) Your Definition to a problem
  - c) Problem you design
  - d) Representing your problem with variable and parameter
  - e) A space where You know the solution
- 11) A production rule consists of \_\_\_\_\_.
  - a) A set of Rule
  - b) A sequence of steps
  - c) Both (a) and (b)
  - d) Arbitrary representation to problem
  - e) Directly getting solution
- 12) Which search method takes less memory?
  - a) Depth-First Search
- b) Breadth-First searchd) Linear Search
- c) Both (a) and (b)

13)

- e) Optimal search
- A heuristic is a way of trying \_\_\_\_\_.
- a) To discover something or an idea embedded in a program
- b) To search and measure how far a node in a search tree seems to be from a goal
- c) To compare two nodes in a search tree to see if one is better than the other
- d) Only (a) and (b)
- e) Only (a), (b) and (c)
- 14) A\* algorithm is based on \_\_\_\_\_
  - a) Breadth-First-Search
  - c) Best-First-Search
  - e) Bulkworld Problem
- b) Depth-First-Search
- d) Hill climbing

| Seat |  |
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### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### Section – I

#### Q.2 Attempt any Three. 12 What is Heuristic search? List the algorithms that use Heuristics. a) A\* may go into over and under estimations - Justify. b) List the different Knowledge representation approaches. c) Illustrate 'DFID' with an appropriate example. d) What are AI systems? List their characteristics. e) 80 Q.3 Attempt any Two. Write and illustrate with an example the 'Hill Climbing' algorithm. a) Compare and contrast between A\* and AO\* algorithms. b) Compare between Beam search and Taboo search algorithms. c) Q.4 Attempt any One 80 What are the characteristics of problems? Illustrate each characteristic. a) What is beam stack search? How is it attained? b) Section – II

| Q.5 | Atte             | empt any Four.  | 12 |
|-----|------------------|---|----|
|     | a)               | Give the semantic network for 'Ragging is prohibited'.            |    |
|     | b)               | Compare between monotonic and non-monotonic reasoning.            |    |
|     | c)               | Where are measures of belief and disbelief used? Illustrate.      |    |
|     | d)               | What are expert systems?  |    |
|     | e)               | What are scripts? Write a brief script for an encounter.          |    |
| Q.6 | Attempt any Two. |   | 08 |
|     | a)               | What is constraint satisfaction? State the steps involved.        |    |
|     | b)               | What is fuzzy logic? How is it used?                              |    |
|     | c)               | Illustrate the working of cut operator in Prolog with an example. |    |
| Q.6 | Atte             | empt any One.   | 08 |
|     | a)               | State Baye's Theorem. How is it related to certainty factors?     |    |
|     | b)               | Compare between procedure and declarative Knowledge.              |    |

)

Set

Max. Marks: 56

**Breadth-First search** 

**Depth-First-Search** 

Optimal approach

 $Y_x$ : dog(x)àhasatail(x)

Hill climbing

Linear Search

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **ARTIFICIAL INTELLIGENCE**

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which search method takes less memory? b)
  - Depth-First Search a)
  - Both (a) and (b) C)
  - e) Optimal search
- A heuristic is a way of trying 2)
  - To discover something or an idea embedded in a program a)
  - To search and measure how far a node in a search tree seems to be b) from a goal

d)

To compare two nodes in a search tree to see if one is better than c) the other

b)

d)

d)

d)

- d) Only (a) and (b)
- e) Only (a), (b) and (c)
- 3) A\* algorithm is based on
  - a) Breadth-First-Search
  - c) **Best-First-Search**
  - e) Bulkworld Problem
- 4) Which is the best way to go for Game playing problem? Heuristic approach b)
  - Linear approach a)
  - Random approach C)
  - e) Stratified approach

#### 5) How do you represent "All dogs have tails?" $Y_X$ : dog(x)àhastail(y) b)

a)  $Y_x$ : dog(x)àhastail(x)

c)

e)

- c)  $Y_x$ : dog(y)àhastail(x)
- e)  $Y_x$ : dog(x)àhasatail(y)

Acquisitional Efficiency

- Which is not a property of representation of knowledge? 6) a)
  - **Representational Verification Representational Adequacy** b) Inferential Adequacy
    - Inferential Efficiency d)

Max. Marks: 70

Marks: 14

Set R

- 7) What are you predicating by the logic:  $Y_x$ :  $\notin y$ : loyalto(x, y).
  - a) Everyone is loyal to some one
  - b) Everyone is loyal to all
  - c) Everyone is not loyal to someone
  - d) Everyone is loyal
  - e) Everyone is not loyal
- 8) Which is not Familiar Connectives in First Order Logic?
  - a) and b)
  - C) or d) not
  - e) either a or
- Which is not a type of First Order Logic (FOL) Sentence? 9)
  - Atomic sentences b) a)
  - Quantified sentence c)
  - e) Simple sentence
- 10) Which is not a Goal-based agent?
  - a) Inference
  - c) Planning
  - e) Dynamic Search
- What is Artificial intelligence? 11)
  - a) Putting your intelligence into Computer
  - b) Programming with your own intelligence
  - c) Making a Machine intelligent
  - d) Putting more memory into Computer
- Which is not the commonly used programming language for AI? 12) Java
  - a) PROLOG c) LISP

b) Perl d)

- e) Java script
- 13) What is state space?
  - a) The whole problem
  - b) Your Definition to a problem
  - c) Problem you design
  - d) Representing your problem with variable and parameter
  - e) A space where You know the solution
- A production rule consists of \_\_\_\_\_. 14)
  - a) A set of Rule
  - b) A sequence of steps
  - c) Both (a) and (b)
  - d) Arbitrary representation to problem
  - e) Directly getting solution

Search

**Complex sentences** 

**Quality Sentence** 

- b)
- d) Conclusion

iff

d)

### SLR-FM-363

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### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### Section – I

#### Q.2 Attempt any Three. 12 What is Heuristic search? List the algorithms that use Heuristics. a) b) A\* may go into over and under estimations - Justify. List the different Knowledge representation approaches. c) Illustrate 'DFID' with an appropriate example. d) What are AI systems? List their characteristics. e) 80 Q.3 Attempt any Two. Write and illustrate with an example the 'Hill Climbing' algorithm. a) Compare and contrast between A\* and AO\* algorithms. b) Compare between Beam search and Taboo search algorithms. c) Q.4 Attempt any One 80 What are the characteristics of problems? Illustrate each characteristic. a) What is beam stack search? How is it attained? b) Section – II Q.5 Attempt any Four. 12

|     | a)               | Give the semantic network for 'Ragging is prohibited'.            |    |
|-----|------------------|---|----|
|     | b)               | Compare between monotonic and non-monotonic reasoning.            |    |
|     | c)               | Where are measures of belief and disbelief used? Illustrate.      |    |
|     | d)               | What are expert systems?  |    |
|     | e)               | What are scripts? Write a brief script for an encounter.          |    |
| Q.6 | Attempt any Two. |   | 08 |
|     | a)               | What is constraint satisfaction? State the steps involved.        |    |
|     | b)               | What is fuzzy logic? How is it used?                              |    |
|     | C)               | Illustrate the working of cut operator in Prolog with an example. |    |
| Q.6 | Atte             | empt any One.   | 08 |
|     | a)               | State Baye's Theorem. How is it related to certainty factors?     |    |
|     | L)               | Company hotive on any conductor and de densitive. Knowledge       |    |

**b)** Compare between procedure and declarative Knowledge.

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Max. Marks: 56

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# T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

### Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

**ARTIFICIAL INTELLIGENCE** 

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

2)

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No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which is not a property of representation of knowledge?
  - **Representational Verification** a)
  - Inferential Adequacy C)
  - e) Acquisitional Efficiency What are you predicating by the logic:  $Y_x$ :  $\notin y$ : loyalto(x, y).
  - Everyone is loyal to some one a)
    - b) Everyone is loval to all
    - c) Everyone is not loyal to someone
    - d) Everyone is loyal
    - e) Everyone is not loyal

#### 3) Which is not Familiar Connectives in First Order Logic?

- and b)
- d) c) or not
- e) either a or

a)

- 4) Which is not a type of First Order Logic (FOL) Sentence?
  - a) Atomic sentences b)
  - Quantified sentence c)
  - e) Simple sentence
- Which is not a Goal-based agent? 5)
  - Inference Search a) b) d) Conclusion
  - c) Planning Dynamic Search e)
- 6) What is Artificial intelligence?
  - a) Putting your intelligence into Computer
  - b) Programming with your own intelligence
  - Making a Machine intelligent c)
  - d) Putting more memory into Computer
- Which is not the commonly used programming language for AI? 7) Java
  - a) PROLOG
  - LISP Perl d) C)
  - Java script e)

Max. Marks: 70

Marks: 14

- **Representational Adequacy**
- Inferential Efficiency



iff

d)

b)

Complex sentences

**Quality Sentence** 

- b)

- 8) What is state space?
  - a) The whole problem
  - b) Your Definition to a problem
  - c) Problem you design
  - d) Representing your problem with variable and parameter
  - e) A space where You know the solution
- A production rule consists of \_\_\_\_\_. 9)
  - a) A set of Rule
  - b) A sequence of steps
  - c) Both (a) and (b)
  - d) Arbitrary representation to problem
  - e) Directly getting solution
- 10) Which search method takes less memory?
  - a) Depth-First Search c) Both (a) and (b)
- d)

- e) Optimal search
- A heuristic is a way of trying \_\_\_\_\_ 11)
  - a) To discover something or an idea embedded in a program
  - b) To search and measure how far a node in a search tree seems to be from a goal
  - c) To compare two nodes in a search tree to see if one is better than the other

b)

d)

b)

- d) Only (a) and (b)
- e) Only (a), (b) and (c)
- A\* algorithm is based on \_\_\_\_ 12)
  - a) Breadth-First-Search
  - c) Best-First-Search
  - e) Bulkworld Problem
  - Which is the best way to go for Game playing problem?
    - a) Linear approach

13)

c)

- Heuristic approach
- e) Stratified approach
- 14) How do you represent "All dogs have tails?"
  - a)  $\gamma_x$ : dog(x)àhastail(x)
  - c)  $\gamma_x$ : dog(y)àhastail(x)
- $Y_x$ : dog(x)àhastail(y) d)  $\gamma_x$ : dog(x)àhasatail(x)
- e)  $Y_x$ : dog(x)àhasatail(y)

- b) **Breadth-First search** 
  - Linear Search

SLR-FM-363

Hill climbing

**Depth-First-Search** 

- b)
- d) Optimal approach
- Random approach

| Seat |  |
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### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### Section – I

#### Attempt any Three. 12 Q.2 What is Heuristic search? List the algorithms that use Heuristics. a) A\* may go into over and under estimations - Justify. b) List the different Knowledge representation approaches. c) Illustrate 'DFID' with an appropriate example. d) What are AI systems? List their characteristics. e) 80 Q.3 Attempt any Two. Write and illustrate with an example the 'Hill Climbing' algorithm. a) Compare and contrast between A\* and AO\* algorithms. b) Compare between Beam search and Taboo search algorithms. C) Q.4 Attempt any One 80 What are the characteristics of problems? Illustrate each characteristic. a) What is beam stack search? How is it attained? b) Section – II Q.5 Attempt any Four. 12

- Give the semantic network for 'Ragging is prohibited'. a) Compare between monotonic and non-monotonic reasoning. b) Where are measures of belief and disbelief used? Illustrate. c) d) What are expert systems? What are scripts? Write a brief script for an encounter. e) Attempt any Two. **08** Q.6 What is constraint satisfaction? State the steps involved. a) b) What is fuzzy logic? How is it used? Illustrate the working of cut operator in Prolog with an example. c) Attempt any One. **08** Q.6 State Baye's Theorem. How is it related to certainty factors? a)
  - **b)** Compare between procedure and declarative Knowledge.

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Max. Marks: 56
T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figure to the right indicates full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
  - 1) Select a component which is NOT part of Android architecture.
    - a) Android framework c) Linux kernel
- b) Android document d)

- 2) ADB stands for
  - a) Android Drive Bridge
  - c) Android Destroy Bridge
- 3) What does the following line of code achieve?
  - Intent intent = new Intent(First Activity.this, SecondActivity.class) b) Creates an implicit Intent
    - Creates an hidden Intent a)
    - Create an explicit Intent d) Starts an activity C)
- Which of the following is NOT true about the MenuItem interface? 4)
  - The MenuItem instance will be returned by the Menu class add(...) a) method.
  - Menultem can decide the Intent issued when clicking menu b) components.
  - C) Menultem can display either an icon or text.
  - Menultem can set a checkbox. d)
- If your service is private to your own application and runs in the same 5) process as the client (which is common), you should create your interface by extending the \_\_\_\_\_ class?
  - Messenger a)
  - b) Binder AIDL d) None of the above. c)
- By default in android studio during app development, file that holds 6) information about app's fundamental features and components is \_\_\_\_\_.
  - Android Manifest.xml a) Build.gradle c)
- b) res/values d) res/layout
- By default in android studio, during app development, directory made for 7) xml files to hold resources like color, string etc is \_
  - res/layout a) AndroidManifest.xml

c)

- res/values b)
- d) Build.gradle

Max. Marks: 70

Marks: 14

14

Libraries



- Android Delete Bridge d)

SLR-FM-364



8) AAPT stands for

- a) Android Application Packaging Tool
- Android Anti Packaging Tool b)
- Android Asset Packaging Tool c)
- Android Application Pack Tool d)

#### How does Google check for malicious software in the Android Market? 9)

- Every new app is scanned by a virus scanner a)
- User report malicious software to Google b)
- Google employees verify each new app c)
- A separate company monitors the Android Market for Google d)
- Android JUnit framework is used to perform \_\_\_\_\_ testing of android apps. 10)
  - Functional testing Unit testing b) a)
    - d) White box testing
- 11) If you want share the date across the all applications, you should go for?
  - Service a) Activity

C)

C)

b) BroadcastReceiver

**SLR-FM-364** 

Set

d) **Content Provider** 

12) Once installed on a device, each Android application lives in \_\_\_\_\_?

- device memory a)
- security sandbox C)

Black box testing

- b) external memory
- SQLite database d)
- 13) Which component is not activated by an Intent?
  - a) Activity
  - c) ContentProvider
- b) Services
- **BroadcastReceiver** d)
- 14) Shared Preferences store values in form of
  - Array structure b)
  - Tree structure C)

a) Key-Value pairs

d) Tags

| No.            |                              |   |   |  | Sel        | Γ     |
|----------------|------------------------------|---|---|--|------------|-------|
|                |                              | T.E. (Part – II<br>MOB  | (New) (CBCS)<br>Information<br>LE APPLICAT  | Examination Nov/Dec-2<br>Technology<br>ON DEVELOPMENT  | 2019       |       |
| Day &<br>Time: | & Da<br>10:                  | te: Wednesday, 2<br>00 AM To 01:00 F  | 7-11-2019<br>M  |  | Max. Marks | s: 56 |
| Instru         | uctio                        | ons: 1) All questio<br>2) Figure to t   | ns are compulsory<br>he right indicates f   | r.<br>full marks.  |            |       |
|                |                              |   | Secti   | on – I   |            |       |
| Q.2            | Atte<br>a)<br>b)<br>c)<br>d) | What are the ma<br>Define Broadcas<br>Explain telephon<br>Illustrate with exa<br>component. | the following quart<br>n components of r<br>Receivers and sta<br>API in android.<br>The code in XML | estions.<br>nobile app? Explain in short.<br>ate methods use in it.<br>. and JAVA to use different dia | alog box   | 12    |
| Q.3            | Atte<br>a)<br>b)             | empt any one of the proceed between them.<br>Explain Service of Differentiate between them. | he following que<br>dures to navigate b<br>component in Andr  | stions.<br>Detween activities and exchan<br>roid with the help of example.                             | ige data   | 08    |
| 0.4            | ۸ ++ ،                       | components in A   | ndroid System with  | n example.   |            |       |

#### Q.4

- Attempt any one of the following questions.a) Describe Android App project structure and illustrate Android app execution 08 flow.
- **b)** Write a note on:
  - Image resource in android 1)
  - 2) String resource in android

#### Section – II

| Q.5 | Atte             | empt any three of the following questions.   | 12 |
|-----|------------------|--|----|
|     | a)               | Write a note on Canvas and Drawable.   |    |
|     | b)               | Write a short on Shared Preferences in Android.  |    |
|     | C)               | List and explain debugger types available in Android app debugging.  |    |
|     | d)               | Explain benefits of Robotium framework.  |    |
| Q.6 | Atte<br>a)<br>b) | empt any one of the following questions.<br>Draw and explain in detail state diagram for MediaPlayer.<br>Explain Sensors in Android with the help of Motion Sensors and Position<br>Sensors. | 08 |
| Q.7 | Atte             | empt any one of the following questions.   | 08 |
|     | a)               | Write shore note on:   |    |
|     | ,                | 1) Robotium  |    |
|     |                  | 2) MonkeyTalk  |    |
|     | b)               | Discuss View Animation, Property Animation and Drawable Animation with example.  |    |

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SLR-FM-364

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Max. Marks: 70

**SLR-FM-364** 

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#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figure to the right indicates full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Marks: 14

14

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- 1) AAPT stands for \_
  - a) Android Application Packaging Tool
  - Android Anti Packaging Tool b)
  - Android Asset Packaging Tool c)
  - Android Application Pack Tool d)

#### 2) How does Google check for malicious software in the Android Market?

- Every new app is scanned by a virus scanner a)
- User report malicious software to Google b)
- Google employees verify each new app C)
- d) A separate company monitors the Android Market for Google
- 3) Android JUnit framework is used to perform testing of android apps.
  - Functional testing a) Unit testing b)
  - White box testing C) Black box testing d)
- If you want share the date across the all applications, you should go for? 4)
  - a) Service b)
  - c) Activity d) Content Provider
- Once installed on a device, each Android application lives in \_\_\_\_\_? 5)
  - a) device memory b) external memory c)
    - security sandbox d) SQLite database
- Which component is not activated by an Intent? 6)
  - Activity Services a) b)
  - ContentProvider c) d) **BroadcastReceiver**
- Shared Preferences store values in form of 7)
  - Key-Value pairs b) a)
  - Tree structure C) d) Tags
- Select a component which is NOT part of Android architecture. 8) Libraries b)
  - Android framework a)
  - c) Linux kernel
- d)
- 9) ADB stands for \_\_\_\_\_
  - a) Android Drive Bridge
  - c) Android Destroy Bridge
- b) Android Debug Bridge

Android document

Android Delete Bridge d)

Array structure

BroadcastReceiver



- By default in android studio during app development, file that holds 13) information about app's fundamental features and components is .
  - a) Android Manifest.xml res/values b)
  - Build.gradle d) res/layout c)
- By default in android studio, during app development, directory made for 14) xml files to hold resources like color, string etc is
  - a) res/lavout

a)

C)

a)

b)

c)

d)

a)

c) AIDL

method.

- b) res/values
- AndroidManifest.xml c)
- Build.gradle
- d)

#### No. T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT Day & Date: Wednesday, 27-11-2019 Max. Marks: 56 Time: 10:00 AM To 01:00 PM Instructions: 1) All questions are compulsory. 2) Figure to the right indicates full marks. Section – I Q.2 Attempt any three of the following questions. 12 a) What are the main components of mobile app? Explain in short. b) Define Broadcast Receivers and state methods use in it. Explain telephony API in android. c)

d) Illustrate with example code in XML and JAVA to use different dialog box component.

#### Attempt any one of the following questions. Q.3

- Define the procedures to navigate between activities and exchange data a) between them.
- b) Explain Service component in Android with the help of example. Differentiate between Service and Bound Service forms of service components in Android System with example.

#### Q.4 Attempt any one of the following questions.

- Describe Android App project structure and illustrate Android app execution **08** a) flow.
- b) Write a note on:

Seat

- Image resource in android 1)
- 2) String resource in android

#### Section – II

| Q.5 | Atte                 | empt any three of the following questions.  | 12 |
|-----|----------------------|---|----|
|     | a)<br>b)<br>c)<br>d) | Write a note on Canvas and Drawable.<br>Write a short on Shared Preferences in Android.<br>List and explain debugger types available in Android app debugging.<br>Explain benefits of Robotium framework. |    |
| Q.6 | Atte<br>a)<br>b)     | empt any one of the following questions.<br>Draw and explain in detail state diagram for MediaPlayer.<br>Explain Sensors in Android with the help of Motion Sensors and Position<br>Sensors.              | 08 |
| Q.7 | Atte                 | empt any one of the following questions.  | 08 |
|     | a)                   | Write shore note on:<br>1) Robotium<br>2) MonkeyTalk  |    |
|     | b)                   | Discuss View Animation, Property Animation and Drawable Animation with example.   |    |

# SLR-FM-364

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Max. Marks: 70

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#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figure to the right indicates full marks.

#### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

C)

# Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- If your service is private to your own application and runs in the same process as the client (which is common), you should create your interface by extending the \_\_\_\_\_ class?
  - a) Messenger
- b) Binder
- AIDL d) None of the above.
- By default in android studio during app development, file that holds information about app's fundamental features and components is \_\_\_\_\_.
  - a) Android Manifest.xml b) c) Build.gradle d)
    - d) res/layout
- 3) By default in android studio, during app development, directory made for xml files to hold resources like color, string etc is \_\_\_\_\_.
  - a) res/layout
  - c) AndroidManifest.xml
- b) res/values

res/values

- d) Build.gradle
- 4) AAPT stands for \_\_\_\_\_
  - a) Android Application Packaging Tool
  - b) Android Anti Packaging Tool
  - c) Android Asset Packaging Tool
  - d) Android Application Pack Tool
- 5) How does Google check for malicious software in the Android Market?
  - a) Every new app is scanned by a virus scanner
  - b) User report malicious software to Google
  - c) Google employees verify each new app
  - d) A separate company monitors the Android Market for Google
- 6) Android JUnit framework is used to perform \_\_\_\_\_ testing of android apps.
  - a) Unit testingc) Black box testing

a) device memory

- b) Functional testingd) White box testing
- 7) If you want share the date across the all applications, you should go for?
  - a) Service b) BroadcastReceiver
  - c) Activity d) Content Provider
- 8) Once installed on a device, each Android application lives in \_\_\_\_\_?
  - b) external memory
  - c) security sandbox
- d) SQLite database

Marks: 14

9) Which component is not activated by an Intent?

Activity a)

- b) Services
- ContentProvider C)
- d) BroadcastReceiver

**SLR-FM-364** 

Set

- Shared Preferences store values in form of 10)
  - Key-Value pairs a)
  - Tree structure c)

- b) Array structure d) Tags
- 11) Select a component which is NOT part of Android architecture.
  - a) Android framework c) Linux kernel
- Libraries b) Android document d)

12) ADB stands for \_\_\_\_

a)

- a) Android Drive Bridge
- Android Debug Bridge b)
- Android Destroy Bridge C)
- d) Android Delete Bridge
- What does the following line of code achieve? 13) Intent intent = new Intent(First Activity.this, SecondActivity.class)
  - b) Creates an implicit Intent
  - Creates an hidden Intent Create an explicit Intent C)
- d) Starts an activity
- 14) Which of the following is NOT true about the MenuItem interface?
  - The MenuItem instance will be returned by the Menu class add(...) a) method.
  - Menultem can decide the Intent issued when clicking menu b) components.
  - Menultem can display either an icon or text. C)
  - Menultem can set a checkbox. d)

# T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Seat

No.

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three of the following questions.

- a) What are the main components of mobile app? Explain in short.
- b) Define Broadcast Receivers and state methods use in it.
- Explain telephony API in android. c)
- Illustrate with example code in XML and JAVA to use different dialog box d) component.

#### Attempt any one of the following questions. Q.3

- Define the procedures to navigate between activities and exchange data a) between them.
- b) Explain Service component in Android with the help of example. Differentiate between Service and Bound Service forms of service components in Android System with example.

#### Q.4 Attempt any one of the following questions.

- Describe Android App project structure and illustrate Android app execution **08** a) flow.
- b) Write a note on:
  - Image resource in android 1)
  - 2) String resource in android

#### Section – II

| Q.5 | Atte<br>a)<br>b)<br>c)<br>d) | empt any three of the following questions.<br>Write a note on Canvas and Drawable.<br>Write a short on Shared Preferences in Android.<br>List and explain debugger types available in Android app debugging.<br>Explain benefits of Robotium framework. | 12 |
|-----|------------------------------|---|----|
| Q.6 | Atte<br>a)<br>b)             | empt any one of the following questions.<br>Draw and explain in detail state diagram for MediaPlayer.<br>Explain Sensors in Android with the help of Motion Sensors and Position<br>Sensors.  | 08 |
| Q.7 | Atte<br>a)<br>b)             | <ul> <li>empt any one of the following questions.</li> <li>Write shore note on:</li> <li>1) Robotium</li> <li>2) MonkeyTalk</li> <li>Discuss View Animation, Property Animation and Drawable Animation with example.</li> </ul>                         | 08 |

# SLR-FM-364

Set

Max. Marks: 56

**08** 

Set

Max. Marks: 70

Marks: 14

14

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book. 2) Figure to the right indicates full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- 1) Android JUnit framework is used to perform \_\_\_\_\_ testing of android apps. Functional testing
  - Unit testing a) b) White box testing
  - Black box testing c) d)
- 2) If you want share the date across the all applications, you should go for?
  - Service b) BroadcastReceiver a) **Content Provider** c) Activity d)

3) Once installed on a device, each Android application lives in \_\_\_\_\_?

- external memory a) device memory b)
- security sandbox d) C)
- 4) Which component is not activated by an Intent? b)
  - Activity a) c)
    - ContentProvider
- Shared Preferences store values in form of 5)
  - a) Key-Value pairs
  - Tree structure C)
- 6) Select a component which is NOT part of Android architecture. Libraries
  - Android framework a)
  - c) Linux kernel
- 7) ADB stands for
  - a) Android Drive Bridge
  - Android Destroy Bridge C)
- What does the following line of code achieve? 8) Intent intent = new Intent(First Activity.this, SecondActivity.class) Creates an implicit Intent b)
  - Creates an hidden Intent a) Create an explicit Intent C)
- d) Starts an activity
- Android Debug Bridge b)

Android document

Android Delete Bridge d)

- SQLite database
- Services
- **BroadcastReceiver**

- d)

b)

d)

- b) Array structure d) Tags

- 9) Which of the following is NOT true about the MenuItem interface?
  - a) The MenuItem instance will be returned by the Menu class add(...) method.
  - b) Menultem can decide the Intent issued when clicking menu components.
  - c) Menultem can display either an icon or text.
  - d) Menultem can set a checkbox.
- 10) If your service is private to your own application and runs in the same process as the client (which is common), you should create your interface by extending the \_\_\_\_\_ class?
  - a) Messenger
- b) Binder
- AIDL d) None of the above.
- 11) By default in android studio during app development, file that holds information about app's fundamental features and components is \_\_\_\_\_.
  - a) Android Manifest.xml
- b) res/valuesd) res/layout

Set

- c) Build.gradled) res/layout12) By default in android studio, during app development, directory made for
- 12) By default in android studio, during app development, directory made for xml files to hold resources like color, string etc is \_\_\_\_\_.
  - a) res/layout

C)

- b) res/values
- c) AndroidManifest.xml
- d) Build.gradle

- 13) AAPT stands for \_\_\_\_
  - a) Android Application Packaging Tool
  - b) Android Anti Packaging Tool
  - c) Android Asset Packaging Tool
  - d) Android Application Pack Tool
- 14) How does Google check for malicious software in the Android Market?
  - a) Every new app is scanned by a virus scanner
  - b) User report malicious software to Google
  - c) Google employees verify each new app
  - d) A separate company monitors the Android Market for Google

Set S

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Seat

No.

**Instructions:** 1) All questions are compulsory.

2) Figure to the right indicates full marks.

#### Section – I

### **Q.2** Attempt any three of the following questions.

- a) What are the main components of mobile app? Explain in short.
- **b)** Define Broadcast Receivers and state methods use in it.
- c) Explain telephony API in android.
- d) Illustrate with example code in XML and JAVA to use different dialog box component.

#### Q.3 Attempt any one of the following questions.

- a) Define the procedures to navigate between activities and exchange data between them.
- **b)** Explain Service component in Android with the help of example. Differentiate between Service and Bound Service forms of service components in Android System with example.

#### Q.4 Attempt any one of the following questions.

- a) Describe Android App project structure and illustrate Android app execution 08 flow.
- **b)** Write a note on:
  - 1) Image resource in android
  - 2) String resource in android

#### Section – II

# Q.5 Attempt any three of the following questions.

- a) Write a note on Canvas and Drawable.
- **b)** Write a short on Shared Preferences in Android.
- c) List and explain debugger types available in Android app debugging.
- d) Explain benefits of Robotium framework.

#### Q.6 Attempt any one of the following questions.

- a) Draw and explain in detail state diagram for MediaPlayer.
- b) Explain Sensors in Android with the help of Motion Sensors and Position Sensors.

#### **Q.7** Attempt any one of the following questions.

- a) Write shore note on:
  - 1) Robotium
  - 2) MonkeyTalk
- **b)** Discuss View Animation, Property Animation and Drawable Animation with example.

Max. Marks: 56

12

**08** 

12

**08** 

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer Book.

2) Figure must be draw wherever necessary.

### MCQ/Objective Type Questions

**Duration: 20 Minutes** 

2)

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- Membership in a VLAN can be based on 1) b) MAC addresses
  - a) Port numbers
  - c) IP addresses
    - is just a connector.
  - a) An active hub
  - c) Either (a) or (b)

- Neither (a) nor (b) d)
- In a bridged LAN, the \_\_\_\_\_ algorithm creates a topology in which each 3) LAN can be reached from any other LAN through one path only.
  - Binary tree a) Spanning tree b)
  - None of these c) Unary tree d)
- The wireless LAN specification is defined by IEEE, called, \_\_\_\_\_ which 4) covers the data link and physical layer. IEEE 802.11 b)

d)

b)

- a) IEEEE 802.2
- c) IEEE 802.3
- 5) The IEEE 802.3 Standard defines CSMA/CD as the access method for first-generation 10-Mbps Ethernet.
  - 1-persistent a)
  - c) Non-persistent d) None of these
- 6) uses two fiber-optic cables.
  - 100Base-TX a) b) 100Base-FX 100Base-T4 None of these d) C)
- 7) Which switching technology reduces the size of a broadcast domain?
  - ISL 802. 1Q b) a) c)
    - VLANs STP d)
- Which of the situations might not require multiple routing protocols in a 8) network?
  - a) When a new Layer 2-only switch is added to the network
  - b) When you are migrating from one routing protocol to another
  - c) When you are using routers from multiple vendors
  - d) When there are host-based routers from multiple vendors

**SLR-FM-365** 



Max. Marks: 50

Marks: 10

- A passive hub

**IEEE 802.5** 

P-persistent

- b)
- All of these d)

#### 9) Which two routing protocols can be redistributed into OSPF by a Cisco router?

- a) IP EIGRP and AppleTalk EIGRP
- b) AppleTalk EIGRP and RIPv2
- c) RIPv2 and IP EIGRP
- d) IPX RIP & AppleTalk EIGRP
- In subcategories of reserved address in IPv6, address that is used by a 10) host to test itself without going into network is called \_\_\_\_ \_\_\_\_.
  - a) Unspecified address
- Loopback address b)

**SLR-FM-365** 

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- c) Compatible address
- d) Mapped address

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM Max. Marks: 40

**Instructions:** 1) Attempt any five questions from Q.No.2 to Q.No.8. 2) Figure to the right indicates full marks.

#### **Attempt Any Five**

- **Q.2** What is VLAN? Explain in detail VLANs on switch, External routing between VLANs and VLAN configuration?
- Q.3 Explain the router with routing table, routing types and host route?
- Q.4 Explain the power cooling requirement for designing networks?
- Q.5 Explain in detail the typical architecture of Ecommerce websites?
- **Q.6** Explain the Metrics and Protocol Types and Administrative Distance w.r.t routing protocol?
- **Q.7** State and explain the Planning a Chassis-Based Switch Installation?
- Q.8 Explain in detail the Wireless Standards and Security?



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### T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer Book.

2) Figure must be draw wherever necessary.

# MCQ/Objective Type Questions

**Duration: 20 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10 1)

- uses two fiber-optic cables.
  - 100Base-TX a) c) 100Base-T4

- b) 100Base-FX
- d) None of these
- 2) Which switching technology reduces the size of a broadcast domain?
  - a) ISL b) 802. 1Q
  - STP d) c) VLANs
- 3) Which of the situations might not require multiple routing protocols in a network?
  - a) When a new Layer 2-only switch is added to the network
  - b) When you are migrating from one routing protocol to another
  - c) When you are using routers from multiple vendors
  - d) When there are host-based routers from multiple vendors
- 4) Which two routing protocols can be redistributed into OSPF by a Cisco router?
  - a) IP EIGRP and AppleTalk EIGRP
  - b) AppleTalk EIGRP and RIPv2
  - c) RIPv2 and IP EIGRP
  - d) IPX RIP & AppleTalk EIGRP
- In subcategories of reserved address in IPv6, address that is used by a 5) host to test itself without going into network is called \_
  - a) Unspecified address
  - c) Compatible address
- Loopback address b)
- d) Mapped address
- Membership in a VLAN can be based on 6)
  - a) Port numbers b) MAC addresses c) IP addresses d) All of these

#### 7) \_\_\_\_ is just a connector.

a) An active hub

- A passive hub b) d)
- c) Either (a) or (b) Neither (a) nor (b) In a bridged LAN, the \_\_\_\_\_ algorithm creates a topology in which each
- LAN can be reached from any other LAN through one path only.
  - a) Spanning tree
  - c) Unary tree

8)

- Binary tree b)
- None of these d)



Max. Marks: 50

- Marks: 10

- Set Q
- 9) The wireless LAN specification is defined by IEEE, called, \_\_\_\_\_ which covers the data link and physical layer.
  - a) IEEEE 802.2
- b) IEEE 802.11
- c) IEEE 802.3 d)
  - IEEE 802.5
- 10) The IEEE 802.3 Standard defines \_\_\_\_\_ CSMA/CD as the access method for first-generation 10-Mbps Ethernet.
  - a) 1-persistent
  - c) Non-persistent

- b) P-persistent
- d) None of these

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM Max. Marks: 40

**Instructions:** 1) Attempt any five questions from Q.No.2 to Q.No.8. 2) Figure to the right indicates full marks.

#### **Attempt Any Five**

- **Q.2** What is VLAN? Explain in detail VLANs on switch, External routing between VLANs and VLAN configuration?
- Q.3 Explain the router with routing table, routing types and host route?
- Q.4 Explain the power cooling requirement for designing networks?
- Q.5 Explain in detail the typical architecture of Ecommerce websites?
- **Q.6** Explain the Metrics and Protocol Types and Administrative Distance w.r.t routing protocol?
- **Q.7** State and explain the Planning a Chassis-Based Switch Installation?
- Q.8 Explain in detail the Wireless Standards and Security?



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Max. Marks: 50

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# T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

**NETWORK SETUP AND MANAGEMENT** Day & Date: Thursday, 28-11-2019

Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer Book.

2) Figure must be draw wherever necessary.

### MCQ/Objective Type Questions

**Duration: 20 Minutes** 

Seat

No.

Marks: 10

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- Which two routing protocols can be redistributed into OSPF by a Cisco 1) router?
  - a) IP EIGRP and AppleTalk EIGRP
  - b) AppleTalk EIGRP and RIPv2
  - c) RIPv2 and IP EIGRP
  - d) IPX RIP & AppleTalk EIGRP
- 2) In subcategories of reserved address in IPv6, address that is used by a host to test itself without going into network is called .
  - Unspecified address a)
  - Compatible address c)
- Membership in a VLAN can be based on 3)
  - a) Port numbers
  - c) IP addresses

- b) d) All of these
- 4) is just a connector.
  - An active hub a)
  - Either (a) or (b) d) c)
- In a bridged LAN, the \_\_\_\_\_ algorithm creates a topology in which each 5) LAN can be reached from any other LAN through one path only.
  - a) Spanning tree Binary tree b)
  - c) Unary tree None of these d)
- The wireless LAN specification is defined by IEEE, called, which 6) covers the data link and physical layer.
  - a) IEEEE 802.2 b) IEEE 802.11
  - c) IEEE 802.3 d) **IEEE 802.5**
- The IEEE 802.3 Standard defines \_\_\_\_ CSMA/CD as the access 7) method for first-generation 10-Mbps Ethernet.
  - a) 1-persistent
  - c) Non-persistent
- P-persistent b) None of these d)
- 8) uses two fiber-optic cables.
  - 100Base-TX a)

c)

b) 100Base-FX 100Base-T4 None of these d)

- Loopback address b)
- d) Mapped address
  - MAC addresses
- b) A passive hub
- Neither (a) nor (b)

Set R

- 9) Which switching technology reduces the size of a broadcast domain?
  - a) ISL b) 802.1Q
  - c) VLANs d) STP
- 10) Which of the situations might not require multiple routing protocols in a network?
  - a) When a new Layer 2-only switch is added to the network
  - b) When you are migrating from one routing protocol to another
  - c) When you are using routers from multiple vendors
  - d) When there are host-based routers from multiple vendors

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Max. Marks: 40

Instructions: 1) Attempt any five questions from Q.No.2 to Q.No.8. 2) Figure to the right indicates full marks.

#### **Attempt Any Five**

- Q.2 What is VLAN? Explain in detail VLANs on switch, External routing between VLANs and VLAN configuration?
- Q.3 Explain the router with routing table, routing types and host route?
- Q.4 Explain the power cooling requirement for designing networks?
- Q.5 Explain in detail the typical architecture of Ecommerce websites?
- Q.6 Explain the Metrics and Protocol Types and Administrative Distance w.r.t routing protocol?
- State and explain the Planning a Chassis-Based Switch Installation? Q.7
- Q.8 Explain in detail the Wireless Standards and Security?



40

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### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT Day & Date: Thursday, 28-11-2019 Max. Marks: 50 Time: 10:00 AM To 12:00 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer

2) Figure must be draw wherever necessary.

### MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) In a bridged LAN, the \_\_\_\_\_ algorithm creates a topology in which each LAN can be reached from any other LAN through one path only.
  - a) Spanning tree b) Binary tree
  - c) Unary tree d) None of these
- 2) The wireless LAN specification is defined by IEEE, called, \_\_\_\_\_ which covers the data link and physical layer.
  - a) IEEE 802.2 b) IEEE 802.11
  - c) IEEE 802.3 d) IEEE 802.5
- 3) The IEEE 802.3 Standard defines \_\_\_\_\_ CSMA/CD as the access method for first-generation 10-Mbps Ethernet.
  - a) 1-persistent b) P-p
  - c) Non-persistent
- ) P-persistent
- d) None of these
- 4) \_\_\_\_\_ uses two fiber-optic cables.
  - a) 100Base-TX b) 100Base-FX
  - c) 100Base-T4 d) None of these
- 5) Which switching technology reduces the size of a broadcast domain?
  - a) ISL b) 802.1Q
  - c) VLANs d) STP
- 6) Which of the situations might not require multiple routing protocols in a network?
  - a) When a new Layer 2-only switch is added to the network
  - b) When you are migrating from one routing protocol to another
  - c) When you are using routers from multiple vendors
  - d) When there are host-based routers from multiple vendors
- 7) Which two routing protocols can be redistributed into OSPF by a Cisco router?
  - a) IP EIGRP and AppleTalk EIGRP
  - b) AppleTalk EIGRP and RIPv2
  - c) RIPv2 and IP EIGRP
  - d) IPX RIP & AppleTalk EIGRP
- In subcategories of reserved address in IPv6, address that is used by a host to test itself without going into network is called \_\_\_\_\_.
  - a) Unspecified address b)
  - c) Compatible address
- b) Loopback address
- d) Mapped address



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- Membership in a VLAN can be based on \_\_\_\_ 9)
  - a) Port numbers
  - c) IP addresses

- . MAC addresses b)
- d) All of these
- \_\_\_\_\_ is just a connector. 10)
  - a) An active hub
  - c) Either (a) or (b)

- b)
- A passive hub Neither (a) nor (b) d)

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Max. Marks: 40

**Instructions:** 1) Attempt any five questions from Q.No.2 to Q.No.8. 2) Figure to the right indicates full marks.

#### **Attempt Any Five**

- **Q.2** What is VLAN? Explain in detail VLANs on switch, External routing between VLANs and VLAN configuration?
- Q.3 Explain the router with routing table, routing types and host route?
- Q.4 Explain the power cooling requirement for designing networks?
- Q.5 Explain in detail the typical architecture of Ecommerce websites?
- **Q.6** Explain the Metrics and Protocol Types and Administrative Distance w.r.t routing protocol?
- **Q.7** State and explain the Planning a Chassis-Based Switch Installation?
- Q.8 Explain in detail the Wireless Standards and Security?



| Seat |  |
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#### T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology TOOLS FOR COMPUTER ARCHITECTURE Max. Marks: 50

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 20 Minutes** 

1)

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- SPARC (Scalable Processor Architecture) is based on \_\_\_\_\_.
- a) RISC b) CISC
  - c) SAS None of these d)
- 2) Properties of the ARC processor are
  - a) It has a LOAD/STORE architecture: only the load and store instruction can access the memory
  - b) The data path and address bus width are 32 bits
  - c) All instructions are 32 bits
  - d) All of the above

#### Branch instructions "bcs" is equal to 3)

- a) Branch on Carry Set Branch on equal b)
- c) Branch on Overflow set d) none of these
- 4) Which of the following are mnemonic of ARC instruction set?
  - a) Id b) st
  - c) andcc d) All of these
- What are the three modules in the SPARC processor? 5) SP. DI. SI
  - a) IU. FPU. CU b)
  - c) AX, BX, CX d) None of these
- Which module of SPARC contains the general purpose registers? 6)
  - FPU a) IU b)
  - c) CU None of these d)
- 7) Which of the following are main simulator controls?
  - Edit a) Step b)
  - All of the above c) Load d)
- Which of the following instructions are not recognized by ARC Tools? 8) a) Idsh
  - ldub b)
  - c) Iduh ldmh d)
- 9) ARC assembly language file is saved as in ARC Tools simulator.
  - File.sim a) File.asm b)
  - File.msm File.tasm d) c)



Marks: 10



- 10)
- What is the meaning of sethi Mnemonic?
  a) Bed Turnover Rate
  b) Load the 21 most significant bits of a register
  c) Load the 22 most significant bits of a register
  d) Load the 24 most significant bits of a register

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology TOOLS FOR COMPUTER ARCHITECTURE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Max. Marks: 40

**Instructions:** 1) Attempt any four questions from Question No. 2. 2) Figures to the right indicate full marks.

#### Q.2 Answer any Four:-

- a) Mention the different ARC instructions and its meaning with example.
- **b)** Explain concept of Linking and loading in ARC Processor.
- c) Write an ARC subroutine that performs a swap operation on the 32 bit operands x = 35 and y = 40, which are stored in memory'.
- d) The SUBCC (subtract instruction with status update) is supported by the ARC The SUBCC (subtract instruction with status update) is supported by the ARC instruction format is that of arithmetic instruction. What are the contents of field op3 for: subcc %r1, %r2, %r3?

#### e) Write short notes:

- 1) Write an Instruction formats and PSR format for the ARC processor.
- 2) Explain concept of Assembly and Symbol table.
- f) Write a note on Time Model's Statistics Window of SPARC Processor.



| c)<br>d)        | All instructions are 32 bits<br>All of the above                                    |                     |   |     |
|-----------------|---|---------------------|---|-----|
| Bra<br>a)<br>c) | nch instructions "bcs" is equal to<br>Branch on Carry Set<br>Branch on Overflow set | b)<br>d)            | <br>Branch on equal<br>none of these      |     |
| Wh<br>a)<br>c)  | ich of the following are mnemonic<br>Id<br>andcc                                    | ; of Al<br>b)<br>d) | RC instruction set?<br>st<br>All of these |     |
|                 |   |                     |   | Pag |

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **TOOLS FOR COMPUTER ARCHITECTURE** Day & Date: Thursday, 28-11-2019 Max. Marks: 50 Time: 10:00 AM To 12:00 PM Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 20 minutes in answer book. 2) Figures to the right indicate full marks. MCQ/Objective Type Questions **Duration: 20 Minutes** Marks: 10 Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10 Which module of SPARC contains the general purpose registers? 1) FPU a) IU b) c) CU d) None of these 2) Which of the following are main simulator controls? a) Step b) Edit d) All of the above c) Load 3) Which of the following instructions are not recognized by ARC Tools? ldub a) Idsh b) d) ldmh c) Iduh 4) ARC assembly language file is saved as \_\_\_\_\_ in ARC Tools simulator. File.asm b) File.sim a) File.tasm d) File.msm c) 5) What is the meaning of sethi Mnemonic? Bed Turnover Rate a) b) Load the 21 most significant bits of a register c) Load the 22 most significant bits of a register d) Load the 24 most significant bits of a register SPARC (Scalable Processor Architecture) is based on . 6) CISC a) RISC b) c) SAS d) None of these Properties of the ARC processor are 7) a) It has a LOAD/STORE architecture: only the load and store instruction can access the memory b) The data path and address bus width are 32 bits All instructions a c) d) All of the above 8) Branch instructions " a) Branch on Carry

Seat

9)

No.

**SLR-FM-366** 

Set

Q



- 10) What are the three modules in the SPARC processor? a) IU, FPU, CU b) SP, DI, SI

  - c) AX, BX, CX

- d) None of these

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology TOOLS FOR COMPUTER ARCHITECTURE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any four questions from Question No. 2. 2) Figures to the right indicate full marks.

#### Q.2 Answer any Four:-

- Mention the different ARC instructions and its meaning with example. a)
- Explain concept of Linking and loading in ARC Processor. b)
- Write an ARC subroutine that performs a swap operation on the 32 bit C) operands x = 35 and y = 40, which are stored in memory'.
- d) The SUBCC (subtract instruction with status update) is supported by the ARC The SUBCC (subtract instruction with status update) is supported by the ARC instruction format is that of arithmetic instruction. What are the contents of field op3 for: subcc %r1, %r2, %r3?

#### Write short notes: e)

- Write an Instruction formats and PSR format for the ARC processor. 1)
- 2) Explain concept of Assembly and Symbol table.
- Write a note on Time Model's Statistics Window of SPARC Processor. **f**)



Max. Marks: 40



### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology TOOLS FOR COMPUTER ARCHITECTURE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 20 Minutes** 

1)

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- ARC assembly language file is saved as \_\_\_\_\_ in ARC Tools simulator. a) File.asm b) File.sim
  - c) File.tasm d) File.msm
- 2) What is the meaning of sethi Mnemonic?
  - Bed Turnover Rate a)
  - Load the 21 most significant bits of a register b)
  - Load the 22 most significant bits of a register c)
  - d) Load the 24 most significant bits of a register
- SPARC (Scalable Processor Architecture) is based on \_\_\_\_\_. 3)
  - RISC b) CISC a)
  - SAS d) None of these c)
- 4) Properties of the ARC processor are
  - a) It has a LOAD/STORE architecture: only the load and store instruction can access the memory
  - The data path and address bus width are 32 bits b)
  - c) All instructions are 32 bits
  - d) All of the above

#### 5) Branch instructions "bcs" is equal to

- a) Branch on Carry Set Branch on equal b)
- c) Branch on Overflow set d) none of these
- Which of the following are mnemonic of ARC instruction set? 6)
  - a) Id b) st c) and cc d) All of these
- What are the three modules in the SPARC processor? 7) a) IU, FPU, CU
  - c) AX, BX, CX None of these d)
- Which module of SPARC contains the general purpose registers? 8)
  - a) IU FPU b)
  - c) CU d)
- 9) Which of the following are main simulator controls?
  - a) Step b) d)
  - c) Load

- SP, DI, SI b)

Edit

None of these

All of the above

Seat No.

Set R

Max. Marks: 50

Marks: 10



- 10) Which of the following instructions are not recognized by ARC Tools?a) Idshb) Idub

  - c) Iduh

- b) d) ldmh

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology TOOLS FOR COMPUTER ARCHITECTURE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) Attempt any four questions from Question No. 2. 2) Figures to the right indicate full marks.

#### Q.2 Answer any Four:-

- a) Mention the different ARC instructions and its meaning with example.
- **b)** Explain concept of Linking and loading in ARC Processor.
- c) Write an ARC subroutine that performs a swap operation on the 32 bit operands x = 35 and y = 40, which are stored in memory'.
- d) The SUBCC (subtract instruction with status update) is supported by the ARC The SUBCC (subtract instruction with status update) is supported by the ARC instruction format is that of arithmetic instruction.
   What are the contents of field op3 for: subcc %r1, %r2, %r3?

#### e) Write short notes:

- 1) Write an Instruction formats and PSR format for the ARC processor.
- 2) Explain concept of Assembly and Symbol table.
- f) Write a note on Time Model's Statistics Window of SPARC Processor.



Max. Marks: 40

| Seat |  |
|------|--|
| No.  |  |

#### T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019 **Information Technology** TOOLS FOR COMPUTER ARCHITECTURE Day & Date: Thursday, 28-11-2019 Max. Marks: 50 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 20 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10
  - Branch instructions "bcs" is equal to 1)
    - a) Branch on Carry Set c) Branch on Overflow set
- b) Branch on equal d) none of these
- Which of the following are mnemonic of ARC instruction set? 2)
  - a) Id st b)
  - d) All of these c) and cc
- What are the three modules in the SPARC processor? 3)
  - a) IU, FPU, CU SP, DI, SI b)
  - None of these d) c) AX, BX, CX
- 4) Which module of SPARC contains the general purpose registers?
  - a) IU b) FPU d)
  - c) CU None of these
- 5) Which of the following are main simulator controls?
  - a) Step Fdit b)
  - c) Load d) All of the above
- Which of the following instructions are not recognized by ARC Tools? 6)
  - a) Idsh b) ldub
  - c) Iduh ldmh d)

in ARC Tools simulator. 7) ARC assembly language file is saved as \_\_\_\_\_

- File.sim a) File.asm b)
  - c) File.tasm File.msm d)
- 8) What is the meaning of sethi Mnemonic?
  - a) **Bed Turnover Rate**
  - b) Load the 21 most significant bits of a register
  - c) Load the 22 most significant bits of a register
  - d) Load the 24 most significant bits of a register
- SPARC (Scalable Processor Architecture) is based on \_\_\_\_\_. 9)
  - a) RISC b) CISC
  - c) SAS d) None of these

Set S

Marks: 10

Set S

- 10)
- Properties of the ARC processor are \_\_\_\_\_. a) It has a LOAD/STORE architecture: only the load and store instruction can access the memoryb) The data path and address bus width are 32 bits

  - c) All instructions are 32 bits
  - d) All of the above

### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology TOOLS FOR COMPUTER ARCHITECTURE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) Attempt any four questions from Question No. 2. 2) Figures to the right indicate full marks.

#### Q.2 Answer any Four:-

- a) Mention the different ARC instructions and its meaning with example.
- **b)** Explain concept of Linking and loading in ARC Processor.
- c) Write an ARC subroutine that performs a swap operation on the 32 bit operands x = 35 and y = 40, which are stored in memory'.
- d) The SUBCC (subtract instruction with status update) is supported by the ARC The SUBCC (subtract instruction with status update) is supported by the ARC instruction format is that of arithmetic instruction.
   What are the contents of field op3 for: subcc %r1, %r2, %r3?

#### e) Write short notes:

- 1) Write an Instruction formats and PSR format for the ARC processor.
- 2) Explain concept of Assembly and Symbol table.
- f) Write a note on Time Model's Statistics Window of SPARC Processor.



Max. Marks: 40
Page 1 of 8

| lime  | : 10:0   | 0 AN                       | / To 12:00 PM  |                   |   |  |  |  |
|-------|--|----------------------------|--|-------------------|---|--|--|--|
| Instr | uctior   | าร: 1                      | <ol> <li>Q. No. 1 is compulsory and sho<br/>book.</li> </ol>   | ould              | be solved in first 20 minutes in answer                     |  |  |  |
|       |  |                            | 2) Figures to the right indicate full  | mai               | rks.  |  |  |  |
|       |  |                            | MCQ/Objective Ty   | pe                | Questions   |  |  |  |
| Dura  | tion: 2  | 0 M                        | inutes   |                   | Marks: 08   |  |  |  |
| Q.1   | Choose the correct alternatives from the options and rewrite the senter<br>1) Input of Lex is? |                            |  |                   |   |  |  |  |
|       |  | a)<br>c)                   | Set to regular expression<br>Numeric data  | b)<br>d)          | Statement<br>ASCII data                                     |  |  |  |
|       | 2)   | Ya<br>a)<br>c)             | cc semantic action is a sequence<br>Tokens<br>Statements   | of?<br>b)<br>d)   | Expression<br>Rules   |  |  |  |
|       | 3)   | Wh<br>a)<br>c)             | iich of the following software tool<br>Lex<br>Both a and b   | is pa<br>b)<br>d) | arser generator?<br>Yacc<br>None of these                   |  |  |  |
|       | 4)   | A L<br>a)<br>c)            | .ex compiler generates?<br>Lex object code<br>Tokens   | b)<br>d)          | Transition tables<br>None of above                          |  |  |  |
|       | 5)   | YA<br>a)<br>c)             | CC is a computer program for<br>Windows<br>Unix  | b)<br>d)          | operation system.<br>DOS<br>openSUSE                        |  |  |  |
|       | 6)   | The<br>a)<br>c)            | e table is created by YAC<br>LALR parsing<br>GLR parsing   | C.<br>b)<br>d)    | LL parsing<br>None of the mentioned                         |  |  |  |
|       | 7)   | The<br>a)<br>c)            | e original YACC as written in<br>R programming language<br>B programming language  | la<br>b)<br>d)    | anguage.<br>C programming language<br>None of the mentioned |  |  |  |
|       | 8)   | YA<br>a)<br>b)<br>c)<br>d) | CC is an acronym for<br>Yes Another Compile Compiler<br>Yet Another Compile Compiler<br>Yet Another Compiler Compiler<br>Yes Another Compiler Compiler |                   |   |  |  |  |

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **COMPILER DEVELOPMENT TOOLS**

Day & Date: Thursday, 28-11-2019

Seat

No.

# **SLR-FM-367**

Set

Max. Marks: 50

Ρ

Set

| Seat |  |
|------|--|
| No.  |  |

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology COMPILER DEVELOPMENT TOOLS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Attempt the following.

- a) How is a Lex specification given structurally?
- b) Give examples of TACC ambiguities and conflicts.
- c) Compare between Lex and YACC.

#### Q.3 Attempt the following.

- a) For an example grammar generate a Lex specification and probable output.
- **b)** Generate YACC actions and outputs for the same grammar and parse sentences.

Max. Marks: 42

12

Ρ

# T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

## COMPILER DEVELOPMENT TOOLS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 20 Minutes** 

Seat No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 80

- YACC is a computer program for operation system. 1)
  - a) Windows b) DOS
  - Unix d) C)
- 2) The table is created by YACC.
  - LALR parsing a)
  - GLR parsing c) d)
- 3) The original YACC as written in language. C programming language
  - R programming language a)
  - B programming language c)
- 4) YACC is an acronym for
  - a) Yes Another Compile Compiler
  - b) Yet Another Compile Compiler
  - c) Yet Another Compiler Compiler
  - d) Yes Another Compiler Compiler
- Input of Lex is? 5)
  - Set to regular expression Statement b) a)
  - c) Numeric data d) ASCII data
- 6) Yacc semantic action is a sequence of?
  - a) Tokens b) Expression c) Statements Rules
  - d)
- 7) Which of the following software tool is parser generator?
  - a) Lex Yacc b) c) Both a and b d) None of these
- A Lex compiler generates? 8)
  - a) Lex object code
  - Tokens c)

- b) Transition tables
- None of above d)

**SLR-FM-367** 



Max. Marks: 50

Marks: 08

None of the mentioned

- openSUSE
- b)

b)

d)

- - LL parsing
- None of the mentioned

Set C

Max. Marks: 42

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology COMPILER DEVELOPMENT TOOLS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

#### **Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Attempt the following.

Seat

No.

- a) How is a Lex specification given structurally?
- b) Give examples of TACC ambiguities and conflicts.
- c) Compare between Lex and YACC.

#### Q.3 Attempt the following.

- a) For an example grammar generate a Lex specification and probable output.
- **b)** Generate YACC actions and outputs for the same grammar and parse sentences.

0010

12

# T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology COMPILER DEVELOPMENT TOOLS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

#### **Duration: 20 Minutes**

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 80

b)

d)

b)

b)

d)

d)

Yacc

None of these

Transition tables

LL parsing

None of the mentioned

None of the mentioned

C programming language

- Which of the following software tool is parser generator? 1)
  - a) Lex Both a and b c)
- 2) A Lex compiler generates?
  - a) Lex object code
    - c) Tokens d) None of above
- 3) YACC is a computer program for \_ \_\_\_\_ operation system.
  - a) Windows b) DOS
    - c) Unix d) openSUSE
- 4) The table is created by YACC.
  - LALR parsing a)
  - c) GLR parsing
- The original YACC as written in language. 5) b)
  - R programming language a)
  - B programming language c)

#### YACC is an acronym for \_ 6)

- a) Yes Another Compile Compiler
- b) Yet Another Compile Compiler
- c) Yet Another Compiler Compiler
- d) Yes Another Compiler Compiler

7) Input of Lex is?

- Set to regular expression b) Statement a)
- c) Numeric data d) ASCII data
- Yacc semantic action is a sequence of? 8)
  - Tokens b) Expression a)
  - **Statements** d) Rules c)

**SLR-FM-367** 

Set

Max. Marks: 50

R

Marks: 08

Set

| Seat |  |
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| No.  |  |

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology COMPILER DEVELOPMENT TOOLS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Attempt the following.

- a) How is a Lex specification given structurally?
- b) Give examples of TACC ambiguities and conflicts.
- c) Compare between Lex and YACC.

## Q.3 Attempt the following.

- a) For an example grammar generate a Lex specification and probable output.
- **b)** Generate YACC actions and outputs for the same grammar and parse sentences.

Max. Marks: 42

12

R

## Set T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

COMPILER DEVELOPMENT TOOLS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

#### **Duration: 20 Minutes**

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. **08**

b)

d)

- The original YACC as written in \_\_\_\_\_ language. 1)
  - R programming language a)
  - B programming language c)
- 2) YACC is an acronym for
  - a) Yes Another Compile Compiler
  - b) Yet Another Compile Compiler
  - c) Yet Another Compiler Compiler
  - d) Yes Another Compiler Compiler
- \_\_ Input of Lex is? 3)
  - Set to regular expression Statement b) a)
  - Numeric data d) ASCII data c)
- 4) Yacc semantic action is a sequence of?
  - a) Tokens Expression b) Statements d) Rules c)
- 5) Which of the following software tool is parser generator?
  - Yacc a) Lex b)
  - c) Both a and b d) None of these
- 6) A Lex compiler generates?
  - a) Lex object code Transition tables b)
  - c) Tokens None of above d)
- 7) YACC is a computer program for operation system.
  - a) Windows b) DOS c) Unix
  - d) openSUSE
- The \_\_\_\_\_ table is created by YACC. 8)
  - a) LALR parsing LL parsing b)
    - c) GLR parsing None of the mentioned d)

**SLR-FM-367** 

Max. Marks: 50

Marks: 08

C programming language None of the mentioned

Set

| Seat |  |
|------|--|
| No.  |  |

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology COMPILER DEVELOPMENT TOOLS

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Attempt the following.

- a) How is a Lex specification given structurally?
- b) Give examples of TACC ambiguities and conflicts.
- c) Compare between Lex and YACC.

#### Q.3 Attempt the following.

- a) For an example grammar generate a Lex specification and probable output.
- **b)** Generate YACC actions and outputs for the same grammar and parse sentences.

Max. Marks: 42

12

S

## Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA SCIENCE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 20 Minutes** 

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **08** 

- Which of the following is needed in K-means clustering? 1)
  - All of the mentions a)
  - Initial guess as to cluster centroids b)
  - **Defined distance metrics** c)
  - d) Number of clusters
- 2) Which of the following is not an assumption of linear regression?
  - a) Linear relationship b) Multivariate normality auto-correlation
  - c) Homoscedasticity d)
- 3) Which is not an activation function in neural networks?
  - a) ReLu PReLu b) Sigmoid d) Sine
  - c)
- 4) Which is not a hyperparameter in decision trees?
  - a) max features min samples split b) c) criterion d) max depth
- Which of the following are some of the regularization methods? 5)
  - a) L<sub>2</sub> Ridge All of the mentions b)
  - c) Elasticnet d) L<sub>1</sub> LASSO
- Which of the following packages provides machine learning functionality? 6)
  - cacheSweave a) Knitr b)
  - c) All of the mentions d) gbm/pam
- 7) R is technically much closer to the Scheme language than it is to the original \_\_\_\_ language.
  - a) S C++ b) С c) d) C#
- 8) Normal random numbers can be generated with rnorm() by setting seed value to: .
  - 2 a) 4 b) c) 3 d) 1

Max. Marks: 50

Marks: 08

Set

Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA SCIENCE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Attempt the following questions.

- a) What are Sigma Technologies? State the ir features.
- What are the five steps involved in Data science? b)
- Compare between Structured and Unstructured data. C)

#### Q.3 Attempt the following questions.

- With case studies explain the applications of Data science. a)
- State the features of communication data and methods used for classification. b) Elaborate on each.



Max. Marks: 42

30

# Information Technology DATA SCIENCE **Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book. 2) Figures to the right indicate full marks. MCQ/Objective Type Questions

**Duration: 20 Minutes** 

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 80

- Which of the following are some of the regularization methods? 1)
  - a) L<sub>2</sub> Ridge b) L<sub>1</sub> LASSO c)
    - Elasticnet d)
- 2) Which of the following packages provides machine learning functionality?

b)

- a) Knitr
- c) All of the mentions d) abm/pam
- 3) R is technically much closer to the Scheme language than it is to the original language.
  - a) S b) C++
  - c) C d) C# Normal random numbers can be generated with rnorm() by setting seed
- 4) value to: \_\_\_\_\_.
  - a) 4 b) 2 3 d) 1 c)
- Which of the following is needed in K-means clustering? 5)
  - a) All of the mentions
  - b) Initial guess as to cluster centroids
  - c) **Defined distance metrics**
  - d) Number of clusters

a)

6) Which of the following is not an assumption of linear regression?

- Linear relationship b) Multivariate normality a)
- Homoscedasticity d) auto-correlation c)
- 7) Which is not an activation function in neural networks?
  - ReLu PReLu a) b)
  - Sigmoid d) Sine C)
- Which is not a hyperparameter in decision trees? 8) max\_features
  - min\_samples\_split b)
  - c) criterion d) max depth

**SLR-FM-368** 

Set

Q

# T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Max. Marks: 50

Marks: 08

All of the mentions

cacheSweave

Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA SCIENCE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Attempt the following questions.

- a) What are Sigma Technologies? State the ir features.
- **b**) What are the five steps involved in Data science?
- c) Compare between Structured and Unstructured data.

## Q.3 Attempt the following questions.

- a) With case studies explain the applications of Data science.
- b) State the features of communication data and methods used for classification. Elaborate on each.

Set Q

Max. Marks: 42

12

| Instr | uctior     | <b>1s:</b> 1) Q. No. 1 is compulsory and she   | ould b                     | e solved in first 20 minutes in ansv                                   | wer   |
|-------|------------|--|----------------------------|--|-------|
|       |            | 2) Figures to the right indicate ful   | l mark                     | (S.  |       |
|       |            | MCQ/Objective T  | ype (                      | Questions  |       |
| Dura  | tion: 2    | 0 Minutes  |                            | Marks  | 30 :8 |
| Q.1   | Choo<br>1) | <b>ose the correct alternatives from th</b><br>Which is not an activation function in<br>a) ReLu<br>c) Sigmoid   | ne op<br>n neu<br>b)<br>d) | tions and rewrite the sentence.<br>ral networks?<br>PReLu<br>Sine      | 80    |
|       | 2)         | Which is not a hyperparameter in de<br>a) max_features<br>c) criterion   | ecisio<br>b)<br>d)         | n trees?<br>min_samples_split<br>max_depth                             |       |
|       | 3)         | <ul><li>Which of the following are some of t</li><li>a) L<sub>2</sub> Ridge</li><li>c) Elasticnet</li></ul>  | the re<br>b)<br>d)         | gularization methods?<br>All of the mentions<br>L1 LASSO               |       |
|       | 4)         | <ul><li>Which of the following packages pro</li><li>a) Knitr</li><li>c) All of the mentions</li></ul>  | bvides<br>b)<br>d)         | machine learning functionality?<br>cacheSweave<br>gbm/pam              |       |
|       | 5)         | R is technically much closer to the S<br>original language.<br>a) S<br>c) C  | Schen<br>b)<br>d)          | ne language than it is to the<br>C++<br>C#                             |       |
|       | 6)         | Normal random numbers can be ge<br>value to:<br>a) 4<br>c) 3   | nerate<br>b)<br>d)         | ed with rnorm() by setting seed<br>2<br>1                              |       |
|       | 7)         | <ul> <li>Which of the following is needed in</li> <li>a) All of the mentions</li> <li>b) Initial guess as to cluster centro</li> <li>c) Defined distance metrics</li> <li>d) Number of clusters</li> </ul> | K-mea                      | ans clustering?  |       |
|       | 8)         | <ul><li>Which of the following is not an ass</li><li>a) Linear relationship</li><li>c) Homoscedasticity</li></ul>  | umptio<br>b)<br>d)         | on of linear regression?<br>Multivariate normality<br>auto-correlation |       |

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA SCIENCE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Seat No.

## **SLR-FM-368**

Max. Marks: 50

- . 08
- ks: 08

R

Set

Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA SCIENCE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Attempt the following questions.

- a) What are Sigma Technologies? State the ir features.
- **b**) What are the five steps involved in Data science?
- c) Compare between Structured and Unstructured data.

## Q.3 Attempt the following questions.

- a) With case studies explain the applications of Data science.
- b) State the features of communication data and methods used for classification. Elaborate on each.

Set R

Max. Marks: 42

12



Max. Marks: 50

## T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA SCIENCE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 20 Minutes** 

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **08** 

- R is technically much closer to the Scheme language than it is to the 1) original \_\_\_\_\_ language.
  - a) S b)
  - c) C d) C#
- 2) Normal random numbers can be generated with rnorm() by setting seed value to: .
  - 2 4 b) a) 3 1
  - d) c)
- 3) Which of the following is needed in K-means clustering?
  - All of the mentions a)
  - b) Initial guess as to cluster centroids
  - c) Defined distance metrics
  - d) Number of clusters

#### 4) Which of the following is not an assumption of linear regression?

- a) Linear relationship b) Multivariate normality
- c) Homoscedasticity
- 5) Which is not an activation function in neural networks?
  - a) ReLu PReLu b)
  - c) Sigmoid d) Sine

Which is not a hyperparameter in decision trees? 6)

- min samples split max features b) a)
- criterion d) max depth c)
- Which of the following are some of the regularization methods? 7) a)
  - L<sub>2</sub> Ridge All of the mentions b)
  - Elasticnet L<sub>1</sub> LASSO d) C)
- Which of the following packages provides machine learning functionality? 8)
  - cacheSweave Knitr b) a)
  - c) All of the mentions d) gbm/pam

Seat No.

Marks: 08

C++

- auto-correlation

- d)

Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA SCIENCE

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Attempt the following questions.

- a) What are Sigma Technologies? State the ir features.
- **b**) What are the five steps involved in Data science?
- c) Compare between Structured and Unstructured data.

## Q.3 Attempt the following questions.

- a) With case studies explain the applications of Data science.
- b) State the features of communication data and methods used for classification. Elaborate on each.

Set S

Max. Marks: 42

12

## T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **USER INTERFACE TECHNOLOGIES**

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer Book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 20 Minutes** 

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence.

#### 1) In the network HTTP resources are located by .

- unique resource locator a) uniform resource identifier b)
- c) unique resource identifier d) none of the mentioned

SLR-FM-369

Set

Max. Marks: 50

Marks: 10

10

Page **1** of **12** 

- HTTP client requests by establishing a \_\_\_\_\_ connection to a particular 2) port on the server.
  - a) user datagram protocol b) transmission control protocol
    - none of the mentioned broader gateway protocol d) C)
- 3) In FTP protocol, client contacts server using \_\_\_\_\_ as the transport protocol.
  - a) Transmission control protocol
  - b) user datagram protocol
  - datagram congestion control protocol c)
  - d) stream control transmission protocol

#### <b> tag makes the enclosed text bold. What is other tag to make text bold? 4)

- <strong> b) <dar> a)
- <black> c) d) <emp>
- 5) What is the correct HTML for making a hyperlink?
  - a) <a href="http:// abc.com">ICT Trends Quiz</a>
  - b) <a name="https:// abc.com">ICT Trends Quiz</a>
  - <https:// abc.com</a> c)
  - d) url="https:// abc.com">ICT Trends Quiz
- 6) To create a combo box (drop down box) which tag will you use?
  - a) <select> <list> b)
  - <input type="dropdown"> all of above d) C)
- FTP uses One port number (21) is used for \_\_\_\_\_ and another one for 7) Direct sequence.
  - a) data transfer, control connection
  - b) socket connection, data transfer
  - c) control connection, data transfer

#### Which attribute is used to name an element uniquely? 8)

a) class

b) ld **SLR-FM-369** 

Set P

- c) dot d) all of above
- HTML (Hyper Text Markup Language) to specify \_\_\_\_\_ of web pages. 9) the content and structure
  - a) style b)
  - c) both d) None
- JavaScript is a language that helps you build \_\_\_\_\_ web pages. 10)
  - dynamic a) c) positioning

- Coloring b) d) None

| Seat<br>No.    | t  | Set      | Ρ     |
|----------------|--|----------|-------|
|                | T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>USER INTERFACE TECHNOLOGIES  | 9        |       |
| Day &<br>Time: | & Date: Thursday, 28-11-2019 Mai<br>:: 10:00 AM To 12:00 PM  | x. Marks | ;: 40 |
| Instru         | <b>uctions:</b> 1) All questions are compulsory.<br>2) Figures to the right indicate full marks.   |          |       |
| Q.2            | <ul> <li>Solve any four.</li> <li>a) What are the various elements provided by HTML5 for media content</li> <li>b) Differentiate between SMTP and POP3.</li> <li>c) What is HTML5?</li> <li>d) Explain 2D and 3D transformation of CSS3.</li> <li>e) What is responsive web design?</li> </ul> | ıt?      | 20    |
| Q.3            | <ul> <li>Solve any two.</li> <li>a) Explain HTTP request response for dynamic web pages.</li> <li>b) What is HTML5 API web storage?</li> <li>c) Explain JSON</li> </ul>  |          | 12    |
| Q.4            | Explain j query for Animation effect.  |          | 08    |

#### Max. Marks: 50 Book. 2) Figures to the right indicate full marks. MCQ/Objective Type Questions **Duration: 20 Minutes** Marks: 10 Choose the correct alternatives from the options and rewrite the 10 sentence. 1) To create a combo box (drop down box) which tag will you use? a) <select> <list> b) c) <input type="dropdown"> d) all of above FTP uses One port number (21) is used for \_\_\_\_\_ and another one for 2) Direct sequence. a) data transfer, control connection b) socket connection. data transfer c) control connection, data transfer d) control connection, socket connection Which attribute is used to name an element uniquely? 3) a) class b) ld c) dot d) all of above 4) HTML (Hyper Text Markup Language) to specify \_\_\_\_\_ of web pages. the content and structure a) style b) c) both None d) JavaScript is a language that helps you build web pages. 5) a) dvnamic Colorina b) c) positioning d) None In the network HTTP resources are located by 6) a) uniform resource identifier unique resource locator b) c) unique resource identifier d) none of the mentioned 7) HTTP client requests by establishing a \_\_\_\_\_ connection to a particular port on the server. a) user datagram protocol b) transmission control protocol c) broader gateway protocol none of the mentioned d)

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer

# **USER INTERFACE TECHNOLOGIES**

Information Technology

Seat No.

Q.1

8)

protocol.

# SLR-FM-369

Page **4** of **12** 

Set T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019

# Set Q

- 9) <b> tag makes the enclosed text bold. What is other tag to make text bold?
  - a) <strong> b) <dar>
  - c) <black> d) <emp>
- 10) What is the correct HTML for making a hyperlink?
  - a) <a href="http:// abc.com">ICT Trends Quiz</a>
  - b) <a name="<u>https:// abc.com</u>">ICT Trends Quiz</a>
  - c) <<u>https:// abc.com</u></a>
  - d) url=<u>"https:// abc.com</u>">ICT Trends Quiz

| Seat<br>No. | t  | Set            | Q     |  |
|-------------|--|----------------|-------|--|
| Day 8       | T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-201<br>Information Technology<br>USER INTERFACE TECHNOLOGIES<br>& Date: Thursday, 28-11-2019   | 9<br>ax. Marks | s: 40 |  |
| Time:       | : 10:00 AM To 12:00 PM   |                |       |  |
| Instru      | <b>uctions:</b> 1) All questions are compulsory.<br>2) Figures to the right indicate full marks.   |                |       |  |
| Q.2         | <ul> <li>Solve any four.</li> <li>a) What are the various elements provided by HTML5 for media content</li> <li>b) Differentiate between SMTP and POP3.</li> <li>c) What is HTML5?</li> <li>d) Explain 2D and 3D transformation of CSS3.</li> <li>e) What is responsive web design?</li> </ul> | nt?            | 20    |  |
| Q.3         | <ul> <li>Solve any two.</li> <li>a) Explain HTTP request response for dynamic web pages.</li> <li>b) What is HTML5 API web storage?</li> <li>c) Explain JSON</li> </ul>  |                | 12    |  |
| Q.4         | Explain j query for Animation effect.  |                | 08    |  |

| Seat<br>No.  |  |   |   |                                       |   |  | Set         | R     |  |
|--|--|---|---|---------------------------------------|---|--|-------------|-------|--|
| T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology |  |   |   |                                       |   |  |             |       |  |
| Day &<br>Time: 2   | Date: Thursda<br>10:00 AM To   | ay, 28-1 <i>°</i><br>12:00 PN   | 1-2019<br>/   |                                       |   | Max                                      | . Marks     | 3: 50 |  |
| Instruc  | ctions: 1) Q.<br>Boo<br>2) Fig   | No. 1 is (<br>ok.   | compulsory and sh   | ould b                                | e solved in first                                   | 20 minutes                               | in ans      | wer   |  |
|  | <i>z)</i> r ig   |   |   |                                       |   |  |             |       |  |
| Duratic  | on: 20 Minutes   | IVI<br>S  | CQ/Objective I  | ype (                                 | LUESTIONS   |  | Marks       | s: 10 |  |
| Q.1 (  | choose the c   | orrect a  | Iternatives from t  | he op                                 | ions and rewri                                      | te the                                   | marra       | 10    |  |
| S  | sentence.  |   |   |                                       |   |  |             |       |  |
| 1  | ) HTML (H<br>a) style<br>c) both   | Hyper Te<br>e<br>า  | ext Markup Langua   | ge) to<br>b)<br>d)                    | specify o<br>the content an<br>None                 | f web page<br>d structure                | S.          |       |  |
| 2  | 2) JavaScr<br>a) dyna<br>c) posi   | ipt is a la<br>amic<br>itioning   | anguage that helps  | you b<br>b)<br>d)                     | uild web<br>Coloring<br>None                        | pages.                                   |             |       |  |
| 3  | 8) In the ne<br>a) unif<br>c) unic   | etwork H<br>orm reso<br>que reso  | TTP resources are<br>ource identifier<br>urce identifier  | locate<br>b)<br>d)                    | ed by<br>unique resourc<br>none of the me           | ce locator<br>entioned                   |             |       |  |
| 4  | <ul> <li>HTTP cl</li> <li>port on t</li> <li>a) user</li> <li>c) broad</li> </ul>  | ient requ<br>he serve<br>r datagra<br>ader gate                             | iests by establishin<br>er.<br>Im protocol<br>eway protocol   | b)<br>d)                              | transmission c                                      | to a particu<br>ontrol proto<br>entioned | ılar<br>col |       |  |
| 5  | 5) In FTP p<br>protocol<br>a) Trar<br>b) use<br>c) data<br>d) strea  | orotocol,<br>nsmissio<br>r datagra<br>agram co<br>am contr                  | client contacts ser<br>n control protocol<br>im protocol<br>ingestion control pr<br>rol transmission pro                                  | ver usi<br>rotocol<br>otocol          | ng as the   | e transport                              |             |       |  |
| 6  | 5) <b> tag<br/>a) <str<br>c) <black< td=""><td>makes tl<br/>ong&gt;<br/>ack&gt;</td><td>ne enclosed text bo</td><td>bld. Wl<br/>b)<br/>d)</td><td>nat is other tag t<br/><dar><br/><emp></emp></dar></td><td>o make tex</td><td>t bold?</td><td></td></black<></str<br></b>    | makes tl<br>ong><br>ack>  | ne enclosed text bo   | bld. Wl<br>b)<br>d)                   | nat is other tag t<br><dar><br/><emp></emp></dar>   | o make tex                               | t bold?     |       |  |
| 7  | 7) What is<br>a) <a h<br="">b) <a r<br="">c) &lt;<u>htt</u><br/>d) url=</a></a>  | the corre<br>nref="http<br>name=" <u>h</u><br><u>ps://_abo</u><br>"https:// | ect HTML for makin<br>o:// <u>abc.com</u> ">ICT <sup>-</sup><br>t <u>tps:// abc.com</u> ">IC<br><u>c.com</u><br><u>abc.com</u> ">ICT Tree | ng a hy<br>Frends<br>T Trei<br>nds Qi | rperlink?<br>s Quiz<br>nds Quiz<br>uiz              |  |             |       |  |
| 8  | 8) To creat<br>a) <sel<br>c) <inp< td=""><td>te a comi<br/>lect&gt;<br/>out type=</td><td>bo box (drop down<br/>"dropdown"&gt;</td><td>box) v<br/>b)<br/>d)</td><td>vhich tag will yo<br/><list><br/>all of above</list></td><td>u use?</td><td></td><td></td></inp<></sel<br> | te a comi<br>lect><br>out type=   | bo box (drop down<br>"dropdown">  | box) v<br>b)<br>d)                    | vhich tag will yo<br><list><br/>all of above</list> | u use?                                   |             |       |  |

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# **SLR-FM-369**



- 9) FTP uses One port number (21) is used for \_\_\_\_\_ and another one for \_\_\_\_\_ Direct sequence.
  - a) data transfer, control connection
  - b) socket connection, data transfer
  - c) control connection, data transfer
  - d) control connection, socket connection
- 10) Which attribute is used to name an element uniquely?
  - a) class b) Id
  - c) dot

d) all of above

| Seat<br>No.    |  | Set   | R     |  |
|----------------|--|-------|-------|--|
|                | T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>USER INTERFACE TECHNOLOGIES  |       |       |  |
| Day &<br>Time: | & Date: Thursday, 28-11-2019 Max.<br>: 10:00 AM To 12:00 PM  | Marks | 3: 40 |  |
| Instru         | <b>uctions:</b> 1) All questions are compulsory.<br>2) Figures to the right indicate full marks.   |       |       |  |
| Q.2            | <ul> <li>Solve any four.</li> <li>a) What are the various elements provided by HTML5 for media content</li> <li>b) Differentiate between SMTP and POP3.</li> <li>c) What is HTML5?</li> <li>d) Explain 2D and 3D transformation of CSS3.</li> <li>e) What is responsive web design?</li> </ul> | ?     | 20    |  |
| Q.3            | <ul> <li>Solve any two.</li> <li>a) Explain HTTP request response for dynamic web pages.</li> <li>b) What is HTML5 API web storage?</li> <li>c) Explain JSON</li> </ul>  |       | 12    |  |
| Q.4            | Explain j query for Animation effect.  |       | 08    |  |

| b)                              | ld   |
|---------------------------------|--|
| d)                              | all of above   |
| Markup Language) to<br>b)<br>d) | specify of web pages.<br>the content and structure<br>None |
| guage that helps you b          | uild web pages.  |
| b)                              | Coloring   |
| d)                              | None   |
|                                 |  |
|                                 |  |

|                       | Information Technology      |
|-----------------------|-----------------------------|
|                       | USER INTERFACE TECHNOLOGIES |
| Day & Date: Thursday, | 28-11-2019                  |

Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer Book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 20 Minutes** 

8)

Seat No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
  - 1) In FTP protocol, client contacts server using as the transport protocol.
    - Transmission control protocol a)
    - b) user datagram protocol
    - c) datagram congestion control protocol
    - d) stream control transmission protocol
  - 2) <b> tag makes the enclosed text bold. What is other tag to make text bold?
    - a) <strong> <dar> b)
    - c) <black> d) <emp>
  - What is the correct HTML for making a hyperlink? 3)
    - a) <a href="http:// abc.com">ICT Trends Quiz</a>
    - b) <a name="https:// abc.com">ICT Trends Quiz</a>
    - c) <https:// abc.com</a>
    - d) url="https:// abc.com">ICT Trends Quiz
  - 4) To create a combo box (drop down box) which tag will you use?
    - a) <select> b) <list>
    - c) <input type="dropdown"> d) all of above
  - FTP uses One port number (21) is used for \_\_\_\_\_ and another one for 5) Direct sequence.
    - a) data transfer, control connection
    - b) socket connection, data transfer
    - c) control connection, data transfer
    - d) control connection, socket connection
  - Which attribute is used to name an element uniquely? 6)
    - a) class c) dot
  - 7) HTML (Hyper Text a) style
    - c) both JavaScript is a lang
      - dynamic a)
    - positioning C)

# SLR-FM-369

Max. Marks: 50

Marks: 10

#### In the network HTTP resources are located by \_\_\_\_\_. 9)

- a) uniform resource identifier
- unique resource locator b)
- c) unique resource identifier
- d) none of the mentioned

**SLR-FM-369** 

Set S

- HTTP client requests by establishing a \_\_\_\_\_ connection to a particular 10) port on the server.
  - a) user datagram protocol
- b) transmission control protocol none of the mentioned d)
- c) broader gateway protocol

Page **11** of **12** 

| Seat<br>No.    |   | Set   | S     |  |
|----------------|---|-------|-------|--|
|                | T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>USER INTERFACE TECHNOLOGIES   |       |       |  |
| Day &<br>Time: | & Date: Thursday, 28-11-2019 Max.<br>: 10:00 AM To 12:00 PM   | Marks | 3: 40 |  |
| Instru         | <ul><li>uctions: 1) All questions are compulsory.</li><li>2) Figures to the right indicate full marks.</li></ul>  |       |       |  |
| Q.2            | <ul> <li>Solve any four.</li> <li>a) What are the various elements provided by HTML5 for media content?</li> <li>b) Differentiate between SMTP and POP3.</li> <li>c) What is HTML5?</li> <li>d) Explain 2D and 3D transformation of CSS3.</li> <li>e) What is responsive web design?</li> </ul> |       | 20    |  |
| Q.3            | <ul> <li>Solve any two.</li> <li>a) Explain HTTP request response for dynamic web pages.</li> <li>b) What is HTML5 API web storage?</li> <li>c) Explain JSON</li> </ul>   |       | 12    |  |
| Q.4            | Explain j query for Animation effect.   |       | 08    |  |

Set

## Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology AGILE PROJECT MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 20 Minutes** 

1)

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10
  - When acceptance testing is performed in Agile development? a) On request of customer
    - b) After system is ready
    - c) At the end of each iteration d) Daily
  - 2) Agile Software Development is based on \_\_\_\_\_.
    - a) Incremental Development
    - **Iterative Development** b)
    - c) Linear Development
    - d) Both Incremental and Iterative Development
  - 3) Agility is defined as the ability of a project team to respond rapidly to a change.
    - a) True b) False
  - 4) Which of the following is delivered at the end of the Sprint?
    - a) A document containing test cases for the current sprint
    - b) An architectural design of the solution
    - c) An increment of Done software
    - d) Wireframes designs for User Interface
  - Select the option that suits the Manifesto for Agile Software Development 5)
    - Individuals and interactions a) b) Working software
      - Customer collaboration All of the mentioned d)
  - When is a Sprint Retrospective ceremony performed? 6)
    - a) Whenever the team suggests
    - b) At the end of each Sprint
    - c) Whenever needed

c)

- d) Whenever the Product Owner suggests
- e) Whenever the Scrum Master suggests
- State True/False: "In Agile development testing is treated as a separate 7) phase."
  - a) True b) False

Max. Marks: 50

Marks: 10

8) Who will test the system in agile development?

a) software tester

b) Developer **SLR-FM-370** 

Set P

- c) Business Analyst
- d) All the above
- 9) Find what is the unit of measurement that is used to measure the size of a user story for an Agile project?
  - a) Function points
- b) Story points
- c) Work breakdown points
- d) Velocity points
- 10) If a team can complete 10 story points In an iteration then how long will it take for the team to complete 100 story points?
  - a) 10 Iterations
  - b) 10 waves c) 20 Iterations d) 20 waves

Set

| Seat |  |
|------|--|
| No.  |  |

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology AGILE PROJECT MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM Max. Marks: 40

16

16

**Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Answer any Four:

- a) List and discuss the difference between traditional Waterfall model and Agile testing?
- **b)** Explain the Iterative and Incremental Development in Agile.
- c) What is difference between Epic, User stories & Tasks?
- d) What is Test Driven Development (TDD)?
- e) Explain Pair Programming and its benefits.

#### Q.3 Attempt any two:

- a) What is Agile Manifesto? List and explain its four key values and twelve principals.
- **b)** Explain Task board in Agile in detail with example.
- c) List and explain various Scrum roles in detail with example.
- Q.4 What is refactoring? Why it is important? List and explain different refactoring08 techniques in Agile software development.

Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **AGILE PROJECT MANAGEMENT**

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 20 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- When is a Sprint Retrospective ceremony performed? 1)
  - a) Whenever the team suggests
  - b) At the end of each Sprint
  - c) Whenever needed
  - d) Whenever the Product Owner suggests
  - e) Whenever the Scrum Master suggests
- 2) State True/False: "In Agile development testing is treated as a separate phase."
  - a) True b)
- 3) Who will test the system in agile development?
  - a) software tester Developer b)
  - c) Business Analyst d)
- Find what is the unit of measurement that is used to measure the size of 4) a user story for an Agile project?
  - Function points b) a)
  - Work breakdown points d) c)
- 5) If a team can complete 10 story points In an iteration then how long will it take for the team to complete 100 story points?
  - a) 10 Iterations b) 10 waves
  - c) 20 Iterations d) 20 waves
- 6) When acceptance testing is performed in Agile development?
  - a) On request of customer After system is ready b)
  - c) At the end of each iteration d) Daily
- 7) Agile Software Development is based on \_\_\_\_\_.
  - a) Incremental Development
  - Iterative Development b)
  - c) Linear Development
  - d) Both Incremental and Iterative Development
- Agility is defined as the ability of a project team to respond rapidly to a 8) change.
  - a) True b) False

#### False

- All the above
- Story points
- Velocity points

Marks: 10

Set

Max. Marks: 50

#### 9) Which of the following is delivered at the end of the Sprint?

- a) A document containing test cases for the current sprint
- b) An architectural design of the solution
- c) An increment of Done software
- d) Wireframes designs for User Interface
- 10) Select the option that suits the Manifesto for Agile Software Development
  - a) Individuals and interactions
- b) Working software
- c) Customer collaboration
- d) All of the mentioned

**SLR-FM-370** 

Set Q

| Seat |  |
|------|--|
| No.  |  |

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology AGILE PROJECT MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM Max. Marks: 40

16

16

**Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Answer any Four:

- a) List and discuss the difference between traditional Waterfall model and Agile testing?
- **b)** Explain the Iterative and Incremental Development in Agile.
- c) What is difference between Epic, User stories & Tasks?
- d) What is Test Driven Development (TDD)?
- e) Explain Pair Programming and its benefits.

#### Q.3 Attempt any two:

- a) What is Agile Manifesto? List and explain its four key values and twelve principals.
- **b)** Explain Task board in Agile in detail with example.
- c) List and explain various Scrum roles in detail with example.
- Q.4 What is refactoring? Why it is important? List and explain different refactoring08 techniques in Agile software development.

Set

R

Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **AGILE PROJECT MANAGEMENT**

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 20 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- Find what is the unit of measurement that is used to measure the size of 1) a user story for an Agile project? Story points
  - a) Function points b)
  - c) Work breakdown points d) Velocity points
- 2) If a team can complete 10 story points In an iteration then how long will it take for the team to complete 100 story points?
  - a) 10 Iterations b) 10 waves
  - d) c) 20 Iterations 20 waves
- 3) When acceptance testing is performed in Agile development?
  - a) On request of customer After system is ready b) Daily
  - c) At the end of each iteration d)
- 4) Agile Software Development is based on \_\_\_\_\_.
  - a) Incremental Development
  - b) Iterative Development
  - Linear Development c)
  - d) Both Incremental and Iterative Development
- Agility is defined as the ability of a project team to respond rapidly to a 5) change.
  - a) True

b) False

- 6) Which of the following is delivered at the end of the Sprint?
  - a) A document containing test cases for the current sprint
    - b) An architectural design of the solution
    - c) An increment of Done software
    - d) Wireframes designs for User Interface
- 7) Select the option that suits the Manifesto for Agile Software Development
  - Individuals and interactions a)
- b) Working software
- c) Customer collaboration d)
- All of the mentioned

Max. Marks: 50

Marks: 10

#### 8) When is a Sprint Retrospective ceremony performed?

- a) Whenever the team suggests
- b) At the end of each Sprint
- c) Whenever needed
- d) Whenever the Product Owner suggests
- e) Whenever the Scrum Master suggests
- 9) State True/False: "In Agile development testing is treated as a separate phase."
  - a) True b) False
- 10) Who will test the system in agile development?
  - a) software tester
- b) Developer
- c) Business Analyst
- d) All the above

**SLR-FM-370** 

Set R
Set

R

Seat

No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology AGILE PROJECT MANAGEMENT

Day & Date: Thursday, 28-11-2019 Max. Marks: 40 Time: 10:00 AM To 12:00 PM Instructions: 1) All Questions are compulsory. 2) Figures to the right indicate full marks. Q.2 Answer any Four: 16 a) List and discuss the difference between traditional Waterfall model and Agile testing? **b)** Explain the Iterative and Incremental Development in Agile. c) What is difference between Epic, User stories & Tasks? d) What is Test Driven Development (TDD)? e) Explain Pair Programming and its benefits. Q.3 Attempt any two: 16 a) What is Agile Manifesto? List and explain its four key values and twelve principals. **b)** Explain Task board in Agile in detail with example. c) List and explain various Scrum roles in detail with example. **Q.4** What is refactoring? Why it is important? List and explain different refactoring **08** 

techniques in Agile software development.

Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology AGILE PROJECT MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 20 Minutes** 

Marks: 10

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- Agility is defined as the ability of a project team to respond rapidly to a change.
  - a) True b) False
- 2) Which of the following is delivered at the end of the Sprint?
  - a) A document containing test cases for the current sprint
    - b) An architectural design of the solution
    - c) An increment of Done software
    - d) Wireframes designs for User Interface
- 3) Select the option that suits the Manifesto for Agile Software Development
  - a) Individuals and interactions b)
    - b) Working softwared) All of the mentioned
  - c) Customer collaboration d)
- 4) When is a Sprint Retrospective ceremony performed?
  - a) Whenever the team suggests
  - b) At the end of each Sprint
  - c) Whenever needed
  - d) Whenever the Product Owner suggests
  - e) Whenever the Scrum Master suggests
- 5) State True/False: "In Agile development testing is treated as a separate phase."
  - a) True b) False
- 6) Who will test the system in agile development?
  - a) software tester b) Developer
  - c) Business Analyst d) All the above
- 7) Find what is the unit of measurement that is used to measure the size of a user story for an Agile project?
  - a) Function points

- b) Story points
- c) Work breakdown points d) Velocity points
- 8) If a team can complete 10 story points In an iteration then how long will it take for the team to complete 100 story points?
  - a) 10 Iterations b) 10 waves
  - c) 20 Iterations d) 20 waves

Set

Max. Marks: 50



- 9) When acceptance testing is performed in Agile development?
  - a) On request of customer
- b) After system is readyd) Daily
- c) At the end of each iteration d)
- 10) Agile Software Development is based on \_\_\_\_\_.
  - a) Incremental Development
  - b) Iterative Development
  - c) Linear Development
  - d) Both Incremental and Iterative Development

Set

S

16

16

### Seat No.

#### T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019 Information Technology AGILE PROJECT MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Max. Marks: 40

**Instructions:** 1) All Questions are compulsory.

2) Figures to the right indicate full marks.

#### Q.2 Answer any Four:

- a) List and discuss the difference between traditional Waterfall model and Agile testing?
- **b)** Explain the Iterative and Incremental Development in Agile.
- c) What is difference between Epic, User stories & Tasks?
- d) What is Test Driven Development (TDD)?
- e) Explain Pair Programming and its benefits.

#### Q.3 Attempt any two:

- a) What is Agile Manifesto? List and explain its four key values and twelve principals.
- **b)** Explain Task board in Agile in detail with example.
- c) List and explain various Scrum roles in detail with example.
- Q.4 What is refactoring? Why it is important? List and explain different refactoring08 techniques in Agile software development.

## T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

## DATABASE ENGINEERING

Day & Date: Friday, 22-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

### **Duration: 30 Minutes**

Seat

No.

#### Q.1 Choose the correct answer

- An outstanding functionality of SQL is its support for automatic to 1) the target data.
  - a) Programming b) Functioning
    - c) Navigation Notification d)
- 2) is a special type of integrity constraint that relates two relations & maintains consistency across the relations.
  - a) Entity Integrity Constraints
  - b) Referential Integrity Constraints
  - c) Domain Integrity Constraints
  - d) Domain Constraints
  - e) Key Constraints
- 3) specifies a search condition for a group or an aggregate.
  - a) GROUP BY Clause **HAVING Clause** b)
  - c) FROM Clause WHERE Clause d)
- Drop Table cannot be used to drop a table referenced by a \_\_\_\_\_ 4) constraint.
  - a) Local Key b) Primary Key
  - Composite Key Foreign Key d) c)
- By data integrity we mean \_\_\_\_ 5)
  - maintaining consistent data values a)
  - b) integrated data values
  - c) banning improper access to data
  - d) not leaking data values
- 6) The property of transaction that persists all the crashes is .
  - a) Atomicity Durability b)
  - c) Isolation d) All of the mentioned
- Transaction processing is associated with everything below except . 7)
  - a) Producing detail summary or exception reports
  - b) Recording a business activity
  - c) Confirming a action or triggering a response
  - d) Maintaining a data

Set

Max. Marks: 70





Marks: 14

14

**SLR-FM-371** Set 8) Commit and rollback are related to data consistency a) data integrity b) c) data sharing d) data security A sophisticated locking mechanism known as 2-phase locking which 9) includes Growing phase and \_\_\_\_\_. b) Release phase a) Shrinking Phase c) Commit phase Acquire Phase d) 10) The \_\_\_\_\_ is responsible for ensuring correct execution in the presence of failures. a) Database Manager b) Transaction Manager c) Recovery/Manager d) **Executive Manager** For a weak entity set to be meaningful, it must be associated with another 11) entity set, called the a) Identifying set b) Owner set c) Neighbour set d) Strong entity set Which is a bottom-up approach to database design that design by 12) examining the relationship between attributes: \_\_\_\_\_? a) Functional dependency b) Database modeling c) Normalization Decomposition d) Which forms simplifies and ensures that there is minimal data aggregates 13) and repetitive groups: \_\_\_\_\_. a) 1NF b) 2NF c) 3NF All of the mentioned d)

- 14) Tables in second normal form (2NF): \_\_\_\_\_.
  - a) Eliminate all hidden dependencies
  - b) Eliminate the possibility of a insertion anomalies
  - c) Have a composite key
  - d) Have all non key fields depend on the whole primary key

| Sea<br>No   | t   | Set        | Ρ     |
|-------------|---|------------|-------|
| 110.        | T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2<br>Information Technology<br>DATABASE ENGINEERING   | 019        |       |
| Day<br>Time | & Date: Friday, 22-11-2019<br>e: 10:00 AM To 01:00 PM   | Max. Marks | s: 56 |
| Instr       | 2) Figures to the right indicate full marks.  |            |       |
|             | Section – I   |            |       |
| Q.2         | <ul> <li>Answer any Four</li> <li>a) Explain the concept of keys with example.</li> <li>b) Explain with example the natural join operations.</li> <li>c) Give the formal definition of domain relational calculus.</li> <li>d) Explain with example generalization and specialization.</li> <li>e) Explain with example third normal form (3NF).</li> </ul> |            | 16    |
| Q.3         | Explain the fundamental relational algebra operations with example.<br>OR<br>Explain concept of First and Second NE with example  |            | 06    |
| Q.4         | Explain the concept of decomposition and dependency   |            | 06    |
| <b>4</b> .4 | Section – II  |            |       |
| Q.5         | <ul> <li>Answer any Four:</li> <li>a) What is the difference between clustering index and a secondary</li> <li>b) Explain the concept of shadow paging.</li> <li>c) What do you mean by concurrency control explain it?</li> <li>d) List the ACID properties and explain the usefulness of each.</li> <li>e) Explain in brief B tree index file.</li> </ul> | index?     | 16    |
| Q.6         | <ul><li>Solve any One:</li><li>a) Explain the use of Thomas write rule used in time stamp based p</li><li>b) Explain in detail the concept of check points in recovery systems.</li></ul>   | rotocol.   | 06    |
| Q.7         | Explain Time-stamp-ordering protocol with an example.   |            | 06    |

### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DATABASE ENGINEERING

Day & Date: Friday, 22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

b)

b)

d)

data consistency

**Executive Manager** 

#### **Duration: 30 Minutes** Q.1 Choose the correct answer

- 1) Commit and rollback are related to \_\_\_\_
  - a) data integrity
  - c) data sharing d) data security
- A sophisticated locking mechanism known as 2-phase locking which 2) includes Growing phase and .
  - a) Shrinking Phase Release phase b)
  - c) Commit phase Acquire Phase d)
- The \_\_\_\_\_ is responsible for ensuring correct execution in the presence 3) of failures. Transaction Manager
  - a) Database Manager
    - c) Recovery/Manager
- For a weak entity set to be meaningful, it must be associated with another 4) entity set, called the b) Owner set
  - a) Identifying set
  - c) Neighbour set d) Strong entity set
- Which is a bottom-up approach to database design that design by 5) examining the relationship between attributes: \_\_\_\_\_? Database modeling
  - a) Functional dependency b)
  - c) Normalization Decomposition d)
- Which forms simplifies and ensures that there is minimal data aggregates 6) and repetitive groups: \_\_\_\_\_.
  - a) 1NF 2NF b)
  - c) 3NF d) All of the mentioned
- Tables in second normal form (2NF): 7)
  - a) Eliminate all hidden dependencies
  - b) Eliminate the possibility of a insertion anomalies
  - c) Have a composite key
  - d) Have all non key fields depend on the whole primary key
- An outstanding functionality of SQL is its support for automatic \_\_\_\_\_ to 8) the target data.
  - a) Programming b)
    - Notification d)

Max. Marks: 70

Marks: 14

14

SLR-FM-371

c) Navigation

Seat No.

- 9) \_\_\_\_\_ is a special type of integrity constraint that relates two relations & maintains consistency across the relations.
  - a) Entity Integrity Constraints
  - b) Referential Integrity Constraints
  - c) Domain Integrity Constraints
  - d) Domain Constraints
  - e) Key Constraints
- 10) \_\_\_\_\_ specifies a search condition for a group or an aggregate.
  - a) GROUP BY Clause b) HAVING Clause
  - c) FROM Clause d) WHERE Clause
- 11) Drop Table cannot be used to drop a table referenced by a \_\_\_\_\_ constraint.
  - a) Local Key b) F
  - c) Composite Key
- b) Primary Keyd) Foreign Key

Set

- 12) By data integrity we mean \_\_\_\_\_.
  - a) maintaining consistent data values
  - b) integrated data values
  - c) banning improper access to data
  - d) not leaking data values

13) The property of transaction that persists all the crashes is \_\_\_\_\_.

- a) Atomicity b) Durability
- c) Isolation d) All of the mentioned
- 14) Transaction processing is associated with everything below except \_\_\_\_\_.
  - a) Producing detail summary or exception reports
  - b) Recording a business activity
  - c) Confirming a action or triggering a response
  - d) Maintaining a data

| Seat  | t        |  |  |  | Set                         | Q     |
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| NO.   |          |  |  |  |                             | -     |
|       |          | T.E. (Part – II  | ) (Old) (CGPA                            | ) Examination Nov                                  | /Dec-2019                   |       |
|       |          |  | Informatio                               | N LECHNOLOGY                                       |                             |       |
| Dav   | 8 Do     | to: Fridov, 22-11-   |  |  | Max Marke                   | 56    |
| Time  | : 10:    | 00 AM To 01:00 F   | M  |  |                             | 5. 30 |
| Instr | ucti     | ons: 1) All questio  | ns are compulso                          | ry.  |                             |       |
|       |          | 2) Figures to  | the right indicate                       | full marks.  |                             |       |
|       |          |  | Sec                                      | tion – I   |                             |       |
| Q.2   | Ans      | wer any Four   |  |  |                             | 16    |
|       | a)<br>h) | Explain the conce  | ept of keys with e<br>note the natural i | xample.<br>Din operations                          |                             |       |
|       | c)       | Give the formal d  | efinition of doma                        | in relational calculus.                            |                             |       |
|       | d)       | Explain with exar  | nple generalizati                        | on and specialization.                             |                             |       |
| _     | e)       | Explain with exar  | nple third normal                        | form (3NF).  |                             |       |
| Q.3   | Exp      | lain the fundamer  | tal relational alge                      | ebra operations with exa<br><b>OR</b>              | ample.                      | 06    |
|       | Exp      | lain concept of Fi   | st and Second N                          | F with example.                                    |                             |       |
| Q.4   | Exp      | lain the concept c   | f decomposition                          | and dependency.                                    |                             | 06    |
|       |          |  | Sec                                      | tion – II  |                             |       |
| Q.5   | Ans      | swer any Four:   |  |  |                             | 16    |
|       | a)       | What is the differ   | ence between cl                          | stering index and a sec                            | condary index?              |       |
|       | D)<br>C) | What do you me   | ept of snadow pa                         | ging.<br>v control explain it?                     |                             |       |
|       | d)       | List the ACID pro  | perties and expla                        | ain the usefulness of ea                           | ch.                         |       |
|       | e)       | Explain in brief B   | tree index file.                         |  |                             |       |
| Q.6   | Sol      | ve any One:  | <b>/</b>                                 |  |                             | 06    |
|       | a)<br>b) | Explain the use of Explain in detail the second sec | f Thomas write r<br>he concept of ch     | ule used in time stamp<br>eck points in recovery s | based protocol.<br>systems. |       |
| Q.7   | Exp      | lain Time-stamp-o  | ordering protocol                        | with an example.                                   |                             | 06    |

### Seat No. T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

Day & Date: Friday, 22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

DATABASE ENGINEERING

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

#### Q.1 Choose the corraect answer

**Duration: 30 Minutes** 

- By data integrity we mean 1)
  - a) maintaining consistent data values
    - integrated data values b)
    - C) banning improper access to data
    - d) not leaking data values
- 2) The property of transaction that persists all the crashes is \_\_\_\_\_.
  - a) Atomicity b) Durability
  - c) Isolation All of the mentioned d)
- Transaction processing is associated with everything below except . 3)
  - a) Producing detail summary or exception reports
  - b) Recording a business activity
  - c) Confirming a action or triggering a response
  - d) Maintaining a data
- Commit and rollback are related to 4)
  - a) data integrity b) data consistency
  - c) data sharing d) data security
- A sophisticated locking mechanism known as 2-phase locking which 5) includes Growing phase and \_\_\_\_\_.
  - a) Shrinking Phase b) Release phase
  - c) Commit phase d) Acquire Phase
- The \_\_\_\_\_ is responsible for ensuring correct execution in the presence 6) of failures.
  - a) Database Manager b) Transaction Manager
  - c) Recovery/Manager **Executive Manager** d)
- For a weak entity set to be meaningful, it must be associated with another 7) entity set, called the \_\_\_\_\_.

b)

- a) Identifying set b) Owner set
- c) Neighbour set d) Strong entity set
- 8) Which is a bottom-up approach to database design that design by examining the relationship between attributes: \_\_\_\_\_? Database modeling
  - a) Functional dependency c) Normalization
- Decomposition d)

SLR-FM-371



Max. Marks: 70

14

- Set
- 9) Which forms simplifies and ensures that there is minimal data aggregates and repetitive groups: \_\_\_\_\_.
   a) 1NF \_\_\_\_\_\_b) 2NF
  - a) 1NF b) 2 c) 3NF d) 2
    - d) All of the mentioned
- 10) Tables in second normal form (2NF): \_\_\_\_\_.
  - a) Eliminate all hidden dependencies
  - b) Eliminate the possibility of a insertion anomalies
  - c) Have a composite key
  - d) Have all non key fields depend on the whole primary key
- 11) An outstanding functionality of SQL is its support for automatic \_\_\_\_\_ to the target data.
  - a) programming
- b) Functioning
- c) navigation
- d) Notification
- 12) \_\_\_\_\_ is a special type of integrity constraint that relates two relations & maintains consistency across the relations.
  - a) Entity Integrity Constraints
  - b) Referential Integrity Constraints
  - c) Domain Integrity Constraints
  - d) Domain Constraints
  - e) Key Constraints
- 13) \_\_\_\_\_ specifies a search condition for a group or an aggregate.
  - a) GROUP BY Clause
- b) HAVING Clause
- c) FROM Clause d) WHERE Clause
- 14) Drop Table cannot be used to drop a table referenced by a \_\_\_\_\_ constraint.
  - a) Local Kev

b) Primary Key

c) Composite Key

d) Foreign Key

| Sea<br>No   | t   | Set        | R     |
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| 110.        | T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2<br>Information Technology<br>DATABASE ENGINEERING   | 019        |       |
| Day<br>Time | & Date: Friday, 22-11-2019<br>:: 10:00 AM To 01:00 PM<br>uctions: 1) All questions are compulsory   | Max. Marks | 56 56 |
| msu         | 2) Figures to the right indicate full marks.  |            |       |
|             | Section – I   |            |       |
| Q.2         | <ul> <li>Answer any Four</li> <li>a) Explain the concept of keys with example.</li> <li>b) Explain with example the natural join operations.</li> <li>c) Give the formal definition of domain relational calculus.</li> <li>d) Explain with example generalization and specialization.</li> <li>e) Explain with example third normal form (3NF).</li> </ul> |            | 16    |
| Q.3         | Explain the fundamental relational algebra operations with example.<br>OR<br>Explain concept of First and Second NE with example  |            | 06    |
| Q.4         | Explain the concept of decomposition and dependency   |            | 06    |
| <b>Q</b> .1 | Section – II  |            |       |
| Q.5         | <ul> <li>Answer any Four:</li> <li>a) What is the difference between clustering index and a secondary</li> <li>b) Explain the concept of shadow paging.</li> <li>c) What do you mean by concurrency control explain it?</li> <li>d) List the ACID properties and explain the usefulness of each.</li> <li>e) Explain in brief B tree index file.</li> </ul> | index?     | 16    |
| Q.6         | <ul><li>Solve any One:</li><li>a) Explain the use of Thomas write rule used in time stamp based pr</li><li>b) Explain in detail the concept of check points in recovery systems.</li></ul>  | otocol.    | 06    |
| Q.7         | Explain Time-stamp-ordering protocol with an example.   |            | 06    |

### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DATABASE ENGINEERING Day & Date: Friday, 22-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

#### **Duration: 30 Minutes** Q.1 Choose the correct answer

Seat No.

- The is responsible for ensuring correct execution in the presence 1) of failures.
  - a) Database Manager b) Transaction Manager c) Recovery/Manager **Executive Manager** d)
  - 2) For a weak entity set to be meaningful, it must be associated with another entity set, called the \_\_\_\_\_.
    - a) Identifying set
    - Neighbour set C)
  - Which is a bottom-up approach to database design that design by 3) examining the relationship between attributes: ?
    - a) Functional dependency
    - c) Normalization d)
  - 4) Which forms simplifies and ensures that there is minimal data aggregates and repetitive groups: \_\_\_\_\_.

b)

- a) 1NF
- c) 3NF d) All of the mentioned
- 5) Tables in second normal form (2NF): \_\_\_\_
  - a) Eliminate all hidden dependencies
  - b) Eliminate the possibility of a insertion anomalies
  - c) Have a composite key
  - d) Have all non key fields depend on the whole primary key
- An outstanding functionality of SQL is its support for automatic \_\_\_\_\_ to 6) the target data.
  - a) programming Functioning b)
  - Notification c) navigation d)
- 7) is a special type of integrity constraint that relates two relations & maintains consistency across the relations.
  - a) Entity Integrity Constraints
  - b) Referential Integrity Constraints
  - c) Domain Integrity Constraints
  - d) Domain Constraints
  - e) Key Constraints

Max. Marks: 70

Marks: 14

14



- b) Owner set
- d) Strong entity set
  - Database modeling
  - Decomposition
- b)
  - 2NF

|     |                             |   |                           | SLR-FM-371  |
|-----|-----------------------------|---|---------------------------|---|
|     |                             |   |                           | Set S   |
| 8)  | a)<br>c)                    | specifies a search condition fo<br>GROUP BY Clause<br>FROM Clause   | orag<br>b)<br>d)          | roup or an aggregate.<br>HAVING Clause<br>WHERE Clause  |
| 9)  | Dro                         | op Table cannot be used to drop a   | table                     | e referenced by a                                       |
|     | a)<br>c)                    | Local Key<br>Composite Key  | b)<br>d)                  | Primary Key<br>Foreign Key                              |
| 10) | By<br>a)<br>b)<br>c)<br>d)  | data integrity we mean<br>maintaining consistent data value<br>integrated data values<br>banning improper access to data<br>not leaking data values               | es<br>I                   |   |
| 11) | The<br>a)<br>c)             | e property of transaction that pers<br>Atomicity<br>Isolation   | ists a<br>b)<br>d)        | ll the crashes is<br>Durability<br>All of the mentioned |
| 12) | Tra<br>a)<br>b)<br>c)<br>d) | Insaction processing is associated<br>Producing detail summary or exc<br>Recording a business activity<br>Confirming a action or triggering<br>Maintaining a data | l with<br>ceptic<br>a res | everything below except<br>on reports<br>sponse         |
| 13) | Cor<br>a)<br>c)             | mmit and rollback are related to _<br>data integrity<br>data sharing  | b)<br>d)                  | <br>data consistency<br>data security                   |
| 14) | A s<br>incl                 | ophisticated locking mechanism k<br>ludes Growing phase and   | nowr                      | as 2-phase locking which                                |

- a) Shrinking Phasec) Commit phase
- Release phase Acquire Phase b) d)

| Seat          | t                                 |  |   |   | Sot             | c     |
|---------------|-----------------------------------|--|---|---|-----------------|-------|
| No.           |                                   |  |   |   | Jei             | 3     |
|               |                                   | T.E. (Part – II  | ) (Old) (CGPA)<br>Information<br>DATABASE E   | Examination Nov/Dec-<br>Technology<br>NGINEERING  | 2019            |       |
| Day &<br>Time | & Da <sup>.</sup><br>: 10:(       | te: Friday, 22-11-2<br>00 AM To 01:00 P  | 2019<br>M   |   | Max. Marks      | s: 56 |
| Instr         | uctic                             | ons: 1) All questio<br>2) Figures to   | ns are compulsory the right indicate f  | r.<br>ull marks.  |                 |       |
|               |                                   |  | Secti   | on – I  |                 |       |
| Q.2           | Ans<br>a)<br>b)<br>c)<br>d)<br>e) | wer any Four<br>Explain the conce<br>Explain with exar<br>Give the formal d<br>Explain with exar<br>Explain with exar  | ept of keys with ex<br>ople the natural joi<br>efinition of domain<br>ople generalization<br>ople third normal fe | ample.<br>n operations.<br>relational calculus.<br>n and specialization.<br>orm (3NF).    |                 | 16    |
| Q.3           | Exp<br>Exp                        | lain the fundamer  | tal relational algeb<br>O<br>st and Second NF   | ora operations with example.<br><b>R</b><br>with example                                  |                 | 06    |
| 04            | Exp                               | lain the concent o   | f decomposition a   | nd dependency   |                 | 06    |
| ч.т           | Слр                               |  | Sooti   | on II   |                 | 00    |
|               | -                                 | _  | Section   | 511 – 11  |                 |       |
| Q.5           | Ans<br>a)<br>b)<br>c)<br>d)<br>e) | wer any Four:<br>What is the differ<br>Explain the conce<br>What do you mea<br>List the ACID pro<br>Explain in brief B | ence between clus<br>ept of shadow pagi<br>in by concurrency<br>perties and explain<br>tree index file.           | stering index and a secondary<br>ing.<br>control explain it?<br>n the usefulness of each. | y index?        | 16    |
| Q.6           | Solv<br>a)<br>b)                  | <b>ve any One:</b><br>Explain the use c<br>Explain in detail t   | f Thomas write rul<br>he concept of cheo  | e used in time stamp based  <br>ck points in recovery systems                             | protocol.<br>S. | 06    |
| Q.7           | Exp                               | lain Time-stamp-o  | rdering protocol w  | ith an example.   |                 | 06    |

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### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **OBJECT ORIENTED MODELING & DESIGN**

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

Book.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

- Figures drawn by pencil, ruler only indicate full marks.
- 3) Do not use pen to draw and label the diagrams.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Marks: 14

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- A solid diamond represents a stronger form of \_\_\_\_\_, known as composition. 1)
  - Generalization a)

c) Aggregation

- b) d) None
- The Unified Modeling Language 2)
  - is a notation useful for graphically depicting an object-oriented a) analysis or design model.
  - allows one to capture design decisions of a system. b)
  - promotes communication among key personnel involved in c) development.
  - all of the above. d)
- 3) A state chart diagram describes: \_\_\_\_\_.
  - Attributes of objects a)
  - Nodes of the system b)
  - Operations executed on a thread c)
  - d) Events triggered by an object
- A(n) is a concept, abstraction, or thing that has a state, behavior, 4) and identity.
  - a) relationship b) attribute
  - d) object c) kev
- 5) A diagram that shows the static structure of an object-oriented model is called
  - structure diagram a)
- b) class diagram d) none of the above
- C) entity diagram A(n) \_\_\_\_\_ is shown as a solid line between the participating classes.
- update a) connector b)
  - c) entity d) association
- indicates how many objects participate in a given relationship. 7)
  - Bound a) C) Role

6)

- Multiplicity b)
- Relationship d)

Max. Marks: 70

Set



|     |   |                                | SLR-FM-372  |
|-----|---|--------------------------------|---|
|     |   |                                | Set P   |
| 8)  | The Sequence diagram lists<br>models these messages over time.<br>a) Objects, Time<br>c) Class, Objects   | horiz<br>b)<br>d)              | ontally, and vertically, and<br>Time, Actors<br>Time, Objects                     |
| 9)  | <ul> <li>A dynamic model is a collection of other via shared events.</li> <li>a) Sequence</li> <li>c) Use case</li> </ul>   | b)<br>d)                       | _ diagrams that interact with each<br>State<br>Activity                           |
| 10) | <ul> <li>Unified Process is a software develoant</li> <li>a) Component-driven</li> <li>b) Iterative and incremental</li> <li>c) Related to Extreme Programm</li> <li>d) Done in only one iteration</li> </ul> | lopme                          | ent methodology which is  |
| 11) | A data store is a object withi<br>for later access.<br>a) Active<br>c) Passive  | in a da<br>b)<br>d)            | ata flow diagram that stores data<br>Dynamic<br>All of the above                  |
| 12) | <ul><li> diagrams show the physical hardware.</li><li>a) Component</li><li>c) Collaboration</li></ul>   | config<br>b)<br>d)             | gurations of software and<br>Deployment<br>None                                   |
| 13) | divide activities according to<br>column format and placing activities<br>a) Fork<br>c) Swim lanes  | o objeo<br>s by tl<br>b)<br>d) | cts by arranging objects in<br>hat object within that column.<br>Join<br>Lifeline |

- 14) In UML, structural and architectural diagram does not include which of the following?
  - a) Deployment diagram, component diagramb) Object diagram, class diagramc) Use case diagram

  - d) None

| Seat |  |
|------|--|
| No.  |  |

### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING & DESIGN

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

#### **Instructions:** 1) All questions are compulsory.

- 2) Figures drawn by pencil, ruler only indicate full marks.
- 3) Do not use pen to draw and label the diagrams.

#### Section – I

#### Q.2 Attempt any four of the following.

- a) Draw an "Event trace" diagram for a phone call.
- b) Draw one-shot state diagram for chess game.
- c) Explain concurrency with respect to dynamic modeling.
- d) Explain features of object oriented languages.
- e) Compare multiplicity with candidate keys for binary association.

#### Q.3 Attempt any two of the following.

- a) Explain the requirement of dynamic model of state diagram. Prepare a state diagram for phone line with labeled events in detail.
- b) Prepare a class diagram for building using below mentioned classes showing at least 10 relationships among the following classes. Include association, aggregation and generalization. Use qualified associations and show multiplicity balls in your diagrams. Use association names where needed. As you prepare the diagrams you may add additional classes : (building, sink, freezer, refrigerator, table, light, switch, window, smoke, alarm, burglar, alarm, cabinet, bread, cheese, ice, door, kitchen)
- c) State and explain following with graphical notation.
  - 1) Association
  - 2) N-ary Association
  - 3) Generalization
  - 4) Dependency

#### Section – II

#### Q.4 Attempt any four of the following.

- a) Give UML notations for the elements of Deployment Diagram
  - 1) Node
  - 2) Node Instance
  - 3) Node Stereotypes
  - 4) Artifact
- **b)** Identify and draw the use case and actors to draw a use case diagram for an online shopping system.
- c) What is package? Explain importing and exporting concepts with notations.
- d) Explain the following with diagram.
  - 1) Swim lanes
  - 2) Forking and joining
- e) Short note: Extension Mechanism in UML

Max. Marks: 56

12

16

16



12

## SLR-FM-372 Set P

#### Q.5 Attempt any two of the following.

- a) Describe elements and notation used to build a state diagram in UML. Draw a state diagram for the login part of an online banking system.
- b) Design and draw a class diagram to models a customer order from a retail catalog.
- c) Explain Sequence diagram with its graphical notations. Also draw a labeled sequence diagram for Hotel reservation and confirmation.

## Set

#### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **OBJECT ORIENTED MODELING & DESIGN**

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures drawn by pencil, ruler only indicate full marks.
- 3) Do not use pen to draw and label the diagrams.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The Sequence diagram lists \_\_\_\_\_ horizontally, and \_\_\_\_\_ vertically, and 1) models these messages over time.
  - a) Objects, Time
  - c) Class, Objects d) Time, Objects
- 2) A dynamic model is a collection of \_\_\_\_\_ diagrams that interact with each other via shared events.
  - a) Sequence b) State
  - c) Use case d) Activity
- 3) Unified Process is a software development methodology which is \_\_\_\_\_. Component-driven a)
  - b) Iterative and incremental
  - c) Related to Extreme Programming
  - d) Done in only one iteration
- A data store is a \_\_\_\_\_ object within a data flow diagram that stores data 4) for later access.
  - a) Active c) Passive
- Dynamic b) d) All of the above
- 5) diagrams show the physical configurations of software and hardware.
  - a) Component b) Deployment
  - c) Collaboration d) None
- \_ divide activities according to objects by arranging objects in 6) column format and placing activities by that object within that column. Join
  - a) Fork b)
  - c) Swim lanes d) Lifeline
- 7) In UML, structural and architectural diagram does not include which of the following?
  - a) Deployment diagram, component diagram
  - b) Object diagram, class diagram
  - c) Use case diagram
  - d) None

Max. Marks: 70

Marks: 14

**SLR-FM-372** 

b) Time, Actors

A solid diamond represents a stronger form of , known as composition.

**SLR-FM-372** 

Set

- a) Generalization
- b) Abstraction

c) Aggregation

8)

- d) None
- 9) The Unified Modeling Language \_\_\_\_\_
  - a) is a notation useful for graphically depicting an object-oriented analysis or design model.
  - allows one to capture design decisions of a system. b)
  - promotes communication among key personnel involved in C) development.
  - d) all of the above.
- 10) A state chart diagram describes: \_\_\_\_\_.
  - Attributes of objects a)
  - b) Nodes of the system
  - c) Operations executed on a thread
  - d) Events triggered by an object
- 11) A(n) \_\_\_\_\_ is a concept, abstraction, or thing that has a state, behavior, and identity.
  - a) relationship

key

c)

- b) attribute
- d) object
- 12) A diagram that shows the static structure of an object-oriented model is called .
  - a) structure diagram
- b) class diagram
- c) entity diagram d) none of the above
- A(n) \_\_\_\_\_ is shown as a solid line between the participating classes. 13)
  - a) connector c) entity
- update b) d) association
- 14) \_ indicates how many objects participate in a given relationship.
  - a) Bound

b) Multiplicity d)

c) Role

Relationship

| Seat |  |
|------|--|
| No.  |  |

### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING & DESIGN

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

#### **Instructions:** 1) All questions are compulsory.

- 2) Figures drawn by pencil, ruler only indicate full marks.
- 3) Do not use pen to draw and label the diagrams.

#### Section – I

#### Q.2 Attempt any four of the following.

- a) Draw an "Event trace" diagram for a phone call.
- b) Draw one-shot state diagram for chess game.
- c) Explain concurrency with respect to dynamic modeling.
- d) Explain features of object oriented languages.
- e) Compare multiplicity with candidate keys for binary association.

#### Q.3 Attempt any two of the following.

- a) Explain the requirement of dynamic model of state diagram. Prepare a state diagram for phone line with labeled events in detail.
- b) Prepare a class diagram for building using below mentioned classes showing at least 10 relationships among the following classes. Include association, aggregation and generalization. Use qualified associations and show multiplicity balls in your diagrams. Use association names where needed. As you prepare the diagrams you may add additional classes : (building, sink, freezer, refrigerator, table, light, switch, window, smoke, alarm, burglar, alarm, cabinet, bread, cheese, ice, door, kitchen)
- c) State and explain following with graphical notation.
  - 1) Association
  - 2) N-ary Association
  - 3) Generalization
  - 4) Dependency

#### Section – II

#### Q.4 Attempt any four of the following.

- a) Give UML notations for the elements of Deployment Diagram
  - 1) Node
  - 2) Node Instance
  - 3) Node Stereotypes
  - 4) Artifact
- **b)** Identify and draw the use case and actors to draw a use case diagram for an online shopping system.
- c) What is package? Explain importing and exporting concepts with notations.
- d) Explain the following with diagram.
  - 1) Swim lanes
  - 2) Forking and joining
- e) Short note: Extension Mechanism in UML

Max. Marks: 56

12

16

16

#### Q.5 Attempt any two of the following.

- a) Describe elements and notation used to build a state diagram in UML. Draw a state diagram for the login part of an online banking system.
- b) Design and draw a class diagram to models a customer order from a retail catalog.
- c) Explain Sequence diagram with its graphical notations. Also draw a labeled sequence diagram for Hotel reservation and confirmation.

12

## SLR-FM-372 Set Q

Set

Max. Marks: 70

Marks: 14

#### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **OBJECT ORIENTED MODELING & DESIGN**

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

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- 3) Do not use pen to draw and label the diagrams.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

c)

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- A diagram that shows the static structure of an object-oriented model is 1) called \_\_\_\_.
  - a) structure diagram entity diagram
- b) class diagram d) none of the above
- 2) A(n) \_\_\_\_\_ is shown as a solid line between the participating classes.
  - a) connector b) update
  - c) entity association d)
- 3) indicates how many objects participate in a given relationship.
  - b) Multiplicity a) Bound c) Role
    - d) Relationship
- The Sequence diagram lists \_\_\_\_\_ horizontally, and \_\_\_\_\_ vertically, and 4) models these messages over time.
  - a) Objects, Time b) Time, Actors
  - c) Class, Objects Time, Objects d)
- A dynamic model is a collection of \_\_\_\_\_ diagrams that interact with each 5) other via shared events.
  - a) Sequence b) State
  - c) Use case d) Activity
- 6) Unified Process is a software development methodology which is \_\_\_\_\_.
  - a) Component-driven
  - b) Iterative and incremental
  - c) Related to Extreme Programming
  - d) Done in only one iteration
- A data store is a \_\_\_\_\_ object within a data flow diagram that stores data 7) for later access.
  - a) Active
  - Dynamic b) d) All of the above c) Passive
- 8) diagrams show the physical configurations of software and hardware.
  - a) Component
  - c) Collaboration

- b) Deployment d) None



- 9) divide activities according to objects by arranging objects in column format and placing activities by that object within that column.
  - Join a) Fork b) c) Swim lanes
    - d) Lifeline
- 10) In UML, structural and architectural diagram does not include which of the followina?
  - a) Deployment diagram, component diagram
  - b) Object diagram, class diagram
  - c) Use case diagram
  - d) None

a)

- A solid diamond represents a stronger form of \_\_\_\_\_, known as composition. 11)
  - Generalization b) Abstraction
  - c) Aggregation d) None
- 12) The Unified Modeling Language \_
  - is a notation useful for graphically depicting an object-oriented a) analysis or design model.
  - allows one to capture design decisions of a system. b)
  - promotes communication among key personnel involved in C) development.
  - d) all of the above.
- 13) A state chart diagram describes: \_\_\_\_\_.
  - a) Attributes of objects
  - b) Nodes of the system
  - c) Operations executed on a thread
  - d) Events triggered by an object
- 14) A(n) \_\_\_\_\_ is a concept, abstraction, or thing that has a state, behavior, and identity.
  - a) relationship

key

c)

- b) attribute object
- d)

| Seat |  |
|------|--|
| No.  |  |

### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING & DESIGN

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

#### **Instructions:** 1) All questions are compulsory.

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#### Section – I

#### Q.2 Attempt any four of the following.

- a) Draw an "Event trace" diagram for a phone call.
- b) Draw one-shot state diagram for chess game.
- c) Explain concurrency with respect to dynamic modeling.
- d) Explain features of object oriented languages.
- e) Compare multiplicity with candidate keys for binary association.

#### Q.3 Attempt any two of the following.

- a) Explain the requirement of dynamic model of state diagram. Prepare a state diagram for phone line with labeled events in detail.
- b) Prepare a class diagram for building using below mentioned classes showing at least 10 relationships among the following classes. Include association, aggregation and generalization. Use qualified associations and show multiplicity balls in your diagrams. Use association names where needed. As you prepare the diagrams you may add additional classes : (building, sink, freezer, refrigerator, table, light, switch, window, smoke, alarm, burglar, alarm, cabinet, bread, cheese, ice, door, kitchen)
- c) State and explain following with graphical notation.
  - 1) Association
  - 2) N-ary Association
  - 3) Generalization
  - 4) Dependency

#### Section – II

#### Q.4 Attempt any four of the following.

- a) Give UML notations for the elements of Deployment Diagram
  - 1) Node
  - 2) Node Instance
  - 3) Node Stereotypes
  - 4) Artifact
- **b)** Identify and draw the use case and actors to draw a use case diagram for an online shopping system.
- c) What is package? Explain importing and exporting concepts with notations.
- d) Explain the following with diagram.
  - 1) Swim lanes
  - 2) Forking and joining
- e) Short note: Extension Mechanism in UML

16

12

16



Max. Marks: 56

#### Q.5 Attempt any two of the following.

- a) Describe elements and notation used to build a state diagram in UML. Draw a state diagram for the login part of an online banking system.
- b) Design and draw a class diagram to models a customer order from a retail catalog.
- c) Explain Sequence diagram with its graphical notations. Also draw a labeled sequence diagram for Hotel reservation and confirmation.

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#### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING & DESIGN

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

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- 3) Do not use pen to draw and label the diagrams.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Unified Process is a software development methodology which is \_\_\_\_\_.
  - a) Component-driven
  - b) Iterative and incremental
  - c) Related to Extreme Programming
  - d) Done in only one iteration
- A data store is a \_\_\_\_\_ object within a data flow diagram that stores data for later access.

b)

- a) Active
- c) Passive d) All of the above
- 3) \_\_\_\_\_ diagrams show the physical configurations of software and hardware.
  - a) Component

b) Deployment

Dynamic

- c) Collaboration d) None
- 4) \_\_\_\_\_ divide activities according to objects by arranging objects in column format and placing activities by that object within that column.
  - a) Fork b) Join
  - c) Swim lanes d) Lifeline
- 5) In UML, structural and architectural diagram does not include which of the following?
  - a) Deployment diagram, component diagram
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  - c) Use case diagram
  - d) None
- 6) A solid diamond represents a stronger form of \_\_\_\_\_, known as composition.
  - a) Generalization
- b) Abstraction
- c) Aggregation
- d) None

Max. Marks: 70

Marks: 14

Set

development. d) all of the above.

7)

a)

b)

c)

8) A state chart diagram describes: \_\_\_\_\_.

analysis or design model.

- a) Attributes of objects
- b) Nodes of the system
- c) Operations executed on a thread

The Unified Modeling Language .

- d) Events triggered by an object
- 9) A(n) \_\_\_\_\_ is a concept, abstraction, or thing that has a state, behavior, and identity.

is a notation useful for graphically depicting an object-oriented

promotes communication among key personnel involved in

allows one to capture design decisions of a system.

- a) relationship b) attribute
- d) object c) key
- A diagram that shows the static structure of an object-oriented model is 10) called
  - a) structure diagram
- b) class diagram
- c) entity diagram d) none of the above
- 11) A(n) \_\_\_\_\_ is shown as a solid line between the participating classes.
  - a) connector b) c) entity
- update d) association
- indicates how many objects participate in a given relationship. 12)
  - b) Multiplicity Bound a) c) Role
    - d) Relationship
- The Sequence diagram lists \_\_\_\_\_ horizontally, and \_\_\_\_\_ vertically, and 13) models these messages over time.
  - a) Objects, Time
- b) Time, Actors
- c) Class, Objects d) Time, Objects
- 14) A dynamic model is a collection of \_\_\_\_\_ diagrams that interact with each other via shared events.
  - a) Sequence b) State
  - c) Use case d) Activity

| Seat |  |
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| No.  |  |

### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology OBJECT ORIENTED MODELING & DESIGN

Day & Date: Saturday, 23-11-2019 Time: 10:00 AM To 01:00 PM

#### **Instructions:** 1) All questions are compulsory.

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- 3) Do not use pen to draw and label the diagrams.

#### Section – I

#### Q.2 Attempt any four of the following.

- a) Draw an "Event trace" diagram for a phone call.
- b) Draw one-shot state diagram for chess game.
- c) Explain concurrency with respect to dynamic modeling.
- d) Explain features of object oriented languages.
- e) Compare multiplicity with candidate keys for binary association.

#### Q.3 Attempt any two of the following.

- a) Explain the requirement of dynamic model of state diagram. Prepare a state diagram for phone line with labeled events in detail.
- b) Prepare a class diagram for building using below mentioned classes showing at least 10 relationships among the following classes. Include association, aggregation and generalization. Use qualified associations and show multiplicity balls in your diagrams. Use association names where needed. As you prepare the diagrams you may add additional classes : (building, sink, freezer, refrigerator, table, light, switch, window, smoke, alarm, burglar, alarm, cabinet, bread, cheese, ice, door, kitchen)
- c) State and explain following with graphical notation.
  - 1) Association
  - 2) N-ary Association
  - 3) Generalization
  - 4) Dependency

#### Section – II

#### Q.4 Attempt any four of the following.

- a) Give UML notations for the elements of Deployment Diagram
  - 1) Node
  - 2) Node Instance
  - 3) Node Stereotypes
  - 4) Artifact
- **b)** Identify and draw the use case and actors to draw a use case diagram for an online shopping system.
- c) What is package? Explain importing and exporting concepts with notations.
- d) Explain the following with diagram.
  - 1) Swim lanes
  - 2) Forking and joining
- e) Short note: Extension Mechanism in UML

Max. Marks: 56

12

16

16

#### Q.5 Attempt any two of the following.

- a) Describe elements and notation used to build a state diagram in UML. Draw a state diagram for the login part of an online banking system.
- b) Design and draw a class diagram to models a customer order from a retail catalog.
- c) Explain Sequence diagram with its graphical notations. Also draw a labeled sequence diagram for Hotel reservation and confirmation.

### Seat No.

#### T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology UNIX OPERATING SYSTEM CONCEPTS

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to right indicate full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - The inode does not specify . 1)
    - a) owner
    - b) group
    - c) permission
    - the path name that access the file d)
  - 2) The Superblock is required for \_
    - Description of the basic size and shape of this file system a)
    - This is the inode number of the first inode in the file system b)
    - The number of free blocks in the file system C)
    - d) All of the mentioned
  - An "Inode" represents \_\_\_\_\_. 3)
    - Buffer a)
    - c) Files & Directories d)
  - What are the 3 different layer of architecture of the unix operating system? 4)
    - a) user ,kernel, files
    - c) user ,kernel, hardware
  - 5) Buffer cache helps to \_\_\_\_\_.
    - Store data a)
    - Improved read/write performance b)
    - Allocate memory C)
    - d) None of the mentioned
  - Grep main a.c b.c c.c is 6)
    - Searches main in all files a)
    - counts the number of "main" in the files b)
    - c) a and b

c)

- d) counts the number of lines in the files
- 7) Input for system call iput
  - a) pointer to in-core inode b) inode
  - c) file system inode number d) none
- The \_\_\_\_\_ identifies all open files for a process. 8) a)
  - User file descriptor table File table b) File allocation
  - Inode table d)

Max. Marks: 70

- b) Data
  - None of the mentioned
- kernel ,files, hardware b)
- d) None of the mentioned

Marks: 14

Set

- 9) Which of the following is not kernel data structure related to process?
  - u area a)

c)

- process table b) d) inode table
- c) region table
- Process calls the \_\_\_\_\_ system call to arrange to catch interrupt signals. 10) b) Sigcatcher

d)

- a) Catch c)
  - Signal
- 11) Age of page means \_\_\_\_\_. a) its swap count
- its reference count b)
- its context switch count d) Memory size
- Which system call is used to invoke other program? 12)
  - exit a) exec b)
  - c) Fork d) Trap
- Which algo. Is used to change the size of the region? 13)
  - Growreg a) Chreg b)
  - Attachreg d) C)
- 14) To open named pipe process uses \_
  - a) Pipe b) fopen
  - C) Creat

d) open

- Issig
- Set P

- changereg
  - system call.

80

Page **3** of **12** 

#### Information Technology UNIX OPERATING SYSTEM CONCEPTS Day & Date: Monday, 25-11-2019 Max. Marks: 56 Time: 10:00 AM To 01:00 PM **Instructions:** 1) All questions are compulsory. 2) Figures to right indicate full marks. Section – I Q.2 Attempt any three of the following questions. 12 a) What is buffer header contains? **b)** List the data structures and their relationship when a regular file is opened. c) What are operating system services? d) What is the use of dup system call? Q.3 Attempt any two of the following questions. 16 Write a note on super block. a) **b)** Explain jalloc algorithm to assign new inodes. c) Explain building block primitives. Give example of Pipe. Section – II Q.4 Attempt any three of the following questions. 12 a) Explain operations performed by kernel during fork. b) Explain Shell in detail. c) Explain allocreg algorithm in detail. d) Write and explain system call algo. e) Write and explain init algorithm. Q.5 Attempt any one of the following questions. 80 a) With a neat figure explain process state transition diagram. b) Describe Image of an Executable file with the help of diagram.

a) Explain the working of signal () system call with the help of algorithm. b) Explain the data structures required for demand paging in detail.

Q.6 Attempt any one of the following questions.

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

| Seat |  |
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| No.  |  |

### SLR-FM-373

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# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

Information Technology UNIX OPERATING SYSTEM CONCEPTS

2) Figures to right indicate full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

c)

1)

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

b)

b)

- The identifies all open files for a process. a) User file descriptor table
- File allocation c) Inode table d)
- Which of the following is not kernel data structure related to process? 2) process table
  - u area a)
  - c) region table d) inode table
- 3) Process calls the \_\_\_\_\_ system call to arrange to catch interrupt signals.
  - Catch a)
    - Signal c)
- 4) Age of page means . its swap count a)
- b) its reference count
- its context switch count d)
- Which system call is used to invoke other program? 5)
  - exec exit a) b) Fork
  - C) d) Trap
- Which algo. Is used to change the size of the region? 6)
  - a) Chreg b) Growreg
  - Attachreg d) changereg c)
- 7) To open named pipe process uses \_\_\_\_ system call.
  - Pipe a) b) fopen open
  - Creat C) d)
- 8) The inode does not specify \_\_\_\_\_.
  - owner a)
  - b) group
  - permission c)
  - the path name that access the file d)
- 9) The Superblock is required for
  - Description of the basic size and shape of this file system a)
  - This is the inode number of the first inode in the file system b)
  - The number of free blocks in the file system C)
  - d) All of the mentioned

Seat No.



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- Sigcatcher
- lssig d)

- - Memory size
- b)

File table

Marks: 14

Max. Marks: 70
### 10) An "Inode" represents \_\_\_\_\_.

- a) Buffer
- c) Files & Directories
- b) Data
- d) None of the mentioned

**SLR-FM-373** 

Set | Q

- 11) What are the 3 different layer of architecture of the unix operating system?
  - a) user ,kernel, filesc) user ,kernel, hardware
- b) kernel ,files, hardwared) None of the mentioned
- 12) Buffer cache helps to \_\_\_\_\_.
  - a) Store data
  - b) Improved read/write performance
  - c) Allocate memory
  - d) None of the mentioned
- 13) Grep main a.c b.c c.c is \_\_\_\_\_.
  - a) Searches main in all files
  - b) counts the number of "main" in the files
  - c) a and b
  - d) counts the number of lines in the files
- 14) Input for system call iput \_\_\_\_\_.
  - a) pointer to in-core inode b) inode
  - c) file system inode number d) none

Page **6** of **12** 

|               |                                   | UNIX OPERATING SYSTEM CONCEPTS   |                  |
|---------------|-----------------------------------|--|------------------|
| Day a<br>Time | & Da<br>: 10                      | ate: Monday, 25-11-2019<br>:00 AM To 01:00 PM  | Max. Marks: 56   |
| Instr         | ucti                              | <ul><li>ons: 1) All questions are compulsory.</li><li>2) Figures to right indicate full marks.</li></ul>   |                  |
|               |                                   | Section – I  |                  |
| Q.2           | Att<br>a)<br>b)<br>c)<br>d)       | empt any three of the following questions.<br>What is buffer header contains?<br>List the data structures and their relationship when a regular file is<br>What are operating system services?<br>What is the use of dup system call?              | 12<br>opened.    |
| Q.3           | Att<br>a)<br>b)<br>c)             | <b>empt any two of the following questions.</b><br>Write a note on super block.<br>Explain ialloc algorithm to assign new inodes.<br>Explain building block primitives. Give example of Pipe.  | 16               |
|               |                                   | Section – II   |                  |
| Q.4           | Att<br>a)<br>b)<br>c)<br>d)<br>e) | empt any three of the following questions.<br>Explain operations performed by kernel during fork.<br>Explain Shell in detail.<br>Explain allocreg algorithm in detail.<br>Write and explain system call algo.<br>Write and explain init algorithm. | 12               |
| Q.5           | Att<br>a)<br>b)                   | empt any one of the following questions.<br>With a neat figure explain process state transition diagram.<br>Describe Image of an Executable file with the help of diagram.   | 08               |
| Q.6           | Att<br>a)<br>b)                   | empt any one of the following questions.<br>Explain the working of signal () system call with the help of algorith<br>Explain the data structures required for demand paging in detail.  | <b>08</b><br>ım. |

# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology UNIX OPERATING SYSTEM CONCEPTS

SLR-FM-373

Set Q

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# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology UNIX OPERATING SYSTEM CONCEPTS

Day & Date: Monday, 25-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to right indicate full marks.

# **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

1)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Buffer cache helps to .
  - Store data a)
  - Improved read/write performance b)
  - Allocate memory c)
  - d) None of the mentioned
- 2) Grep main a.c b.c c.c is \_\_\_\_\_.
  - Searches main in all files a)
  - counts the number of "main" in the files b)
  - c) a and b
  - d) counts the number of lines in the files
- Input for system call iput \_\_\_\_\_ 3)
  - a) pointer to in-core inode inode b)
  - c) file system inode number d) none
- identifies all open files for a process. 4) The
  - a) User file descriptor table b)
  - c) Inode table d)
- Which of the following is not kernel data structure related to process? 5)
  - a) u area
  - region table d) inode table C)
- Process calls the \_\_\_\_\_ system call to arrange to catch interrupt signals. 6) Sigcatcher b)
  - a) Catch
  - Signal C) d)
- 7) Age of page means \_\_\_\_
  - a) its swap count
  - its context switch count c) d)
- 8) Which system call is used to invoke other program?
  - exit a) exec b) c) Fork d) Trap
- Which algo. Is used to change the size of the region? 9)
  - Growreg a) Chreg b)
  - c) Attachreg d) changereg

- its reference count b)
- Memory size

Marks: 14

Max. Marks: 70

Set

R

- File table
- File allocation
- b) process table

Issia

10) To open named pipe process uses \_\_\_\_\_ system call.

a) Pipe

C)

- b) fopen d) open
- 11) The inode does not specify \_\_\_\_\_.
  - a) Owner
  - b) Group

Creat

- c) Permission
- d) the path name that access the file
- 12) The Superblock is required for \_
  - a) Description of the basic size and shape of this file system
  - b) This is the inode number of the first inode in the file system
  - c) The number of free blocks in the file system
  - d) All of the mentioned
- 13) An "Inode" represents \_\_\_\_\_.
  - a) Buffer

c)

- b) Data
- d) None of the mentioned

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Set R

- 14) What are the 3 different layer of architecture of the unix operating system?
  - a) user ,kernel, files
- b) kernel ,files, hardware
- c) user ,kernel, hardware

Files & Directories

d) None of the mentioned

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|             | Information Technology<br>UNIX OPERATING SYSTEM CONCEPTS   |    |
|-------------|--|----|
| Day<br>Time | & Date: Monday, 25-11-2019 Max. Marks:<br>e: 10:00 AM To 01:00 PM  | 56 |
| Instr       | <b>uctions:</b> 1) All questions are compulsory.<br>2) Figures to right indicate full marks.   |    |
|             | Section – I  |    |
| Q.2         | <ul> <li>Attempt any three of the following questions.</li> <li>a) What is buffer header contains?</li> <li>b) List the data structures and their relationship when a regular file is opened.</li> <li>c) What are operating system services?</li> <li>d) What is the use of dup system call?</li> </ul>               | 12 |
| Q.3         | <ul> <li>Attempt any two of the following questions.</li> <li>a) Write a note on super block.</li> <li>b) Explain ialloc algorithm to assign new inodes.</li> <li>c) Explain building block primitives. Give example of Pipe.</li> </ul>   | 16 |
| _           | Section – II   |    |
| Q.4         | <ul> <li>Attempt any three of the following questions.</li> <li>a) Explain operations performed by kernel during fork.</li> <li>b) Explain Shell in detail.</li> <li>c) Explain allocreg algorithm in detail.</li> <li>d) Write and explain system call algo.</li> <li>e) Write and explain init algorithm.</li> </ul> | 12 |
| Q.5         | <ul> <li>Attempt any one of the following questions.</li> <li>a) With a neat figure explain process state transition diagram.</li> <li>b) Describe Image of an Executable file with the help of diagram.</li> </ul>  | 08 |
| Q.6         | <ul> <li>Attempt any one of the following questions.</li> <li>a) Explain the working of signal () system call with the help of algorithm.</li> <li>b) Explain the data structures required for demand paging in detail.</li> </ul>   | 08 |

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

# Seat No.

**SLR-FM-373** 

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| ) AN                           | 1 To 01:00 PM   |                                     |   |
|--------------------------------|---|-------------------------------------|---|
| <b>is:</b> 2                   | <ol> <li>Q. No. 1 is compulsory and<br/>answer book.</li> <li>Figures to right indicate full mar</li> </ol> | it sho<br>ks.                       | ould be solved in first   |
|                                | MCQ/Objective Ty  | pe Q                                | uestions  |
| 0 Mi                           | nutes   |                                     |   |
| o <b>se</b><br>Pro<br>a)<br>c) | the correct alternatives from th<br>cess calls the system call t<br>Catch<br>Signal                         | <b>e op</b> t<br>to arr<br>b)<br>d) | tions and rewrite the s<br>ange to catch interrupt s<br>Sigcatcher<br>Issig |
| Age<br>a)<br>c)                | e of page means<br>its swap count<br>its context switch count   | b)<br>d)                            | its reference count<br>Memory size  |
| Whi<br>a)<br>c)                | ich system call is used to invoke o<br>exec<br>Fork   | other<br>b)<br>d)                   | program?<br>exit<br>Trap  |
| Whi<br>a)<br>c)                | ich algo. Is used to change the siz<br>Chreg<br>Attachreg   | ze of<br>b)<br>d)                   | the region?<br>Growreg<br>changereg   |
| To d<br>a)<br>c)               | open named pipe process uses _<br>Pipe<br>Creat   | b)<br>d)                            | _ system call.<br>fopen<br>open   |
| The<br>a)<br>b)<br>c)<br>d)    | inode does not specify<br>owner<br>group<br>permission<br>the path name that access the fi                  | le                                  |   |
| The<br>a)<br>b)                | Superblock is required for<br>Description of the basic size and<br>This is the inode number of the f        | <br>d shaj<br>first ir              | be of this file system<br>hode in the file system                           |

#### b) Т

- c) The number of free blocks in the file system
- All of the mentioned d)

#### 8) An "Inode" represents \_\_\_\_\_.

- Buffer b) a) C)
  - Files & Directories None of the mentioned d)
- What are the 3 different layer of architecture of the unix operating system? 9)
  - user ,kernel, files a) user ,kernel, hardware
- kernel, files, hardware b)
- None of the mentioned d)

Data

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

# Information Technology UNIX OPERATING SYSTEM CONCEPTS

Day & Date: Monday, 25-11-2019 Time: 10:00 AM 7

**Instructions:** 1) 30 minutes in

Duration: 30 Minu

2)

3)

4)

5)

6)

7)

C)

Seat

No.

#### Q.1 Choose the entence. 14

- Proce 1)
  - a) С
  - S C)
  - Age of
  - a) its C)
    - its
- signals.

Max. Marks: 70

**SLR-FM-373** 

Set

Marks: 14

S

10) Buffer cache helps to \_\_\_\_\_.

- Store data a)
- Improved read/write performance b)
- Allocate memory C)
- d) None of the mentioned
- 11) Grep main a.c b.c c.c is \_\_\_\_.
  - Searches main in all files a)
  - counts the number of "main" in the files b)
  - a and b C)
  - counts the number of lines in the files d)
- 12) Input for system call iput \_\_\_\_\_ \_\_\_
  - a) pointer to in-core inode b) inode
  - C) file system inode number d) none
- 13) The \_\_\_\_\_ identifies all open files for a process. a) User file descriptor table
  - b) File table
  - c) Inode table d) File allocation
- Which of the following is not kernel data structure related to process? 14)
  - u area a)

region table

c)

b) process table **SLR-FM-373** 

Set S

d) inode table

Page 11 of 12

a) What is buffer header contains? **b)** List the data structures and their relationship when a regular file is opened. What are operating system services? c) d) What is the use of dup system call? Q.3 Attempt any two of the following questions. 16 Write a note on super block. a) **b)** Explain jalloc algorithm to assign new inodes. c) Explain building block primitives. Give example of Pipe. Section – II Q.4 Attempt any three of the following questions. 12 a) Explain operations performed by kernel during fork. **b)** Explain Shell in detail. c) Explain allocreg algorithm in detail. d) Write and explain system call algo. e) Write and explain init algorithm. Q.5 Attempt any one of the following questions. 80 a) With a neat figure explain process state transition diagram. b) Describe Image of an Executable file with the help of diagram. Q.6 Attempt any one of the following questions. **08** 

a) Explain the working of signal () system call with the help of algorithm.b) Explain the data structures required for demand paging in detail.

Q.2 Attempt any three of the following questions.

2) Figures to right indicate full marks.

**Instructions:** 1) All questions are compulsory.

Day & Date: Monday, 25-11-2019

Time: 10:00 AM To 01:00 PM

Seat No. **SLR-FM-373** 

Max. Marks: 56

| No.  |            |   |                       |            |                              | Set     | Υ                     |  |
|--|------------|---|-----------------------|------------|------------------------------|---------|-----------------------|--|
| T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>SOFTWARE ENGINEERING |            |   |                       |            |                              |         |                       |  |
| Day &<br>Time:   | Date 10:00 | : Tuesday, 26-1<br>) AM To 01:00 P          | 1-2019<br>PM          |            | Max                          | . Marks | s: 70                 |  |
| Instru   | iction     | s: 1) Q. No. 1 is<br>book.<br>2) Figuros to | s compulsory and sh   | ould b     | e solved in first 30 minutes | in ans  | wer                   |  |
|  |            | 2) Tigules to                               |                       |            |                              |         |                       |  |
| Durati   | ion: 3(    | N Minutes                                   | ICQ/Objective I       | ype (      | Luestions                    | Marks   | s <sup>.</sup> 14     |  |
| 01   | Choo       | se the correct                              | alternatives from t   | ho on      | ions and rewrite the         | Maria   | יין .כ.<br><b>1</b> 1 |  |
| <b>Q</b> . I   | sente      | ence.                                       | alternatives nom ti   |            |                              |         | 14                    |  |
|  | 1)         | Waterfall softwa                            | are development mo    | delis      | ·                            |         |                       |  |
|  |            | a) non iterative                            | e model               | d)         | open model                   |         |                       |  |
|  | 2)         | Weterfell medal                             |                       | u)<br>hv   |                              |         |                       |  |
|  | 2)         | a) Kevin                                    | ronginally proposed   | by<br>b)   | <br>Rovce                    |         |                       |  |
|  |            | c) Mccall                                   |                       | d)         | Edwin                        |         |                       |  |
|  | 3)         | An SRS provide                              | es a reference for    | 0          | f the final product.         |         |                       |  |
|  |            | a) verification                             |                       | b)         | Justification                |         |                       |  |
|  |            | c) validation                               |                       | d)         | Implementation               |         |                       |  |
|  | 4)         | The is a                                    | repository of various | s data     | flows defined in a DFD.      |         |                       |  |
|  |            | c) data replica                             | as                    | d)         | data repository              |         |                       |  |
|  | 5)         | between                                     | the modules is the    | streng     | th of interconnections betw  | een     |                       |  |
|  |            | modules.                                    |                       | <b>L</b> ) |                              |         |                       |  |
|  |            | a) Coupling<br>c) Interface                 |                       | (a<br>(b   | Cohesion                     |         |                       |  |
|  | 6)         | cohesior                                    | occurs when there     | is no      | meaningful relationship am   | ona     |                       |  |
|  | 0)         | the elements of                             | a module.             |            |                              | ong     |                       |  |
|  |            | a) Temporal                                 |                       | b)         | Coincidental                 |         |                       |  |
|  | `          | c) Sequential                               |                       | a)         | Logical                      |         |                       |  |
|  | ()         | CMM means                                   | <br>Aaturity Model    | b)         | Cost Maturity Model          |         |                       |  |
|  |            | c) Capability N                             | Maturity Model        | d)         | All                          |         |                       |  |
|  | 8)         | manager                                     | ment is an attempt to | o minii    | mize the chances of failure  |         |                       |  |
|  |            | caused by unpla                             | anned events.         | b)         | Schodulo                     |         |                       |  |
|  |            | c) Effort Estim                             | nation                | d)         | Risk                         |         |                       |  |
|  | 9)         | A detailed proie                            | ect schedule is neve  | ŕ          |                              |         |                       |  |
|  | -,         | a) static                                   |                       | b)         | _<br>Variable                |         |                       |  |
|  |            | c) dynamic                                  |                       | d)         | Fixed                        |         |                       |  |

Set D

|     |   |                  | Set                              |  |  |  |
|-----|---|------------------|----------------------------------|--|--|--|
| 10) | The weakness of the<br>Project Management.                                      | _ model is it re | quires co-located teams in Agile |  |  |  |
|     | a) Adaptive PMLC  | b)               | Iterative PMLC                   |  |  |  |
|     | c) Prototype  | d)               | Linear                           |  |  |  |
| 11) | The adaptive software deve collaborate and Learn.                               | elopment mode    | el has three phases,             |  |  |  |
|     | a) review   | b)               | Change                           |  |  |  |
|     | c) speculate  | d)               | quality control                  |  |  |  |
| 12) | Black box testing is also ca  | lled as          |                                  |  |  |  |
|     | a) Structural Testing   | b)               | Acceptance Testing               |  |  |  |
|     | c) Regression Testing   | d)               | Functional Testing               |  |  |  |
| 13) | is a condition that causes a system to fail in performing its required function |                  |                                  |  |  |  |
|     | a) Failure  | b)               | Fault                            |  |  |  |
|     | c) Debugging  | d)               | Error                            |  |  |  |
| 14) | Boundary value analysis be  | elong to         |                                  |  |  |  |

a) Acceptanceb) Black boxc) Regressiond) White Box

SLR-FM-374

Ρ

# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

SOFTWARE ENGINEERING

# Q.2 Attempt any four.

Seat

No.

- a) Explain waterfall software development model in detail.
- **b)** Describe in briefly about software configuration management process.
- c) Explain DFD in detail with an example.
- d) Explain about coupling and its types in design.
- e) Write note on Entity-Relationship diagram.

### Q.3 Attempt any two.

- a) What are the different characteristics of SRS?
- b) Explain basic concepts and notations used in Object Oriented Design.
- c) Define software architecture and its importance in software development.

### Section – II

### Q.4 Attempt any four

- a) Explain about risk management planning.
- b) Explain about Qualitative Quality Management Planning.
- c) Explain CMM in detail.
- d) Explain characteristics, strengths and weaknesses of Agile Adaptive PMLC model.
- e) Write short note on Unit Testing and System Testing.

### Q.5 Attempt any two.

- a) Explain White box testing and its types in detail.
- **b)** Describe briefly about Effort Estimation and Scheduling.
- c) Explain about Agile Iterative Project Management Life cycle model in detail.



Set

Max. Marks: 56

16

16

12

|               |                   | T.E   | . (Part – II) (Old) (CGPA) Ex<br>Information Te<br>SOFTWARE EN | xami<br>echn<br>GINE | ination Nov/Dec-2019<br>ology<br>EERING |
|---------------|-------------------|---|--|----------------------|---|
| Day &<br>Time | & Date<br>: 10:00 | : Tu<br>) AN  | esday, 26-11-2019<br>1 To 01:00 PM                             |                      | Max. Marks: 70                          |
| Instr         | uction            | <b>is:</b> 1  | ) Q. No. 1 is compulsory and sho<br>book.                      | uld b                | e solved in first 30 minutes in answer  |
|               |                   | 2   | ?) Figures to the right indicate full                          | mark                 | S                                       |
| Durof         | ion 2             | о M.  | MCQ/Objective Ty   | pe C                 | Questions                               |
|               | .1011. 31         |   |  |                      | iono and revurite the                   |
| Q.1           | sente             | ose t<br>ence   | the correct alternatives from the                              | e opt                | ions and rewrite the 14                 |
|               | 1)                | cau   | management is an attempt to<br>sed by unplanned events.        | minir                | nize the chances of failure             |
|               |                   | a)<br>c)  | Project<br>Effort Estimation                                   | b)<br>d)             | Schedule<br>Risk                        |
|               | 2)                | A d   | etailed project schedule is never                              |                      | ÷                                       |
|               |                   | a)  | static   | b)<br>d)             | Variable<br>Fixed                       |
|               | 3)                | The<br>Pro  | e weakness of the model is ject Management.                    | s it rea             | quires co-located teams in Agile        |
|               |                   | a)  | Adaptive PMLC  | b)                   | Iterative PMLC                          |
|               |                   | c)  | Prototype  | d)                   | Linear                                  |
|               | 4)                | The<br>coll   | adaptive software development aborate and Learn.               | mode                 | el has three phases,                    |
|               |                   | a)  | review   | b)                   | Change                                  |
|               | 5)                |   | speculate  | u)                   | quality control                         |
|               | 5)                | a)  | Structural Testing   | <br>b)               | Acceptance Testing                      |
|               |                   | c)  | Regression Testing   | d)                   | Functional Testing                      |
|               | 6)                |   | is a condition that causes a sy                                | ystem                | to fail in performing its required      |
|               |                   | fund  | ction.   | <b>L</b> )           | Foult                                   |
|               |                   | a)<br>c)  | Debugging  | (d                   | Error                                   |
|               | 7)                | Boi   | indary value analysis belong to                                | - /                  |   |
|               | • ,               | a)  | Acceptance   | b)                   | Black box                               |
|               |                   | c)  | Regression   | d)                   | White Box                               |
|               | 8)                | Wa  | terfall software development moc                               | lel is <sub>-</sub>  |   |
|               |                   | a)<br>c)  | non iterative model  | d)                   | open model                              |
|               | <b>d</b> )        | </td <td>terfall model originally proposed l</td> <td></td> <td></td> | terfall model originally proposed l                            |                      |   |
|               | 5)                | a)  | Kevin  | b)                   | <br>Royce                               |
|               |                   | c)  | Mccall   | ý                    | Edwin                                   |

c) Mccall a) Edwin Set Q

- 10) An SRS provides a reference for \_\_\_\_\_ of the final product.
  - a) verification
- b) Justification

Set Q

- c) validation d) Implementation
- 11) The \_\_\_\_\_ is a repository of various data flows defined in a DFD.
  - a) data treec) data replicas

- b) data constraints
- d) data repository
- 12) \_\_\_\_\_ between the modules is the strength of interconnections between modules.
  - a) Couplingc) Interface

- b) Interdependence
- d) Cohesion
- 13) \_\_\_\_\_ cohesion occurs when there is no meaningful relationship among the elements of a module.
  - a) Temporal
  - c) Sequential

- b) Coincidentald) Logical
- 14) CMM means\_\_\_
  - a) Common Maturity Model
  - c) Capability Maturity Model
- b) Cost Maturity Model
- d) All

# Seat T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

SOFTWARE ENGINEERING

#### Attempt any four. Q.2

No.

- Explain waterfall software development model in detail. a)
- b) Describe in briefly about software configuration management process.
- C) Explain DFD in detail with an example.
- Explain about coupling and its types in design. d)
- Write note on Entity-Relationship diagram. e)

#### Q.3 Attempt any two.

- What are the different characteristics of SRS? a)
- Explain basic concepts and notations used in Object Oriented Design. b)
- Define software architecture and its importance in software development. c)

### Section – II

#### Attempt any four Q.4

- Explain about risk management planning. a)
- b) Explain about Qualitative Quality Management Planning.
- Explain CMM in detail. c)
- Explain characteristics, strengths and weaknesses of Agile Adaptive PMLC d) model.
- Write short note on Unit Testing and System Testing. e)

#### Attempt any two. Q.5

- Explain White box testing and its types in detail. a)
- Describe briefly about Effort Estimation and Scheduling. b)
- Explain about Agile Iterative Project Management Life cycle model in c) detail.





Max. Marks: 56

16

12

12

|             |                  |                 | Information T<br>SOFTWARE EN  | 'echr<br>IGIN | nology<br>EERING                         |            |
|-------------|------------------|-----------------|---|---------------|--|------------|
| Day<br>Time | & Dat<br>e: 10:0 | e: Tu<br>0 AN   | uesday, 26-11-2019<br>// To 01:00 PM  |               | Max. M                                   | /larks: 70 |
| Instr       | ructio           | ns: ´           | I) Q. No. 1 is compulsory and sh  | ould b        | e solved in first 30 minutes in          | answer     |
|             |                  |                 | 2) Figures to the right indicate ful  | l marl        | (S.                                      |            |
|             |                  |                 | MCQ/Objective T   | ype (         | Questions                                |            |
| Dura        | ation: 3         | 30 M            | inutes  |               | Ν  | Jarks: 14  |
| Q.1         | Cho<br>sent      | ose<br>enco     | the correct alternatives from the between the modules is the                      | h <b>e op</b> | tions and rewrite the                    | 14         |
|             | 1)               | mo              | dules.  | Sucie         |  | 711        |
|             |                  | a)<br>c)        | Coupling<br>Interface   | b)<br>d)      | Interdependence<br>Cohesion              |            |
|             | 2)               |                 | cohesion occurs when there  | is no         | meaningful relationship amon             | ig         |
|             |                  | the<br>a)<br>c) | elements of a module.<br>Temporal<br>Sequential                                   | b)<br>d)      | Coincidental<br>Logical                  |            |
|             | 3)               | CM<br>a)<br>c)  | 1M means<br>Common Maturity Model<br>Capability Maturity Model                    | b)<br>d)      | Cost Maturity Model<br>All               |            |
|             | 4)               |                 | management is an attempt to   | o mini        | mize the chances of failure              |            |
|             |                  | caı<br>a)<br>c) | used by unplanned events.<br>Project<br>Effort Estimation                         | b)<br>d)      | Schedule<br>Risk                         |            |
|             | 5)               | Ac              | letailed project schedule is never  | r             |  |            |
|             |                  | a)<br>c)        | static<br>dynamic   | b)<br>d)      | Variable<br>Fixed                        |            |
|             | 6)               | The<br>Pro      | e weakness of the model pject Management.   | is it re      | quires co-located teams in Ag            | jile       |
|             |                  | a)              | Adaptive PMLC   | b)            | Iterative PMLC                           |            |
|             |                  | c)              | Prototype   | d)            | Linear                                   |            |
|             | 7)               | The<br>col      | e adaptive software developmen<br>laborate and Learn.                             | t mod         | el has three phases,                     |            |
|             |                  | a)              | review  | b)            | Change                                   |            |
|             | 0)               | C)              | speculale   | u)            | quality control                          |            |
|             | 8)               | ыа<br>а)<br>с)  | Structural Testing S also called as _<br>Structural Testing<br>Regression Testing | b)<br>d)      | Acceptance Testing<br>Functional Testing |            |

# Seat No.

# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

# SLR-FM-374

Set R

| 9)  | is a condition that causes a s  | systen              | n to fail in performing its                             |
|-----|---|---------------------|---|
|     | a) Failure<br>c) Debugging  | b)<br>d)            | Fault<br>Error  |
| 10) | Boundary value analysis belong to   |                     | ·   |
|     | a) Acceptance<br>c) Regression  | b)<br>d)            | Black box<br>White Box                                  |
| 11) | Waterfall software development mo<br>a) non iterative model<br>c) iterative model | odel is<br>b)<br>d) | open model<br>none of these                             |
| 12) | Waterfall model originally proposed<br>a) Kevin<br>c) Mccall                      | by<br>b)<br>d)      | Royce<br>Edwin  |
| 13) | An SRS provides a reference for<br>a) verification<br>c) validation               | 0<br>b)<br>d)       | f the final product.<br>Justification<br>Implementation |
| 14) | The is a repository of various a) data tree                                       | s data<br>b)        | flows defined in a DFD.<br>data constraints             |

c) data replicas data repository d)

SLR-FM-374

required

Set R

# Seat No. T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

SOFTWARE ENGINEERING

#### Attempt any four. Q.2

- Explain waterfall software development model in detail. a)
- b) Describe in briefly about software configuration management process.
- C) Explain DFD in detail with an example.
- Explain about coupling and its types in design. d)
- Write note on Entity-Relationship diagram. e)

#### Q.3 Attempt any two.

- What are the different characteristics of SRS? a)
- Explain basic concepts and notations used in Object Oriented Design. b)
- Define software architecture and its importance in software development. c)

### Section – II

#### Attempt any four Q.4

- Explain about risk management planning. a)
- b) Explain about Qualitative Quality Management Planning.
- Explain CMM in detail. c)
- Explain characteristics, strengths and weaknesses of Agile Adaptive PMLC d) model.
- Write short note on Unit Testing and System Testing. e)

#### Attempt any two. Q.5

- Explain White box testing and its types in detail. a)
- Describe briefly about Effort Estimation and Scheduling. b)
- Explain about Agile Iterative Project Management Life cycle model in c) detail.

**SLR-FM-374** 



Max. Marks: 56

16

12

16

| Seat<br>No.  |  |  |  |                                 |  | Set     | S     |  |
|--|--|--|--|---------------------------------|--|---------|-------|--|
| T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>SOFTWARE ENGINEERING |  |  |  |                                 |  |         |       |  |
| Day & I<br>Time: 1   | Day & Date: Tuesday, 26-11-2019 Max. Marks: 70<br>Time: 10:00 AM To 01:00 PM   |  |  |                                 |  |         |       |  |
| Instruc  | <b>Instructions:</b> 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.<br>2) Figures to the right indicate full marks |  |  |                                 |  |         |       |  |
|  |  | _,go. ee te  | ICQ/Objective Ty                         | ne (                            | Duestions  |         |       |  |
| Duratio  | on: 30   | Minutes  |  | pc s                            |  | Marks   | s: 14 |  |
| Q.1 C  | Choos  | e the correct a                                    | alternatives from th                     | e opt                           | ions and rewrite the   |         | 14    |  |
| <b>s</b><br>1  | senter<br>) T<br>F   | <b>ice.</b><br>The weakness o<br>Project Manage    | of the model is ment.                    | s it ree                        | quires co-located teams in                                     | Agile   |       |  |
|  | a  | <ul> <li>Adaptive PI</li> <li>Drototype</li> </ul> | MLC                                      | b)                              | Iterative PMLC   |         |       |  |
|  |  |  |  | a)                              | Linear   |         |       |  |
| 2  | 2) I<br>C  | he adaptive so<br>collaborate and                  | oftware development<br>Learn.            | mode                            | el has three phases,   |         |       |  |
|  | (  | c) speculate                                       |  | d)                              | quality control  |         |       |  |
| 3  | 3) E<br>a  | Black box testin<br>) Structural T<br>) Regression | g is also called as<br>esting<br>Testing | <br>b)<br>d)                    | Acceptance Testing   |         |       |  |
| 4  | L)   | is a cond  | lition that causes a s                   | ∽,<br>vstem                     | to fail in performing its rec                                  | wired   |       |  |
|  | -,   | unction.<br>) Failure<br>) Debugging               |  | b)<br>d)                        | Fault<br>Error   | Jan e a |       |  |
| 5  | 5) E   | Boundary value                                     | analysis belong to _                     |                                 |  |         |       |  |
|  | a<br>C   | <ul><li>Acceptance</li><li>Regression</li></ul>    | 9  | b)<br>d)                        | Black box<br>White Box   |         |       |  |
| 6  | S) V<br>a<br>c   | Vaterfall softwa                                   | ire development moo<br>e model<br>del    | del is <sub>.</sub><br>b)<br>d) | open model<br>none of these                                    |         |       |  |
| 7  | 7) V<br>a  | Vaterfall model<br>ı) Kevin<br>:) Mccall           | originally proposed                      | by<br>b)<br>d)                  | <br>Royce<br>Edwin   |         |       |  |
| 8  | 3) A<br>a<br>c   | An SRS provide<br>) verification<br>) validation   | es a reference for                       | , o<br>b)<br>d)                 | f the final product.<br>Justification<br>Implementation        |         |       |  |
| 9  | Т ()<br>а<br>с   | The is a l<br>i) data tree<br>i) data replica      | repository of various<br>s               | data<br>b)<br>d)                | flows defined in a DFD.<br>data constraints<br>data repository |         |       |  |



- 10) \_ between the modules is the strength of interconnections between modules.
  - a) Coupling

Interdependence b) Cohesion

Cost Maturity Model

- c) Interface d)
- \_ cohesion occurs when there is no meaningful relationship among 11) the elements of a module.

b)

d)

- a) Temporal b) Coincidental
- c) Sequential
- d) Logical

All

- 12) CMM means
  - a) Common Maturity Model
  - c) Capability Maturity Model
- 13) management is an attempt to minimize the chances of failure caused by unplanned events.
  - a) Project Schedule b)
  - c) Effort Estimation Risk d)
- A detailed project schedule is never 14)
  - Variable a) static b) Fixed
  - dynamic c) d)

# Seat No. T.E. (Part – II) (Old) (CGP

# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

# Q.2 Attempt any four.

- a) Explain waterfall software development model in detail.
- **b)** Describe in briefly about software configuration management process.
- c) Explain DFD in detail with an example.
- d) Explain about coupling and its types in design.
- e) Write note on Entity-Relationship diagram.

# Q.3 Attempt any two.

- a) What are the different characteristics of SRS?
- **b)** Explain basic concepts and notations used in Object Oriented Design.
- c) Define software architecture and its importance in software development.

### Section – II

# Q.4 Attempt any four

- a) Explain about risk management planning.
- **b)** Explain about Qualitative Quality Management Planning.
- c) Explain CMM in detail.
- d) Explain characteristics, strengths and weaknesses of Agile Adaptive PMLC model.
- e) Write short note on Unit Testing and System Testing.

# Q.5 Attempt any two.

- a) Explain White box testing and its types in detail.
- **b)** Describe briefly about Effort Estimation and Scheduling.
- c) Explain about Agile Iterative Project Management Life cycle model in detail.





Max. Marks: 56

12

16

16

# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

# **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. The \_\_\_\_\_ provides the core operating system infrastructure such as 1)
  - memory management, process management etc. and various device drivers. b) Kernel
    - a) DVM
    - c) Libraries
  - 2) AVD stands for
    - a) Android Virtual Device
    - c) Android Virtual Disk
  - 3) is a layout resource that defines the blueprint of a various elements appearing on the screen of the app.

d)

- R.java a)
- c) activity main.xml d) None of the choices are correct
- file is registry of several details such as list of logical components, 4) sdk requirements, and version of the app. b) activity\_main.xml
  - AndroidManifest.xml a)
  - Both a & b c)
- debugs apps and monitors their behavior in verbose mode. 5)
  - DVM a) b) JDK
  - DDMS c) d) None of these
- 6) Android runtime treats any activity with highest priority which is in state.
  - a) Pause c) Active
- b) Current
- d) None of these
- 7) During the execution of \_\_\_\_\_ the Activity is not yet rendered on screen but is about to become visible to user.
  - onPause() a) b) onCreate()
  - onResume() d) onStart() C)
- Async Task allows you to perform asynchronous work on your user 8) interface. It performs the blocking operations in a worker thread and then publishes the results on the UI thread.
  - a) True b) False

Android Virtual Directory

b)

b) activity\_main.java

d) None

d) None

None

SLR-FM-375



Max. Marks: 70



Seat

Marks: 14

Set P

- 9) Dialog classes in android?
  - a) AlertDialog
  - c) DatePickerDialog
- b) ProgressDialog
- d) All of the above
- 10) If you want share the data across the all applications, you should go for?
  - a) Shared Preferencesc) SQLite Databases
- b) Internal Storaged) Content provider
- 11) Which of the following is NOT a state in the life cycle of a service?
  - a) Starting b) Running
  - c) Destroyed d) Paused
- 12) Service have any user interface components.a) Trueb) False
- 13) What Built-in database is Android Shipped with?
  - a) SQLite b) MySQL
    - c) Oracle d) Apache
- 14) What is LastKnownLocation in android?
  - a) To find the last location of a phone
  - b) To find known location of a phone
  - c) To find the last known location of a phone
  - d) None of the above

|  |                                    | SLR-FN  | <b>N-3</b> | 75   |   |  |  |
|--|------------------------------------|---|------------|------|---|--|--|
| Seat   | t                                  | S   | et         | Ρ    | ] |  |  |
| T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>MOBILE APPLICATION DEVELOPMENT |                                    |   |            |      |   |  |  |
| Day &<br>Time<br>Instr   | & Dat<br>: 10:(<br><b>uctio</b>    | te: Wednesday, 27-11-2019 Max. M<br>00 AM To 01:00 PM<br>ons: 1) All questions are compulsory.  | larks      | : 56 |   |  |  |
|  |                                    | 2) Figure to the right indicates full marks.  |            |      |   |  |  |
|  | _                                  | Section – I   |            |      |   |  |  |
| Q.2  | Ans<br>a)<br>b)<br>c)<br>d)        | Swer any four from the following questions each carries.<br>Define Broadcast Receivers and state use of it?<br>Define AVD and its uses?<br>Illustrate the use of src folder in Android SDK.<br>What are the various components on DDMS.   |            | 16   |   |  |  |
| Q.3  | e)<br>Ans<br>Defi<br>betv          | What are the logical components of an Android App?<br>wer any one of the following questions.<br>ine the procedure to navigate between activities and exchange data<br>ween them.   |            | 06   |   |  |  |
|  |                                    | OR  |            |      |   |  |  |
|  | Illus                              | trate Activity life cycle states and respective call back methods.  |            |      |   |  |  |
| Q.4  | Exp                                | lain event handling paradigm with the help of UI element.   |            | 06   |   |  |  |
|  |                                    | Section – II  |            |      |   |  |  |
| Q.5  | Atte<br>a)<br>b)<br>c)<br>d)<br>e) | empt any four of the following questions.<br>Classify Sensors in Android.<br>Outline the features of Location services.<br>Define the role of Media Controller.<br>Differentiate between view and property animations.<br>What is SharedPreferences? Explain it with one example. |            | 16   |   |  |  |
| Q.6  | a)                                 | Explain the states and relevant methods of Mediaplayer API. What permissions are required to do media playback over a Wi-Fi network? <b>OR</b>  |            | 06   |   |  |  |
|  | b)                                 | Define strategies to deal with multiple screen densities and sizes in an app.   |            |      |   |  |  |
| Q.7  | Exp                                | lain the categories of sensors available in Android devices.  |            | 06   |   |  |  |

Set

# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
  - 2) Figures to the right indicate full marks.

# **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

c)

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Async Task allows you to perform asynchronous work on your user 1) interface. It performs the blocking operations in a worker thread and then publishes the results on the UI thread. a) True b) False
- Dialog classes in android? 2)
  - AlertDialog a)
  - DatePickerDialog C)
- If you want share the data across the all applications, you should go for? 3)
  - Shared Preferences a) SQLite Databases
- b) Internal Storage d) Content provider

b) ProgressDialog

d) All of the above

- 4) Which of the following is NOT a state in the life cycle of a service?
  - b) Running a) Starting
  - Destroyed d) Paused c)
- Service have any user interface components. 5) a) True b) False
- What Built-in database is Android Shipped with? 6)
  - SQLite b) MySQL a) c)
    - Oracle Apache d)
- 7) What is LastKnownLocation in android?
  - To find the last location of a phone a)
  - To find known location of a phone b)
  - To find the last known location of a phone c)
  - None of the above d)
- 8) The \_\_\_\_\_ provides the core operating system infrastructure such as memory management, process management etc. and various device drivers.
  - DVM Kernel a) b) d) None
  - c) Libraries

9)

- AVD stands for \_\_\_\_\_.
- a) Android Virtual Device
- c) Android Virtual Disk
- b) Android Virtual Directory
- d) None

Max. Marks: 70

Marks: 14

Page 5 of 12

- 10) \_\_\_\_\_ is a layout resource that defines the blueprint of a various elements appearing on the screen of the app.
  - a) R.java activity\_main.xml

C)

- b) activity\_main.java
  - d) None of the choices are correct
- \_\_ file is registry of several details such as list of logical components, 11) sdk requirements, and version of the app.
  - a) AndroidManifest.xml c) Both a & b
- b) activity\_main.xml d) None
- 12) \_ debugs apps and monitors their behavior in verbose mode.
  - DVM b) JDK a)
  - d) None of these DDMS c)
- Android runtime treats any activity with highest priority which is in \_\_\_\_\_ 13) state.
  - a) Pause
- b) Current
- d) None of these
- During the execution of \_\_\_\_\_ the Activity is not yet rendered on screen 14) but is about to become visible to user.
  - a) onPause()

Active

c)

c) onResume()

- b) onCreate()
- d) onStart()

Set | Q

**SLR-FM-375** 

|               |   | SL   | .R-FM-3     | 575   |  |  |  |
|---------------|---|--|-------------|-------|--|--|--|
| Seat          | t   |  | Set         | Q     |  |  |  |
| NO.           |   |  |             | -     |  |  |  |
|               |   | T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2  | 019         |       |  |  |  |
|               |   | Information Technology   |             |       |  |  |  |
|               |   | MOBILE APPLICATION DEVELOPMENT   |             |       |  |  |  |
| Day &<br>Time | & Dat<br>: 10:0   | te: Wednesday, 27-11-2019<br>00 AM To 01:00 PM   | Max. Marks  | s: 56 |  |  |  |
| Instr         | uctio   | <ul><li><b>ns:</b> 1) All questions are compulsory.</li><li>2) Figure to the right indicates full marks.</li></ul>             |             |       |  |  |  |
|               |   | Section – I  |             |       |  |  |  |
| Q.2           | Ans   | wer any four from the following questions each carries.  |             | 16    |  |  |  |
|               | a)  | Define Broadcast Receivers and state use of it?  |             |       |  |  |  |
|               | b)  | Define AVD and its uses?   |             |       |  |  |  |
|               | c)  | Illustrate the use of src folder in Android SDK.   |             |       |  |  |  |
|               | e)  | What are the logical components of an Android App?   |             |       |  |  |  |
| Q.3           | Ans   | wer any one of the following questions.  |             | 06    |  |  |  |
|               | Define the procedure to navigate between activities and exchange data |  |             |       |  |  |  |
|               | between them.   |  |             |       |  |  |  |
|               | Illue   | <b>UR</b><br>trate Activity life cycle states and respective call back mothods   |             |       |  |  |  |
| 0.4           | Evol  | liale Activity life cycle states and respective call back methods.   |             | 06    |  |  |  |
| Q.4           | Схрі  |  |             | 00    |  |  |  |
|               |   | Section – II   |             |       |  |  |  |
| Q.5           | Atte  | empt any four of the following questions.  |             | 16    |  |  |  |
|               | a)<br>b)  | Classify Sensors in Android.   |             |       |  |  |  |
|               | c)  | Define the role of Media Controller.   |             |       |  |  |  |
|               | d)  | Differentiate between view and property animations.  |             |       |  |  |  |
|               | e)  | What is SharedPreferences? Explain it with one example.  |             |       |  |  |  |
| Q.6           | a)  | Explain the states and relevant methods of Mediaplayer API. Wh permissions are required to do media playback over a Wi-Fi netw | at<br>vork? | 06    |  |  |  |
|               | b)  | Define strategies to deal with multiple screen densities and sizes app.  | in an       |       |  |  |  |
| Q.7           | Expl  | lain the categories of sensors available in Android devices.   |             | 06    |  |  |  |

Set

Max. Marks: 70

Marks: 14

# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

| Instructions: 1) Q. No. 1 is compulsory | and should be | e solved in first 3 | 0 minutes in answe | er |
|---|---------------|---------------------|--------------------|----|
| book.                                   |               |                     |                    |    |

2) Figures to the right indicate full marks.

# **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- debugs apps and monitors their behavior in verbose mode. 1)
  - DVM a)
    - b) JDK c) DDMS d) None of these
- 2) Android runtime treats any activity with highest priority which is in \_\_\_\_\_ state.
  - a) Pause b) Current Active d) None of these c)
- During the execution of the Activity is not yet rendered on screen 3) but is about to become visible to user.
  - onPause() a) b) onCreate()
  - onResume() c)
- Async Task allows you to perform asynchronous work on your user 4) interface. It performs the blocking operations in a worker thread and then publishes the results on the UI thread.

d) onStart()

- b) False a) True
- 5) Dialog classes in android?
  - a) AlertDialog ProgressDialog b) c) DatePickerDialog d) All of the above
- If you want share the data across the all applications, you should go for? 6)
  - b) Internal Storage a) Shared Preferences
  - SQLite Databases d) Content provider C)
- Which of the following is NOT a state in the life cycle of a service? 7)
  - b) Running a) Starting
  - d) Paused Destroyed c)
- Service have any user interface components. 8)
  - True b) False a)
- What Built-in database is Android Shipped with? 9)
  - a) SQLite b) MySQL
  - c) Oracle d) Apache



Set R

- 10) What is LastKnownLocation in android?
  - a) To find the last location of a phone
  - b) To find known location of a phone
  - c) To find the last known location of a phone
  - d) None of the above
- 11) The \_\_\_\_\_ provides the core operating system infrastructure such as memory management, process management etc. and various device drivers.
  - a) DVM

- b) Kernel
- c) Libraries d) None
- 12) AVD stands for \_\_\_\_\_.
  - a) Android Virtual Device
- b) Android Virtual Directory
- c) Android Virtual Disk
- d) None
- 13) \_\_\_\_\_ is a layout resource that defines the blueprint of a various elements appearing on the screen of the app.
  - a) R.java

c)

- b) activity\_main.java
  - d) None of the choices are correct
- 14) \_\_\_\_\_ file is registry of several details such as list of logical components, sdk requirements, and version of the app.
  - a) AndroidManifest.xmlc) Both a & b

activity\_main.xml

- b) activity\_main.xml
- d) None

|                |                                    | SLR-   | FM-3     | 875   |
|----------------|------------------------------------|--|----------|-------|
| Seat<br>No.    |                                    |  | Set      | R     |
|                |                                    | T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>MOBILE APPLICATION DEVELOPMENT   |          |       |
| Day &<br>Time: | & Dat<br>10:0                      | te: Wednesday, 27-11-2019 Max<br>00 AM To 01:00 PM   | k. Marks | s: 56 |
| Instru         | uctio                              | <ul><li><b>ns:</b> 1) All questions are compulsory.</li><li>2) Figure to the right indicates full marks.</li></ul>   |          |       |
|                |                                    | Section – I  |          |       |
| Q.2            | Ansv<br>a)<br>b)<br>c)<br>d)<br>e) | wer any four from the following questions each carries.<br>Define Broadcast Receivers and state use of it?<br>Define AVD and its uses?<br>Illustrate the use of src folder in Android SDK.<br>What are the various components on DDMS.<br>What are the logical components of an Android App? |          | 16    |
| Q.3            | Ans<br>Defir<br>betw               | wer any one of the following questions.<br>ne the procedure to navigate between activities and exchange data<br>ween them.   |          | 06    |
|                |                                    | OR   |          |       |
| ~ 4            | Tilust                             | trate Activity life cycle states and respective call back methods.   |          | 00    |
| Q.4            | Expl                               | ain event handling paradigm with the help of Of element.   |          | 00    |
|                | _                                  | Section – II   |          |       |
| Q.5            | Atte<br>a)<br>b)<br>c)<br>d)<br>e) | mpt any four of the following questions.<br>Classify Sensors in Android.<br>Outline the features of Location services.<br>Define the role of Media Controller.<br>Differentiate between view and property animations.<br>What is SharedPreferences? Explain it with one example.             |          | 16    |
| Q.6            | a)                                 | Explain the states and relevant methods of Mediaplayer API. What permissions are required to do media playback over a Wi-Fi network <b>OR</b>  | ?        | 06    |
|                | b)                                 | Define strategies to deal with multiple screen densities and sizes in a app.   | an       |       |
| Q.7            | Expl                               | ain the categories of sensors available in Android devices.  |          | 06    |

Γ

# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

# **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- If you want share the data across the all applications, you should go for? 1)
- Which of the following is NOT a state in the life cycle of a service?

- The \_\_\_\_\_ provides the core operating system infrastructure such as memory management, process management etc. and various device drivers.
  - Android Virtual Directory
- is a layout resource that defines the blueprint of a various elements appearing on the screen of the app.
  - d) None of the choices are correct
- file is registry of several details such as list of logical components, sdk requirements, and version of the app.
  - AndroidManifest.xml a)
  - b) activity\_main.xml Both a & b C) d) None

Max. Marks: 70

Set

SLR-FM-375

#### Shared Preferences b) Internal Storage a) SQLite Databases d) Content provider c) 2) Starting Running a) b) Destroyed Paused C) d) Service have any user interface components. 3) a) True b) False What Built-in database is Android Shipped with? 4) SQLite b) MySQL a) c) Oracle d) Apache What is LastKnownLocation in android? 5) To find the last location of a phone a) To find known location of a phone b) To find the last known location of a phone c) d) None of the above 6) DVM Kernel a) b) C) Libraries d) None 7) AVD stands for a) Android Virtual Device b) c) Android Virtual Disk d) None 8) a) R.java b) activity\_main.java activity\_main.xml c) 9)

Seat No.

Marks: 14

- Set S
- 10) debugs apps and monitors their behavior in verbose mode.
  - DVM a) DDMS

c)

- b) JDK d) None of these
- 11) Android runtime treats any activity with highest priority which is in \_\_\_\_\_ state.
  - a) Pause
  - c) Active

- b) Current
- d) None of these
- During the execution of \_\_\_\_\_ the Activity is not yet rendered on screen 12) but is about to become visible to user.
  - onPause() a) c)
    - b) onCreate() onResume() d) onStart()
- Async Task allows you to perform asynchronous work on your user 13) interface. It performs the blocking operations in a worker thread and then publishes the results on the UI thread. a) True b) False
- Dialog classes in android? 14) a) AlertDialog
  - DatePickerDialog c)
- b) ProgressDialog
- d) All of the above

|               |                  | SL  | .R-FM-3      | 75    |  |  |  |
|---------------|------------------|---|--------------|-------|--|--|--|
| Seat          | t                |   | Set          | S     |  |  |  |
| NO.           |                  |   |              | •     |  |  |  |
|               |                  | T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2   | 019          |       |  |  |  |
|               |                  | Information Technology  |              |       |  |  |  |
|               |                  | MOBILE APPLICATION DEVELOPMENT  |              |       |  |  |  |
| Day &<br>Time | & Dat<br>: 10:0  | te: Wednesday, 27-11-2019<br>00 AM To 01:00 PM  | Max. Marks   | 56 56 |  |  |  |
| Instr         | uctio            | <ul><li><b>ons:</b> 1) All questions are compulsory.</li><li>2) Figure to the right indicates full marks.</li></ul>               |              |       |  |  |  |
|               |                  | Section – I   |              |       |  |  |  |
| Q.2           | Ans<br>a)        | wer any four from the following questions each carries.<br>Define Broadcast Receivers and state use of it?                        |              | 16    |  |  |  |
|               | b)<br>c)<br>d)   | Illustrate the use of src folder in Android SDK.<br>What are the various components on DDMS.                                      |              |       |  |  |  |
| Q.3           | Ans<br>Defin     | wer any one of the following questions.<br>ne the procedure to navigate between activities and exchange dat                       | ta           | 06    |  |  |  |
|               | OR               |   |              |       |  |  |  |
|               | Illust           | trate Activity life cycle states and respective call back methods.  |              |       |  |  |  |
| Q.4           | Expl             | lain event handling paradigm with the help of UI element.   |              | 06    |  |  |  |
|               |                  | Section – II  |              |       |  |  |  |
| Q.5           | Atte<br>a)<br>b) | <b>mpt any four of the following questions.</b><br>Classify Sensors in Android.<br>Outline the features of Location services      |              | 16    |  |  |  |
|               | c)<br>d)         | Define the role of Media Controller.<br>Differentiate between view and property animations.                                       |              |       |  |  |  |
|               | e)               | What is SharedPreferences? Explain it with one example.   |              |       |  |  |  |
| Q.6           | a)               | Explain the states and relevant methods of Mediaplayer API. Wh permissions are required to do media playback over a Wi-Fi netw OR | iat<br>vork? | 06    |  |  |  |
|               | b)               | Define strategies to deal with multiple screen densities and sizes app.   | in an        |       |  |  |  |
| Q.7           | Expl             | lain the categories of sensors available in Android devices.  |              | 06    |  |  |  |

|               |                   |                       | NE   | TWORK SE                                       | TUP AN                         | ID M                               | ANAGEME                                      | NT                 |
|---------------|-------------------|-----------------------|--|--|--------------------------------|------------------------------------|--|--------------------|
| Day &<br>Time | & Date<br>: 10:00 | e: Th<br>D AN         | ursday, 2<br>Л To 12:0                         | 28-11-2019<br>0 PM                             |                                |                                    |  | Max. Ma            |
| Instr         | uctior            | <b>is:</b> 1<br>2     | l) Q. No.<br>answe<br>) Figure                 | 1 is compulsor<br>r book.<br>s to the right in | y and it sl<br>idicate ful     | hould<br>I marl                    | be solved in f<br>ks.                        | irst 20 minutes in |
|               |                   |                       |  | MCQ/Obje                                       | ctive Ty                       | pe (                               | Questions                                    |                    |
| Dura          | tion: 2           | 0 M                   | inutes   | -  |                                | •                                  |  | Ma                 |
| Q.1           | Choc<br>1)        | ose<br>Mu<br>a)<br>c) | <b>the corre</b><br>Itilayer sv<br>TCP<br>Both | ct alternative<br>vitches allow fo             | <b>s from th</b><br>or control | <b>e op</b> t<br>based<br>b)<br>d) | t <b>ions and rew</b><br>d on<br>UDP<br>None | rite the sentence  |
|               | 2)                | a)<br>c)              | is<br>RIP<br>OSPF                              | the external g                                 | ateway pr                      | otoco<br>b)<br>d)                  | ol.<br>EIGRP<br>BGP                          |                    |
|               | 3)                | VL/<br>a)<br>c)       | ANs can l<br>Hub<br>layer-3 s                  | be configured a                                | as virtual i                   | interfa<br>b)<br>d)                | aces on a<br>layer-2 switcl<br>Gateway       | <br>h              |
|               | 4)                | Wh<br>a)              | hat are the<br>VLANs (                         | e advantages c<br>establish broad              | of VLANs?<br>dcast dom         | ains                               | in switched ne                               | tworks             |

### Q.1 he sentence.

Information Technology

- S
- b) VLANs allow access to network services based on department, not physical location
- c) VLANs can greatly simplify adding, moving, or changing hosts on the network
- d) All above

c) Layer 4

9)

- 5) routing table contains information entered manually.
  - Static 2 **Dvnamic 3** a) b) c) Hierarchical 4 none d)
- Where does routing occur within TCP/IP reference model? 6)
  - a) Application b)
  - c) Transport d) none
- At which layer of the OSI model does Point to Point Protocol perform? 7) a) Layer 2
  - b) Layer 3 Layer 1 d)
- 8) What does a Layer 2 switch use to decide source where to forward a received frame?
  - a) Source MAC address
  - b) IP address c) Destination IP address d) **Destination MAC address**
  - Firewalls often have what is commonly called a DMZ. DMZ stands for
    - **DeMovement Zone DeMaintained Zone** a) b)
    - Data Militarized Zone d) **DeMilitarized Zone** c)

**SLR-FM-378** 

Seat

No.

# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

Set

Max. Marks: 50

Marks: 10

- Network



- 10) \_\_\_\_\_ repeats a signal
  a) A repeater
  c) Both a & b

- A Hub b)
- d) None of these

| Seat<br>No. |   | Set    | Ρ                 |
|-------------|---|--------|-------------------|
| Day &       | T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>NETWORK SETUP AND MANAGEMENT  | Marke  | s <sup>.</sup> 40 |
| Time:       | 10:00 AM To 12:00 PM  | · mark | 5. 40             |
| Instru      | <b>ctions:</b> 1) All Questions are compulsory.<br>2) Figures to the right indicate full marks.   |        |                   |
| Q.2         | <ul> <li>Answer any FOUR from the following questions.</li> <li>a) What are different functions of Network Interface Cards?</li> <li>b) Discuss regarding different network connection devices.</li> <li>c) What parameters are required to design a good network?</li> <li>d) Discuss in detail regarding functioning of Routers.</li> <li>e) How the IP Routing Table directs the packets?</li> </ul> |        | 20                |
| Q.3         | <ul> <li>Answer any two of the following question.</li> <li>a) Explain Rip protocol.</li> <li>b) Explain VLAN configurations.</li> <li>c) List the switch types. What are the benefits of fixed configuration swit</li> </ul>   | ches?  | 10                |
| Q.4         | <b>Write short notes</b><br>Wireless Troubleshooting.   |        | 10                |

# Set

# T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

**Duration: 20 Minutes** 

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- Where does routing occur within TCP/IP reference model? 1) Network
  - Application a)
  - b) Transport d) c) none
- At which layer of the OSI model does Point to Point Protocol perform? 2)
  - a) Laver 2 Laver 3 b)
  - c) Layer 4 Layer 1 d)
- 3) What does a Layer 2 switch use to decide source where to forward a received frame? b) IP address
  - a) Source MAC address
  - Destination IP address d) C)
- 4) Firewalls often have what is commonly called a DMZ. DMZ stands for
  - **DeMovement Zone** a)
  - c) Data Militarized Zone
- 5) \_ repeats a signal
  - a) A repeater c) Both a & b None of these
- 6) Multilayer switches allow for control based on
  - a) TCP UDP b) c) Both
    - d) None
- 7) is the external gateway protocol.
  - RIP b) EIGRP a) BGP
  - OSPF d) C)
- 8) VLANs can be configured as virtual interfaces on a
  - a) Hub layer-2 switch b) c) layer-3 switch d) Gateway
- What are the advantages of VLANs? 9)
  - a) VLANs establish broadcast domains in switched networks
  - b) VLANs allow access to network services based on department, not physical location
  - c) VLANs can greatly simplify adding, moving, or changing hosts on the network
  - All above d)

Max. Marks: 50

**SLR-FM-378** 

b) **DeMaintained Zone** 

- d) **DeMilitarized Zone**
- b) A Hub
- d)

**Destination MAC address** 

Marks: 10


- \_\_\_\_ routing table contains information entered manually. Static 2 b) Dynamic 3 Hierarchical 4 d) none 10)
  - a)
  - c) Hierarchical 4

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|----|----|----|---|-----|----|
|    |    |    |   |     |    |

Set

Max. Marks: 40

20

10

10

| Seat |  |
|------|--|
| No.  |  |

## T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

### Instructions:1) All Questions are compulsory.

2) Figures to the right indicate full marks.

## Q.2 Answer any FOUR from the following questions.

- a) What are different functions of Network Interface Cards?
- **b)** Discuss regarding different network connection devices.
- c) What parameters are required to design a good network?
- d) Discuss in detail regarding functioning of Routers.
- e) How the IP Routing Table directs the packets?

### Q.3 Answer any two of the following question.

- a) Explain Rip protocol.
- **b)** Explain VLAN configurations.
- c) List the switch types. What are the benefits of fixed configuration switches?

### Q.4 Write short notes

Wireless Troubleshooting.

Set

R

## Seat No.

## T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 20 Minutes** 

2)

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

b)

**DeMaintained Zone** 

Firewalls often have what is commonly called a DMZ. DMZ stands for 1)

|    | ·                     |  |
|----|-----------------------|--|
| a) | DeMovement Zone       |  |
| a) | Data Militarizad Zana |  |

- **DeMilitarized Zone** d) Data Militarized Zone C) repeats a signal
- A repeater A Hub b) a)
- Both a & b d) None of these C)
- 3) Multilayer switches allow for control based on
  - a) TCP b) UDP Both d) None c)
- 4) is the external gateway protocol.
  - RIP EIGRP b) a) c) OSPF BGP d)
- VLANs can be configured as virtual interfaces on a \_ 5)
  - a) Hub layer-2 switch b)
  - c) layer-3 switch d) Gateway
- 6) What are the advantages of VLANs?
  - a) VLANs establish broadcast domains in switched networks
  - b) VLANs allow access to network services based on department, not physical location
  - c) VLANs can greatly simplify adding, moving, or changing hosts on the network
  - d) All above
- 7) routing table contains information entered manually.
  - Static 2 b) Dynamic 3 a) c) Hierarchical 4 d) none
- Where does routing occur within TCP/IP reference model? 8)
  - Application b) Network a)
  - Transport d) c) none
- At which layer of the OSI model does Point to Point Protocol perform? 9)
  - a) Layer 2 b) Layer 3
  - Layer 4 c) d) Layer 1

Max. Marks: 50

Marks: 10



- 10) What does a Layer 2 switch use to decide source where to forward a received frame?
  - a) Source MAC address
  - c) Destination IP address
- b) IP address
- d) Destination MAC address

Set R

Max. Marks: 40

20

10

10

## T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Seat

No.

## Instructions:1) All Questions are compulsory.

2) Figures to the right indicate full marks.

## Q.2 Answer any FOUR from the following questions.

- a) What are different functions of Network Interface Cards?
- **b)** Discuss regarding different network connection devices.
- c) What parameters are required to design a good network?
- d) Discuss in detail regarding functioning of Routers.
- e) How the IP Routing Table directs the packets?

### Q.3 Answer any two of the following question.

- a) Explain Rip protocol.
- **b)** Explain VLAN configurations.
- c) List the switch types. What are the benefits of fixed configuration switches?

### Q.4 Write short notes

Wireless Troubleshooting.

Set

Seat No.

## T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 20 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 20 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- VLANs can be configured as virtual interfaces on a \_ 1) b)
  - a) Hub c) layer-3 switch
- layer-2 switch Gateway
- 2) What are the advantages of VLANs?
  - a) VLANs establish broadcast domains in switched networks
  - b) VLANs allow access to network services based on department, not physical location

d)

- c) VLANs can greatly simplify adding, moving, or changing hosts on the network
- d) All above
- \_ routing table contains information entered manually. 3) Dynamic 3
  - Static 2 b) a)
  - c) Hierarchical 4 d)
- 4) Where does routing occur within TCP/IP reference model?
  - Application b) a)
  - c) Transport d) none
- At which layer of the OSI model does Point to Point Protocol perform? 5)
  - a) Laver 2 Laver 3 b) c) Layer 4
    - d) Layer 1
- What does a Layer 2 switch use to decide source where to forward a 6) received frame?
  - a) Source MAC address b) IP address
  - c) Destination IP address d) **Destination MAC address**
- 7) Firewalls often have what is commonly called a DMZ. DMZ stands for
  - **DeMovement Zone** a)
  - **Data Militarized Zone** C)
- **DeMaintained Zone** b)
- **DeMilitarized Zone** d)

A Hub

- 8) repeats a signal
  - A repeater a)

a)

C)

- b) c) Both a & b d) None of these
- Multilayer switches allow for control based on 9) TCP
  - UDP b)
  - Both d) None



Marks: 10

- none
- Network



|  | 10) | i | s the | external | gateway | protoco | ı. |
|--|-----|---|-------|----------|---------|---------|----|
|--|-----|---|-------|----------|---------|---------|----|

- a) RIP EIGRP BGP b) d) c) OSPF

Seat No.

## T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology NETWORK SETUP AND MANAGEMENT

Day & Date: Thursday, 28-11-2019 Time: 10:00 AM To 12:00 PM

### Instructions:1) All Questions are compulsory.

2) Figures to the right indicate full marks.

# Q.2 Answer any FOUR from the following questions.a) What are different functions of Network Interface Cards?

- b) Discuss regarding different network connection devices.
- Discuss regarding different fielwork connection devices.
   What parameters are required to design a good network?
- c) What parameters are required to design a good network?
- d) Discuss in detail regarding functioning of Routers.
- e) How the IP Routing Table directs the packets?

### Q.3 Answer any two of the following question.

- a) Explain Rip protocol.
- **b)** Explain VLAN configurations.
- c) List the switch types. What are the benefits of fixed configuration switches?

### Q.4 Write short notes

Wireless Troubleshooting.

Set S

Max. Marks: 40

20

10

10

| Seat |  |
|------|--|
| No.  |  |

## B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume data wherever necessary.

## **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Mobile commerce is the use of wireless devices to conduct e-commerce 1) transactions from any location.
  - a) True
- A data dictionary is an automated or manual file that stores definitions of 2) data elements and their characteristics.
  - a) True b) False
- 3) \_ is a system where operations like data extraction, transformation and loading operations are executed. Data integration
  - a) Data staging b)
  - C) ETL d) None of the mentioned
- 4) is a category of applications and technologies for presenting and analyzing corporate and external data. b) MIS
  - Data warehouse a)
  - EIS All of the mentioned c) d)
- Which of the following areas are affected by BI? 5)
  - Revenue CRM a) b)
    - C) Sales d) All of the mentioned
- BI can catalyze a business's success in terms of \_ 6)
  - Distinguish the products and services that drive revenues a)
  - Rank customers and locations based on profitability b)
  - Ranks customers and locations based on probability C)
  - d) All of the mentioned
- 7) Business intelligence (BI) is a broad category of application programs which includes \_\_\_\_
  - Decision support a) b) Data mining c)
    - OLAP d) All of the mentioned
- Supply chain are a form of these because they automate the flow of 8) information across organizational boundaries.
  - Enterprise applications a)
  - Execute support systems b)
  - Inter-organizational system C)
  - Knowledge management system d)

Max. Marks: 70

Marks: 14

Set

b)

False



Set P

- 9) Are leaders of teams of programmers and analysts, project managers, physical facility managers, telecommunications managers, or database specialists?
  - Chief Information Officer (CIO) a) C) **Business** 
    - b) Information system managers d) Programmers
- 10) Senior Manager who oversees the use of information technology in the firm
  - Information system managers a)
    - b) **Business** d) Chief Information Officer (CIO)
    - Programmers
- Which of the following relates to enterprise interoperability? 11) DFD a)
  - Information flow diagram b)
  - XML Entity relationship diagram C) d)
- Part of e-business that deals with the buying and selling of goods and 12) services over the internet. Is Electronic Commerce (e-commerce?) a) True b) False
- 13) Are representatives of departments outside of the information systems group for whom applications are developed
  - Data Workers a)
- **Enterprise Applications** b) Senior Management
- End Users d) c)
- A contemporary term for data and software tools for organizing, analyzing 14) and providing access to data to help managers and other enterprise users make more informed decisions. Is Business Intelligence?
  - True a)

c)

b) False

# B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM Day & Date: Saturday, 07-12-019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

Seat

No.

- 2) Figure to the right indicates full marks.
- 3) Assume data wherever necessary.

## Soction I

|     | Section – I  |    |
|-----|--|----|
| Q.2 | <ul> <li>Answer any FOUR from the following questions.</li> <li>a) What is new in Management Information Systems?</li> <li>b) How information technology improves business processes?</li> <li>c) Describe various enterprise social networking software capabilities.</li> <li>d) What is an organization? Draw and elaborate the behavioral view of an Organization.</li> <li>e) Identify and describe three ethical principles.</li> </ul>  | 12 |
| Q.3 | <ul> <li>Answer any ONE from the following questions.</li> <li>a) How do the value chain and value web models help businesses identify opportunities for strategic information system applications?</li> <li>b) Describe how promoting synergies and core competencies enhances competitive advantage.</li> </ul>  | 08 |
| Q.4 | <b>Answer the following questions.</b><br>List and describe the five steps in an ethical analysis.<br>Define privacy and fair information practices.   | 08 |
|     | Section – II   |    |
| Q.5 | <ul> <li>Answer any FOUR from the following question <ul> <li>a) What are the challenges of managing IT infrastructure and management Solutions?</li> <li>b) Draw a diagram of components of data warehouse?</li> <li>c) Define data mining, describing how it differs from OLAP and the types of information it provides.</li> <li>d) Define a digital market and digital goods and describe their distinguishing features.</li> <li>e) How has e-commerce affected business-to-business transactions?</li> </ul> </li> </ul> | 12 |
| Q.6 | <ul> <li>Answer any ONE from the following questions</li> <li>a) Define and describe Net marketplaces and explain how they differ from private industrial networks (private exchanges).</li> <li>b) List and describe four business objectives, four system functionalities, and four information requirements of a typical e-commerce Web site.</li> </ul>  | 08 |
| Q.7 | Answer the following question<br>List and describe important types of m-commerce services and applications.  | 08 |

## **SLR-FM-379**



Max. Marks: 56

| Seat |  |
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## B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume data wherever necessary.

## **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

c)

Marks: 14

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Supply chain are a form of these because they automate the flow of 1) information across organizational boundaries.
  - Enterprise applications a)
  - Execute support systems b)
  - Inter-organizational system c)
  - Knowledge management system d)
- 2) Are leaders of teams of programmers and analysts, project managers, physical facility managers, telecommunications managers, or database specialists?
  - a) Chief Information Officer (CIO) b) Business
    - Information system managers d) Programmers
- Senior Manager who oversees the use of information technology in the 3) firm
  - a) Information system managers b) **Business**
  - Programmers d) Chief Information Officer (CIO) c)
- 4) Which of the following relates to enterprise interoperability?
  - DFD a) b) XML c)
- Information flow diagram
  - d) Entity relationship diagram
- Part of e-business that deals with the buying and selling of goods and 5) services over the internet. Is Electronic Commerce (e-commerce?) a) True False b)
- Are representatives of departments outside of the information systems 6) group for whom applications are developed
  - Data Workers a)
- **Enterprise Applications** b)
- c) End Users d) Senior Management
- 7) A contemporary term for data and software tools for organizing, analyzing and providing access to data to help managers and other enterprise users make more informed decisions. Is Business Intelligence? a)
  - True b) False
- Mobile commerce is the use of wireless devices to conduct e-commerce 8) transactions from any location.
  - a) True
- False b)



Max. Marks: 70

Set Q

**SLR-FM-379** 

- 9) A data dictionary is an automated or manual file that stores definitions of data elements and their characteristics.
  - a) True False b)
- 10) is a system where operations like data extraction, transformation and loading operations are executed. Data staging a)
  - b) Data integration
  - ETL d) None of the mentioned
- 11) is a category of applications and technologies for presenting and analyzing corporate and external data. MIS
  - Data warehouse b) a)
  - All of the mentioned C) EIS d)
- 12) Which of the following areas are affected by BI?
  - b) CRM
  - a) Revenue d) All of the mentioned Sales c)
- 13) BI can catalyze a business's success in terms of
  - Distinguish the products and services that drive revenues a)
  - Rank customers and locations based on profitability b)
  - Ranks customers and locations based on probability C)
  - All of the mentioned d)
- Business intelligence (BI) is a broad category of application programs 14) which includes
  - Decision support a)
  - OLAP C)

C)

- b) Data mining
- All of the mentioned d)

|     |                                   | 2) Figure to the right indicates full marks.  |    |
|-----|-----------------------------------|---|----|
|     |                                   | 3) Assume data wherever necessary.  |    |
|     |                                   | Section – I   |    |
| Q.2 | An:<br>a)<br>b)<br>c)<br>d)<br>e) | swer any FOUR from the following questions.<br>What is new in Management Information Systems?<br>How information technology improves business processes?<br>Describe various enterprise social networking software capabilities.<br>What is an organization? Draw and elaborate the behavioral view of an<br>Organization.<br>Identify and describe three ethical principles. | 12 |
| Q.3 | Ans<br>a)<br>b)                   | swer any ONE from the following questions.<br>How do the value chain and value web models help businesses identify<br>opportunities for strategic information system applications?<br>Describe how promoting synergies and core competencies enhances<br>competitive advantage.   | 08 |
| Q.4 | <b>An</b> s<br>List<br>Def        | <b>swer the following questions.</b><br>t and describe the five steps in an ethical analysis.<br>fine privacy and fair information practices.   | 08 |
|     |                                   | Section – II  |    |
| Q.5 | An:<br>a)                         | swer any FOUR from the following question<br>What are the challenges of managing IT infrastructure and management<br>Solutions?   | 12 |
|     | b)<br>c)                          | Draw a diagram of components of data warehouse?<br>Define data mining, describing how it differs from OLAP and the types of<br>information it provides.   |    |
|     | d)                                | Define a digital market and digital goods and describe their distinguishing features.   |    |

Q.6 Answer any ONE from the following questions

Define and describe Net marketplaces and explain how they differ from a) private industrial networks (private exchanges).

e) How has e-commerce affected business-to-business transactions?

b) List and describe four business objectives, four system functionalities, and four information requirements of a typical e-commerce Web site.

### Q.7 Answer the following question

List and describe important types of m-commerce services and applications.

Seat No.

## B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

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Max. Marks: 56

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| Seat |  |
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## B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume data wherever necessary.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

c)

Marks: 14

## Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which of the following areas are affected by BI?
  - a) Revenue

Sales

- b) CRMd) All of the mentioned
- 2) BI can catalyze a business's success in terms of \_\_\_\_\_
  - a) Distinguish the products and services that drive revenues
  - b) Rank customers and locations based on profitability
  - c) Ranks customers and locations based on probability
  - d) All of the mentioned
- 3) Business intelligence (BI) is a broad category of application programs which includes \_\_\_\_\_.
  - a) Decision support
- b) Data mining
- c) OLAP d) All of the mentioned
- 4) Supply chain are a form of these because they automate the flow of information across organizational boundaries.
  - a) Enterprise applications
  - b) Execute support systems
  - c) Inter-organizational system
  - d) Knowledge management system
- 5) Are leaders of teams of programmers and analysts, project managers, physical facility managers, telecommunications managers, or database specialists?
  - a) Chief Information Officer (CIO) b) Information system managers
  - c) Business d) Programmers
- 6) Senior Manager who oversees the use of information technology in the firm \_\_\_\_\_.
  - a) Information system managers b) Business
  - c) Programmers d)
- 7) Which of the following relates to enterprise interoperability?
  - a) DFD c) XML

b) Information flow diagram

Chief Information Officer (CIO)

d) Entity relationship diagram



Max. Marks: 70

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- Part of e-business that deals with the buying and selling of goods and 8) services over the internet. Is Electronic Commerce (e-commerce?) a) True False b)
- 9) Are representatives of departments outside of the information systems group for whom applications are developed \_
  - b) **Enterprise Applications**
  - C) End Users d) Senior Management
- A contemporary term for data and software tools for organizing, analyzing 10) and providing access to data to help managers and other enterprise users make more informed decisions. Is Business Intelligence? False a) True b)
- Mobile commerce is the use of wireless devices to conduct e-commerce 11) transactions from any location.
  - True b) False a)
- 12) A data dictionary is an automated or manual file that stores definitions of data elements and their characteristics.
  - a) True False b)
- 13) is a system where operations like data extraction, transformation and loading operations are executed.
  - Data staging a) ETL

C)

C)

EIS

a) Data Workers

b) Data integration

MIS

- None of the mentioned d)
- \_ is a category of applications and technologies for presenting and 14) analyzing corporate and external data.
  - Data warehouse a) b)
    - All of the mentioned d)

Page 8 of 12

**08** 

**08** 

|     |                                   | 3) Assume data wherever necessary.  |    |
|-----|-----------------------------------|---|----|
|     |                                   | Section – I   |    |
| Q.2 | Ans<br>a)<br>b)<br>c)<br>d)<br>e) | swer any FOUR from the following questions.<br>What is new in Management Information Systems?<br>How information technology improves business processes?<br>Describe various enterprise social networking software capabilities.<br>What is an organization? Draw and elaborate the behavioral view of an<br>Organization.<br>Identify and describe three ethical principles. | 12 |
| Q.3 | Ans<br>a)<br>b)                   | swer any ONE from the following questions.<br>How do the value chain and value web models help businesses identify<br>opportunities for strategic information system applications?<br>Describe how promoting synergies and core competencies enhances<br>competitive advantage.   | 08 |
| Q.4 | <b>An</b><br>List<br>Def          | swer the following questions.<br>and describe the five steps in an ethical analysis.<br>Tine privacy and fair information practices.  | 08 |
|     |                                   | Section – II  |    |
| Q.5 | Ans<br>a)                         | swer any FOUR from the following question<br>What are the challenges of managing IT infrastructure and management<br>Solutions?   | 12 |
|     | b)<br>c)                          | Draw a diagram of components of data warehouse?<br>Define data mining, describing how it differs from OLAP and the types of<br>information it provides.   |    |
|     | d)                                | Define a digital market and digital goods and describe their distinguishing features.   |    |
|     | e)                                | How has e-commerce affected business-to-business transactions?  |    |

a) Define and describe Net marketplaces and explain how they differ from

four information requirements of a typical e-commerce Web site.

List and describe important types of m-commerce services and applications.

b) List and describe four business objectives, four system functionalities, and

## B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-019

Time: 02:30 PM To 05:30 PM

Seat

No.

Instructions: 1) All questions are compulsory.

Q.6 Answer any ONE from the following questions

Q.7 Answer the following question

private industrial networks (private exchanges).

2) Figure to the right indicates full marks

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R Set

Max. Marks: 56

| Seat |  |
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| No.  |  |

## B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume data wherever necessary.

## **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

b)

- Senior Manager who oversees the use of information technology in the 1) firm .
  - Information system managers a)
  - C) Programmers d) Chief Information Officer (CIO)
- 2) Which of the following relates to enterprise interoperability?
  - Information flow diagram a) DFD b) C)
    - Entity relationship diagram XML d)
- Part of e-business that deals with the buying and selling of goods and 3) services over the internet. Is Electronic Commerce (e-commerce?) a) True False b)
- Are representatives of departments outside of the information systems 4) group for whom applications are developed \_
  - Data Workers a)
- **Enterprise Applications** b)

**Business** 

End Users c)

C)

- Senior Management d)
- A contemporary term for data and software tools for organizing, analyzing 5) and providing access to data to help managers and other enterprise users make more informed decisions. Is Business Intelligence? a) True b) False
- 6) Mobile commerce is the use of wireless devices to conduct e-commerce transactions from any location.
  - a) True b) False
- A data dictionary is an automated or manual file that stores definitions of 7) data elements and their characteristics.
  - a) True False b)
- 8) \_ is a system where operations like data extraction, transformation and loading operations are executed.
  - Data staging b) Data integration a)
  - C) ETL d) None of the mentioned
- \_ is a category of applications and technologies for presenting and 9) analyzing corporate and external data. MIS
  - a) Data warehouse b) EIS
    - All of the mentioned d)

Max. Marks: 70

Marks: 14

Set

- 10) Which of the following areas are affected by BI?
  - a) Revenue

- b) CRM
- c) Sales d) All of the mentioned
- 11) BI can catalyze a business's success in terms of \_
  - a) Distinguish the products and services that drive revenues
  - b) Rank customers and locations based on profitability
  - c) Ranks customers and locations based on probability
  - d) All of the mentioned
- 12) Business intelligence (BI) is a broad category of application programs which includes \_\_\_\_\_.
  - a) Decision support
- b) Data mining

c) OLAP

- d) All of the mentioned
- 13) Supply chain are a form of these because they automate the flow of information across organizational boundaries.
  - a) Enterprise applications
  - b) Execute support systems
  - c) Inter-organizational system
  - d) Knowledge management system
- 14) Are leaders of teams of programmers and analysts, project managers, physical facility managers, telecommunications managers, or database specialists?
  - a) Chief Information Officer (CIO) b)
  - c) Business

Information system managers

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Set S

d) Programmers

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-019

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume data wherever necessary.

## Section – I

| Q.2 | <ul> <li>Answer any FOUR from the following questions.</li> <li>a) What is new in Management Information Systems?</li> <li>b) How information technology improves business processes?</li> <li>c) Describe various enterprise social networking software capabilities.</li> <li>d) What is an organization? Draw and elaborate the behavioral view of an Organization.</li> <li>e) Identify and describe three ethical principles.</li> </ul> | 12 |
|-----|---|----|
| Q.3 | <ul> <li>Answer any ONE from the following questions.</li> <li>a) How do the value chain and value web models help businesses identify opportunities for strategic information system applications?</li> <li>b) Describe how promoting synergies and core competencies enhances competitive advantage.</li> </ul>   | 08 |
| Q.4 | Answer the following questions.<br>List and describe the five steps in an ethical analysis.<br>Define privacy and fair information practices.   | 08 |
|     | Section – II  |    |
| Q.5 | <ul> <li>Answer any FOUR from the following question</li> <li>a) What are the challenges of managing IT infrastructure and management Solutions?</li> <li>b) Draw a diagram of components of data warehouse?</li> </ul>   | 12 |
|     | <ul> <li>c) Define data mining, describing how it differs from OLAP and the types of information it provides.</li> </ul>  |    |
|     | <ul> <li>d) Define a digital market and digital goods and describe their distinguishing features.</li> <li>e) How has e-commerce affected business-to-business transactions?</li> </ul>   |    |
| 0.6 | Answer any ONE from the following questions   | 08 |
| Q.0 | <ul> <li>a) Define and describe Net marketplaces and explain how they differ from private industrial networks (private exchanges).</li> <li>b) List and describe four business objectives, four system functionalities, and four information requirements of a typical e-commerce Web site.</li> </ul>  | 00 |
| Q.7 | <b>Answer the following question</b><br>List and describe important types of m-commerce services and applications.  | 08 |

Max. Marks: 56

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Seat No.

| Seat |  |
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## B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology ADVANCED DATABASE SYSTEM

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
  - 2) Figures to the right indicates full marks.

## **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- If a relation r is fragmented and divided in to a number of fragments as 1)  $r_1, r_{2,...,n}$   $r_n$  according to its attributes, then it is
  - a) Horizontal fragmentation
    - c) Both
- Vertical fragmentation b) Cannot say d)
- 2) Site reintegration in distributed database is nothing but \_\_\_\_\_.
  - a) Separating a failed site from a network
  - Selecting a new coordinator b)
  - c) Rejoining of a failed site after its recovery
  - d) Connecting the whole network after the failure of its server
- 3) Point gueries and range gueries are complicated to process in partitioning technique.
  - Round Robin a) b) Hash
  - Range d) c) All
- In parallel database, if guery processing occurs only in one or few 4) partitions and other partitions are not in use then it is named as \_\_\_\_\_.
  - Partition skew b) a)
  - c) Execution skew
- attribute value skew data skew d)

#### 5) In interguery parallelism .

- Different queries are executing in parallel a)
- b) Single query is executing in parallel
- c) Individual operation of a query executes in parallel
- d) Different operation of a query executes in parallel
- In OODB, final & not final indicates the 6)
  - a) structure type creation subtype creation b)
    - c) object creation d) complex type creation
- In OLAP implementation MOLAP is 7)
  - **Multiattributed OLAP** a) Multivalued OLAP b) Multiple OLAP
  - c) Multidimensional OLAP d)
- 8) The operation of changing dimensions used in a cross-tab is referred as \_\_\_\_.
  - a) slicing pivoting c)

- b) dicing
- dimensioning d)

Max. Marks: 70

Set

Marks: 14

In query processing for selection operation A3, A4 & A5 algorithms are \_\_\_\_. a) basic algorithms using indices b) c) complex selections d) comparison selections 10)  $\sigma \theta_1 \cap \theta_1(E) =$ \_\_\_\_\_ a)  $\sigma\theta_1(E) \cap \theta_1(E)$ b)  $\sigma \theta_1(E) \cup \theta_1(E)$ c)  $\sigma\theta_1(\sigma\theta_2(E))$ d) All The estimated cost of hash join requires \_\_\_\_\_ block transfers for relations 11) r & s. a) b<sub>r</sub>+b<sub>s</sub> b) n<sub>r</sub>\*b<sub>r</sub>+b<sub>s</sub> c)  $3(b_r+b_s)+4n_h$ d)  $2(b_r+b_s)$ 12) The protocol which allows global transactions to read but not to update local data items is . a) local-read-write protocol b) local-read protocol c) global-read-write protocol d) global-read protocol Which of the following is not the Dameon process that runs on a hadoop 13) cluster? a) JobTracker b) DataNode c) TaskTracker TaskNode d)

- 14) Which of the following is not a phase of Reducer?
  - a) Map

- Reduce b)
- Shuffle c)
- d) Sort

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# Set

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|---|-------|
| B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>ADVANCED DATABASE SYSTEM   |       |
| Day & Date: Tuesday,10-12-2019 Max. Mark<br>Time: 02:30 PM To 05:30 PM  | s: 56 |
| Instructions: 1) All questions are compulsory.<br>2) Figures to the right indicates full marks.   |       |
| Section – I   |       |
| <ul> <li>Q.2 Write short notes. (any three)</li> <li>a) Shared lock &amp; distributed lock manager approach</li> <li>b) Partitioning techniques</li> <li>c) Data cube and its operations</li> <li>d) Decision tree classifier</li> </ul>        | 12    |
| <ul> <li>Q.3 Attempt any one.</li> <li>What is distributed database system? Elaborate distributed transaction processing with its system architecture and failure modes.</li> <li>OR</li> </ul>   | 08    |
| What is Data warehouse? Elaborate its components and issues with neat diagram.  |       |
| <b>Q.4</b> What is interoperation parallelism? Illustrate its techniques with examples.   | 08    |
| Section – II  |       |
| <ul> <li>Q.5 Write short notes. (any three)</li> <li>a) Unnesting</li> <li>b) Complex selection algorithms for conjunction</li> <li>c) Merge join</li> <li>d) Complex data types in Object oriented databases</li> </ul>                        | 12    |
| <ul> <li>Q.6 Attempt any one.</li> <li>What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.</li> <li>OR</li> <li>Explain Hadoon architecture with its HDES example.</li> </ul> | 08    |
| <b>Q.7</b> List and explain Equivalence rules for query optimization.   | 08    |

|                                     | d)                      | Sort                                 |  |
|-------------------------------------|-------------------------|--------------------------------------|--|
| gmented and d<br>ling to its attrib | livided ir<br>utes, the | to a number of fragments as en it is |  |
| gmentation                          | b)<br>d)                | Vertical fragmentation<br>Cannot say |  |
|                                     |                         |                                      |  |

In query processing for selection operation A3, A4 & A5 algorithms are \_\_\_\_. a) basic algorithms using indices b)

- complex selections C)
- $\sigma \theta_1 \cap \theta_1(E) =$ \_
  - b)  $\sigma \theta_1(E) \cap \theta_1(E)$ a)
  - d)  $\sigma\theta_1(\sigma\theta_2(E))$ C)
- 4) The estimated cost of hash join requires \_\_\_\_\_ block transfers for relations r & s.
  - a)  $b_r+b_s$ b)  $n_r b_r + b_s$
  - c)  $3(b_r+b_s)+4n_h$ d)  $2(b_r+b_s)$
- 5) The protocol which allows global transactions to read but not to update local data items is \_\_\_\_
  - a) local-read-write protocol
  - c) global-read-write protocol
- 6) Which of the following is not the Dameon process that runs on a hadoop cluster?
  - JobTracker DataNode a) b)
  - TaskTracker d) TaskNode C)
- 7) Which of the following is not a phase of Reducer?
  - a) Map b) Reduce ذله 0 - ---
  - c) Shuffle
- 8) If a relation r is frac
  - r<sub>1</sub>, r<sub>2,.....</sub> r<sub>n</sub> accord
    - a) Horizontal frag c) Both

- Max. Marks: 70
- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology ADVANCED DATABASE SYSTEM

2) Figures to the right indicates full marks.

## MCQ/Objective Type Questions

Choose the correct alternatives from the options and rewrite the sentence.

The operation of changing dimensions used in a cross-tab is referred as \_\_\_\_.

b)

d)

d)

b)

d)

dicing

All

dimensioning

 $\sigma\theta_1(E) \cup \theta_1(E)$ 

local-read protocol

global-read protocol

comparison selections



Set

Q

Seat

Day & Date: Tuesday, 10-12-2019

a) slicing

c) pivoting

Time: 02:30 PM To 05:30 PM

**Duration: 30 Minutes** 

1)

2)

3)

No.

Q.1

Marks: 14

14

|     | SLR-FM-380   | ) |
|-----|--|---|
|     | Set Q  |   |
| 9)  | <ul> <li>Site reintegration in distributed database is nothing but</li> <li>a) Separating a failed site from a network</li> <li>b) Selecting a new coordinator</li> <li>c) Rejoining of a failed site after its recovery</li> <li>d) Connecting the whole network after the failure of its server</li> </ul> |   |
| 10) | Point queries and range queries are complicated to process inpartitioning technique.a) Round Robinb) Hashc) Ranged) All  |   |
| 11) | In parallel database, if query processing occurs only in one or few<br>partitions and other partitions are not in use then it is named as<br>a) Partition skew b) attribute value skew<br>c) Execution skew d) data skew   |   |
| 12) | <ul> <li>In interquery parallelism</li> <li>a) Different queries are executing in parallel</li> <li>b) Single query is executing in parallel</li> <li>c) Individual operation of a query executes in parallel</li> <li>d) Different operation of a query executes in parallel</li> </ul>                     |   |
| 13) | In OODB, <i>final</i> & <i>not final</i> indicates the<br>a) structure type creation b) subtype creation<br>c) object creation d) complex type creation  |   |
| 14) | In OLAP implementation MOLAP is  |   |

- a) Multivalued OLAP
- b) Multiattributed OLAP
- c) Multidimensional OLAP
- d) Multiple OLAP

| Seat<br>No.    |  |   |   | Set        | Q     |  |
|----------------|--|---|---|------------|-------|--|
|                | B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>ADVANCED DATABASE SYSTEM  |   |   |            |       |  |
| Day 8<br>Time: | & Date: Tuesday,10-<br>: 02:30 PM To 05:30   | 12-2019<br>PM   |   | Max. Marks | s: 56 |  |
| Instru         | uctions: 1) All quest<br>2) Figures  | ions are compulsory.<br>o the right indicates ful                                       | marks.  |            |       |  |
|                |  | Section   | -1  |            |       |  |
| Q.2            | <ul> <li>Write short notes.</li> <li>a) Shared lock &amp;</li> <li>b) Partitioning tee</li> <li>c) Data cube and</li> <li>d) Decision tree of</li> </ul> | <b>(any three)</b><br>distributed lock manag<br>hniques<br>its operations<br>classifier | er approach   |            | 12    |  |
| Q.3            | Attempt any one.<br>What is distributed<br>processing with its s   | database system? Elab<br>ystem architecture and<br><b>O</b>                             | orate distributed transactior<br>failure modes.<br><b>R</b> | ı          | 08    |  |
|                | What is Data wareh diagram.  | ouse? Elaborate its co  | nponents and issues with n                                  | eat        |       |  |
| Q.4            | What is interoperati   | on parallelism? Illustrat   | e its techniques with examp                                 | oles.      | 08    |  |
|                |  | Section   | - 11  |            |       |  |
| Q.5            | <ul> <li>Write short notes.</li> <li>a) Unnesting</li> <li>b) Complex select</li> <li>c) Merge join</li> <li>d) Complex data</li> </ul>                  | <b>(any three)</b><br>tion algorithms for conj<br>types in Object oriented              | unction<br>I databases                                      |            | 12    |  |
| Q.6            | Attempt any one.<br>What is query proce<br>cost calculation of a   | essing? How the cost of<br>Selection operation.<br><b>OR</b><br>bitecture with its HDES | a query is measured? Exp                                    | lain the   | 08    |  |
| Q.7            | List and explain Eq  | uivalence rules for quer  | y optimization.   |            | 08    |  |

## B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology ADVANCED DATABASE SYSTEM

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

2) Figures to the right indicates full marks.

## **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

2)

6)

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - 1) In interguery parallelism \_\_\_\_\_.
    - Different queries are executing in parallel a)
    - b) Single query is executing in parallel
    - Individual operation of a query executes in parallel c)
    - d) Different operation of a query executes in parallel
    - In OODB, final & not final indicates the subtype creation a) structure type creation b) object creation complex type creation c) d)
  - In OLAP implementation MOLAP is \_\_\_\_ 3)
    - Multivalued OLAP b) Multiattributed OLAP a) Multidimensional OLAP Multiple OLAP c) d)
  - 4) The operation of changing dimensions used in a cross-tab is referred as .
    - slicing dicing a) b)
    - pivoting dimensioning c) d)
  - In query processing for selection operation A3, A4 & A5 algorithms are \_\_\_\_. 5)

b)

d)

using indices

comparison selections

- a) basic algorithms
- c) complex selections
- $\sigma \theta_1 \cap \theta_1(E) = \_$ a)  $\sigma\theta_1(E) \cap \theta_1(E)$ b)  $\sigma \theta_1(E) \cup \theta_1(E)$ c)  $\sigma\theta_1(\sigma\theta_2(E))$ d) All
- 7) The estimated cost of hash join requires \_\_\_\_\_ block transfers for relations r & s. a)  $b_r + b_s$ b)  $n_r b_r + b_s$ 
  - c)  $3(b_r+b_s)+4n_h$ d)  $2(b_r+b_s)$
- The protocol which allows global transactions to read but not to update 8) local data items is
  - a) local-read-write protocol b) local-read protocol global-read protocol d) c) global-read-write protocol
- 9) Which of the following is not the Dameon process that runs on a hadoop cluster?
  - a) JobTracker DataNode b) c) TaskTracker d) TaskNode



Marks: 14

Max. Marks: 70

Set R

Seat No.

10) Which of the following is not a phase of Reducer?

- a) Map
- b) Reduce
- c) Shuffle d) Sort
- 11) If a relation r is fragmented and divided in to a number of fragments as
  - $r_1$ ,  $r_2$ ,  $r_n$  according to its attributes, then it is \_\_\_\_\_. a) Horizontal fragmentation
    - Vertical fragmentation b)

**SLR-FM-380** 

Set

- c) Both d) Cannot say
- 12) Site reintegration in distributed database is nothing but \_\_\_\_\_.
  - a) Separating a failed site from a network
  - b) Selecting a new coordinator
  - c) Rejoining of a failed site after its recovery
  - d) Connecting the whole network after the failure of its server
- 13) Point queries and range queries are complicated to process in \_\_\_\_\_ partitioning technique.
  - a) Round Robin

- b) Hash
- Range d) All c)
- In parallel database, if query processing occurs only in one or few 14) partitions and other partitions are not in use then it is named as \_\_\_\_\_.
  - a) Partition skew

- attribute value skew b)
- c) Execution skew
- d) data skew

| B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>ADVANCED DATABASE SYSTEM         Day & Date: Tuesday,10-12-2019<br>Time: 02:30 PM To 05:30 PM       Max. Marks: 56         Instructions: 1) All questions are compulsory.<br>2) Figures to the right indicates full marks.<br>Section – I       12         Q.2       Write short notes. (any three)<br>a) Shared lock & distributed lock manager approach<br>b) Partitioning techniques<br>c) Data cube and its operations<br>d) Decision tree classifier       12         Q.3       Attempt any one.<br>What is distributed database system? Elaborate distributed transaction<br>processing with its system architecture and failure modes.<br>OR       08         What is Data warehouse? Elaborate its components and issues with neat<br>diagram.       08         Q.4       What is interoperation parallelism? Illustrate its techniques with examples.<br>OR       08         Section – II       12         Q.5       Write short notes. (any three)<br>a) Unnesting<br>b) Complex selection algorithms for conjunction<br>c) Merge join<br>d) Complex data types in Object oriented databases       12         Q.6       Attempt any one.<br>What is query processing? How the cost of a query is measured? Explain the<br>cost calculation of a Selection operation.       08 | Seat<br>No.    | t   |  |  |  | Set        | R     |
|--|----------------|---|--|--|--|------------|-------|
| Day & Date: Tuesday,10-12-2019       Max. Marks: 56         Time: 02:30 PM To 05:30 PM       Instructions: 1) All questions are compulsory.       2) Figures to the right indicates full marks.         Section – I         Q.2       Write short notes. (any three)       12         a)       Shared lock & distributed lock manager approach       12         b)       Partitioning techniques       2         c)       Data cube and its operations       0         d)       Decision tree classifier       08         What is distributed database system? Elaborate distributed transaction processing with its system architecture and failure modes.       08         What is Data warehouse? Elaborate its components and issues with neat diagram.       08         Q.4       What is interoperation parallelism? Illustrate its techniques with examples.       08         Section – II       12         Q.5       Write short notes. (any three)       12         a)       Unnesting       12         b)       Complex selection algorithms for conjunction       0         c)       Merge join       12         d)       Complex data types in Object oriented databases       08         What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.       0  |                | B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>ADVANCED DATABASE SYSTEM |  |  |  |            |       |
| Instructions: 1) All questions are compulsory.<br>2) Figures to the right indicates full marks.<br>Section – I<br>Q.2 Write short notes. (any three)<br>a) Shared lock & distributed lock manager approach<br>b) Partitioning techniques<br>c) Data cube and its operations<br>d) Decision tree classifier<br>Q.3 Attempt any one.<br>What is distributed database system? Elaborate distributed transaction<br>processing with its system architecture and failure modes.<br>What is Data warehouse? Elaborate its components and issues with neat<br>diagram.<br>Q.4 What is interoperation parallelism? Illustrate its techniques with examples.<br>B) Complex selection algorithms for conjunction<br>c) Merge join<br>d) Complex data types in Object oriented databases<br>Q.6 Attempt any one.<br>What is query processing? How the cost of a query is measured? Explain the<br>cost calculation of a Selection operation.<br>OR  | Day &<br>Time: | & D<br>: 02   | ate: Tuesday,10-12<br>2:30 PM To 05:30 P   | -2019<br>VI  |  | Max. Marks | s: 56 |
| Section – I         Q.2       Write short notes. (any three)       12         a)       Shared lock & distributed lock manager approach       12         b)       Partitioning techniques       2         c)       Data cube and its operations       0         d)       Decision tree classifier       08         What is distributed database system? Elaborate distributed transaction processing with its system architecture and failure modes.       08         What is Data warehouse? Elaborate its components and issues with neat diagram.       08         Q.4       What is interoperation parallelism? Illustrate its techniques with examples.       08         Section – II       2.5       Write short notes. (any three)       12         a)       Unnesting       12       12         b)       Complex selection algorithms for conjunction       2       12         d)       Complex data types in Object oriented databases       08         What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.       08   | Instru         | uct   | ions: 1) All question<br>2) Figures to   | ns are compulsory.<br>the right indicates fu                                 | II marks.  |            |       |
| Q.2       Write short notes. (any three)       12         a)       Shared lock & distributed lock manager approach       12         b)       Partitioning techniques       12         c)       Data cube and its operations       0         d)       Decision tree classifier       08         Q.3       Attempt any one.       08         What is distributed database system? Elaborate distributed transaction processing with its system architecture and failure modes.       08         What is Data warehouse? Elaborate its components and issues with neat diagram.       08         Q.4       What is interoperation parallelism? Illustrate its techniques with examples.       08         Section – II         Q.5       Write short notes. (any three)       12         a)       Unnesting       12         b)       Complex selection algorithms for conjunction       12         c)       Merge join       0       08         Q.6       Attempt any one.       08       08         What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.       08   |                |   |  | Section  | ) <b>–</b> I   |            |       |
| Q.3 Attempt any one.       08         What is distributed database system? Elaborate distributed transaction processing with its system architecture and failure modes.       08         What is Data warehouse? Elaborate its components and issues with neat diagram.       08         Q.4 What is interoperation parallelism? Illustrate its techniques with examples.       08         Section – II       12         Q.5 Write short notes. (any three)       12         a) Unnesting       12         b) Complex selection algorithms for conjunction       12         c) Merge join       01         d) Complex data types in Object oriented databases       08         What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.       08  | Q.2            | W<br>a)<br>b)<br>c)<br>d)   | rite short notes. (a<br>Shared lock & di<br>Partitioning tech<br>Data cube and it<br>Decision tree cla | <b>ny three)</b><br>stributed lock mana<br>niques<br>s operations<br>ssifier | ger approach   |            | 12    |
| <ul> <li>What is Data warehouse? Elaborate its components and issues with neat diagram.</li> <li>Q.4 What is interoperation parallelism? Illustrate its techniques with examples.</li> <li>Q.5 Write short notes. (any three)         <ul> <li>a) Unnesting</li> <li>b) Complex selection algorithms for conjunction</li> <li>c) Merge join</li> <li>d) Complex data types in Object oriented databases</li> </ul> </li> <li>Q.6 Attempt any one.         <ul> <li>What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.</li> </ul> </li> </ul>  | Q.3            | At<br>W<br>pre  | tempt any one.<br>hat is distributed da<br>ocessing with its sys                                       | tabase system? Ela<br>tem architecture and                                   | borate distributed transactic<br>I failure modes.<br><b>DR</b> | 'n         | 08    |
| Q.4       What is interoperation parallelism? Illustrate its techniques with examples.       08         Section – II         Q.5       Write short notes. (any three)       12         a)       Unnesting       12         b)       Complex selection algorithms for conjunction       12         c)       Merge join       12         d)       Complex data types in Object oriented databases       08         Q.6       Attempt any one.       08         What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.       08  |                | W<br>dia  | hat is Data warehou<br>agram.  | se? Elaborate its co   | pmponents and issues with i                                    | neat       |       |
| Section – II         Q.5       Write short notes. (any three)       12         a)       Unnesting       12         b)       Complex selection algorithms for conjunction       12         c)       Merge join       12         d)       Complex data types in Object oriented databases       8         Q.6       Attempt any one.       08         What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.       08   | Q.4            | W   | hat is interoperatior  | parallelism? Illustra  | te its techniques with exam                                    | ples.      | 08    |
| Q.5       Write short notes. (any three)       12         a)       Unnesting       12         b)       Complex selection algorithms for conjunction       12         c)       Merge join       12         d)       Complex data types in Object oriented databases       8         Q.6       Attempt any one.       08         What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.       08  |                |   |  | Section  | – II   |            |       |
| <ul> <li>Q.6 Attempt any one.</li> <li>What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.</li> </ul>  | Q.5            | W<br>a)<br>b)<br>c)<br>d)   | rite short notes. (a<br>Unnesting<br>Complex selection<br>Merge join<br>Complex data ty                | ny three)<br>on algorithms for cor<br>pes in Object oriente                  | ijunction<br>ed databases                                      |            | 12    |
| Explain Hadoon architecture with its HDES example  | Q.6            | At<br>W<br>co   | <b>tempt any one.</b><br>hat is query process<br>st calculation of a S                                 | sing? How the cost of<br>election operation.<br>OR                           | of a query is measured? Exp                                    | plain the  | 08    |
| Q.7List and explain Equivalence rules for query optimization.08  | Q.7            | Lis   | st and explain Equiv   | alence rules for que   | ry optimization.   |            | 08    |

| C)                           | Both   | d)                                  | Cannot say   |  |
|------------------------------|--|-------------------------------------|--|--|
| Site<br>a)<br>b)<br>c)<br>d) | e reintegration in distributed datable<br>Separating a failed site from a new<br>Selecting a new coordinator<br>Rejoining of a failed site after its<br>Connecting the whole network a | oase i<br>etwor<br>recov<br>fter th | s nothing but<br>k<br>/ery<br>ne failure of its server |  |
| Poi<br>par<br>a)<br>c)       | nt queries and range queries are<br>titioning technique.<br>Round Robin<br>Range   | comp<br>b)<br>d)                    | licated to process in<br>Hash<br>All                   |  |
|                              |  |                                     |  |  |

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019

Information Technology ADVANCED DATABASE SYSTEM

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

2) Figures to the right indicates full marks.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - 1)  $\sigma \theta_1 \cap \theta_1(E) =$ \_\_\_\_\_
    - a)  $\sigma\theta_1(E) \cap \theta_1(E)$ b)  $\sigma \theta_1(E) \cup \theta_1(E)$ d) All c)  $\sigma\theta_1(\sigma\theta_2(E))$
  - The estimated cost of hash join requires \_\_\_\_\_ block transfers for relations 2) r & s.
    - a) b<sub>r</sub>+b<sub>s</sub> n<sub>r</sub>\*b<sub>r</sub>+b<sub>s</sub> b) c)  $3(b_r+b_s)+4n_h$ d)  $2(b_r+b_s)$

#### The protocol which allows global transactions to read but not to update 3) local data items is .

- a) local-read-write protocol
- c) global-read-write protocol d)
- Which of the following is not the Dameon process that runs on a hadoop 4) cluster?
  - a) JobTracker b) DataNode c) TaskTracker d)
  - TaskNode
- Which of the following is not a phase of Reducer? 5)
  - Reduce Map b) a)
  - c) Shuffle d) Sort

6) If a relation r is fragmented and divided in to a number of fragments as  $r_1, r_2$   $r_n$  according to its attributes, then it is

- a) Horizontal fragmentation Vertical fragmentation b) c) Both
- 7) Site reinteg
  - a) Separa
  - b) Selecti
  - c) Rejoini
  - d) Conne

#### Point querie partitioning a) Round

8)

- - b) local-read protocol
  - global-read protocol

**SLR-FM-380** 

Set

Max. Marks: 70



Marks: 14

|     |                               |   |                               | SLR-FM-38   | 30 |
|-----|-------------------------------|---|-------------------------------|---|----|
|     |                               |   |                               | Set   | S  |
| 9)  | In p<br>par<br>a)<br>c)       | parallel database, if query process<br>titions and other partitions are no<br>Partition skew<br>Execution skew  | sing o<br>t in us<br>b)<br>d) | ccurs only in one or few<br>se then it is named as<br>attribute value skew<br>data skew |    |
| 10) | In ii<br>a)<br>b)<br>c)<br>d) | nterquery parallelism<br>Different queries are executing in<br>Single query is executing in para<br>Individual operation of a query ex<br>Different operation of a query ex | n para<br>allel<br>xecute     | allel<br>es in parallel<br>es in parallel   |    |
| 11) | In C<br>a)<br>c)              | DODB, <i>final</i> & <i>not final</i> indicates the structure type creation object creation   | he<br>b)<br>d)                | <br>subtype creation<br>complex type creation   |    |
| 12) | In C<br>a)<br>c)              | DLAP implementation MOLAP is<br>Multivalued OLAP<br>Multidimensional OLAP   | b)<br>d)                      | <br>Multiattributed OLAP<br>Multiple OLAP   |    |
| 13) | Th∉<br>a)<br>c)               | e operation of changing dimension<br>slicing<br>pivoting  | ns use<br>b)<br>d)            | ed in a cross-tab is referred as<br>dicing<br>dimensioning                              |    |

- In query processing for selection operation A3, A4 & A5 algorithms are \_\_\_\_. 14)
  - a) basic algorithms

- b) using indices
- c) complex selections
- d) comparison selections

| NO.  |     | Э    |
|--|-----|------|
| B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>ADVANCED DATABASE SYSTEM  | -   |      |
| Day & Date: Tuesday,10-12-2019 Max. Ma<br>Time: 02:30 PM To 05:30 PM   | rks | : 56 |
| Instructions: 1) All questions are compulsory.<br>2) Figures to the right indicates full marks.  |     |      |
| Section – I  |     |      |
| <ul> <li>Q.2 Write short notes. (any three)</li> <li>a) Shared lock &amp; distributed lock manager approach</li> <li>b) Partitioning techniques</li> <li>c) Data cube and its operations</li> <li>d) Decision tree classifier</li> </ul>       |     | 12   |
| <ul> <li>Q.3 Attempt any one.</li> <li>What is distributed database system? Elaborate distributed transaction processing with its system architecture and failure modes.</li> <li>OR</li> </ul>  |     | 80   |
| What is Data warehouse? Elaborate its components and issues with neat diagram.   |     |      |
| <b>Q.4</b> What is interoperation parallelism? Illustrate its techniques with examples.  |     | 08   |
| Section – II   |     |      |
| <ul> <li>Q.5 Write short notes. (any three)</li> <li>a) Unnesting</li> <li>b) Complex selection algorithms for conjunction</li> <li>c) Merge join</li> <li>d) Complex data types in Object oriented databases</li> </ul>                       |     | 12   |
| <ul> <li>Q.6 Attempt any one.</li> <li>What is query processing? How the cost of a query is measured? Explain the cost calculation of a Selection operation.</li> <li>OR</li> <li>Explain Hadoop architecture with its HDES example</li> </ul> |     | 08   |
| <b>Q.7</b> List and explain Equivalence rules for query optimization.  |     | 08   |

14

## **SLR-FM-381**

## Page **1** of **12**

### B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

# Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
  - 1) Which of the following are objective of software testing?
    - a) Determines that software product satisfy specified requirements
    - b) Demonstrate that software products are fit for use
    - c) Detect defects
    - d) All the above
  - 2) In which of the following situation defects arise?
    - a) No knowledge of system
    - b) System is used in wrong way and May have coded wrongly
    - c) Incorrect setup of testing environment
    - d) All the above
  - 3) Which of the following is non functional testing for an e-commerce website?
    - a) People can buy goods
    - b) People can return faulty goods
    - c) Security of system during transaction
    - d) 1000 people can log into system at same time
  - 4) Testing done without planning and Documentation is called \_\_\_\_\_
    - a) Unit testing b) Regression testing
    - c) Adhoc testing d) None of the mentioned
  - 5) Which is/are characteristic/s of stress testing?
    - a) It is a type of non functional testing
    - b) It involves testing beyond normal operational capacity, often to a breaking point, in order to observe the results
    - c) It put great emphasis on robustness, availability, and error handling under a heavy load, rather than on what would be considered correct behavior under normal circumstances
    - d) All of the above
  - 6) Verifying that whether software components are functioning correctly and identifying the defects in them is objective of which level of testing?
    - a) Integration testingc) Unit testing
- b) Acceptance testingd) System Testing

•

Set

Max. Marks: 70

Marks: 14

- 7) Which of the following are types of acceptance system?
  - a) Alpha testing
  - b) Beta testing
  - c) Contract acceptance testing
  - d) All the above
- 8) What are the objectives behind writing and executing the test cases?
  - a) Find the defects in software products
  - b) Verify that the software meets the end user requirements
  - c) Improve software quality
  - d) All of the above
- 9) What are test items?
  - a) Functions of the software
  - b) Requirements stated in the Design stage
  - c) Both a and b
  - d) None of these
- 10) Software quality assurance consists of the auditing and reporting functions of management.
  - a) True b) False
- 11) Who identifies, documents, and verifies that corrections have been made to the software?
  - a) Project manager
- b) Project team
- c) SQA group
- d) All of the mentioned

Set P

- 12) The Selenium RC is used \_\_\_\_\_
  - a) To run your test against different browsers (except HtmlUnit) on different operating systems
  - b) To create tests with little or no prior knowledge in programming
  - c) To test a web application against Firefox only
  - d) To run a huge test suite, that can be executed on multiple machines
- 13) Selenium IDE supports auto complete mode when creating tests. This feature serves following purposes: \_\_\_\_\_.
  - a) It helps the tester to enter commands more quickly
  - b) It restricts the user from entering invalid commands
  - c) Both a and b
  - d) None
- 14) When Testing should be stopped?
  - a) When manager asks to stop
  - b) When time runs out
  - c) When enough money are spend on testing
  - d) It depends on risk associated with that project

## Seat No.

## B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### Section – I

## Q.2 Attempt any three

- a) What is software Testing? Describe the Challenges in Testing.
- **b)** Describe the following:
  - 1) Defect Management Process
  - 2) Skills Required by Tester
- c) How to write test cases using Equivalence Partitioning testing technique, illustrate with a example?
- d) Define the following testing levels: GUI Testing, Compatibility Testing, Performance Testing and Security Testing.

### Q.3 Attempt any two.

- a) What are the Principles of Software Testing? Describe Test Team Approach, Attitude towards Testing and Test Policy for software testing.
- b) Describe in detail White-Box Testing Techniques-Data Coverage and Code Coverage.
- c) Define the different Testing levels in detail.
  - 1) Alpha Testing
  - 2) Beta Testing
  - 3) Gamma Testing
  - 4) Big-Bang Testing

### Section – II

### Q.4 Attempt any three.

- a) Mention a few typical testing resources that should be considered when test planning.
- **b)** Why is defining the software's quality and reliability goals an important part of test Planning?
- c) Describe the SQA Processes and Product Characteristics.
- d) What's the difference between a tool and automation?

### Q.5 Attempt any two.

- a) Describe Realities of using test tools and automation by considering selenium testing tool.
- **b)** Illustrate in detail Formal Approaches to SQA and Statistical SQA with examples.
- c) Describe the test case terms:
  - 1) Reporting Bugs
  - 2) Bug-Tracking Systems

**E** Max. Marks: 56

Set

16

12

16

12

|      | DE (Dort | 1) /NL | ~ . |
|------|----------|--------|-----|
| No.  |          |        |     |
| Seat |          |        |     |

## B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

### Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- What are the objectives behind writing and executing the test cases? 1)
  - Find the defects in software products a)
  - Verify that the software meets the end user requirements b)
  - c) Improve software quality
  - d) All of the above
- 2) What are test items?
  - a) Functions of the software
  - b) Requirements stated in the Design stage
  - Both a and b c)
  - d) None of these
- 3) Software quality assurance consists of the auditing and reporting functions of management.
  - True b) False a)
- Who identifies, documents, and verifies that corrections have been made 4) to the software?
  - a) Project manager
- b) Project team

c) SQA group

d) All of the mentioned

- 5) The Selenium RC is used \_\_\_\_\_
  - a) To run your test against different browsers (except HtmlUnit) on different operating systems
  - b) To create tests with little or no prior knowledge in programming
  - c) To test a web application against Firefox only
  - d) To run a huge test suite, that can be executed on multiple machines
- Selenium IDE supports auto complete mode when creating tests. This 6) feature serves following purposes: \_\_\_\_
  - It helps the tester to enter commands more quickly a)
  - b) It restricts the user from entering invalid commands
  - c) Both a and b
  - d) None

Max. Marks: 70

Marks: 14

Set
7) When Testing should be stopped?

- a) When manager asks to stop
- b) When time runs out
- c) When enough money are spend on testing
- d) It depends on risk associated with that project
- 8) Which of the following are objective of software testing?
  - a) Determines that software product satisfy specified requirements
  - b) Demonstrate that software products are fit for use
  - c) Detect defects
  - d) All the above
- 9) In which of the following situation defects arise?
  - a) No knowledge of system
  - b) System is used in wrong way and May have coded wrongly
  - c) Incorrect setup of testing environment
  - d) All the above
- 10) Which of the following is non functional testing for an e-commerce website?
  - a) People can buy goods
  - b) People can return faulty goods
  - c) Security of system during transaction
  - d) 1000 people can log into system at same time
- 11) Testing done without planning and Documentation is called \_\_\_\_\_.
  - a) Unit testing b) Regression testing
  - c) Adhoc testing d) None of the mentioned
- 12) Which is/are characteristic/s of stress testing?
  - a) It is a type of non functional testing
  - b) It involves testing beyond normal operational capacity, often to a breaking point, in order to observe the results
  - c) It put great emphasis on robustness, availability, and error handling under a heavy load, rather than on what would be considered correct behavior under normal circumstances
  - d) All of the above
- 13) Verifying that whether software components are functioning correctly and identifying the defects in them is objective of which level of testing?
  - a) Integration testing
- b) Acceptance testing
- c) Unit testing
- d) System Testing
- 14) Which of the following are types of acceptance system?
  - a) Alpha testing
  - b) Beta testing
  - c) Contract acceptance testing
  - d) All the above

SLR-FM-381

Set

# Seat No.

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# Section – I

# Q.2 Attempt any three

- a) What is software Testing? Describe the Challenges in Testing.
- **b)** Describe the following:
  - 1) Defect Management Process
  - 2) Skills Required by Tester
- c) How to write test cases using Equivalence Partitioning testing technique, illustrate with a example?
- d) Define the following testing levels: GUI Testing, Compatibility Testing, Performance Testing and Security Testing.

# Q.3 Attempt any two.

- a) What are the Principles of Software Testing? Describe Test Team Approach, Attitude towards Testing and Test Policy for software testing.
- b) Describe in detail White-Box Testing Techniques-Data Coverage and Code Coverage.
- c) Define the different Testing levels in detail.
  - 1) Alpha Testing
  - 2) Beta Testing
  - 3) Gamma Testing
  - 4) Big-Bang Testing

# Section – II

# Q.4 Attempt any three.

- a) Mention a few typical testing resources that should be considered when test planning.
- **b)** Why is defining the software's quality and reliability goals an important part of test Planning?
- c) Describe the SQA Processes and Product Characteristics.
- d) What's the difference between a tool and automation?

# Q.5 Attempt any two.

- a) Describe Realities of using test tools and automation by considering selenium testing tool.
- **b)** Illustrate in detail Formal Approaches to SQA and Statistical SQA with examples.
- c) Describe the test case terms:
  - 1) Reporting Bugs
  - 2) Bug-Tracking Systems

**E** Max. Marks: 56

16

12

16



Set

| Seat |  |
|------|--|
| No.  |  |
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# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

# Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - Which is/are characteristic/s of stress testing? 1)
    - It is a type of non functional testing a)
    - It involves testing beyond normal operational capacity, often to a b) breaking point, in order to observe the results
    - It put great emphasis on robustness, availability, and error handling c) under a heavy load, rather than on what would be considered correct behavior under normal circumstances
    - d) All of the above
  - 2) Verifying that whether software components are functioning correctly and identifying the defects in them is objective of which level of testing?
    - Integration testing Acceptance testing a) b)
    - Unit testing d) System Testing c)
  - Which of the following are types of acceptance system? 3)
    - a) Alpha testing
    - b) Beta testing
    - Contract acceptance testing c)
    - d) All the above
  - 4) What are the objectives behind writing and executing the test cases?
    - Find the defects in software products a)
    - b) Verify that the software meets the end user requirements
    - c) Improve software quality
    - d) All of the above
  - 5) What are test items?
    - Functions of the software a)
    - Requirements stated in the Design stage b)
    - Both a and b c)
    - d) None of these
  - 6) Software quality assurance consists of the auditing and reporting functions of management.
    - a) True b) False

Max. Marks: 70

Marks: 14

7) Who identifies, documents, and verifies that corrections have been made to the software?

a) Project manager

c) SQA group

- b) Project team
- d) All of the mentioned

**SLR-FM-381** 

- 8) The Selenium RC is used \_\_\_\_\_
  - a) To run your test against different browsers (except HtmlUnit) on different operating systems
  - b) To create tests with little or no prior knowledge in programming
  - c) To test a web application against Firefox only
  - d) To run a huge test suite, that can be executed on multiple machines
- Selenium IDE supports auto complete mode when creating tests. This feature serves following purposes: \_\_\_\_\_.
  - a) It helps the tester to enter commands more quickly
  - b) It restricts the user from entering invalid commands
  - c) Both a and b
  - d) None
- 10) When Testing should be stopped?
  - a) When manager asks to stop
  - b) When time runs out
  - c) When enough money are spend on testing
  - d) It depends on risk associated with that project
- 11) Which of the following are objective of software testing?
  - a) Determines that software product satisfy specified requirements
  - b) Demonstrate that software products are fit for use
  - c) Detect defects
  - d) All the above
- 12) In which of the following situation defects arise?
  - a) No knowledge of system
  - b) System is used in wrong way and May have coded wrongly
  - c) Incorrect setup of testing environment
  - d) All the above
- 13) Which of the following is non functional testing for an e-commerce website?
  - a) People can buy goods
  - b) People can return faulty goods
  - c) Security of system during transaction
  - d) 1000 people can log into system at same time
- 14) Testing done without planning and Documentation is called \_\_\_\_
  - a) Unit testing b) Regression testing
  - c) Adhoc testing d) None of the mentioned

# Seat No.

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# Section – I

# Q.2 Attempt any three

- a) What is software Testing? Describe the Challenges in Testing.
- **b)** Describe the following:
  - 1) Defect Management Process
  - 2) Skills Required by Tester
- c) How to write test cases using Equivalence Partitioning testing technique, illustrate with a example?
- d) Define the following testing levels: GUI Testing, Compatibility Testing, Performance Testing and Security Testing.

# Q.3 Attempt any two.

- a) What are the Principles of Software Testing? Describe Test Team Approach, Attitude towards Testing and Test Policy for software testing.
- b) Describe in detail White-Box Testing Techniques-Data Coverage and Code Coverage.
- c) Define the different Testing levels in detail.
  - 1) Alpha Testing
  - 2) Beta Testing
  - 3) Gamma Testing
  - 4) Big-Bang Testing

# Section – II

# Q.4 Attempt any three.

- a) Mention a few typical testing resources that should be considered when test planning.
- **b)** Why is defining the software's quality and reliability goals an important part of test Planning?
- c) Describe the SQA Processes and Product Characteristics.
- d) What's the difference between a tool and automation?

# Q.5 Attempt any two.

- a) Describe Realities of using test tools and automation by considering selenium testing tool.
- **b)** Illustrate in detail Formal Approaches to SQA and Statistical SQA with examples.
- c) Describe the test case terms:
  - 1) Reporting Bugs
  - 2) Bug-Tracking Systems

**E** Max. Marks: 56

Set

16

12

16

Set S

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

# Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

# Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Software quality assurance consists of the auditing and reporting functions of management.
  - a) True b) False
- 2) Who identifies, documents, and verifies that corrections have been made to the software?
  - a) Project manager b) Project team
  - c) SQA group d) All of the mentioned

# 3) The Selenium RC is used \_\_\_\_

- a) To run your test against different browsers (except HtmlUnit) on different operating systems
- b) To create tests with little or no prior knowledge in programming
- c) To test a web application against Firefox only
- d) To run a huge test suite, that can be executed on multiple machines
- 4) Selenium IDE supports auto complete mode when creating tests. This feature serves following purposes: \_\_\_\_\_.
  - a) It helps the tester to enter commands more quickly
  - b) It restricts the user from entering invalid commands
  - c) Both a and b
  - d) None
- 5) When Testing should be stopped?
  - a) When manager asks to stop
  - b) When time runs out
  - c) When enough money are spend on testing
  - d) It depends on risk associated with that project
- 6) Which of the following are objective of software testing?
  - a) Determines that software product satisfy specified requirements
  - b) Demonstrate that software products are fit for use
  - c) Detect defects
  - d) All the above

19

Max. Marks: 70

Marks: 14

- 7) In which of the following situation defects arise?
  - a) No knowledge of system
  - b) System is used in wrong way and May have coded wrongly
  - c) Incorrect setup of testing environment
  - d) All the above
- 8) Which of the following is non functional testing for an e-commerce website?
  - a) People can buy goods
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  - c) Security of system during transaction
  - d) 1000 people can log into system at same time
- 9) Testing done without planning and Documentation is called \_\_\_\_\_.
  - a) Unit testing b) Regression testing
  - c) Adhoc testing d) None of the mentioned
- 10) Which is/are characteristic/s of stress testing?
  - a) It is a type of non functional testing
  - b) It involves testing beyond normal operational capacity, often to a breaking point, in order to observe the results
  - c) It put great emphasis on robustness, availability, and error handling under a heavy load, rather than on what would be considered correct behavior under normal circumstances
  - d) All of the above
- 11) Verifying that whether software components are functioning correctly and identifying the defects in them is objective of which level of testing?
  - a) Integration testing b) Acceptance testing
  - c) Unit testing d) System Testing
- 12) Which of the following are types of acceptance system?
  - a) Alpha testing
  - b) Beta testing
  - c) Contract acceptance testing
  - d) All the above
- 13) What are the objectives behind writing and executing the test cases?
  - a) Find the defects in software products
  - b) Verify that the software meets the end user requirements
  - c) Improve software quality
  - d) All of the above
- 14) What are test items?
  - a) Functions of the software
  - b) Requirements stated in the Design stage
  - c) Both a and b
  - d) None of these

Set

# Seat No.

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# Section – I

# Q.2 Attempt any three

- a) What is software Testing? Describe the Challenges in Testing.
- **b)** Describe the following:
  - 1) Defect Management Process
  - 2) Skills Required by Tester
- c) How to write test cases using Equivalence Partitioning testing technique, illustrate with a example?
- d) Define the following testing levels: GUI Testing, Compatibility Testing, Performance Testing and Security Testing.

# Q.3 Attempt any two.

- a) What are the Principles of Software Testing? Describe Test Team Approach, Attitude towards Testing and Test Policy for software testing.
- b) Describe in detail White-Box Testing Techniques-Data Coverage and Code Coverage.
- c) Define the different Testing levels in detail.
  - 1) Alpha Testing
  - 2) Beta Testing
  - 3) Gamma Testing
  - 4) Big-Bang Testing

# Section – II

# Q.4 Attempt any three.

- a) Mention a few typical testing resources that should be considered when test planning.
- **b)** Why is defining the software's quality and reliability goals an important part of test Planning?
- c) Describe the SQA Processes and Product Characteristics.
- d) What's the difference between a tool and automation?

# Q.5 Attempt any two.

- a) Describe Realities of using test tools and automation by considering selenium testing tool.
- **b)** Illustrate in detail Formal Approaches to SQA and Statistical SQA with examples.
- c) Describe the test case terms:
  - 1) Reporting Bugs
  - 2) Bug-Tracking Systems

E Max. Marks: 56

16

12

16

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019

Day & Date: Saturday,14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

Information Technology MOBILE COMPUTING

- 2) Assume suitable data if necessary.
- 3) Figure must be draw wherever necessary.

MCQ/Objective Type Questions

b)

Grid antenna

Demodulation

**Duration: 30 Minutes** 

Seat

No.

## Q.1 Choose the correct alternatives from the options.

- 1) Which type of antenna is used for edge excited cells?
  - a) Omnidirectional antenna
  - c) Sectored directional antenna d) Dipole antenna
- 2) TDD is effective for \_\_\_\_\_
  - a) Fixed wireless access and users are stationary
  - b) Dynamic wireless access and users are stationary
  - c) Fixed wireless access and users are moving
  - d) Dynamic wireless access and users are moving
- 3) Dwell time does not depend on which of the following factor?
  - a) Propagation
  - b) Interference
  - c) Distance between subscriber and base station
  - d) Mobile station
- 4) Which of the following is not an objective for channel assignment strategies?
  - a) Efficient utilization of spectrum b) Increase of capacity
  - c) Minimize the interference d) Maximize the interference
- 5) Which of the following is not a property of spread spectrum techniques?
  - a) Interference rejection capability
  - b) Multipath fading
  - c) Frequency planning elimination
  - d) Multiple user, multiple access interface
- 6) Path loss in free space model is defined as difference of \_\_\_\_\_.
  - a) Effective transmitted power and gain
  - b) Effective received power and distance between T-R
  - c) Gain and received power
  - d) Effective transmitter power and receiver power
- 7) Which is the process of encoding information from a message source in suitable manner for transmission?
  - a) Modulation b)
  - c) Encryption d) Decryption

Max. Marks: 70

# SLR-FM-382



Marks: 14

Set

What is borrowing strategy in fixed channel assignments?

physical layer specifications for implementing WLANs?

- Borrowing channels from neighbouring cell a) b) Borrowing channels from neighbouring cluster
- c) Borrowing channels from same cell
- d) Borrowing channels from other base station in same cell
- What is the case of reflection, in course of second medium being a perfect 10) dielectric?

Which of the following specifies a set of media access control (MAC) and

b)

d)

**IEEE 802.3** 

**IEEE 802.15** 

- Loss of energy during absorption a)
- Total energy reflected back to first medium b)
- No loss of energy in absorption c)
- Total energy transmitted into second medium d)
- Frequency hopping involves a periodic change of transmission \_\_\_\_\_. 11) Frequency

b)

- Signal a)
- c) Phase d) Amplitude
- 12) Why neighbouring stations are assigned different group of channels in cellular system?
  - To minimize interference a)
  - b) To minimize area

a) IEEE 802.16

c) IEEE 802.11

8)

9)

- To maximize throughput C)
- To maximize capacity of each cell d)
- carries digitally encoded user data. 13)
  - a) Traffic channels c) Signaling channels
- Control channels b) Forward channels d)
- 14) Which of the following antenna radiates power with unit gain uniformly in all directions?
  - Directional antenna a)
- **Dipole** antenna b)
- Isotropic antenna c)
- d) Loop antenna

| Seat           |   |  |         |
|----------------|---|--|---------|
| No.            |   | Se   | t   P   |
|                | B.E. (Part –  | I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>MOBILE COMPUTING   |         |
| Day &<br>Time: | A Date: Saturday,14-<br>02:30 PM To 05:30   | -12-2019 Max. Mai  | rks: 56 |
| Instru         | uctions: 1) All quest<br>2) Figures   | tions are compulsory.<br>to the right indicate full marks.   |         |
|                | , 0   | Section – I  |         |
| Q.2            | <ul> <li>Attempt any three</li> <li>a) What is handow</li> <li>b) Explain the sign</li> <li>c) What is multiple</li> <li>d) What are the adwith cell cluster</li> </ul>           | ver? Explain all the scenarios in GSM?<br>nal propagation with path loss of radio signals?<br>exing? Draw and illustrate types of multiplexing?<br>dvantages, disadvantages for cellular system also explain it<br>rs? | 12      |
| ~ ~            | e) Explain all the t  | benefits of wireless networks and mobile communications?   | •••     |
| Q.3            | Draw and explain th   | ne functional architecture of GSM?   | 80      |
|                | Explain with neat di  | agram the functional architecture of GPRS and WCDMA?   |         |
| Q.4            | <ul><li>Attempt any two</li><li>a) DSSS and FHS</li><li>b) Antennas</li><li>c) Mobility Manag</li></ul>   | SS<br>jement   | 08      |
|                |   | Section – II   |         |
| Q.5            | <ul> <li>Attempt any three</li> <li>a) Explain the met</li> <li>b) Illustrate with d</li> <li>c) What is MANE</li> <li>d) State and explain</li> <li>e) Explain the AO</li> </ul> | chanism used in traditional TCP?<br>liagram the indirect TCP?<br>T, explain it with mobile IP?<br>ain the challenges of wireless network?<br>DV mobile Adhoc network?  | 12      |
| Q.6            | Draw and explain th   | ne system and protocol architecture of 802.11 standards?<br>OR   | 08      |
|                | Explain with examp  | le all the mobility models in MANET?   |         |
| Q.7            | Attempt any two<br>a) Infrastructure a<br>b) cellular IP in mo  | nd ad-hoc networks<br>obile computing  | 08      |

c) Location aided routing

**SLR-FM-382** 

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

### Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

MOBILE COMPUTING

- 2) Assume suitable data if necessary.
- 3) Figure must be draw wherever necessary.

# **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

c)

Seat No.

#### Q.1 Choose the correct alternatives from the options.

Which of the following specifies a set of media access control (MAC) and 1) physical layer specifications for implementing WLANs?

**IEEE 802.15** 

- a) IEEE 802.16 **IEEE 802.3** b)
  - IEEE 802.11 d)
- 2) What is borrowing strategy in fixed channel assignments?
  - a) Borrowing channels from neighbouring cell
  - b) Borrowing channels from neighbouring cluster
  - c) Borrowing channels from same cell
  - d) Borrowing channels from other base station in same cell
- 3) What is the case of reflection, in course of second medium being a perfect dielectric?
  - Loss of energy during absorption a)
  - Total energy reflected back to first medium b)
  - No loss of energy in absorption c)
  - Total energy transmitted into second medium d)
- Frequency hopping involves a periodic change of transmission \_\_\_\_\_. 4)
  - Signal Frequency a) b)
  - Phase d) Amplitude C)
- Why neighbouring stations are assigned different group of channels in 5) cellular system?
  - To minimize interference a)
  - b) To minimize area
  - c) To maximize throughput
  - d) To maximize capacity of each cell
- carries digitally encoded user data. 6) Control channels b)
  - Traffic channels a)
  - Signaling channels C)
- Which of the following antenna radiates power with unit gain uniformly in 7) all directions?

d)

b)

Forward channels

Dipole antenna

- a) Directional antenna
- c) Isotropic antenna d) Loop antenna

SLR-FM-382

Max. Marks: 70

Marks: 14

- Set Q
- 8) Which type of antenna is used for edge excited cells?
  - a) Omnidirectional antenna

b) Grid antenna

- c) Sectored directional antenna d) Dipole antenna
- 9) TDD is effective for \_\_\_\_\_.
  - a) Fixed wireless access and users are stationary
  - b) Dynamic wireless access and users are stationary
  - c) Fixed wireless access and users are moving
  - d) Dynamic wireless access and users are moving
- 10) Dwell time does not depend on which of the following factor?
  - a) Propagation
  - b) Interference
  - c) Distance between subscriber and base station
  - d) Mobile station
- 11) Which of the following is not an objective for channel assignment strategies?
  - a) Efficient utilization of spectrum b) Increase of capacity
  - c) Minimize the interference d) Maximize the interference
- 12) Which of the following is not a property of spread spectrum techniques?
  - a) Interference rejection capability
  - b) Multipath fading
  - c) Frequency planning elimination
  - d) Multiple user, multiple access interface
- 13) Path loss in free space model is defined as difference of \_\_\_\_\_.
  - a) Effective transmitted power and gain
  - b) Effective received power and distance between T-R
  - c) Gain and received power
  - d) Effective transmitter power and receiver power
- 14) Which is the process of encoding information from a message source in suitable manner for transmission?
  - a) Modulation

b) Demodulation

c) Encryption

d) Decryption

| Seat           |   | Cat  |       |
|----------------|---|--|-------|
| No.            |   | Set  | Q     |
|                | B.E. (Part – I  | ) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology<br>MOBILE COMPUTING  |       |
| Day 8<br>Time: | Date: Saturday,14-1   | 2-2019 Max. Marks  | s: 56 |
| Instru         | <b>uctions:</b> 1) All questic<br>2) Figures to   | ons are compulsory.<br>the right indicate full marks.  |       |
|                |   | Section – I  |       |
| Q.2            | <ul> <li>Attempt any three</li> <li>a) What is handove</li> <li>b) Explain the signal</li> <li>c) What is multiplex</li> <li>d) What are the adv<br/>with cell clusters</li> <li>e) Explain all the be</li> </ul> | er? Explain all the scenarios in GSM?<br>al propagation with path loss of radio signals?<br>king? Draw and illustrate types of multiplexing?<br>vantages, disadvantages for cellular system also explain it<br>? | 12    |
| 0.2            | Drow and explain the  |  | 00    |
| Q.3            |   | OR   | 00    |
|                | Explain with neat diag  | gram the functional architecture of GPRS and WCDMA?  |       |
| Q.4            | <ul><li>Attempt any two</li><li>a) DSSS and FHSS</li><li>b) Antennas</li><li>c) Mobility Manager</li></ul>  | Sment  | 08    |
|                |   | Section – II   |       |
| Q.5            | <ul> <li>Attempt any three</li> <li>a) Explain the mech</li> <li>b) Illustrate with dia</li> <li>c) What is MANET,</li> <li>d) State and explain</li> <li>e) Explain the AOD</li> </ul>                           | nanism used in traditional TCP?<br>Igram the indirect TCP?<br>explain it with mobile IP?<br>n the challenges of wireless network?<br>V mobile Adhoc network?   | 12    |
| Q.6            | Draw and explain the  | system and protocol architecture of 802.11 standards?  | 08    |
|                | Explain with example  | all the mobility models in MANET?  |       |
| Q.7            | Attempt any two<br>a) Infrastructure and<br>b) cellular IP in mot   | d ad-hoc networks<br>bile computing  | 08    |

c) Location aided routing

**SLR-FM-382** 

# Set

Seat No.

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **MOBILE COMPUTING**

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if necessary.
- 3) Figure must be draw wherever necessary.

**MCQ/Objective Type Questions** 

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options.

- 1) Which of the following is not a property of spread spectrum techniques?
  - a) Interference rejection capability
  - b) Multipath fading
  - c) Frequency planning elimination
  - d) Multiple user, multiple access interface
- 2) Path loss in free space model is defined as difference of .
  - a) Effective transmitted power and gain
  - b) Effective received power and distance between T-R
  - c) Gain and received power
  - Effective transmitter power and receiver power d)
- Which is the process of encoding information from a message source in 3) suitable manner for transmission?
  - a) Modulation Demodulation b)
  - c) Encryption d) Decryption
- Which of the following specifies a set of media access control (MAC) and 4) physical layer specifications for implementing WLANs?
  - a) IEEE 802.16 **IEEE 802.3** b)
  - c) IEEE 802.11 d) **IEEE 802.15**
- What is borrowing strategy in fixed channel assignments? 5)
  - a) Borrowing channels from neighbouring cell
  - b) Borrowing channels from neighbouring cluster
  - c) Borrowing channels from same cell
  - d) Borrowing channels from other base station in same cell
- What is the case of reflection, in course of second medium being a perfect 6) dielectric?
  - Loss of energy during absorption a)
  - b) Total energy reflected back to first medium
  - c) No loss of energy in absorption
  - d) Total energy transmitted into second medium
- Frequency hopping involves a periodic change of transmission \_\_\_\_\_. 7)
  - Signal b) a) d)
  - Phase c)

- Frequency
  - Amplitude



14

Max. Marks: 70

- 8) Why neighbouring stations are assigned different group of channels in cellular system?
  - To minimize interference a)
  - To minimize area b)
  - To maximize throughput c)
  - d) To maximize capacity of each cell
- carries digitally encoded user data. 9)
  - a) Traffic channels

Control channels b)

**SLR-FM-382** 

Set R

- c) Signaling channels d) Forward channels
- 10) Which of the following antenna radiates power with unit gain uniformly in all directions?

b)

- Directional antenna a)
- b) Dipole antenna

Grid antenna

- Isotropic antenna d) Loop antenna C)
- 11) Which type of antenna is used for edge excited cells?
  - Omnidirectional antenna a)
  - C) Sectored directional antenna d) Dipole antenna
- 12) TDD is effective for \_\_\_\_\_.
  - Fixed wireless access and users are stationary a)
  - Dynamic wireless access and users are stationary b)
  - c) Fixed wireless access and users are moving
  - Dynamic wireless access and users are moving d)
- Dwell time does not depend on which of the following factor? 13)
  - Propagation a)
  - Interference b)
  - Distance between subscriber and base station C)
  - Mobile station d)
- 14) Which of the following is not an objective for channel assignment strategies?
  - Efficient utilization of spectrum a) b) Increase of capacity c)
    - Maximize the interference Minimize the interference d)

| 140.  |          |   |              |
|-------|----------|---|--------------|
|       |          | B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019<br>Information Technology                               | )            |
|       |          |   |              |
| Day   | & Da     | ate: Saturday,14-12-2019 Max  | (. Marks: 56 |
| lime  | e: 02    | ::30 PM To 05:30 PM   |              |
| Instr | ucti     | <ul><li>ions: 1) All questions are compulsory.</li><li>2) Figures to the right indicate full marks.</li></ul> |              |
|       |          | Section – I   |              |
| Q.2   | Att      | tempt any three   | 12           |
|       | a)       | What is handover? Explain all the scenarios in GSM?   |              |
|       | b)       | Explain the signal propagation with path loss of radio signals?   |              |
|       | c)       | What is multiplexing? Draw and illustrate types of multiplexing?  |              |
|       | d)       | What are the advantages, disadvantages for cellular system also expl with cell clusters?                      | ain it       |
|       | e)       | Explain all the benefits of wireless networks and mobile communication  | ons?         |
| Q.3   | Dra      | aw and explain the functional architecture of GSM?  | 08           |
|       |          | OR  |              |
|       | Ex       | plain with neat diagram the functional architecture of GPRS and WCDN  | IA?          |
| Q.4   | Att      | tempt any two   | 08           |
|       | a)       | DSSS and FHSS   |              |
|       | b)       | Antennas  |              |
|       | C)       | Mobility Management   |              |
|       |          | Section – II  |              |
| 0.5   | Δtt      | tempt any three   | 12           |
| Q.0   | a)       | Explain the mechanism used in traditional TCP?  | 12           |
|       | ⊆)<br>b) | Illustrate with diagram the indirect TCP?   |              |
|       | c)       | What is MANET, explain it with mobile IP?   |              |
|       | d)       | State and explain the challenges of wireless network?   |              |
|       | e)       | Explain the AODV mobile Adhoc network?  |              |
| Q.6   | Dra      | aw and explain the system and protocol architecture of 802.11 standard<br><b>OR</b>                           | s? <b>08</b> |
|       | Ex       | plain with example all the mobility models in MANET?  |              |
| Q.7   | Att      | tempt any two   | 08           |
|       | a)       | Infrastructure and ad-hoc networks  | 50           |
|       | b)       | cellular IP in mobile computing   |              |
|       | ,        |   |              |

c) Location aided routing

SLR-FM-382

Seat No. Set R

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology MOBILE COMPUTING

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Assume suitable data if necessary.
- 3) Figure must be draw wherever necessary.

**MCQ/Objective Type Questions** 

**Duration: 30 Minutes** 

Seat No.

#### Q.1 Choose the correct alternatives from the options.

- What is the case of reflection, in course of second medium being a perfect 1) dielectric?
  - Loss of energy during absorption a)
  - Total energy reflected back to first medium b)
  - No loss of energy in absorption c)
  - Total energy transmitted into second medium d)
- Frequency hopping involves a periodic change of transmission \_\_\_\_\_. 2)
  - Signal Frequency a) b)
  - C) Phase d) Amplitude
- 3) Why neighbouring stations are assigned different group of channels in cellular system?
  - To minimize interference a)
  - To minimize area b)
  - c) To maximize throughput
  - d) To maximize capacity of each cell

#### carries digitally encoded user data. 4) Control channels

- Traffic channels a)
  - Signaling channels d) Forward channels

b)

b)

- Which of the following antenna radiates power with unit gain uniformly in 5) all directions?
  - Directional antenna a) b)
  - Isotropic antenna c) d)
- 6) Which type of antenna is used for edge excited cells?
  - a) Omnidirectional antenna
  - c) Sectored directional antenna d) Dipole antenna
- 7) TDD is effective for

C)

- Fixed wireless access and users are stationary a)
- Dynamic wireless access and users are stationary b)
- C) Fixed wireless access and users are moving
- Dynamic wireless access and users are moving d)

Max. Marks: 70

SLR-FM-382

Marks: 14

14

Dipole antenna



Grid antenna

- 8) Dwell time does not depend on which of the following factor?
  - a) Propagation
  - b) Interference
  - c) Distance between subscriber and base station
  - d) Mobile station
- 9) Which of the following is not an objective for channel assignment strategies?
  - a) Efficient utilization of spectrum b) Increase of capacity
  - c) Minimize the interference d) Maximize the interference
- 10) Which of the following is not a property of spread spectrum techniques?
  - a) Interference rejection capability
  - b) Multipath fading
  - c) Frequency planning elimination
  - d) Multiple user, multiple access interface
- 11) Path loss in free space model is defined as difference of \_\_\_\_\_.
  - a) Effective transmitted power and gain
  - b) Effective received power and distance between T-R
  - c) Gain and received power
  - d) Effective transmitter power and receiver power
- 12) Which is the process of encoding information from a message source in suitable manner for transmission?
  - a) Modulation b) Demodulation
  - c) Encryption d) Decryption
- 13) Which of the following specifies a set of media access control (MAC) and physical layer specifications for implementing WLANs?
  - a) IEEE 802.16 b) IEEE 802.3
  - c) IEEE 802.11 d) IEEE 802.15
- 14) What is borrowing strategy in fixed channel assignments?
  - a) Borrowing channels from neighbouring cell
  - b) Borrowing channels from neighbouring cluster
  - c) Borrowing channels from same cell
  - d) Borrowing channels from other base station in same cell

Set S

|             |                                   | B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2  | 2019                          |
|-------------|-----------------------------------|---|-------------------------------|
|             |                                   | MOBILE COMPUTING  |                               |
| Day<br>Time | & Da<br>e: 02                     | ate: Saturday,14-12-2019<br>:30 PM To 05:30 PM  | Max. Marks: 56                |
| Instr       | ucti                              | <ul><li>ons: 1) All questions are compulsory.</li><li>2) Figures to the right indicate full marks.</li></ul>  |                               |
|             |                                   | Section – I   |                               |
| Q.2         | Att<br>a)<br>b)<br>c)<br>d)<br>e) | what is handover? Explain all the scenarios in GSM?<br>Explain the signal propagation with path loss of radio signals?<br>What is multiplexing? Draw and illustrate types of multiplexing?<br>What are the advantages, disadvantages for cellular system also<br>with cell clusters?<br>Explain all the benefits of wireless networks and mobile commun | 12<br>explain it<br>ications? |
| Q.3         | Dra                               | aw and explain the functional architecture of GSM?  | 08                            |
|             | Ex                                | olain with neat diagram the functional architecture of GPRS and W   | CDMA?                         |
| Q.4         | Att                               | empt any two  | 08                            |
|             | a)                                | DSSS and FHSS   |                               |
|             | ы)<br>С)                          | Mobility Management   |                               |
|             | -                                 | Section – II  |                               |
| Q.5         | Att<br>a)<br>b)<br>c)<br>d)<br>e) | empt any three<br>Explain the mechanism used in traditional TCP?<br>Illustrate with diagram the indirect TCP?<br>What is MANET, explain it with mobile IP?<br>State and explain the challenges of wireless network?<br>Explain the AODV mobile Adhoc network?   | 12                            |
| Q.6         | Dra                               | aw and explain the system and protocol architecture of 802.11 star<br>OR  | idards? 08                    |
| 07          |                                   |   |                               |
| Q./         | Att<br>a)<br>b)                   | Infrastructure and ad-hoc networks<br>cellular IP in mobile computing   | 08                            |

c) Location aided routing

**SLR-FM-382** Set S

Seat No.

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **DATA MINING**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer Book.

2) Figures to the right indicate full marks.

# **MCQ/Objective Type Questions**

#### Duration: 30 Minutes Marks: 14 Choose the correct alternatives from the options. 1) Which of the following is not a data mining functionality? Characterization and Discrimination a) b) Classification and regression c) Selection and interpretation **Clustering and Analysis** d) 2) is a summarization of the general characteristics or features of a target class of data. Data Characterization b) Data Classification a) c) Data discrimination d) Data selection 3) The various aspects of data mining methodologies is/are \_\_\_\_\_. Mining various and new kinds of knowledge i) Mining knowledge in multidimensional space ii) Pattern evaluation and pattern or constraint-guided mining iii) iv) Handling uncertainty, noise, or incompleteness of data i. ii and iv only b) ii. iii and iv only a) c) i. II and iii only d) All i. ii. iii and iv 4) The full form of KDD is Knowledge Database b) Knowledge Discovery Database a) Knowledge Data House d) Knowledge Data Definition c) 5) Which of the following activities is NOT a data mining task? Predicting the future stock price of a company using historical records a) Monitoring and predicting failures in a hydropower plant b) Extracting the frequencies of a sound wave C) Monitoring the heart rate of a patient for abnormalities d) 6) Which of the following is not a data pre-processing methods?

- The difference between supervised learning and unsupervised learning is 7) given by \_\_\_\_\_.
  - unlike unsupervised learning, supervised learning needs labeled data a)

b) Data Discretization

d) Data Reduction

- unlike unsupervised learning, supervised learning can be used to b) detect outliers
- there is no difference c)

Data Cleaning

Data Visualization

a)

c)

unlike supervised leaning, unsupervised learning can form new d) classes

Max. Marks: 70

**SLR-FM-383** 

# Seat

No.

Q.1

Set P

- 8) Which data mining task can be used for predicting wind velocities as a function of temperature, humidity, air pressure, etc.?
  - a) Cluster Analysis
- b) Regression

c) Classification

- d) Regressiond) Sequential pattern discovery
- d) Seque
- 9) The number of iterations in Apriori \_\_\_\_
  - a) increases with the size of the data
  - b) decreases with the increase in size of the data
  - c) increases with the size of the maximum frequent set
  - d) decreases with increase in size of the maximum frequent set
- 10) Which of the following are interestingness measures for association rules?

b) lift

- a) recall
  - accuracy d) compactness
- 11) This clustering algorithm terminates when mean values computed for the current iteration of the algorithm are identical to the computed mean values for the previous iteration
  - a) K-Means clustering
- b) conceptual clusteringd) agglomerative clustering
- c) expectation maximization
- 12) If a customer is spending more than expected, the customer's intrinsic value is \_\_\_\_\_ their actual value.
  - a) greater than

c)

a)

- b) less than
- c) less than or equal to
- d) equal to
- 13) A data mining algorithm is unstable if \_\_\_\_\_

creating a target dataset

- a) test set accuracy depends on the ordering of test set instances
- b) the algorithm builds models unable to classify outliers
- c) the algorithm is highly sensitive to small changes in the training data
- d) test set accuracy depends on the choice of input attributes
- 14) This step of the KDD process model deals with noisy data \_\_\_\_\_
  - b) data preprocessing
  - c) data transformation
- d) data mining

| No.            |                        |   |   |  |                    | Set        | Ρ     |
|----------------|------------------------|---|---|--|--------------------|------------|-------|
|                |                        | B.E. (Part – I)   | (New) (CBCS)<br>Information<br>DATA   | ) Examinati<br>1 Technolog<br>MINING   | on Nov/Dec-2<br>Jy | 019        |       |
| Day 8<br>Time: | & Dat<br>02:3          | te: Tuesday, 17-1<br>30 PM To 05:30 P   | 2-2019<br>M   |  |                    | Max. Marks | :: 56 |
| Instru         | uctio                  | ons: 1) All questio<br>2) Figures to  | ns are compulso<br>the right indicate   | y.<br>full marks.                      |                    |            |       |
|                |                        |   | Sec   | tion – I                               |                    |            |       |
| Q.2            | Atte<br>a)<br>b)<br>c) | <b>mpt any three.</b><br>What are major<br>What are major<br>What are the iss   | ssues in data mii<br>asks in Data Pre<br>ues in classificati                  | ning?<br>processing?<br>on? Explain wi | th example.        |            | 12    |
| Q.3            | Attea)                 | <ul> <li>mpt any two.</li> <li>Use a flowchart selection:</li> <li>1) stepwise for</li> <li>2) stepwise ba</li> <li>3) a combination</li> </ul> | to summarize the<br>ward selection<br>ckward eliminatic<br>on of forward sele | following proc                         | edures for attribu | te subset  | 16    |
|                | с)                     | Explain with an example   | example Bayesia   | n classification                       | лт.                |            |       |
|                | -                      |   | Sect  | ion – II                               |                    |            |       |
| Q.4            | Atte<br>a)<br>b)<br>c) | <b>mpt any three</b><br>How do you mea<br>What are advane<br>Explain - Harves   | isure the quality o<br>ced association ro<br>t System.                        | of rules?<br>ule techniques            | ?                  |            | 12    |
| Q.5            | Atte<br>a)<br>b)<br>c) | <b>mpt any two</b><br>What do you me<br>Give examples f<br>Explain sampling   | an by partitioning<br>or different cluste<br>g algorithm with a               | ?<br>ring attributes<br>n example.     |                    |            | 16    |

**SLR-FM-383** 

# Seat

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA MINING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer Book.

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

Duration: 30 Minutes

#### Q.1 Choose the correct alternatives from the options.

- 1) Which data mining task can be used for predicting wind velocities as a function of temperature, humidity, air pressure, etc.?
  - Cluster Analysis a) b) Regression
  - c) Classification d) Sequential pattern discovery
- 2) The number of iterations in Apriori
  - increases with the size of the data a)
  - b) decreases with the increase in size of the data
  - C) increases with the size of the maximum frequent set
  - decreases with increase in size of the maximum frequent set d)
- Which of the following are interestingness measures for association rules? 3)

b) lift

- a) recall
- c) accuracy d) compactness
- 4) This clustering algorithm terminates when mean values computed for the current iteration of the algorithm are identical to the computed mean values for the previous iteration b) conceptual clustering
  - K-Means clustering a)
  - expectation maximization d) agglomerative clustering C)
- If a customer is spending more than expected, the customer's intrinsic 5) value is their actual value.
  - a) greater than b) less than
  - less than or equal to C) d) equal to
- 6) A data mining algorithm is unstable if
  - test set accuracy depends on the ordering of test set instances a)
  - the algorithm builds models unable to classify outliers b)
  - the algorithm is highly sensitive to small changes in the training data c)
  - test set accuracy depends on the choice of input attributes d)
- 7) This step of the KDD process model deals with noisy data b) data preprocessing
  - creating a target dataset a) data transformation c)
- d) data mining
- Which of the following is not a data mining functionality? 8)
  - Characterization and Discrimination a)
  - Classification and regression b)
  - Selection and interpretation c)
  - **Clustering and Analysis** d)



Set



Marks: 14

Set Q

- 9) \_\_\_\_\_ is a summarization of the general characteristics or features of a target class of data.
  - a) Data Characterization
- b) Data Classificationd) Data selection
- c) Data discrimination
- 10) The various aspects of data mining methodologies is/are \_\_\_\_\_.
  - i) Mining various and new kinds of knowledge
  - ii) Mining knowledge in multidimensional space
  - iii) Pattern evaluation and pattern or constraint-guided mining
  - iv) Handling uncertainty, noise, or incompleteness of data
  - a) i. ii and iv onlyc) i. II and iii only

- b) ii. iii and iv only
- d) All i. ii. iii and iv
- 11) The full form of KDD is \_\_\_\_\_
  - a) Knowledge Database
  - c) Knowledge Data House
- b) Knowledge Discovery Database
- d) Knowledge Data Definition
- 12) Which of the following activities is NOT a data mining task?
  - a) Predicting the future stock price of a company using historical records
  - b) Monitoring and predicting failures in a hydropower plant
  - c) Extracting the frequencies of a sound wave
  - d) Monitoring the heart rate of a patient for abnormalities
- 13) Which of the following is not a data pre-processing methods?
  - a) Data Visualization b) Data Discretization
  - c) Data Cleaning d) Data Reduction
- 14) The difference between supervised learning and unsupervised learning is given by \_\_\_\_\_.
  - a) unlike unsupervised learning, supervised learning needs labeled data
  - b) unlike unsupervised learning, supervised learning can be used to detect outliers
  - c) there is no difference
  - d) unlike supervised leaning, unsupervised learning can form new classes

# B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019

## Information Technology **DATA MINING**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

# **Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

# Q.2 Attempt any three.

- What are major issues in data mining? a)
- What are major tasks in Data Preprocessing? b)
- What are the issues in classification? Explain with example. c)

#### Q.3 Attempt any two.

- Use a flowchart to summarize the following procedures for attribute subset a) selection:
  - 1) stepwise forward selection
  - 2) stepwise backward elimination
  - a combination of forward selection and backward elimination 3)
- Give an example of classification using prediction. b)
- Explain with an example Bayesian classification. C)

## Section – II

| Q.4 | Att | empt any three                                 | 12 |
|-----|-----|--|----|
|     | a)  | How do you measure the quality of rules?       |    |
|     | b)  | What are advanced association rule techniques? |    |
|     | c)  | Explain - Harvest System.                      |    |
| Q.5 | Att | empt any two                                   | 16 |

- What do you mean by partitioning? a)
- Give examples for different clustering attributes. b)
- Explain sampling algorithm with an example. C)

**SLR-FM-383** 

Set

Max. Marks: 56

12

16

Seat No.

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA MINING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer Book.

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

# Q.1 Choose the correct alternatives from the options.

- 1) Which of the following activities is NOT a data mining task?
  - a) Predicting the future stock price of a company using historical records
  - b) Monitoring and predicting failures in a hydropower plant
  - c) Extracting the frequencies of a sound wave
  - d) Monitoring the heart rate of a patient for abnormalities
- 2) Which of the following is not a data pre-processing methods?a) Data Visualizationb) Data Discretization
  - a) Data Visualizationc) Data Cleaning
- d) Data Reduction
- 3) The difference between supervised learning and unsupervised learning is given by \_\_\_\_\_.
  - a) unlike unsupervised learning, supervised learning needs labeled data
  - b) unlike unsupervised learning, supervised learning can be used to detect outliers
  - c) there is no difference
  - d) unlike supervised leaning, unsupervised learning can form new classes
- 4) Which data mining task can be used for predicting wind velocities as a function of temperature, humidity, air pressure, etc.?
  - a) Cluster Analysis

Classification

c)

C)

- b) Regression
- d) Sequential pattern discovery
- 5) The number of iterations in Apriori
  - a) increases with the size of the data
  - b) decreases with the increase in size of the data
  - c) increases with the size of the maximum frequent set
  - d) decreases with increase in size of the maximum frequent set
- 6) Which of the following are interestingness measures for association rules?
  - a) recall b) lift
  - c) accuracy d) compactness
- 7) This clustering algorithm terminates when mean values computed for the current iteration of the algorithm are identical to the computed mean values for the previous iteration
  - a) K-Means clustering
    - b) conceptual clustering
    - expectation maximization d) agglomerative clustering

Set

# Max. Marks: 70

Marks: 14

Set R

- 8) If a customer is spending more than expected, the customer's intrinsic value is \_\_\_\_\_ their actual value.
  - greater than a)

- b) less than
- less than or equal to d) equal to C)
- 9) A data mining algorithm is unstable if \_\_\_\_\_.
  - test set accuracy depends on the ordering of test set instances a)
  - the algorithm builds models unable to classify outliers b)
  - the algorithm is highly sensitive to small changes in the training data c)
  - test set accuracy depends on the choice of input attributes d)
- This step of the KDD process model deals with noisy data \_\_\_\_ 10)
  - creating a target dataset a)
- b) data preprocessing
- data transformation d) data mining c)
- 11) Which of the following is not a data mining functionality?
  - Characterization and Discrimination a)
  - Classification and regression b)
  - Selection and interpretation c)
  - d) Clustering and Analysis
- \_\_\_\_\_ is a summarization of the general characteristics or features of a 12) target class of data.
  - a) Data Characterization
- b) Data Classification
- c) Data discrimination
- d) Data selection
- The various aspects of data mining methodologies is/are \_\_\_\_\_. 13) Mining various and new kinds of knowledge i)
  - Mining knowledge in multidimensional space ii)
  - iii) Pattern evaluation and pattern or constraint-guided mining
  - Handling uncertainty, noise, or incompleteness of data iv)
  - i. ii and iv only a)
  - c) i. II and iii only

- b) ii. iii and iv only d) All i. ii. iii and iv
- The full form of KDD is \_\_\_\_ 14)
  - Knowledge Database a)
  - Knowledge Data House c)
- b) Knowledge Discovery Database
- d) Knowledge Data Definition

| Sea<br>No.  | t                      |  |  |   | Set                                   | R    |
|-------------|------------------------|--|--|---|---------------------------------------|------|
|             |                        | B.E. (Part – I)  | (New) (CBCS)<br>Information<br>DATA N  | Examination No<br>Technology<br>/INING  | ov/Dec-2019                           |      |
| Day<br>Time | & Da<br>e: 02:         | ate: Tuesday, 17-1<br>30 PM To 05:30 F   | 2-2019<br>M  |   | Max. Marks                            | 56 : |
| Instr       | uctio                  | ons: 1) All questic<br>2) Figures to   | ns are compulsory the right indicate for   | ull marks.  |                                       |      |
|             |                        |  | Sectio   | on – I  |                                       |      |
| Q.2         | Atte<br>a)<br>b)<br>c) | empt any three.<br>What are major<br>What are major<br>What are the iss  | issues in data minii<br>tasks in Data Prepr<br>ues in classificatior   | ng?<br>ocessing?<br>n? Explain with exa   | mple.                                 | 12   |
| Q.3         | Atte<br>a)<br>b)<br>c) | <ul> <li>empt any two.</li> <li>Use a flowchart selection:</li> <li>1) stepwise for</li> <li>2) stepwise ba</li> <li>3) a combination</li> <li>Give an example</li> <li>Explain with an example</li> </ul> | to summarize the for<br>ward selection<br>ckward elimination<br>on of forward select<br>of classification us<br>example Bayesian | ollowing procedures<br>tion and backward<br>sing prediction.<br>classification. | s for attribute subset<br>elimination | 16   |
|             |                        |  | Sectio   | on – II   |                                       |      |
| Q.4         | Atte<br>a)<br>b)<br>c) | empt any three<br>How do you mea<br>What are advan<br>Explain - Harves   | asure the quality of<br>ced association rule<br>t System.  | rules?<br>e techniques?   |                                       | 12   |
| Q.5         | Atte<br>a)<br>b)<br>c) | empt any two<br>What do you me<br>Give examples f<br>Explain sampling  | an by partitioning?<br>or different clustering<br>g algorithm with an  | ng attributes.<br>example.  |                                       | 16   |

**SLR-FM-383** 

## B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DATA MINING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer Book.

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

Duration: 30 Minutes

a)

#### Q.1 Choose the correct alternatives from the options.

- 1) Which of the following are interestingness measures for association rules?
  - recall b) lift a) C) accuracy d) compactness
- This clustering algorithm terminates when mean values computed for the 2) current iteration of the algorithm are identical to the computed mean values for the previous iteration
  - a) K-Means clustering
  - expectation maximization c)
- If a customer is spending more than expected, the customer's intrinsic 3) value is their actual value.
  - greater than a)
  - c) less than or equal to d) equal to
- 4) A data mining algorithm is unstable if \_\_\_\_\_
  - test set accuracy depends on the ordering of test set instances a)
  - the algorithm builds models unable to classify outliers b)
  - the algorithm is highly sensitive to small changes in the training data C)
  - test set accuracy depends on the choice of input attributes d)

#### 5) This step of the KDD process model deals with noisy data creating a target dataset b) data preprocessing

- c) data transformation d) data mining
- Which of the following is not a data mining functionality? 6)
  - Characterization and Discrimination a)
  - Classification and regression b)
  - Selection and interpretation c)
  - d) Clustering and Analysis
- 7) is a summarization of the general characteristics or features of a target class of data.
  - Data Characterization a) Data discrimination c)
- b) Data Classification

b) conceptual clustering

b) less than

d) agglomerative clustering

d) Data selection

Set

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> Marks: 14 14

#### 8) The various aspects of data mining methodologies is/are

- Mining various and new kinds of knowledge i)
- Mining knowledge in multidimensional space ii)
- iii) Pattern evaluation and pattern or constraint-guided mining
- Handling uncertainty, noise, or incompleteness of data iv)
- i. ii and iv only a)
- i. II and iii only C)

9)

a)

The full form of KDD is \_\_\_\_\_.

Knowledge Database

- b) Knowledge Discovery Database
- Knowledge Data House c) d) Knowledge Data Definition
- 10) Which of the following activities is NOT a data mining task?
  - Predicting the future stock price of a company using historical records a)
  - Monitoring and predicting failures in a hydropower plant b)
  - Extracting the frequencies of a sound wave c)
  - Monitoring the heart rate of a patient for abnormalities d)
- 11) Which of the following is not a data pre-processing methods?
  - Data Visualization a)
  - Data Cleaning c)
- 12) The difference between supervised learning and unsupervised learning is aiven by
  - unlike unsupervised learning, supervised learning needs labeled data a)
  - unlike unsupervised learning, supervised learning can be used to b) detect outliers
  - there is no difference C)
  - unlike supervised leaning, unsupervised learning can form new d) classes
- Which data mining task can be used for predicting wind velocities as a 13) function of temperature, humidity, air pressure, etc.?
  - Cluster Analysis a)

c) Classification

- b) Regression
- d) Sequential pattern discovery
- 14) The number of iterations in Apriori
  - increases with the size of the data a)
  - b) decreases with the increase in size of the data
  - increases with the size of the maximum frequent set c)
  - decreases with increase in size of the maximum frequent set d)

# SLR-FM-383

Set S

- b) Data Discretization

b) ii. iii and iv only

d) All i. ii. iii and iv

d) Data Reduction

| Sea<br>No.  | t                     |  |  |  | Set                     | S        |
|-------------|-----------------------|--|--|--|-------------------------|----------|
|             |                       | B.E. (Part – I   | (New) (CBCS) E<br>Information T<br>DATA M  | Examination Nov/De<br>echnology<br>INING   | c-2019                  |          |
| Day<br>Time | & Da<br>e: 02:        | ate: Tuesday, 17-1<br>:30 PM To 05:30 F  | 2-2019<br>M  |  | Max. Marks              | 56 ;: 56 |
| Instr       | ucti                  | ons: 1) All questic<br>2) Figures to   | ns are compulsory.<br>the right indicate ful   | l marks.   |                         |          |
|             |                       |  | Section  | n – I  |                         |          |
| Q.2         | Att<br>a)<br>b)<br>c) | empt any three.<br>What are major<br>What are major<br>What are the iss  | issues in data mining<br>tasks in Data Prepro<br>ues in classification   | g?<br>cessing?<br>? Explain with example.  |                         | 12       |
| Q.3         | Att                   | empt any two.  |  |  |                         | 16       |
|             | a)<br>b)<br>c)        | Use a flowchart<br>selection:<br>1) stepwise for<br>2) stepwise ba<br>3) a combinati<br>Give an example<br>Explain with an | to summarize the for<br>ward selection<br>ckward elimination<br>on of forward selecti<br>e of classification usi<br>example Bayesian c | lowing procedures for at<br>on and backward elimina<br>ng prediction.<br>assification. | tribute subset<br>ation |          |
|             |                       |  | Section  | n – II   |                         |          |
| Q.4         | Att<br>a)<br>b)<br>c) | empt any three<br>How do you mea<br>What are advan<br>Explain - Harves   | asure the quality of r<br>ced association rule<br>st System.   | ules?<br>techniques?   |                         | 12       |
| Q.5         | Att<br>a)<br>b)<br>c) | empt any two<br>What do you me<br>Give examples f<br>Explain sampling  | an by partitioning?<br>or different clustering<br>g algorithm with an e  | g attributes.<br>xample.   |                         | 16       |

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# Seat No.

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **DISTRIBUTED COMPUTING**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options.

In distributed systems, link and site failure is detected by \_\_\_\_ 1) Handshaking

- polling a)
- b) c) token passing d) none of these
- Logical extension of computation migration is 2)
  - system migration a) process migration b)
  - c) thread migration data migration d)
- 3) Which are the two complementary deadlock-prevention schemes using timestamps?
  - The wait-die & wound-wait scheme a)
  - The wait-n-watch scheme b)
  - The wound-wait scheme c)
  - d) The wait-wound & wound-wait scheme
- For proper synchronization in distributed systems . 4)
  - a) prevention from the deadlock is must
  - b) prevention from the starvation is must
  - c) prevention from the deadlock & starvation is must
  - d) none of the mentioned
- 5) Single coordinator approach has the following disadvantages \_\_\_\_ a) Bottleneck
  - Slow response b)
  - c) Deadlock d) One request per second
- 6) The file once created cannot be changed is called
  - a) Immutable file Mutable file c)
- Mutex file b)
- d) None of these
- 7) What are the different ways in which clients and servers are dispersed across machines?
  - a) Servers may not run on dedicated machines
  - b) Servers and clients can be on same machines
  - c) Distribution cannot be interposed between an OS and the file system
  - d) OS cannot be distributed with the file system a part of that distribution

Marks: 14

14

Max. Marks: 70

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- 8) What are the characteristics of stateless server?
  - a) Easier to implement
  - b) They are not fault-tolerant upon client or server failures
  - They store all information file server c)
  - d) They are redundant to keep data safe
- 9) What are not the characteristics of a DFS?
  - a) Login transparency and access transparency
  - b) Files need not contain information about their physical location
  - c) No Multiplicity of users
  - d) No Multiplicity if files
- 10) What are the characteristics of tightly coupled system?
  - Different clock i)
  - ii) Use communication links
  - iii) Same clock
  - iv) Distributed systems
  - b) a) i c) i, ii and iii
    - d) ii, iii and iv

i and iv

- The Zero Capacity queue \_\_\_\_\_. 11)
  - a) is referred to as a message system with buffering
  - b) is referred to as a message system with no buffering
  - c) is referred to as a link
  - d) none of the mentioned
- 12) What is not a major reason for building distributed systems?
  - a) Resource sharing
- Computation speedup b) Simplicity d)
- 13) Bounded capacity and Unbounded capacity queues are referred to as \_\_\_\_\_.
  - Programmed buffering a) User defined buffering
- Automatic buffering b) d) No buffering
- According to the ring algorithm, links between processes are \_\_\_\_\_. 14)
  - Bidirectional a)

c) Reliability

c)

- b) Unidirectional
- c) Both bidirectional and unidirectional
- d) None of these

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# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DISTRIBUTED COMPUTING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
  - 3) Assume suitable data if necessary.
  - 4) Figures must be draw wherever necessary.

### Section – I

## Q.2 Attempt any three

- a) Describe all the issue for designing distributed computing.
- b) Draw and explain all the buffering mechanisms for message passing.
- c) State and explain the call semantics of RPC.
- **d)** Draw and explain the implementation of logical clocks by using counters and physical clocks.
- **Q.3 a)** What is process migration? Describe desirable features of a good process **08** migration.

### OR

Explain with example the client server binding in distributed environment.

**Q.4** Explain in detail with example failure handling in MPS.

# Section – II

# Q.5 Solve any three

- a) Explain the consistency models of shared memory.
- b) Describe classification of mutual exclusion algorithms and its preliminaries.
- c) Explain with example the algorithm for implementing Distributed Shared Memory.
- d) Explain in detail log structured file system.
- Q.6 a) Explain with example Lamport and Recart-Agrawala algorithms.
   OR
   Explain all the machanisms for building Distributed File System

Explain all the mechanisms for building Distributed File System.

**Q.7** State and describe design issues of Distributed Shared Memory.



Max. Marks: 56

12

**08** 

**08** 

# SLR-FM-384 Set

Seat No.

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **DISTRIBUTED COMPUTING**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Duration: 30 Minutes** 

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

#### Q.1 Choose the correct alternatives from the options.

- What are the characteristics of stateless server? 1)
  - Easier to implement a)
  - b) They are not fault-tolerant upon client or server failures
  - They store all information file server C)
  - d) They are redundant to keep data safe
- 2) What are not the characteristics of a DFS?
  - a) Login transparency and access transparency
  - b) Files need not contain information about their physical location
  - c) No Multiplicity of users
  - d) No Multiplicity if files
- 3) What are the characteristics of tightly coupled system?
  - **Different clock**
  - ii) Use communication links
  - iii) Same clock
  - Distributed systems iv)
  - a) i

i)

- b) c) i, ii and iii ii, iii and iv d)
- 4) The Zero Capacity queue \_\_\_\_\_.
  - a) is referred to as a message system with buffering
  - b) is referred to as a message system with no buffering
  - c) is referred to as a link
  - d) none of the mentioned
- What is not a major reason for building distributed systems? 5)
  - a) Resource sharing Computation speedup b)

i and iv

- c) Reliability d) Simplicity
- Bounded capacity and Unbounded capacity gueues are referred to as 6)
  - Programmed buffering b) Automatic buffering a)
  - User defined buffering d) No buffering c)
- 7) According to the ring algorithm, links between processes are \_\_\_\_\_.
  - **Bidirectional** a)
  - b) Unidirectional
  - c) Both bidirectional and unidirectional
  - d) None of these

Max. Marks: 70

Marks: 14
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|------|------------------------------|-----------------|------------------|-----------|
|      |                              |                 |                  | Set C     |
| In d | distributed systems, link ar | nd site failure | e is detected by |           |
| a)   | polling                      | b)              | Handshaking      |           |
| c)   | token passing                | d)              | none of these    |           |
| Log  | gical extension of computa   | tion migratio   | on is            |           |
| a)   | process migration            | b)              | system migration |           |
| c)   | thread migration             | d)              | data migration   |           |
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- 10) Which are the two complementary deadlock-prevention schemes using timestamps?
  - a) The wait-die & wound-wait scheme
  - b) The wait-n-watch scheme

8)

9)

- c) The wound-wait scheme
- d) The wait-wound & wound-wait scheme
- 11) For proper synchronization in distributed systems .
  - a) prevention from the deadlock is must
  - b) prevention from the starvation is must
  - c) prevention from the deadlock & starvation is must
  - d) none of the mentioned

a) Immutable file

- 12) Single coordinator approach has the following disadvantages \_\_\_\_\_.
  - a) Bottleneck Slow response b)
  - c) Deadlock d) One request per second
- 13) The file once created cannot be changed is called
  - b) Mutex file
  - c) Mutable file d) None of these
- 14) What are the different ways in which clients and servers are dispersed across machines?
  - a) Servers may not run on dedicated machines
  - b) Servers and clients can be on same machines
  - c) Distribution cannot be interposed between an OS and the file system
  - d) OS cannot be distributed with the file system a part of that distribution

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### B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DISTRIBUTED COMPUTING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
  - 3) Assume suitable data if necessary.
  - 4) Figures must be draw wherever necessary.

#### Section – I

#### Q.2 Attempt any three

- a) Describe all the issue for designing distributed computing.
- b) Draw and explain all the buffering mechanisms for message passing.
- c) State and explain the call semantics of RPC.
- **d)** Draw and explain the implementation of logical clocks by using counters and physical clocks.
- **Q.3 a)** What is process migration? Describe desirable features of a good process **08** migration.

#### OR

Explain with example the client server binding in distributed environment.

**Q.4** Explain in detail with example failure handling in MPS.

#### Section – II

#### Q.5 Solve any three

- a) Explain the consistency models of shared memory.
- b) Describe classification of mutual exclusion algorithms and its preliminaries.
- c) Explain with example the algorithm for implementing Distributed Shared Memory.
- d) Explain in detail log structured file system.
- Q.6 a) Explain with example Lamport and Recart-Agrawala algorithms. 08 OR

Explain all the mechanisms for building Distributed File System.

**Q.7** State and describe design issues of Distributed Shared Memory.



Max. Marks: 56

12

**08** 

**08** 

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

**DISTRIBUTED COMPUTING** 

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

c)

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No.

#### Q.1 Choose the correct alternatives from the options.

1) Single coordinator approach has the following disadvantages \_

Bottleneck a) Deadlock

- Slow response b) d)
  - One request per second
- The file once created cannot be changed is called 2)
  - Immutable file b) Mutex file a)
  - Mutable file None of these d) C)
- 3) What are the different ways in which clients and servers are dispersed across machines?
  - Servers may not run on dedicated machines a)
  - Servers and clients can be on same machines b)
  - Distribution cannot be interposed between an OS and the file system c)
  - OS cannot be distributed with the file system a part of that distribution d)
- 4) What are the characteristics of stateless server?
  - Easier to implement a)
  - They are not fault-tolerant upon client or server failures b)
  - They store all information file server C)
  - d) They are redundant to keep data safe
- 5) What are not the characteristics of a DFS?
  - Login transparency and access transparency a)
  - Files need not contain information about their physical location b)
  - No Multiplicity of users C)
  - No Multiplicity if files d)
- 6) What are the characteristics of tightly coupled system?
  - **Different clock** i)
  - Use communication links ii)
  - Same clock iii)
  - iv) **Distributed systems**
  - a) i
  - i, ii and iii c)

- i and iv b)
- d) ii, iii and iv

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Marks: 14 14

- SLR-FM-384 Set | R 7) The Zero Capacity queue . a) is referred to as a message system with buffering b) is referred to as a message system with no buffering c) is referred to as a link d) none of the mentioned 8) What is not a major reason for building distributed systems? a) Resource sharing b) Computation speedup c) Reliability Simplicity d) 9) Bounded capacity and Unbounded capacity queues are referred to as \_\_\_\_\_. a) Programmed buffering b) Automatic buffering c) User defined buffering d) No buffering 10) According to the ring algorithm, links between processes are \_\_\_\_\_. a) Bidirectional b) Unidirectional c) Both bidirectional and unidirectional d) None of these 11) In distributed systems, link and site failure is detected by \_\_\_\_\_. a) polling b) Handshaking c) token passing none of these d) Logical extension of computation migration is \_ 12) a) process migration b) system migration c) thread migration data migration d) 13) Which are the two complementary deadlock-prevention schemes using timestamps? a) The wait-die & wound-wait scheme b) The wait-n-watch scheme c) The wound-wait scheme
  - d) The wait-wound & wound-wait scheme
- 14) For proper synchronization in distributed systems \_\_\_\_\_.
  - a) prevention from the deadlock is must
  - b) prevention from the starvation is must
  - c) prevention from the deadlock & starvation is must
  - d) none of the mentioned

| Seat |  |
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#### B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DISTRIBUTED COMPUTING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
  - 3) Assume suitable data if necessary.
  - 4) Figures must be draw wherever necessary.

#### Section – I

#### Q.2 Attempt any three

- a) Describe all the issue for designing distributed computing.
- b) Draw and explain all the buffering mechanisms for message passing.
- c) State and explain the call semantics of RPC.
- **d)** Draw and explain the implementation of logical clocks by using counters and physical clocks.
- **Q.3 a)** What is process migration? Describe desirable features of a good process **08** migration.

#### OR

Explain with example the client server binding in distributed environment.

**Q.4** Explain in detail with example failure handling in MPS.

#### Section – II

#### Q.5 Solve any three

- a) Explain the consistency models of shared memory.
- b) Describe classification of mutual exclusion algorithms and its preliminaries.
- c) Explain with example the algorithm for implementing Distributed Shared Memory.
- d) Explain in detail log structured file system.
- Q.6 a) Explain with example Lamport and Recart-Agrawala algorithms. 08 OR

Explain all the mechanisms for building Distributed File System.

**Q.7** State and describe design issues of Distributed Shared Memory.



Max. Marks: 56

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| Day<br>Time | & Date<br>: 02:3  | e: Tu<br>0 PN                              | uesday, 17-12-2019<br>// To 05:30 PM   |                                |                       | Ν  | /lax. Marks: 70 |
| Instr       | uctio             | ns:  | <ol> <li>Q. No. 1 is compulsory a<br/>Book.</li> <li>Figures to the right indication</li> <li>Assume suitable data if it</li> </ol>                                | ind sho<br>ate full<br>necessa | uld b<br>marl<br>ary. | e solved in first 30 minu<br>ks.                               | ites in answer  |
|             |                   |  | MCQ/Object   | ive Ty                         | pe (                  | Questions  |                 |
| Dura        | tion: 3           | 80 M                                       | inutes   | -                              | -                     |  | Marks: 14       |
| Q.1         | <b>Choo</b><br>1) | wh<br>i)<br>ii)<br>iii)<br>iv)<br>a)<br>c) | the correct alternatives finat are the characteristics of<br>Different clock<br>Use communication links<br>Same clock<br>Distributed systems<br>i<br>i, ii and iii | rom the                        | b)                    | tions.<br>pled system?<br>i and iv<br>ii, iii and iv           | 14              |
|             | 2)                | The<br>a)<br>b)<br>c)<br>d)                | e Zero Capacity queue<br>is referred to as a messag<br>is referred to as a messag<br>is referred to as a link<br>none of the mentioned                             | <br>ge syste<br>ge syste       | em v<br>em v          | <i>v</i> ith buffering<br><i>v</i> ith no buffering            |                 |
|             | 3)                | Wh<br>a)<br>c)                             | nat is not a major reason fo<br>Resource sharing<br>Reliability  | r buildir                      | ng di<br>b)<br>d)     | stributed systems?<br>Computation speedup<br>Simplicity        |                 |
|             | 4)                | Bo<br>a)<br>c)                             | unded capacity and Unbou<br>Programmed buffering<br>User defined buffering   | inded c                        | apac<br>b)<br>d)      | ity queues are referred<br>Automatic buffering<br>No buffering | to as           |
|             | 5)                | Ace<br>a)<br>b)<br>c)<br>d)                | cording to the ring algorithr<br>Bidirectional<br>Unidirectional<br>Both bidirectional and uni<br>None of these  | n, links<br>idirectio          | betv<br>nal           | veen processes are   |                 |
|             | 6)                | In d<br>a)<br>c)                           | distributed systems, link an<br>polling<br>token passing   | id site fa                     | ailure<br>b)<br>d)    | e is detected by<br>Handshaking<br>none of these               |                 |
|             | 7)                | Lo(<br>a)<br>c)                            | gical extension of computa<br>process migration<br>thread migration  | tion mig                       | pratic<br>b)<br>d)    | on is<br>system migration<br>data migration                    |                 |

Set S

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- SLR-FM-384 Set S
- 8) Which are the two complementary deadlock-prevention schemes using timestamps?
  - a) The wait-die & wound-wait scheme
  - b) The wait-n-watch scheme
  - c) The wound-wait scheme
  - d) The wait-wound & wound-wait scheme
- 9) For proper synchronization in distributed systems \_\_\_\_\_.
  - a) prevention from the deadlock is must
  - b) prevention from the starvation is must
  - c) prevention from the deadlock & starvation is must
  - d) none of the mentioned

c) Deadlock

- 10) Single coordinator approach has the following disadvantages \_\_\_\_\_.
  - a) Bottleneck
- b) Slow responsed) One request per second
- 11) The file once created cannot be changed is called \_\_\_\_\_
  - a) Immutable file b) Mutex file
    - c) Mutable file d) None of these
- 12) What are the different ways in which clients and servers are dispersed across machines?
  - a) Servers may not run on dedicated machines
  - b) Servers and clients can be on same machines
  - c) Distribution cannot be interposed between an OS and the file system
  - d) OS cannot be distributed with the file system a part of that distribution
- 13) What are the characteristics of stateless server?
  - a) Easier to implement
  - b) They are not fault-tolerant upon client or server failures
  - c) They store all information file server
  - d) They are redundant to keep data safe
- 14) What are not the characteristics of a DFS?
  - a) Login transparency and access transparency
  - b) Files need not contain information about their physical location
  - c) No Multiplicity of users
  - d) No Multiplicity if files

| Seat |  |
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| No.  |  |

### B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology DISTRIBUTED COMPUTING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
  - 3) Assume suitable data if necessary.
  - 4) Figures must be draw wherever necessary.

#### Section – I

#### Q.2 Attempt any three

- a) Describe all the issue for designing distributed computing.
- **b)** Draw and explain all the buffering mechanisms for message passing.
- c) State and explain the call semantics of RPC.
- **d)** Draw and explain the implementation of logical clocks by using counters and physical clocks.
- Q.3 a) What is process migration? Describe desirable features of a good process 08 migration.

#### OR

Explain with example the client server binding in distributed environment.

**Q.4** Explain in detail with example failure handling in MPS.

#### Section – II

#### Q.5 Solve any three

- a) Explain the consistency models of shared memory.
- b) Describe classification of mutual exclusion algorithms and its preliminaries.
- c) Explain with example the algorithm for implementing Distributed Shared Memory.
- d) Explain in detail log structured file system.
- Q.6 a) Explain with example Lamport and Recart-Agrawala algorithms. 08 OR

Explain all the mechanisms for building Distributed File System.

**Q.7** State and describe design issues of Distributed Shared Memory.



Max. Marks: 56

12

**08** 

**08** 

|  |                  | B.E                     | . (Part – I) (New)<br>Info<br>MICROCONTRO   | (CBCS) Exa<br>rmation Tecl  | mi<br>nn<br>BE    | nation Nov/De<br>ology<br>EDDED SYSTEM        | c-2019            |
|--|------------------|-------------------------|---|---|-------------------|---|-------------------|
| Day<br>Time  | & Date<br>: 02:3 | e: Tu<br>0 PN           | uesday, 17-12-2019<br>// To 05:30 PM  |   |                   |   | Max. Marks: 70    |
| Instr  | uctio            | ns: ^<br>2<br>3         | 1) Q. No. 1 is compu<br>book.<br>) Figure to the right i<br>) Assume suitable da    | lsory and shoul<br>ndicates full ma<br>ata wherever ne            | d b<br>rks<br>ce: | e solved in first 30<br>s.<br>ssary.          | minutes in answer |
|  |                  |                         | MCQ/OI  | bjective Type   | e C               | Questions                                     |                   |
| Dura   | ition: 3         | 30 M                    | inutes  |   |                   |   | Marks: 14         |
| Q.1  | <b>Cho</b><br>1) | ose<br>805<br>a)<br>c)  | <b>the correct alternat</b><br>1 series has how ma<br>2<br>1                        | <b>ives from the c</b><br>any 16 bit registe<br>b)<br>d)          | <b>pt</b><br>ers  | <b>ions.</b><br>?<br>3<br>0                   | 14                |
|  | 2)               | Who<br>a)<br>c)         | en 8051 wakes up th<br>DPTR<br>PC   | en 0x00 is load<br>b)<br>d)                                       | ed                | to which register?<br>SP<br>PSW               |                   |
|  | 3)               | Whe<br>flag<br>a)<br>c) | en the microcontrolle<br>bits of which registe<br>DPTR<br>PC                        | r executes som<br>r are affected?<br>b)<br>d)                     | e a               | arithmetic operatior<br>SP<br>PSW             | ns, then the      |
| <ul> <li>How are the status of the carry, auxiliary carry and parity flag affected if the following instructions are executed by 8051 microcontroller?</li> <li>MOV A,#9C</li> </ul> |                  |                         | affected if<br>er?  |   |                   |   |                   |
|  |                  | a)<br>c)                | CY=0, AC=0, P=0<br>CY=0, AC=1, P=0  | b)<br>d)  |                   | CY=1, AC=1, P=0<br>CY=1, AC=1, P=1            | )                 |
|  | 5)               | The<br>a)<br>c)         | internal RAM memo<br>32 bytes<br>128 bytes  | ory of the 8051 i<br>b)<br>d)                                     | S _               | 64 bytes<br>256 bytes                         |                   |
|  | 6)               | On<br>a)<br>c)          | power up, the 8051 ເ<br>00-2F<br>00-7F  | uses which RAM<br>b)<br>d)  | 1 Ic              | ocations for registe<br>00-07<br>00-0F        | r R0- R7          |
|  | 7)               | Hov<br>mic<br>a)<br>c)  | v many bytes of bit a<br>rocontrollers?<br>8 bytes<br>16 bytes                      | ddressable mer<br>b)<br>d)  | noi               | ry is present in 805<br>32 bytes<br>128 bytes | 51 based          |
|  | 8)               | Eml<br>a)<br>b)<br>c)   | bedded hardware/so<br>Regulate physical v<br>Change the state o<br>Measure/Read the | ftware systems<br>variable<br>f some devices<br>state of the vari | are<br>abl        | e basically designe<br>le/device              | d to              |

# Set No.

Set P

- ire/Read the state of the variable/device
- d) All of these

- 9) Which of the following processor architecture supports easier instruction pipelining?
  - a) Harvard

C)

c)

C)

Both a & b

- Von Neumann b) d) None of these
- 10) Which of the following is one time programmable memory?
  - SRAM b) PROM a) C)
    - FLASH d) **NVRAM**
- 11) Which of the following memory type is best suited for development purpose?
  - EEPROM a)

- b) FLASH
- **UVEPROM** Both (a) and (b) d)
- 12) UART stands for \_\_\_\_\_ .
  - Universal Asynchronous Receiver Transmitter a)
  - Universal Analog Receiver Transmitter b)
  - Unique Asynchronous Receiver Transmitter C)
  - None of these d)

171.2 Mbps

- What is the theoretical maximum data rate supported by GPRS is \_\_\_\_\_. 13)
  - 8 Mbps a)

- b) 12 Mbps
- d)
- 14) Quality attributes of an embedded system are \_
  - Functional requirements a)
  - c) both

b) Non-functional requirements None of these

None of the above

d)





|     | b)<br>c)<br>d)        | What is computational model? Explain its role in hardware software co-<br>design.<br>Explain multiprocessing, multitasking and multiprogramming.<br>What are the advantages and disadvantages of using user level threads? |    |
|-----|-----------------------|--|----|
| Q.6 | e)<br>Ans<br>a)<br>b) | Explain the structure of TCB.<br><b>Swer any one.</b><br>Explain the semaphore based process synchronization under Windows OS.<br>Explain various process interaction models in detail                                     | 08 |
| Q.7 | Diso                  | cuss embedded system design details for digital camera application.  | 08 |

b) Explain memory organization of 8051 microcontroller. c) Explain with examples any two arithmetic instructions of 8051 microcontroller.

a) Compare between Harvard & Von-Neumann CPU architecture.

2) Figure to the right indicates full marks. 3) Assume suitable data wherever necessary.

- d) Explain in detail interrupt structure of 8051 microprocessor.
- Write an assembly language program for 8-bit subtraction using 8051 e) microcontroller.

Information Technology **MICROCONTROLLER & EMBEDDED SYSTEMS** 

Section – I

#### Q.3 Attempt any one.

Q.2 Answer any three.

- Draw and explain the architecture of 8051 microcontroller in detail. a)
- b) Explain interfacing of 8051 with keyboard
- Q.4 With proper diagram, explain the interfacing of temperature sensor with 8051 **08** microcontroller.

#### Section – II

#### Q.5 Answer any three.

- What is hardware software co-design? Explain the fundamental issues in a) hardware software co-design.
- b)
- c)
- d)
- e)

#### Q.6 Ans

- a)
- b)

Page **3** of **12** 

# **SLR-FM-386**

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019

Max. Marks: 56

Set

| Seat |  |
|------|--|
| No.  |  |
|      |  |

Day & Date: Tuesday, 17-12-2019

Instructions: 1) All questions are compulsory.

Time: 02:30 PM To 05:30 PM

12

**08** 

# B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **MICROCONTROLLER & EMBEDDED SYSTEMS** Max. Marks: 70

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data wherever necessary.

#### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Set

No.

#### Q.1 Choose the correct alternatives from the options.

- Embedded hardware/software systems are basically designed to \_\_\_\_\_. 1)
  - Regulate physical variable a)
  - Change the state of some devices b)
  - Measure/Read the state of the variable/device c)
  - All of these d)
- 2) Which of the following processor architecture supports easier instruction pipelining?
  - a) Harvard b) Von Neumann Both a & b d) None of these c)
- 3) Which of the following is one time programmable memory?
  - a) SRAM PROM b)
  - FLASH d) **NVRAM** c)
- Which of the following memory type is best suited for development 4) purpose?

b)

d)

FLASH

Both (a) and (b)

- EEPROM a)
- **UVEPROM** C)
- UART stands for 5)
  - Universal Asynchronous Receiver Transmitter a)
  - Universal Analog Receiver Transmitter b)
  - Unique Asynchronous Receiver Transmitter c)
  - None of these d)

What is the theoretical maximum data rate supported by GPRS is \_\_\_\_\_. 6)

a) 8 Mbps b) 12 Mbps 171.2 Mbps None of the above c) d)

7) Quality attributes of an embedded system are \_\_\_\_

- **Functional requirements** Non-functional requirements a) b) C)
  - both d) None of these
- 8051 series has how many 16 bit registers? 8)
  - 2 3 a) b)
  - 1 d) C) 0

**SLR-FM-386** 

Set



Marks: 14 14

When 8051 wakes up then 0x00 is loaded to which register? 9)

DPTR a)

b) SP **SLR-FM-386** 

Set Q

- C) PC d) **PSW**
- When the microcontroller executes some arithmetic operations, then the 10) flag bits of which register are affected?
  - DPTR SP a) b) PC **PSW** d) C)
- 11) How are the status of the carry, auxiliary carry and parity flag affected if the following instructions are executed by 8051 microcontroller \_\_\_\_\_?

#### MOV A,#9C

#### ADD A,#64H

- CY=0, AC=0, P=0 CY=1, AC=1, P=0 a) b) c)
  - CY=0, AC=1, P=0 d) CY=1, AC=1, P=1
- The internal RAM memory of the 8051 is \_\_\_\_\_ 12)
  - 32 bytes 64 bytes a) b)
  - c) 128 bytes d) 256 bytes
- 13) On power up, the 8051 uses which RAM locations for register R0- R7 \_\_\_\_\_.
  - 00-2F b) 00-07 a) d) 00-0F
  - c) 00-7F
- How many bytes of bit addressable memory is present in 8051 based 14) microcontrollers?
  - 8 bytes a)
  - 16 bytes C)

- 32 bytes b)
- 128 bytes d)

Page 5 of 12

| With proper diagram, explain the interfacing of temperature sensor with 8051 microcontroller. |   |    |  |
|---|---|----|--|
|   | Section – II  |    |  |
| Ans   | swer any three.   | 12 |  |
| a)  | What is hardware software co-design? Explain the fundamental issues in  |    |  |
|   | nardware software co-design.  |    |  |
| b)  | What is computational model? Explain its role in hardware software co-<br>design.   |    |  |
| C)  | Explain multiprocessing, multitasking and multiprogramming.   |    |  |
| d)  | What are the advantages and disadvantages of using user level threads?  |    |  |
| e)  | Explain the task control block (TCB)? Explain the structure of TCB.   |    |  |
| Ans   | swer any one.   | 08 |  |
| a)<br>b)  | Explain the semaphore based process synchronization under Windows OS.<br>Explain various process interaction models in detail |    |  |
| Discuss embedded system design details for digital camera application.                        |   |    |  |
|   |   |    |  |
|   |   |    |  |
|   |   |    |  |

#### b) Explain memory organization of 8051 microcontroller. c) Explain with examples any two arithmetic instructions of 8051 microcontroller.

a) Compare between Harvard & Von-Neumann CPU architecture.

d) Explain in detail interrupt structure of 8051 microprocessor.

2) Figure to the right indicates full marks. 3) Assume suitable data wherever necessary.

Write an assembly language program for 8-bit subtraction using 8051 e) microcontroller.

Information Technology **MICROCONTROLLER & EMBEDDED SYSTEMS** 

Section – I

#### Q.3 Attempt any one.

Q.2 Answer any three.

- Draw and explain the architecture of 8051 microcontroller in detail. a)

- b) Explain interfacing of 8051 with keyboard
- Q.4

## Q.5

### Q.6

Q.7

# **SLR-FM-386**

Set B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019

| Seat |  |
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| No.  |  |

Day & Date: Tuesday, 17-12-2019

Instructions: 1) All questions are compulsory.

Time: 02:30 PM To 05:30 PM

Max. Marks: 56

12

| Page <b>7</b> of <b>1</b> 2 | 2 |
|-----------------------------|---|

#### B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **MICROCONTROLLER & EMBEDDED SYSTEMS** Day & Date: Tuesday, 17-12-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data wherever necessary.

### MCQ/Objective Type Questions

#### Q.1 Choose the correct alternatives from the options. The internal RAM memory of the 8051 is 1) 32 bytes 64 bytes a) b) c) 128 bytes d) 256 bytes 2) On power up, the 8051 uses which RAM locations for register R0- R7 \_\_\_\_\_. 00-2F 00-07 a) b) 00-7F 00-0F d) c) 3) How many bytes of bit addressable memory is present in 8051 based microcontrollers? 8 bytes 32 bytes a) b) c) 16 bytes d) 128 bytes 4) Embedded hardware/software systems are basically designed to \_\_\_\_\_. Regulate physical variable a) Change the state of some devices b) Measure/Read the state of the variable/device c) d) All of these 5) Which of the following processor architecture supports easier instruction pipelining? a) Harvard Von Neumann b) c) Both a & b d) None of these Which of the following is one time programmable memory? 6) a) SRAM PROM b) FLASH d) **NVRAM** c) 7) Which of the following memory type is best suited for development purpose? a) EEPROM b) FLASH **UVEPROM** Both (a) and (b) C) d) 8) UART stands for Universal Asynchronous Receiver Transmitter a) Universal Analog Receiver Transmitter b) Unique Asynchronous Receiver Transmitter C) None of these d)

Set No.

**Duration: 30 Minutes** 

## **SLR-FM-386**



Marks: 14

| c) | 1       | d) 0                                    |          |
|----|---------|---|----------|
| Wh | en 8051 | wakes up then 0x00 is loaded to which r | egister? |
| a) | DPTR    | b) SP                                   |          |
| c) | PC      | d) PSW                                  |          |

- 13) When the microcontroller executes some arithmetic operations, then the flag bits of which register are affected?
  - DPTR SP a) b) c) PC d) PSW
- How are the status of the carry, auxiliary carry and parity flag affected if 14) the following instructions are executed by 8051 microcontroller \_\_\_\_\_?

#### MOV A,#9C

#### ADD A,#64H

- CY=0, AC=0, P=0 a)
- CY=0, AC=1, P=0 C)
- b) CY=1, AC=1, P=0 CY=1, AC=1, P=1 d)

Page 8 of 12

- What is the theoretical maximum data rate supported by GPRS is \_\_\_\_\_. b) 12 Mbps
  - None of the above d)
  - 171.2 Mbps
- Quality attributes of an embedded system are \_\_\_\_ 10)

8051 series has how many 16 bit registers?

a) Functional requirements C) both

8 Mbps

2

9)

11)

12)

a)

C)

a)

b) Non-functional requirements d) None of these

**SLR-FM-386** 

# Set | R

3

b)

- d)
- PSW

|     |                                   | microcontroller.   |    |
|-----|-----------------------------------|--|----|
| Q.3 | Att<br>a)<br>b)                   | empt any one.<br>Draw and explain the architecture of 8051 microcontroller in detail.<br>Explain interfacing of 8051 with keyboard   | 08 |
| Q.4 | Wit<br>mic                        | h proper diagram, explain the interfacing of temperature sensor with 8051 rocontroller.  | 08 |
|     |                                   | Section – II   |    |
| Q.5 | Ans<br>a)<br>b)<br>c)<br>d)<br>e) | swer any three.<br>What is hardware software co-design? Explain the fundamental issues in<br>hardware software co-design.<br>What is computational model? Explain its role in hardware software co-<br>design.<br>Explain multiprocessing, multitasking and multiprogramming.<br>What are the advantages and disadvantages of using user level threads?<br>Explain the task control block (TCB)? Explain the structure of TCB. | 12 |
| Q.6 | An:<br>a)<br>b)                   | swer any one.<br>Explain the semaphore based process synchronization under Windows OS.<br>Explain various process interaction models in detail   | 08 |
| Q.7 | Dis                               | cuss embedded system design details for digital camera application.  | 08 |

#### Information Technology **MICROCONTROLLER & EMBEDDED SYSTEMS** Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data wherever necessary.

#### Section – I

B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019

### Q.2 Answer any three.

- a) Compare between Harvard & Von-Neumann CPU architecture.
- b) Explain memory organization of 8051 microcontroller.
- c) Explain with examples any two arithmetic instructions of 8051 microcontroller.
- d) Explain in detail interrupt structure of 8051 microprocessor.
- Write an assembly language program for 8-bit subtraction using 8051 e)

#### Q.3

**SLR-FM-386** 

R Set

Max. Marks: 56

Seat No.

|   | d)               | 0                               |
|---|------------------|---------------------------------|
| 51 wakes up then 0x00 is loa<br>R                               | aded<br>b)<br>d) | to which register?<br>SP<br>PSW |
| e microcontroller executes so<br>of which register are affected | ome a<br>l?      | rithmetic operations, then the  |
| R   | b)<br>d)         | PSW                             |
|   |                  |                                 |
|   |                  |                                 |

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **MICROCONTROLLER & EMBEDDED SYSTEMS** 

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data wherever necessary.

#### MCQ/Objective Type Questions

b)

PROM

**Duration: 30 Minutes** 

Set

No.

### Q.1 Choose the correct alternatives from the options.

- Which of the following is one time programmable memory? 1)
  - SRAM a)
    - FLASH d) **NVRAM** C)
- Which of the following memory type is best suited for development 2) purpose? FLASH
  - EEPROM b) a) C)
    - **UVEPROM** d) Both (a) and (b)
- UART stands for 3)
  - Universal Asynchronous Receiver Transmitter a)
  - b) Universal Analog Receiver Transmitter
  - Unique Asynchronous Receiver Transmitter c)
  - None of these d)

#### 4) What is the theoretical maximum data rate supported by GPRS is \_\_\_\_\_. 8 Mbps b) 12 Mbps a)

- 171.2 Mbps d) None of the above C)
- 5) Quality attributes of an embedded system are \_\_\_\_\_
  - Non-functional requirements a) Functional requirements b)
  - d) None of these C) both

6) 8051 series has how many 16 bit registers?

- h) a) 2 1 c)
- 7) When 80
  - DPT a)
  - PC C)
- When the 8) flag bits o
  - a) DPT
  - PC c)

# **SLR-FM-386**

Set

Max. Marks: 70

Marks: 14

#### **SLR-FM-386** Set S How are the status of the carry, auxiliary carry and parity flag affected if the following instructions are executed by 8051 microcontroller \_\_\_\_\_? MOV A,#9C ADD A,#64H CY=0, AC=0, P=0 CY=1, AC=1, P=0 a) b) CY=0, AC=1, P=0 CY=1, AC=1, P=1 d) c) The internal RAM memory of the 8051 is \_\_\_\_\_ 10) 64 bytes 32 bytes b) a) 128 bytes d) 256 bytes C) On power up, the 8051 uses which RAM locations for register R0- R7 \_\_\_\_\_. 11) 00-2F 00-07 a) b) 00-7F C) d) 00-0F How many bytes of bit addressable memory is present in 8051 based 12) microcontrollers? a) 8 bytes b) 32 bytes c) 16 bytes d) 128 bytes 13) Embedded hardware/software systems are basically designed to \_\_\_\_\_.

- Regulate physical variable a)
- Change the state of some devices b)
- Measure/Read the state of the variable/device C)
- All of these d)

9)

Which of the following processor architecture supports easier instruction 14) pipelining?

Harvard a)

c)

Both a & b

- Von Neumann b)
- None of these d)

| Q.2 | An         | swer any three.   | 12 |
|-----|------------|---|----|
|     | a)         | Compare between Harvard & Von-Neumann CPU architecture.   |    |
|     | b)         | Explain memory organization of 8051 microcontroller.  |    |
|     | c)         | Explain with examples any two arithmetic instructions of 8051 microcontroller.                                    |    |
|     | d)         | Explain in detail interrupt structure of 8051 microprocessor.   |    |
|     | e)         | Write an assembly language program for 8-bit subtraction using 8051 microcontroller.                              |    |
| Q.3 | Att        | empt any one.   | 08 |
|     | a)<br>b)   | Draw and explain the architecture of 8051 microcontroller in detail.<br>Explain interfacing of 8051 with keyboard |    |
| Q.4 | Wit<br>mic | h proper diagram, explain the interfacing of temperature sensor with 8051<br>procontroller.                       | 80 |
|     |            | Section – II  |    |
| Q.5 | An         | swer any three.   | 12 |
|     | a)         | What is hardware software co-design? Explain the fundamental issues in hardware software co-design.               |    |
|     | b)         | What is computational model? Explain its role in hardware software co-<br>design.                                 |    |
|     | C)         | Explain multiprocessing, multitasking and multiprogramming.   |    |
|     | d)         | What are the advantages and disadvantages of using user level threads?  |    |

e) Explain the task control block (TCB)? Explain the structure of TCB.

### Q.6 Answer any one.

- a) Explain the semaphore based process synchronization under Windows OS.
- b) Explain various process interaction models in detail
- **Q.7** Discuss embedded system design details for digital camera application. 80

**SLR-FM-386** 

Seat No.

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figure to the right indicates full marks. 3) Assume suitable data wherever necessary.

#### B.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019 Information Technology **MICROCONTROLLER & EMBEDDED SYSTEMS**

Section – I

Day & Date: Tuesday, 17-12-2019

Max. Marks: 56

80

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S Set

### Seat <u>No.</u> B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

HUMAN COMPUTER INTERACTION Day & Date: Saturday, 14-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

Information Technology

- 2) Figures drawn by pencil, ruler only indicate full marks.
- 3) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

d)

Memory

Duration: 30 Minutes

### Q.1 Choose the correct alternatives from the options.

- 1) The golden rule of design is understand your
  - a) Customer b) Needs
  - c) Material
- 2) What is design?
  - a) Achieving goods within constraints
  - b) Achieving goals within constraints
  - c) Arriving goals within constraints
  - d) Arriving goals within common
- 3) Learnability, flexibility and robustness are three main usability principles that can be considered as general headings for standards and guidelines generation. Which of the following are also high level usability categories that can guide standards and guidelines generation?
  - 1) Effectiveness
  - 2) Efficiency
  - 3) Fault tolerance
  - 4) Satisfaction

Select correct option:

a) (1) & (2) c) (2) & (3)

- b) (1), (2) & (4) d) (2) & (4)
- 4) Visually impaired persons can interact with outside world using their

a) Sense of sight

- b) Sense of hearing
- c) Both sense of touch and sense of hearing
- d) Sense of touch
- 5) \_\_\_\_\_ is a very general goal of Usability and refers to how good a system at doing what it is suppose to do.
  - a) Effectiveness
  - c) Utility

- b) Efficiency
- d) None of the above

Marks: 14

14

Set F

Max. Marks: 70

# SLR-FM-387

- 6) What is a semantic network?
  - a) A model of long-term memory
  - b) A record of our memory of events
  - c) The part of the brain which allows us to remember things
  - d) A mechanism for improving memory
- 7) Which are the most significant senses for the average person when it comes to interacting with a computer?
  - a) Sight and hearing b) Hearing, touch and smell
  - c) Hearing and touch d) Sight, hearing and touch
- 8) Which of the following is true about Short-Term memory?
  - a) Short-term memory has a Limited capacity
  - b) Short-term memory has an unlimited capacity
  - c) Short-term memory has no capacity
  - d) Short-term memory has large but limited capacity
- 9) Over a short period of time, we find it easier to remember the string of numbers "404 894 6743" because \_\_\_\_\_.
  - a) Numbers are easier to remember than arbitrary characters
  - b) The grouping of the numbers is significant
  - c) Ten numbers is not that many to have to remember from working memory
  - d) None of these
- 10) Evaluation tests the \_\_\_\_\_, \_\_\_\_, and \_\_\_\_\_ of an interactive system.
  - a) Usability, functionality and acceptability
  - b) Appearance, working and functionality
  - c) Effectiveness, GUI and acceptability
  - d) Usability ,effectiveness, functionality
- 11) The biological response to physical stimuli is called \_\_\_\_\_.
  - a) Affect b) Effect
  - c) Emotion d) Attitude
- 12) HCI deals with: \_\_\_\_
  - a) Design of interactive system only
  - b) Evaluation of interactive system only
  - c) Implementation of interactive system only
  - d) All of the given choices
- 13) Physical and device models represent \_\_\_\_\_ skills.
  - a) Human motor b) Linguistic
  - c) a and b d) None of the above
- 14) Which of the given statements correctly defines effectiveness in terms of one of the usability goals?
  - a) It is a very general goal and refers to how good a system at doing what it is supposed to do
  - b) It refers to the way a system supports users in carrying out their tasks
  - c) It involves protecting the users from dangerous conditions
  - d) It involves protecting the users from undesired situations

Set

| Seat |  |
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| No.  |  |

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology HUMAN COMPUTER INTERACTION

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any four of the following

- a) Explain Cathode Ray Tube with diagram.
- b) What is WIMP? Discuss the elements of WIMP in detail.
- c) What are paradigms and metaphor give examples.
- d) What are text entry devices available in computer? What is meant by chord Keyboards?
- e) Differentiate deductive reasoning, inductive reasoning and abductive reasoning.

#### Q.3 Answer any two of the following.

- a) What are the input and output channels of human? Draw and explain the structure of human Memory.
- b) State the Golden rule of Design. Draw and explain the process of design in detail.
- c) Mention 7 stages of Donald Norman's model in interaction?

#### Section – II

#### Q.4 Attempt any four of the following.

- a) Define cognitive complexity theory. Give example.
- b) Define stakeholder. Describe different categories of stakeholders.
- c) Discuss the elements of windowing system.
- d) Explain in detail about linguistic models.
- e) Explain
  - 1) Task analysis
  - 2) Task decomposition

#### Q.5 Answer any two of the following.

- a) Explain in detail about evaluation through expert analysis and evaluation through participation?
- **b)** Describe briefly
  - 1) Knowledge based analysis
  - 2) Sensor based interaction
- c) Describe the following:
  - 1) Dialog and dialog design notation
  - 2) Textual dialog notation and diagrammatic notations
  - 3) Dialog semantics

Max. Marks: 56

12

16

16

### Seat No. B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

HUMAN COMPUTER INTERACTION

- Figures drawn by pencil, ruler only indicate full marks.
- 3) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options.

- Which of the following is true about Short-Term memory? 1)
  - a) Short-term memory has a Limited capacity
  - b) Short-term memory has an unlimited capacity
  - Short-term memory has no capacity c)
  - d) Short-term memory has large but limited capacity
- 2) Over a short period of time, we find it easier to remember the string of numbers "404 894 6743" because
  - Numbers are easier to remember than arbitrary characters a)
  - The grouping of the numbers is significant b)
  - c) Ten numbers is not that many to have to remember from working memory
  - d) None of these
- 3) Evaluation tests the \_\_\_\_\_, \_\_\_\_, and \_ of an interactive system.
  - a) Usability, functionality and acceptability
  - b) Appearance, working and functionality
  - c) Effectiveness, GUI and acceptability
  - d) Usability effectiveness, functionality
- The biological response to physical stimuli is called . 4)
  - a) Affect Effect b)
  - c) Emotion d) Attitude
- 5) HCI deals with:
  - a) Design of interactive system only
  - b) Evaluation of interactive system only
  - c) Implementation of interactive system only
  - d) All of the given choices
- Physical and device models represent skills. 6)
  - a) Human motor Linguistic b) c) a and b
    - d) None of the above

Max. Marks: 70

Marks: 14

- 7) Which of the given statements correctly defines effectiveness in terms of one of the usability goals?
  - a) It is a very general goal and refers to how good a system at doing what it is supposed to do
  - b) It refers to the way a system supports users in carrying out their tasks

b)

d)

- c) It involves protecting the users from dangerous conditions
- d) It involves protecting the users from undesired situations
- 8) The golden rule of design is understand your \_\_\_\_\_
  - a) Customer

Needs

**SLR-FM-387** 

Set

c) Material

Memory

- 9) What is design?
  - a) Achieving goods within constraints
  - b) Achieving goals within constraints
  - c) Arriving goals within constraints
  - d) Arriving goals within common
- 10) Learnability, flexibility and robustness are three main usability principles that can be considered as general headings for standards and guidelines generation. Which of the following are also high level usability categories that can guide standards and guidelines generation?
  - 1) Effectiveness
  - 2) Efficiency
  - 3) Fault tolerance
  - 4) Satisfaction

Select correct option:

- a) (1) & (2) b) (1), (2) & (4) c) (2) & (3) d) (2) & (4)
- 11) Visually impaired persons can interact with outside world using their
  - a) Sense of sight
  - b) Sense of hearing
  - c) Both sense of touch and sense of hearing
  - d) Sense of touch
- 12) \_\_\_\_\_ is a very general goal of Usability and refers to how good a system at doing what it is suppose to do.
  - a) Effectiveness
- b) Efficiencyd) None of the above

Hearing, touch and smell

- c) Utility d
- 13) What is a semantic network?
  - a) A model of long-term memory
  - b) A record of our memory of events
  - c) The part of the brain which allows us to remember things
  - d) A mechanism for improving memory
- 14) Which are the most significant senses for the average person when it comes to interacting with a computer?
  - a) Sight and hearing b)
  - c) Hearing and touch d) Sight, hearing and touch

| Seat |  |
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### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology HUMAN COMPUTER INTERACTION

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any four of the following

- a) Explain Cathode Ray Tube with diagram.
- b) What is WIMP? Discuss the elements of WIMP in detail.
- c) What are paradigms and metaphor give examples.
- d) What are text entry devices available in computer? What is meant by chord Keyboards?
- e) Differentiate deductive reasoning, inductive reasoning and abductive reasoning.

#### Q.3 Answer any two of the following.

- a) What are the input and output channels of human? Draw and explain the structure of human Memory.
- b) State the Golden rule of Design. Draw and explain the process of design in detail.
- c) Mention 7 stages of Donald Norman's model in interaction?

#### Section – II

#### Q.4 Attempt any four of the following.

- a) Define cognitive complexity theory. Give example.
- b) Define stakeholder. Describe different categories of stakeholders.
- c) Discuss the elements of windowing system.
- d) Explain in detail about linguistic models.
- e) Explain
  - 1) Task analysis
  - 2) Task decomposition

#### Q.5 Answer any two of the following.

- a) Explain in detail about evaluation through expert analysis and evaluation through participation?
- b) Describe briefly
  - 1) Knowledge based analysis
  - 2) Sensor based interaction
- c) Describe the following:
  - 1) Dialog and dialog design notation
  - 2) Textual dialog notation and diagrammatic notations
  - 3) Dialog semantics

Max. Marks: 56

12

16

16

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology HUMAN COMPUTER INTERACTION

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures drawn by pencil, ruler only indicate full marks.
- 3) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options.

- 1) \_\_\_\_ is a very general goal of Usability and refers to how good a system at doing what it is suppose to do.
  - a) Effectiveness b) Efficiency d) None of the above
    - c) Utility
- 2) What is a semantic network?
  - a) A model of long-term memory
  - b) A record of our memory of events
  - c) The part of the brain which allows us to remember things
  - d) A mechanism for improving memory
- 3) Which are the most significant senses for the average person when it comes to interacting with a computer?
  - a) Sight and hearing b) Hearing, touch and smell
  - c) Hearing and touch d) Sight, hearing and touch
- 4) Which of the following is true about Short-Term memory?
  - Short-term memory has a Limited capacity a)
  - b) Short-term memory has an unlimited capacity
  - c) Short-term memory has no capacity
  - d) Short-term memory has large but limited capacity
- 5) Over a short period of time, we find it easier to remember the string of numbers "404 894 6743" because .
  - Numbers are easier to remember than arbitrary characters a)
  - The grouping of the numbers is significant b)
  - Ten numbers is not that many to have to remember from working c) memory
  - d) None of these

#### 6) Evaluation tests the \_\_\_\_\_, \_\_\_\_, and \_\_ of an interactive system.

- Usability, functionality and acceptability a)
- b) Appearance, working and functionality
- c) Effectiveness, GUI and acceptability
- d) Usability effectiveness, functionality
- The biological response to physical stimuli is called . 7)
  - a) Affect
  - b) Effect c) Emotion d) Attitude

Max. Marks: 70

Marks: 14 14

R

- 8) HCI deals with: \_\_\_\_\_.
  - a) Design of interactive system only
  - b) Evaluation of interactive system only
  - c) Implementation of interactive system only
  - d) All of the given choices
- 9) Physical and device models represent \_\_\_\_\_ skills.
  - a) Human motor b) Linguistic
    - c) a and b d) None of the above
- 10) Which of the given statements correctly defines effectiveness in terms of one of the usability goals?
  - a) It is a very general goal and refers to how good a system at doing what it is supposed to do
  - b) It refers to the way a system supports users in carrying out their tasks
  - c) It involves protecting the users from dangerous conditions
  - d) It involves protecting the users from undesired situations
- 11) The golden rule of design is understand your \_\_\_\_\_
  - a) Customer b) I
  - c) Material

Needs Memory SLR-FM-387

Set

- d)
- 12) What is design?
  - a) Achieving goods within constraints
  - b) Achieving goals within constraints
  - c) Arriving goals within constraints
  - d) Arriving goals within common
- 13) Learnability, flexibility and robustness are three main usability principles that can be considered as general headings for standards and guidelines generation. Which of the following are also high level usability categories that can guide standards and guidelines generation?
  - 1) Effectiveness
  - 2) Efficiency
  - 3) Fault tolerance
  - 4) Satisfaction

Select correct option:

- a) (1) & (2)
- c) (2) & (3)

- b) (1), (2) & (4) d) (2) & (4)
- 14) Visually impaired persons can interact with outside world using their

a) Sense of sight

- b) Sense of hearing
- c) Both sense of touch and sense of hearing
- d) Sense of touch

Set R

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology HUMAN COMPUTER INTERACTION

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

Seat No.

#### **Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any four of the following

- a) Explain Cathode Ray Tube with diagram.
- b) What is WIMP? Discuss the elements of WIMP in detail.
- c) What are paradigms and metaphor give examples.
- d) What are text entry devices available in computer? What is meant by chord Keyboards?
- e) Differentiate deductive reasoning, inductive reasoning and abductive reasoning.

#### Q.3 Answer any two of the following.

- a) What are the input and output channels of human? Draw and explain the structure of human Memory.
- b) State the Golden rule of Design. Draw and explain the process of design in detail.
- c) Mention 7 stages of Donald Norman's model in interaction?

#### Section – II

#### Q.4 Attempt any four of the following.

- a) Define cognitive complexity theory. Give example.
- b) Define stakeholder. Describe different categories of stakeholders.
- c) Discuss the elements of windowing system.
- d) Explain in detail about linguistic models.
- e) Explain
  - 1) Task analysis
  - 2) Task decomposition

#### Q.5 Answer any two of the following.

- a) Explain in detail about evaluation through expert analysis and evaluation through participation?
- b) Describe briefly
  - 1) Knowledge based analysis
  - 2) Sensor based interaction
- **c)** Describe the following:
  - 1) Dialog and dialog design notation
  - 2) Textual dialog notation and diagrammatic notations
  - 3) Dialog semantics

Max. Marks: 56

12

16

12

Set

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology HUMAN COMPUTER INTERACTION

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

**Duration: 30 Minutes** 

Seat

No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures drawn by pencil, ruler only indicate full marks.
- 3) Do not use pen to draw and label the diagrams.

### MCQ/Objective Type Questions

#### Q.1 Choose the correct alternatives from the options.

- Evaluation tests the \_\_\_\_\_, \_\_\_\_, and \_ 1)
  - a) Usability, functionality and acceptability
  - b) Appearance, working and functionality
  - c) Effectiveness. GUI and acceptability
  - d) Usability effectiveness, functionality
- 2) The biological response to physical stimuli is called
  - a) Affect Effect b) c) Emotion
    - d) Attitude

\_\_\_ of an interactive system.

- 3) HCI deals with:
  - a) Design of interactive system only
  - b) Evaluation of interactive system only
  - c) Implementation of interactive system only
  - d) All of the given choices
- Physical and device models represent 4) skills.
  - a) Human motor b) Linguistic
  - c) a and b d) None of the above
- 5) Which of the given statements correctly defines effectiveness in terms of one of the usability goals?
  - It is a very general goal and refers to how good a system at doing a) what it is supposed to do
  - b) It refers to the way a system supports users in carrying out their tasks
  - c) It involves protecting the users from dangerous conditions
  - d) It involves protecting the users from undesired situations
- 6) The golden rule of design is understand your \_
  - a) Customer b) Needs c) Material d) Memory
- 7) What is design?
  - a) Achieving goods within constraints
  - b) Achieving goals within constraints
  - c) Arriving goals within constraints
  - d) Arriving goals within common

Max. Marks: 70

Marks: 14

Page 11 of 12

- 8) Learnability, flexibility and robustness are three main usability principles that can be considered as general headings for standards and guidelines generation. Which of the following are also high level usability categories that can guide standards and guidelines generation?
  - Effectiveness 1)
  - 2) Efficiency
  - 3) Fault tolerance

4) Satisfaction

Select correct option:

a) (1) & (2)

c)

(1), (2) & (4)(2) & (3)d) (2) & (4)

b)

- 9) Visually impaired persons can interact with outside world using their
  - Sense of sight a)
  - b) Sense of hearing
  - c) Both sense of touch and sense of hearing
  - d) Sense of touch
- 10) is a very general goal of Usability and refers to how good a system at doing what it is suppose to do.
  - a) Effectiveness
  - c) Utility

- b) Efficiency
- None of the above d)

**SLR-FM-387** 

Set

- What is a semantic network? 11)
  - a) A model of long-term memory
  - b) A record of our memory of events
  - c) The part of the brain which allows us to remember things
  - d) A mechanism for improving memory
- Which are the most significant senses for the average person when it 12) comes to interacting with a computer?
  - Sight and hearing b) Hearing, touch and smell a)
  - c) Hearing and touch d) Sight, hearing and touch
- 13) Which of the following is true about Short-Term memory?
  - Short-term memory has a Limited capacity a)
  - Short-term memory has an unlimited capacity b)
  - Short-term memory has no capacity c)
  - d) Short-term memory has large but limited capacity
- 14) Over a short period of time, we find it easier to remember the string of numbers "404 894 6743" because
  - Numbers are easier to remember than arbitrary characters a)
  - The grouping of the numbers is significant b)
  - Ten numbers is not that many to have to remember from working C) memorv
  - d) None of these

| Seat |  |
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### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology HUMAN COMPUTER INTERACTION

Day & Date: Saturday, 14-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any four of the following

- a) Explain Cathode Ray Tube with diagram.
- b) What is WIMP? Discuss the elements of WIMP in detail.
- c) What are paradigms and metaphor give examples.
- d) What are text entry devices available in computer? What is meant by chord Keyboards?
- e) Differentiate deductive reasoning, inductive reasoning and abductive reasoning.

#### Q.3 Answer any two of the following.

- a) What are the input and output channels of human? Draw and explain the structure of human Memory.
- b) State the Golden rule of Design. Draw and explain the process of design in detail.
- c) Mention 7 stages of Donald Norman's model in interaction?

#### Section – II

#### Q.4 Attempt any four of the following.

- a) Define cognitive complexity theory. Give example.
- b) Define stakeholder. Describe different categories of stakeholders.
- c) Discuss the elements of windowing system.
- d) Explain in detail about linguistic models.
- e) Explain
  - 1) Task analysis
  - 2) Task decomposition

#### Q.5 Answer any two of the following.

- a) Explain in detail about evaluation through expert analysis and evaluation through participation?
- **b)** Describe briefly
  - 1) Knowledge based analysis
  - 2) Sensor based interaction
- c) Describe the following:
  - 1) Dialog and dialog design notation
  - 2) Textual dialog notation and diagrammatic notations
  - 3) Dialog semantics

Max. Marks: 56

12

16

16

Set

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Decision support system involve all of the following type of analytical 1) modeling activities except
  - a) What if analysis

c) Goal-seeking analysis

- b) Sensitivity analysis **Heuristics** d)
- 2) Which of the following is not true of information?
  - Information involves placing data in some form of meaningful context. a)
  - Information is produced as a byproduct of a transformation process b)
  - c) Information involves transforming data using a defined process
  - d) helps to reduce uncertainty, thereby improving decision behavior
- \_ can help you choose a product. 3) The \_
  - a) Office automation system
  - b) Management Information System
  - Transaction processing c)
  - **Decision Support System** d)
- 4) A storage device that is connected directly to a network is an example of
  - a) Network attached storage
  - b) c) Direct attached storage RAID d)
- Knowledge derived from recorded facts is 5)
  - a) Data b) Information c) Truth
    - d) All of the above
- If you are a \_\_\_\_\_ recipient of sensitive information, such as might be 6) overheard or contained in a misdirected email, this would not be illegal, but might be unethical to use it.
  - a) Active b) Passive
  - c) Proper d) **Business**
- Which of these system uses multidimensional data analysis? 7)
  - a) DSS b) MIS
  - All of these ESS c) d)

Seat No.

Max. Marks: 70

Storage area network

Marks: 14

# Supply chain decision support pertaining to specific products produced at specific plants in a specific quantity falls under \_\_\_\_\_.

- a) Supply chain decision support at strategic level
- b) Supply chain decision support at operational level
- c) Supply chain decision support at tactial level
- d) Either at strategic level or at tactical level
- The expert system uses a(n) \_\_\_\_\_ to select the most appropriate response.
  - a) Inference

8)

b) Decision support system

**SLR-FM-388** 

- c) Knowledge base d) data source
- 10) The criteria used to access how user and business needs are met in software \_\_\_\_\_.
  - a) Compatibility b) Security
  - c) Scalability d) Functionality
- Building and sustaining long term business with customers is the aim of \_\_\_\_\_.
  - a) Customer Relationship Management
  - b) Customer Acquisition
  - c) Customer Management
  - d) Electronic-CRM
- 12) E-Commerce is not suitable for \_\_\_\_\_.
  - a) Sale/Purchasing of expensive jewelry
  - b) Sale/Purchase of Mobile phones
  - c) Online Job searching
  - d) Sale/Purchase of branded clothes
- 13) Confidentiality, \_\_\_\_\_ and availability are the basic principles of information security.
  - a) Integrity

- b) Portability
- c) Modularity d) Efficiency
- 14) To easily modify the existing system it is necessary to \_\_\_\_\_.
  - a) Use good software tools
  - b) Use the best hardware available
  - c) Design the system which can be changed at low cost
  - d) Keep the programming team happy

| Seat |  |
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### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to right indicate full marks.

#### Section – I

#### Q.2 Answer any four of the following questions.

- a) What is information system? Explain the dimensions of information system.
- b) What is collaboration? Explain few business benefits of collaboration and teamwork.
- c) How information systems impact organizations and business firm?
- d) Write a note on Information rights.
- e) List and explain ethics in a information society.
- f) Write a note on Green computing.

#### Q.3 Answer any two of the following questions.

- a) Explain the tools and technologies for collaboration and teamwork.
- b) Why it is required to have security and control in Information technology.
- c) Explain the components of information technology infrastructure.

#### Section – II

#### Q.4 Answer any FOUR of the following questions.

- a) Why e-commerce is different? Explain types of e- commerce.
- **b)** Write a note on intelligent techniques to manage knowledge.
- c) Explain types of knowledge management systems.
- d) Explain Rapid Application Development.
- e) What is change management?
- f) What are the critical success factors in selecting projects?

### Q.7 Answer any two of the following questions.

- a) Explain Customer Relationship Management with diagram.
- b) What is Business Intelligence (BI)? Explain management strategies for developing BI capabilities.
- c) Explain how you manage global systems.

Max. Marks: 56

12

16

16

# Seat No.

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Supply chain decision support pertaining to specific products produced at 1) specific plants in a specific quantity falls under
  - a) Supply chain decision support at strategic level
  - b) Supply chain decision support at operational level
  - c) Supply chain decision support at tactial level
  - d) Either at strategic level or at tactical level
- 2) The expert system uses a(n) \_\_\_\_\_ to select the most appropriate response.
  - a) Inference b)
    - Decision support system d) data source
- The criteria used to access how user and business needs are met in 3) software \_\_\_\_
  - Compatibility b) a)
  - Security Scalability d) **Functionality** C)
- Building and sustaining long term business with customers is the aim 4) of
  - a) Customer Relationship Management
  - b) Customer Acquisition
  - c) Customer Management
  - d) Electronic-CRM

c) Knowledge base

- 5) E-Commerce is not suitable for
  - a) Sale/Purchasing of expensive jewelry
  - b) Sale/Purchase of Mobile phones
  - c) Online Job searching
  - d) Sale/Purchase of branded clothes
- Confidentiality, \_\_\_\_\_ and availability are the basic principles of 6) information security.
  - Portability Integrity b) a)
  - Modularity Efficiency d) C)
- 7) To easily modify the existing system it is necessary to \_\_\_\_\_.
  - Use good software tools a)
  - Use the best hardware available b)
  - c) Design the system which can be changed at low cost
  - d) Keep the programming team happy



Marks: 14
- 8) Decision support system involve all of the following type of analytical modeling activities except
  - a) What if analysis
  - c) Goal-seeking analysis
- b) Sensitivity analysis d) **Heuristics**
- 9) Which of the following is not true of information?
  - Information involves placing data in some form of meaningful context. a)
  - Information is produced as a byproduct of a transformation process b)
  - Information involves transforming data using a defined process c)
  - d) helps to reduce uncertainty, thereby improving decision behavior
- 10) The \_\_\_\_ can help you choose a product.
  - a) Office automation system
  - Management Information System b)
  - Transaction processing c)
  - d) Decision Support System

#### A storage device that is connected directly to a network is an example 11) of

Network attached storage a)

c)

C)

a) Data

Truth

- Direct attached storage d) RAID
- Knowledge derived from recorded facts is 12)
  - b) Information
    - d) All of the above
- If you are a \_\_\_\_\_ recipient of sensitive information, such as might be 13) overheard or contained in a misdirected email, this would not be illegal, but might be unethical to use it.
  - a) Active b) Passive
  - c) Proper d) **Business**
- 14) Which of these system uses multidimensional data analysis?
  - a) DSS
  - ESS d) c)
- b) MIS
  - All of these

- Storage area network
- b)

**SLR-FM-388** 

Set

| Seat |  |
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#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to right indicate full marks.

#### Section – I

#### Q.2 Answer any four of the following questions.

- a) What is information system? Explain the dimensions of information system.
- b) What is collaboration? Explain few business benefits of collaboration and teamwork.
- c) How information systems impact organizations and business firm?
- d) Write a note on Information rights.
- e) List and explain ethics in a information society.
- f) Write a note on Green computing.

#### Q.3 Answer any two of the following questions.

- a) Explain the tools and technologies for collaboration and teamwork.
- b) Why it is required to have security and control in Information technology.
- c) Explain the components of information technology infrastructure.

#### Section – II

#### Q.4 Answer any FOUR of the following questions.

- a) Why e-commerce is different? Explain types of e- commerce.
- **b)** Write a note on intelligent techniques to manage knowledge.
- c) Explain types of knowledge management systems.
- d) Explain Rapid Application Development.
- e) What is change management?
- f) What are the critical success factors in selecting projects?

## Q.7 Answer any two of the following questions.

- a) Explain Customer Relationship Management with diagram.
- b) What is Business Intelligence (BI)? Explain management strategies for developing BI capabilities.
- c) Explain how you manage global systems.

Max. Marks: 56

12

16

16

| Seat |  |
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| No.  |  |
|      |  |

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to right indicate full marks.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - Knowledge derived from recorded facts is \_ 1)
    - a) Data c) Truth

- b) Information
- d) All of the above
- If you are a \_\_\_\_\_ recipient of sensitive information, such as might be 2) overheard or contained in a misdirected email, this would not be illegal, but might be unethical to use it.
  - a) Active b) Passive
  - c) Proper d) **Business**
- 3) Which of these system uses multidimensional data analysis?
  - DSS b) MIS a)
  - ESS All of these c) d)
- 4) Supply chain decision support pertaining to specific products produced at specific plants in a specific quantity falls under \_
  - a) Supply chain decision support at strategic level
  - Supply chain decision support at operational level b)
  - Supply chain decision support at tactial level c)
  - d) Either at strategic level or at tactical level
- The expert system uses a(n) \_\_\_\_\_ to select the most appropriate 5) response. a) Inference
  - b) Decision support system
  - c) Knowledge base d) data source
- The criteria used to access how user and business needs are met in 6) software
  - a) Compatibility Security b)
  - Functionality c) Scalability d)
- Building and sustaining long term business with customers is the aim 7) of \_
  - a) Customer Relationship Management
  - b) Customer Acquisition
  - c) Customer Management
  - d) Electronic-CRM

Set

R

Max. Marks: 70

8) E-Commerce is not suitable for \_\_\_\_\_.

- a) Sale/Purchasing of expensive jewelry
- b) Sale/Purchase of Mobile phones
- c) Online Job searching
- d) Sale/Purchase of branded clothes
- Confidentiality, \_\_\_\_\_ and availability are the basic principles of information security.
  - a) Integrity

b) Portability

**SLR-FM-388** 

Set

- c) Modularity d) Efficiency
- 10) To easily modify the existing system it is necessary to \_\_\_\_\_.
  - a) Use good software tools
  - b) Use the best hardware available
  - c) Design the system which can be changed at low cost
  - d) Keep the programming team happy
- 11) Decision support system involve all of the following type of analytical modeling activities except \_\_\_\_\_.
  - a) What if analysis
- b) Sensitivity analysis
- c) Goal-seeking analysis d) Heuristics
- 12) Which of the following is not true of information?
  - a) Information involves placing data in some form of meaningful context.
  - b) Information is produced as a byproduct of a transformation process
  - c) Information involves transforming data using a defined process
  - d) helps to reduce uncertainty, thereby improving decision behavior
- 13) The \_\_\_\_\_ can help you choose a product.
  - a) Office automation system
  - b) Management Information System
  - c) Transaction processing
  - d) Decision Support System
- A storage device that is connected directly to a network is an example of \_\_\_\_\_.
  - a) Network attached storage
  - c) Direct attached storage
- b) Storage area network
- d) RAID

| Seat |  |
|------|--|
| No.  |  |

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to right indicate full marks.

#### Section – I

#### Q.2 Answer any four of the following questions.

- a) What is information system? Explain the dimensions of information system.
- **b)** What is collaboration? Explain few business benefits of collaboration and teamwork.
- c) How information systems impact organizations and business firm?
- d) Write a note on Information rights.
- e) List and explain ethics in a information society.
- f) Write a note on Green computing.

#### Q.3 Answer any two of the following questions.

- a) Explain the tools and technologies for collaboration and teamwork.
- b) Why it is required to have security and control in Information technology.
- c) Explain the components of information technology infrastructure.

#### Section – II

#### Q.4 Answer any FOUR of the following questions.

- a) Why e-commerce is different? Explain types of e- commerce.
- **b)** Write a note on intelligent techniques to manage knowledge.
- c) Explain types of knowledge management systems.
- d) Explain Rapid Application Development.
- e) What is change management?
- f) What are the critical success factors in selecting projects?

## Q.7 Answer any two of the following questions.

- a) Explain Customer Relationship Management with diagram.
- b) What is Business Intelligence (BI)? Explain management strategies for developing BI capabilities.
- c) Explain how you manage global systems.

Max. Marks: 56

12

16

16

# B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

# MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to right indicate full marks.

# MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The criteria used to access how user and business needs are met in software \_\_\_\_\_.
  - a) Compatibility

- b) Security
- c) Scalability d) Functionality
- Building and sustaining long term business with customers is the aim of \_\_\_\_\_.
  - a) Customer Relationship Management
  - b) Customer Acquisition
  - c) Customer Management
  - d) Electronic-CRM
- 3) E-Commerce is not suitable for \_\_\_\_\_.
  - a) Sale/Purchasing of expensive jewelry
  - b) Sale/Purchase of Mobile phones
  - c) Online Job searching
  - d) Sale/Purchase of branded clothes
- Confidentiality, \_\_\_\_\_ and availability are the basic principles of information security.
  - a) Integrity b) Portability
  - c) Modularity d) Efficiency
- 5) To easily modify the existing system it is necessary to \_\_\_\_\_.
  - a) Use good software tools
  - b) Use the best hardware available
  - c) Design the system which can be changed at low cost
  - d) Keep the programming team happy
- 6) Decision support system involve all of the following type of analytical modeling activities except \_\_\_\_\_.
  - a) What if analysis
  - c) Goal-seeking analysis d) Heuristics
- 7) Which of the following is not true of information?
  - a) Information involves placing data in some form of meaningful context.

b)

Sensitivity analysis

- b) Information is produced as a byproduct of a transformation process
- c) Information involves transforming data using a defined process
- d) helps to reduce uncertainty, thereby improving decision behavior



Max. Marks: 70

Page **11** of **12** 

- 8) The can help you choose a product.
  - a) Office automation system
  - b) Management Information System
  - Transaction processing c)
  - d) Decision Support System

#### 9) A storage device that is connected directly to a network is an example of .

- a) Network attached storage b) Storage area network
- c) Direct attached storage d) RAID
- 10) Knowledge derived from recorded facts is \_
  - a) Data b)
  - c) Truth d)
- If you are a recipient of sensitive information, such as might be 11) overheard or contained in a misdirected email, this would not be illegal, but might be unethical to use it.
  - a) Active b)
  - c) Proper d)
- 12) Which of these system uses multidimensional data analysis?
  - a) DSS b) MIS
  - c) ESS d)
- 13) Supply chain decision support pertaining to specific products produced at specific plants in a specific quantity falls under \_\_\_\_
  - Supply chain decision support at strategic level a)
  - b) Supply chain decision support at operational level
  - c) Supply chain decision support at tactial level
  - d) Either at strategic level or at tactical level
- The expert system uses a(n) \_\_\_\_\_ to select the most appropriate 14) response.
  - a) Inference

- Decision support system b)
- c) Knowledge base
- d) data source

- Information
- All of the above

Set

- Passive
- **Business**
- All of these

| Seat |  |
|------|--|
| No.  |  |

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MANAGEMENT INFORMATION SYSTEM

Day & Date: Saturday, 07-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All Questions are compulsory.

2) Figures to right indicate full marks.

#### Section – I

#### Q.2 Answer any four of the following questions.

- a) What is information system? Explain the dimensions of information system.
- **b)** What is collaboration? Explain few business benefits of collaboration and teamwork.
- c) How information systems impact organizations and business firm?
- d) Write a note on Information rights.
- e) List and explain ethics in a information society.
- f) Write a note on Green computing.

#### Q.3 Answer any two of the following questions.

- a) Explain the tools and technologies for collaboration and teamwork.
- b) Why it is required to have security and control in Information technology.
- c) Explain the components of information technology infrastructure.

#### Section – II

#### Q.4 Answer any FOUR of the following questions.

- a) Why e-commerce is different? Explain types of e- commerce.
- **b)** Write a note on intelligent techniques to manage knowledge.
- c) Explain types of knowledge management systems.
- d) Explain Rapid Application Development.
- e) What is change management?
- f) What are the critical success factors in selecting projects?

## Q.7 Answer any two of the following questions.

- a) Explain Customer Relationship Management with diagram.
- b) What is Business Intelligence (BI)? Explain management strategies for developing BI capabilities.
- c) Explain how you manage global systems.



12

16

16

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology ADVANCED DATA BASE SYSTEM

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

## MCQ/Objective Type Questions

Duration: 30 Minutes

Seat

No.

Q.1

- Marks: 14 atives from the options and rewrite the sentence. 14
- Choose the correct alternatives from the options and rewrite the sentence.
   1) Data that are shipped to a client on behalf of a transaction can reside at the client even after the transaction completes is called \_\_\_\_\_.
  - a) Data caching b) Lock caching
    - c) Data fetching d) Data distribution
  - 2) Site reintegration in distributed database is nothing but \_\_\_\_\_.
    - a) Separating a failed site from a network
    - b) Selecting a new coordinator
    - c) Rejoining of a failed site after its recovery
    - d) Connecting the whole network after the failure of its server
- 3) In interquery parallelism \_
  - a) Different queries are executing in parallel
  - b) Single query is executing in parallel
  - c) Individual operation of a query executes in parallel
  - d) Different operation of a query executes in parallel
- 4) The protocol which allows global transactions to read but not to update local data items is \_\_\_\_\_.
  - a) Local-read-write protocol
- b) Local-read protocold) Global-read protocol
- c) Global-read-write protocol d) (
- 5) If one of the sites containing relation r fails then the relation r can be found at another site. This mechanism is \_\_\_\_\_.
  - a) Data fragmentation
  - b) Data replication
  - c) Data integration
  - d) Data configuration
- 6) The query

#### Create type Student under Person ....

- Is using a
- a) table inheritance
- b) multiple inheritanced) attribute inheritance
- c) type inheritance d)
- 7) Duplication elimination, projection, set operations can be done by \_\_\_\_\_.
  - a) Sorting c) Both

- b) Hashing
- d) None

Max. Marks: 70

9

Set

- 8) Sorting of the relation that do not fit in memory is called
  - a) Parallel sort

b) External sort Merge sort

- c) Range sort
- 9) Translation of a queries in high level database language in to expressions that can be used at the physical level is called

d)

- query optimization a)
- query processing c)
- b) query transformation d) query execution
- 10) The process that receive user queries, execute them and results are sent back are called \_\_\_\_\_.
  - a) Data server process c) User process
- b) Server process
- Database writer process d)
- In data analysis & mining, Decision Support System is used for making \_\_\_\_\_. 11)
  - a) Query decisions b) Data analysis decisions
  - c) Business decisions
- d) Table creation decisions

 $\sigma_{\theta_1(E)} \cup \theta_1(E)$ 

- 12) Large volumes of data are processed by Hadoop
  - Using a lot of machines in parallel. This optimizes data processing a)
  - b) Shipping the code to the data instead of sending the date to the code

b)

- Using sophisticated caching techniques on name node to speed c) processing of data
- d) All of the above
- 13)  $\sigma_{\theta_1 \cap \theta_1(E)} =$  \_\_\_\_\_.
  - $\mathbf{O}_{\theta_1}(\mathbf{E}) \cap_{\theta_1}(\mathbf{E})$ a)
  - d) All C)  $\sigma_{\theta_1}(\sigma_{\theta_2(E)})$
- Which of the following is not the Dameon process that runs on hadoop 14) cluster?
  - JobTracker a)

DataNode b)

TaskTracker c)

d) TaskNode Set

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|----------------|---|----------|-----------------|
| Seat<br>No.    |   | Set      | Ρ               |
|                | B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>ADVANCED DATA BASE SYSTEM  |          |                 |
| Day &<br>Time: | & Date: Tuesday, 10-12-2019 Max<br>: 02:30 PM To 05:30 PM   | . Marks  | s: 56           |
| Instru         | <ul><li>uctions: 1) All questions are compulsory</li><li>2) Figures to the right indicate full marks.</li></ul>   |          |                 |
|                | Section – I   |          |                 |
| Q.2            | <ul> <li>Attempt any three of the following questions.</li> <li>a) Shared lock &amp; distributed lock manager approach.</li> <li>b) Complex datatypes.</li> <li>c) Parallel sort.</li> <li>d) Persistent C ++ system.</li> </ul>              |          | 12              |
| Q.3            | Attempt any one of the following questions.<br>Illustrate with example Query transformation and semi join strategy in<br>distributed query processing.  |          | 08              |
|                | Explain Objects, Object - identity and reference types in SQL with example illustration.  | <b>;</b> |                 |
| Q.4            | Attempt any one of the following questions.<br>What is interoperation parallelism? Illustrate its techniques with examples.<br>OR   |          | 08              |
|                | What is I/O Parallelism? Explain and compare the partitioning techniques i  | n it.    |                 |
|                | Section – II  |          |                 |
| Q.5            | <ul> <li>Attempt any three of the following questions.</li> <li>a) Decision tree classifier</li> <li>b) Association and clustering</li> <li>c) Transaction processing monitors</li> <li>d) Database connectivity and OOD standards</li> </ul> |          | 12              |
| Q.6            | Attempt any one of the following questions.<br>What is Datawarehouse? Elaborate its components and issues with neat d<br>OR   | liagram  | <b>08</b><br>1. |
|                | Explain query processing of selection operation using indices with all its algorithms.  |          |                 |
| Q.7            | Attempt any one of the following questions.<br>Differentiate between SQL, NoSQL & New SQL with example & use.   |          | 08              |
|                | What is performance tuning? Explain tunable parameters & tuning of hards  | ware.    |                 |

# SLR-FM-389 Set

Seat No.

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **ADVANCED DATA BASE SYSTEM**

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

#### **Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

#### **Duration: 30 Minutes**

1)

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Sorting of the relation that do not fit in memory is called \_\_\_\_\_ a) Parallel sort
  - c) Range sort

- b) External sort d) Merge sort
- 2) Translation of a queries in high level database language in to expressions that can be used at the physical level is called query transformation b)
  - a) query optimization
  - c) query processing
- The process that receive user queries, execute them and results are sent 3) back are called

d)

- a) Data server process c) User process
- b) Server process

query execution

- Database writer process d)
- In data analysis & mining, Decision Support System is used for making . 4)
  - a) Query decisions
- Data analysis decisions b) Table creation decisions d)
- c) Business decisions
- 5) Large volumes of data are processed by Hadoop \_
  - a) Using a lot of machines in parallel. This optimizes data processing
  - Shipping the code to the data instead of sending the date to the code b)
  - c) Using sophisticated caching techniques on name node to speed processing of data
  - d) All of the above
- 6)  $\sigma_{\theta_1 \cap \theta_1(E)} =$ 
  - b) a)  $\mathbf{O}_{\theta_1}(\mathbf{E}) \cap_{\theta_1}(\mathbf{E})$  $\sigma_{\theta_1(E)} \cup \theta_1(E)$
  - d) All c)  $\sigma_{\theta_1}(\sigma_{\theta_2(E)})$
- 7) Which of the following is not the Dameon process that runs on hadoop cluster?
  - a) JobTracker DataNode b) c) TaskTracker d) TaskNode
- 8) Data that are shipped to a client on behalf of a transaction can reside at the client even after the transaction completes is called \_
  - Data caching a) b)
  - Lock caching c) Data fetching d) Data distribution

Max. Marks: 70

- Set Q
- 9) Site reintegration in distributed database is nothing but \_\_\_\_\_.
  - Separating a failed site from a network a)
  - b) Selecting a new coordinator
  - c) Rejoining of a failed site after its recovery
  - d) Connecting the whole network after the failure of its server
- 10) In interguery parallelism
  - Different queries are executing in parallel a)
  - b) Single query is executing in parallel
  - c) Individual operation of a query executes in parallel
  - d) Different operation of a query executes in parallel
- 11) The protocol which allows global transactions to read but not to update local data items is
  - a) Local-read-write protocol
- b) Local-read protocol
- c) Global-read-write protocol d)
- **Global-read protocol**
- If one of the sites containing relation r fails then the relation r can be 12) found at another site. This mechanism is .
  - a) Data fragmentation
  - b) Data replication
  - c) Data integration
  - d) Data configuration
- 13) The query

c)

#### Create type Student under Person ....

Is using a

- a) table inheritance c) type inheritance
- b) multiple inheritance
- attribute inheritance d)

#### Duplication elimination, projection, set operations can be done by \_\_\_\_\_. 14)

a) Sorting Both

Hashing b) d) None

| r              |   | r      |                 |
|----------------|---|--------|-----------------|
| Seat<br>No.    |   | Set    | Q               |
|                | B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>ADVANCED DATA BASE SYSTEM  |        |                 |
| Day 8<br>Time: | & Date: Tuesday, 10-12-2019 Max.<br>: 02:30 PM To 05:30 PM  | Marks  | s: 56           |
| Instru         | <ul><li>uctions: 1) All questions are compulsory</li><li>2) Figures to the right indicate full marks.</li></ul>   |        |                 |
|                | Section – I   |        |                 |
| Q.2            | <ul> <li>Attempt any three of the following questions.</li> <li>a) Shared lock &amp; distributed lock manager approach.</li> <li>b) Complex datatypes.</li> <li>c) Parallel sort.</li> <li>d) Persistent C ++ system.</li> </ul>              |        | 12              |
| Q.3            | Attempt any one of the following questions.<br>Illustrate with example Query transformation and semi join strategy in<br>distributed query processing.  |        | 08              |
|                | Explain Objects, Object - identity and reference types in SQL with example illustration.  |        |                 |
| Q.4            | Attempt any one of the following questions.<br>What is interoperation parallelism? Illustrate its techniques with examples.<br>OR   |        | 08              |
|                | What is I/O Parallelism? Explain and compare the partitioning techniques in   | h it.  |                 |
|                | Section – II  |        |                 |
| Q.5            | <ul> <li>Attempt any three of the following questions.</li> <li>a) Decision tree classifier</li> <li>b) Association and clustering</li> <li>c) Transaction processing monitors</li> <li>d) Database connectivity and OOD standards</li> </ul> |        | 12              |
| Q.6            | Attempt any one of the following questions.<br>What is Datawarehouse? Elaborate its components and issues with neat di<br>OR  | iagram | <b>08</b><br>1. |
|                | Explain query processing of selection operation using indices with all its algorithms.  |        |                 |
| Q.7            | Attempt any one of the following questions.<br>Differentiate between SQL, NoSQL & New SQL with example & use.   |        | 08              |
|                | What is performance tuning? Explain tunable parameters & tuning of hardw  | vare.  |                 |

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology ADVANCED DATA BASE SYSTEM

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

Marks: 14

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- If one of the sites containing relation r fails then the relation r can be 1) found at another site. This mechanism is .
  - a) Data fragmentation
  - b) Data replication
  - c) Data integration
  - d) Data configuration
- 2) The query

#### Create type Student under Person ....

Is using a

- a) table inheritance
- b) multiple inheritance
- c) type inheritance d) attribute inheritance

Duplication elimination, projection, set operations can be done by \_\_\_\_\_. 3)

- Sorting Hashing a) b) Both None c) d)
- Sorting of the relation that do not fit in memory is called \_ 4)
  - Parallel sort External sort a) b)
    - Range sort Merge sort C) d)
- 5) Translation of a gueries in high level database language in to expressions that can be used at the physical level is called \_\_\_\_\_
  - a) query optimization query transformation b)
  - c) query processing d) query execution
- The process that receive user queries, execute them and results are sent 6) back are called b) Server process
  - a) Data server process
  - c) User process Database writer process d)
- In data analysis & mining, Decision Support System is used for making \_\_\_\_\_. 7)
  - a) Query decisions
- Data analysis decisions b)
- c) Business decisions
- Table creation decisions d)

- Max. Marks: 70
- Set R

#### 8) Large volumes of data are processed by Hadoop

- Using a lot of machines in parallel. This optimizes data processing a)
- Shipping the code to the data instead of sending the date to the code b)
- c) Using sophisticated caching techniques on name node to speed processing of data
- d) All of the above
- 9)  $\mathbf{O}_{\theta_1 \cap \theta_1}(\mathbf{E}) =$ 
  - b) a)  $\mathbf{O}_{\theta_1}(\mathbf{E}) \cap_{\theta_1}(\mathbf{E})$  $\sigma_{\theta_1(E)} \cup \theta_1(E)$
  - $\sigma_{\theta_1}(\sigma_{\theta_2(E)})$ d) All c)
- 10) Which of the following is not the Dameon process that runs on hadoop cluster?
  - a) JobTracker b) DataNode
  - c) TaskTracker d) TaskNode
- 11) Data that are shipped to a client on behalf of a transaction can reside at the client even after the transaction completes is called \_\_\_\_\_.
  - Data caching a)
- b) Lock caching

SLR-FM-389

Set

- c) Data fetching d) Data distribution
- Site reintegration in distributed database is nothing but . 12)
  - Separating a failed site from a network a)
  - Selecting a new coordinator b)
  - c) Rejoining of a failed site after its recovery
  - d) Connecting the whole network after the failure of its server
- 13) In interguery parallelism
  - Different queries are executing in parallel a)
  - b) Single query is executing in parallel
  - Individual operation of a query executes in parallel c)
  - Different operation of a query executes in parallel d)
- The protocol which allows global transactions to read but not to update 14) local data items is
  - a) Local-read-write protocol
- b) Local-read protocol
- c) Global-read-write protocol
- d) **Global-read protocol**

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| -              |   |      |
|----------------|---|------|
| Seat<br>No.    | Set   | R    |
|                | B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>ADVANCED DATA BASE SYSTEM  |      |
| Day &<br>Time: | & Date: Tuesday, 10-12-2019 Max. Marks:<br>: 02:30 PM To 05:30 PM   | : 56 |
| Instru         | <ul><li>uctions: 1) All questions are compulsory</li><li>2) Figures to the right indicate full marks.</li></ul>   |      |
|                | Section – I   |      |
| Q.2            | <ul> <li>Attempt any three of the following questions.</li> <li>a) Shared lock &amp; distributed lock manager approach.</li> <li>b) Complex datatypes.</li> <li>c) Parallel sort.</li> <li>d) Persistent C ++ system.</li> </ul>              | 12   |
| Q.3            | Attempt any one of the following questions.<br>Illustrate with example Query transformation and semi join strategy in<br>distributed query processing.  | 08   |
|                | OR<br>Explain Objects, Object - identity and reference types in SQL with example<br>illustration.   |      |
| Q.4            | Attempt any one of the following questions.<br>What is interoperation parallelism? Illustrate its techniques with examples.<br>OR   | 08   |
|                | What is I/O Parallelism? Explain and compare the partitioning techniques in it.   |      |
|                | Section – II  |      |
| Q.5            | <ul> <li>Attempt any three of the following questions.</li> <li>a) Decision tree classifier</li> <li>b) Association and clustering</li> <li>c) Transaction processing monitors</li> <li>d) Database connectivity and OOD standards</li> </ul> | 12   |
| Q.6            | Attempt any one of the following questions.<br>What is Datawarehouse? Elaborate its components and issues with neat diagram.<br>OR  | 08   |
|                | Explain query processing of selection operation using indices with all its algorithms.  |      |
| Q.7            | Attempt any one of the following questions.<br>Differentiate between SQL, NoSQL & New SQL with example & use.   | 08   |
|                | What is performance tuning? Explain tunable parameters & tuning of hardware.  |      |

Page 10 of 12

# SLR-FM-389

# Seat No.

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **ADVANCED DATA BASE SYSTEM**

Day & Date: Tuesday, 10-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - 1) The process that receive user queries, execute them and results are sent back are called
    - a) Data server process c) User process
- b) Server process Database writer process d)

 $\mathbf{\sigma}_{\theta_1(E)} \cup \theta_1(E)$ 

- In data analysis & mining, Decision Support System is used for making \_\_\_\_\_. 2)
  - a) Query decisions Data analysis decisions b) d) Table creation decisions
  - c) Business decisions
- Large volumes of data are processed by Hadoop 3)
  - a) Using a lot of machines in parallel. This optimizes data processing
  - Shipping the code to the data instead of sending the date to the code b)
  - c) Using sophisticated caching techniques on name node to speed processing of data
  - d) All of the above
- 4)  $\mathbf{O}_{\theta_1 \cap \theta_1}(\mathbf{E}) =$ 
  - $\mathbf{O}_{\theta_1}(\mathbf{E}) \cap_{\theta_1}(\mathbf{E})$ b) a)
  - d) All C)  $\sigma_{\theta_1}(\sigma_{\theta_2(E)})$
- 5) Which of the following is not the Dameon process that runs on hadoop cluster?
  - a) JobTracker DataNode b) c)
    - TaskTracker d) TaskNode
- Data that are shipped to a client on behalf of a transaction can reside at 6) the client even after the transaction completes is called \_
  - Data caching Lock caching a) b)
  - c) Data fetching d) Data distribution
- Site reintegration in distributed database is nothing but \_\_\_\_\_. 7)
  - a) Separating a failed site from a network
  - b) Selecting a new coordinator
  - c) Rejoining of a failed site after its recovery
  - d) Connecting the whole network after the failure of its server

Set

Max. Marks: 70

SLR-FM-389 Set 8) In interguery parallelism a) Different queries are executing in parallel b) Single query is executing in parallel Individual operation of a query executes in parallel c) d) Different operation of a query executes in parallel 9) The protocol which allows global transactions to read but not to update local data items is \_ a) Local-read-write protocol b) Local-read protocol c) Global-read-write protocol d) Global-read protocol If one of the sites containing relation r fails then the relation r can be 10) found at another site. This mechanism is a) Data fragmentation b) Data replication c) Data integration d) Data configuration 11) The query Create type Student under Person .... Is using a a) table inheritance b) multiple inheritance attribute inheritance c) type inheritance d) Duplication elimination, projection, set operations can be done by \_\_\_\_\_. 12) Sorting Hashing a) b) Both d) None C) Sorting of the relation that do not fit in memory is called \_\_\_\_\_. 13) a) Parallel sort b) External sort d) Merge sort c) Range sort Translation of a queries in high level database language in to expressions 14) that can be used at the physical level is called \_\_\_\_

- a) query optimization
- query transformation b)
- c) query processing
- d) query execution

| Seat<br>No.    | Set   | S               |
|----------------|---|-----------------|
|                | B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>ADVANCED DATA BASE SYSTEM  |                 |
| Day 8<br>Time: | & Date: Tuesday, 10-12-2019 Max. Mark<br>: 02:30 PM To 05:30 PM   | s: 56           |
| Instru         | <ul><li>uctions: 1) All questions are compulsory</li><li>2) Figures to the right indicate full marks.</li></ul>   |                 |
|                | Section – I   |                 |
| Q.2            | <ul> <li>Attempt any three of the following questions.</li> <li>a) Shared lock &amp; distributed lock manager approach.</li> <li>b) Complex datatypes.</li> <li>c) Parallel sort.</li> <li>d) Persistent C ++ system.</li> </ul>              | 12              |
| Q.3            | Attempt any one of the following questions.<br>Illustrate with example Query transformation and semi join strategy in<br>distributed query processing.  | 08              |
|                | OR<br>Explain Objects, Object - identity and reference types in SQL with example<br>illustration.   |                 |
| Q.4            | Attempt any one of the following questions.<br>What is interoperation parallelism? Illustrate its techniques with examples.<br>OR   | 08              |
|                | What is I/O Parallelism? Explain and compare the partitioning techniques in it.   |                 |
|                | Section – II  |                 |
| Q.5            | <ul> <li>Attempt any three of the following questions.</li> <li>a) Decision tree classifier</li> <li>b) Association and clustering</li> <li>c) Transaction processing monitors</li> <li>d) Database connectivity and OOD standards</li> </ul> | 12              |
| Q.6            | Attempt any one of the following questions.<br>What is Datawarehouse? Elaborate its components and issues with neat diagram<br>OR   | <b>08</b><br>n. |
|                | Explain query processing of selection operation using indices with all its algorithms.  |                 |
| Q.7            | Attempt any one of the following questions.<br>Differentiate between SQL, NoSQL & New SQL with example & use.   | 08              |
|                | What is performance tuning? Explain tunable parameters & tuning of hardware.  |                 |

| Seat |  |
|------|--|
| No.  |  |
|      |  |

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
  - 2) Figures to the right indicates full marks.

## MCQ/Objective Type Questions

## **Duration: 30 Minutes**

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- To check whether we are developing the right product according to the 1) customer requirements or not.lt is a static process
  - a) Validation c) Quality Assurance
- Verification b)
- d) **Quality Control**

Implementation

- 2) Defects are less costly, if detected in which of the following phases
  - Coding a)

b) Design

d)

- **Requirements Gathering** C)
- 3) Which of the following techniques is NOT a White box technique?
  - a) Statement Testing and coverage
  - b) Decision Testing and coverage
  - c) Condition Coverage
  - d) Boundary value analysis
- To test a function, the programmer has to write a \_\_\_\_\_, which calls the 4) function and passes it test data.
  - a) Stub b) Driver
  - Proxy c) d) None
- 5) Executing the same test case by giving the number of inputs on same build called as \_
  - a) Regression Testing
  - **Re** Testing c) Ad hoc Testing d) Sanity Testing
- 6) Retesting the entire application after a change has been made called as

b)

- **Full Regression Testing** a) **Regional Regression** 
  - Unit Regression b)
    - d) Retesting
- What are the Types of Integration Testing? 7)
  - **Big Bang Testing** a) c)

C)

- Bottom Up Testing b) All the above
- Top Down Testing d)

Max. Marks: 70

Set

- b) Verification c) Quality Assurance d) Quality Control Which of the following is NOT part of system testing? Its goal is to simulate what your users might do. That type of automation tool is called a . a) Regression testing b) Test monkey d) None
- Both a and b c)
- 13) Selenium IDE supports autocomplete mode when creating tests. This feature serves following purposes \_\_\_\_\_.
  - a) It helps the tester to enter commands more quickly
  - b) It restricts the user from entering invalid commands
  - c) Both a and b
  - d) None
- Selenium IDE supports \_\_\_\_\_ Browser only to create and execute Test 14) Cases.
  - a) Google Chrome
- b) Internet Explorer

c) Mozilla Firefox

d) Opera

- The Planning phase of a formal review includes the following \_\_\_\_\_. 8)
  - a) Explaining the objectives
  - b) Selecting the personnel, allocating roles
  - c) Follow up
  - d) Individual Meeting preparations
- Test cases are designed during \_\_\_\_ 9)
  - a) Test recording b) Test planning
  - c) Test configuration d) Test specification
- 10) It measures the quality of a product It is a specific part of the QA procedure, It is a corrective process, It applies for particular product & Deals with the product \_\_\_\_\_.
  - a) Validation

  - a) Top-down integration testing
  - b) Performance, load and stress testing
  - c) Requirements-based testing
  - d) Usability testing

11)

12)

- **SLR-FM-390** 
  - Set

#### Page **3** of **12**

# Seat No.

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three.

- a) What is software Testing? Mention the different approaches to Testing.
- **b)** What are the misconception about Testing?
- c) Differentiate between Black-Box and White box Testing Technique.
- d) Define the following testing levels: Integration Testing and Big-Bang Testing.

#### Q.3 Attempt any two.

- a) What are the Principle of Software Testing? Mention the different Test Policy, Strategy, Planning for software testing.
- b) Describe in detail Static and Dynamic Testing.
- c) Define the different testing levels in detail
  - 1) Performance Testing
  - 2) Volume Testing
  - 3) Stress Testing
  - 4) Load Testing

#### Section – II

#### Q.4 Attempt any three.

- a) Mention a few typical testing resources that should be considered when test planning.
- b) What are the four reasons for test case planning?
- c) How to Achieve Software Quality in testing process.
- d) Write a short note on Random Testing.

#### Q.5 Attempt any two.

- a) Write the Benefits of Automation and Tools in software testing.
- b) Write the minimum 8 Test Cases for Login Form which includes username and password fields.
- c) Describe the test case terms Reporting Bugs and Bug-Tracking Systems in detail.

16

12

Max. Marks: 56

**SLR-FM-390** 

Set

16

## Seat No.

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
  - 2) Figures to the right indicates full marks.

## MCQ/Objective Type Questions

#### Duration: 30 Minutes

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) The Planning phase of a formal review includes the following \_\_\_\_\_\_.
  - a) Explaining the objectives
  - b) Selecting the personnel, allocating roles
  - c) Follow up
  - d) Individual Meeting preparations
- 2) Test cases are designed during \_\_\_\_
  - a) Test recording b)
  - c) Test configuration d) Test specification
- 3) It measures the quality of a product It is a specific part of the QA procedure, It is a corrective process, It applies for particular product & Deals with the product \_\_\_\_\_.
  - a) Validation b) Verification
  - c) Quality Assurance d) Quality Control
- 4) Which of the following is NOT part of system testing?
  - a) Top-down integration testing
  - b) Performance, load and stress testing
  - c) Requirements-based testing
  - d) Usability testing
- 5) Its goal is to simulate what your users might do. That type of automation tool is called a \_\_\_\_\_.
  - a) Regression testing b) Test monkey
  - c) Both a and b d) None
- 6) Selenium IDE supports autocomplete mode when creating tests. This feature serves following purposes \_\_\_\_\_.
  - a) It helps the tester to enter commands more quickly
  - b) It restricts the user from entering invalid commands
  - c) Both a and b
  - d) None
- 7) Selenium IDE supports \_\_\_\_\_ Browser only to create and execute Test Cases.
  - a) Google Chromec) Mozilla Firefox
- b) Internet Explorer

Test planning

d) Opera



Max. Marks: 70

- 8) To check whether we are developing the right product according to the customer requirements or not. It is a static process \_ .
  - a) Validation Verification b)
  - c) Quality Assurance d) **Quality Control**
- 9) Defects are less costly, if detected in which of the following phases
  - Coding a)

- b) Design
- c) Requirements Gathering d) Implementation

#### 10) Which of the following techniques is NOT a White box technique?

- a) Statement Testing and coverage
- **Decision Testing and coverage** b)
- **Condition Coverage** c)
- d) Boundary value analysis
- To test a function, the programmer has to write a \_\_\_\_\_, which calls the 11) function and passes it test data.
  - a) Stub b) Driver
  - c) Proxy d) None
- 12) Executing the same test case by giving the number of inputs on same build called as
  - a) Regression Testing
  - c) Ad hoc Testing d)
- Retesting the entire application after a change has been made called as 13)
  - Full Regression Testing a)
- Unit Regression b)
- **Regional Regression** Retesting d) c)
- 14) What are the Types of Integration Testing?
  - Big Bang Testing a)
  - c) Top Down Testing
- Bottom Up Testing
- d) All the above
- b)

Set

- Re Testing

- b)
  - Sanity Testing

| Page | 6 | of | 12 |
|------|---|----|----|

# Seat No.

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three.

- a) What is software Testing? Mention the different approaches to Testing.
- b) What are the misconception about Testing?
- c) Differentiate between Black-Box and White box Testing Technique.
- d) Define the following testing levels: Integration Testing and Big-Bang Testing.

#### Q.3 Attempt any two.

- a) What are the Principle of Software Testing? Mention the different Test Policy, Strategy, Planning for software testing.
- b) Describe in detail Static and Dynamic Testing.
- c) Define the different testing levels in detail
  - 1) Performance Testing
  - 2) Volume Testing
  - 3) Stress Testing
  - 4) Load Testing

#### Section – II

#### Q.4 Attempt any three.

- a) Mention a few typical testing resources that should be considered when test planning.
- b) What are the four reasons for test case planning?
- c) How to Achieve Software Quality in testing process.
- d) Write a short note on Random Testing.

#### Q.5 Attempt any two.

- a) Write the Benefits of Automation and Tools in software testing.
- b) Write the minimum 8 Test Cases for Login Form which includes username and password fields.
- c) Describe the test case terms Reporting Bugs and Bug-Tracking Systems in detail.

Max. Marks: 56

16

12

12

| Seat |  |
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| No.  |  |

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
  - 2) Figures to the right indicates full marks.

# MCQ/Objective Type Questions

# **Duration: 30 Minutes**

c)

#### Marks: 14

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Executing the same test case by giving the number of inputs on same build called as
  - a) Regression Testing Ad hoc Testing
- b) Re Testing d) Sanity Testing
- 2) Retesting the entire application after a change has been made called as
  - **Full Regression Testing** a)
- b) Unit Regression
- **Regional Regression** Retesting d) C)

#### 3) What are the Types of Integration Testing?

- Big Bang Testing Bottom Up Testing a) b)
- Top Down Testing d) All the above c)
- 4) The Planning phase of a formal review includes the following . a) Explaining the objectives
  - b) Selecting the personnel, allocating roles
  - Follow up c)
  - d) Individual Meeting preparations
- Test cases are designed during \_ 5)
  - Test recording b) Test planning a)
  - c) Test configuration d) Test specification
- It measures the quality of a product It is a specific part of the QA 6) procedure, It is a corrective process, It applies for particular product & Deals with the product \_\_\_\_\_
  - a) Validation

- b) Verification
- Quality Assurance d) **Quality Control** c)
- 7) Which of the following is NOT part of system testing?
  - Top-down integration testing a)
  - b) Performance, load and stress testing
  - c) Requirements-based testing
  - d) Usability testing

Max. Marks: 70

R

- 8) Its goal is to simulate what your users might do. That type of automation tool is called a \_\_\_\_ .
  - a) Regression testing
- b) Test monkey d) None

Set

- c) Both a and b
- 9) Selenium IDE supports autocomplete mode when creating tests. This feature serves following purposes \_\_\_\_
  - a) It helps the tester to enter commands more quickly
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- 10) Selenium IDE supports Browser only to create and execute Test Cases.
  - a) Google Chrome b)
  - c) Mozilla Firefox d)
- To check whether we are developing the right product according to the 11) customer requirements or not. It is a static process

b)

d)

- a) Validation
- **Quality Control** c) Quality Assurance d)
- 12) Defects are less costly, if detected in which of the following phases
  - a) Coding

b) Design

Internet Explorer

Opera

Verification

Implementation

- **Requirements Gathering** c)
- 13) Which of the following techniques is NOT a White box technique?
  - a) Statement Testing and coverage
  - b) Decision Testing and coverage
  - **Condition Coverage** C)
  - d) Boundary value analysis
- 14) To test a function, the programmer has to write a \_\_\_\_\_, which calls the function and passes it test data.
  - a) Stub b)
  - c) Proxy
- Driver
- d) None

R

# Seat No.

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three.

- a) What is software Testing? Mention the different approaches to Testing.
- **b)** What are the misconception about Testing?
- c) Differentiate between Black-Box and White box Testing Technique.
- d) Define the following testing levels: Integration Testing and Big-Bang Testing.

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- a) What are the Principle of Software Testing? Mention the different Test Policy, Strategy, Planning for software testing.
- b) Describe in detail Static and Dynamic Testing.
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  - 1) Performance Testing
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  - 3) Stress Testing
  - 4) Load Testing

#### Section – II

#### Q.4 Attempt any three.

- a) Mention a few typical testing resources that should be considered when test planning.
- b) What are the four reasons for test case planning?
- c) How to Achieve Software Quality in testing process.
- d) Write a short note on Random Testing.

#### Q.5 Attempt any two.

- a) Write the Benefits of Automation and Tools in software testing.
- b) Write the minimum 8 Test Cases for Login Form which includes username and password fields.
- c) Describe the test case terms Reporting Bugs and Bug-Tracking Systems in detail.

Max. Marks: 56

16

12

16

## Seat No.

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
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# MCQ/Objective Type Questions

Duration: 30 Minutes

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- It measures the quality of a product It is a specific part of the QA procedure, It is a corrective process, It applies for particular product & Deals with the product \_\_\_\_\_.
  - a) Validation b) Verification
  - c) Quality Assurance d) Quality Control
- 2) Which of the following is NOT part of system testing?
  - a) Top-down integration testing
  - b) Performance, load and stress testing
  - c) Requirements-based testing
  - d) Usability testing
- Its goal is to simulate what your users might do. That type of automation tool is called a \_\_\_\_\_.
  - a) Regression testing b) Test monkey
  - c) Both a and b d) None
- Selenium IDE supports autocomplete mode when creating tests. This feature serves following purposes \_\_\_\_\_.
  - a) It helps the tester to enter commands more quickly
  - b) It restricts the user from entering invalid commands
  - c) Both a and b
  - d) None
- 5) Selenium IDE supports \_\_\_\_\_ Browser only to create and execute Test Cases.
  - a) Google Chrome b) Internet Explorer

Requirements Gathering

- c) Mozilla Firefox d) Opera
- 6) To check whether we are developing the right product according to the customer requirements or not. It is a static process \_\_\_\_\_.
  - a) Validation b) Verification
  - c) Quality Assurance d) Quality Control
- 7) Defects are less costly, if detected in which of the following phases
  - a) Coding

c)

- b) Design
- d) Implementation

Set S

Max. Marks: 70

8) Which of the following techniques is NOT a White box technique?

- a) Statement Testing and coverage
- b) Decision Testing and coverage
- c) Condition Coverage
- d) Boundary value analysis
- 9) To test a function, the programmer has to write a \_\_\_\_\_, which calls the function and passes it test data.

b)

- a) Stub
- c) Proxy d) None
- 10) Executing the same test case by giving the number of inputs on same build called as \_\_\_\_\_.
  - a) Regression Testing b) Re Testing
  - c) Ad hoc Testing d) Sanity Testing
- 11) Retesting the entire application after a change has been made called as
  - a) Full Regression Testing
- b) Unit Regression

Driver

**SLR-FM-390** 

Set

- c) Regional Regression d) Retesting
- 12) What are the Types of Integration Testing?
  - a) Big Bang Testing
- b) Bottom Up Testingd) All the above
- c) Top Down Testing d) A
- 13) The Planning phase of a formal review includes the following \_\_\_\_\_\_.a) Explaining the objectives
  - b) Selecting the personnel, allocating roles
  - c) Follow up
  - d) Individual Meeting preparations
- 14) Test cases are designed during \_\_\_\_\_
  - a) Test recording b)
  - c) Test configuration
- ) Test planning
- d) Test specification

# Seat No.

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SOFTWARE TESTING AND QUALITY ASSURANCE

Day & Date: Thursday, 12-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three.

- a) What is software Testing? Mention the different approaches to Testing.
- **b)** What are the misconception about Testing?
- c) Differentiate between Black-Box and White box Testing Technique.
- d) Define the following testing levels: Integration Testing and Big-Bang Testing.

#### Q.3 Attempt any two.

- a) What are the Principle of Software Testing? Mention the different Test Policy, Strategy, Planning for software testing.
- b) Describe in detail Static and Dynamic Testing.
- c) Define the different testing levels in detail
  - 1) Performance Testing
  - 2) Volume Testing
  - 3) Stress Testing
  - 4) Load Testing

#### Section – II

#### Q.4 Attempt any three.

- a) Mention a few typical testing resources that should be considered when test planning.
- b) What are the four reasons for test case planning?
- c) How to Achieve Software Quality in testing process.
- d) Write a short note on Random Testing.

#### Q.5 Attempt any two.

- a) Write the Benefits of Automation and Tools in software testing.
- b) Write the minimum 8 Test Cases for Login Form which includes username and password fields.
- c) Describe the test case terms Reporting Bugs and Bug-Tracking Systems in detail.

Max. Marks: 56

12

16

16

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **FUZZY & NEURAL NETWORKS** 

MCQ/Objective Type Questions

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

book.

Q.1 Choose the correct alternatives from the options. 1) Fuzzy logic is a form of \_\_\_\_\_. a) Two-valued logic b) Crisp set logic c) Many-valued logic d) Binary set logic Traditional set theory is also known as Crisp Set theory. 2) a) True False b) The truth values of traditional set theory is and that of fuzzy set is . 3) a) Either 0 or 1, between 0 & 1 Between 0 & 1, either 0 or 1 b) c) Between 0 & 1, between 0 & 1 Either 0 or 1, either 0 or 1 d) Fuzzy logic is extension of Crisp set with an extension of handling the 4) concept of Partial Truth. a) True b) False 5) The room temperature is hot. Here the hot (use of linguistic variable is used) can be represented by a) Fuzzy Set b) Crisp Set c) Fuzzy & Crisp Set None of the mentioned d) 6) The values of the set membership is represented by \_\_\_\_\_. a) Discrete Set b) Degree of truth c) Probabilities d) Both Degree of truth & Probabilities Japanese were the first to utilize fuzzy logic practically on high-speed 7) trains in Sendai. b) False a) True 8) Fuzzy Set theory defines fuzzy operators. Choose the fuzzy operators from the following. a) AND b) OR c) NOT All of the mentioned d) There are also other operators, more linguistic in nature, called \_\_\_\_\_ 9) that can be applied to fuzzy set theory. a) Hedges Lingual Variable b) None of the mentioned c) Fuzz Variable d) Page **1** of **12** 

# SLR-FM-391

Set

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

Max. Marks: 70

Seat No.

**Duration: 30 Minutes** 

2) Figures to the right indicate full marks.

14

- 10) Fuzzy logic is usually represented as \_\_\_\_\_.
  - a) IF-THEN-ELSE rules
  - b) IF-THEN rules
  - c) Both IF-THEN-ELSE rules & IF-THEN rules
  - d) None of the mentioned
- 11) For what purpose Feedback neural networks are primarily used?
  - a) classification b) feature mapping
  - c) pattern mapping d) none of the mentioned
- 12) Presence of false minima will have what effect on probability of error in recall?
  - a) directly
- b) inversely

No

b)

**SLR-FM-391** 

Set P

- c) no effect d) directly or inversely
- 13) How is effect false minima reduced?
  - a) deterministic update of weights
  - b) stochastic update of weights
  - c) deterministic or stochastic update of weights
  - d) none of the mentioned
- 14) 4 is Boltzman law practical for implementation?
  - a) Yes

|                |                            |   |  |  |                              |        | г     |      |
|----------------|----------------------------|---|--|--|------------------------------|--------|-------|------|
| Seat<br>No.    |                            |   |  |  |                              | :      | Set   | Ρ    |
|                |                            | B.E. (Part – I)<br>Fl   | (Old) (CGP<br>Informati<br>UZZY & NE                                 | A) Examination<br>on Technolo<br>URAL NETW | tion Nov/Dec<br>9gy<br>/ORKS | -2019  |       |      |
| Day &<br>Time: | k Dat<br>02:3              | e: Tuesday,17-12-<br>80 PM To 05:30 PM  | -2019<br>M   |  |                              | Max. I | Marks | : 56 |
| Instru         | uctio                      | <b>ns:</b> 1) All question<br>2) Figures to t   | is are compuls<br>he right indica                                    | sory.<br>ite full marks.                   |                              |        |       |      |
|                |                            |   | Se   | ection – I                                 |                              |        |       |      |
| Q.2            | Atte                       | mpt any four.   |  |  |                              |        |       | 08   |
|                | a)<br>b)<br>c)<br>d)<br>e) | What are fuzzy da<br>Illustrate use of c<br>What is rank orde<br>Give one applicat<br>What is fuzzy qua | atabases?<br>ardinality.<br>aring?<br>tion of fuzzy.<br>alification? |  |                              |        |       |      |
| 0 2            | - ,<br>A ++ o              | mot ony two   |  |  |                              |        |       | 10   |
| Q.J            | Alle                       | How is stability a  | nalveis of cont  | rol system carr                            | ied out?                     |        |       | 10   |
|                | a)<br>b)                   | State the conside   | erations of fuzz   | rv decision mak                            | king                         |        |       |      |
|                | c)                         | Illustrate fuzzy int  | egrals.  |  | ling.                        |        |       |      |
| Q.4            | Atte                       | mpt any one.  |  |  |                              |        |       | 10   |
|                | a)                         | How does max- n   | nin method wo  | ork?                                       |                              |        |       |      |
|                | b)                         | State and Illustrat   | te some applie   | cations of fuzzy                           | theory.                      |        |       |      |
|                |                            |   | S  | Section-II                                 |                              |        |       |      |
| Q.5            | Atte                       | mpt any four.   |  |  |                              |        |       | 08   |
|                | a)                         | What is a percept   | tron?  |  |                              |        |       |      |
|                | b)                         | Compare betwee  | n supervised   | and unsupervis                             | ed learning.                 |        |       |      |
|                | d)                         | Explain the basic   | model of ANN   | N'S.                                       |                              |        |       |      |
|                | a)<br>e)                   | Define activation   | function   | ласк ргорадаш                              | וזנ                          |        |       |      |
| Q.6            | Atte                       | mpt any two.  |  |  |                              |        |       | 10   |
|                | a)                         | What is classification  | ation?   |  |                              |        |       |      |
|                | b)<br>c)                   | How does Mc cu<br>List the Learning<br>Adaline and Med  | Iloach - Pit's n<br>Algorithms ar<br>Ialine.                         | nodel work?<br>nd compare the              | m Compare bet                | ween   |       |      |
| Q.7            | Atte                       | mpt any one.  |  |  |                              |        |       | 10   |
|                | a)<br>b)                   | Explain the feed<br>Compare betwee  | forward topolo<br>en Adaline and                                     | ogy of ANN in c<br>I Medaline.             | letail.                      |        |       |      |

| ate: Tuesday,17-12-2019<br>2:30 PM To 05:30 PM   |   |             |   | Marks: 70 |
|--|---|-------------|---|-----------|
| ions: 1  | ) Q. No. 1 is compulsory and sho<br>book.   | ould b      | e solved in first 30 minutes i            | n answer  |
| 2  | 2) Figures to the right indicate full   | mark        | S.  |           |
| MCQ/Objective Type Questions   |   |             |   |           |
| . 30 minutes   |   |             |   |           |
| Fuzzy Set theory defines fuzzy operators. Choose the fuzzy operators from the following. |   |             |   |           |
| a)   | AND   | b)          | OR  |           |
| c)   | NOT   | d)          | All of the mentioned                      |           |
| There are also other operators, more linguistic in nature, called                        |   |             |   |           |
| a)<br>c)   | Hedges<br>Fuzz Variable   | b)<br>d)    | Lingual Variable<br>None of the mentioned |           |
| Fuz<br>a)<br>b)<br>c)<br>d)  | zzy logic is usually represented as<br>IF-THEN-ELSE rules<br>IF-THEN rules<br>Both IF-THEN-ELSE rules & IF-<br>None of the mentioned  | s<br>THEN   | <br>I rules                               |           |
| For  | For what purpose Feedback neural networks are primarily used?   |             |   |           |
| a)   | classification  | b)          | feature mapping                           |           |
| c)   | pattern mapping   | d)          | none of the mentioned                     |           |
| Presence of false minima will have what effect on probability of error in recall?        |   |             |   |           |
| a)   | directly  | b)          | inversely                                 |           |
| C)   | no effect   | d)          | directly or inversely                     |           |
| Hov<br>a)<br>b)<br>c)<br>d)  | ow is effect false minima reduced?<br>deterministic update of weights<br>stochastic update of weights<br>deterministic or stochastic update of weights<br>none of the mentioned |             |   |           |
| 4 is<br>a)   | Boltzman law practical for imple<br>Yes   | menta<br>b) | ation?<br>No                              |           |
| Fuz<br>a)<br>c)  | zzy logic is a form of<br>Two-valued logic<br>Many-valued logic   | b)<br>d)    | Crisp set logic<br>Binary set logic       |           |
| I raditional set theory is also known as Crisp Set theory                                |   |             |   |           |

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **FUZZY & NEURAL NETWORKS** 

Day & Da Time: 02

Instructi

Duration:

Seat

No.

#### Q.1 Ch

- 1)
- 2)

#### 3)

# 5)

6)

#### 7)

- 8)
- 9) Set theory also known as et theory. IS b) False
  - a) True

# **SLR-FM-391**

Set

Q

# er
Set

- 10) The truth values of traditional set theory is \_\_\_\_\_ and that of fuzzy set is \_\_\_\_\_.
  - a) Either 0 or 1, between 0 & 1 b) Between 0 & 1, either 0 or 1
  - c) Between 0 & 1, between 0 & 1 d) Either 0 or 1, either 0 or 1
- 11) Fuzzy logic is extension of Crisp set with an extension of handling the concept of Partial Truth.
  - a) True b) False
- 12) The room temperature is hot. Here the hot (use of linguistic variable is used) can be represented by \_\_\_\_\_.
  - a) Fuzzy Set
- b) Crisp Set
- c) Fuzzy & Crisp Set d) None of the mentioned
- 13) The values of the set membership is represented by \_\_\_\_\_.
  - a) Discrete Set
  - b) Degree of truth
  - c) Probabilities
  - d) Both Degree of truth & Probabilities
- 14) Japanese were the first to utilize fuzzy logic practically on high-speed trains in Sendai.
  - a) True

b) False

| Seat           | t   | Set       | Q    |
|----------------|---|-----------|------|
| 140.           | B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>FUZZY & NEURAL NETWORKS  | 9         |      |
| Day 8<br>Time: | & Date: Tuesday,17-12-2019 Ma<br>: 02:30 PM To 05:30 PM   | ax. Marks | 56 : |
| Instru         | <ul><li>uctions: 1) All questions are compulsory.</li><li>2) Figures to the right indicate full marks.</li></ul>  |           |      |
|                | Section – I   |           |      |
| Q.2            | <ul> <li>Attempt any four.</li> <li>a) What are fuzzy databases?</li> <li>b) Illustrate use of cardinality.</li> <li>c) What is rank ordering?</li> <li>d) Give one application of fuzzy.</li> <li>e) What is fuzzy qualification?</li> </ul>   |           | 08   |
| Q.3            | <ul> <li>Attempt any two.</li> <li>a) How is stability analysis of control system carried out?</li> <li>b) State the considerations of fuzzy decision making.</li> <li>c) Illustrate fuzzy integrals.</li> </ul>  |           | 10   |
| Q.4            | <ul><li>Attempt any one.</li><li>a) How does max- min method work?</li><li>b) State and Illustrate some applications of fuzzy theory.</li></ul>   |           | 10   |
|                | Section-II  |           |      |
| Q.5            | <ul> <li>Attempt any four.</li> <li>a) What is a perceptron?</li> <li>b) Compare between supervised and unsupervised learning.</li> <li>c) Explain the basic model of ANN's.</li> <li>d) Desire a learning model using back propagation</li> <li>e) Define activation function</li> </ul> |           | 08   |
| Q.6            | <ul> <li>Attempt any two.</li> <li>a) What is classification?</li> <li>b) How does Mc culloach - Pit's model work?</li> <li>c) List the Learning Algorithms and compare them Compare between Adaline and Medaline.</li> </ul>   |           | 10   |
| Q.7            | <ul> <li>Attempt any one.</li> <li>a) Explain the feed forward topology of ANN in detail.</li> <li>b) Compare between Adaline and Medaline.</li> </ul>  |           | 10   |

#### **FUZZY & NEURAL NETWORKS** Max. Marks: 70 book. 2) Figures to the right indicate full marks. MCQ/Objective Type Questions Choose the correct alternatives from the options. used) can be represented by a) Fuzzy Set b) Crisp Set c) Fuzzy & Crisp Set None of the mentioned d) The values of the set membership is represented by . a) Discrete Set b) Degree of truth c) Probabilities d) Both Degree of truth & Probabilities trains in Sendai. a) True b) False from the following. a) AND b) OR c) NOT d) All of the mentioned that can be applied to fuzzy set theory. Lingual Variable a) Hedges b) c) Fuzz Variable None of the mentioned d) Fuzzy logic is usually represented as \_\_\_\_\_. a) IF-THEN-ELSE rules b) IF-THEN rules c) Both IF-THEN-ELSE rules & IF-THEN rules d) None of the mentioned For what purpose Feedback neural networks are primarily used? a) classification feature mapping b) c) pattern mapping d) none of the mentioned

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

**Duration: 30 Minutes** 

Seat

No.

#### Q.1

- The room temperature is hot. Here the hot (use of linguistic variable is 1)
- 2)
- Japanese were the first to utilize fuzzy logic practically on high-speed 3)
- 4) Fuzzy Set theory defines fuzzy operators. Choose the fuzzy operators
- There are also other operators, more linguistic in nature, called \_\_\_\_\_ 5)
- 6)
- 7)
- 8) Presence of false minima will have what effect on probability of error in recall?
  - directly a)
  - c) no effect

- inversely b)
- directly or inversely d)

## SLR-FM-391

Set

R

Marks: 14

- 9) How is effect false minima reduced?
  - a) deterministic update of weights
  - b) stochastic update of weights
  - c) deterministic or stochastic update of weights
  - d) none of the mentioned
- 10) 4 is Boltzman law practical for implementation? a) Yes b) No
- 11) Fuzzy logic is a form of \_\_\_\_\_.
  - a) Two-valued logic b) Crisp set logic
  - c) Many-valued logic d) Binary set logic
- 12) Traditional set theory is also known as Crisp Set theory.a) Trueb) False
- 13) The truth values of traditional set theory is \_\_\_\_\_ and that of fuzzy set is \_\_\_\_\_.
  - a) Either 0 or 1, between 0 & 1 b) Between 0 & 1, either 0 or 1
  - c) Between 0 & 1, between 0 & 1 d) Either 0 or 1, either 0 or 1
- 14) Fuzzy logic is extension of Crisp set with an extension of handling the concept of Partial Truth.
  - a) True

b) False

**SLR-FM-391** 

Set R

| 0              |                            |   |            |       |
|----------------|----------------------------|---|------------|-------|
| Seat<br>No.    |                            |   | Set        | R     |
|                |                            | B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2<br>Information Technology<br>FUZZY & NEURAL NETWORKS   | 019        |       |
| Day 8<br>Time: | & Dat<br>: 02:3            | e: Tuesday,17-12-2019<br>30 PM To 05:30 PM  | Max. Marks | s: 56 |
| Instru         | uctio                      | <ul><li><b>ns:</b> 1) All questions are compulsory.</li><li>2) Figures to the right indicate full marks.</li></ul>                                      |            |       |
|                |                            | Section – I   |            |       |
| Q.2            | Atte                       | empt any four.  |            | 08    |
|                | a)<br>b)<br>c)<br>d)<br>e) | What are fuzzy databases?<br>Illustrate use of cardinality.<br>What is rank ordering?<br>Give one application of fuzzy.<br>What is fuzzy gualification? |            |       |
| 0.2            | ~,<br>^++~                 |   |            | 10    |
| Q.J            | Alle                       | How is stability analysis of control system carried out?  |            | 10    |
|                | a)<br>h)                   | State the considerations of fuzzy decision making   |            |       |
|                | c)                         | Illustrate fuzzy integrals.   |            |       |
| Q.4            | Atte                       | empt any one.   |            | 10    |
|                | a)                         | How does max- min method work?  |            |       |
|                | b)                         | State and Illustrate some applications of fuzzy theory.   |            |       |
|                |                            | Section-II  |            |       |
| Q.5            | Atte                       | empt any four.  |            | 08    |
|                | a)                         | What is a perceptron?   |            |       |
|                | b)                         | Compare between supervised and unsupervised learning.   |            |       |
|                | ୯)<br>C)                   | Explain the basic model of ANN's.   |            |       |
|                | a)<br>e)                   | Define activation function  |            |       |
| Q.6            | Atte                       | empt any two.   |            | 10    |
|                | a)<br>b)<br>c)             | What is classification?<br>How does Mc culloach - Pit's model work?   |            |       |
|                | 9                          | Adaline and Medaline.   |            |       |
| Q.7            | Atte<br>a)<br>b)           | empt any one.<br>Explain the feed forward topology of ANN in detail.<br>Compare between Adaline and Medaline.   |            | 10    |

**FUZZY & NEURAL NETWORKS** Max. Marks: 70 book. 2) Figures to the right indicate full marks. MCQ/Objective Type Questions Choose the correct alternatives from the options. Fuzzy logic is usually represented as \_\_\_\_\_. 1) a) IF-THEN-ELSE rules b) IF-THEN rules Both IF-THEN-ELSE rules & IF-THEN rules c) d) None of the mentioned 2) For what purpose Feedback neural networks are primarily used? a) classification b) feature mapping none of the mentioned c) pattern mapping d) 3) Presence of false minima will have what effect on probability of error in recall? a) directly inversely b) c) no effect d) directly or inversely

- 4) How is effect false minima reduced?
  - a) deterministic update of weights
  - b) stochastic update of weights
  - c) deterministic or stochastic update of weights
  - d) none of the mentioned
- 5) 4 is Boltzman law practical for implementation?
  - a) Yes b) No
- 6) Fuzzy logic is a form of \_\_\_\_
  - a) Two-valued logic b) Crisp set logic
  - c) Many-valued logic d) Binary set logic
- 7) Traditional set theory is also known as Crisp Set theory. a) True False b)
- The truth values of traditional set theory is and that of fuzzy set is . 8) a) Either 0 or 1, between 0 & 1
  - Between 0 & 1, between 0 & 1 c)
- 9) Fuzzy logic is extension of Crisp set with an extension of handling the concept of Partial Truth.
  - a) True

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

### **Duration: 30 Minutes**

Seat

No.

### Q.1

## **SLR-FM-391**

Marks: 14

14

Page 10 of 12

|     |   |                    | Set   |
|-----|---|--------------------|---|
| 10) | The room temperature is hot. Here to<br>used) can be represented by<br>a) Fuzzy Set<br>c) Fuzzy & Crisp Set   | he ho<br>b)<br>d)  | ot (use of linguistic variable is<br>Crisp Set<br>None of the mentioned |
| 11) | <ul> <li>The values of the set membership is</li> <li>a) Discrete Set</li> <li>b) Degree of truth</li> <li>c) Probabilities</li> <li>d) Both Degree of truth &amp; Probabilities</li> </ul> | s repre            | esented by  |
| 12) | Japanese were the first to utilize fuz<br>trains in Sendai.<br>a) True  | zy log<br>b)       | jic practically on high-speed<br>False                                  |
| 13) | Fuzzy Set theory defines fuzzy oper<br>from the following.<br>a) AND<br>c) NOT  | ators.<br>b)<br>d) | Choose the fuzzy operators<br>OR<br>All of the mentioned                |
|     |   |                    | to de la concentra de la  |

- 14) There are also other operators, more linguistic in nature, called \_\_\_\_\_\_ that can be applied to fuzzy set theory.
  - a) Hedges
- b) Lingual Variable

S

c) Fuzz Variable d) None of the mentioned

| •              |                            |  |   |   |                            |            |      |
|----------------|----------------------------|--|---|---|----------------------------|------------|------|
| Seat<br>No.    |                            |  |   |   |                            | Set        | S    |
|                |                            | B.E. (Part – I)<br>Fl  | (Old) (CGP)<br>Informatic<br>JZZY & NEU                           | A) Examination<br>on Technolog<br>RAL NETWO | on Nov/Dec-2<br>ly<br>)RKS | 019        |      |
| Day &<br>Time: | & Date<br>02:3             | e: Tuesday,17-12-<br>0 PM To 05:30 PN  | 2019<br>1   |   |                            | Max. Marks | 56 : |
| Instru         | uctio                      | <b>ns:</b> 1) All question<br>2) Figures to t  | s are compulsone right indicat                                    | ory.<br>e full marks.                       |                            |            |      |
|                |                            |  | Se  | ction – I                                   |                            |            |      |
| Q.2            | Atte                       | mpt any four.  |   |   |                            |            | 08   |
|                | a)<br>b)<br>c)<br>d)<br>e) | What are fuzzy da<br>Illustrate use of ca<br>What is rank orde<br>Give one applicat<br>What is fuzzy qua | atabases?<br>ardinality.<br>ring?<br>ion of fuzzy.<br>lification? |   |                            |            |      |
| Q.3            | Δtte                       | mpt any two  |   |   |                            |            | 10   |
| 4.0            | a)                         | How is stability ar  | alvsis of contr   | ol svstem carrie                            | d out?                     |            |      |
|                | b)                         | State the conside  | rations of fuzzy  | / decision makir                            | ng.                        |            |      |
|                | c)                         | Illustrate fuzzy int   | egrals.   |   | 0                          |            |      |
| Q.4            | Atte                       | mpt any one.   |   |   |                            |            | 10   |
|                | a)                         | How does max- m  | nin method wo   | ·k?   |                            |            |      |
|                | b)                         | State and Illustrat  | e some applic   | ations of fuzzy tl                          | neory.                     |            |      |
|                |                            |  | S   | ection-II                                   |                            |            |      |
| Q.5            | Atte                       | mpt any four.  |   |   |                            |            | 08   |
|                | a)                         | What is a percept  | ron?  |   |                            |            | •••  |
|                | b)                         | Compare betwee   | n supervised a  | nd unsupervise                              | d learning.                |            |      |
|                | c)                         | Explain the basic  | model of ANN  | S.  |                            |            |      |
|                | d)<br>e)                   | Desire a learning  | model using b   | ack propagation                             | l                          |            |      |
| 0.6            | ۰)<br>۸++۰                 |  |   |   |                            |            | 10   |
| Q.0            | a)                         | What is classifica   | ition?  |   |                            |            | 10   |
|                | b)<br>c)                   | How does Mc cul<br>List the Learning   | loach - Pit's m<br>Algorithms an                                  | odel work?<br>d compare them                | Compare betwe              | een        |      |
| 07             | <b>A ##</b> ~              |  |   |   |                            |            | 40   |
| Q. <i>1</i>    | atte<br>a)<br>b)           | Explain the feed<br>Compare betwee   | forward topolo<br>n Adaline and                                   | gy of ANN in de<br>Medaline.                | tail.                      |            | 10   |

## B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

### **DISTRIBUTED COMPUTING** Day & Date: Tuesday, 17-12-2019

Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

### **Duration: 30 Minutes**

#### Q.1 Choose the correct alternatives from the options.

1) In message passing a process receives information by executing the Send Primitive b)

d)

b)

d)

- a) Send
- c) Receive
- 2) Distributed systems should \_\_\_\_
  - a) high security
  - c) better system utilization
- What are global locks? 3)
  - a) they synchronize access to local resources
  - b) they synchronize access to global resources
  - c) they synchronize access to local and global resources
  - d) none of above
- 4) Message passing system allows processes to \_\_\_\_
  - a) communicate with one another without resorting to shared data
  - communicate with one another by resorting to shared data b)
  - share data c)
  - d) name the recipient or sender of the message
- 5) Bounded capacity and Unbounded capacity queues are referred to as \_\_\_\_\_. Automatic buffering
  - Programmed buffering a) c) User defined buffering
    - b) d) No buffering

**Receive Primitive** 

low system overhead

have better resource sharing

In case of failure, a new transaction coordinator can be elected by \_\_\_\_\_. 6)

- a) bully algorithm ring algorithm b) c) both (a) and (b) d) none of the mentioned
- 7) In the token passing approach of distributed systems, processes are
  - organized in a ring structure \_\_\_\_ b) Physically a) logically
  - c) both (a) and (b) none of the mentioned d)
- 8) What are the characteristics of tightly coupled system?
  - a) Same clock, usually shared memory
  - b) Communication is via this shared memory
  - c) Multiprocessors
  - d) All of these

Max. Marks: 70

Set



# Seat

No.

Marks: 14

#### Page 2 of 12

- 9) What are the characteristics of mutual exclusion using centralized approach?
  - a) One processor as coordinator which handles all requests
  - It requires request, reply and release per critical section entry b)
  - C) The method is free from starvation
  - d) All of these
- 10) What is the characteristics of atomicity?
  - All operations associated are executed to completion or none are a) performed
  - One processor as coordinator which handles all requests b)
  - When responses are received from all processes, then process can c) enter its critical Section
  - Use communication links d)
- 11) What are the disadvantages of majority protocol?
  - a) Complicated implementation b) Deadlock can occur easily
  - c) Both a and b d) Vulnerability
- In distributed file system, \_\_\_\_\_ is mapping between logical and physical 12) objects.
  - a) client interfacing migration

c)

14)

- b) Naming
- Heterogeneity d)
- 13) What are the advantages of file replication?
  - a) Improves availability Improves performance b)
  - Both a and b c)
- d) Improves speed
- What are the major components of file system? Authorization service b)
- a) Directory service c) Shadow service
- d) All of these

Set

| Seat |  |
|------|--|
| No.  |  |

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DISTRIBUTED COMPUTING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### Section – I

#### Q.2 Attempt any three

- a) Explain in detail stub generation and RPC messages.
- b) Explain with example message buffering strategy.
- c) Explain the flexible reliability in multicast communication and atomic multicast.
- d) Explain the server naming and server locating w.r.t. client server bindings.
- Q.3 a) Explain with example idempotency and handling of duplicate request 08 messages.

#### OR

Explain all the issues in designing a Distributed Operating System.

**Q.4** What do you mean by multidatagram message? Explain encoding and decoding **08** of message data.

#### Section – II

| Q.5 | Atte | empt any three  | 12 |
|-----|------|---|----|
|     | a)   | Explain WFG and probe based distributed algorithm for deadlock    |    |
|     | -    | detection.  |    |
|     | b)   | Explain the desirable features of a good distributed file system. |    |
|     | c)   | Explain the clock synchronization issues and algorithm.           |    |
|     | d)   | Explain with example and figure file sharing semantics.           |    |
| Q.6 | a)   | Explain in detail file caching schemes.                           | 08 |
|     | ,    | OR  |    |
|     |      | Explain in detail all the process migration mechanisms.           |    |
| Q.7 | Wri  | te note on  | 08 |
|     | a)   | Fault tolerance   |    |
|     | - (  |   |    |

**b)** Implementation of logical clocks

Max. Marks: 56

12

Set P

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **DISTRIBUTED COMPUTING**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Seat No.

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### MCQ/Objective Type Questions **Duration: 30 Minutes**

#### Q.1 Choose the correct alternatives from the options.

- 1) What are the characteristics of tightly coupled system?
  - Same clock, usually shared memory a)
  - Communication is via this shared memory b)
  - c) **Multiprocessors**
  - d) All of these
- 2) What are the characteristics of mutual exclusion using centralized approach?
  - a) One processor as coordinator which handles all requests
  - b) It requires request, reply and release per critical section entry
  - c) The method is free from starvation
  - d) All of these
- 3) What is the characteristics of atomicity?
  - a) All operations associated are executed to completion or none are performed
  - b) One processor as coordinator which handles all requests
  - c) When responses are received from all processes, then process can enter its critical Section
  - d) Use communication links
- 4) What are the disadvantages of majority protocol?
  - a) Complicated implementation b) Deadlock can occur easily
  - c) Both a and b d) Vulnerability
- In distributed file system, \_\_\_\_\_ is mapping between logical and physical 5) objects.

d)

b)

- a) client interfacing b) Naming
- c) migration d) Heterogeneity
- 6) What are the advantages of file replication?
  - Improves performance b)

Improves speed

- c) Both a and b
- 7) What are the major components of file system? Authorization service
  - a) Directory service

a) Improves availability

c) Shadow service d) All of these

Max. Marks: 70

Marks: 14

8) In message passing a process receives information by executing the \_\_\_\_\_

d)

a) Send

9)

Send Primitive b)

c) Receive

Distributed systems should \_\_\_\_

c) better system utilization

- b) have better resource sharing
- d) low system overhead

**Receive Primitive** 

10) What are global locks?

a) high security

- a) they synchronize access to local resources
- b) they synchronize access to global resources
- c) they synchronize access to local and global resources
- d) none of above
- 11) Message passing system allows processes to \_\_\_\_\_
  - a) communicate with one another without resorting to shared data
  - communicate with one another by resorting to shared data b)
  - share data c)
  - d) name the recipient or sender of the message
- 12) Bounded capacity and Unbounded capacity queues are referred to as \_\_\_\_\_.
  - Programmed buffering a)
  - User defined buffering c)
- Automatic buffering b) d) No buffering
- In case of failure, a new transaction coordinator can be elected by \_\_\_\_\_. 13) a) bully algorithm
  - ring algorithm b)
    - d) none of the mentioned
- 14) In the token passing approach of distributed systems, processes are organized in a ring structure \_\_\_\_\_.
  - a) logically

- b)
- c) both (a) and (b)

c) both (a) and (b)

- Physically
- d) none of the mentioned

## **SLR-FM-392**

Set Q

| Seat |  |
|------|--|
| No.  |  |

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DISTRIBUTED COMPUTING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### Section – I

#### Q.2 Attempt any three

- a) Explain in detail stub generation and RPC messages.
- b) Explain with example message buffering strategy.
- c) Explain the flexible reliability in multicast communication and atomic multicast.
- d) Explain the server naming and server locating w.r.t. client server bindings.
- Q.3 a) Explain with example idempotency and handling of duplicate request 08 messages.

#### OR

Explain all the issues in designing a Distributed Operating System.

**Q.4** What do you mean by multidatagram message? Explain encoding and decoding **08** of message data.

#### Section – II

| Q.5 | Atte | empt any three  | 12 |
|-----|------|---|----|
|     | a)   | Explain WFG and probe based distributed algorithm for deadlock    |    |
|     |      | detection.  |    |
|     | b)   | Explain the desirable features of a good distributed file system. |    |
|     | c)   | Explain the clock synchronization issues and algorithm.           |    |
|     | d)   | Explain with example and figure file sharing semantics.           |    |
| Q.6 | a)   | Explain in detail file caching schemes.                           | 08 |
|     | •    | OR  |    |
|     |      | Explain in detail all the process migration mechanisms.           |    |
| Q.7 | Wri  | te note on  | 08 |
|     | a)   | Fault tolerance   |    |
|     |      |   |    |

**b)** Implementation of logical clocks

Set

Max. Marks: 56

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **DISTRIBUTED COMPUTING**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

c)

Seat

No.

#### Q.1 Choose the correct alternatives from the options.

- 1) Bounded capacity and Unbounded capacity gueues are referred to as
  - Programmed buffering a)
    - b) Automatic buffering User defined buffering d) No buffering
- 2) In case of failure, a new transaction coordinator can be elected by .
  - a) bully algorithm ring algorithm b)
  - c) both (a) and (b) d) none of the mentioned
- In the token passing approach of distributed systems, processes are 3) organized in a ring structure \_
  - Physically a) logically b)
  - c) both (a) and (b) none of the mentioned d)
- 4) What are the characteristics of tightly coupled system?
  - a) Same clock, usually shared memory
  - b) Communication is via this shared memory
  - **Multiprocessors** c)
  - d) All of these

#### What are the characteristics of mutual exclusion using centralized approach? 5)

- One processor as coordinator which handles all requests a)
- b) It requires request, reply and release per critical section entry
- c) The method is free from starvation
- d) All of these
- What is the characteristics of atomicity? 6)
  - All operations associated are executed to completion or none are a) performed
  - b) One processor as coordinator which handles all requests
  - c) When responses are received from all processes, then process can enter its critical Section
  - d) Use communication links
- 7) What are the disadvantages of majority protocol?
  - a) Complicated implementation c) Both a and b
- b) Deadlock can occur easily
- d) Vulnerability

Marks: 14

R

Max. Marks: 70

- In distributed file system, \_\_\_\_\_ is mapping between logical and physical 8) objects.
  - a) client interfacing b) Naming
  - c) migration d) Heterogeneity
- 9) What are the advantages of file replication?

a) Improves availability

10)

Improves performance b)

Improves speed

- c) Both a and b d)
- What are the major components of file system?
- a) Directory service Authorization service b)
- c) Shadow service All of these d)
- In message passing a process receives information by executing the \_\_\_\_\_. 11) a) Send
  - b) **Receive Primitive**
  - c) Receive d)
- 12) Distributed systems should \_\_\_\_
  - a) high security
  - c) better system utilization
- What are global locks? 13)
  - a) they synchronize access to local resources
  - b) they synchronize access to global resources
  - c) they synchronize access to local and global resources
  - d) none of above
- Message passing system allows processes to \_\_\_\_ 14)
  - a) communicate with one another without resorting to shared data
  - b) communicate with one another by resorting to shared data
  - c) share data
  - d) name the recipient or sender of the message



- b) have better resource sharing
- d) low system overhead

**SLR-FM-392** 

Send Primitive

| Seat |  |
|------|--|
| No.  |  |

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DISTRIBUTED COMPUTING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### Section – I

#### Q.2 Attempt any three

- a) Explain in detail stub generation and RPC messages.
- b) Explain with example message buffering strategy.
- c) Explain the flexible reliability in multicast communication and atomic multicast.
- d) Explain the server naming and server locating w.r.t. client server bindings.
- Q.3 a) Explain with example idempotency and handling of duplicate request 08 messages.

#### OR

Explain all the issues in designing a Distributed Operating System.

**Q.4** What do you mean by multidatagram message? Explain encoding and decoding **08** of message data.

#### Section – II

| Q.5 | Atte | empt any three  | 12 |
|-----|------|---|----|
|     | a)   | Explain WFG and probe based distributed algorithm for deadlock detection. |    |
|     | b)   | Explain the desirable features of a good distributed file system.         |    |
|     | c)   | Explain the clock synchronization issues and algorithm.                   |    |
|     | d)   | Explain with example and figure file sharing semantics.                   |    |
| Q.6 | a)   | Explain in detail file caching schemes.                                   | 08 |
|     |      | Explain in detail all the process migration mechanisms.                   |    |
| Q.7 | Wri  | te note on  | 08 |
|     | a)   | Fault tolerance   |    |
|     |      |   |    |

**b)** Implementation of logical clocks

Max. Marks: 56

12

Set R

| Seat |  |
|------|--|
| No.  |  |

#### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **DISTRIBUTED COMPUTING**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options.

- 1) What is the characteristics of atomicity?
  - All operations associated are executed to completion or none are a) performed
  - b) One processor as coordinator which handles all requests
  - When responses are received from all processes, then process can c) enter its critical Section
  - d) Use communication links

#### 2) What are the disadvantages of majority protocol?

- a) Complicated implementation b)
- Deadlock can occur easily c) Both a and b d) Vulnerability
- In distributed file system, \_\_\_\_\_ is mapping between logical and physical 3) objects.

b)

b)

d)

- a) client interfacing
- c) migration d)
- 4) What are the advantages of file replication?
  - a) Improves availability
  - c) Both a and b d)
- 5) What are the major components of file system? Authorization service
  - Directory service a)
  - Shadow service C)
- In message passing a process receives information by executing the \_\_\_\_\_. 6)
  - Send Primitive Send b) a)
  - **Receive Primitive** c) Receive d)
- 7) Distributed systems should \_\_\_\_\_.
  - high security a)
  - c) better system utilization d)
- b) have better resource sharing low system overhead
- What are global locks? 8)
  - a) they synchronize access to local resources
  - b) they synchronize access to global resources
  - c) they synchronize access to local and global resources
  - d) none of above

- Naming
- Heterogeneity
- Improves performance b) Improves speed

All of these

Max. Marks: 70

Marks: 14 14

Set Message passing system allows processes to \_\_\_\_\_ a) communicate with one another without resorting to shared data b) communicate with one another by resorting to shared data c) share data d) name the recipient or sender of the message 10) Bounded capacity and Unbounded capacity queues are referred to as \_\_\_\_\_. a) Programmed buffering b) Automatic buffering c) User defined buffering d) No buffering In case of failure, a new transaction coordinator can be elected by \_\_\_\_\_. 11) a) bully algorithm b) ring algorithm c) both (a) and (b) d) none of the mentioned

SLR-FM-392

- 12) In the token passing approach of distributed systems, processes are organized in a ring structure \_\_\_\_
  - b) Physically a) logically
  - c) both (a) and (b) d) none of the mentioned
- 13) What are the characteristics of tightly coupled system?
  - a) Same clock, usually shared memory
  - b) Communication is via this shared memory
  - c) Multiprocessors
  - d) All of these

9)

- What are the characteristics of mutual exclusion using centralized approach? 14)
  - a) One processor as coordinator which handles all requests
  - It requires request, reply and release per critical section entry b)
  - The method is free from starvation c)
  - d) All of these

| Seat |  |
|------|--|
| No.  |  |

### B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DISTRIBUTED COMPUTING

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### Section – I

#### Q.2 Attempt any three

- a) Explain in detail stub generation and RPC messages.
- b) Explain with example message buffering strategy.
- c) Explain the flexible reliability in multicast communication and atomic multicast.
- d) Explain the server naming and server locating w.r.t. client server bindings.
- Q.3 a) Explain with example idempotency and handling of duplicate request 08 messages.

#### OR

Explain all the issues in designing a Distributed Operating System.

**Q.4** What do you mean by multidatagram message? Explain encoding and decoding **08** of message data.

#### Section – II

| Q.5 | Atte | empt any three  | 12 |
|-----|------|---|----|
|     | a)   | Explain WFG and probe based distributed algorithm for deadlock detection. |    |
|     | b)   | Explain the desirable features of a good distributed file system.         |    |
|     | c)   | Explain the clock synchronization issues and algorithm.                   |    |
|     | d)   | Explain with example and figure file sharing semantics.                   |    |
| Q.6 | a)   | Explain in detail file caching schemes.                                   | 08 |
|     |      | Explain in detail all the process migration mechanisms.                   |    |
| Q.7 | Wri  | te note on  | 08 |
|     | a)   | Fault tolerance   |    |
|     |      |   |    |

**b)** Implementation of logical clocks

Max. Marks: 56

Set S

|      |                  | MCQ/Objective Type Qu   | estions   |
|------|------------------|---|---|
| Dura | tion: 3          | 30 Minutes  | Marks: 14   |
| Q.1  | <b>Cho</b><br>1) | A continuous image is digitised at poia) randomb) Vc) contourd) S   | n <b>s. 14</b><br>nts.<br>ertex<br>ampling  |
|      | 2)               | The transition between continuous values of<br>digital equivalent is called<br>a) Quantisation b) S<br>c) Rasterisation d) N  | the image function and its<br>ampling<br>one of the Mentioned                                     |
|      | 3)               | Images quantised with insufficient brightness<br>occurrence of<br>a) Pixillation b) B<br>c) False contours d) N   | s levels will lead to the<br>lurring<br>one of the mention  |
|      | 4)               | The smallest discernible change in intensity<br>a) Intensity Resolution b) C<br>c) Saturation d) C  | level is called<br>ontour<br>ontrast  |
|      | 5)               | What is the tool used in tasks such as zoom<br>a) Sampling b) In<br>c) Filters d) N   | ing, shrinking, rotating, etc.?<br>terpolation<br>one of the mentioned                            |
|      | 6)               | The type of Interpolation where for each newimmediate pixel is assigned isa) bicubic interpolationb) cuc) bilinear interpolationd) new                              | v location the intensity of the<br>ubic interpolation<br>earest neighbour interpolation           |
|      | 7)               | The type of Interpolation where the intensity<br>pixels is used to obtain intensity a new locati<br>a) cubic interpolation b) ne<br>c) bilinear interpolation d) bi | of the FOUR neighbouring<br>on is called<br>earest neighbour interpolation<br>cubic interpolation |
|      | 8)               | Dynamic range of imaging system is a ratio determined by  | where the upper limit is  |

b)

d)

Noise

Contrast

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

a) Saturation

c) Brightness

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **IMAGE PROCESSING** 

- 2) All questions are compulsory.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

#### MCO/Obiostivo Typo O ....

**SLR-FM-393** 

Max. Marks: 70

Ρ



Seat No.

- 9) For Dynamic range ratio the lower limit is determined by \_\_\_\_\_.
  - a) Saturation

a)

b) Brightness

Contrast

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Set

- c) Noise d)
- Quantitatively, spatial resolution cannot be represented in which of the 10) following ways \_\_\_\_\_. line pairs
  - b) Pixels
  - Dots d) none of the mentioned C)
- To convert a continuous sensed data into Digital form, which of the 11) following is required?
  - a) Sampling
  - b) Quantization
  - c) Both Sampling and Quantization
  - d) Neither Sampling nor Quantization
- To convert a continuous image f(x, y) to digital form, we have to sample 12) the function in
  - a) Coordinates
    - b) Amplitude
  - c) All of the mentioned d) None of the mentioned
- 13) For a continuous image f(x, y), how could be Sampling defined?
  - Digitizing the coordinate values a)
  - Digitizing the amplitude values b)
  - c) All of the mentioned
  - d) None of the mentioned
- For a continuous image f(x, y), Quantization is defined as \_\_\_\_\_. 14)
  - a) Digitizing the coordinate values
  - Digitizing the amplitude values b)
  - c) All of the mentioned
  - d) None of the mentioned

| Seat           | t   | Set   | Р     |  |
|----------------|---|---|-------|--|
| NO.            |   |   | _     |  |
|                | B.E. (Part – I) (Old) (CGPA) Examination I<br>Information Technology<br>IMAGE PROCESSING  | Dec-2019  |       |  |
| Day &<br>Time: | & Date: Tuesday,17-12-2019<br>:: 02:30 PM To 05:30 PM   | Max. Marks  | 3: 56 |  |
| Instru         | <b>uctions:</b> 1) All questions are compulsory.<br>2) Figures to the right indicate full marks.  |   |       |  |
|                | Section – I   |   |       |  |
| Q.2            | <ul> <li>Attempt any four of the following questions.</li> <li>a) How are digital images represented?</li> <li>b) What is fourier transform? Where is it used?</li> <li>c) What is a Hotelling Transform?</li> <li>d) What is Spatial filtering?</li> <li>e) How is Spatial mask generated from frequency domain</li> </ul> | specification?  | 08    |  |
| Q.3            | Attempt any two of the following questions.   |   | 10    |  |
|                | <ul> <li>a) List and explain fundamental steps in image processing</li> <li>b) State properties of 2D Fourier transform.</li> <li>c) How is enhancement in frequency domain carried out?</li> </ul>   | <ul> <li>List and explain fundamental steps in image processing.</li> <li>State properties of 2D Fourier transform.</li> <li>How is enhancement in frequency domain carried out?</li> </ul> |       |  |
| Q.4            | Attempt any one of the following questions.   |   | 10    |  |
|                | <ul> <li>a) What are the elements of visual perception? Develop a model.</li> <li>b) How are images enhanced?</li> </ul>  | a simple image  |       |  |
|                |   |   |       |  |
| Q.5            | <ul> <li>Attempt any four of the following questions.</li> <li>a) What is image compression?</li> <li>b) What is lossy compression?</li> <li>c) What is boundary detection?</li> <li>d) What is morphology?</li> <li>e) List the Regional descriptors.</li> </ul>   |   | 08    |  |
| Q.6            | <ul> <li>Attempt any two of the following questions.</li> <li>a) How is an Image Compression model developed?</li> <li>b) What is segmentation?</li> <li>c) What is thresholding set? Where is it used?</li> </ul>  |   | 10    |  |
| Q.7            | <ul> <li>Attempt any one of the following questions.</li> <li>a) What are relational descriptors? Illustrate.</li> <li>b) What is the area of motion in segmentation?</li> </ul>  |   | 10    |  |

## Set P

## B.E. (Part – I) (Old) (CGPA) Examination Dec-2019 Information Technology

**IMAGE PROCESSING** 

Day & Date: Tuesday,17-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) All questions are compulsory.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

### MCQ/Objective Type Questions

b)

Noise

**Duration: 30 Minutes** 

Seat No.

#### Q.1 Choose the correct alternatives from the options.

- Dynamic range of imaging system is a ratio where the upper limit is determined by \_\_\_\_\_.
  - a) Saturation
  - c) Brightness d) Contrast

#### 2) For Dynamic range ratio the lower limit is determined by \_\_\_\_\_.

- a) Saturation b) Brightness
- c) Noise d) Contrast
- 3) Quantitatively, spatial resolution cannot be represented in which of the following ways \_\_\_\_\_.
  - a) line pairs b) Pixels
  - c) Dots d) none of the mentioned
- 4) To convert a continuous sensed data into Digital form, which of the following is required?
  - a) Sampling
  - b) Quantization
  - c) Both Sampling and Quantization
  - d) Neither Sampling nor Quantization
- 5) To convert a continuous image f(x, y) to digital form, we have to sample the function in \_\_\_\_\_.
  - a) Coordinates
- b) Amplitude
- c) All of the mentioned d) None of the mentioned
- 6) For a continuous image f(x, y), how could be Sampling defined?
  - a) Digitizing the coordinate values
  - b) Digitizing the amplitude values
  - c) All of the mentioned
  - d) None of the mentioned
- 7) For a continuous image f(x, y), Quantization is defined as \_\_\_\_\_.
  - a) Digitizing the coordinate values
  - b) Digitizing the amplitude values
  - c) All of the mentioned
  - d) None of the mentioned

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Max. Marks: 70

Marks: 14

8) A continuous image is digitised at \_\_\_\_\_ points.

- a) random b) Vertex
- c) contour d) Sampling
- The transition between continuous values of the image function and its digital equivalent is called \_\_\_\_\_.
  - Quantisation b) Sampling
  - c) Rasterisation d) None of the Mentioned
- 10) Images quantised with insufficient brightness levels will lead to the occurrence of \_\_\_\_\_.
  - a) Pixillation

Sampling

a)

a)

- b) Blurring
- c) False contours d) None of the mention

11) The smallest discernible change in intensity level is called \_\_\_\_\_.

- a) Intensity Resolution b) Contour
- c) Saturation d) Contrast

#### 12) What is the tool used in tasks such as zooming, shrinking, rotating, etc.?

- b) Interpolation
- c) Filters d) None of the mentioned
- 13) The type of Interpolation where for each new location the intensity of the immediate pixel is assigned is \_\_\_\_\_.
  - a) bicubic interpolation
  - c) bilinear interpolation
- b) cubic interpolation
- d) nearest neighbour interpolation

**SLR-FM-393** 

Set

- 14) The type of Interpolation where the intensity of the FOUR neighbouring pixels is used to obtain intensity a new location is called \_\_\_\_\_.
  - a) cubic interpolation
- b) nearest neighbour interpolation
- c) bilinear interpolation
- d) bicubic interpolation

| Seat<br>No.    |   | Set   | Q     |  |  |  |  |
|----------------|---|---|-------|--|--|--|--|
|                | B.E. (Part – I) (Old) (CGPA) Examination Dec-2019<br>Information Technology<br>IMAGE PROCESSING   |   |       |  |  |  |  |
| Day &<br>Time: | Date: Tuesday,17-12-20<br>02:30 PM To 05:30 PM  | 9 Max. Mark   | s: 56 |  |  |  |  |
| Instru         | <b>uctions:</b> 1) All questions a<br>2) Figures to the   | re compulsory.<br>right indicate full marks.  |       |  |  |  |  |
|                |   | Section – I   |       |  |  |  |  |
| Q.2            | <ul> <li>Attempt any four of the</li> <li>a) How are digital image</li> <li>b) What is fourier transic</li> <li>c) What is a Hotelling T</li> <li>d) What is Spatial filtering</li> <li>e) How is Spatial mask</li> </ul> | following questions.<br>es represented?<br>form? Where is it used?<br>fransform?<br>ng?<br>generated from frequency domain specification?   | 08    |  |  |  |  |
| Q.3            | <ul> <li>Attempt any two of the f</li> <li>a) List and explain funct</li> <li>b) State properties of 2</li> <li>c) How is enhancement</li> </ul>  | Attempt any two of the following questions.10I) List and explain fundamental steps in image processing.I) State properties of 2D Fourier transform.I) How is enhancement in frequency domain carried out? |       |  |  |  |  |
| Q.4            | <ul> <li>Attempt any one of the fail</li> <li>a) What are the eleme model.</li> <li>b) How are images end</li> </ul>  | <b>ollowing questions.</b><br>hts of visual perception? Develop a simple image<br>hanced?   | 10    |  |  |  |  |
|                |   | Section – II  |       |  |  |  |  |
| Q.5            | <ul> <li>Attempt any four of the</li> <li>a) What is image compresent</li> <li>b) What is lossy compresent</li> <li>c) What is boundary de</li> <li>d) What is morphology</li> <li>e) List the Regional des</li> </ul>    | following questions.<br>ession?<br>ession?<br>tection?<br>coriptors.  | 08    |  |  |  |  |
| Q.6            | <ul><li>Attempt any two of the f</li><li>a) How is an Image Co</li><li>b) What is segmentation</li><li>c) What is thresholding</li></ul>  | <b>ollowing questions.</b><br>mpression model developed?<br>n?<br>set? Where is it used?  | 10    |  |  |  |  |
| Q.7            | <ul><li>Attempt any one of the f</li><li>a) What are relational of</li><li>b) What is the area of r</li></ul>   | ollowing questions.<br>escriptors? Illustrate.<br>notion in segmentation?   | 10    |  |  |  |  |

## Set Q

## B.E. (Part – I) (Old) (CGPA) Examination Dec-2019 Information Technology **IMAGE PROCESSING**

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) All questions are compulsory.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options.

- What is the tool used in tasks such as zooming, shrinking, rotating, etc.? 1) Interpolation b)
  - Sampling a)
  - c) Filters
- The type of Interpolation where for each new location the intensity of the 2) immediate pixel is assigned is \_\_\_\_

d)

b)

d)

- a) bicubic interpolation
- c) bilinear interpolation
- The type of Interpolation where the intensity of the FOUR neighbouring 3) pixels is used to obtain intensity a new location is called .
  - a) cubic interpolation

c) bilinear interpolation

b) nearest neighbour interpolation d) bicubic interpolation

Noise

None of the mentioned

nearest neighbour interpolation

cubic interpolation

- 4) Dynamic range of imaging system is a ratio where the upper limit is determined by \_\_\_\_\_.
  - Saturation b) a)
  - c) Brightness d) Contrast
- For Dynamic range ratio the lower limit is determined by \_\_\_\_\_. 5)
  - a) Saturation **Brightness** b)
  - d) Contrast c) Noise
- Quantitatively, spatial resolution cannot be represented in which of the 6) following ways \_\_\_\_\_.
  - a) line pairs

- b) Pixels
- Dots d) none of the mentioned c)
- 7) To convert a continuous sensed data into Digital form, which of the following is required?
  - a) Sampling
  - b) Quantization
  - c) Both Sampling and Quantization
  - d) Neither Sampling nor Quantization

SLR-FM-393

Set

R

Max. Marks: 70

Marks: 14

- To convert a continuous image f(x, y) to digital form, we have to sample 8) the function in .
  - a) Coordinates

9)

- c) All of the mentioned
- For a continuous image f(x, y), how could be Sampling defined?
- Digitizing the coordinate values a)
- b) Digitizing the amplitude values
- c) All of the mentioned
- d) None of the mentioned

#### 10) For a continuous image f(x, y), Quantization is defined as \_\_\_\_\_.

- a) Digitizing the coordinate values
- Digitizing the amplitude values b)
- c) All of the mentioned
- d) None of the mentioned
- 11) A continuous image is digitised at \_\_\_\_\_ points.
  - a) random b) Vertex
  - c) contour d) Sampling
- 12) The transition between continuous values of the image function and its digital equivalent is called \_\_\_\_
  - a) Quantisation b) Sampling
  - c) Rasterisation d) None of the Mentioned
- Images quantised with insufficient brightness levels will lead to the 13) occurrence of \_\_\_\_\_.
  - a) Pixillation
- b) Blurring d) None of the mention
- The smallest discernible change in intensity level is called \_\_\_\_\_. 14)
  - a) Intensity Resolution
- Contour b)

c) Saturation

c) False contours

d) Contrast

- b) Amplitude
- d) None of the mentioned

**SLR-FM-393** 

Set

| Seat           |  | Set        | R     |  |  |  |  |
|----------------|--|------------|-------|--|--|--|--|
| NO.            | B.E. (Part – I) (Old) (CGPA) Examination Dec-2019<br>Information Technology<br>IMAGE PROCESSING  |            |       |  |  |  |  |
| Day &<br>Time: | & Date: Tuesday,17-12-2019<br>02:30 PM To 05:30 PM   | Max. Marks | 56 56 |  |  |  |  |
| Instru         | <b>uctions:</b> 1) All questions are compulsory.<br>2) Figures to the right indicate full marks.   |            |       |  |  |  |  |
|                | Section – I  |            |       |  |  |  |  |
| Q.2            | <ul> <li>Attempt any four of the following questions.</li> <li>a) How are digital images represented?</li> <li>b) What is fourier transform? Where is it used?</li> <li>c) What is a Hotelling Transform?</li> <li>d) What is Spatial filtering?</li> <li>e) How is Spatial mask generated from frequency domain specifical</li> </ul> | ition?     | 08    |  |  |  |  |
| Q.3            | Attempt any two of the following questions.10I) List and explain fundamental steps in image processing.I) State properties of 2D Fourier transform.I) How is enhancement in frequency domain carried out?  |            |       |  |  |  |  |
| Q.4            | <ul> <li>Attempt any one of the following questions.</li> <li>a) What are the elements of visual perception? Develop a simple in model.</li> <li>b) How are images enhanced?</li> </ul>  | mage       | 10    |  |  |  |  |
|                | Section – II   |            |       |  |  |  |  |
| Q.5            | <ul> <li>Attempt any four of the following questions.</li> <li>a) What is image compression?</li> <li>b) What is lossy compression?</li> <li>c) What is boundary detection?</li> <li>d) What is morphology?</li> <li>e) List the Regional descriptors.</li> </ul>  |            | 08    |  |  |  |  |
| Q.6            | <ul> <li>Attempt any two of the following questions.</li> <li>a) How is an Image Compression model developed?</li> <li>b) What is segmentation?</li> <li>c) What is thresholding set? Where is it used?</li> </ul>   |            | 10    |  |  |  |  |
| Q.7            | <ul> <li>Attempt any one of the following questions.</li> <li>a) What are relational descriptors? Illustrate.</li> <li>b) What is the area of motion in segmentation?</li> </ul>   |            | 10    |  |  |  |  |

## Set R

# B.E. (Part – I) (Old) (CGPA) Examination Dec-2019

Day & Date: Tuesday, 17-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

**Information Technology IMAGE PROCESSING** 

- 2) All questions are compulsory.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options.

Quantitatively, spatial resolution cannot be represented in which of the 1) following ways \_\_\_\_\_.

b)

b)

- a) line pairs c) Dots
  - d) none of the mentioned

Amplitude

Pixels

- 2) To convert a continuous sensed data into Digital form, which of the following is required?
  - a) Sampling
  - b) Quantization
  - c) Both Sampling and Quantization
  - d) Neither Sampling nor Quantization
- To convert a continuous image f(x, y) to digital form, we have to sample 3) the function in \_\_\_\_\_.
  - a) Coordinates
  - d) None of the mentioned c) All of the mentioned
- 4) For a continuous image f(x, y), how could be Sampling defined?
  - a) Digitizing the coordinate values
  - b) Digitizing the amplitude values
  - c) All of the mentioned
  - d) None of the mentioned
- For a continuous image f(x, y), Quantization is defined as \_\_\_\_\_. 5)
  - a) Digitizing the coordinate values
  - Digitizing the amplitude values b)
  - c) All of the mentioned
  - d) None of the mentioned
- A continuous image is digitised at \_\_\_\_\_ points. 6)
  - a) random b) Vertex
  - c) contour d) Sampling
- The transition between continuous values of the image function and its 7) digital equivalent is called
  - a) Quantisation b) Sampling
  - None of the Mentioned c) Rasterisation d)



Max. Marks: 70

Marks: 14

14



- 8) Images quantised with insufficient brightness levels will lead to the occurrence of .
  - a) Pixillation

a)

- c) False contours
- b) Blurring d) None of the mention
- 9) The smallest discernible change in intensity level is called \_\_\_\_\_.
  - Intensity Resolution b) Contour a)
  - c) Saturation d) Contrast
- What is the tool used in tasks such as zooming, shrinking, rotating, etc.? 10) Sampling
  - Interpolation b)
  - Filters d) None of the mentioned C)
- 11) The type of Interpolation where for each new location the intensity of the immediate pixel is assigned is
  - a) bicubic interpolation b)
  - c) bilinear interpolation
- 12) The type of Interpolation where the intensity of the FOUR neighbouring pixels is used to obtain intensity a new location is called \_
  - a) cubic interpolation
  - nearest neighbour interpolation b) c) bilinear interpolation d) bicubic interpolation
- Dynamic range of imaging system is a ratio where the upper limit is 13) determined by \_\_\_\_\_.
  - a) Saturation Brightness c)
- b) Noise
- d) Contrast
- For Dynamic range ratio the lower limit is determined by \_\_\_\_\_. 14)
  - a) Saturation Noise c)

**Brightness** b) Contrast d)



- cubic interpolation d) nearest neighbour interpolation

- **SLR-FM-393**

Set

| Seat           | t   | Set  | S     |  |
|----------------|---|--|-------|--|
| NO.            |   | 0010   |       |  |
|                | B.E. (Part – I) (Old) (CGPA) Examination Dec<br>Information Technology<br>IMAGE PROCESSING  | -2019  |       |  |
| Day &<br>Time: | & Date: Tuesday,17-12-2019<br>: 02:30 PM To 05:30 PM  | Max. Marks   | 3: 56 |  |
| Instru         | <ul><li>uctions: 1) All questions are compulsory.</li><li>2) Figures to the right indicate full marks.</li></ul>  |  |       |  |
|                | Section – I   |  |       |  |
| Q.2            | <ul> <li>Attempt any four of the following questions.</li> <li>a) How are digital images represented?</li> <li>b) What is fourier transform? Where is it used?</li> <li>c) What is a Hotelling Transform?</li> <li>d) What is Spatial filtering?</li> <li>e) How is Spatial mask generated from frequency domain specified</li> </ul> | cification?  | 08    |  |
| Q.3            | Attempt any two of the following questions.   |  | 10    |  |
|                | <ul> <li>a) List and explain fundamental steps in image processing.</li> <li>b) State properties of 2D Fourier transform.</li> <li>c) How is enhancement in frequency domain carried out?</li> </ul>  | <ul> <li>a) List and explain fundamental steps in image processing.</li> <li>b) State properties of 2D Fourier transform.</li> <li>c) How is enhancement in frequency domain carried out?</li> </ul> |       |  |
| Q.4            | Attempt any one of the following questions.   |  | 10    |  |
|                | <ul> <li>a) What are the elements of visual perception? Develop a simmodel.</li> <li>b) How are images enhanced?</li> </ul>   | ple image  |       |  |
|                | b) How are images enhanced?   |  |       |  |
| Q.5            | <ul> <li>Attempt any four of the following questions.</li> <li>a) What is image compression?</li> <li>b) What is lossy compression?</li> <li>c) What is boundary detection?</li> <li>d) What is morphology?</li> <li>e) List the Regional descriptors.</li> </ul>   |  | 08    |  |
| Q.6            | <ul> <li>Attempt any two of the following questions.</li> <li>a) How is an Image Compression model developed?</li> <li>b) What is segmentation?</li> <li>c) What is thresholding set? Where is it used?</li> </ul>  |  | 10    |  |
| Q.7            | <ul> <li>Attempt any one of the following questions.</li> <li>a) What are relational descriptors? Illustrate.</li> <li>b) What is the area of motion in segmentation?</li> </ul>  |  | 10    |  |

## Set S

# Set

#### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology INFORMATION RETRIEVAL

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate marks to a question

#### MCQ/Objective Type Questions

#### Duration: 30 Minutes

Seat No.

#### Q.1 A) Choose the correct Answer

 If relevant set of documents with respect to query q has 10 documents and answer set to query has retrieved 15 documents. If the tenth document in answer set is second relevant document in the answer set then we have precision is \_\_\_\_\_%.

| a) | 10%   | b) | 9%   |
|----|-------|----|------|
| 2  | 1000/ | d) | 200/ |

| C) | 100% | d) 20% |  |
|----|------|--------|--|
| -  |      |        |  |

2) Consider following scenario: While looking for one document on topic information retrieval, one advertisement of watches pops up. User clicks on that advertisement and starts exploring that website as well other website looking for different watches and pricing. We have shifted from .

- a) Retrieval to browsingc) none of these
- b) Browsing to retrievald) None of the above
- evaluation allows the application to control when to do work of obtaining new results.
  - a) Full b) Lazy
- 4) In Brute force approach, if text is having 90 characters and pattern is having 10 characters, how many search comparisons will be required at worst case?
  - a) 9 b) 10
  - c) 90 d) 900
- 5) \_\_\_\_\_ are designed to allow binary search by comparing contents of pointer.
  - a) Inverted index b) Suffix Trees
  - c) Suffix arrays d) Signature files
- In Shift-OR algorithm, state of search is kept in a machine word D= d<sub>m</sub>.... d<sub>1</sub>. A is match is reported whenever \_\_\_\_\_.

b) RAW

- a)  $d_m$  bit is set to 1 b)  $d_m$  bit is set to 0 c)  $d_1$  bit is set to 1 d)  $d_1$  bit is set to 0
- 7) Oracle provides \_\_\_\_\_ for data types which are not interpreted.
  - a) VARCHAR2
  - c) LOB d) CLOB

Max. Marks: 70

Marks: 14



- \_ provides indexing mechanism and query interface to the data. 8) \_\_\_
  - Gatherer a)
  - **Object Cache** C)
- b) Broker d) Replication Manager
- \_\_ is a meta crawler. 9) \_\_\_\_\_ a)
  - Google
  - MSN C)

- b) Ask
- d) all of them

10) 'is contained in' is a example of \_\_\_\_\_ predicate.

- Semantic a) Spatial C)
- b) temporal
- d) attribute

#### B) Match Correctly

| 1. Brown noise | a. Energy spectrum is in between completely upredictable and too predictable |
|----------------|--|
| 2. Black noise | b. Energy spectrum is too predictable  |
| 3. Pink noise  | c. Energy spectrum is completely<br>unpredictable                            |
| 4. White noise | d. signals model successfully such as water level of river                   |

| Seat |  |
|------|--|
| No.  |  |

#### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology INFORMATION RETRIEVAL

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figure to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three

- a) Draw nondeterministic automata and construct bit mask table for pattern 'abcbac'.
- **b)** State and give formulae for evaluation measures for information retrieval.
- c) Explain models for browsing.
- d) Define inverted index. Explain steps in search algorithm on inverted index.
- e) Find edit distance between 'information' and 'transformation'.

#### Q.3 Attempt any one

- a) Calculate weight vectors for the following documents in vector model?
  - Doc 1 "Computers have brought the world to our fingertips. We will try to understand at a basic level the science -- old and new -- underlying this new Computational Universe. Our quest takes us on a broad sweep of scientific knowledge and related technologies... Ultimately, this study makes us look anew at ourselves -- our genome; language; music, "knowledge"; and, above all, the mystery of our intelligence."
  - **Doc 2** "An introduction to computer science in the context of scientific, engineering, and commercial applications. The goal of the course is to teach basic principles and practical issues, while at the same time preparing students to use computers effectively for applications in computer science..." Consider keywords: science, knowledge, principles, engineering,

Consider keywords: science, knowledge, principles, engineering, applications, computers.

- **b)** How to construct signature files? How to search word and context queries using signature file?
- Q.4 Define information retrieval. With neat diagram explain information retrieval08 process.

#### Section – II

#### Q.5 Attempt Any three

- a) Explain basic steps in data retrieval.
- **b)** Explain different query predicates with example.
- c) How to find the objects in the collection that are within distance d from query objects.
- d) Explain architectural issues in digital library.
- e) Explain different aspects required to consider in designing a multimedia query language.

Max. Marks: 56

08

12



08

#### Q.6 Attempt any one

- a)
- What is ranking? Explain working of any three ranking algorithms. How GEMINI approach is applied to two dimensional colour images within b) QBIC?
- **Q.7** Define conceptual structure of type Generic Letter and Business\_product\_letter. 08
# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology

b) d<sub>m</sub> bit is set to 0

**Replication Manager** 

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate marks to a question

### **MCQ/Objective Type Questions**

**INFORMATION RETRIEVAL** 

#### Q.1 A) **Choose the correct Answer**

**Duration: 30 Minutes** 

- 1) In Shift-OR algorithm, state of search is kept in a machine word D= d<sub>m</sub>....
  - d<sub>1</sub>. A is match is reported whenever \_
    - d<sub>m</sub> bit is set to 1 a)
    - d<sub>1</sub> bit is set to 1 d) d<sub>1</sub> bit is set to 0 C)
- 2) Oracle provides \_\_\_\_\_ for data types which are not interpreted.
  - VARCHAR2 b) RAW a)
  - d) CLOB LOB c)
- provides indexing mechanism and query interface to the data. 3)

d)

b) Broker

- Gatherer a)
- **Object Cache** C)
- is a meta crawler. 4)
  - Google b) Ask a) MSN d) all of them C)
- 5) 'is contained in' is a example of \_\_\_\_\_ predicate.
  - Semantic b) temporal a)
    - Spatial attribute c) d)
- 6) If relevant set of documents with respect to guery g has 10 documents and answer set to guery has retrieved 15 documents. If the tenth document in answer set is second relevant document in the answer set then we have precision is \_\_\_\_\_%.

| a) | 10%   | b) | 9%  |
|----|-------|----|-----|
|    | 1000/ | Ň  | 000 |

c) 100% d) 20%

7) Consider following scenario: While looking for one document on topic information retrieval, one advertisement of watches pops up. User clicks on that advertisement and starts exploring that website as well other website looking for different watches and pricing. We have shifted from

Retrieval to browsing a) none of these

C)

- b) Browsing to retrieval d) None of the above
- \_\_\_\_\_ evaluation allows the application to control when to do work of 8) obtaining new results.
  - Full a)
- b) Lazy

Max. Marks: 70

Set

Marks: 14

10

SLR-FM-395

Set Q

- 9) In Brute force approach, if text is having 90 characters and pattern is having 10 characters, how many search comparisons will be required at worst case?
  - a) 9 b) 10 d) 900 C)
    - 90
- 10) \_\_\_\_\_ are designed to allow binary search by comparing contents of pointer.
  - a) Inverted index
    - b) Suffix Trees
    - Suffix arrays c)

- d) Signature files

#### B) Match Correctly

| 1. Brown noise | a. Energy spectrum is in between completely upredictable and too predictable       |
|----------------|--|
| 2. Black noise | b. Energy spectrum is too predictable  |
| 3. Pink noise  | c. Energy spectrum is completely<br>unpredictable                                  |
| 4. White noise | <ul> <li>d. signals model successfully such as water<br/>level of river</li> </ul> |

| Seat |  |
|------|--|
| No.  |  |

### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology INFORMATION RETRIEVAL

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figure to the right indicates full marks.

### Section – I

#### Q.2 Attempt any three

- a) Draw nondeterministic automata and construct bit mask table for pattern 'abcbac'.
- **b)** State and give formulae for evaluation measures for information retrieval.
- c) Explain models for browsing.
- d) Define inverted index. Explain steps in search algorithm on inverted index.
- e) Find edit distance between 'information' and 'transformation'.

#### Q.3 Attempt any one

- a) Calculate weight vectors for the following documents in vector model?
  - Doc 1 "Computers have brought the world to our fingertips. We will try to understand at a basic level the science -- old and new -- underlying this new Computational Universe. Our quest takes us on a broad sweep of scientific knowledge and related technologies... Ultimately, this study makes us look anew at ourselves -- our genome; language; music, "knowledge"; and, above all, the mystery of our intelligence."
  - **Doc 2** "An introduction to computer science in the context of scientific, engineering, and commercial applications. The goal of the course is to teach basic principles and practical issues, while at the same time preparing students to use computers effectively for applications in computer science..." Consider keywords: science, knowledge, principles, engineering,

Consider keywords: science, knowledge, principles, engineering, applications, computers.

- **b)** How to construct signature files? How to search word and context queries using signature file?
- Q.4 Define information retrieval. With neat diagram explain information retrieval08 process.

#### Section – II

#### Q.5 Attempt Any three

- a) Explain basic steps in data retrieval.
- **b)** Explain different query predicates with example.
- c) How to find the objects in the collection that are within distance d from query objects.
- d) Explain architectural issues in digital library.
- e) Explain different aspects required to consider in designing a multimedia query language.

Max. Marks: 56

08

12

Page **8** of **16** 

## **SLR-FM-395**



08

#### Q.6 Attempt any one

- a)
- What is ranking? Explain working of any three ranking algorithms. How GEMINI approach is applied to two dimensional colour images within b) QBIC?
- **Q.7** Define conceptual structure of type Generic Letter and Business\_product\_letter. 08

## **INFORMATION RETRIEVAL MCQ/Objective Type Questions** is a meta crawler. Google b) Ask MSN d) all of them \_ predicate. Semantic b) temporal attribute Spatial d) 10% 9% b) 100% d) 20%

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 A) **Choose the correct Answer**

- 1) a)
  - c)
  - 'is contained in' is a example of \_\_\_\_
    - a)
    - C)
  - 3) If relevant set of documents with respect to query q has 10 documents and answer set to query has retrieved 15 documents. If the tenth document in answer set is second relevant document in the answer set then we have precision is %.
    - a)
    - c)
  - 4) Consider following scenario:

While looking for one document on topic information retrieval, one advertisement of watches pops up. User clicks on that advertisement and starts exploring that website as well other website looking for different watches and pricing. We have shifted from \_

- Retrieval to browsing a) none of these c)
- b) Browsing to retrieval d) None of the above
- evaluation allows the application to control when to do work of 5) obtaining new results.
  - Full a)

- b) Lazy
- 6) In Brute force approach, if text is having 90 characters and pattern is having 10 characters, how many search comparisons will be required at worst case?
  - a) 9 b) 10
  - 90 C) d) 900
- \_\_\_\_ are designed to allow binary search by comparing contents of 7) \_ pointer. b) Suffix Trees
  - Inverted index a)
  - c) Suffix arrays d) Signature files

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate marks to a question

Set

Max. Marks: 70

#### 8) In Shift-OR algorithm, state of search is kept in a machine word $D = d_m$ .... d<sub>1</sub>. A is match is reported whenever \_

- d<sub>m</sub> bit is set to 1 a)
- C) d<sub>1</sub> bit is set to 1
- b) d<sub>m</sub> bit is set to 0 d)  $d_1$  bit is set to 0
- 9) Oracle provides \_\_\_\_\_ for data types which are not interpreted.
  - VARCHAR2 b) RAW LOB
    - d) CLOB

#### \_ provides indexing mechanism and query interface to the data. 10) \_\_\_\_ Gatherer

- b) Broker
- Object Cache C)
- d) Replication Manager

#### Match Correctly B)

a)

C)

a)

| -              |  |
|----------------|--|
| 1. Brown noise | a. Energy spectrum is in between completely upredictable and too predictable |
| 2. Black noise | b. Energy spectrum is too predictable  |
| 3. Pink noise  | c. Energy spectrum is completely<br>unpredictable                            |
| 4. White noise | d. signals model successfully such as water level of river                   |

04

## **SLR-FM-395** Set R

| Seat |  |
|------|--|
| No.  |  |

### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology INFORMATION RETRIEVAL

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figure to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three

- a) Draw nondeterministic automata and construct bit mask table for pattern 'abcbac'.
- **b)** State and give formulae for evaluation measures for information retrieval.
- c) Explain models for browsing.
- d) Define inverted index. Explain steps in search algorithm on inverted index.
- e) Find edit distance between 'information' and 'transformation'.

#### Q.3 Attempt any one

- a) Calculate weight vectors for the following documents in vector model?
  - Doc 1 "Computers have brought the world to our fingertips. We will try to understand at a basic level the science -- old and new -- underlying this new Computational Universe. Our quest takes us on a broad sweep of scientific knowledge and related technologies... Ultimately, this study makes us look anew at ourselves -- our genome; language; music, "knowledge"; and, above all, the mystery of our intelligence."
  - **Doc 2** "An introduction to computer science in the context of scientific, engineering, and commercial applications. The goal of the course is to teach basic principles and practical issues, while at the same time preparing students to use computers effectively for applications in computer science..." Consider keywords: science knowledge principles engineering

Consider keywords: science, knowledge, principles, engineering, applications, computers.

- **b)** How to construct signature files? How to search word and context queries using signature file?
- Q.4 Define information retrieval. With neat diagram explain information retrieval08 process.

#### Section – II

#### Q.5 Attempt Any three

- a) Explain basic steps in data retrieval.
- **b)** Explain different query predicates with example.
- c) How to find the objects in the collection that are within distance d from query objects.
- d) Explain architectural issues in digital library.
- e) Explain different aspects required to consider in designing a multimedia query language.

Max. Marks: 56

**08** 

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## Set R

08

### Q.6 Attempt any one

- a)
- What is ranking? Explain working of any three ranking algorithms. How GEMINI approach is applied to two dimensional colour images within b) QBIC?
- **Q.7** Define conceptual structure of type Generic Letter and Business\_product\_letter. 08

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **INFORMATION RETRIEVAL**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate marks to a question

#### **MCQ/Objective Type Questions**

#### **Duration: 30 Minutes**

Seat

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#### Q.1 A) **Choose the correct Answer**

- evaluation allows the application to control when to do work of 1) obtaining new results. Full b) Lazy a)
- 2) In Brute force approach, if text is having 90 characters and pattern is having 10 characters, how many search comparisons will be required at worst case?
  - 9 a) b) 10 c)
    - 90 d) 900
- are designed to allow binary search by comparing contents of 3) pointer.
  - Inverted index a) Suffix arrays C)
- b) Suffix Trees d) Signature files
- 4) In Shift-OR algorithm, state of search is kept in a machine word D= d<sub>m</sub>.... d<sub>1</sub>. A is match is reported whenever
  - d<sub>m</sub> bit is set to 1 b) d<sub>m</sub> bit is set to 0
  - d<sub>1</sub> bit is set to 1 c)

a)

- d)  $d_1$  bit is set to 0
- 5) Oracle provides \_\_\_\_\_ for data types which are not interpreted.
  - b) RAW VARCHAR2 a) c)
    - d) CLOB LOB

\_ provides indexing mechanism and query interface to the data. 6) b) Broker

- a) Gatherer **Object Cache** C)
- **Replication Manager** d)
- is a meta crawler. 7)
  - a) Google b) Ask MSN
- C)
- 8) 'is contained in' is a example of \_\_\_\_\_ predicate.
  - Semantic b) temporal a) C)
    - Spatial d) attribute

## **SLR-FM-395**

Set

Max. Marks: 70

Marks: 14

- d) all of them



- 9) If relevant set of documents with respect to query q has 10 documents and answer set to query has retrieved 15 documents. If the tenth document in answer set is second relevant document in the answer set then we have precision is \_\_\_\_\_%.
  - a) 10% b) 9%
  - c) 100% d) 20%
- Consider following scenario: While looking for one document on topic information retrieval, one advertisement of watches pops up. User clicks on that advertisement and starts exploring that website as well other website looking for different watches and pricing. We have shifted from \_\_\_\_\_.
  - a) Retrieval to browsing
- b) Browsing to retrieval
- c) none of these
- d) None of the above

#### B) Match Correctly

| 1. Brown noise | a. Energy spectrum is in between completely upredictable and too predictable       |
|----------------|--|
| 2. Black noise | b. Energy spectrum is too predictable  |
| 3. Pink noise  | <ul> <li>c. Energy spectrum is completely<br/>unpredictable</li> </ul>             |
| 4. White noise | <ul> <li>d. signals model successfully such as water<br/>level of river</li> </ul> |

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### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology INFORMATION RETRIEVAL

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figure to the right indicates full marks.

#### Section – I

#### Q.2 Attempt any three

- a) Draw nondeterministic automata and construct bit mask table for pattern 'abcbac'.
- **b)** State and give formulae for evaluation measures for information retrieval.
- c) Explain models for browsing.
- d) Define inverted index. Explain steps in search algorithm on inverted index.
- e) Find edit distance between 'information' and 'transformation'.

#### Q.3 Attempt any one

- a) Calculate weight vectors for the following documents in vector model?
  - Doc 1 "Computers have brought the world to our fingertips. We will try to understand at a basic level the science -- old and new -- underlying this new Computational Universe. Our quest takes us on a broad sweep of scientific knowledge and related technologies... Ultimately, this study makes us look anew at ourselves -- our genome; language; music, "knowledge"; and, above all, the mystery of our intelligence."
  - **Doc 2** "An introduction to computer science in the context of scientific, engineering, and commercial applications. The goal of the course is to teach basic principles and practical issues, while at the same time preparing students to use computers effectively for applications in computer science..." Consider keywords: science knowledge principles engineering

Consider keywords: science, knowledge, principles, engineering, applications, computers.

- **b)** How to construct signature files? How to search word and context queries using signature file?
- Q.4 Define information retrieval. With neat diagram explain information retrieval08 process.

#### Section – II

#### Q.5 Attempt Any three

- a) Explain basic steps in data retrieval.
- **b)** Explain different query predicates with example.
- c) How to find the objects in the collection that are within distance d from query objects.
- d) Explain architectural issues in digital library.
- e) Explain different aspects required to consider in designing a multimedia query language.

Max. Marks: 56

80

12



#### Q.6 Attempt any one

- a)
- What is ranking? Explain working of any three ranking algorithms. How GEMINI approach is applied to two dimensional colour images within b) QBIC?
- **Q.7** Define conceptual structure of type Generic Letter and Business\_product\_letter. 08

## Seat No.

#### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE COMPUTING AND APPLICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Which of the following specifies a set of media access control (MAC) and 1) physical layer specifications for implementing WLANs? **IEEE 802.3** 
  - a) IEEE 802.16 b)
  - c) IEEE 802.11 d)
- 2) Why neighbouring stations are assigned different group of channels in cellular system?
  - a) To minimize interference
  - b) To minimize area
  - c) To maximize throughput
  - d) To maximize capacity of each cell
- 3) Which type of antenna is used for edge excited cells?
  - **Omnidirectional antenna** Grid antenna b) a)
  - d) Sectored directional antenna Dipole antenna c)
- 4) Which of the following is not an objective for channel assignment strategies?
  - a) Efficient utilization of spectrum Increase of capacity b)
  - c) Minimize the interference Maximize the interference d)
- 5) What is a borrowing strategy in fixed channel assignments?
  - Borrowing channels from neighbouring cell a)
  - Borrowing channels from neighbouring cluster b)
  - Borrowing channels from same cell c)
  - d) Borrowing channels from other base station in same cell
- 6) Dwell time does not depend on which of the following factor?
  - Propagation a)
  - b) Interference
  - Distance between subscriber and base station C)
  - d) Mobile station
- 7) The mechanism behind electromagnetic wave propagation cannot be attributed to \_\_\_\_\_.
  - Reflection b) Diffraction a)
  - Scattering d) Sectoring c)

Max. Marks: 70

Marks: 14

IEEE 802.15



- 8) Path loss in free space model is defined as difference of \_\_\_\_\_\_.
  - a) Effective transmitted power and gain
  - b) Effective received power and distance between T-R
  - c) Gain and received power
  - d) Effective transmitter power and receiver power
- 9) What is the case of reflection, in course of second medium being a perfect dielectric?
  - a) Loss of energy during absorption
  - b) Total energy reflected back to first medium
  - c) No loss of energy in absorption
  - d) Total energy transmitted into second medium
- 10) Which is the process of encoding information from a message source in suitable manner for transmission?
  - a) Modulation

- b) Demodulation
- c) Encryption
- d) Decryption
- 11) TDD is effective for \_\_\_\_\_
  - a) Fixed wireless access and users are stationary
  - b) Dynamic wireless access and users are stationary
  - c) Fixed wireless access and users are moving
  - d) Dynamic wireless access and users are moving
- 12) Frequency hopping involves a periodic change of transmission \_\_\_\_\_\_.
  - a) Signal b) Frequency
  - c) Phase d) Amplitude
- 13) Which of the following is not a property of spread spectrum techniques?
  - a) Interference rejection capability
  - b) Multipath fading
  - c) Frequency planning elimination
  - d) Multiple user, multiple access interface
  - \_\_\_\_\_ carries digitally encoded user data.
  - a) Traffic channels

14)

- b) Control channels
- c) Signalling channels
- d) Forward channels

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### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE COMPUTING AND APPLICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Q.2

#### **Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable data if necessary.

#### Section – I

#### Attempt any three of the following questions. What is multiplexing? Draw and illustrate types of multiplexing? a) Explain all the benefits of wireless networks and mobile communications. b) What is handover? Explain all the scenarios in GSM? c) Explain the signal propagation with path loss of radio signals. d) What are the advantages, disadvantages for cellular system also explain it e) with cell clusters? **Q.3** Explain all the mechanism with example to control medium access. 80 OR Explain with neat diagram the functional architecture of GPRS and WCDMA. 80 Attempt any two of the following questions. 80 Q.4 Mobility Management a) Mobile IP b) Antennas C) Section – II Q.5 Attempt any three 12 What is MANET, explain it with mobile IP? a) Illustrate with diagram the indirect TCP. b) State and explain the challenges of wireless network. C) d) Explain the mechanism used in traditional TCP. Explain the AODV mobile Adhoc network. e) With neat diagrams explain all the wireless media access techniques. 80 Q.6 OR What is mobility? Explain all the models of mobility in detail. 80 08 Q.7 Attempt any two of the following questions. Mobile TCP a)

- b) IEEE 802.11
- Sensor networks c)

Max. Marks: 56

12

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#### Seat No. B E (Part – II) (CGPA) E

#### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE COMPUTING AND APPLICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

Duration: 30 Minutes

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Path loss in free space model is defined as difference of \_\_\_\_\_.
  - a) Effective transmitted power and gain
  - b) Effective received power and distance between T-R
  - c) Gain and received power
  - d) Effective transmitter power and receiver power
- 2) What is the case of reflection, in course of second medium being a perfect dielectric?
  - a) Loss of energy during absorption
  - b) Total energy reflected back to first medium
  - c) No loss of energy in absorption
  - d) Total energy transmitted into second medium
- 3) Which is the process of encoding information from a message source in suitable manner for transmission?
  - a) Modulation b) Demodulation
  - c) Encryption d) Decryption
- 4) TDD is effective for \_\_\_\_\_.
  - a) Fixed wireless access and users are stationary
  - b) Dynamic wireless access and users are stationary
  - c) Fixed wireless access and users are moving
  - d) Dynamic wireless access and users are moving
- 5) Frequency hopping involves a periodic change of transmission \_\_\_\_\_\_.
  - a) Signal b) Frequ
  - c) Phase

- ) Frequency
- d) Amplitude
- 6) Which of the following is not a property of spread spectrum techniques?
  - a) Interference rejection capability
  - b) Multipath fading

7)

c)

- c) Frequency planning elimination
- d) Multiple user, multiple access interface

#### \_\_\_\_\_ carries digitally encoded user data.

a) Traffic channels

Signalling channels

- b) Control channels
- d) Forward channels



Max. Marks: 70

Marks: 14



- 8) Which of the following specifies a set of media access control (MAC) and physical layer specifications for implementing WLANs?
  - a) IEEE 802.16 b)
    - b) IEEE 802.3
  - c) IEEE 802.11 d) IEEE 802.15
- 9) Why neighbouring stations are assigned different group of channels in cellular system?
  - a) To minimize interference
  - b) To minimize area
  - c) To maximize throughput
  - d) To maximize capacity of each cell
- 10) Which type of antenna is used for edge excited cells?
  - a) Omnidirectional antenna b) Grid antenna
  - c) Sectored directional antenna d) Dipole antenna
- 11) Which of the following is not an objective for channel assignment strategies?
  - a) Efficient utilization of spectrum b) Increase of capacity
  - c) Minimize the interference d) Maximize the interference
- 12) What is a borrowing strategy in fixed channel assignments?
  - a) Borrowing channels from neighbouring cell
  - b) Borrowing channels from neighbouring cluster
  - c) Borrowing channels from same cell
  - d) Borrowing channels from other base station in same cell
- 13) Dwell time does not depend on which of the following factor?
  - a) Propagation
  - b) Interference
  - c) Distance between subscriber and base station
  - d) Mobile station
- 14) The mechanism behind electromagnetic wave propagation cannot be attributed to \_\_\_\_\_.
  - a) Reflection
- b) Diffraction

c) Scattering

d) Sectoring

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Q.2

### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE COMPUTING AND APPLICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

#### **Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable data if necessary.

Attempt any three of the following questions.

#### Section – I

#### What is multiplexing? Draw and illustrate types of multiplexing? a) Explain all the benefits of wireless networks and mobile communications. b) What is handover? Explain all the scenarios in GSM? c) Explain the signal propagation with path loss of radio signals. d) What are the advantages, disadvantages for cellular system also explain it e) with cell clusters? **Q.3** Explain all the mechanism with example to control medium access. 80 OR Explain with neat diagram the functional architecture of GPRS and WCDMA. 80 Attempt any two of the following questions. 80 Q.4 Mobility Management a) Mobile IP b) Antennas C) Section – II Q.5 Attempt any three 12 What is MANET, explain it with mobile IP? a) Illustrate with diagram the indirect TCP. b) State and explain the challenges of wireless network. C) d) Explain the mechanism used in traditional TCP. Explain the AODV mobile Adhoc network. e) With neat diagrams explain all the wireless media access techniques. 80 Q.6 OR What is mobility? Explain all the models of mobility in detail. 80 08 Q.7 Attempt any two of the following questions. Mobile TCP a)

- **b)** IEEE 802.11
- c) Sensor networks

Max. Marks: 56

12

Set Q

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### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE COMPUTING AND APPLICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- What is a borrowing strategy in fixed channel assignments? 1)
  - Borrowing channels from neighbouring cell a)
  - Borrowing channels from neighbouring cluster b)
  - Borrowing channels from same cell c)
  - d) Borrowing channels from other base station in same cell
- Dwell time does not depend on which of the following factor? 2)
  - a) Propagation
  - b) Interference
  - c) Distance between subscriber and base station
  - d) Mobile station
- 3) The mechanism behind electromagnetic wave propagation cannot be attributed to
  - a) Reflection Diffraction b)
  - c) Scattering Sectoring
- 4) Path loss in free space model is defined as difference of \_\_\_\_\_\_.
  - a) Effective transmitted power and gain
  - b) Effective received power and distance between T-R
  - Gain and received power c)
  - d) Effective transmitter power and receiver power
- 5) What is the case of reflection, in course of second medium being a perfect dielectric?
  - a) Loss of energy during absorption
  - b) Total energy reflected back to first medium
  - c) No loss of energy in absorption
  - d) Total energy transmitted into second medium
- Which is the process of encoding information from a message source in 6) suitable manner for transmission?
  - Modulation a) b)
  - c) Encryption d) Decryption

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Marks: 14

Demodulation

- d)

- 7) TDD is effective for \_\_\_\_\_.
  - a) Fixed wireless access and users are stationary
  - b) Dynamic wireless access and users are stationary
  - c) Fixed wireless access and users are moving
  - d) Dynamic wireless access and users are moving
- 8) Frequency hopping involves a periodic change of transmission \_\_\_\_\_.
  - Signal Frequency a) b)
  - Phase Amplitude d) c)
- 9) Which of the following is not a property of spread spectrum techniques?
  - Interference rejection capability a)
  - b) Multipath fading
  - c) Frequency planning elimination
  - d) Multiple user, multiple access interface
- carries digitally encoded user data. 10)
  - a) Traffic channels
- b) Control channels Forward channels
- Signalling channels d) C)
- 11) Which of the following specifies a set of media access control (MAC) and physical layer specifications for implementing WLANs?
  - a) IEEE 802.16 b) **IEEE 802.3**
  - IEEE 802.11 d) **IEEE 802.15** C)
- Why neighbouring stations are assigned different group of channels in 12) cellular system?
  - a) To minimize interference
  - b) To minimize area

c)

- To maximize throughput c)
- d) To maximize capacity of each cell
- 13) Which type of antenna is used for edge excited cells?
  - **Omnidirectional antenna** b) Grid antenna a)
  - Sectored directional antenna d) Dipole antenna c)
- Which of the following is not an objective for channel assignment 14) strategies?
  - Efficient utilization of spectrum b) a)

Minimize the interference

- - Page 8 of 12

Increase of capacity Maximize the interference d)

**SLR-FM-396** Set

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Q.2

### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE COMPUTING AND APPLICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

#### Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable data if necessary.

Attempt any three of the following questions.

#### Section – I

#### What is multiplexing? Draw and illustrate types of multiplexing? a) Explain all the benefits of wireless networks and mobile communications. b) What is handover? Explain all the scenarios in GSM? c) Explain the signal propagation with path loss of radio signals. d) What are the advantages, disadvantages for cellular system also explain it e) with cell clusters? **Q.3** Explain all the mechanism with example to control medium access. 80 OR Explain with neat diagram the functional architecture of GPRS and WCDMA. 80 Attempt any two of the following questions. 80 Q.4 Mobility Management a) Mobile IP b) Antennas C) Section – II Q.5 Attempt any three 12 What is MANET, explain it with mobile IP? a) Illustrate with diagram the indirect TCP. b) State and explain the challenges of wireless network. C) d) Explain the mechanism used in traditional TCP. Explain the AODV mobile Adhoc network. e) With neat diagrams explain all the wireless media access techniques. 80 Q.6 OR What is mobility? Explain all the models of mobility in detail. 80 08 Q.7 Attempt any two of the following questions. Mobile TCP a)

- **b)** IEEE 802.11
- c) Sensor networks

Max. Marks: 56

12

Set R

### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE COMPUTING AND APPLICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Which is the process of encoding information from a message source in 1) suitable manner for transmission?
  - a) Modulation Encryption C)
- Demodulation b) d) Decryption
- 2) TDD is effective for \_\_\_\_\_
  - a) Fixed wireless access and users are stationary
  - b) Dynamic wireless access and users are stationary
  - c) Fixed wireless access and users are moving
  - d) Dynamic wireless access and users are moving
- Frequency hopping involves a periodic change of transmission . 3)
  - Signal Frequency a) b) Phase c)
    - d) Amplitude
- Which of the following is not a property of spread spectrum techniques? 4)
  - a) Interference rejection capability
  - Multipath fading b)
  - c) Frequency planning elimination
  - d) Multiple user, multiple access interface
- 5) carries digitally encoded user data.
  - a) Traffic channels Control channels b)
  - Signalling channels d) Forward channels c)
- Which of the following specifies a set of media access control (MAC) and 6) physical layer specifications for implementing WLANs?
  - a) IEEE 802.16 b) **IEEE 802.3**
  - c) IEEE 802.11 **IEEE 802.15** d)
- Why neighbouring stations are assigned different group of channels in 7) cellular system?
  - a) To minimize interference
  - b) To minimize area
  - c) To maximize throughput
  - d) To maximize capacity of each cell

Max. Marks: 70

Marks: 14

- 8) Which type of antenna is used for edge excited cells?
  - a) Omnidirectional antenna
- b) Grid antenna

Set

- c) Sectored directional antenna d) Dipole antenna
- 9) Which of the following is not an objective for channel assignment strategies?
  - a) Efficient utilization of spectrum b) Increase of capacity
  - c) Minimize the interference d) Maximize the interference
- 10) What is a borrowing strategy in fixed channel assignments?
  - a) Borrowing channels from neighbouring cell
  - b) Borrowing channels from neighbouring cluster
  - c) Borrowing channels from same cell
  - d) Borrowing channels from other base station in same cell
- 11) Dwell time does not depend on which of the following factor?
  - a) Propagation
  - b) Interference
  - c) Distance between subscriber and base station
  - d) Mobile station
- 12) The mechanism behind electromagnetic wave propagation cannot be attributed to \_\_\_\_\_.
  - a) Reflection b) Diffraction
  - c) Scattering d) Sectoring
- 13) Path loss in free space model is defined as difference of \_\_\_\_\_\_.
  - a) Effective transmitted power and gain
  - b) Effective received power and distance between T-R
  - c) Gain and received power
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- 14) What is the case of reflection, in course of second medium being a perfect dielectric?
  - a) Loss of energy during absorption
  - b) Total energy reflected back to first medium
  - c) No loss of energy in absorption
  - d) Total energy transmitted into second medium

| Seat |  |
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### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology MOBILE COMPUTING AND APPLICATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Q.2

#### **Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable data if necessary.

#### Section – I

#### Attempt any three of the following questions. What is multiplexing? Draw and illustrate types of multiplexing? a) Explain all the benefits of wireless networks and mobile communications. b) What is handover? Explain all the scenarios in GSM? c) Explain the signal propagation with path loss of radio signals. d) What are the advantages, disadvantages for cellular system also explain it e) with cell clusters? **Q.3** Explain all the mechanism with example to control medium access. 80 OR Explain with neat diagram the functional architecture of GPRS and WCDMA. 80 Attempt any two of the following questions. 80 Q.4 Mobility Management a) Mobile IP b) Antennas c) Section – II Q.5 Attempt any three 12 What is MANET, explain it with mobile IP? a) Illustrate with diagram the indirect TCP. b) State and explain the challenges of wireless network. C) d) Explain the mechanism used in traditional TCP. Explain the AODV mobile Adhoc network. e) With neat diagrams explain all the wireless media access techniques. 80 Q.6 OR What is mobility? Explain all the models of mobility in detail. 80 08 Q.7 Attempt any two of the following questions. Mobile TCP a)

- b) IEEE 802.11
- Sensor networks c)

Max. Marks: 56

| B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 |  |  |  |
|--|--|--|--|
| Information Technology                           |  |  |  |
| INFORMATION ASSURANCE & SECURITY                 |  |  |  |

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Monoalphabetic ciphers are stronger than Polyalphabetic ciphers. 1) i)
  - Vigenere cipher is Polyalphabetic ii) Which one of the following is true?
    - a) i only b)
    - c) Both i and ii d) Neither i nor ii
- 2) What is the ciphertext of "MONEYZ" using Playfair cipher (key "TUTORIALS")?
  - a) NUFMZU
  - d) c) NVMFZV NUMFZV
- The only difference between DES encryption and DES decryption 3) algorithm is in
  - Number of Feistel rounds a)
- b) Complex function 'F' Permutation tables
- Ordering of the round keys d) c)
- For SSL connection, SSL Record protocol provides 4) a) Message confidentiality
  - Message Integrity b)
  - Both a) and b) C)
  - d) None of a) and b) Let the plaintext be 01001011 and the initial vector be taken as 1111. If
  - the block cipher is the transposition cipher with the key a permutation (1)2 3 then the ciphertext obtained from CBC mode of operation
    - $\backslash_2$ 4 1 is given by.

5)

- 01110011 01110101 a) b)
- 01111000 d) 01111010 c)
- Diffie-Hellman key exchange protocol is based on \_\_\_\_\_ 6)
  - Discrete log problem b) a) c) Factorization problem
    - Subset sum problem d) Permutation problem
- The advantage of IKE Phase 1 Main mode over IKE Phase 1 Aggressive 7) mode is
  - Main mode uses fewer messages a)
  - Main mode provides greater security b)
  - Main mode hides the identities of the communicating entities c)
  - Main mode has a larger suite of options for key exchange d)

Set

Max. Marks: 70

Marks: 14

- ii only

- b) NUFMZV

#### 8) Which of the following statement is false?

- a) An anomaly-based IDS uses OS-based audit trails to detect intrusion.
- b) A signature based IDS identifies patterns of behavior that accompany an attack.
- c) A network-based IDS identifies whether the behavior of the network is a statistically significant departure from normal.
- d) A host-based IDS alerts the administrator if it sees a disproportionate number of malformed TCP packets entering the organization.
- 9) This technique in identity theft involves sending of e-mail messages to online payment accounts to update their records with confidential information which is then used by the identity thieves.
  - a) Viruses
- b) Worm holes

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Set

- c) Phishing d) Pooling
- 10) Which of the following make filtering decisions based on application payload?
  - a) Packet filter
  - b) Stateful packet inspection firewall
  - c) Deep inspection firewall
  - d) Reverse proxy
- 11) \_\_\_\_\_ is the standard for an information security management system.
  - a) ISO 27000 b) ISO 27004
  - c) ISO 27001 d) ISO 27002
- 12) Early viruses used the following technique to evade detection \_\_\_\_\_
  - a) They were encrypted and decrypted only during execution.
  - b) They updated themselves by downloading code from an FTP site.
  - c) They were hidden in the payload of TCP packets carrying regular traffic.
  - d) They used compression so that the length of the infected and original files matched.
- 13) \_\_\_\_\_ refers to sending a large number of E-Mails to the victim to crash victims E-Mail account or to make victims mail server crash.
  - a) E-Mail Bombing b) Password Sniffing
    - Identity Theft d) Forgery
- 14) Which of the following describes programs that can run independently, travel from system to system and disrupt computer communication?
  - a) Viruses b)
  - c) Droppers

C)

- ) Trojans
- d) Worm

|                |   |  | SLR-FM-397                   |
|----------------|---|--|------------------------------|
| Seat<br>No.    |   |  | Set P                        |
|                | B.E. (Pa  | art – II) (CGPA) Examination N<br>Information Technology<br>ORMATION ASSURANCE & S   | Nov/Dec-2019<br>/<br>ECURITY |
| Day &<br>Time: | & Date: Monday, 25<br>: 02:30 PM To 05:3  | 5-11-2019<br>0 PM  | Max. Marks: 56               |
| Instru         | 2) Figure   | to the right indicates full marks.   |                              |
|                |   | Section – I  |                              |
| Q.2            | <ul><li>Write short notes</li><li>a) Counter Mode</li><li>b) A Model for S</li><li>c) SSL Record L</li></ul>  | <b>5. (Any Two)</b><br>e of operation<br>ymmetric Encryption<br>ayer Protocol  | 08                           |
| Q.3            | <ul><li>Answer the follow</li><li>a) Describe MAC</li><li>b) Describe Pub</li><li>c) Demonstrate</li></ul>  | <b>wing. (Any Two)</b><br>C with its properties and applications<br>lic-Key Cryptography.<br>Man-in-the middle attack on Diffie-He | ellman Key Exchange.         |
| Q.4            | Answer the follow<br>a) Explain two so  | ving.<br>cenarios of Digital Certificate Revoca<br>OR  | 10 ation with solutions.     |
|                | <b>b)</b> Explain IPSec   | protocol with Security Associations.   |                              |
| Q.5            | Answer the follow<br>a) Compare betw  | Section – II<br>wing. (Any Two)<br>veen Host-based and Network-base  | 08<br>d Intrusion Detection  |
|                | System.<br>b) Explain in det<br>c) What is Backo  | ail the working of Anonymizers.<br>door? Illustrate.   |                              |
| Q.6            | <ul> <li>Answer the follow</li> <li>a) Explain Applie</li> <li>b) Describe Troje</li> <li>c) Describe the last of the last of</li></ul> | <b>ving. (Any Two) :</b><br>cation Level Firewalls.<br>an Horse.<br>Positive Aspects of ITA 2000.                                  | 10                           |
| Q.7            | Answer the follow<br>a) What is Cybe<br>examples.   | ving.<br>r' crime? How is Cyber Crime Classif  | fied? Explain with           |
|                | <b>b)</b> What are Kev  | loggers? Explain the different types of  | of Kevloggers.               |
|                | ,   |  |                              |

Max. Marks: 70

| Seat |  |
|------|--|
| No.  |  |
|      |  |

#### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology INFORMATION ASSURANCE & SECURITY

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Marks: 14

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Which of the following statement is false?
  - a) An anomaly-based IDS uses OS-based audit trails to detect intrusion.
  - b) A signature based IDS identifies patterns of behavior that accompany an attack.
  - c) A network-based IDS identifies whether the behavior of the network is a statistically significant departure from normal.
  - d) A host-based IDS alerts the administrator if it sees a disproportionate number of malformed TCP packets entering the organization.

2) This technique in identity theft involves sending of e-mail messages to online payment accounts to update their records with confidential information which is then used by the identity thieves.

- a) Viruses b) Worm holes
- c) Phishing d) Pooling
- 3) Which of the following make filtering decisions based on application payload?
  - a) Packet filter
  - b) Stateful packet inspection firewall
  - c) Deep inspection firewall
  - d) Reverse proxy
- 4) \_\_\_\_\_ is the standard for an information security management system.

| a) | ISO 27000 | b) | ISO 27004 |  |
|----|-----------|----|-----------|--|
| a) | 100 07004 | أم | 100 07000 |  |

- c) ISO 27001 d) ISO 27002
- 5) Early viruses used the following technique to evade detection \_\_\_\_\_
  - a) They were encrypted and decrypted only during execution.
  - b) They updated themselves by downloading code from an FTP site.
  - c) They were hidden in the payload of TCP packets carrying regular traffic.
  - d) They used compression so that the length of the infected and original files matched.
- 6) \_\_\_\_\_ refers to sending a large number of E-Mails to the victim to crash victims E-Mail account or to make victims mail server crash.
  - a) E-Mail Bombing b) Password Sniffing
  - c) Identity Theft d) Forgery

|                          |   |                           | SLR-FM-397   |
|--------------------------|---|---------------------------|--|
|                          |   |                           | Set Q  |
| Whi<br>trave<br>a)<br>c) | ch of the following describes prog<br>el from system to system and disr<br>Viruses<br>Droppers            | rams<br>upt c<br>b)<br>d) | that can run independently,<br>omputer communication?<br>Trojans<br>Worm |
| i)<br>ii)<br>Whi         | Monoalphabetic ciphers are stron<br>Vigenere cipher is Polyalphabetic<br>ch one of the following is true? | nger 1<br>C               | than Polyalphabetic ciphers.   |
| a)                       | i only<br>Both i and ii   | d)                        | ii only<br>Neither i por ii  |
| U)<br>Wha                | but if and if $MONEVZ$  | u)<br>Icina               | Playfair ciphor (koy   |
| "TU                      | TORIALS")?  | ising                     |  |
| a)                       | NUFMZU  | b)                        | NUFMZV   |
| c)                       | NVMFZV  | d)                        | NUMFZV   |
| The                      | only difference between DES end   | crypti                    | on and DES decryption  |
| aigo<br>a)<br>c)         | Number of Feistel rounds<br>Ordering of the round keys  | b)<br>d)                  | Complex function 'F'<br>Permutation tables                               |
| For<br>a)<br>c)          | SSL connection, SSL Record pro<br>Message confidentiality<br>Both a) and b)                               | tocol<br>b)<br>d)         | provides<br>Message Integrity<br>None of a) and b)                       |
| Let<br>the               | the plaintext be 01001011 and the<br>block cipher is the transposition ci                                 | e initia<br>ipher         | al vector be taken as 1111. If with the key a permutation                |
| $\binom{1}{2}$ is gi     | $\begin{pmatrix} 2 & 3 & 4 \\ 4 & 1 & 3 \end{pmatrix}$ , then the ciphertext ob ven by.                   | taine                     | d from CBC mode of operation   |
| a) ັ                     | 01110011  | b)                        | 01110101   |
| C)                       | 01111000  | d)                        | 01111010   |
| Diffi                    | e-Hellman key exchange protocol   | is ba                     | ased on  |
| а)<br>С)                 | Factorization problem   | d)                        | Permutation problem  |

- 14) The advantage of IKE Phase 1 Main mode over IKE Phase 1 Aggressive mode is \_\_\_\_\_.
  - a) Main mode uses fewer messages

7)

8)

9)

10)

11)

12)

13)

- b) Main mode provides greater security
- c) Main mode hides the identities of the communicating entities
- d) Main mode has a larger suite of options for key exchange

|                         |  | SLR-FM-3  | 397   |
|-------------------------|--|---|-------|
| Seat<br>No.             |  | Set   | Q     |
|                         | B.E. (Part – I<br>INFORMA  | I) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>ATION ASSURANCE & SECURITY                            |       |
| Day &<br>Time<br>Instru | & Date: Monday, 25-11-20<br>02:30 PM To 05:30 PM<br><b>uctions:</b> 1) All questions a   | )19 Max. Marks<br>are compulsory.   | s: 56 |
|                         | 2) Figure to the   | right indicates full marks.   |       |
| Q.2                     | Write short notes. (Any<br>a) Counter Mode of ope  | Section – I<br>Two)<br>eration  | 08    |
| Q.3                     | c) SSL Record Layer P<br>Answer the following. (   | Protocol<br>Any Two)  | 10    |
|                         | <ul> <li>a) Describe MAC with i</li> <li>b) Describe Public-Key</li> <li>c) Demonstrate Man-in</li> </ul>  | ts properties and applications.<br>Cryptography.<br>-the middle attack on Diffie-Hellman Key Exchange.                |       |
| Q.4                     | <ul><li>Answer the following.</li><li>a) Explain two scenario</li></ul>  | os of Digital Certificate Revocation with solutions.<br><b>OR</b>   | 10    |
|                         | b) Explain IPSec protoc  | col with Security Associations.   |       |
| Q.5                     | <ul> <li>Answer the following. (</li> <li>a) Compare between H<br/>System.</li> <li>b) Explain in detail the following of the second second</li></ul> | Section – II<br>Any Two)<br>lost-based and Network-based Intrusion Detection<br>working of Anonymizers.<br>Ilustrate. | 08    |
| Q.6                     | <ul> <li>Answer the following. (</li> <li>a) Explain Application L</li> <li>b) Describe Trojan Hora</li> <li>c) Describe the Positive</li> </ul>   | <b>Any Two) :</b><br>₋evel Firewalls.<br>se.<br>e Aspects of ITA 2000.  | 10    |
| Q.7                     | <ul><li>Answer the following.</li><li>a) What is Cyber' crime examples.</li></ul>  | Provis Cyber Crime Classified? Explain with   | 10    |
|                         | b) What are Keyloggers   | s? Explain the different types of Keyloggers.   |       |

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#### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology INFORMATION ASSURANCE & SECURITY

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

# Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

Duration: 30 Minutes

#### Marks: 14

### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) Let the plaintext be 01001011 and the initial vector be taken as 1111. If the block cipher is the transposition cipher with the key a permutation

 $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 4 & 1 & 3 \end{pmatrix}$ , then the ciphertext obtained from CBC mode of operation is given by.

| .0.5 | <i>j</i> |    |          |
|------|----------|----|----------|
| a)   | 01110011 | b) | 01110101 |
| c)   | 01111000 | d) | 01111010 |

#### 2) Diffie-Hellman key exchange protocol is based on \_\_\_\_\_

- a) Discrete log problem b) Subset sum problem
- c) Factorization problem d) Permutation problem
- 3) The advantage of IKE Phase 1 Main mode over IKE Phase 1 Aggressive mode is \_\_\_\_\_.
  - a) Main mode uses fewer messages
  - b) Main mode provides greater security
  - c) Main mode hides the identities of the communicating entities
  - d) Main mode has a larger suite of options for key exchange
- 4) Which of the following statement is false?
  - a) An anomaly-based IDS uses OS-based audit trails to detect intrusion.
  - b) A signature based IDS identifies patterns of behavior that accompany an attack.
  - c) A network-based IDS identifies whether the behavior of the network is a statistically significant departure from normal.
  - d) A host-based IDS alerts the administrator if it sees a disproportionate number of malformed TCP packets entering the organization.
- 5) This technique in identity theft involves sending of e-mail messages to online payment accounts to update their records with confidential information which is then used by the identity thieves.
  - a) Viruses b) Worm holes
  - c) Phishing d) Pooling

Seat No.

Max. Marks: 70

6) Which of the following make filtering decisions based on application payload?

- Packet filter a)
- Stateful packet inspection firewall b)
- Deep inspection firewall C)
- d) Reverse proxy
- 7) is the standard for an information security management system.
  - ISO 27000 a)
- b) ISO 27004

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Set | R

- ISO 27001 d) ISO 27002 c)
- Early viruses used the following technique to evade detection \_\_\_\_\_ 8)
  - They were encrypted and decrypted only during execution. a)
  - They updated themselves by downloading code from an FTP site. b)
  - They were hidden in the payload of TCP packets carrying regular C) traffic.
  - d) They used compression so that the length of the infected and original files matched.
- 9) refers to sending a large number of E-Mails to the victim to crash victims E-Mail account or to make victims mail server crash.
  - E-Mail Bombing Password Sniffing a) b)
  - **Identity Theft** d) Forgery c)
- 10) Which of the following describes programs that can run independently, travel from system to system and disrupt computer communication?
  - Viruses b) Troians a)
  - Droppers Worm C) d)
- Monoalphabetic ciphers are stronger than Polyalphabetic ciphers. 11) i) Vigenere cipher is Polyalphabetic ii) Which one of the following is true?
  - i only a)

a)

NUFMZU

- b) ii only
- Both i and ii Neither i nor ii c) d)
- What is the ciphertext of "MONEYZ" using Playfair cipher (key 12) "TUTORIALS")?
  - b) NUFMZV
  - c) NVMFZV d) NUMFZV
- The only difference between DES encryption and DES decryption 13) algorithm is in
  - Number of Feistel rounds a)
- Complex function 'F' b)
- Ordering of the round keys Permutation tables d) C)
- 14) For SSL connection, SSL Record protocol provides
  - Message confidentiality a)
- Message Integrity b)
- Both a) and b) C)
- None of a) and b) d)

|               | SLR-FM-3  | 97    |
|---------------|---|-------|
| Seat<br>No.   | t Set   | R     |
|               | B.E. (Part – II) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>INFORMATION ASSURANCE & SECURITY  |       |
| Day &<br>Time | & Date: Monday, 25-11-2019 Max. Marks<br>: 02:30 PM To 05:30 PM   | 56 56 |
| Instr         | <b>uctions:</b> 1) All questions are compulsory.<br>2) Figure to the right indicates full marks.  |       |
|               | Section – I   |       |
| Q.2           | <ul> <li>Write short notes. (Any Two)</li> <li>a) Counter Mode of operation</li> <li>b) A Model for Symmetric Encryption</li> <li>c) SSL Record Layer Protocol</li> </ul>   | 08    |
| Q.3           | <ul> <li>Answer the following. (Any Two)</li> <li>a) Describe MAC with its properties and applications.</li> <li>b) Describe Public-Key Cryptography.</li> <li>c) Demonstrate Man-in-the middle attack on Diffie-Hellman Key Exchange.</li> </ul> | 10    |
| Q.4           | <ul> <li>Answer the following.</li> <li>a) Explain two scenarios of Digital Certificate Revocation with solutions.</li> <li>OR</li> </ul>   | 10    |
|               | <b>b)</b> Explain IPSec protocol with Security Associations.  |       |
|               | Section – II  |       |
| Q.5           | <ul> <li>Answer the following. (Any Two)</li> <li>a) Compare between Host-based and Network-based Intrusion Detection System.</li> <li>b) Explain in detail the working of Anonymizers.</li> <li>c) What is Backdoor? Illustrate.</li> </ul>      | 08    |
| Q.6           | <ul> <li>Answer the following. (Any Two):</li> <li>a) Explain Application Level Firewalls.</li> <li>b) Describe Trojan Horse.</li> <li>c) Describe the Positive Aspects of ITA 2000.</li> </ul>   | 10    |
| Q.7           | <ul> <li>Answer the following.</li> <li>a) What is Cyber' crime? How is Cyber Crime Classified? Explain with examples.</li> </ul>   | 10    |
|               | <b>b)</b> What are Keyloggers? Explain the different types of Keyloggers.   |       |

| Seat |  |
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| No.  |  |
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#### B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **INFORMATION ASSURANCE & SECURITY**

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Marks: 14

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Which of the following make filtering decisions based on application 1) payload?
  - Packet filter a)
  - Stateful packet inspection firewall b)
  - Deep inspection firewall c)
  - Reverse proxy d)
- 2) is the standard for an information security management system.
  - a) ISO 27000 ISO 27004 b)
  - c) ISO 27001 d) ISO 27002
- 3) Early viruses used the following technique to evade detection \_\_\_\_\_ .
  - They were encrypted and decrypted only during execution. a)
  - They updated themselves by downloading code from an FTP site. b)
  - They were hidden in the payload of TCP packets carrying regular c) traffic.
  - d) They used compression so that the length of the infected and original files matched.
- 4) \_\_\_\_ refers to sending a large number of E-Mails to the victim to crash victims E-Mail account or to make victims mail server crash.
  - a) E-Mail Bombing Password Sniffing b)
  - c) Identity Theft d) Forgery
- Which of the following describes programs that can run independently, 5) travel from system to system and disrupt computer communication?
  - a) Viruses Trojans b)
  - c) Droppers d) Worm
- 6) Monoalphabetic ciphers are stronger than Polyalphabetic ciphers. i) Vigenere cipher is Polyalphabetic ii) Which one of the following is true?
  - a) i only b) ii only
  - Both i and ii d) Neither i nor ii C)
- What is the ciphertext of "MONEYZ" using Playfair cipher (key 7) "TUTORIALS")? NUFMZV
  - a) NUFMZU
  - b) **NVMFZV** d) NUMFZV C)

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Max. Marks: 70

- Number of Feistel rounds a)
- Complex function 'F' b) Permutation tables d)

Message Integrity

- Ordering of the round keys C)
- 9) For SSL connection, SSL Record protocol provides
  - Message confidentiality a)
    - Both a) and b) d) None of a) and b)
- Let the plaintext be 01001011 and the initial vector be taken as 1111. If 10) the block cipher is the transposition cipher with the key a permutation
  - $\begin{pmatrix} 1 & 2 \\ 2 & 4 \end{pmatrix}$ 3 4 , then the ciphertext obtained from CBC mode of operation 1 is given by.
  - a) 01110011

c)

C)

- b) 01111000
  - d)

b)

- 11) Diffie-Hellman key exchange protocol is based on a)
  - Discrete log problem b) Subset sum problem
  - C) Factorization problem d) Permutation problem
- The advantage of IKE Phase 1 Main mode over IKE Phase 1 Aggressive 12) mode is
  - Main mode uses fewer messages a)
  - Main mode provides greater security b)
  - Main mode hides the identities of the communicating entities c)
  - Main mode has a larger suite of options for key exchange d)
- 13) Which of the following statement is false?
  - An anomaly-based IDS uses OS-based audit trails to detect intrusion. a)
  - A signature based IDS identifies patterns of behavior that accompany b) an attack.
  - A network-based IDS identifies whether the behavior of the network is c) a statistically significant departure from normal.
  - d) A host-based IDS alerts the administrator if it sees a disproportionate number of malformed TCP packets entering the organization.
- 14) This technique in identity theft involves sending of e-mail messages to online payment accounts to update their records with confidential information which is then used by the identity thieves.
  - a) Viruses

b) Worm holes

c) Phishing d) Pooling



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|----------------|----------------------|---|---|--|--------------------|------------|
| Seat<br>No.    | t                    |   |   |  | Set                | S          |
|                |                      | B.E. (Part –<br>INFORN  | II) (CGPA) Exa<br>Information 7<br>IATION ASSU  | mination Nov<br>echnology<br>RANCE & SEC       | /Dec-2019<br>URITY |            |
| Day &<br>Time: | & Da<br>: 02         | ate: Monday, 25-11-2<br>30 PM To 05:30 PM   | 2019<br>1   |  | Max. Mark          | s: 56      |
| Instru         | ucti                 | ons: 1) All questions<br>2) Figure to the   | s are compulsory.<br>e right indicates fu   | ll marks.                                      |                    |            |
| Q.2            | Wr<br>a)<br>b)<br>c) | <b>ite short notes. (An</b><br>Counter Mode of o<br>A Model for Symm<br>SSL Record Layer        | <b>Section</b><br>peration<br>etric Encryption<br>Protocol                            | n – I  |                    | 08         |
| Q.3            | An<br>a)<br>b)<br>c) | <b>swer the following.</b><br>Describe MAC with<br>Describe Public-Ke<br>Demonstrate Man-       | . <b>(Any Two)</b><br>h its properties and<br>ey Cryptography.<br>in-the middle attac | l applications.<br>ck on Diffie-Hellm          | an Key Exchange.   | 10         |
| Q.4            | An<br>a)<br>b)       | swer the following.<br>Explain two scenar<br>Explain IPSec prot                                 | rios of Digital Cert  | ficate Revocation<br><b>DR</b><br>Associations | with solutions.    | 10         |
|                | 5)                   |   | Sectio  | n – II   |                    |            |
| Q.5            | An<br>a)<br>b)<br>c) | swer the following.<br>Compare between<br>System.<br>Explain in detail the<br>What is Backdoor? | . <b>(Any Two)</b><br>Host-based and N<br>e working of Anon<br>' Illustrate.          | letwork-based Inf<br>ymizers.                  | trusion Detection  | 08         |
| Q.6            | An<br>a)<br>b)<br>c) | <b>swer the following.</b><br>Explain Application<br>Describe Trojan Ho<br>Describe the Positi  | a <b>(Any Two) :</b><br>In Level Firewalls.<br>Drse.<br>Ive Aspects of ITA            | 2000.  |                    | 10         |
| Q.7            | An<br>a)             | swer the following.<br>What is Cyber' crin<br>examples.   | ne? How is Cyber  | Crime Classified?                              | ? Explain with     | 10         |
|                | b)                   | What are Keylogge   | ers? Explain the di   | fferent types of K                             | eyloggers.         |            |
| Seat |  |
|------|--|
| No.  |  |

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **DATA MINING & WAREHOUSING**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

5)

a)

#### Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

- 1) The full form of OLAP is
  - a) Online Analytical Processing b) **Online Advanced Processing**
  - c) Online Advanced Preparation **Online Analytical Performance** d)

#### 2) is a subject - oriented, integrated, time-variant, nonvolatile collection or data in support of management decisions.

- Data Mining b) Data warehousing a)
- **Document Mining** d) **Text Mining** c)
- The data is stored, retrieved and updated in 3)
  - OLTP a) OLAP b)
  - c) SMTP FTP d)
- An \_\_\_\_\_ system is market-oriented and is used for data analysis by 4) knowledge workers, including managers, executives, and analysts. b) OLTP
  - a) OLAP c) Both of the above
- d) None of the above
- is a good alternative to the star schema. Star Schema
  - Snowflake schema b)
  - c) Fact constellation d) Star-snowflake schema
- 6) \_ exposes the information being captured, stored and managed The by operational systems.
  - a) top-down view b) data warehouse view
  - c) data source view d) business query view
- 7) The type of relationship in star schema is \_
  - a) many to many b) one to one
  - c) one to many d) many to one
- 8) The \_\_\_\_\_ allows the selection of the relevant information necessary for the data warehouse.
  - data warehouse view a) top-down view b)
  - c) data source view d) business query view
- 9) Which of the following is not a component of a data warehouse? Current detail data b)
  - a) Metadata
  - c) Lightly summarized data d) Component Key

Max. Marks: 70

Marks: 14

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- 10) Which of the following is not a kind of data warehouse application?
  - a) Information processing
- b) Analytical processing
- c) Data mining
- d) Transaction processing
- 11) A data warehouse is which of the following?
  - a) Can be updated by end users
  - b) Contains numerous naming conventions and formats
  - c) Organized around important subject areas
  - d) Contains only current data
- 12) An operational system is which of the following?
  - a) A system that is used to run the business in real time and is based on historical data
  - b) A system that is used to run the business in real time and is based on current data
  - c) A system that is used to support decision making and is based on current data
  - d) A system that is used to support decision making and is based on historical data
- 13) The generic two-level data warehouse architecture includes which of the following?
  - a) At least one data mart
  - b) Data that can extracted from numerous internal and external sources
  - c) Near real-time updates
  - d) None of the above
- 14) The active data warehouse architecture includes which of the following?
  - a) At least one data mart
  - b) Data that can extracted from numerous internal and external sources
  - c) Near real-time updates
  - d) All of the above

# d) What is spatial Mining? e) Define Temporal Mining and illustrate the same. Attempt any two of the following questions. a) How are Web pages classified? b) Elaborate on the architectures of Data Mining. c) How is indexing of Multimedia material performed? Attempt any one of the following questions. a) How is knowledge extracted from the web? b) List and explain the Data Mining primitives.

|     | b)<br>c)<br>d)<br>e)               | List the basic elements of Data Mining.<br>What is Visualization?<br>Compare between classification and clustering.<br>List the steps in KDD Process   |    |
|-----|------------------------------------|--|----|
| Q.3 | Atte<br>a)<br>b)<br>c)             | empt any two of the following questions.<br>What is Association Rule Mining? How is it carried out?<br>How is tree based classification carried out?<br>How is extraction done using Neural Networks?  | 08 |
| Q.4 | Atte<br>a)<br>b)                   | empt any one of the following questions.<br>State and compare the technologies used for Data warehousing.<br>List and compare the various techniques used for Data Mining.   | 08 |
|     |                                    | Section – II   |    |
| Q.5 | Atte<br>a)<br>b)<br>c)<br>d)<br>e) | empt any four of the following questions.<br>What are types of Web Mining?<br>What is a Query language? How is its GUI developed?<br>List the applications of Data Mining.<br>What is spatial Mining?<br>Define Temporal Mining and illustrate the same. | 12 |
| Q.6 | Atte<br>a)                         | empt any two of the following questions.<br>How are Web pages classified?  | 08 |

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology DATA MINING & WAREHOUSING

Section – I

80

# **SLR-FM-398**

Set

Max. Marks: 56

Ρ

12

Seat No.

Q.7

Day & Date: Tuesday, 26-11-2019

**Instructions:** 1) All questions are compulsory.

a) What is a business model?

Q.2 Attempt any four of the following questions.

2) Figures to the right indicate full marks.

Time: 02:30 PM To 05:30 PM

# Seat No.

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **DATA MINING & WAREHOUSING**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

- The allows the selection of the relevant information necessary for 1) the data warehouse.
  - a) top-down view b)
  - data source view d) C)
- 2) Which of the following is not a component of a data warehouse?
  - Metadata b) a)
  - Lightly summarized data d) c)
- 3) Which of the following is not a kind of data warehouse application? Analytical processing b)
  - a) Information processing
  - c) Data mining Transaction processing d)
- 4) A data warehouse is which of the following?
  - a) Can be updated by end users
  - b) Contains numerous naming conventions and formats
  - c) Organized around important subject areas
  - d) Contains only current data
- An operational system is which of the following? 5)
  - a) A system that is used to run the business in real time and is based on historical data
  - b) A system that is used to run the business in real time and is based on current data
  - c) A system that is used to support decision making and is based on current data
  - d) A system that is used to support decision making and is based on historical data
- 6) The generic two-level data warehouse architecture includes which of the following?
  - a) At least one data mart
  - b) Data that can extracted from numerous internal and external sources
  - c) Near real-time updates
  - d) None of the above

Max. Marks: 70

Marks: 14

data warehouse view

- business query view
- Current detail data Component Key

Set 7) The active data warehouse architecture includes which of the following? a) At least one data mart Data that can extracted from numerous internal and external sources b) Near real-time updates c) d) All of the above 8) The full form of OLAP is a) Online Analytical Processing b) **Online Advanced Processing** c) Online Advanced Preparation d) **Online Analytical Performance** 9) is a subject - oriented, integrated, time-variant, nonvolatile collection or data in support of management decisions. Data Mining b) Data warehousing a) **Document Mining** d) **Text Mining** c) The data is stored, retrieved and updated in 10) a) OLAP OLTP b) SMTP c) d) FTP 11) \_\_\_\_ system is market-oriented and is used for data analysis by An knowledge workers, including managers, executives, and analysts. a) OLAP b) OLTP c) Both of the above d) None of the above 12) is a good alternative to the star schema. a) Star Schema b) Snowflake schema c) Fact constellation d) Star-snowflake schema 13) The \_\_\_\_\_ exposes the information being captured, stored and managed by operational systems. a) top-down view b) data warehouse view c) data source view d) business query view

- 14) The type of relationship in star schema is \_
  - a) many to many
- b) one to one
- c) one to many
- d) many to one

**SLR-FM-398** 

| Atte<br>a)<br>b) | mpt any one of the following questions.<br>How is knowledge extracted from the web?<br>List and explain the Data Mining primitives. |  |  |  |  |
|------------------|---|--|--|--|--|
|                  |   |  |  |  |  |
|                  |   |  |  |  |  |
|                  |   |  |  |  |  |

Compare between classification and clustering. d) List the steps in KDD Process e) Q.3 Attempt any two of the following questions. **08** What is Association Rule Mining? How is it carried out? a) How is tree based classification carried out? b) How is extraction done using Neural Networks? c) 80 Q.4 Attempt any one of the following questions. State and compare the technologies used for Data warehousing. a) List and compare the various techniques used for Data Mining. b) Section – II Attempt any four of the following questions. Q.5 12 What are types of Web Mining? a) What is a Query language? How is its GUI developed? b) List the applications of Data Mining. c) What is spatial Mining? d) Define Temporal Mining and illustrate the same. e) Q.6 Attempt any two of the following questions. **08** How are Web pages classified? a) Elaborate on the architectures of Data Mining. b) How is indexing of Multimedia material performed? c)

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **DATA MINING & WAREHOUSING** 

Section – I

2) Figures to the right indicate full marks.

What is Visualization? c)

Attempt any four of the following questions.

b) List the basic elements of Data Mining.

What is a business model?

**Instructions:** 1) All questions are compulsory.

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Day & Date: Tuesday, 26-11-2019

Time: 02:30 PM To 05:30 PM

Seat No.

Q.2

Q.7

a)



Max. Marks: 56

12

80

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology

# **DATA MINING & WAREHOUSING**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

1)

Seat

No.

#### Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

- is a good alternative to the star schema.
  - Star Schema a)
  - c) Fact constellation d) Star-snowflake schema
- 2) The \_\_\_\_\_ exposes the information being captured, stored and managed by operational systems.
  - a) top-down view

- data warehouse view
- c) data source view d) business query view
- 3) The type of relationship in star schema is \_\_\_\_\_
  - a) many to many b) one to one
  - c) one to many d) many to one
- 4) allows the selection of the relevant information necessary for The the data warehouse.
  - a) top-down view c) data source view
    - b) data warehouse view d) business query view
- Which of the following is not a component of a data warehouse? 5)
  - Metadata Current detail data b) a)
  - Lightly summarized data d) Component Key c)
- Which of the following is not a kind of data warehouse application? 6)
  - Information processing Analytical processing a) b)
  - Data mining Transaction processing c) d)
- 7) A data warehouse is which of the following?
  - a) Can be updated by end users
  - b) Contains numerous naming conventions and formats
  - c) Organized around important subject areas
  - d) Contains only current data





Max. Marks: 70

Marks: 14

- Snowflake schema b)
- - b)

- 8) An operational system is which of the following?
  - a) A system that is used to run the business in real time and is based on historical data
  - b) A system that is used to run the business in real time and is based on current data
  - c) A system that is used to support decision making and is based on current data
  - d) A system that is used to support decision making and is based on historical data
- 9) The generic two-level data warehouse architecture includes which of the following?
  - a) At least one data mart
  - b) Data that can extracted from numerous internal and external sources
  - Near real-time updates c)
  - d) None of the above
- 10) The active data warehouse architecture includes which of the following? At least one data mart a)
  - b) Data that can extracted from numerous internal and external sources
  - c) Near real-time updates
  - d) All of the above
- 11) The full form of OLAP is
  - a) Online Analytical Processing
  - Online Advanced Preparation d) C)
- is a subject oriented, integrated, time-variant, nonvolatile 12) collection or data in support of management decisions.
  - b) a) Data Mining Data warehousing
  - **Document Mining** d) **Text Mining** c)
- 13) The data is stored, retrieved and updated in
  - a) OLAP OLTP b)
  - c) SMTP d) FTP
- An \_\_\_\_\_ system is market-oriented and is used for data analysis by 14) knowledge workers, including managers, executives, and analysts. b) OLTP
  - a) OLAP c) Both of the above
- d) None of the above

- Online Advanced Processing
- b)
  - Online Analytical Performance



| b)   | What is a Query language? How is its GUI developed? |
|------|---|
| c)   | List the applications of Data Mining.               |
| d)   | What is spatial Mining?                             |
| e)   | Define Temporal Mining and illustrate the same.     |
| Atte | empt any two of the following questions.            |
| a)   | How are Web pages classified?                       |
| b)   | Elaborate on the architectures of Data Mining.      |
| c)   | How is indexing of Multimedia material performed?   |
| Atte | empt any one of the following questions.            |
| a)   | How is knowledge extracted from the web?            |
| b)   | List and explain the Data Mining primitives.        |
|      |   |

| Q.5 | Atte                   | empt any four of the following questions.   |
|-----|------------------------|---|
|     |                        | Section – II  |
| Q.4 | Atte<br>a)<br>b)       | empt any one of the following questions.<br>State and compare the technologies used for Data warehousing.<br>List and compare the various techniques used for Data Mining.                            |
| Q.3 | Atte<br>a)<br>b)<br>c) | empt any two of the following questions.<br>What is Association Rule Mining? How is it carried out?<br>How is tree based classification carried out?<br>How is extraction done using Neural Networks? |
|     | c)<br>d)<br>e)         | Compare between classification and clustering.<br>List the steps in KDD Process   |

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **DATA MINING & WAREHOUSING** 

Section – I

Q.2 What is a business model? a)

**Instructions:** 1) All questions are compulsory.

Day & Date: Tuesday, 26-11-2019

Time: 02:30 PM To 05:30 PM

a)

Q.6

Q.7

Seat

No.

- Attempt any four of the following questions.

What are types of Web Mining?

#### List the basic elements of Data Mining. b) What is Vieualization?

2) Figures to the right indicate full marks.

**SLR-FM-398** 



Max. Marks: 56

12

**08** 

80

12

80

80

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology

# **DATA MINING & WAREHOUSING**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat No.

#### Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

- 1) Which of the following is not a kind of data warehouse application?
  - a) Information processing

c) Data mining

- Analytical processing b) Transaction processing d)
- A data warehouse is which of the following? 2)
  - a) Can be updated by end users
  - b) Contains numerous naming conventions and formats
  - c) Organized around important subject areas
  - d) Contains only current data
- An operational system is which of the following? 3)
  - a) A system that is used to run the business in real time and is based on historical data
  - b) A system that is used to run the business in real time and is based on current data
  - c) A system that is used to support decision making and is based on current data
  - d) A system that is used to support decision making and is based on historical data
- The generic two-level data warehouse architecture includes which of the 4) following?
  - a) At least one data mart
  - Data that can extracted from numerous internal and external sources b)
  - c) Near real-time updates
  - d) None of the above
- The active data warehouse architecture includes which of the following? 5)
  - a) At least one data mart
  - b) Data that can extracted from numerous internal and external sources
  - c) Near real-time updates
  - d) All of the above
- The full form of OLAP is \_\_\_\_ 6)

c)

- Online Analytical Processing a)
  - b) Online Advanced Processing
  - Online Advanced Preparation d) Online Analytical Performance



Max. Marks: 70

Marks: 14

|     | SLR-FM-398   |
|-----|--|
|     | Set S  |
| 7)  | is a subject - oriented, integrated, time-variant, nonvolatile<br>collection or data in support of management decisions.<br>a) Data Mining b) Data warehousing<br>c) Document Mining d) Text Mining  |
| 8)  | The data is stored, retrieved and updated in<br>a) OLAP b) OLTP<br>c) SMTP d) FTP  |
| 9)  | <ul> <li>An system is market-oriented and is used for data analysis by knowledge workers, including managers, executives, and analysts.</li> <li>a) OLAP</li> <li>b) OLTP</li> <li>c) Both of the above</li> <li>d) None of the above</li> </ul> |
| 10) | is a good alternative to the star schema.<br>a) Star Schema b) Snowflake schema<br>c) Fact constellation d) Star-snowflake schema  |
| 11) | The exposes the information being captured, stored and managedby operational systems.a) top-down viewb) data warehouse viewc) data source viewd) business query view   |
| 12) | The type of relationship in star schema is<br>a) many to many b) one to one<br>c) one to many d) many to one   |
| 13) | The allows the selection of the relevant information necessary forthe data warehouse.a) top-down viewb) data warehouse viewc) data source viewd) business query view   |
| 14) | Which of the following is not a component of a data warehouse?   |

a) Metadata

- b) Current detail data
- c) Lightly summarized data
- d) Component Key

# **DATA MINING & WAREHOUSING** Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM **Instructions:** 1) All questions are compulsory. 2) Figures to the right indicate full marks. Section – I Attempt any four of the following questions. What is a business model? List the basic elements of Data Mining. What is Visualization? Compare between classification and clustering. List the steps in KDD Process

#### e) Q.3 Attempt any two of the following questions. What is Association Rule Mining? How is it carried out? a) How is tree based classification carried out? b) How is extraction done using Neural Networks? c) Q.4 Attempt any one of the following questions. State and compare the technologies used for Data warehousing. a) List and compare the various techniques used for Data Mining. b) Section – II

| Q.5 | Atte | empt any four of the following questions.           | 12 |
|-----|------|---|----|
|     | a)   | What are types of Web Mining?                       |    |
|     | b)   | What is a Query language? How is its GUI developed? |    |
|     | c)   | List the applications of Data Mining.               |    |
|     | d)   | What is spatial Mining?                             |    |
|     | e)   | Define Temporal Mining and illustrate the same.     |    |
| Q.6 | Atte | empt any two of the following questions.            | 08 |
|     | a)   | How are Web pages classified?                       |    |
|     | b)   | Elaborate on the architectures of Data Mining.      |    |
|     | c)   | How is indexing of Multimedia material performed?   |    |
| Q.7 | Atte | empt any one of the following questions.            | 08 |
|     | a)   | How is knowledge extracted from the web?            |    |
|     |      |   |    |

b) List and explain the Data Mining primitives.

# **SLR-FM-398**

Q.2

a) b)

c)

d)

Seat No.

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology

Max. Marks: 56

12

**08** 

80

Set

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology

**BUSINESS INTELLIGENCE** Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

| Instructions: 1) | Q. No. 1 is compulsory and should be solved in first 30 minutes in answer |
|------------------|---|
|                  | book.   |

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

a)

2)

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The data gathered from different sources are transferred & given to data 1) warehouse using
  - a) Analysis tools b) Mathematical tools c) ETL tools d) **OLAP** tools
  - Which factor enables the BI projects
  - a) Technologies b) Analysis c) Human resources d) All
- DSS combines data & mathematical models to solve complex problems: 3) (State true or false).
  - a) True False b)
- 4) In analysis subset of attributes are investigated.
  - Univariate **Bivariate** a) b) c) Multivariate d)
    - Data distribution
- Empirical density histograms are used in graphical analysis of \_\_\_\_\_. 5) Categorical attributes b) Numerical attributes a)
  - Empirical curve d) All types C)
- 6) Which of the following are the measures of central tendency for numerical attributes?
  - a) Midrange b) Geometrical mean
  - d) All C) Mode
- 7) Gini index and Entropy index are used for measuring of categorical attributes.
  - a) Homogenity b) Heterogenity
  - c) Central tendency d) Dispersion
- Variance and Mean Absolute Deviation are the measures of \_\_\_\_\_ for 8) numerical attributes. Central Tendency
  - a) Dispersion b)
  - c) Relative Location d) Outliers
- 9) Which is not the part of extended structure of DSS \_ data management
  - knowledge management b)
  - model management d) memory management C)

**SLR-FM-400** 

Set



Max. Marks: 70

Marks: 14

|     |   |                    | SLR-   | FM-4 | 100 |
|-----|---|--------------------|--|------|-----|
|     |   |                    |  | Set  | Ρ   |
| 10) | Select the applications of dataminin<br>a) Relational marketing<br>c) Risk evaluation                               | g<br>b)<br>d)      | Fraud detection  |      |     |
| 11) | can be used for the identifica<br>a) Scatter plot<br>c) Box plot  | tion o<br>b)<br>d) | f attributes.<br>Loess plot<br>QQ plot                     |      |     |
| 12) | In linear regression models the funct<br>& is linear.<br>a) Dependant & independent<br>c) Independent & independent | tional<br>b)<br>d) | relationship between the _<br>Dependant & dependant<br>All |      |     |
| 13) | Vectors are used in<br>a) Simple linear regression  | b)                 | Multiple linear regression                                 |      |     |

- c) Both d) None Which of the followings are evaluations of validation of regression
- 14) models?

  - a) Significance of coefficientsc) Coefficients of determination
- Analysis of variance b)
- d) All

|               |                              | B.E. (Part – II) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>BUSINESS INTELLIGENCE  |        |
|---------------|------------------------------|--|--------|
| Day &<br>Time | & Da<br>: 02::               | te: Tuesday, 26-11-2019 Max. Mark<br>30 PM To 05:30 PM   | ks: 56 |
| Instr         | uctic                        | <ul> <li>ans: 1) All questions are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>3) Assume suitable date if necessary.</li> </ul> |        |
|               |                              | Section – I  |        |
| Q.2           | Atte<br>a)<br>b)<br>c)<br>d) | empt any three.<br>Differentiation between OLAP, Statistics & Datamining<br>BI architecture<br>Effective and timely decisions in BI<br>Box plots & QQ plots    | 12     |
| Q.3           | Atte<br>Exp                  | empt any one.<br>lain the various measures of numerical attributes for Univariate analysis.<br>OR  | 08     |
| Q.4           | Whata                        | at is the importance of data reduction in data mining process? Explain how a reduction takes place in detail.  | 08     |
|               |                              | Section – II   |        |
| Q.5           | Atte<br>a)<br>b)<br>c)<br>d) | empt any three.<br>Structure of regression models<br>Market basket analysis & Web mining<br>Definition of Time series with examples<br>Apriori algorithm       | 12     |
| Q.6           | Atte<br>Wha<br>mod           | empt any one.<br>at are classification problems? Explain the taxonomy of classification<br>dels.   | 08     |
|               | Disc                         | <b>UK</b><br>cuss the evaluation of classification models.   |        |
| Q.7           | Elat                         | porate multiple linear regressions with its coefficients & examples.   | 08     |

Set P

Multiple linear regression

| B.E. (F | Part – II) (CGPA) Examination Nov/Dec-2019 |
|---------|--|
|         | Information Technology                     |

### normation rechnology **BUSINESS INTELLIGENCE**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

| Instructions: 1) | Q. No. 1 is compulsory and should be solved in first 30 minutes in answer |
|------------------|---|
|                  | book.   |

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Variance and Mean Absolute Deviation are the measures of for 1) numerical attributes.
  - a) Dispersion **Central Tendency** b) c) Relative Location
    - d) **Outliers**
- 2) Which is not the part of extended structure of DSS .
  - data management knowledge management b) a) c) model management d) memory management
- 3) Select the applications of datamining
  - a) Relational marketing Fraud detection b)
  - c) Risk evaluation d) All

4) can be used for the identification of attributes.

- a) Scatter plot Loess plot b)
- c) Box plot d) QQ plot
- In linear regression models the functional relationship between the \_\_\_\_\_ 5) & \_\_\_\_\_ is linear. b) Dependant & dependant

All

None

d)

b)

- a) Dependant & independent
- Independent & independent C)
- 6) Vectors are used in \_\_\_\_
  - Simple linear regression a)
  - Both d) C)
- 7) Which of the followings are evaluations of validation of regression models? Analysis of variance
  - a) Significance of coefficients b)
  - c) Coefficients of determination d) All

#### The data gathered from different sources are transferred & given to data 8) warehouse using .

- a) Analysis tools
- c) ETL tools
- Which factor enables the BI projects \_ 9)
  - a) Technologies
  - c) Human resources

**SLR-FM-400** 



Max. Marks: 70

Marks: 14





- 10) DSS combines data & mathematical models to solve complex problems: (State true or false).
  - a) True b) False
- 11) In \_\_\_\_\_ analysis subset of attributes are investigated.
  - a) Univariateb)c) Multivariated)
    - Bivariate
       Data distribution
- 12) Empirical density histograms are used in graphical analysis of \_\_\_\_\_.
  - a) Categorical attributes b) Numerical attributes
  - c) Empirical curve d) All types
- 13) Which of the following are the measures of central tendency for numerical attributes?
  - a) Midrange b)
  - c) Mode d) All
- 14) Gini index and Entropy index are used for measuring \_\_\_\_\_ of categorical attributes.
  - a) Homogenity

b) Heterogenity

Geometrical mean

c) Central tendency d) Dispersion

|               |  | B.E. (Part – II) (CGPA) Examination Nov/Dec-2019   | •              |
|---------------|--|--|----------------|
|               |  | Information Technology   |                |
| Day &<br>Time | & Da<br>: 02::   | te: Tuesday, 26-11-2019<br>30 PM To 05:30 PM   | Max. Marks: 56 |
| Instr         | uctio  | <ul> <li>ons: 1) All questions are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>3) Assume suitable date if necessary.</li> </ul> |                |
|               |  | Section – I  |                |
| Q.2           | Atte<br>a)<br>b)<br>c)<br>d)   | empt any three.<br>Differentiation between OLAP, Statistics & Datamining<br>BI architecture<br>Effective and timely decisions in BI<br>Box plots & QQ plots    | 12             |
| Q.3           | Attempt any one.<br>Explain the various measures of numerical attributes for Univariate analysis. 08<br>OR |  |                |
|               | Witl   | n neat diagram elaborate the phases in the development of BI syst  | em.            |
| Q.4           | Whata<br>data  | at is the importance of data reduction in data mining process? Exp<br>a reduction takes place in detail.   | blain how 08   |
|               |  | Section – II   |                |
| Q.5           | Atte<br>a)<br>b)<br>c)<br>d)   | empt any three.<br>Structure of regression models<br>Market basket analysis & Web mining<br>Definition of Time series with examples<br>Apriori algorithm       | 12             |
| Q.6           | Atte<br>What<br>mod  | empt any one.<br>at are classification problems? Explain the taxonomy of classification dels.  | on <b>08</b>   |
|               | Disc   | cuss the evaluation of classification models.  |                |
| Q.7           | Elal   | porate multiple linear regressions with its coefficients & examples.   | 08             |

Seat No.

Set Q

|      |         | book.  |                     |  |
|------|---------|--|---------------------|--|
|      |         | <ol><li>Figures to the right indicate full</li></ol>   | III mar             | ks.  |
|      |         | <ol> <li>Assume suitable data if neces</li> </ol>  | sary.               |  |
|      |         | MCQ/Objective 1  | ype                 | Questions  |
| Dura | tion: 3 | 30 Minutes   |                     | Marks: 14  |
| Q.1  | Cho     | ose the correct alternatives from t  | he op               | tions and rewrite the sentence. 14                           |
|      | 1)      | Empirical density histograms are u<br>a) Categorical attributes<br>c) Empirical curve              | sed in<br>b)<br>d)  | graphical analysis of<br>Numerical attributes<br>All types   |
|      | 2)      | Which of the following are the mea<br>attributes?<br>a) Midrange<br>c) Mode                        | sures<br>b)<br>d)   | of central tendency for numerical<br>Geometrical mean<br>All |
|      | 3)      | Gini index and Entropy index are u<br>attributes.<br>a) Homogenity<br>c) Central tendency          | sed fo<br>b)<br>d)  | or measuring of categorical<br>Heterogenity<br>Dispersion    |
|      | 4)      | Variance and Mean Absolute Devia<br>numerical attributes.<br>a) Dispersion<br>c) Relative Location | ation a<br>b)<br>d) | are the measures of for<br>Central Tendency<br>Outliers      |

## B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **BUSINESS INTELLIGENCE**

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

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# **SLR-FM-400**

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Max. Marks: 70

- 2 rical

5) Which is not the part of extended structure of DSS \_\_\_\_\_.

- a) data management b)
- c) model management d)

6) Select the applications of datamining

- a) Relational marketing Fraud detection b) c) Risk evaluation d) All
- can be used for the identification of attributes. 7)
  - a) Scatter plot Loess plot b)
    - c) Box plot d) QQ plot
- 8) In linear regression models the functional relationship between the \_\_\_\_\_ & is linear.

b)

d)

None

- a) Dependant & independent
- c) Independent & independent d)
- Vectors are used in \_\_\_\_\_ 9) a) Simple linear regression
  - c) Both

b) All

Multiple linear regression

Dependant & dependant

knowledge management memory management

|     |  |          | Set R                            |
|-----|--|----------|----------------------------------|
| 10) | Which of the followings are evaluatio models?  | ons of   | validation of regression         |
|     | <ul><li>a) Significance of coefficients</li><li>c) Coefficients of determination</li></ul> | b)<br>d) | Analysis of variance<br>All      |
| 11) | The data gathered from different sou warehouse using                                       | rces     | are transferred & given to data  |
|     | <ul><li>a) Analysis tools</li><li>c) ETL tools</li></ul>                                   | b)<br>d) | Mathematical tools<br>OLAP tools |
| 12) | Which factor enables the BI projects   | <u> </u> |                                  |
|     | <ul><li>a) Technologies</li><li>c) Human resources</li></ul>                               | d)<br>d) | Analysis<br>All                  |
| 13) | DSS combines data & mathematical (State true or false).                                    | mode     | els to solve complex problems:   |
|     | a) True  | b)       | False                            |
| 14) | In analysis subset of attributes   | s are    | investigated.                    |

- a) Univariate b) Bivariate
- c) Multivariate d) Data distribution

|               |                              | B.E. (Part – II) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>BUSINESS INTELLIGENCE   |         |
|---------------|------------------------------|---|---------|
| Day &<br>Time | & Da<br>: 02::               | te: Tuesday, 26-11-2019 Max. Ma<br>30 PM To 05:30 PM  | rks: 56 |
| Instr         | uctio                        | <ul> <li>a) All questions are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>3) Assume suitable date if necessary.</li> </ul>   |         |
|               |                              | Section – I   |         |
| Q.2           | Atte<br>a)<br>b)<br>c)<br>d) | empt any three.<br>Differentiation between OLAP, Statistics & Datamining<br>BI architecture<br>Effective and timely decisions in BI<br>Box plots & QQ plots | 12      |
| Q.3           | Atte<br>Exp                  | empt any one.<br>Iain the various measures of numerical attributes for Univariate analysis.<br>OR   | 08      |
| Q.4           | Whata                        | at is the importance of data reduction in data mining process? Explain how a reduction takes place in detail.   | 08      |
|               |                              | Section – II  |         |
| Q.5           | Atte<br>a)<br>b)<br>c)<br>d) | empt any three.<br>Structure of regression models<br>Market basket analysis & Web mining<br>Definition of Time series with examples<br>Apriori algorithm    | 12      |
| Q.6           | Atte<br>What<br>mod          | empt any one.<br>at are classification problems? Explain the taxonomy of classification<br>dels.  | 08      |
|               | Dise                         | OR<br>cuss the evaluation of classification models  |         |
| Q.7           | Elal                         | porate multiple linear regressions with its coefficients & examples.  | 08      |

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| 0 PN                   | 1 To 05:30 PM   |   |  |
|------------------------|---|---|--|
| <b>ns:</b> 1<br>2<br>3 | <ul> <li>) Q. No. 1 is compulsory and sh book.</li> <li>?) Figures to the right indicate full</li> <li>8) Assume suitable data if necess</li> </ul> | ould k<br>mark<br>ary.  | be solved in first 30 minutes in a<br>s.   |
|                        | MCQ/Objective Ty  | /pe (   | Questions  |
| 30 Mi                  | nutes   |   | Mar  |
| ose t<br>Sel           | the correct alternatives from the ect the applications of datamining  | e opt   | ions and rewrite the sentence  |
| a)                     | Relational marketing  | b)  | Fraud detection  |
| c)                     | Risk evaluation   | d)  | All  |
|                        | can be used for the identification  | tion o  | f attributes.  |
| a)                     | Scatter plot  | b)  | Loess plot   |
| C)                     | Box plot  | d)  | QQ plot  |
| In li                  | near regression models the func   | tional  | relationship between the   |
| &                      | Is linear.  | <b>Ь</b> )  | Dependent & dependent  |
| a)<br>C)               | Independent & independent   | d)  | All  |
| Vor                    | store are used in   | ч)  | ,  |
| a)                     | Simple linear regression  | h)  | Multiple linear regression   |
| c)                     | Both  | d)  | None   |
|                        | 0 PM<br>ns: 1<br>23<br>0 Mi<br>23<br>30 Mi<br>sel<br>a)<br>c)<br>In li<br>&_<br>a)<br>c)<br>Vec<br>a)<br>c)   | <ul> <li>0 PM To 05:30 PM</li> <li>ns: 1) Q. No. 1 is compulsory and sh book.</li> <li>2) Figures to the right indicate full</li> <li>3) Assume suitable data if necess</li> <li>MCQ/Objective Ty</li> <li>60 Minutes</li> <li>ose the correct alternatives from the Select the applications of datamining</li> <li>a) Relational marketing</li> <li>c) Risk evaluation</li> <li> can be used for the identificate</li> <li>a) Scatter plot</li> <li>c) Box plot</li> <li>In linear regression models the funct</li> <li>&amp; is linear.</li> <li>a) Dependant &amp; independent</li> <li>c) Independent &amp; independent</li> <li>Vectors are used in</li> <li>a) Simple linear regression</li> <li>c) Both</li> </ul> | <ul> <li>0 PM 10 05:30 PM</li> <li>ns: 1) Q. No. 1 is compulsory and should the book.</li> <li>2) Figures to the right indicate full markes.</li> <li>2) Figures to the right indicate full markes.</li> <li>3) Assume suitable data if necessary.</li> <li>MCQ/Objective Type Composition of the optications of datamining</li> <li>a) Relational marketing b)</li> <li>c) Risk evaluation d)</li> <li> can be used for the identification of a) Scatter plot b)</li> <li>c) Box plot d)</li> <li>In linear regression models the functional &amp; is linear.</li> <li>a) Dependant &amp; independent b)</li> <li>c) Independent &amp; independent d)</li> <li>Vectors are used in</li> <li>a) Simple linear regression b)</li> <li>c) Both d)</li> </ul> |

## B.E. (Part - II) (CGPA) Examination Nov/Dec-2019 Information Technology **BUSINESS INTELLIGENCE**

Day & Date: Tuesday, 26-11-2019 Time

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Q.1 he sentence. 14

- d) None
- Which of the followings are evaluations of validation of regression 5) models? Analysis of variance
  - Significance of coefficients b) a)
  - Coefficients of determination d) All C)

#### The data gathered from different sources are transferred & given to data 6) warehouse using

- a) Analysis tools b) Mathematical tools
- **OLAP** tools c) ETL tools d)
- 7) Which factor enables the BI projects a) Technologies b) Analysis
  - c) Human resources d) All
- 8) DSS combines data & mathematical models to solve complex problems: (State true or false).
  - a) True b) False
- \_\_\_\_ analysis subset of attributes are investigated. 9) In Bivariate
  - Univariate b) a)
  - c) Multivariate d) Data distribution

**SLR-FM-400** 

Set

Max. Marks: 70

Marks: 14

|     |  |                     | Set S  |
|-----|--|---------------------|--|
| 10) | Empirical density histograms are us<br>a) Categorical attributes<br>c) Empirical curve                       | sed in<br>b)<br>d)  | graphical analysis of<br>Numerical attributes<br>All types |
| 11) | Which of the following are the mean attributes?<br>a) Midrange   | sures (<br>b)       | of central tendency for numerical<br>Geometrical mean      |
| 12) | c) Mode<br>Gini index and Entropy index are up   | d)<br>sed foi       | All  |
| 12) | attributes.<br>a) Homogenity   | b)                  | Heterogenity   |
|     | c) Central tendency  | d)                  | Dispersion   |
| 13) | Variance and Mean Absolute Devia numerical attributes.   | ition a             | re the measures of for                                     |
|     | <ul><li>a) Dispersion</li><li>c) Relative Location</li></ul>   | b)<br>d)            | Central Tendency<br>Outliers                               |
| 14) | <ul><li>Which is not the part of extended s</li><li>a) data management</li><li>c) model management</li></ul> | tructur<br>b)<br>d) | e of DSS<br>knowledge management<br>memory management      |

|       |                              | B.E. (Part – II) (CGPA) Examination Nov/Dec-2019<br>Information Technology  |       |
|-------|------------------------------|---|-------|
| Day 8 | & Da                         | te <sup>.</sup> Tuesday 26-11-2019 Max Mark   | s: 56 |
| Time  | : 02:                        | 30 PM To 05:30 PM   |       |
| Instr | uctio                        | <ul> <li>and a straight indicate full marks.</li> <li>Assume suitable date if necessary.</li> </ul>   |       |
|       |                              | Section – I   |       |
| Q.2   | Atte<br>a)<br>b)<br>c)<br>d) | empt any three.<br>Differentiation between OLAP, Statistics & Datamining<br>BI architecture<br>Effective and timely decisions in BI<br>Box plots & QQ plots | 12    |
| Q.3   | <b>Atte</b><br>Exp           | empt any one.<br>Iain the various measures of numerical attributes for Univariate analysis.<br>OR   | 08    |
|       | Wit                          | n neat diagram elaborate the phases in the development of BI system.  |       |
| Q.4   | Wh<br>data                   | at is the importance of data reduction in data mining process? Explain how a reduction takes place in detail.   | 08    |
|       |                              | Section – II  |       |
| Q.5   | Atte<br>a)<br>b)<br>c)<br>d) | empt any three.<br>Structure of regression models<br>Market basket analysis & Web mining<br>Definition of Time series with examples<br>Apriori algorithm    | 12    |
| Q.6   | Atte<br>What<br>mod          | empt any one.<br>at are classification problems? Explain the taxonomy of classification<br>dels.  | 08    |
|       | Dise                         | OR<br>cuss the evaluation of classification models.   |       |
| Q.7   | Elal                         | porate multiple linear regressions with its coefficients & examples.  | 08    |

Set S

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Max. Marks: 70

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **CLOUD COMPUTING**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

Marks: 14

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The cloud computing is defined by using attribute. 1)
  - Multitenancy a) c) Virtualization
    - Security b) d) Cost-savings
- 2) describes a distribution model in which applications are hosted by a service provider and made available to users.
  - Infrastructure-as-a-Service (IaaS) a)
  - b) Platform-as-a-Service (PaaS)
  - c) Software-as-a-Service (SaaS)
  - d) Cloud service
- describes a cloud service that can only be accessed by a limited 3) amount of people.
  - Data center a)
  - Virtualization d) Public cloud c)
- Which delivery model is an example of a cloud computing environment 4) that provides users with a web based email service?
  - a) Software as a Service
  - b) c) Computing as a Service d)
- An Internet connection is necessary for cloud computing interaction. 5) False a) True b)
- Which delivery model is an example of a cloud computing environment 6) that provides users access to virtual machines?
  - a) Platform as a Service b) Software as a Service
  - Application as a Service d) Infrastructure as a Service c)
- What is an advantage of a multitenancy cloud environment over a 7) singletenancy environment?
  - a) cost savings easy to customize b)
  - c) faster performance d) higher data security
- 8) Which of the following is cloud deployment model?
  - a) public b) private
  - c) hybrid d) all



- b) Private cloud
  - - Platform as a Service
  - Infrastructure as a Service

- 9) IAM stands for\_\_\_
  - a) Identity and Access Management
  - b) Identity and Authentication Management
  - c) Identity and Auditing Management
  - d) None of these
- 10) \_\_\_\_\_ is the process of verifying the identity of a user or system.
  - a) Authorization b) Auditing
  - c) Authentication d) All
- 11) Which of the following service provider provides the least amount of built
  - in \_\_\_\_\_ security?
  - a) SaaS c) IaaS

- b) PaaS
- d) All of the mentioned
- 12) Point out the wrong statement:
  - a) Public cloud may be managed by the constituent organization(s) or by a third party
  - b) A community cloud may be managed by the constituent organization(s) or by a third party
  - c) Private clouds may be either on- or off-premises
  - d) None of the mentioned
- 13) The role of CSP in cloud computing is\_\_\_\_
  - a) As a cloud Security Providerc) As a Cloud Service Provider
- b) As a Cloud Server Provider
- d) None of these

- 14) ASP stands for\_\_\_
  - a) Application Server Provider
  - c) Application Security Provider
- b) Application Service Provider
- d) Both A & B



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# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology CLOUD COMPUTING

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
  - 3) Assume suitable data if necessary.

## Section – I

## Q.2 Attempt any four.

- a) Define cloud computing with its attributes.
- **b)** Explain the SPI framework for cloud computing with neat diagram.
- c) Explain cloud deployment models with diagram.
- d) Explain the Infrastructure security at network level with its risk factors.
- e) Explain benefits and challenges of cloud computing.
- f) List and explain the application of cloud computing.
- **Q.3** Explain the cloud service delivery model in detail with neat diagram.

## OR

Explain information security concerns associated with data stored in the cloud by using following aspects.

- 1) Confidentiality
- 2) Integrity
- 3) Availability

## Section – II

## Q.4 Attempt any four

- a) What is privacy? Explain KPMG data life cycle.
- **b)** Explain Software as a service security issue.
- c) Define trusted cloud computing and explain cloud service provider Risks.
- d) What is identity management? Explain issues in implementing Identity Management.
- e) Why Cloud Computing brings new threats? Any 3 reasons.
- f) Explain Quality of Service (QoS) monitoring in cloud computing environment.
- **Q.5** Explain Public, private, Hybrid cloud Models in details.

## OR

Explain CSP life cycle approach & stages in CSP life cycle with neat diagram.



20

Max. Marks: 56

80

20

80

# Set

## Seat No.

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **CLOUD COMPUTING**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Which of the following is cloud deployment model? 1)
  - Public b) a)
  - c) hybrid d) all
- 2) IAM stands for\_
  - a) Identity and Access Management
  - b) Identity and Authentication Management
  - c) Identity and Auditing Management
  - d) None of these
- is the process of verifying the identity of a user or system. 3)
  - a) Authorization Auditing b)
  - c) Authentication d) All
- 4) Which of the following service provider provides the least amount of built
  - in security? a) SaaS

c) laaS

- b) PaaS
- All of the mentioned d)

None of these

- Point out the wrong statement: 5)
  - Public cloud may be managed by the constituent organization(s) or by a a) third party
  - A community cloud may be managed by the constituent organization(s) b) or by a third party

d)

b)

- Private clouds may be either on- or off-premises C)
- d) None of the mentioned
- The role of CSP in cloud computing is\_ 6) b)
  - a) As a cloud Security Provider
  - c) As a Cloud Service Provider
- 7) ASP stands for

c) Virtualization

a)

- a) Application Server Provider
- c) Application Security Provider d)
- 8) The cloud computing is defined by using attribute. Multitenancy
  - b) Security
  - d) Cost-savings

Both A & B

**Application Service Provider** 

As a Cloud Server Provider

- Marks: 14
- private





Max. Marks: 70

Q

- describes a distribution model in which applications are hosted by a service provider and made available to users.
  - a) Infrastructure-as-a-Service (IaaS)
  - b) Platform-as-a-Service (PaaS)
  - c) Software-as-a-Service (SaaS)
  - d) Cloud service
- 10) \_\_\_\_\_ describes a cloud service that can only be accessed by a limited amount of people.
  - a) Data center b) Private cloud
  - c) Virtualization d) Public cloud
- 11) Which delivery model is an example of a cloud computing environment that provides users with a web based email service?
  - a) Software as a Service b)
  - c) Computing as a Service d) Infrastructure as a Service
- 12) An Internet connection is necessary for cloud computing interaction.a) Trueb) False
- 13) Which delivery model is an example of a cloud computing environment that provides users access to virtual machines?
  - a) Platform as a Service
- b) Software as a Service

Platform as a Service

- c) Application as a Service
- d) Infrastructure as a Service
- 14) What is an advantage of a multitenancy cloud environment over a singletenancy environment?
  - a) cost savings
  - c) faster performance
- b) easy to customize
- d) higher data security



**SLR-FM-603** 

# Seat No.

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology CLOUD COMPUTING

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
  - 3) Assume suitable data if necessary.

## Section – I

# Q.2 Attempt any four.

- a) Define cloud computing with its attributes.
- **b)** Explain the SPI framework for cloud computing with neat diagram.
- c) Explain cloud deployment models with diagram.
- d) Explain the Infrastructure security at network level with its risk factors.
- e) Explain benefits and challenges of cloud computing.
- f) List and explain the application of cloud computing.
- **Q.3** Explain the cloud service delivery model in detail with neat diagram.

## OR

Explain information security concerns associated with data stored in the cloud by using following aspects.

- 1) Confidentiality
- 2) Integrity
- 3) Availability

# Section – II

# Q.4 Attempt any four

- a) What is privacy? Explain KPMG data life cycle.
- **b)** Explain Software as a service security issue.
- c) Define trusted cloud computing and explain cloud service provider Risks.
- d) What is identity management? Explain issues in implementing Identity Management.
- e) Why Cloud Computing brings new threats? Any 3 reasons.
- f) Explain Quality of Service (QoS) monitoring in cloud computing environment.
- **Q.5** Explain Public, private, Hybrid cloud Models in details.

# OR

Explain CSP life cycle approach & stages in CSP life cycle with neat diagram.



Max. Marks: 56

80

20

20

80

Max. Marks: 70

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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **CLOUD COMPUTING** 

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) An Internet connection is necessary for cloud computing interaction.
  - a) True b)
- Which delivery model is an example of a cloud computing environment 62) that provides users access to virtual machines?
  - a) Platform as a Service
  - c) Application as a Service
- What is an advantage of a multitenancy cloud environment over a 3) singletenancy environment?
  - a) cost savings
  - c) faster performance d)
- 4) Which of the following is cloud deployment model?
  - a) public private b) d) all
  - c) hybrid
- 5) IAM stands for
  - a) Identity and Access Management
  - Identity and Authentication Management b)
  - Identity and Auditing Management c)
  - d) None of these
- is the process of verifying the identity of a user or system. 6)
  - a) Authorization Auditing b)
  - c) Authentication d) All
- 7) Which of the following service provider provides the least amount of built
  - security? in
  - a) SaaS
  - c) laaS

- b) PaaS
- All of the mentioned d)

Marks: 14

False

- Software as a Service b)
- d) Infrastructure as a Service
- b) easy to customize
  - higher data security

- 8) Point out the wrong statement:
  - Public cloud may be managed by the constituent organization(s) or by a a) third party
  - A community cloud may be managed by the constituent organization(s) b) or by a third party
  - Private clouds may be either on- or off-premises C)
  - d) None of the mentioned
  - 9) The role of CSP in cloud computing is\_
    - a) As a cloud Security Provider
      - b) As a Cloud Server Provider

Set

- c) As a Cloud Service Provider d) None of these
- 10) ASP stands for\_

Multitenancy

a)

- a) Application Server Provider **Application Security Provider** C)
  - b) **Application Service Provider** Both A & B d)
- 11) The cloud computing is defined by using \_ attribute.
  - Security b)
  - c) Virtualization d) Cost-savings
- 12) describes a distribution model in which applications are hosted by a service provider and made available to users.
  - a) Infrastructure-as-a-Service (laaS)
  - b) Platform-as-a-Service (PaaS)
  - c) Software-as-a-Service (SaaS)
  - d) Cloud service
- describes a cloud service that can only be accessed by a limited 13) amount of people.
  - a) Data center

b) Private cloud

c) Virtualization

- Public cloud d)
- 14) Which delivery model is an example of a cloud computing environment that provides users with a web based email service?
  - a) Software as a Service c) Computing as a Service
- b) Platform as a Service
- d) Infrastructure as a Service

# Seat No.

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology CLOUD COMPUTING

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
  - 3) Assume suitable data if necessary.

## Section – I

## Q.2 Attempt any four.

- a) Define cloud computing with its attributes.
- **b)** Explain the SPI framework for cloud computing with neat diagram.
- c) Explain cloud deployment models with diagram.
- d) Explain the Infrastructure security at network level with its risk factors.
- e) Explain benefits and challenges of cloud computing.
- f) List and explain the application of cloud computing.
- **Q.3** Explain the cloud service delivery model in detail with neat diagram.

# 08

Explain information security concerns associated with data stored in the cloud by using following aspects.

OR

- 1) Confidentiality
- 2) Integrity
- 3) Availability

## Section – II

# Q.4 Attempt any four

- a) What is privacy? Explain KPMG data life cycle.
- **b)** Explain Software as a service security issue.
- c) Define trusted cloud computing and explain cloud service provider Risks.
- d) What is identity management? Explain issues in implementing Identity Management.
- e) Why Cloud Computing brings new threats? Any 3 reasons.
- f) Explain Quality of Service (QoS) monitoring in cloud computing environment.
- **Q.5** Explain Public, private, Hybrid cloud Models in details.

# OR

Explain CSP life cycle approach & stages in CSP life cycle with neat diagram.



Max. Marks: 56

20

20

80

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology **CLOUD COMPUTING**

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14 1)

- is the process of verifying the identity of a user or system. Auditing
  - a) Authorization b)
  - c) Authentication d) All
- Which of the following service provider provides the least amount of built 2) \_security? in \_\_\_\_\_
  - - All of the mentioned d)
- 3) Point out the wrong statement:
  - a) Public cloud may be managed by the constituent organization(s) or by a third party
  - b) A community cloud may be managed by the constituent organization(s) or by a third party

d)

- Private clouds may be either on- or off-premises C)
- d) None of the mentioned
- The role of CSP in cloud computing is\_ 4) b)
  - a) As a cloud Security Provider
  - c) As a Cloud Service Provider

#### 5) ASP stands for

a) SaaS

c) laaS

- Application Server Provider a)
- **Application Security Provider** d) c)
- The cloud computing is defined by using 6) attribute. Security
  - a) Multitenancy b)
  - c) Virtualization d) Cost-savings
- \_ describes a distribution model in which applications are hosted by 7) a service provider and made available to users.
  - a) Infrastructure-as-a-Service (laaS)
  - b) Platform-as-a-Service (PaaS)
  - c) Software-as-a-Service (SaaS)
  - d) Cloud service

**Application Service Provider** 

As a Cloud Server Provider

b) Both A & B

None of these



Max. Marks: 70

Marks: 14

- b) PaaS



- describes a cloud service that can only be accessed by a limited amount of people.
  - a) Data center

b) Private cloud

**SLR-FM-603** 

Set

- c) Virtualization d) Public cloud
- 9) Which delivery model is an example of a cloud computing environment that provides users with a web based email service?
  - a) Software as a Service b)
    - b) Platform as a Serviced) Infrastructure as a Service
  - c) Computing as a Service d) Infrastructure as a Service
- 10) An Internet connection is necessary for cloud computing interaction.a) Trueb) False
- 11) Which delivery model is an example of a cloud computing environment that provides users access to virtual machines?
  - a) Platform as a Service I
    - b) Software as a Service
  - c) Application as a Service c
- d) Infrastructure as a Service
- 12) What is an advantage of a multitenancy cloud environment over a singletenancy environment?
  - a) cost savings
- b) easy to customize
- c) faster performance d) higher data security

d)

all

- 13) Which of the following is cloud deployment model?
  - a) public b) private
  - c) hybrid
- 14) IAM stands for\_
  - a) Identity and Access Management
  - b) Identity and Authentication Management
  - c) Identity and Auditing Management
  - d) None of these

# B.E. (Part – II) (CGPA) Examination Nov/Dec-2019 Information Technology CLOUD COMPUTING

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figures to the right indicate full marks.
  - 3) Assume suitable data if necessary.

## Section – I

## Q.2 Attempt any four.

- a) Define cloud computing with its attributes.
- **b)** Explain the SPI framework for cloud computing with neat diagram.
- c) Explain cloud deployment models with diagram.
- d) Explain the Infrastructure security at network level with its risk factors.
- e) Explain benefits and challenges of cloud computing.
- f) List and explain the application of cloud computing.
- **Q.3** Explain the cloud service delivery model in detail with neat diagram.

## OR

Explain information security concerns associated with data stored in the cloud by using following aspects.

- 1) Confidentiality
- 2) Integrity
- 3) Availability

# Section – II

# Q.4 Attempt any four

- a) What is privacy? Explain KPMG data life cycle.
- **b)** Explain Software as a service security issue.
- c) Define trusted cloud computing and explain cloud service provider Risks.
- d) What is identity management? Explain issues in implementing Identity Management.
- e) Why Cloud Computing brings new threats? Any 3 reasons.
- f) Explain Quality of Service (QoS) monitoring in cloud computing environment.
- **Q.5** Explain Public, private, Hybrid cloud Models in details.

# OR

Explain CSP life cycle approach & stages in CSP life cycle with neat diagram.



Max. Marks: 56

20

80

20

80
| Seat<br>No. |         |   |                           |                             |                                       |             | Set    | Ρ     |
|-------------|---------|---|---------------------------|-----------------------------|---------------------------------------|-------------|--------|-------|
|             | S       | 5.E. (Part – I)                           | Old) (CGPA)<br>Informatio | A) Exan<br>on Tech<br>ATHEM | nination Nov/E<br>nology<br>ATICS – I | Dec-2019    | -      |       |
| Day & I     | Date:   | Saturday, 07-1                            | 2-2019                    |                             |                                       | Max         | . Mark | s: 70 |
| Instruc     | ctions: | : 1) Q. No. 1 is                          | compulsory and            | d should                    | be solved in first                    | 30 minutes  | in ans | wer   |
|             |         | book.<br>2) Figures to                    | the right indicate        | e full ma                   | rks.                                  |             |        |       |
|             |         | Ň   | ICQ/Objectiv              | е Туре                      | Questions                             |             |        |       |
| Duratio     | on: 30  | Minutes                                   |                           |                             |                                       |             | Mark   | s: 14 |
| Q.1 C       | )<br>)  | e the correct a                           | alternatives fro          | m the o                     | ptions and rewri                      | te the sent | tence. | 14    |
| •           |         | $\frac{-3}{-3}$ x is equal it             | ,                         | b)                          | x 1                                   |             |        |       |
|             | a       | $\frac{\pi}{3} - \frac{1}{9}$             |                           | D)                          | $-\frac{\pi}{3}-\frac{1}{9}$          |             |        |       |
|             | C       | $\frac{x}{3} + \frac{1}{9}$               |                           | d)                          | $-\frac{x}{3}+\frac{1}{9}$            |             |        |       |
| 2           | 2) T    | he particular ir                          | ntegral of $(D^2 + T)$    | 16)y = c                    | os 4x i <b>s</b>                      |             |        |       |
|             | а       | $\frac{x}{8}\sin 2x$                      |                           | b)                          | $\frac{x}{8}\cos 2x$                  |             |        |       |
|             | C       | $\frac{-x}{8}\sin 2x$                     |                           | d)                          | $\frac{-x}{8}\cos 2x$                 |             |        |       |
| 3           | 5) L'   | $^{-1}\{\phi'(s)\} = \_$                  |                           |                             | C C                                   |             |        |       |
|             | а       | $-\frac{1}{t}L^{-1}\{\phi(s)\}$           | )}                        | b)                          | $-tL^{-1}\{\varphi(s)\}$              |             |        |       |
|             | C       | ) $tL^{-1}\{\phi(s)\}$                    |                           | d)                          | None of these                         |             |        |       |
| 4           | -) L    | $-1\left\{\frac{1}{(s-3)^2}\right\} = \_$ | ·                         |                             |                                       |             |        |       |
|             | а       | ) $te^{-3t}$                              |                           | b)                          | $\frac{e^{-3t}}{t}$                   |             |        |       |
|             | C       | ) te <sup>3t</sup>                        |                           | d)                          | $t^2 e^{3t}$                          |             |        |       |
| 5           | 5) Z    | {1) =                                     | _•                        |                             | -                                     |             |        |       |
|             | а       | $\frac{1}{z-1}$                           |                           | b)                          | $\frac{z}{z+1}$                       |             |        |       |
|             | C       | $\frac{1}{z+1}$                           |                           | d)                          | $\frac{z}{z-1}$                       |             |        |       |
| 6           | 5) If   | $Z\{f(k)\} = F(z)$                        | $z$ ) then $Z\{kf(k)\}$   | =                           |                                       |             |        |       |
|             | а       | $-z \frac{dF(Z)}{dZ}$                     |                           | D)                          | $Z \frac{dF(Z)}{dZ}$                  |             |        |       |
|             | C       | $\frac{-dF(z)}{dZ}$                       |                           | d)                          | $\frac{dF(z)}{dZ}$                    |             |        |       |
|             | 7) lf   | f(x) is an ever                           | n function then           | $\int_{-x}^{x} f(x)$        | dx =                                  |             |        |       |
|             | а       | $2\int_{a}^{z} f(x)dx$                    |                           | b)                          | $\int_{0}^{0} f(x) dx$                |             |        |       |
|             | C       | ) 0                                       |                           | d)                          | $z^{-z}$ None of these                |             |        |       |

|     |  |   | Set P   |
|-----|--|---|---|
| 8)  | A unit normal to the<br>a) $2i + 4j - k$<br>c) $\frac{1}{\sqrt{21}}(2i + 4j - k)$  | e surface z = 2xy at t<br>b)<br>c) d)                 | he point (2,1,4) is<br>2i + 4j + k<br>$\frac{1}{\sqrt{21}}$ (4i + 2j - k)   |
| 9)  | If $\bar{v} = 5xyi + 2y^2j + a) 9$<br>c) 14  | - 3yz <sup>2</sup> k The divergend<br>b)<br>d)        | ce of this vector at (1, 1, 1) is<br>10<br>15   |
| 10) | If mean of $x = 70$ m<br>of y on x is<br>a) $y = 0.8x + 120$<br>c) $y = 0.5x + 60$ | nean of y = 149 and :<br>b<br>b)<br>d)                | x = 0.7 then the line of regression<br>y = 0.6x + 80<br>y = 0.7x + 100  |
| 11) | If coefficient of corr<br>a) coincident<br>c) parallel                             | relation $r = \pm 1$ then t<br>b)<br>d)               | he regression lines are<br>perpendicular<br>inclined at an angle of ⅔   |
| 12) | In a M M l ∞ syste<br>a) greater than 1<br>c) equal to 1                           | m the ration $\frac{\lambda}{\mu}$ must b<br>b)<br>d) | e<br>less than 1<br>equal to 1.5  |
| 13) | For binominal distr<br>n, p, q are respecti<br>a) 9, 1/3, 2/3<br>c) 18, 2/3, 1/3   | ibution mean = 12 an<br>vely.<br>b)<br>d)             | d variance is 4, then the values of<br>4, <sup>1</sup> / <sub>2</sub> , <sup>1</sup> / <sub>2</sub><br>9, <sup>2</sup> / <sub>3</sub> , <sup>1</sup> / <sub>3</sub> |
| 14) | Fourier expansion a) sine terms  | of an odd function ha<br>b)                           | s only<br>cosine terms  |

c) both sine and cosine terms d) none of these

| Seat<br>No.    | Set   | Ρ              |
|----------------|---|----------------|
|                | S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>APPLIED MATHEMATICS – I  |                |
| Day &<br>Time: | Date: Saturday, 07-12-2019 Max. Marks<br>10:00 AM To 01:00 PM   | s: 56          |
| Instru         | <ul> <li>ctions: 1) Q. No. 4 &amp; Q. No. 8 are compulsory.</li> <li>2) Solve any two questions from each section.</li> <li>3) Figures to the right indicate full marks.</li> </ul> |                |
| Q.2            | Attempt the following questions.<br>a) Solve $(D^3 + D)y = \cos x$<br>b) Solve $(D^3 - 7D + 6)y = x^2$<br>c) Solve $(D^2 - 2D - 1)y = e^x \cos x$                                   | 03<br>03<br>03 |
| Q.3            | Attempt any three of following questions.<br><b>a)</b> Find $L\left\{\int_{0}^{t} u^{-1} 2^{u} \sin u  du\right\}$  | 03             |
| ł              | <b>b)</b> Find $L^{-1}\left\{\frac{s}{(s-3)(s^2+4)}\right\}$  | 03             |
| (              | c) Evaluate $\int_{0}^{\infty} \frac{\cos 4t - \cos 3t}{t} dt$ sing Laplace transform.  | 03             |
| C              | <b>d)</b> Find $L\{te^{-2t}\sin^2 t\}$  | 03             |
| Q.4            | Attempt the following questions.  |                |
| ć              | Find z-transform and its ROC of $f(k) = \frac{3^k}{k!}$ , $k \ge 0$   | 03             |
| I              | b) Prove that the z-transform of $x_k = \sin \alpha k, k \ge 0$ where $\alpha$ is real is given by<br>$\frac{z \sin \alpha}{z^2 - 2z \cos \alpha + 1} \text{ if }  z  > 1$          | 04             |
| (              | C) Find $Z^{-1}\left(\frac{z}{z-5}\right)  z  < 5$  | 03             |
| Q.5            | Attempt the following questions.  |                |
| ä              | a) Find a Fourier series to represent $f(x) = x^2$ in $(0, 2\pi)$ .<br>b) Find Half-range sine series of  | 05<br>04       |
|                | $f(x) = \frac{2x}{\frac{1}{2}}, 0 \le x \le \frac{1}{2}$  |                |
|                | $=\frac{1}{1}(1-x)$ . $\frac{1}{2} \le x \le 1$   |                |
|                | Section – II  |                |
| Q.6            | Attempt the following questions.  | ~~             |
| á              | a) A particle moves along the curve $x = t^2 + 1$ $y = t^2 z = 2t + 3$ where t is the time find velocity and acceleration with their magnitudes?                                    | 03             |
|                |   | ~~             |

- **b)** Find the directional derivative of  $\phi = x^4 + y^4 + z^4$  at point (1,-2,1) in the directional of AB where B is (2,6,-1).
- c) Show that the vector field defined by  $\overline{F} = (y + z)i + (z + x)j + (x + y)k$  is irrotational. Also find scalar potential. 04

#### Q.7 Attempt the following questions.

a) Six dice are thrown 729 times. How many times do expect at least three dice to show a 5 or 6?

1

65

**b)** Fit a poisson distribution to the following data.

0

100

|    |              | I      | 109      | 05        | 22       | 5      | I         | 200      |          |
|----|--------------|--------|----------|-----------|----------|--------|-----------|----------|----------|
| c) | Weights of 4 | 000 st | udents   | are four  | nd to be | normal | ly distri | buted w  | ith mean |
|    | 50 kgs and s | tanda  | rd devia | ition 5 k | gs. Finc | the nu | mber o    | f studer | nts with |
|    | weight:      |        |          |           |          |        |           |          |          |

2

 $\gamma\gamma$ 

3

4

Total

200

1) Less than 45 kgs and

2) Between 45 and 60 kgs.

Х

[Given - for SNV z, Area between z = 0 to z = 1 is 0.3413 and z = 0 to z = 2 is 0.4772].

#### Q.8 Attempt the following questions.

a) Calculate Karl Pearson's coefficient of correlation from the following data. 04

| x : | 28 | 45 | 40 | 38 | 35 | 33 | 40 | 32 | 36 | 33 |
|-----|----|----|----|----|----|----|----|----|----|----|
| y : | 23 | 34 | 33 | 34 | 30 | 26 | 28 | 31 | 36 | 35 |

**b)** Fit a second degree parabola for the following data.

| y: 2 6 7 8 10 11 11 10 9 | x : | 1 | 2 | 3 | 4 | 5  | 6  | 7  | 8  | 9 |
|--------------------------|-----|---|---|---|---|----|----|----|----|---|
|                          | y : | 2 | 6 | 7 | 8 | 10 | 11 | 11 | 10 | 9 |

**c)** The equation to the two lines of regressions are 6y = 5x + 90 and 15x = 8y + 130. Find the mean of x and y and the coefficient of correlation?

#### Q.9 Attempt the following questions.

- a) There are two typists in a type writing shop each typists can type on an average 5 letters per hour. The rate of arrivals of letters is 8 per hours
  - 1) What is the probability that both the typist are busy?
  - 2) What is the average idle time for which both typist are idle?
- b) People arrive to purchase railways tickets at the rate of 5 per minute. On an average is takes 10 seconds to issue the ticket. A person arrives 5 min, before the train starts. It takes 4 min for him to get in the train after purchasing the ticket.
  - 1) Can he be expected in the train before the train starts?
  - 2) What is the probability that he will be in the train before the train starts?

09

03

05

## SLR-FM-705

Set

| Seat<br>No.      |                      |  |  |              | Set  | Q     |
|------------------|----------------------|--|--|--------------|--|-------|
|                  | S.E                  | E. (Part – I)  | (Old) (CGPA) E                           | xan          | nination Nov/Dec-2019  |       |
|                  |                      |  | APPLIED MATH                             | EM           | ATICS – I  |       |
| Day &<br>Time: 1 | Date: Sa<br>10:00 AM | turday, 07-1<br>1 To 01:00 P                                 | 2-2019<br>M                              |              | Max. Mark  | s: 70 |
| Instruc          | ctions: 1            | ) Q. No. 1 is  | compulsory and she                       | ould         | be solved in first 30 minutes in ans                         | wer   |
|                  | 2                    | ?) Figures to  | the right indicate ful                   | l ma         | rks.   |       |
|                  |                      | Ν  | ICQ/Objective T                          | уре          | Questions  |       |
| Duratio          | on: 30 Mi            | nutes  |  |              | Mark   | s: 14 |
| Q.1 C            | Choose t             | : <b>he correct</b> a<br>nit normal to                       | alternatives from the surface $z = 2xy$  | ne o<br>at t | ptions and rewrite the sentence.                             | 14    |
| •                | ) (All a)            | 2i + 4j – k  |  | b)           | 2i + 4j + k  |       |
|                  | c)                   | $\frac{1}{\sqrt{21}}(2i+4j-$                                 | – k)                                     | d)           | $\frac{1}{\sqrt{21}}(4i+2j-k)$                               |       |
| 2                | 2) If ⊽              | $= 5xyi + 2y^2$  | $^{2}j + 3yz^{2}k$ The diver             | geno         | e of this vector at (1, 1, 1) is                             |       |
|                  | a)<br>c)             | 9<br>1 <i>4</i>  |  | b)           | 10<br>15   |       |
| 3                | s) Ifm               | $\frac{1}{1}$  | 0 mean of $v = 149$                      | u)<br>and ·  | v = 0.7 then the line of regression                          |       |
|                  | of y                 | on x is  |  |              |  |       |
|                  | a)                   | y = 0.8x + 1   | 120                                      | b)           | y = 0.6x + 80  |       |
|                  | C)                   | y = 0.5x + 6   |  | (D)          | y = 0.7x + 100   |       |
| 4                | a)                   | coincident   | correlation $r = \pm 1$ th               | b)           | perpendicular  |       |
|                  | c)                   | parallel   |  | d)           | inclined at an angle of $\frac{2}{3}$                        |       |
| 5                | 5) In a              | n M M l ∞ sy   | stem the ration $\frac{\lambda}{\mu}$ mu | ıst b        | e  |       |
|                  | a)                   | greater than   | า 1                                      | b)           | less than 1  |       |
| -                | c)                   | equal to 1   |  | d)           | equal to 1.5   |       |
| 6                | 5) For<br>n n        | binominal di   | istribution mean = 1:<br>actively        | 2 an         | d variance is 4, then the values of                          |       |
|                  | a)                   | 9, <sup>1</sup> / <sub>3</sub> , <sup>2</sup> / <sub>3</sub> |  | b)           | 4, 1/2, 1/2  |       |
|                  | c)                   | 18, ⅔, ⅓   |  | d)           | 9, <sup>2</sup> / <sub>3</sub> , <sup>1</sup> / <sub>3</sub> |       |
| 7                | ') Foι<br>α)         | irier expansi  | on of an odd functio                     | n ha         | s only   |       |
|                  | a)<br>C)             | both sine a  | nd cosine terms                          | d)           | none of these  |       |
| 8                | $\frac{1}{2}$        | × is equal to  | )  |              |  |       |
|                  | <i>р</i> –з<br>а)    | $\frac{x}{2} - \frac{1}{2}$                                  |  | b)           | $-\frac{x}{2}-\frac{1}{2}$                                   |       |
|                  | c)                   | $\frac{x}{1} \pm \frac{1}{2}$                                |  | d)           | 3  9   |       |
|                  | - /                  | 3 9  |  | .,           | 3 ' 9  |       |

| 0)  | The mention less intermediate $(D^2 + 1)$                      | $\sim$               | 4                        |
|-----|--|----------------------|--------------------------|
| 9)  | The particular integral of $(D^2 + 1)$                         | 6)y = c              | os 4x IS                 |
|     | a) $\frac{x}{8}\sin 2x$  | b)                   | $\frac{x}{8}\cos 2x$     |
|     | c) $\frac{-x}{8}\sin 2x$                                       | d)                   | $\frac{-x}{8}\cos 2x$    |
| 10) | $L^{-1}{\phi'(s)} = $  |                      |                          |
|     | a) $-\frac{1}{t}L^{-1}\{\phi(s)\}$                             | b)                   | $-tL^{-1}\{\varphi(s)\}$ |
|     | c) $tL^{-1}\{\phi(s)\}$  | d)                   | None of these            |
| 11) | $L^{-1}\left\{\frac{1}{(s-3)^2}\right\} = \underline{\qquad}.$ |                      |                          |
|     | a) $te^{-3t}$  | b)                   | $e^{-3t}$                |
|     | c) $te^{3t}$   | d)                   | $t^{t}t^{2}e^{3t}$       |
| 12) | $Z\{1) = \underline{\qquad}.$                                  |                      |                          |
|     | a) $\frac{1}{z-1}$   | b)                   | $\frac{z}{z+1}$          |
|     | c) $\frac{1}{z+1}$   | d)                   | $\frac{z}{z-1}$          |
| 13) | If $Z{f(k)} = F(z)$ then $Z{kf(k)} =$                          | =                    |                          |
|     | a) $-z \frac{dF(z)}{dZ}$                                       | b)                   | $Z \frac{dF(z)}{dZ}$     |
|     | $\mathbf{C})  \frac{-dF(z)}{dZ}$                               | d)                   | $\frac{dF(z)}{dZ}$       |
| 14) | If $f(x)$ is an even function then                             | $\int_{-x}^{x} f(x)$ | dx =                     |
|     | a) $2\int_{z}^{z} f(x)dx$                                      | <sup>^</sup> b)      | $\int_{0}^{0} f(x) dx$   |
|     | c) 0   | d)                   | None of these            |

Set Q

| Seat<br>No.      | Set   | Q              |
|------------------|---|----------------|
|                  | S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>APPLIED MATHEMATICS – I  |                |
| Day &<br>Time: 7 | Date: Saturday, 07-12-2019 Max. Marks<br>10:00 AM To 01:00 PM   | 56 56          |
| Instruc          | <ul> <li>ctions: 1) Q. No. 4 &amp; Q. No. 8 are compulsory.</li> <li>2) Solve any two questions from each section.</li> <li>3) Figures to the right indicate full marks.</li> </ul>   |                |
| Q.2 A<br>a<br>k  | Attempt the following questions.<br>a) Solve $(D^3 + D)y = \cos x$<br>b) Solve $(D^3 - 7D + 6)y = x^2$<br>c) Solve $(D^2 - 2D - 1)y = e^x \cos x$   | 03<br>03<br>03 |
| Q.3 A            | Attempt any three of following questions.<br>a) Find $L\left\{\int_{0}^{t} u^{-1} 2^{u} \sin u  du\right\}$   | 03             |
| k                | <b>b)</b> Find $L^{-1}\left\{\frac{s}{(s-3)(s^2+4)}\right\}$  | 03             |
| C                | c) Evaluate $\int_{0}^{\infty} \frac{\cos 4t - \cos 3t}{t} dt$ sing Laplace transform.  | 03             |
| c                | d) Find $L\{te^{-2t}\sin^2 t\}$   | 03             |
| Q.4 A            | Attempt the following questions.  |                |
| 8                | Find z-transform and its ROC of $f(k) = \frac{3^{k}}{k!}, k \ge 0$  | 03             |
| k                | <b>b)</b> Prove that the z-transform of $x_k = \sin \alpha k, k \ge 0$ where $\alpha$ is real is given by<br>$\frac{z \sin \alpha}{z^2 - 2z \cos \alpha + 1} \text{ if }  z  > 1$   | 04             |
| C                | Find $Z^{-1}\left(\frac{z}{z-5}\right)  z  < 5$   | 03             |
| Q.5 A            | Attempt the following questions.<br>a) Find a Fourier series to represent $f(x) = x^2$ in $(0, 2\pi)$ .<br>b) Find Half-range sine series of<br>$f(x) = \frac{2x}{1}, 0 \le x \le \frac{1}{2}$<br>$= \frac{2}{1}(1-x). \frac{1}{2} \le x \le 1$<br>Section – II | 05<br>04       |
| Q.6              | Attempt the following questions.<br>a) A particle moves along the curve $x = t^2 + 1$ $x = t^2 = 2t + 2$ where t is the   | US             |
| C                | time find velocity and acceleration with their magnitudes?  | 00             |
|                  |   | ~~             |

- b) Find the directional derivative of φ = x<sup>4</sup> + y<sup>4</sup> + z<sup>4</sup> at point (1,-2,1) in the directional of AB where B is (2,6,-1).
  c) Show that the vector field defined by F
  = (y + z)i + (z + x)j + (x + y)k is irrotational. Also find scalar potential. 03
- 04

#### Q.7 Attempt the following questions.

a) Six dice are thrown 729 times. How many times do expect at least three dice to show a 5 or 6?

1

65

**b)** Fit a poisson distribution to the following data.

0

100

|    |              | I      | 109      | 05        | 22       | 5      | I         | 200      |          |
|----|--------------|--------|----------|-----------|----------|--------|-----------|----------|----------|
| c) | Weights of 4 | 000 st | udents   | are four  | nd to be | normal | ly distri | buted w  | ith mean |
|    | 50 kgs and s | tanda  | rd devia | ition 5 k | gs. Finc | the nu | mber o    | f studer | nts with |
|    | weight:      |        |          |           |          |        |           |          |          |

2

 $\gamma\gamma$ 

3

4

Total

200

1) Less than 45 kgs and

2) Between 45 and 60 kgs.

Х

[Given - for SNV z, Area between z = 0 to z = 1 is 0.3413 and z = 0 to z = 2 is 0.4772].

#### Q.8 Attempt the following questions.

a) Calculate Karl Pearson's coefficient of correlation from the following data. 04

| x : | 28 | 45 | 40 | 38 | 35 | 33 | 40 | 32 | 36 | 33 |
|-----|----|----|----|----|----|----|----|----|----|----|
| y : | 23 | 34 | 33 | 34 | 30 | 26 | 28 | 31 | 36 | 35 |

**b)** Fit a second degree parabola for the following data.

| x : | 1 | 2 | 3 | 4 | 5  | 6  | 7  | 8  | 9 |
|-----|---|---|---|---|----|----|----|----|---|
| y : | 2 | 6 | 7 | 8 | 10 | 11 | 11 | 10 | 9 |
|     |   |   |   |   | -  |    | _  |    | - |

**c)** The equation to the two lines of regressions are 6y = 5x + 90 and 15x = 8y + 130. Find the mean of x and y and the coefficient of correlation?

#### Q.9 Attempt the following questions.

- a) There are two typists in a type writing shop each typists can type on an average 5 letters per hour. The rate of arrivals of letters is 8 per hours
  - 1) What is the probability that both the typist are busy?
  - 2) What is the average idle time for which both typist are idle?
- b) People arrive to purchase railways tickets at the rate of 5 per minute. On an of average is takes 10 seconds to issue the ticket. A person arrives 5 min, before the train starts. It takes 4 min for him to get in the train after purchasing the ticket.
  - 1) Can he be expected in the train before the train starts?
  - 2) What is the probability that he will be in the train before the train starts?

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03

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| Day 8<br>Time: | Date 10:00 | : Sa<br>) AM      | turday, 07-12-2019<br>1 To 01:00 PM                                     |       | Max. Marks: 70                           |
|----------------|------------|-------------------|---|-------|--|
| Instru         | uction     | i <b>s:</b> 1     | ) Q. No. 1 is compulsory and sho  | ould  | be solved in first 30 minutes in answer  |
|                |            | 2                 | ) Figures to the right indicate full                                    | mai   | rks.                                     |
|                |            |                   | MCQ/Objective Ty  | /pe   | Questions                                |
| Durat          | ion: 3     | 0 Mi              | nutes   |       | Marks: 14                                |
| Q.1            | Choo       | se t              | he correct alternatives from th   | e o   | otions and rewrite the sentence. 14      |
|                | 1)         | 2{1<br>a)         | ) =   | h)    | Ζ  |
|                |            | u)<br>、           | $\overline{z-1}$  |       | z+1                                      |
|                |            | C)                | $\frac{1}{z+1}$   | d)    | $\frac{z}{z-1}$                          |
|                | 2)         | If $Z$            | ${f(k)} = F(z)$ then $Z{kf(k)} = $                                      |       |  |
|                |            | a)                | $-Z \frac{dF(z)}{dZ}$   | b)    | $Z \frac{dF(z)}{dZ}$                     |
|                |            | c)                | $\frac{-dF(z)}{dZ}$   | d)    | $\frac{dF(z)}{dZ}$                       |
|                |            |                   | x<br>C  |       | u2                                       |
|                | 3)         | lf f(             | x) is an even function then $\int_{-r}^{r} f$                           | f(x)  | dx =                                     |
|                |            | a)                | Z<br>C  | b)    | 0  |
|                |            | ,                 | $2 \int f(x) dx$  | ,     | f(x)dx                                   |
|                |            |                   | <i>J</i><br>0   |       | J<br>-z                                  |
|                |            | c)                | 0   | d)    | None of these                            |
|                | 4)         | Ąu                | nit normal to the surface $z = 2xy$                                     | at th | ne point (2,1,4) is                      |
|                |            | a)                | 2i + 4j - k   | b)    | $2\mathbf{i} + 4\mathbf{j} + \mathbf{k}$ |
|                |            | C)                | $\frac{1}{\sqrt{21}}(2i+4j-k)$  | u)    | $\frac{1}{\sqrt{21}}(4i+2j-k)$           |
|                | 5)         | If $\overline{v}$ | $= 5xyi + 2y^2j + 3yz^2k$ The divergence                                | jenc  | e of this vector at (1, 1, 1) is         |
|                |            | a)                | 9   | b)    | 10                                       |
|                |            | C)                | 14  | a)    |  |
|                | 6)         | If m              | lean of $x = 70$ mean of $y = 149$ a                                    | nd 3  | x = 0.7 then the line of regression      |
|                |            | a)                | v = 0.8x + 120  | b)    | v = 0.6x + 80                            |
|                |            | c)                | y = 0.5x + 60   | d)    | y = 0.7x + 100                           |
|                | 7)         | If co             | Defficient of correlation $r = \pm 1$ the                               | en th | ne regression lines are                  |
|                |            | a)                | coincident  | b)    | perpendicular                            |
|                |            | C)                | parallel  | d)    | inclined at an angle of $\frac{2}{3}$    |
|                | 8)         | In a              | $M M   \propto \text{ system the ration } \frac{\lambda}{n} \text{ mu}$ | st be | e  |
|                |            | a)                | greater than 1  | b)    | less than 1                              |
|                |            | c)                | equal to 1  | d)    | equal to 1.5                             |

#### Seat No.

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology APPLIED MATHEMATICS – I

Page **9** of **16** 

## **SLR-FM-705**

Set

R

For binominal distribution mean = 12 and variance is 4, then the values of 9) n, p, q are respectively. a)  $9, \frac{1}{3}, \frac{2}{3}$ b) 4, ½, ½ c)  $18, \frac{2}{3}, \frac{1}{3}$ d) 9,  $\frac{2}{3}$ ,  $\frac{1}{3}$ Fourier expansion of an odd function has only \_ 10) a) sine terms b) cosine terms both sine and cosine terms d) none of these C) 11)  $\frac{1}{D-3}$  × is equal to \_\_\_\_\_. b)  $-\frac{x}{3}-\frac{1}{9}$ a)  $\frac{x}{3} - \frac{1}{9}$ C)  $\frac{x}{3} + \frac{1}{9}$ d)  $-\frac{x}{3} + \frac{1}{9}$ The particular integral of  $(D^2 + 16)y = \cos 4x$  is \_\_\_\_\_. 12) b)  $\frac{x}{8}\cos 2x$ a)  $\frac{x}{8}\sin 2x$ d)  $\frac{-x}{8}\cos 2x$ c)  $\frac{-x}{8}\sin 2x$ 13)  $L^{-1}\{\phi'(s)\} =$ \_\_\_\_\_. a)  $-\frac{1}{t}L^{-1}\{\phi(s)\}$ b)  $-tL^{-1}\{\phi(s)\}$ c)  $tL^{-1}\{\phi(s)\}$ d) None of these 14)  $L^{-1}\left\{\frac{1}{(s-3)^2}\right\} =$ \_\_\_\_\_. a)  $te^{-3t}$ b)  $\frac{e^{-3t}}{t}$ c)  $te^{3t}$ d)  $t^2 e^{3t}$ 

**SLR-FM-705** 

Set R

| Seat<br>No.    |                        |   |   | Set  | R              |
|----------------|------------------------|---|---|--|----------------|
|                |                        | S.E. (Part – I) (<br>A  | Old) (CGPA) Examina<br>Information Technolo<br>PPLIED MATHEMATIO                          | tion Nov/Dec-2019<br>ogy<br>CS – I           |                |
| Day &<br>Time: | . Da<br>10:            | te: Saturday, 07-12<br>00 AM To 01:00 PM  | 2019  | Max. Marks                                   | s: 56          |
| Instru         | ictio                  | ons: 1) Q. No. 4 & C<br>2) Solve any tv<br>3) Figures to th   | . No. 8 are compulsory.<br>o questions from each sect<br>e right indicate full marks.     | ion.   |                |
| Q.2            | Atte<br>a)<br>b)<br>c) | empt the following<br>Solve $(D^3 + D)y =$<br>Solve $(D^3 - 7D + 6)$<br>Solve $(D^2 - 2D - 1)$  | questions.<br>$y = x^2$<br>$y = e^x \cos x$   |  | 03<br>03<br>03 |
| Q.3            | Atte<br>a)             | Find $L \begin{cases} \int_{0}^{t} u^{-1} 2^{u} \\ \end{bmatrix}$   | bllowing questions.   |  | 03             |
|                | b)                     | Find $L^{-1} \left\{ \frac{s}{(s-3)(s^2+4)} \right\}$   |   |  | 03             |
|                | c)                     | Evaluate $\int_{0}^{\infty} \frac{\cos 4t}{2}$  | <u>− cos 3t</u><br>t dt sing Laplace tra  | ansform.                                     | 03             |
|                | d)                     | Find $L\{te^{-2t}\sin^2 t\}$  |   |  | 03             |
| Q.4            | Att                    | empt the following  | questions.  |  | •••            |
|                | a)                     | Find z-transform ar   | d its ROC of $f(k) = \frac{3^{k}}{k!}, k \ge 1$   | 0  | 03             |
|                | b)                     | Prove that the z-train $\frac{z\sin \alpha}{z^2 - 2z\cos \alpha + 1}$ if $ z $  | nsform of $x_k = sin \alpha k, k \ge 0$<br>> 1  | where $\alpha$ is real is given by           | 04             |
|                | c)                     | Find $Z^{-1}\left(\frac{z}{z-5}\right)  z  <$   | 5   |  | 03             |
| Q.5            | Atte<br>a)<br>b)       | empt the following<br>Find a Fourier serie<br>Find Half-range sin<br>$f(x) = \frac{2x}{1}, 0 \le x \le \frac{1}{2}$<br>$= \frac{2}{1} (1 - x).$ | <b>questions.</b><br>s to represent $f(x) = x^2$ in (<br>e series of<br>$x^2 \le x \le 1$ | (0,2π).                                      | 05<br>04       |
|                |                        |   | Section – II  |  |                |
| Q.6            | Atte<br>a)             | empt the following<br>A particle moves al<br>time find velocity a   | <b>questions.</b><br>ong the curve $x = t^2 + 1 y = d$ acceleration with their matrix     | = $t^2 z = 2t + 3$ where t is the agnitudes? | 03             |

- b) Find the directional derivative of φ = x<sup>4</sup> + y<sup>4</sup> + z<sup>4</sup> at point (1,-2,1) in the directional of AB where B is (2,6,-1).
  c) Show that the vector field defined by F
  = (y + z)i + (z + x)j + (x + y)k is irrotational. Also find scalar potential. 03
- 04

#### Q.7 Attempt the following questions.

a) Six dice are thrown 729 times. How many times do expect at least three dice to show a 5 or 6?

1

~ -

**b)** Fit a poisson distribution to the following data.

0

|    |              | Г      | 109      | 60        | 22       | S       | I         | 200      |          |
|----|--------------|--------|----------|-----------|----------|---------|-----------|----------|----------|
| c) | Weights of 4 | 000 st | udents   | are four  | nd to be | normal  | ly distri | buted w  | ith mean |
|    | 50 kgs and s | standa | rd devia | ition 5 k | gs. Find | the nui | mber o    | f studer | nts with |
|    | weight:      |        |          |           |          |         |           |          |          |

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Total

200

1) Less than 45 kgs and

2) Between 45 and 60 kgs.

Х

[Given - for SNV z, Area between z = 0 to z = 1 is 0.3413 and z = 0 to z = 2 is 0.4772].

#### Q.8 Attempt the following questions.

a) Calculate Karl Pearson's coefficient of correlation from the following data. 04

| <b>x</b> : | 28 | 45 | 40 | 38 | 35 | 33 | 40 | 32 | 36 | 33 |
|------------|----|----|----|----|----|----|----|----|----|----|
| y :        | 23 | 34 | 33 | 34 | 30 | 26 | 28 | 31 | 36 | 35 |

**b)** Fit a second degree parabola for the following data.

| x : | 1 | 2   | 3 | 4 | 5  | 6  | 7  | 8  | 9 |   |
|-----|---|-----|---|---|----|----|----|----|---|---|
| y:  | 2 | 6   | 7 | 8 | 10 | 11 | 11 | 10 | 9 | ] |
|     |   | . н | , |   |    | -  | 1  |    |   | - |

**c)** The equation to the two lines of regressions are 6y = 5x + 90 and 15x = 8y + 130. Find the mean of x and y and the coefficient of correlation?

#### Q.9 Attempt the following questions.

- a) There are two typists in a type writing shop each typists can type on an average 5 letters per hour. The rate of arrivals of letters is 8 per hours
  - 1) What is the probability that both the typist are busy?
  - 2) What is the average idle time for which both typist are idle?
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  - 1) Can he be expected in the train before the train starts?
  - 2) What is the probability that he will be in the train before the train starts?

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SLR-FM-705

Set

| 1101          |                   |                          |   |                           |   |
|---------------|-------------------|--------------------------|---|---------------------------|---|
|               |                   | S.E                      | E. (Part – I) (Old) (CGPA)<br>Information<br>APPLIED MAT  | Exar<br>Tech<br>HEM       | nination Nov/Dec-2019<br>nology<br>ATICS – I  |
| Day &<br>Time | & Date<br>: 10:00 | e: Sa<br>D AN            | turday, 07-12-2019<br>1 To 01:00 PM   |                           | Max. Marks: 70  |
| Instr         | uctior            | <b>is:</b> 1<br>2        | ) Q. No. 1 is compulsory and s<br>book.<br>2) Figures to the right indicate fu  | hould<br>ull ma           | be solved in first 30 minutes in answer rks.  |
|               |                   |                          | MCQ/Objective   | Туре                      | Questions   |
| Durat         | tion: 3           | 0 Mi                     | nutes   |                           | Marks: 14   |
| Q.1           | <b>Choc</b><br>1) | lf m<br>of y<br>a)<br>c) | the correct alternatives from<br>bean of $x = 70$ mean of $y = 149$<br>on x is<br>y = 0.8x + 120<br>y = 0.5x + 60               | b)<br>d)                  | y = $0.6x + 80$<br>y = $0.7x + 100$   |
|               | 2)                | )<br>lf co<br>a)<br>c)   | Defficient of correlation $r = \pm 1$ to coincident parallel  | then t<br>b)<br>d)        | he regression lines are<br>perpendicular<br>inclined at an angle of <sup>2</sup> ⁄ <sub>3</sub>   |
|               | 3)                | In a                     | $M M   \infty$ system the ration $\frac{\lambda}{n}$ m  | nust b                    | е   |
|               |                   | a)<br>c)                 | greater than 1<br>equal to 1  | b)<br>d)                  | less than 1<br>equal to 1.5   |
|               | 4)                | For<br>n, p<br>a)<br>c)  | binominal distribution mean =<br>, q are respectively.<br>9, $\frac{1}{3}$ , $\frac{2}{3}$<br>18, $\frac{2}{3}$ , $\frac{1}{3}$ | 12 an<br>b)<br>d)         | d variance is 4, then the values of<br>4, <sup>1</sup> / <sub>2</sub> , <sup>1</sup> / <sub>2</sub><br>9, <sup>2</sup> / <sub>3</sub> , <sup>1</sup> / <sub>3</sub> |
|               | 5)                | Fou<br>a)<br>c)          | rier expansion of an odd functi<br>sine terms<br>both sine and cosine terms   | on ha<br>b)<br>d)         | s only<br>cosine terms<br>none of these   |
|               | 6)                | 1<br>D-3<br>a)<br>C)     | × is equal to<br>$\frac{x}{3} - \frac{1}{9}$<br>$\frac{x}{3} + \frac{1}{9}$   | b)<br>d)                  | $-\frac{x}{3} - \frac{1}{9} \\ -\frac{x}{3} + \frac{1}{9}$  |
|               | 7)                | The                      | e particular integral of $(D^2 + 16)$   | $\mathbf{y} = \mathbf{c}$ | os 4x is  |
|               |                   | a)                       | $\frac{x}{8}\sin 2x$  | b)                        | $\frac{x}{8}\cos 2x$  |
|               |                   | c)                       | $\frac{-x}{8}\sin 2x$   | d)                        | $\frac{-x}{8}\cos 2x$   |
|               | 8)                | $L^{-1}$                 | $\{\varphi'(s)\} = \_\_\$   |                           |   |
|               |                   | a)                       | $-\frac{1}{t}L^{-1}\{\varphi(s)\}$  | b)                        | $-tL^{-1}{\phi(s)}$   |
|               |                   | c)                       | $tL^{-1}{\phi(s)}$  | d)                        | None of these   |

# Seat No.

**SLR-FM-705** 

Set S

SLR-FM-705 Set S



| Seat<br>No.      | Set  | S              |
|------------------|--|----------------|
|                  | S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>APPLIED MATHEMATICS – I   |                |
| Day &<br>Time: 7 | Date: Saturday, 07-12-2019 Max. Marks<br>10:00 AM To 01:00 PM  | s: 56          |
| Instruc          | <ul> <li>ctions: 1) Q. No. 4 &amp; Q. No. 8 are compulsory.</li> <li>2) Solve any two questions from each section.</li> <li>3) Figures to the right indicate full marks.</li> </ul>  |                |
| Q.2 A            | Attempt the following questions.<br>a) Solve $(D^3 + D)y = \cos x$<br>b) Solve $(D^3 - 7D + 6)y = x^2$<br>c) Solve $(D^2 - 2D - 1)y = e^x \cos x$  | 03<br>03<br>03 |
| Q.3 A            | Attempt any three of following questions.<br>a) Find $L\left\{\int_{0}^{t} u^{-1} 2^{u} \sin u  du\right\}$  | 03             |
| k                | <b>b)</b> Find $L^{-1}\left\{\frac{s}{(s-3)(s^2+4)}\right\}$   | 03             |
| C                | c) Evaluate $\int_{0}^{\infty} \frac{\cos 4t - \cos 3t}{t} dt$ sing Laplace transform.   | 03             |
| c                | d) Find $L\{te^{-2t}\sin^2 t\}$  | 03             |
| Q.4              | Attempt the following questions.   |                |
| 8                | Find z-transform and its ROC of $f(k) = \frac{3^{k}}{k!}$ , $k \ge 0$  | 03             |
| k                | <b>b)</b> Prove that the z-transform of $x_k = \sin \alpha k, k \ge 0$ where $\alpha$ is real is given by $\frac{z \sin \alpha}{z^2 - 2z \cos \alpha + 1}$ if $ z  > 1$  | 04             |
| C                | Find $Z^{-1}\left(\frac{z}{z-5}\right)  z  < 5$  | 03             |
| Q.5<br>a<br>k    | Attempt the following questions.<br>a) Find a Fourier series to represent $f(x) = x^2$ in $(0, 2\pi)$ .<br>b) Find Half-range sine series of<br>$f(x) = \frac{2x}{1}, 0 \le x \le \frac{1}{2}$<br>$= \frac{2}{1}(1-x)$ . $\frac{1}{2} \le x \le 1$<br>Section – II | 05<br>04       |
| Q.6              | Attempt the following questions.<br>A particle moves along the curve $y = t^2 + 1$ $y = t^2 z = 2t + 2$ where t is the   | U۵             |
| c                | time find velocity and acceleration with their magnitudes?   | 00             |
|                  |  | ~~             |

- **b)** Find the directional derivative of  $\phi = x^4 + y^4 + z^4$  at point (1,-2,1) in the directional of AB where B is (2,6,-1).
- c) Show that the vector field defined by  $\overline{F} = (y + z)i + (z + x)j + (x + y)k$  is irrotational. Also find scalar potential.

#### Q.7 Attempt the following questions.

Six dice are thrown 729 times. How many times do expect at least three a) dice to show a 5 or 6?

1

~ -

**b)** Fit a poisson distribution to the following data.

0

|    |              | Г      | 109      | 60        | 22       | S       | I         | 200      |          |
|----|--------------|--------|----------|-----------|----------|---------|-----------|----------|----------|
| c) | Weights of 4 | 000 st | udents   | are four  | nd to be | normal  | ly distri | buted w  | ith mean |
|    | 50 kgs and s | standa | rd devia | ition 5 k | gs. Find | the nui | mber o    | f studer | nts with |
|    | weight:      |        |          |           |          |         |           |          |          |

2

3

4

Total

200

1) Less than 45 kgs and

2) Between 45 and 60 kgs.

Х

[Given - for SNV z, Area between z = 0 to z = 1 is 0.3413 and z = 0 to z = 2is 0.4772].

#### Attempt the following questions. Q.8

a) Calculate Karl Pearson's coefficient of correlation from the following data.

| <b>x</b> : | 28 | 45 | 40 | 38 | 35 | 33 | 40 | 32 | 36 | 33 |
|------------|----|----|----|----|----|----|----|----|----|----|
| y :        | 23 | 34 | 33 | 34 | 30 | 26 | 28 | 31 | 36 | 35 |

**b)** Fit a second degree parabola for the following data.

| X : | 1 | 2          | 3 | 4 | 5  | 6  | 7  | 8  | 9 |   |
|-----|---|------------|---|---|----|----|----|----|---|---|
| y : | 2 | 6          | 7 | 8 | 10 | 11 | 11 | 10 | 9 | ] |
|     |   | <i>с</i> и | , |   |    | -  | -  |    |   | - |

03 c) The equation to the two lines of regressions are 6y = 5x + 90 and 15x = 8y + 130. Find the mean of x and y and the coefficient of correlation?

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- There are two typists in a type writing shop each typists can type on an a) average 5 letters per hour. The rate of arrivals of letters is 8 per hours
  - What is the probability that both the typist are busy? 1)
  - 2) What is the average idle time for which both typist are idle?
- b) People arrive to purchase railways tickets at the rate of 5 per minute. On an 04 average is takes 10 seconds to issue the ticket. A person arrives 5 min, before the train starts. It takes 4 min for him to get in the train after purchasing the ticket.
  - 1) Can he be expected in the train before the train starts?
  - 2) What is the probability that he will be in the train before the train starts?

09

SLR-FM-705

Set

04

03

## S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **DISCRETE MATHEMATICAL STRUCTURE**

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

d)

Tautology

- The expression 'Q if p' indicates which of the following connectives. 1) b) Conditional
  - Biconditional a)
  - Exclusive OR c)
- $T \rightarrow P$  is equivalent to \_\_\_\_\_. 2)
  - Ρ b) Т a)  $\neg P$ C) d) F
- PCNF is 3)
  - Conjunction of elementary product a)
  - Conjunction of minterms b)
  - Conjunction of maxterms c)
  - Disjunction of elementary sum d)
- If S = {  $\phi$ , {  $\phi$  }, {  $\phi$  }} then what is cardinality of S? 4)
  - a) 0 b) 3 2 d) 4 C)
- 5) If Let S be the relation from Y to Z and R is the relation from A to B the composition  $R \circ S$  is from \_\_\_\_\_.
  - b) Z to B A to Z a)
  - c) Y to B d) None of these
- If the relation R is represented by matrix and if we replace 0 by 1 and 1 by 6) 0 then resultant matrix represents \_
  - Complement of R Inverse of R a) b)
  - Domain of R c) d) Range of R
- 7) Relation matrix of the relation is given below.
  - Γ1 1 1] 1 1 0 1 0 1
  - Only reflexive property a)
  - b) Only symmetric property
  - All properties except Irreflexive c)
  - Only antisymmetric property d)

## SLR-FM-706



Marks: 14

Max. Marks: 70

Set P

| 8)  | A su<br>and<br>a) | ubset f of A x B is said to be a fur<br>first element of order pairs of f _<br>do not repeat | nctio       | n from A to B if domain of f is A<br><br>do not exist |
|-----|-------------------|--|-------------|---|
|     | c)                | repeat   | d)          | members of B  |
| 9)  | A la              | ttice $h \langle A, \leq \rangle$ is bounded iff it has                                      | S           |   |
|     | a)<br>c)          | a minimum element<br>both  | b)<br>d)    | a maximum element<br>None                             |
| 10) | A po<br>mee       | poset $h < A, \leq >$ is a iff even even and a join.   | ery p       | pair of elements in A have both a                     |
|     | a)<br>c)          | group<br>lattice   | b)<br>d)    | Ring<br>None  |
| 11) | Abe<br>a)         | lian group satisfies additional  | b)          | property than group.<br>Inverse                       |
|     | c)                | identity   | d)          | Commutative   |
| 12) | A to              | tally ordered set is also called a   |             |   |
|     | a)                | ring   | b)          | Field   |
|     | C)                |  | u)          |   |
| 13) | A                 | is a complemented distribution<br>boolean function   | utive<br>b) | e lattice.  |
|     | c)                | modular lattice  | d)          | boolean expression                                    |
| 14) | Eve               | ry cyclic group is   |             |   |
|     | a)                | an abelian group   | d)          | may not abelian group                                 |
|     | 0)                | not a group  | u)          | NONE  |

## S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DISCRETE MATHEMATICAL STRUCTURE

Day & Date: Tuesday, 10-12-2019

Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

#### Section – I

#### Q.2 Solve any three.

- **a)** Explain Tautological Implication and show that  $(P^{A}Q) => (P \rightarrow Q)$ .
- **b)** Convert the given formula into prefix and suffix form.  $A^{\vee} ((\neg B \rightarrow C)^{\wedge} (\neg D \leftrightarrow E))$
- c) Define equivalence relation and equivalence class along with an example.
- d) Define duality law and prove that "If A has dual as A\* and B has dual as B\* and  $A \Leftrightarrow B$  the prove that  $A^* \Leftrightarrow B^*$
- e) Show that  $S \lor R$  is a valid conclusion from the following premises:  $P \lor Q, P \to R, Q \to S$

#### Q.3 Solve any one.

- a) Explain the following terms
  - 1) Tautology and contradiction
  - 2) Set inclusion and equality of sets
  - 3) Relative complement of A with respect to B
  - 4) Partition and covering of sets
- **b)** Define minterm, PDNF, maxterm and PCNF and obtain PDNF and PCNF of  $(P \land Q) \lor (\neg P \land Q \land R)$  without constructing truth table.

#### Q.4 Solve the following.

- a) Given a set  $S = \{1,2,3,4,5\}$ . Find the equivalence relation on S which generates the partition  $\{\{1,2,4\},\{3\},\{5\}\}$ . Draw graph of the relation.
- **b)** Let A= {4,5,6,7,8}. State whether following are covering or partition along with reason.
  - $1) \quad \{\{4,5\},\{6\},\{7,8,4\}\}$
  - 2)  $\{\{4\},\{7,6\},\{5\}\}$
  - 3)  $\{\{4,5\},\{7\},\{6,8\}\}$
  - $4) \quad \{\{4,5\},\{5,6\},\{4,7,8\}\}$

Max. Marks: 56

08

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### Section – II

### Q.5 Solve any three.

- a) Explain Lattices properties.
- b) What are the different type of functions?
- c) Which of the partially ordered sets in figures (a), (b) and (c) are lattices? Justify your answer.



d) What is group code? Define groups.

### Q.6 Solve the following questions.

- a) Let A = {1, 2, 3, 4}, B = {a, b, c}, C = {x, y, z}. Consider the relations R from A to B and S from B to C as follows: R = {(1, b), (3, a) (3, b), (4, c)} and S={(a, y), (c, x), (a, z) }
  - 1) Draw the diagrams of R and S.
  - 2) Find the matrix of each relation R, S (composition)  $R \circ S$ .
  - 3) Write R-1 and the composition  $R \circ S$  as sets of ordered pairs.
- **b)** Define Group, Semi group and moniod with example.

12

16

**SLR-FM-706** 

Set P

## S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **DISCRETE MATHEMATICAL STRUCTURE**

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### **MCQ/Objective Type Questions**

### **Duration: 30 Minutes**

c)

2)

9)

Choose the correct alternatives from the options and rewrite the sentence. Q.1

- A subset f of A x B is said to be a function from A to B if domain of f is A 1) and first element of order pairs of f
  - b) do not exist a) do not repeat
    - repeat
  - A lattice  $h \langle A, \leq \rangle$  is bounded iff it has \_
  - a minimum element a) b) a maximum element
  - c) both d) None
- 3) A poset  $h < A \le is$  a \_\_\_\_\_\_ iff every pair of elements in A have both a meet and a join.
  - group Ring a) b)
  - lattice d) None c)
- 4) Abelian group satisfies additional \_\_\_\_\_ property than group.
  - transitive b) Inverse a) c) identity d) Commutative
- 5) A totally ordered set is also called a \_
  - Field a) ring b)
  - c) chain None d)

6) А is a complemented distributive lattice.

- boolean function a)
- modular lattice C)
- 7) Every cyclic group is \_\_\_\_
  - a) an abelian group c) not a group
- The expression 'Q if p' indicates which of the following connectives. 8)

b)

d) None

Т

- a) Biconditional b) Conditional d) Tautology
- c) Exclusive OR
- $T \rightarrow P$  is equivalent to \_\_\_\_\_. a) Ρ b) d) F
  - $\neg P$ c)

Max. Marks: 70

Marks: 14

14

Set

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|      |  |

d) members of B

b) complete lattice

d) boolean expression

may not abelian group



#### 10) PCNF is \_\_\_\_\_.

- a) Conjunction of elementary product
- b) Conjunction of minterms
- c) Conjunction of maxterms
- d) Disjunction of elementary sum

### 11) If $S = \{ \phi, \{ \phi \}, \{ \phi, \{ \phi \} \}\}$ then what is cardinality of S?

- a) 0 b) 3
- c) 2 d) 4
- 12) If Let S be the relation from Y to Z and R is the relation from A to B the composition  $R \circ S$  is from \_\_\_\_\_.
  - a) A to Z

- b) Z to B
- c) Y to B d) None of these
- 13) If the relation R is represented by matrix and if we replace 0 by 1 and 1 by 0 then resultant matrix represents \_\_\_\_\_.
  - a) Complement of R
    b) Inverse of R
    c) Domain of R
    d) Range of R
- 14) Relation matrix of the relation is given below.

| 1 | 1 | 1] |
|---|---|----|
| 1 | 0 | 1  |
| 1 | 1 | 0] |

- a) Only reflexive property
- b) Only symmetric property
- c) All properties except Irreflexive
- d) Only antisymmetric property

| Seat |  |
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### S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DISCRETE MATHEMATICAL STRUCTURE

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

#### Section – I

#### Q.2 Solve any three.

- **a)** Explain Tautological Implication and show that  $(P^{A}Q) => (P \rightarrow Q)$ .
- **b)** Convert the given formula into prefix and suffix form.  $A^{\vee} ((\neg B \rightarrow C)^{\wedge} (\neg D \leftrightarrow E))$
- c) Define equivalence relation and equivalence class along with an example.
- d) Define duality law and prove that "If A has dual as A\* and B has dual as B\* and  $A \Leftrightarrow B$  the prove that  $A^* \Leftrightarrow B^*$
- e) Show that  $S \lor R$  is a valid conclusion from the following premises:  $P \lor Q, P \to R, Q \to S$

#### Q.3 Solve any one.

- a) Explain the following terms
  - 1) Tautology and contradiction
  - 2) Set inclusion and equality of sets
  - 3) Relative complement of A with respect to B
  - 4) Partition and covering of sets
- **b)** Define minterm, PDNF, maxterm and PCNF and obtain PDNF and PCNF of  $(P \land Q) \lor (\neg P \land Q \land R)$  without constructing truth table.

#### Q.4 Solve the following.

- a) Given a set  $S = \{1,2,3,4,5\}$ . Find the equivalence relation on S which generates the partition  $\{\{1,2,4\},\{3\},\{5\}\}$ . Draw graph of the relation.
- **b)** Let A= {4,5,6,7,8}. State whether following are covering or partition along with reason.
  - $1) \quad \{\{4,5\},\{6\},\{7,8,4\}\}$
  - 2)  $\{\{4\},\{7,6\},\{5\}\}$
  - 3)  $\{\{4,5\},\{7\},\{6,8\}\}$
  - 4)  $\{\{4,5\},\{5,6\},\{4,7,8\}\}$

Max. Marks: 56

Set

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12

### Section – II

#### Q.5 Solve any three.

- Explain Lattices properties. a)
- What are the different type of functions? b)
- Which of the partially ordered sets in figures (a), (b) and (c) are lattices? c) Justify your answer.



d) What is group code? Define groups.

#### Q.6 Solve the following questions.

- Let A =  $\{1, 2, 3, 4\}$ , B =  $\{a, b, c\}$ , C =  $\{x, y, z\}$ . Consider the relations R from a) A to B and S from B to C as follows:  $R = \{(1, b), (3, a), (3, b), (4, c)\}$  and  $S=\{(a, y), (c, x), (a, z)\}$ 
  - 1) Draw the diagrams of R and S.
  - 2) Find the matrix of each relation R, S (composition)  $R \circ S$ .
  - 3) Write R-1 and the composition  $R \circ S$  as sets of ordered pairs.
- b) Define Group, Semi group and moniod with example.

12

16

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Set | Q

## S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **DISCRETE MATHEMATICAL STRUCTURE**

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - If Let S be the relation from Y to Z and R is the relation from A to B the 1) composition  $R \circ S$  is from \_\_\_\_\_.
    - a) A to Z
    - c) Y to B d) None of these
  - If the relation R is represented by matrix and if we replace 0 by 1 and 1 by 2) 0 then resultant matrix represents

ſ1 1

1 0

1 0 1

1

b) Z to B

11

- Complement of R Inverse of R a) b)
- Domain of R c) d) Range of R

3) Relation matrix of the relation is given below.

| a) | Only reflexive property |
|----|-------------------------|

- Only symmetric property b)
- All properties except Irreflexive C)
- Only antisymmetric property d)
- A subset f of A x B is said to be a function from A to B if domain of f is A 4) and first element of order pairs of f
  - do not repeat b) do not exist a)
  - c) repeat d) members of B

5) A lattice  $h \langle A, \leq \rangle$  is bounded iff it has \_

- a minimum element b) a maximum element a)
  - c) both d) None
- A poset  $h < A, \leq >$  is a \_\_\_\_\_ iff every pair of elements in A have both a 6) meet and a join.
  - group a) b) Ring c) lattice
    - d) None
- 7) Abelian group satisfies additional \_\_\_ \_ property than group.
  - transitive b) Inverse a)
  - C) identity d) Commutative
- 8) A totally ordered set is also called a \_
  - ring b) Field a) d) None
    - c) chain

Max. Marks: 70

SLR-FM-706



Set

Marks: 14

Page 10 of 16

- 9) A \_\_\_\_\_ is a complemented distributive lattice.
  - boolean function a)
  - modular lattice C)

d) boolean expression

b) may not abelian group

b) complete lattice

- 10) Every cyclic group is \_\_\_\_\_
  - a) an abelian group
    - c) not a group
- The expression 'Q if p' indicates which of the following connectives. 11)
  - a) Biconditional
- b) Conditional

d) None

- c) Exclusive OR
- d) Tautology
- 12)  $T \rightarrow P$  is equivalent to \_\_\_\_\_.
  - a) P b) T
  - c) ¬P d) F
- 13) PCNF is \_\_\_\_
  - Conjunction of elementary product a)
  - Conjunction of minterms b)
  - Conjunction of maxterms c)
  - Disjunction of elementary sum d)
- 14) If  $S = \{ \phi, \{ \phi \}, \{ \phi, \{ \phi \} \} \}$  then what is cardinality of S?
  - 0 b) 3 a) c) 2 d) 4

Set R

#### S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DISCRETE MATHEMATICAL STRUCTURE

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

#### Section – I

#### Q.2 Solve any three.

- **a)** Explain Tautological Implication and show that  $(P^{A}Q) => (P \rightarrow Q)$ .
- **b)** Convert the given formula into prefix and suffix form.  $A^{\vee} ((\neg B \rightarrow C)^{\wedge} (\neg D \leftrightarrow E))$
- c) Define equivalence relation and equivalence class along with an example.
- d) Define duality law and prove that "If A has dual as A\* and B has dual as B\* and  $A \Leftrightarrow B$  the prove that  $A^* \Leftrightarrow B^*$
- e) Show that  $S \lor R$  is a valid conclusion from the following premises:  $P \lor Q, P \to R, Q \to S$

#### Q.3 Solve any one.

- a) Explain the following terms
  - 1) Tautology and contradiction
  - 2) Set inclusion and equality of sets
  - 3) Relative complement of A with respect to B
  - 4) Partition and covering of sets
- **b)** Define minterm, PDNF, maxterm and PCNF and obtain PDNF and PCNF of  $(P \land Q) \lor (\neg P \land Q \land R)$  without constructing truth table.

#### Q.4 Solve the following.

- a) Given a set  $S = \{1,2,3,4,5\}$ . Find the equivalence relation on S which generates the partition  $\{\{1,2,4\},\{3\},\{5\}\}$ . Draw graph of the relation.
- **b)** Let A= {4,5,6,7,8}. State whether following are covering or partition along with reason.
  - $1) \quad \{\{4,5\},\{6\},\{7,8,4\}\}$
  - 2)  $\{\{4\},\{7,6\},\{5\}\}$
  - 3)  $\{\{4,5\},\{7\},\{6,8\}\}$
  - 4)  $\{\{4,5\},\{5,6\},\{4,7,8\}\}$

Max. Marks: 56

Set R

SLR-FM-706

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08

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#### Section – II

#### Q.5 Solve any three.

- a) Explain Lattices properties.
- b) What are the different type of functions?
- c) Which of the partially ordered sets in figures (a), (b) and (c) are lattices? Justify your answer.



d) What is group code? Define groups.

#### Q.6 Solve the following questions.

- a) Let A = {1, 2, 3, 4}, B = {a, b, c}, C = {x, y, z}. Consider the relations R from A to B and S from B to C as follows: R = {(1, b), (3, a) (3, b), (4, c)} and S={(a, y), (c, x), (a, z) }
  - 1) Draw the diagrams of R and S.
  - 2) Find the matrix of each relation R, S (composition)  $R \circ S$ .
  - 3) Write R-1 and the composition  $R \circ S$  as sets of ordered pairs.
- **b)** Define Group, Semi group and moniod with example.

12

R

16

## SLR-FM-706

Set

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **DISCRETE MATHEMATICAL STRUCTURE** Max. Marks: 70

Day & Date: Tuesday, 10-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

#### **MCQ/Objective Type Questions**

Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- A poset  $h < A, \leq >$  is a iff every pair of elements in A have both a 1) meet and a join.
  - a) group

**Duration: 30 Minutes** 

- lattice d) None c)
- \_\_\_\_ property than group. 2) Abelian group satisfies additional
  - a) transitive b) Inverse
  - identitv d) Commutative c)
- 3) A totally ordered set is also called a
  - ring Field a) b)
  - c) chain d) None
- A is a complemented distributive lattice. 4) b) complete lattice
  - a) boolean function
  - c) modular lattice d) boolean expression
- 5) Every cyclic group is \_\_\_\_\_
  - a) an abelian group not a group c)
- b) may not abelian group
- d) None
- The expression 'Q if p' indicates which of the following connectives. 6)
  - b) Conditional Biconditional a)
  - **Exclusive OR** Tautology c) d)
- $T \rightarrow P$  is equivalent to \_\_\_\_\_. 7)
  - a) P b) T ¬Ρ d) F c)
- 8) PCNF is
  - a) Conjunction of elementary product
  - Conjunction of minterms b)
  - Conjunction of maxterms c)
  - d) Disjunction of elementary sum
- 9) If S = {  $\phi$ , {  $\phi$  }, {  $\phi$  }} then what is cardinality of S?
  - 0 b) 3 a)
  - d) 4 c) 2



- Ring
- b)

14

Marks: 14

| Set | S |
|-----|---|
| JEL | 3 |

- Set S
- 10) If Let S be the relation from Y to Z and R is the relation from A to B the composition  $R \circ S$  is from \_\_\_\_\_.
  - a) A to Z

C)

Y to B

- b) Z to B d) None of these
- 11) If the relation R is represented by matrix and if we replace 0 by 1 and 1 by 0 then resultant matrix represents \_\_\_\_\_.
  - a) Complement of R c) Domain of R
- b) Inverse of R d) Range of R
- 12) Relation matrix of the relation is given below.

$$\begin{array}{cccc}
1 & 1 & 1 \\
1 & 0 & 1 \\
1 & 1 & 0
\end{array}$$

- a) Only reflexive property
- b) Only symmetric property
- c) All properties except Irreflexive
- d) Only antisymmetric property
- A subset f of A x B is said to be a function from A to B if domain of f is A and first element of order pairs of f \_\_\_\_\_.
  - a) do not repeat
  - c) repeat
- b) do not exist
- d) members of B
- 14) A lattice  $h \langle A, \leq \rangle$  is bounded iff it has
  - a) a minimum element
    - c) both

- b) a maximum element
- d) None

### Seat No. S.E. (Part – I) (Old) (CGP

#### S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DISCRETE MATHEMATICAL STRUCTURE

Day & Date: Tuesday, 10-12-2019

Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

- 2) Figure to the right indicates full marks.
- 3) Assume suitable data if required.

#### Section – I

#### Q.2 Solve any three.

- **a)** Explain Tautological Implication and show that  $(P^{A}Q) => (P \rightarrow Q)$ .
- **b)** Convert the given formula into prefix and suffix form.  $A^{\vee} ((\neg B \rightarrow C)^{\wedge} (\neg D \leftrightarrow E))$
- c) Define equivalence relation and equivalence class along with an example.
- d) Define duality law and prove that "If A has dual as A\* and B has dual as B\* and  $A \Leftrightarrow B$  the prove that  $A^* \Leftrightarrow B^*$
- e) Show that  $S \lor R$  is a valid conclusion from the following premises:  $P \lor Q, P \to R, Q \to S$

#### Q.3 Solve any one.

- a) Explain the following terms
  - 1) Tautology and contradiction
  - 2) Set inclusion and equality of sets
  - 3) Relative complement of A with respect to B
  - 4) Partition and covering of sets
- **b)** Define minterm, PDNF, maxterm and PCNF and obtain PDNF and PCNF of  $(P \land Q) \lor (\neg P \land Q \land R)$  without constructing truth table.

#### Q.4 Solve the following.

- a) Given a set  $\tilde{S}$ = {1,2,3,4,5}. Find the equivalence relation on S which generates the partition { {1,2,4},{3},{5}}. Draw graph of the relation.
- **b)** Let A= {4,5,6,7,8}. State whether following are covering or partition along with reason.
  - $1) \quad \{\{4,5\},\{6\},\{7,8,4\}\}$
  - 2)  $\{\{4\},\{7,6\},\{5\}\}$
  - 3)  $\{\{4,5\},\{7\},\{6,8\}\}$
  - $4) \quad \{\{4,5\},\{5,6\},\{4,7,8\}\}$

Max. Marks: 56

08

Set

**SLR-FM-706** 

08

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Section – II

#### Q.5 Solve any three.

- a) Explain Lattices properties.
- b) What are the different type of functions?
- c) Which of the partially ordered sets in figures (a), (b) and (c) are lattices? Justify your answer.



d) What is group code? Define groups.

#### Q.6 Solve the following questions.

- a) Let A = {1, 2, 3, 4}, B = {a, b, c}, C = {x, y, z}. Consider the relations R from A to B and S from B to C as follows: R = {(1, b), (3, a) (3, b), (4, c)} and S={(a, y), (c, x), (a, z) }
  - 1) Draw the diagrams of R and S.
  - 2) Find the matrix of each relation R, S (composition)  $R \circ S$ .
  - 3) Write R-1 and the composition  $R \circ S$  as sets of ordered pairs.
- **b)** Define Group, Semi group and moniod with example.

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

## **ADVANCED C CONCEPTS**

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

2)

3)

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

What is the output of this C code? 1) #include <stdio.h> #include <math.h>

> void main() { int k = pow(2, 3);printf("%d\n", k); } a) 9 c) -1 Strcat() function adds null character Only if there is space a) Depends on the standard c)

Finding the location of a given item in a collection of items is called

| a) | Discovering | b) | Finding |
|----|-------------|----|---------|
| c) | Searching   | d) | Mining  |

- c) Searching
- 4) What is the output of this C code? #include <stdio.h> void main() {

char \*s = "hello"; char p = s;printf("%p\t%p", p, s); }

- a) Different address is printed
- c) Run time error

- Same address is printed b)
- d) Nothing

8

6

Always

Depends on the compiler

b) d)

b)

d)

Seat No.





Max. Marks: 70

Marks: 14

5) What will be the output? #include <stdio.h>

```
double var = 8;
int main()
```

```
int var = 5;
printf("%d", var);
```

**`**}

{

- a) 5 b) 8
- c) Compile time error due to wrong format identifier for double
- d) Compile time error due to redeclaration of variable with same name
- 6) The first and second arguments of fopen() are \_\_\_\_\_
  - a) A character string containing the name of the file & the second argument is the mode.
  - b) A character string containing the name of the user & the second argument is the mode.
  - c) A character string containing file poniter & the second argument is the mode.
  - d) None of the mentioned
- 7) What is the scope of an external variable?
  - a) Whole source file in which it is defined
  - b) From the point of declaration to the end of the file in which it is defined
  - c) Any source file in a program
  - d) From the point of declaration to the end of the file being compiled
- 8) The total number of comparisons in a bubble sort is \_\_\_\_\_.
  - a) O(n logn) b) O(2
  - c) O(n2)
- b) O(2n) d) O(n)
- 9) FILE reserved word is \_\_\_\_\_
  - a) A structure tag declared in stdio.h
  - b) One of the basic datatypes in c
  - c) Pointer to the structure defined in stdio.h
  - d) It is a type name defined in stdio.h
- 10) Which of the following sorting algorithm is of divide and conquer type?
  - a) Bubble sort b) Insertion sort
  - c) Quick sort d) Merge sort
- 11) Which of the following is a correct format for declaration of function?
  - a) return-type function-name(argument type);
  - b) return-type function-name(argument type){ }
  - c) return-type (argument type)function-name;
  - d) Both (a) and (b)
- 12) The worst case occur in linear search algorithm when
  - a) Item is somewhere in the middle of the array
  - b) Item is not in the array at all
  - c) Item is the last element in the array
  - d) Item is the last element in the array or item is not there at all

#### 13) When do you need to use type-conversions?

- a) The value to be stored is beyond the max limit
- b) The value to be stored is in a form not supported by that data type
- c) To reduce the memory in use, relevant to the value
- d) All of the mentioned
- 14) The easiest sorting is \_\_\_\_\_.
  - a) quick sort
  - c) heap sort

- b) shell sort
- d) selection sort

**SLR-FM-707** 

Set P

## Seat No.

### S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology ADVANCED C CONCEPTS

Day & Date: Thursday,12-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

#### Q.2 Solve any three of the following.

- a) What is a Function? Give an example to illustrate the Function in C.
- **b)** Illusate with an example of array of 10 pointers pointing to integers?
- c) What are logical operators written in C?
- d) What is an algorithm? Write any two data types in C with examples.

#### Q.3 Solve any two.

- a) Write an algorithm for swapping two elements without using an extra temporary variable.
- **b)** Write a program for Towers of Honoi problem using recursion.
- c) Write a program to count the number of vowels in a given String.

#### Section – II

#### Q.4 Solve any three of the following.

- a) What is hash searching? Illustrate with an example.
- b) Explain the concept of sequential search with example.
- c) What is Big-O notation and Omega Notation? Explain.
- d) State and explain Different File I/O Functions.

#### Q.5 Solve any two.

- a) Write C Program to Sort N Numbers in Ascending Order using Bubble Sort.
- **b)** Write a C program to sort a set of n elements using Insertion Sort.
- c) Write a C program for hash searching using linear collision.





Max. Marks: 56

12

16

16
# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

# **ADVANCED C CONCEPTS**

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- The total number of comparisons in a bubble sort is \_\_\_\_\_. 1)
  - O(n logn) a) b)
  - c) O(n2) d) O(n)
- FILE reserved word is 2)
  - a) A structure tag declared in stdio.h
  - b) One of the basic datatypes in c
  - c) Pointer to the structure defined in stdio.h
  - d) It is a type name defined in stdio.h
- 3) Which of the following sorting algorithm is of divide and conquer type?
  - a) Bubble sort Insertion sort b)
  - c) Quick sort d) Merge sort
- Which of the following is a correct format for declaration of function? 4)
  - a) return-type function-name(argument type);
  - b) return-type function-name(argument type) { }
  - c) return-type (argument type)function-name;
  - d) Both (a) and (b)
- The worst case occur in linear search algorithm when 5)
  - a) Item is somewhere in the middle of the array
  - b) Item is not in the array at all
  - c) Item is the last element in the array
  - d) Item is the last element in the array or item is not there at all
- 6) When do you need to use type-conversions?
  - a) The value to be stored is beyond the max limit
  - b) The value to be stored is in a form not supported by that data type
  - c) To reduce the memory in use, relevant to the value
  - d) All of the mentioned
- 7) The easiest sorting is \_\_\_\_\_.
  - quick sort a)
  - heap sort c)

- b) shell sort
- d) selection sort

# **SLR-FM-707**



Max. Marks: 70

Marks: 14



Set 8) What is the output of this C code? #include <stdio.h> #include <math.h> void main() { int k = pow(2, 3);printf("%d\n", k); } a) 9 b) 8 c) -1 d) 6 9) Strcat() function adds null character a) Only if there is space b) Always c) Depends on the standard Depends on the compiler d) 10) Finding the location of a given item in a collection of items is called Discovering Finding b) a) Searching d) Mining C) 11) What is the output of this C code? #include <stdio.h> void main() { char \*s = "hello"; char p = s;printf("%p\t%p", p, s); } Different address is printed b) Same address is printed a) c) Run time error d) Nothing 12) What will be the output? #include <stdio.h> double var = 8: int main() { int var = 5; printf("%d", var); } a) 5 b) 8 c) Compile time error due to wrong format identifier for double d) Compile time error due to redeclaration of variable with same name 13) The first and second arguments of fopen() are \_ A character string containing the name of the file & the second a) argument is the mode. b) A character string containing the name of the user & the second argument is the mode. A character string containing file poniter & the second argument is C) the mode.

d) None of the mentioned

SLR-FM-707

# What is the scope of an external variable?

- a) Whole source file in which it is defined
- b) From the point of declaration to the end of the file in which it is defined
- c) Any source file in a program

14)

d) From the point of declaration to the end of the file being compiled

**SLR-FM-707** 

Set Q

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology ADVANCED C CONCEPTS

Day & Date: Thursday,12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

# Q.2 Solve any three of the following.

- a) What is a Function? Give an example to illustrate the Function in C.
- **b)** Illusate with an example of array of 10 pointers pointing to integers?
- c) What are logical operators written in C?
- d) What is an algorithm? Write any two data types in C with examples.

# Q.3 Solve any two.

- a) Write an algorithm for swapping two elements without using an extra temporary variable.
- **b)** Write a program for Towers of Honoi problem using recursion.
- c) Write a program to count the number of vowels in a given String.

### Section – II

# Q.4 Solve any three of the following.

- a) What is hash searching? Illustrate with an example.
- b) Explain the concept of sequential search with example.
- c) What is Big-O notation and Omega Notation? Explain.
- d) State and explain Different File I/O Functions.

# Q.5 Solve any two.

- a) Write C Program to Sort N Numbers in Ascending Order using Bubble Sort.
- **b)** Write a C program to sort a set of n elements using Insertion Sort.
- c) Write a C program for hash searching using linear collision.





Max. Marks: 56

12

16

12

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology ADVANCED C CONCEPTS

Day & Date: Thursday,12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

14

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
  - 1) What will be the output?
    - #include <stdio.h>
       double var = 8:

int main() { int var = 5;

```
printf("%d", var);
```

- **`**}
- a) 5 b) 8
- c) Compile time error due to wrong format identifier for double
- d) Compile time error due to redeclaration of variable with same name
- 2) The first and second arguments of fopen() are
  - A character string containing the name of the file & the second argument is the mode.
  - b) A character string containing the name of the user & the second argument is the mode.
  - c) A character string containing file poniter & the second argument is the mode.
  - d) None of the mentioned
- 3) What is the scope of an external variable?
  - a) Whole source file in which it is defined
  - b) From the point of declaration to the end of the file in which it is defined
  - c) Any source file in a program
  - d) From the point of declaration to the end of the file being compiled
- 4) The total number of comparisons in a bubble sort is \_\_\_\_\_.
  - a) O(n logn) b) O(2n) c) O(n2) d) O(n)

# **SLR-FM-707**

Set

Max. Marks: 70



R

b) One of the basic datatypes in c c) Pointer to the structure defined in stdio.h d) It is a type name defined in stdio.h 6) Which of the following sorting algorithm is of divide and conquer type? a) Bubble sort b) c) Quick sort d) 7) Which of the following is a correct format for declaration of function? a) return-type function-name(argument type); b) return-type function-name(argument type) { }

a) A structure tag declared in stdio.h

FILE reserved word is .

- c) return-type (argument type)function-name;
- d) Both (a) and (b)

5)

- The worst case occur in linear search algorithm when 8)
  - a) Item is somewhere in the middle of the array
  - b) Item is not in the array at all
  - c) Item is the last element in the array
  - d) Item is the last element in the array or item is not there at all
- When do you need to use type-conversions? 9)
  - a) The value to be stored is beyond the max limit
  - b) The value to be stored is in a form not supported by that data type
  - c) To reduce the memory in use, relevant to the value
  - d) All of the mentioned
- 10) The easiest sorting is \_\_\_\_\_
  - a) quick sort

{

c) heap sort

- shell sort b)
- selection sort d)

Insertion sort

Merge sort

- 11) What is the output of this C code? #include <stdio.h>
  - #include <math.h> void main()
    - int k = pow(2, 3);
    - printf("%d\n", k);
  - } a) 9 b) 8
  - c) -1 d) 6
- Strcat() function adds null character 12)
  - a) Only if there is space b)
  - Depends on the standard d) C)
- 13) Finding the location of a given item in a collection of items is called
  - Discovering Finding a) b) Searching Mining C)

    - d)

# SLR-FM-707 Set

- Always

Depends on the compiler

- 14) What is the output of this C code? #include <stdio.h> void main()
  {
   char \*s = "hello";
   char \*p = s;
   printf("%p\t%p", p, s);
   }
  a) Different address is printed
  c) Run time error
- b) Same address is printed

Set R

d) Nothing

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology ADVANCED C CONCEPTS

Day & Date: Thursday,12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

# Q.2 Solve any three of the following.

- a) What is a Function? Give an example to illustrate the Function in C.
- **b)** Illusate with an example of array of 10 pointers pointing to integers?
- c) What are logical operators written in C?
- d) What is an algorithm? Write any two data types in C with examples.

# Q.3 Solve any two.

- a) Write an algorithm for swapping two elements without using an extra temporary variable.
- **b)** Write a program for Towers of Honoi problem using recursion.
- c) Write a program to count the number of vowels in a given String.

# Section – II

# Q.4 Solve any three of the following.

- a) What is hash searching? Illustrate with an example.
- **b)** Explain the concept of sequential search with example.
- c) What is Big-O notation and Omega Notation? Explain.
- d) State and explain Different File I/O Functions.

# Q.5 Solve any two.

- a) Write C Program to Sort N Numbers in Ascending Order using Bubble Sort.
- **b)** Write a C program to sort a set of n elements using Insertion Sort.
- c) Write a C program for hash searching using linear collision.



Set

Max. Marks: 56

R

12

16

12

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

# **ADVANCED C CONCEPTS**

Day & Date: Thursday, 12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

Seat No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- Which of the following sorting algorithm is of divide and conquer type? 1)
  - Bubble sort b) Insertion sort a) Quick sort C)
    - d) Merge sort
- 2) Which of the following is a correct format for declaration of function?
  - a) return-type function-name(argument type);
  - b) return-type function-name(argument type){ }
  - c) return-type (argument type)function-name;
  - d) Both (a) and (b)
- The worst case occur in linear search algorithm when 3)
  - a) Item is somewhere in the middle of the array
  - Item is not in the array at all b)
  - c) Item is the last element in the array
  - d) Item is the last element in the array or item is not there at all
- When do you need to use type-conversions? 4)
  - a) The value to be stored is beyond the max limit
  - b) The value to be stored is in a form not supported by that data type

b)

shell sort

- c) To reduce the memory in use, relevant to the value
- d) All of the mentioned
- 5) The easiest sorting is \_\_\_\_\_.
  - quick sort a)
  - heap sort d) selection sort c)
- What is the output of this C code? 6)
  - #include <stdio.h> #include <math.h> void main() { int k = pow(2, 3);printf("%d\n", k);

} a) 9 b) 8 C) -1 d) 6 **SLR-FM-707** 

Marks: 14

14

Max. Marks: 70

Set 7) Strcat() function adds null character a) Only if there is space b) Always Depends on the standard c) d) Depends on the compiler Finding the location of a given item in a collection of items is called 8) Discovering a) b) Finding Searching d) Mining C) What is the output of this C code? 9) #include <stdio.h> void main() { char \*s = "hello": char p = s;printf("%p\t%p", p, s); } Different address is printed b) Same address is printed a) Run time error d) Nothing C) 10) What will be the output? #include <stdio.h> double var = 8; int main() { int var = 5; printf("%d", var); } a) 5 b) 8 c) Compile time error due to wrong format identifier for double d) Compile time error due to redeclaration of variable with same name 11) The first and second arguments of fopen() are \_ a) A character string containing the name of the file & the second argument is the mode. b) A character string containing the name of the user & the second argument is the mode. A character string containing file poniter & the second argument is c) the mode. d) None of the mentioned 12) What is the scope of an external variable? a) Whole source file in which it is defined b) From the point of declaration to the end of the file in which it is defined c) Any source file in a program d) From the point of declaration to the end of the file being compiled The total number of comparisons in a bubble sort is \_ 13) O(n logn) a) b) O(2n) c) O(n2) d) O(n)

SLR-FM-707

# **SLR-FM-707** Set S

- 14) FILE reserved word is \_\_\_\_\_.
  - a) A structure tag declared in stdio.hb) One of the basic datatypes in c

  - c) Pointer to the structure defined in stdio.h
  - d) It is a type name defined in stdio.h

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology ADVANCED C CONCEPTS

Day & Date: Thursday,12-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

# Q.2 Solve any three of the following.

- a) What is a Function? Give an example to illustrate the Function in C.
- **b)** Illusate with an example of array of 10 pointers pointing to integers?
- c) What are logical operators written in C?
- d) What is an algorithm? Write any two data types in C with examples.

# Q.3 Solve any two.

- a) Write an algorithm for swapping two elements without using an extra temporary variable.
- **b)** Write a program for Towers of Honoi problem using recursion.
- c) Write a program to count the number of vowels in a given String.

# Section – II

# Q.4 Solve any three of the following.

- a) What is hash searching? Illustrate with an example.
- b) Explain the concept of sequential search with example.
- c) What is Big-O notation and Omega Notation? Explain.
- d) State and explain Different File I/O Functions.

# Q.5 Solve any two.

- a) Write C Program to Sort N Numbers in Ascending Order using Bubble Sort.
- **b)** Write a C program to sort a set of n elements using Insertion Sort.
- c) Write a C program for hash searching using linear collision.



Max. Marks: 56

12

16

16

| The                                       | operation of J - K flip-flop is similar to that of the SR flip-flop except |  |  |  |
|---|--|--|--|--|
| that                                      | the J - K flip-flop  |  |  |  |
| a)  | Doesn't have an invalid state  |  |  |  |
| b)  | Sets to clear when both $J = 0$ and $K = 0$                                |  |  |  |
| c)  | It does not show transition on change in pulse                             |  |  |  |
| d) It does not accept asynchronous inputs |  |  |  |  |
|   |  |  |  |  |
|   |  |  |  |  |
|   |  |  |  |  |
|   |  |  |  |  |

NAND

1100101

6) The difference between half adder and full adder is \_\_\_\_\_.

a) Half adder has two inputs while full adder has four inputs

b) Half adder has one output while full adder has two outputs

c) Half adder has two inputs while full adder has three inputs

d) All of the Mentioned

a) 2 b) 3

5) Total number of inputs in a half adder is \_

c) 4 d) 1

1000011 c) 0110110 d)

3) a) AND

c) SOP

get \_\_\_\_. a) 0111001

4)

7)

Day & Date: Saturday, 14-12-2019

book.

Time: 10:00 AM To 01:00 PM

Seat

No.

- The expression Y = (A + B)(B + C)(C + A) shows the \_\_\_\_\_ operation. POS b)
- None of these c) 257 d)
- a) 255 b) 256
- bus is
- date? a) NAND b) NOR
- MCQ/Objective Type Questions

Marks: 14

#### Q.1 14

**DIGITAL TECHNIQUES** 

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

- **Duration: 30 Minutes**

- 1) The Boolean expression  $Y = \overline{A + B}$  is logically equivalent to what single

2) Figures to the right indicate full marks.

# Choose the correct alternatives from the options and rewrite the sentence.

#### c) AND d) OR

- 2) The decimal equivalent of the highest possible address for an 8-bit address

d)

b)

On subtracting  $(010110)_2$  from  $(1011001)_2$  using 2's complement, we

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology



Set

Max. Marks: 70

|     |   |                                  | Set  | Ρ |
|-----|---|----------------------------------|--|---|
| 8)  | <ul> <li>With regard to a D latch</li> <li>a) The Q output follows the D input</li> <li>b) The Q output is opposite the D input</li> <li>c) The Q output follows the D input</li> <li>d) The Q output is HIGH regardless</li> </ul> | wher<br>nput v<br>wher<br>s of E | n EN is LOW<br>vhen EN is LOW<br>n EN is HIGH<br>N's input state |   |
| 9)  | 8 to 1 mux would have<br>a) 2 inputs<br>c) 8 inputs   | b)<br>d)                         | 3 inputs<br>5 inputs   |   |
| 10) | Following IC is used for BCD to 7 se<br>a) 74148<br>c) 7447   | gmen<br>b)<br>d)                 | t decoder<br>74157<br>None                                       |   |
| 11) | With the availability of 16 x 4 memory size, how many ICs (memory chips) will be required for the expansion of its word size in order to obtain 16 x 8 memory?  |                                  |  |   |
|     | c) 8  | d)                               | 16   |   |
| 12) | A VHDL models consist of an<br>a) Entity Declaration<br>c) Both a and b   | and a<br>b)<br>d)                | a<br>Architecture Body<br>None of the above                      |   |
| 13) | List out The Levels of Abstractions in<br>a) Data flow level<br>c) Behavioral Level   | b)<br>d)                         | DL?<br>Structural Level<br>All of the above                      |   |
| 14) | What Can Be The Various Uses Of   | /HDL                             | ?  |   |

- a) To synthesize digital circuits
  b) To verify and validate digital designs
  c) To simulate circuits
  d) All of the above

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

Information Technology DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

# Q.2 Attempt any three.

Seat

No.

- **a)** Express the Boolean function F = AB + A'C in a product of sumform.
- **b)** Simplify the following Boolean function: F = A'C + A'B + AB'C + BC.
- c) Write a note on Parity Checker.
- d) Explain Arithmetic Logic Unit using 74181 IC.
- d) With a neat diagram describe Asynchronous counters.

### Q.3 Attempt any two.

- a) Obtain the simplified expressions in sum-of-product for the following Boolean functions:
  - 1)  $xy + \overline{x}y\overline{z} + \overline{x}y\overline{z}$
  - 2)  $ABD + \overline{A}\overline{C}\overline{D} + \overline{A}B + \overline{A}C\overline{D} + A\overline{B}\overline{D}$
- b) Design full subtractor using NAND gates.
- c) Describe the procedure of converting S R type flip-flop to T type flip-flop.

### Section – II

# Q.4 Attempt any three

a) Implement the following combinational circuit using a decoder

 $f1 = \sum m(3, 5, 8, 15)$ 

 $f^2 = \sum m(1, 4, 5, 7)$ 

- **b)** With a neat diagram design 5 bitShift register.
- c) Write a List of Verilog Operator.
- d) Describe the Dataflow Modeling with a example using verilog HDL.
- e) Design a 2 to 1 multiplexer in a Verilog HDL.

### Q.5 Attempt any two.

- a) Implement Full subtractor using Multiplexer.
- **b)** Design a 16-line to 1-line MUX from five 4-line to 1-line MUX's.
- c) Illustrate Dynamic RAM Cell and Refreshing with a neat diagram.

SLR-FM-708

# 19

Set

Max. Marks: 56

12

12

16

| Seat<br>No. |                 |   |
|-------------|-----------------|---|
|             | S.E. (Part – I) | ) (Old) (CGPA) Examination Nov/Dec-2019 |
|             |                 | Information Technology                  |

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

**DIGITAL TECHNIQUES** 

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

Duration: 30 Minutes

5)

Marks: 14

### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) With regard to a D latch \_\_\_\_\_
  - a) The Q output follows the D input when EN is LOW
  - b) The Q output is opposite the D input when EN is LOW
  - c) The Q output follows the D input when EN is HIGH
  - d) The Q output is HIGH regardless of EN's input state
- 2) 8 to 1 mux would have \_\_\_\_\_.
  - a) 2 inputs b) 3 inputs
  - c) 8 inputs d) 5 inputs
- 3) Following IC is used for BCD to 7 segment decoder
  - a) 74148 b) 74157
  - c) 7447 d) None
- 4) With the availability of 16 x 4 memory size, how many ICs (memory chips) will be required for the expansion of its word size in order to obtain 16 x 8 memory?
  - a) 2 b) 4 c) 8 d) 16
  - A VHDL models consist of an \_\_\_\_\_ and a \_\_\_\_
    - a) Entity Declaration b) Architecture Body
    - c) Both a and b d) None of the above
- 6) List out The Levels of Abstractions in VHDL?
  - a) Data flow level b) Structural Level
  - c) Behavioral Level d) All of the above
- 7) What Can Be The Various Uses Of VHDL?
  - a) To synthesize digital circuits
  - b) To verify and validate digital designs
  - c) To simulate circuits
  - d) All of the above
- 8) The Boolean expression  $Y = \overline{A + B}$  is logically equivalent to what single gate?
  - a) NAND b) NOR c) AND d) OR



Max. Marks: 70

Set

- 9) The decimal equivalent of the highest possible address for an 8-bit address bus is .
  - a) 255

c) 257

- b) 256
- None of these d)
- 10) The expression Y = (A + B)(B + C)(C + A) shows the operation. a) AND b) POS c) SOP
  - d) NAND
- On subtracting  $(010110)_2$  from  $(1011001)_2$  using 2's complement, we 11) get \_\_\_
  - a) 0111001 b) 1100101
  - c) 0110110 d) 1000011
- Total number of inputs in a half adder is \_ 12)
  - 3 a) 2 b) c) 4 d) 1
- 13) The difference between half adder and full adder is \_\_\_\_\_
  - Half adder has two inputs while full adder has four inputs a)
  - b) Half adder has one output while full adder has two outputs
  - c) Half adder has two inputs while full adder has three inputs
  - d) All of the Mentioned
- 14) The operation of J - K flip-flop is similar to that of the SR flip-flop except that the J - K flip-flop \_\_\_\_
  - Doesn't have an invalid state a)
  - Sets to clear when both J = 0 and K = 0b)
  - c) It does not show transition on change in pulse
  - d) It does not accept asynchronous inputs

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

**DIGITAL TECHNIQUES** 

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

# Q.2 Attempt any three.

Seat No.

- **a)** Express the Boolean function F = AB + A'C in a product of sumform.
- **b)** Simplify the following Boolean function: F = A'C + A'B + AB'C + BC.
- c) Write a note on Parity Checker.
- d) Explain Arithmetic Logic Unit using 74181 IC.
- d) With a neat diagram describe Asynchronous counters.

### Q.3 Attempt any two.

- a) Obtain the simplified expressions in sum-of-product for the following Boolean functions:
  - 1)  $xy + \overline{x}y\overline{z} + \overline{x}y\overline{z}$
  - 2)  $ABD + \overline{A}\overline{C}\overline{D} + \overline{A}B + \overline{A}C\overline{D} + A\overline{B}\overline{D}$
- **b)** Design full subtractor using NAND gates.
- c) Describe the procedure of converting S R type flip-flop to T type flip-flop.

### Section – II

### Q.4 Attempt any three

a) Implement the following combinational circuit using a decoder

 $f1 = \sum m(3, 5, 8, 15)$ 

 $f^2 = \sum m(1, 4, 5, 7)$ 

- **b)** With a neat diagram design 5 bitShift register.
- c) Write a List of Verilog Operator.
- d) Describe the Dataflow Modeling with a example using verilog HDL.
- e) Design a 2 to 1 multiplexer in a Verilog HDL.

### Q.5 Attempt any two.

- a) Implement Full subtractor using Multiplexer.
- **b)** Design a 16-line to 1-line MUX from five 4-line to 1-line MUX's.
- c) Illustrate Dynamic RAM Cell and Refreshing with a neat diagram.

**SLR-FM-708** 



Max. Marks: 56

12

16

12

| Seat |  |
|------|--|
| No.  |  |

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **DIGITAL TECHNIQUES**

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

1)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

| Total number of inputs in a half a | dder is |   |
|------------------------------------|---------|---|
| a) 2                               | b)      | 3 |
| c) 4                               | d)      | 1 |

- 2) The difference between half adder and full adder is
  - a) Half adder has two inputs while full adder has four inputs
  - Half adder has one output while full adder has two outputs b)
  - c) Half adder has two inputs while full adder has three inputs
  - d) All of the Mentioned
- The operation of J K flip-flop is similar to that of the SR flip-flop except 3) that the J - K flip-flop
  - a) Doesn't have an invalid state
  - b) Sets to clear when both J = 0 and K = 0
  - c) It does not show transition on change in pulse
  - d) It does not accept asynchronous inputs
- 4) With regard to a D latch \_
  - a) The Q output follows the D input when EN is LOW
  - b) The Q output is opposite the D input when EN is LOW
  - c) The Q output follows the D input when EN is HIGH
  - d) The Q output is HIGH regardless of EN's input state
- 5) 8 to 1 mux would have
  - 2 inputs b) 3 inputs a) c) 8 inputs d) 5 inputs
- Following IC is used for BCD to 7 segment decoder 6)
  - a) 74148 74157 b)
  - c) 7447 d) None
- With the availability of 16 x 4 memory size, how many ICs (memory chips) 7) will be required for the expansion of its word size in order to obtain 16 x 8 memory?

| a) | 2 | b) | 4  |
|----|---|----|----|
| c) | 8 | d) | 16 |

R

Marks: 14

Max. Marks: 70

- A VHDL models consist of an \_\_\_\_\_ and a \_ a) Entity Declaration Architecture Body b) c) Both a and b d) None of the above List out The Levels of Abstractions in VHDL? a) Data flow level b) Structural Level c) Behavioral Level All of the above d) What Can Be The Various Uses Of VHDL? a) To synthesize digital circuits b) To verify and validate digital designs c) To simulate circuits d) All of the above The Boolean expression  $Y = \overline{A + B}$  is logically equivalent to what single 11) gate? a) NAND b) NOR c) AND d) OR The decimal equivalent of the highest possible address for an 8-bit address 12) bus is \_\_\_\_\_. a) 255 b) 256 c) 257 None of these d)
- The expression Y = (A + B)(B + C)(C + A) shows the \_\_\_\_\_ operation. 13) POS a) AND b)
  - c) SOP d) NAND
- On subtracting  $(010110)_2$  from  $(1011001)_2$  using 2's complement, we 14)
  - get \_
  - a) 0111001 b) 1100101 c) 0110110 d) 1000011

- 8)
- 9)
- 10)



# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

Information Technology DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019 Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

# Q.2 Attempt any three.

Seat No.

- **a)** Express the Boolean function F = AB + A'C in a product of sumform.
- **b)** Simplify the following Boolean function: F = A'C + A'B + AB'C + BC.
- c) Write a note on Parity Checker.
- d) Explain Arithmetic Logic Unit using 74181 IC.
- d) With a neat diagram describe Asynchronous counters.

### Q.3 Attempt any two.

- a) Obtain the simplified expressions in sum-of-product for the following Boolean functions:
  - 1)  $xy + \overline{x}y\overline{z} + \overline{x}y\overline{z}$
  - 2)  $ABD + \overline{A}\overline{C}\overline{D} + \overline{A}B + \overline{A}C\overline{D} + A\overline{B}\overline{D}$
- **b)** Design full subtractor using NAND gates.
- c) Describe the procedure of converting S R type flip-flop to T type flip-flop.

### Section – II

# Q.4 Attempt any three

a) Implement the following combinational circuit using a decoder

 $f1 = \sum m(3, 5, 8, 15)$ 

 $f^2 = \sum m(1, 4, 5, 7)$ 

- **b)** With a neat diagram design 5 bitShift register.
- c) Write a List of Verilog Operator.
- d) Describe the Dataflow Modeling with a example using verilog HDL.
- e) Design a 2 to 1 multiplexer in a Verilog HDL.

### Q.5 Attempt any two.

- a) Implement Full subtractor using Multiplexer.
- **b)** Design a 16-line to 1-line MUX from five 4-line to 1-line MUX's.
- c) Illustrate Dynamic RAM Cell and Refreshing with a neat diagram.

SLR-FM-708

Max. Marks: 56

16

12

12

| ,          |  | ,      |                                |    |
|------------|--|--------|--------------------------------|----|
| The<br>bus | decimal equivalent of the highes is    | st pos | sible address for an 8-bit add | re |
| a)         | 255                                    | b)     | 256                            |    |
| c)         | 257                                    | d)     | None of these                  |    |
| The        | expression $Y = (A + B)(B + C)(C + C)$ | C + A) | shows the operation.           |    |
| a)         | AND                                    | b)     | POS                            |    |
| c)         | SOP                                    | d)     | NAND                           |    |
|            |  |        |                                |    |
|            |  |        |                                |    |
|            |  |        |                                |    |
|            |  |        |                                | Ρ  |

Time: 10:00 AM To 01:00 PM **Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

1)

8)

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Following IC is used for BCD to 7 segment decoder
  - a) 74148 b) 74157
  - c) 7447 d) None
- 2) With the availability of 16 x 4 memory size, how many ICs (memory chips) will be required for the expansion of its word size in order to obtain 16 x 8 memory?
  - a) 2 b) 4
- c) 8 16 d)
- 3) A VHDL models consist of an \_\_\_\_\_ and a \_
  - a) Entity Declaration Architecture Body b)
  - c) Both a and b None of the above d)
- List out The Levels of Abstractions in VHDL? 4)
  - a) Data flow level b)
  - All of the above c) Behavioral Level d)
- What Can Be The Various Uses Of VHDL? 5)
  - a) To synthesize digital circuits
  - b) To verify and validate digital designs
  - c) To simulate circuits
  - d) All of the above
- 6) The Boolean expression  $Y = \overline{A + B}$  is logically equivalent to what single qate?
  - a) NAND NOR b)
  - c) AND d) OR
- 7) The decimal equ ess bus is
  - a) 255
  - c) 257

Structural Level

**SLR-FM-708** 

Set

# Information Technology **DIGITAL TECHNIQUES** Day & Date: Saturday, 14-12-2019

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

Max. Marks: 70

Marks: 14

- Set S
- On subtracting (010110)<sub>2</sub> from (1011001)<sub>2</sub> using 2's complement, we get \_\_\_\_\_.
  - a) 0111001 b) 1100101
  - c) 0110110 d) 1000011
- 10) Total number of inputs in a half adder is \_\_\_\_\_
  - a) 2 b) 3 c) 4 d) 1
- 11) The difference between half adder and full adder is \_\_\_\_\_.
  - a) Half adder has two inputs while full adder has four inputs
  - b) Half adder has one output while full adder has two outputs
  - c) Half adder has two inputs while full adder has three inputs
  - d) All of the Mentioned
- 12) The operation of J K flip-flop is similar to that of the SR flip-flop except that the J K flip-flop \_\_\_\_\_.
  - a) Doesn't have an invalid state
  - b) Sets to clear when both J = 0 and K = 0
  - c) It does not show transition on change in pulse
  - d) It does not accept asynchronous inputs
- 13) With regard to a D latch \_\_\_\_\_
  - a) The Q output follows the D input when EN is LOW
  - b) The Q output is opposite the D input when EN is LOW
  - c) The Q output follows the D input when EN is HIGH
  - d) The Q output is HIGH regardless of EN's input state
- 14) 8 to 1 mux would have \_\_\_\_\_.
  - a) 2 inputsc) 8 inputs

- b) 3 inputs
- d) 5 inputs

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

# DIGITAL TECHNIQUES Day & Date: Saturday, 14-12-2019

Time: 10:00 AM To 01:00 PM

Seat No.

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

# Section – I

# Q.2 Attempt any three.

- **a)** Express the Boolean function F = AB + A'C in a product of sumform.
- **b)** Simplify the following Boolean function: F = A'C + A'B + AB'C + BC.
- c) Write a note on Parity Checker.
- d) Explain Arithmetic Logic Unit using 74181 IC.
- d) With a neat diagram describe Asynchronous counters.

# Q.3 Attempt any two.

- a) Obtain the simplified expressions in sum-of-product for the following Boolean functions:
  - 1)  $xy + \overline{x}y\overline{z} + \overline{x}y\overline{z}$
  - 2)  $ABD + \overline{A}\overline{C}\overline{D} + \overline{A}B + \overline{A}C\overline{D} + A\overline{B}\overline{D}$
- **b)** Design full subtractor using NAND gates.
- c) Describe the procedure of converting S R type flip-flop to T type flip-flop.

### Section – II

# Q.4 Attempt any three

a) Implement the following combinational circuit using a decoder

 $f1 = \sum m(3, 5, 8, 15)$ 

 $f^2 = \sum m(1, 4, 5, 7)$ 

- **b)** With a neat diagram design 5 bitShift register.
- c) Write a List of Verilog Operator.
- d) Describe the Dataflow Modeling with a example using verilog HDL.
- e) Design a 2 to 1 multiplexer in a Verilog HDL.

# Q.5 Attempt any two.

- a) Implement Full subtractor using Multiplexer.
- **b)** Design a 16-line to 1-line MUX from five 4-line to 1-line MUX's.
- c) Illustrate Dynamic RAM Cell and Refreshing with a neat diagram.

# **SLR-FM-708**

Max. Marks: 56

16

12

12

|                     |  | COMPUTER G   | ecnn<br>GRAF               | PHICS   |
|---------------------|--|--|----------------------------|---|
| Day & D<br>Time: 10 | ate: Tu<br>):00 AN                                     | esday,17-12-2019<br>1 To 01:00 PM  |                            | Max. Marks: 70  |
| Instruct            | ions: 1  | ) Q. No. 1 is compulsory and sho   | ould b                     | e solved in first 30 minutes in answer                              |
|                     | 2  | book.<br>2) Do not use pen to draw and lab<br>3) Figures to the right indicate full  | el the<br>mark             | e diagrams.<br>s.   |
|                     |  | MCQ/Objective Ty   | vpe C                      | Questions   |
| Duration            | i: 30 Mi   | nutes  |                            | Marks: 14   |
| Q.1 Cł<br>1)        | noose f<br>The<br>i)<br>ii)<br>iii)<br>iv)<br>a)<br>c) | the correct alternatives from the<br>purpose of refreshing the CRT is<br>To avoid flickering<br>To maintain steady picture<br>To avoid fading of pixels<br>None of the above<br>I and iii<br>iii, and ii | e opt<br>s<br>b)<br>d)     | ions. 14<br><br>Iv<br>i,ii,iii                                      |
| 2)                  | The<br>CR<br>i)<br>ii)<br>iii)<br>iv)<br>a)<br>c)      | e element primarily responsible fo<br>T is<br>Sulphur<br>Zinc<br>Phosphorus<br>Neon<br>only Sulphur<br>phosphorus and sulphur  | b)<br>d)                   | tting visible light in a Refresh<br>only Phosphorus<br>only neon    |
| 3)                  | plai<br>a)<br>c)                                       | is repositioning the coordination is repositioning the coordination by making an angle with the at Combined transformation Scaling   | ates a<br>xes.<br>b)<br>d) | llong a circular path, in the x-y<br>Rotation<br>Translation        |
| 4)                  | Two<br>per<br>a)<br>c)                                 | b basic technique used for product<br>netration technique and<br>Front dark technique<br>Ray penetration technique   | cing c<br>b)<br>d)         | olor display are Beam<br>Shadow mask technique<br>None of the above |
| 5)                  | Edę<br>a)<br>c)  | ge fill algorithm uses proce<br>Iterative process<br>Non recursive process   | ess.<br>b)<br>d)           | Recursive process<br>None of the above                              |
| 6)                  | The<br>a)<br>c)  | e algorithm used for filling the inte<br>Flood fill algorithm<br>Scan line polygon fill algorithm  | rior o<br>b)<br>d)         | f a polygon is called<br>Boundary fill algorithm<br>None of these   |

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019

Page **1** of **12** 

**SLR-FM-709** 

Set P

|     |  |  | Set   |
|-----|--|--|---|
| 7)  | Identify the odd one out from the fol<br>a) Frame Buffer<br>c) Display program   | lowing<br>b)<br>d)                               | g<br>Pixmap<br>Refresh Buffer   |
| 8)  | <ul><li>Z- Buffer algorithm is developed by</li><li>a) Go Che Leong</li><li>c) Cohen</li></ul>   | b)<br>d)   | <br>Warnock<br>Catmull  |
| 9)  | <ul> <li>The problems of hidden surface are</li> <li>a) Removal of hidden surface</li> <li>b) Identification of hidden surface</li> <li>c) Both a &amp; b</li> <li>d) None of these</li> </ul>   |  |   |
| 10) | Medical applications of computer gr<br>a) Picture enhancements<br>c) Simulation of operation   | aphic<br>b)<br>d)                                | s are<br>Tomography<br>All of the above   |
| 11) | is a flexible strip that is used   | l to pr  | oduce smooth curve using a set  |
|     | of point.<br>a) Spline<br>c) Depth-sorting method  | b)<br>d)   | Scan-line method<br>None of these   |
| 12) | <ul> <li>Identify the incorrect matching pair (1)</li> <li>Jaggies = Line with stair step a</li> <li>ii) Pixel = Shortened forms of pic</li> <li>iii) Persistence = time taken for the decay two tenth of its original i</li> <li>iv) Frame buffer = Picture definition</li> <li>a) All are correctly matched</li> <li>c) i and iii</li> </ul> | appea<br>ture e<br>ntensi<br>on is s<br>b)<br>d) | <br>rance<br>lement<br>tted light from the screen to<br>ity<br>stored in a memory area<br>only iv<br>only iii |
| 13) | Two dimensional color model are _<br>a) RGB and CMKY<br>c) RGB and CMYK  | b)<br>d)   | RBG and CYMK<br>None  |
| 14) | Several graphics image file formats  | that a   | are used by most of graphics  |

- system are \_\_\_\_\_. a) GIF c) TIFF
- JPEG b)
- d) All of these

Ρ

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology COMPUTER GRAPHICS

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Do not use pen to draw and label the diagrams.

# Section – I

# Q.2 Attempt any four.

- a) Short Note on Color Models.
- **b)** Short Note on 3D transformation with matrix equation.
- **c)** What is DDA? Consider a line AB with A= (0,0) and B (-7,-7). Apply a simple DDA Algorithm and calculate the pixels on the line.
- d) Short Note: Scan converting polygon.
- e) Define Reflection; consider a point (2, 3) in coordinate plane. Apply the reflection matrix to the point P (2,3) through y axis and draw the same.

# Q.3 Attempt any two

- a) Compare and differentiate with diagram: Edge fill and Seed Fill procedures.
- **b)** Explain 2D:
  - 1) Translation
  - 2) Rotation
  - 3) Scaling with matrix and diagram
- c) Define and write the matrix equation for 3D Rotation, reflection, shearing with diagram.

# Section – II

# Q.4 Attempt any four.

- a) Elaborate in detail Bezier curve and its properties with diagram.
- b) Short Note: Segmented File Display
- c) Short Note : Anti aliasing and Half toning
- d) Define multimedia and elements and need of multimedia.
- e) What is windowing? Explain Viewing transformation.

# Q.5 Attempt any two.

- a) Short Note:
  - 1) GIF
  - 2) JPEG
- **b)** What is clipping? Explain working of Sutherland Cohen line clipping algorithm in detail.
- c) Elaborate Z- Buffer Algorithm with diagram.

Set P

Max. Marks: 56

SLR-FM-709

# 12

16

16

|             |                  | S.E   | E. (Part – I) (Old) (CGPA) Ex<br>Information Te<br>COMPUTER G  | kami<br>echn<br>GRAF                                   | ination Nov/Dec-2019<br>ology<br>PHICS   |       |
|-------------|------------------|---|--|--|--|-------|
| Day<br>Time | & Date<br>: 10:0 | e: Tu<br>0 AN                               | iesday,17-12-2019<br>/ To 01:00 PM   |  | Max. Marks   | s: 70 |
| Instr       | uctior           | າ <b>ຣ:</b> 1<br>2                          | <ol> <li>Q. No. 1 is compulsory and sho<br/>book.</li> <li>Do not use pen to draw and lab</li> </ol>   | ould b<br>bel the                                      | e solved in first 30 minutes in ans<br>e diagrams.   | wer   |
|             |                  | 3   | 3) Figures to the right indicate full  | mark   | íS.  |       |
| Dura        | tion 2           | 0.14  | MCQ/Objective Ty   | vpe (  | Questions  | o. 11 |
| Dura        |                  |   |  |  | INIAI KS   | 5. 14 |
| Q.1         | 2000<br>1)       | ' ose<br>  -7                               | the correct alternatives from th<br>Buffer algorithm is developed by   | e opi  | tions.   | 14    |
|             | 1)               | a)<br>c)                                    | Go Che Leong<br>Cohen  | b)<br>d)   | <br>Warnock<br>Catmull   |       |
|             | 2)               | The<br>a)<br>b)<br>c)<br>d)                 | e problems of hidden surface are<br>Removal of hidden surface<br>Identification of hidden surface<br>Both a & b<br>None of these   |  | <br>_  |       |
|             | 3)               | Ме  | dical applications of computer gra   | aphic  | s are  |       |
|             |                  | a)  | Picture enhancements   | b)   | Tomography   |       |
|             |                  | C)  |  | u)   |  |       |
|             | 4)               |   | is a flexible strip that is used   | to pro   | bauce smooth curve using a set   |       |
|             |                  | a)  | Spline   | b)   | Scan-line method   |       |
|             |                  | c)  | Depth-sorting method   | d)   | None of these  |       |
|             | 5)               | Ide<br>i)<br>ii)<br>iii)<br>iv)<br>a)<br>c) | ntify the incorrect matching pair _<br>Jaggies = Line with stair step a<br>Pixel = Shortened forms of pict<br>Persistence = time taken for the<br>decay two tenth of its original in<br>Frame buffer = Picture definitio<br>All are correctly matched<br>i and iii | ppea<br>ure e<br>e emi<br>atensi<br>n is s<br>b)<br>d) | <br>rance<br>lement<br>tted light from the screen to<br>ity<br>tored in a memory area<br>only iv<br>only iii |       |
|             | 6)               | Tw<br>a)<br>c)                              | o dimensional color model are<br>RGB and CMKY<br>RGB and CMYK  | b)<br>d)   | RBG and CYMK<br>None   |       |
|             | 7)               | Sev<br>sys<br>a)                            | veral graphics image file formats<br>tem are<br>GIF  | that a<br>b)   | JPEG   |       |

Page **4** of **12** 

**SLR-FM-709** 

# Seat

No.

c) TIFF d) All of these Set Q

|     |  |                     | Set Q   |
|-----|--|---------------------|---|
| 8)  | <ul> <li>The purpose of refreshing the CRT i</li> <li>i) To avoid flickering</li> <li>ii) To maintain steady picture</li> <li>iii) To avoid fading of pixels</li> <li>iv) None of the above</li> <li>a) I and iii</li> <li>c) iii, and ii</li> </ul> | b)<br>d)            | lv<br>i,ii,iii  |
| 9)  | The element primarily responsible for<br>CRT is<br>i) Sulphur<br>ii) Zinc<br>iii) Phosphorus<br>iv) Neon<br>a) only Sulphur<br>c) phosphorus and sulphur   | b)                  | tting visible light in a Refresh<br>only Phosphorus               |
| 10) | is repositioning the coordina<br>plane by making an angle with the a   | ates a<br>xes.      | along a circular path, in the x-y                                 |
|     | c) Scaling   | d)                  | Translation   |
| 11) | Two basic technique used for produ<br>penetration technique and<br>a) Front dark technique   | cing c<br>b)        | olor display are Beam<br>Shadow mask technique                    |
| 12) | Edge fill algorithm uses proce   | a)<br>ess.          | None of the above   |
| ,   | <ul><li>a) Iterative process</li><li>c) Non recursive process</li></ul>  | b)<br>d)            | Recursive process<br>None of the above                            |
| 13) | <ul><li>The algorithm used for filling the interaction</li><li>a) Flood fill algorithm</li><li>c) Scan line polygon fill algorithm</li></ul>   | erior o<br>b)<br>d) | f a polygon is called<br>Boundary fill algorithm<br>None of these |
| 14) | Identify the odd one out from the foll<br>a) Frame Buffer  | owing<br>b)         | )<br>Pixmap<br>Defreeb Duffer                                     |

c) Display program d) Refresh Buffer

**SLR-FM-709** 

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology COMPUTER GRAPHICS

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Do not use pen to draw and label the diagrams.

# Section – I

# Q.2 Attempt any four.

- a) Short Note on Color Models.
- **b)** Short Note on 3D transformation with matrix equation.
- **c)** What is DDA? Consider a line AB with A= (0,0) and B (-7,-7). Apply a simple DDA Algorithm and calculate the pixels on the line.
- d) Short Note: Scan converting polygon.
- e) Define Reflection; consider a point (2, 3) in coordinate plane. Apply the reflection matrix to the point P (2,3) through y axis and draw the same.

# Q.3 Attempt any two

- a) Compare and differentiate with diagram: Edge fill and Seed Fill procedures.
- **b)** Explain 2D:
  - 1) Translation
  - 2) Rotation
  - 3) Scaling with matrix and diagram
- c) Define and write the matrix equation for 3D Rotation, reflection, shearing with diagram.

# Section – II

# Q.4 Attempt any four.

- a) Elaborate in detail Bezier curve and its properties with diagram.
- b) Short Note: Segmented File Display
- c) Short Note : Anti aliasing and Half toning
- d) Define multimedia and elements and need of multimedia.
- e) What is windowing? Explain Viewing transformation.

# Q.5 Attempt any two.

- a) Short Note:
  - 1) GIF
  - 2) JPEG
- **b)** What is clipping? Explain working of Sutherland Cohen line clipping algorithm in detail.
- c) Elaborate Z- Buffer Algorithm with diagram.

SLR-FM-709

Max. Marks: 56

16

12



16

|               |                   | S.E. (Part – I) (Old) (CGPA) E<br>Information T<br>COMPUTER C   | xami<br>echn<br>≩RAF                            | nation Nov/Dec-2019<br>ology<br>PHICS   |    |
|---------------|-------------------|---|---|---|----|
| Day a<br>Time | & Date<br>: 10:00 | e: Tuesday,17-12-2019<br>0 AM To 01:00 PM   |   | Max. Marks:   | 70 |
| Instr         | uctior            | <ul> <li>ns: 1) Q. No. 1 is compulsory and sho<br/>book.</li> <li>2) Do not use pen to draw and lat</li> <li>3) Figures to the right indicate full</li> </ul>   | ould b<br>oel the                               | e solved in first 30 minutes in answe<br>e diagrams.                                | r  |
|               |                   |   | vne (   | )<br>Jugetione  |    |
| Dura          | tion: 3           | 0 Minutes   | /pc d   | Marks:  | 14 |
| Q.1           | <b>Choo</b><br>1) | bse the correct alternatives from the<br>Edge fill algorithm uses proce<br>a) Iterative process<br>c) Non recursive process   | <b>ie opt</b><br>∋ss.<br>b)<br>d)               | ions.<br>Recursive process<br>None of the above                                     | 14 |
|               | 2)                | The algorithm used for filling the interal<br>a) Flood fill algorithm<br>c) Scan line polygon fill algorithm  | rior o<br>b)<br>d)                              | f a polygon is called<br>Boundary fill algorithm<br>None of these                   |    |
|               | 3)                | Identify the odd one out from the fol<br>a) Frame Buffer<br>c) Display program  | lowing<br>b)<br>d)                              | I<br>Pixmap<br>Refresh Buffer   |    |
|               | 4)                | <ul><li>Z- Buffer algorithm is developed by</li><li>a) Go Che Leong</li><li>c) Cohen</li></ul>  | b)<br>d)  | Warnock<br>Catmull  |    |
|               | 5)                | <ul> <li>The problems of hidden surface are</li> <li>a) Removal of hidden surface</li> <li>b) Identification of hidden surface</li> <li>c) Both a &amp; b</li> <li>d) None of these</li> </ul>  |   |   |    |
|               | 6)                | Medical applications of computer gra<br>a) Picture enhancements<br>c) Simulation of operation   | aphics<br>b)<br>d)                              | are<br>Tomography<br>All of the above   |    |
|               | 7)                | <ul> <li> is a flexible strip that is used of point.</li> <li>a) Spline</li> <li>c) Depth-sorting method</li> </ul>   | to pro<br>b)<br>d)                              | oduce smooth curve using a set<br>Scan-line method<br>None of these                 |    |
|               | 8)                | <ul> <li>Identify the incorrect matching pair</li> <li>i) Jaggies = Line with stair step a</li> <li>ii) Pixel = Shortened forms of pict</li> <li>iii) Persistence = time taken for th</li> <li>decay two tenth of its original in</li> <li>iv) Frame buffer = Picture definition</li> </ul> | ippear<br>ure el<br>e emit<br>ntensi<br>on is s | <br>rance<br>ement<br>tted light from the screen to<br>ty<br>tored in a memory area |    |

b)

d)

only iv

only iii

All are correctly matched

a)

C)

i and iii

# Seat No.

# **SLR-FM-709**

Set R

|     |  |                        | SLR-FM-709   |
|-----|--|------------------------|--|
|     |  |                        | Set R  |
| 9)  | Two dimensional color model are _<br>a) RGB and CMKY<br>c) RGB and CMYK  | b)<br>d)               | RBG and CYMK<br>None   |
| 10) | Several graphics image file formats system are<br>a) GIF   | s that a               | are used by most of graphics                                 |
|     | c) TIFF  | d)                     | All of these   |
| 11) | <ul> <li>The purpose of refreshing the CRT</li> <li>i) To avoid flickering</li> <li>ii) To maintain steady picture</li> <li>iii) To avoid fading of pixels</li> <li>iv) None of the above</li> <li>a) I and iii</li> <li>c) iii, and ii</li> </ul> | b)<br>d)               | <br>I∨<br>i,ii,iii   |
| 12) | The element primarily responsible f<br>CRT is<br>i) Sulphur<br>ii) Zinc<br>iii) Phosphorus<br>iv) Neon<br>a) only Sulphur<br>c) phosphorus and sulphur   | for em                 | only Phosphorus  |
| 13) | <ul> <li> is repositioning the coordir</li> <li>plane by making an angle with the</li> <li>a) Combined transformation</li> <li>c) Scaling</li> </ul>   | ates axes.<br>b)<br>d) | along a circular path, in the x-y<br>Rotation<br>Translation |
| 14) | Two basic technique used for produce produce produce and   | ucing (                | color display are Beam                                       |

- a) Front dark techniquec) Ray penetration technique
- Shadow mask technique None of the above b)
- d)

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology COMPUTER GRAPHICS

Day & Date: Tuesday,17-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Do not use pen to draw and label the diagrams.

# Section – I

# Q.2 Attempt any four.

- a) Short Note on Color Models.
- **b)** Short Note on 3D transformation with matrix equation.
- **c)** What is DDA? Consider a line AB with A= (0,0) and B (-7,-7). Apply a simple DDA Algorithm and calculate the pixels on the line.
- d) Short Note: Scan converting polygon.
- e) Define Reflection; consider a point (2, 3) in coordinate plane. Apply the reflection matrix to the point P (2,3) through y axis and draw the same.

# Q.3 Attempt any two

- a) Compare and differentiate with diagram: Edge fill and Seed Fill procedures.
- **b)** Explain 2D:
  - 1) Translation
  - 2) Rotation
  - 3) Scaling with matrix and diagram
- c) Define and write the matrix equation for 3D Rotation, reflection, shearing with diagram.

# Section – II

# Q.4 Attempt any four.

- a) Elaborate in detail Bezier curve and its properties with diagram.
- b) Short Note: Segmented File Display
- c) Short Note : Anti aliasing and Half toning
- d) Define multimedia and elements and need of multimedia.
- e) What is windowing? Explain Viewing transformation.

# Q.5 Attempt any two.

- a) Short Note:
  - 1) GIF
  - 2) JPEG
- **b)** What is clipping? Explain working of Sutherland Cohen line clipping algorithm in detail.
- c) Elaborate Z- Buffer Algorithm with diagram.

SLR-FM-709



Max. Marks: 56

16

12

16

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **COMPUTER GRAPHICS** 

Day & Date: Tuesday, 17-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Do not use pen to draw and label the diagrams.
- 3) Figures to the right indicate full marks.

# MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options.

- 1) Medical applications of computer graphics are Tomography b)
  - a) Picture enhancements c)
    - Simulation of operation d) All of the above
- 2) is a flexible strip that is used to produce smooth curve using a set of point.
  - a) Spline Scan-line method b) c) Depth-sorting method d) None of these
- 3) Identify the incorrect matching pair .
  - Jaggies = Line with stair step appearance i)
  - Pixel = Shortened forms of picture element ii)
  - Persistence = time taken for the emitted light from the screen to iii) decay two tenth of its original intensity
  - Frame buffer = Picture definition is stored in a memory area iv) only iv
  - All are correctly matched a) b)
  - i and iii d) only iii c)

#### 4) Two dimensional color model are

- **RBG and CYMK** a) RGB and CMKY b)
- c) RGB and CMYK d) None
- Several graphics image file formats that are used by most of graphics 5) system are \_\_\_\_\_. a) GIF
  - JPEG b) TIFF d) All of these
- 6) The purpose of refreshing the CRT is \_\_\_\_\_.
  - To avoid flickering i)
  - To maintain steady picture ii)
  - To avoid fading of pixels iii)
  - iv) None of the above
  - I and iii a)

c)

b) lv c) iii, and ii d) i,ii,iii SLR-FM-709



Max. Marks: 70

Marks: 14

7) The element primarily responsible for emitting visible light in a Refresh CRT is i) Sulphur ii) Zinc Phosphorus iii) Neon iv) a) only Sulphur b) only Phosphorus phosphorus and sulphur d) only neon c) 8) is repositioning the coordinates along a circular path, in the x-y plane by making an angle with the axes. Combined transformation a) b) Rotation Scaling d) Translation c) 9) Two basic technique used for producing color display are Beam penetration technique and Front dark technique Shadow mask technique a) b) Ray penetration technique None of the above d) C) 10) Edge fill algorithm uses \_\_\_\_\_ process. Iterative process **Recursive process** a) b) Non recursive process None of the above c) d) 11) The algorithm used for filling the interior of a polygon is called Boundary fill algorithm Flood fill algorithm a) b) None of these Scan line polygon fill algorithm d) c) Identify the odd one out from the following 12) a) Frame Buffer Pixmap b) c) Display program d) **Refresh Buffer** Z- Buffer algorithm is developed by \_ 13) a) Go Che Leong b) Warnock c) Cohen d) Catmull The problems of hidden surface are \_\_\_\_\_ 14) Removal of hidden surface a) Identification of hidden surface b) Both a & b c)

d) None of these

**SLR-FM-709** 

Set S

# S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **COMPUTER GRAPHICS**

Day & Date: Tuesday, 17-12-2019 Time: 10:00 AM To 01:00 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Do not use pen to draw and label the diagrams.

# Section – I

#### Attempt any four. Q.2

- Short Note on Color Models. a)
- b) Short Note on 3D transformation with matrix equation.
- What is DDA? Consider a line AB with A= (0,0) and B (-7,-7). Apply a c) simple DDA Algorithm and calculate the pixels on the line.
- Short Note: Scan converting polygon. d)
- Define Reflection; consider a point (2, 3) in coordinate plane. Apply the e) reflection matrix to the point P (2,3) through y axis and draw the same.

#### Q.3 Attempt any two

- Compare and differentiate with diagram: Edge fill and Seed Fill a) procedures.
- b) Explain 2D:
  - Translation 1)
  - 2) Rotation
  - 3) Scaling with matrix and diagram
- Define and write the matrix equation for 3D Rotation, reflection, shearing c) with diagram.

# Section – II

#### Q.4 Attempt any four.

- Elaborate in detail Bezier curve and its properties with diagram. a)
- Short Note: Segmented File Display b)
- Short Note : Anti aliasing and Half toning C)
- Define multimedia and elements and need of multimedia. d)
- What is windowing? Explain Viewing transformation. e)

#### Q.5 Attempt any two.

- Short Note: a)
  - 1) GIF
  - 2) JPEG
- What is clipping? Explain working of Sutherland Cohen line clipping b) algorithm in detail.
- Elaborate Z- Buffer Algorithm with diagram. c)

Max. Marks: 56

SLR-FM-709





16

12
| Seat |  |
|------|--|
| No.  |  |

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology APPLIED MATHEMATICS - II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

- 2) Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q. P. Set (A, B, C, D) on Top of Page.
- 3) Use of non programmable calculator is allowed.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) The use of Romberg's method is \_\_\_\_
  - a) To solve simultaneous linear equations
  - b) To find root of the equation
  - c) To evaluate definite integration
  - d) To find eigen values

# As soon as a new value of a variable is found by iteration, it is used immediately in the next step, this method is called as \_\_\_\_\_. a) Gauss-Jacobi's method b) Gauss-Seidal method

- a) Gauss-Jacobi's method b c) Gauss-Jordan method d
  - d) Gauss Elimination method
- 3) When Gauss Elimination method is used to solve set of equation AX = B, matrix A is transformed to \_\_\_\_\_.
  - a) Upper triangular matrix b) Diagonal matrix
  - c) Lower triangular matrix d) Identity matrix
- 4) Truncation error in Trapezoidal rule is of order \_\_\_\_\_
  - a) h b)  $h^2$ c)  $h^3$  d)  $h^4$
- 5) The order of convergence of Regula falsi method for finding roots of equation f(x) = 0 is \_\_\_\_\_.

| a) | Second order | b) | Cubic order |
|----|--------------|----|-------------|
| c) | First order  | d) | Very slow   |

- 6) A root of the equation  $x \cos x = 0$  lies between \_\_\_\_\_ a) 1 and 2 b) 2 and 3
  - c) 0 and 1 d) -1 and 0
- 7) The Newton Raphson method fails when \_\_\_\_\_.
  - a) f'(x) is negative b) f'(x) is positive c) Never fails d) f'(x) is zero
- 8) The Multiplication of closed interval  $[-3,4] \cdot [-3,5] =$ \_\_\_\_\_. a) [-15,20] b)  $\begin{bmatrix} 1 & 1 \\ -1 \end{bmatrix}$ 
  - c) [20, -15] d) [9, 15]

Set P

Max. Marks: 70

Marks: 14

|     |   |   | Set  |
|-----|---|---|--|
| 9)  | Quantifiers of the second kind are ca<br>a) Absolute<br>c) Approximate  | alled <sub>-</sub><br>b)<br>d)            | Quantifiers<br>Relative<br>Modified  |
| 10) | Consider<br>i) $A(x) = x$ $0 \le x \le 1$<br>= 0 $owii) B(x) = \min\{1, x\} x \ge 0= 0$ $x < 0Then the fuzzy number area) Both i) and ii)$  |   | Oply ii)   |
|     | c) Only i)  | d)  | Neither i) or nor ii)  |
| 11) | <ul> <li>For any set A defined on universal set a)</li> <li>Ø</li> <li>c) A</li> </ul>  | et <i>X,</i> (<br>b)<br>d)                | $\begin{array}{c} \mathcal{D}_A = \underline{\qquad} \\ X \\ A^c \end{array}$  |
| 12) | The fuzzy sets A and B are defined a<br>$A = \frac{0.2}{x_1} + \frac{0.5}{x_2} + \frac{0.6}{x_3}$<br>$B = \frac{0.1}{x_1} + \frac{0.4}{x_2}$<br>$B = \frac{0.1}{x_1} + \frac{0.4}{x_2} + \frac{0.4}{x_2}$<br>B = | as fol<br>+ $\frac{0.5}{x_3}$<br>b)<br>d) | lows,<br>the set $A \cap B^c$ is<br>$\frac{\frac{0.2}{x_1}}{x_1} + \frac{0.5}{x_2} + \frac{0.5}{x_3}}{\frac{0.9}{x_1}} + \frac{0.6}{x_2} + \frac{0.6}{x_3}}$ |
| 13) | For the fuzzy set defined by the func<br>The scalar cardinality of t set A is<br>a) 5.2<br>c) 5.5   | tion ∡<br>b)<br>d)                        | $A(x) = 1 - \frac{x}{10}, x \in \{0, 1, 2, \dots 10\}$<br>   |
| 14) | The largest membership grade obtai called as  | ned k                                     | by an element in a fuzzy set is  |

- Support of fuzzy set Normal of fuzzy set b) a)
- c)
- Height of Fuzzy set Fuzzy number

Ρ

- d)

## SLR-FM-710 Set P

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology APPLIED MATHEMATICS - II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

| Instr | uctio   | ns: 1) Question No. 3 is compulsory in Section –I solve any two questions from<br>Q. No.2, 4, 5.  | m   |
|-------|---------|---|-----|
|       |         | 2) Question No. 6 is compulsory in Section –II solve any two questions fro  | m   |
|       |         | Q. No.7, 8, 9.<br>2) Figures to the right indicate full marks.<br>3) Use of non programmable calculator is allowed.   |     |
|       |         | Section – I   |     |
| Q.2   | a)      | Find the positive real root of the equation $e^{-x} = \sin x$ Correct to three decimal places by Regula falsi method.   | 05  |
|       | b)      | Find the positive real root of the equation $x^3 - 9x + 1 = 0$ by Bisection method.(Carry out 6 iterations)   | 04  |
|       |         | OR  | • • |
|       | b)      | Use N R method to find a positive root of $e^{0.4x} - 0.4x = 9$   | 04  |
| Q.3   | a)      | Perform two iterations of the $N - R$ method to solve non-linear equations $x^2 + y = 11$ and $y^2 - x = 7$ starting with initial conditions as $x_0 = 3.5$ ,                               | 05  |
|       | b)      | $y_0 = -1.8$<br>Solve the following equations by using factorization method.<br>x + 5y + z = 14, 2x + y + 3z = 13, 3x + y + 4z = 17   | 05  |
| Q.4   | a)      | Evaluate $\int_{a}^{1} \frac{dx}{dx}$ by using Trapezoidal Rule by taking $h = 0.2$   | 03  |
|       | ,<br>b) | Evaluate $\int_{0}^{2x+3} dx$ by doing trapezoidal rule by taking $n = 0.2$   | 06  |
|       | D)      | Use Romberg's method to evaluate $\int_0^{\infty} \frac{dx}{x^2+4} dx$ take $n=2$   | 00  |
| Q.5   | a)      | Solve the following equations by Gauss Elimination method.<br>x + 4y + 9z = 16, 2x + y + z = 10, 3x + 2y + 3z = 18  | 04  |
|       | b)      | Using Trapezoidal rule evaluate $\int_{1}^{2} \int_{3}^{4} \frac{1}{(x+y)^{2}} dx dy$ , $h = k = 0.5$   | 05  |
|       |         | Section – II  |     |
| Q.6   | a)      | State the conditions for fuzzy set to be a fuzzy number and hence<br>determine whether the following fuzzy set is a fuzzy number.<br>$C(x) = 1 \qquad 0 \le x \le b$ $= 0 \qquad otherwise$ | 04  |
|       |         | OR  |     |
|       | a)      | Prove that:<br>i) $\alpha(A \cup B) = \alpha_A \cup \alpha_B$<br>ii) $\alpha_+(A \cap B) = \alpha_{+A} \cap \alpha_{+B}$  | 04  |

Seat No.

Max. Marks: 70

|     |    |   |  |   |                              |  | SLR-                       | FM-7 | 10 |
|-----|----|---|--|---|------------------------------|--|----------------------------|------|----|
|     |    |   |  |   |                              |  |                            | Set  | Ρ  |
|     | b) | For given fuzzy numbers<br>$Where A(x) = \frac{x-2}{3}$ $= \frac{7-x}{3}$ $= 0$ $B(x) = x - 3$ $= \frac{9-x}{3}$                          | bers find<br>2<br>5<br>07<br>3   | $MIN (A, B)$ $< x \le 5$ $< x \le 7$ $therwise$ $3 < x \le 4$ $4 < x \le 9$ |                              |  |                            |      | 06 |
|     |    | =0  | 0  | therwise  |                              |  |                            |      |    |
| Q.7 | a) | For the following fuzz<br>Elements $x_1$<br>A(x) 	0.1<br>B(x) 	0.9<br>Find $S(D, A) \approx 0.4$ A  | x <sub>2</sub><br>0.6<br>0.7   | x <sub>3</sub><br>0.8<br>0.5  | x <sub>4</sub><br>0.9<br>0.2 | x <sub>5</sub><br>0.7<br>0.1           | x <sub>6</sub><br>0.1<br>0 |      | 04 |
|     | b) | Find S(B, A) & 0.4 A<br>Find A - B for the follo<br>$B(x) = \frac{x - 10}{10}$ $= \frac{35 - x}{15}$ $= 0$ $A(x) = x - 4$ $= 6 - x$ $= 0$ | by bowing m<br>10 < x<br>20 < z<br>0<br>$4 < x \le 2$<br>$5 < x \le 2$<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | embership<br>$x \le 20$<br>$x \le 35$<br>wise<br>$\le 5$<br>$\le 6$<br>vise | function:                    |  |                            |      | 05 |
| Q.8 | a) | Let A be fuzzy set de<br>membership function  | fined on $A(x) =$  | $X = \{-3, -\frac{12-x}{15} \text{ for all } x \}$                          | -2, -1, 0, 1<br>x and f(x)   | $1, 2, 3, 4, 5\}$ $) = x^2 + 2$        | by<br>is crisp             |      | 05 |
|     | b) | function for all $x \in X$<br>Calculate $\alpha$ -cuts and<br>B(x) = 0<br>$= \frac{x - 7}{3}$<br>$= \frac{13 - x}{3}$                     | then by<br>strong $a$<br>x > 13,<br>$7 < x \le$<br>10 < x  | using exter<br>x-cuts for th<br>x < 7<br>$\leq 10$<br>$\leq 13$ where       | e fuzzy se $\alpha = 0.7, 0$ | ciple find <i>f</i><br>et B,<br>0.8, 1 | r(A).                      |      | 04 |
| Q.9 | a) | Solve the fuzzy equation<br>$A(x) = x - 3$ $= 5 - x$ $= 0$ $B(x) = \frac{(x - 12)}{8}$ $= \frac{32 - x}{12}$                              | tion $A + 3 < x = 4 < x + 0$<br>4 < x + 0<br>12 < x<br>20 < 2<br>20 < 2  | $X = B wh$ $\leq 4$ $\leq 5$ vise $\leq 20$ $x \leq 32$ vise                | ere                          |  |                            |      | 05 |
|     | b) | = 0<br>Explain the concept c  | of fuzzy   | quantifiers a   | and their t                  | ypes.                                  |                            |      | 04 |

Set

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **APPLIED MATHEMATICS - II**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q. P. Set (A, B, C, D) on Top of Page.

3) Use of non programmable calculator is allowed.

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

2)

3)

C)

Seat

No.

### Choose the correct alternatives from the options and rewrite the sentence. Q.1 14

- The Multiplication of closed interval [-3,4]. [-3,5] =\_\_\_\_\_. 1)
  - $\left[\frac{1}{15}, \frac{1}{20}\right]$ a) [-15,20] b) d) [20, -15][9, 15] C) Quantifiers of the second kind are called \_ Quantifiers Relative a) Absolute b) Approximate d) Modified c) Consider
- i) A(x) = x $0 \le x \le 1$ = 0ow  $B(x) = \min\{1, x\}$  $x \ge 0$ ii) = 0*x* < 0 Then the fuzzy number are \_\_\_\_\_ b) Both i) and ii) Only ii) a) Neither i) or nor ii) C) Only i) d) 4) For any set A defined on universal set X,  $0_A =$ \_\_\_\_\_ a) Ø b) Χ d) c)  $A^{c}$ Α

The fuzzy sets A and B are defined as follows, 5)  $B = \frac{0.1}{x_1} + \frac{0.4}{x_2} + \frac{0.5}{x_3} \text{ the set } A \cap B^c \text{ is } \_\_\_\_.$ b)  $\frac{0.2}{x_1} + \frac{0.5}{x_2} + \frac{0.5}{x_3}$ d)  $\frac{0.9}{x_1} + \frac{0.6}{x_2} + \frac{0.6}{x_3}$  $A = \frac{0.2}{x_1} + \frac{0.5}{x_2} + \frac{0.6}{x_3}$ a)  $\frac{0.9}{x_1} + \frac{0.6}{x_2} + \frac{0.5}{x_3}$ c)  $\frac{0.3}{x_1} + \frac{0.9}{x_2} + \frac{0.1}{x_3}$ 

For the fuzzy set defined by the function  $A(x) = 1 - \frac{x}{10}$ ,  $x \in \{0, 1, 2, \dots, 10\}$ 6) The scalar cardinality of t set A is \_\_\_\_ b) 5.4 a) 5.2

c) 5.5 d) 5.6

### SLR-FM-710

Max. Marks: 70

Marks: 14

- c) Normal of fuzzy set d) Fuzzy number 8) The use of Romberg's method is \_\_\_\_\_ a) To solve simultaneous linear equations To find root of the equation b) To evaluate definite integration c) To find eigen values d) 9) As soon as a new value of a variable is found by iteration, it is used immediately in the next step, this method is called as Gauss-Jacobi's method Gauss-Seidal method b) a) Gauss-Jordan method d) Gauss Elimination method C) When Gauss Elimination method is used to solve set of equation AX = B, 10) matrix A is transformed to Upper triangular matrix b) **Diagonal matrix** a) Lower triangular matrix Identity matrix C) d) 11) Truncation error in Trapezoidal rule is of order  $h^2$ b) h a) h<sup>3</sup>  $h^4$ c) d) 12) The order of convergence of Regula falsi method for finding roots of equation f(x) = 0 is \_\_\_\_\_. Second order b) Cubic order a) First order d) Very slow c)
- 7) The largest membership grade obtained by an element in a fuzzy set is called as
  - Support of fuzzy set a)
- Height of Fuzzy set b)

- A root of the equation  $x \cos x = 0$  lies between \_\_\_\_ 13) 1 and 2 b) 2 and 3 a)
  - c) 0 and 1 d) -1 and 0
- 14) The Newton - Raphson method fails when \_
  - f'(x) is positive f'(x) is negative a) b) c)
    - Never fails d) f'(x) is zero

**SLR-FM-710** Set

| Seat |  |
|------|--|
| No.  |  |

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **APPLIED MATHEMATICS - II**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

| Instructions: 1) | Question No. 3 is compulsory in Section –I solve any two questions from |
|------------------|---|
|                  | Q. No.2, 4, 5.  |

- 2) Question No. 6 is compulsory in Section –II solve any two questions from Q. No.7, 8, 9.
- 2) Figures to the right indicate full marks.
- 3) Use of non programmable calculator is allowed.

### Section – I

| Q.2 | a) | Find the positive real root of the equation $e^{-x} = \sin x$ Correct to three desired places by Regula falsi method  | 05 |
|-----|----|---|----|
|     | b) | Find the positive real root of the equation $x^3 - 9x + 1 = 0$ by Bisection method. (Carry out 6 iterations)  | 04 |
|     |    | OR  |    |
|     | b) | Use N R method to find a positive root of $e^{0.4x} - 0.4 x = 9$  | 04 |
| Q.3 | a) | Perform two iterations of the $N - R$ method to solve non-linear equations $x^2 + y = 11$ and $y^2 - x = 7$ starting with initial conditions as $x_0 = 3.5$ , | 05 |
|     | b) | $y_0 = -1.8$<br>Solve the following equations by using factorization method.<br>x + 5y + z = 14,2x + y + 3z = 13,3x + y + 4z = 17                             | 05 |
| Q.4 | a) | Evaluate $\int_{a}^{1} \frac{dx}{dx}$ by using Trapezoidal Rule by taking $h = 0.2$   | 03 |
|     | b) | Use Romberg's method to evaluate $\int_0^1 \frac{dx}{x^2+4} dx$ take $n = 2$  | 06 |
| Q.5 | a) | Solve the following equations by Gauss Elimination method.<br>x + 4y + 9z = 16.2x + y + z = 10.3x + 2y + 3z = 18  | 04 |
|     | b) | Using Trapezoidal rule evaluate $\int_{1}^{2} \int_{3}^{4} \frac{1}{(x+y)^{2}} dx dy$ , $h = k = 0.5$   | 05 |
|     |    | Section – II  |    |
| Q.6 | a) | State the conditions for fuzzy set to be a fuzzy number and hence determine whether the following fuzzy set is a fuzzy number.<br>$C(x) = 1$ $0 \le x \le h$  | 04 |
|     |    | = 0 otherwise   |    |
|     |    | OR  |    |
|     | a) | Prove that:<br>i) $\alpha(A \cup B) = \alpha_A \cup \alpha_B$   | 04 |

ii)  $\alpha(A \cap B) = \alpha_{+A} \cap \alpha_{+B}$ iii)  $\alpha_+(A \cap B) = \alpha_{+A} \cap \alpha_{+B}$ 

Q

Set

Max. Marks: 70

|     |    |  |  |                              |  | SLR-                       | F <b>M-7</b> | 10 |
|-----|----|--|--|------------------------------|--|----------------------------|--------------|----|
|     |    |  |  |                              |  |                            | Set          | Q  |
|     | b) | For given fuzzy numbers find <i>M</i><br>Where $A(x) = \frac{x-2}{3}$ 2 <  | $IIN(A,B) \\ x \le 5$                            |                              |  |                            |              | 06 |
|     |    | $=\frac{7-x}{3} \qquad 5 < $   | $x \leq 7$                                       |                              |  |                            |              |    |
|     |    | B(x) = x - 3 3 <<br>9 - x  | $x \le 4$  |                              |  |                            |              |    |
|     |    | $= \frac{4}{3}$ $= 0 \qquad otherwise of the second s$ | < x ≤ 9<br>erwise                                |                              |  |                            |              |    |
| Q.7 | a) | For the following fuzzy sets<br>Elements $x_1$ $x_2$<br>A(x) 0.1 0.6<br>B(x) 0.9 0.7<br>Eind S(B, A) & 0.4 A $\circ$ B   | <i>x</i> <sub>3</sub><br>0.8<br>0.5              | x <sub>4</sub><br>0.9<br>0.2 | x <sub>5</sub><br>0.7<br>0.1               | x <sub>6</sub><br>0.1<br>0 |              | 04 |
|     | b) | Find S(B, A) & 0.4 ATTB<br>Find A - B for the following mer<br>$B(x) = \frac{x - 10}{10} \qquad 10 < x \le \frac{35 - x}{20} < x \le \frac{20}{10} < x \le \frac{10}{10}$  | nbership<br>20<br>< 35                           | function:                    |  |                            |              | 05 |
|     |    | $ \begin{array}{c} 15 \\ = 0 \\ A(x) = x - 4 \\ = 6 - x \\ = 0 \end{array} \begin{array}{c} 20 < x \\ otherwi \\ 4 < x \leq 1 \\ 5 < x \leq 1 \\ 0 \\ otherwis \end{array} $   | se<br>5<br>6<br>5                                |                              |  |                            |              |    |
| Q.8 | a) | Let A be fuzzy set defined on X<br>membership function $A(x) = \frac{12}{1}$   | $\frac{1}{5} = \{-3, -\frac{1}{5}\}$ for all $z$ | -2, -1, 0, 1<br>x and $f(x)$ | $x_{1}, 2, 3, 4, 5$<br>$x_{2} = x^{2} + 2$ | by<br>is crisp             |              | 05 |
|     | b) | Calculate $\alpha$ -cuts and strong $\alpha$ -c<br>$B(x) = 0$ $x > 13, x = \frac{x - 7}{3}$ $7 < x \le 1$<br>$= \frac{13 - x}{3}$ $10 < x \le 1$   | cuts for th<br>< 7<br>.0<br>13 where             | e fuzzy se $\alpha = 0.7, 0$ | ).8, 1                                     | (A).                       |              | 04 |
| Q.9 | a) | Solve the fuzzy equation $A + A$<br>$A(x) = x - 3  3 < x \le 4$<br>= 5 - x  4 < x < 5<br>= 0  otherwise<br>$B(x) = \frac{(x - 12)}{8}  12 < x \le 5$<br>$= \frac{32 - x}{12}  20 < x \le 5$  | $X = B wh$ $4$ $5$ $e$ $20$ $\leq 32$            | ere                          |  |                            |              | 05 |
|     | b) | = 0 otherwi<br>Explain the concept of fuzzy qu   | se<br>antifiers a                                | and their ty                 | /pes.                                      |                            |              | 04 |

Seat

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **APPLIED MATHEMATICS - II**

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q. P. Set (A, B, C, D) on Top of Page.

3) Use of non programmable calculator is allowed.

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 1) The order of convergence of Regula falsi method for finding roots of 14

ots of

| 1) | equ                                 | ation $f(x) = 0$ is   | la taisi                        | Cubic order   |
|----|-------------------------------------|---|---------------------------------|---|
|    | a)<br>c)                            | First order   | d)                              | Very slow   |
| 2) | A ro<br>a)<br>c)                    | bot of the equation $x - \cos x =$<br>1 and 2<br>0 and 1  | 0 lies<br>b)<br>d)              | between<br>2 and 3<br>-1 and 0                              |
| 3) | The<br>a)<br>c)                     | Newton - Raphson method fai $f'(x)$ is negative Never fails   | ls wher<br>b)<br>d)             | f'(x) is positive $f'(x)$ is zero                           |
| 4) | The<br>a)                           | Multiplication of closed interva [-15,20]   | l [-3,4]<br>b)                  | $[.[-3,5] = \$<br>$\left[\frac{1}{15}, \frac{1}{20}\right]$ |
|    | c)                                  | [20, -15]   | d)                              | [9, 15]   |
| 5) | Qua<br>a)<br>c)                     | antifiers of the second kind are<br>Absolute<br>Approximate   | called <sub>-</sub><br>b)<br>d) | Quantifiers<br>Relative<br>Modified                         |
| 6) | Cor<br>i)<br>ii)<br>The<br>a)<br>c) | nsider<br>$A(x) = x 	 0 \le x \le 1$ $= 0 	 ow$ $B(x) = \min\{1, x\} 	 x \ge 0$ $= 0 	 x < 0$ en the fuzzy number are<br>Both i) and ii)<br>Only i) | <br>b)<br>d)                    | Only ii)<br>Neither i) or nor ii)                           |
| 7) | For<br>a)<br>c)                     | any set A defined on universal<br>Ø<br>A  | set <i>X</i> , (<br>b)<br>d)    | $D_A = \underline{\qquad}.$ $X$ $A^c$                       |
|    |                                     |   |                                 |   |

# No.

Max. Marks: 70

Marks: 14

Set

Set

**SLR-FM-710** 

8) The fuzzy sets A and B are defined as follows,

 $B = \frac{0.1}{x_1} + \frac{0.4}{x_2} + \frac{0.5}{x_3} \text{ the set } A \cap B^c \text{ is } \_\_\_\_.$ b)  $\frac{0.2}{x_1} + \frac{0.5}{x_2} + \frac{0.5}{x_3}$ d)  $\frac{0.9}{x_1} + \frac{0.6}{x_2} + \frac{0.6}{x_3}$  $A = \frac{0.2}{x_1} + \frac{0.5}{x_2} + \frac{0.6}{x_3}$ a)  $\frac{0.9}{x_1} + \frac{0.6}{x_2} + \frac{0.5}{x_3}$ c)  $\frac{0.3}{x_1} + \frac{0.9}{x_2} + \frac{0.1}{x_3}$ 

For the fuzzy set defined by the function  $A(x) = 1 - \frac{x}{10}$ ,  $x \in \{0, 1, 2, \dots, 10\}$ 9) The scalar cardinality of t set A is

- 5.4 b) a) 5.2 5.5 d) 5.6 C)
- 10) The largest membership grade obtained by an element in a fuzzy set is called as
  - a) Support of fuzzy set
- b) Height of Fuzzy set
- c) Normal of fuzzy set
- Fuzzy number d)
- 11) The use of Romberg's method is
  - To solve simultaneous linear equations a)
  - To find root of the equation b)
  - To evaluate definite integration c)
  - To find eigen values d)

### 12) As soon as a new value of a variable is found by iteration, it is used immediately in the next step, this method is called as

- Gauss-Jacobi's method a)
  - Gauss-Seidal method b) Gauss Elimination method
- Gauss-Jordan method d) c)
- When Gauss Elimination method is used to solve set of equation AX = B, 13) matrix A is transformed to \_
  - Upper triangular matrix a) b) **Diagonal matrix**
  - Lower triangular matrix d) Identity matrix c)
- Truncation error in Trapezoidal rule is of order \_\_\_\_\_ 14) h<sup>2</sup> h b) a) d)
  - h<sup>3</sup> c)

 $h^4$ 

| Seat |  |
|------|--|
| No.  |  |

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology APPLIED MATHEMATICS - II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

| Instructions: 1) | Question No. 3 is compulsory in Section –I solve any two questions from |
|------------------|---|
|                  | Q. No.2, 4, 5.  |

- 2) Question No. 6 is compulsory in Section –II solve any two questions from Q. No.7, 8, 9.
- 2) Figures to the right indicate full marks.
- 3) Use of non programmable calculator is allowed.

### Section – I

| Q.2 | a) | Find the positive real root of the equation $e^{-x} = \sin x$ Correct to three desired places by Regula falsi method  | 05 |  |  |  |  |
|-----|----|---|----|--|--|--|--|
|     | b) | Find the positive real root of the equation $x^3 - 9x + 1 = 0$ by Bisection method. (Carry out 6 iterations)  | 04 |  |  |  |  |
|     |    | OR  |    |  |  |  |  |
|     | b) | Use <i>N R</i> method to find a positive root of $e^{0.4x} - 0.4x = 9$  | 04 |  |  |  |  |
| Q.3 | a) | Perform two iterations of the $N - R$ method to solve non-linear equations $x^2 + y = 11$ and $y^2 - x = 7$ starting with initial conditions as $x_0 = 3.5$ , | 05 |  |  |  |  |
|     | b) | $y_0 = -1.8$<br>Solve the following equations by using factorization method.<br>x + 5y + z = 14,2x + y + 3z = 13,3x + y + 4z = 17                             | 05 |  |  |  |  |
| Q.4 | a) | <b>a)</b> Evaluate $\int_{-\infty}^{1} \frac{dx}{dx}$ by using Trapezoidal Rule by taking $h = 0.2$   |    |  |  |  |  |
|     | b) | Lise Romberg's method to evaluate $\int_{1}^{1} \frac{dx}{dx} dx$ take $n = 2$  | 06 |  |  |  |  |
|     |    | Use nonderg simethod to evaluate $\int_0^1 \frac{1}{x^2+4} dx$ take $n = 2$   |    |  |  |  |  |
| Q.5 | a) | Solve the following equations by Gauss Elimination method.  | 04 |  |  |  |  |
|     | b) | x + 4y + 9z = 16, 2x + y + z = 10, 3x + 2y + 3z = 18<br>Using Trapezoidal rule evaluate $\int_{1}^{2} \int_{3}^{4} \frac{1}{(x+y)^{2}} dx dy, h = k = 0.5$    | 05 |  |  |  |  |
|     |    | Section – II  |    |  |  |  |  |
| Q.6 | a) | State the conditions for fuzzy set to be a fuzzy number and hence determine whether the following fuzzy set is a fuzzy number.                                | 04 |  |  |  |  |
|     |    | $C(x) = 1 \qquad 0 \le x \le b$   |    |  |  |  |  |
|     |    | = 0 otherwise   |    |  |  |  |  |
|     | a) | Prove that:   | 04 |  |  |  |  |
|     | aj | i) $\alpha(A \cup B) = \alpha_A \cup \alpha_B$  | νŦ |  |  |  |  |
|     |    | $\eta = \eta =$   |    |  |  |  |  |

ii)  $\alpha_+(A \cap B) = \alpha_{+A} \cap \alpha_{+B}$ 

Max. Marks: 70

Set R

|     |    |   |  |  |   |                                       | SLR-                       | FM-7 | 10 |
|-----|----|---|--|--|---|---------------------------------------|----------------------------|------|----|
|     |    |   |  |  |   |                                       |                            | Set  | R  |
|     | b) | For given fuzzy numbers<br>$Where A(x) = \frac{x-2}{3}$ $= \frac{7-x}{3}$ $= 0$ $B(x) = x-3$ $= \frac{9-x}{3}$                            | bers find<br>2<br>5<br><i>ot</i><br>3<br>4   | $MIN (A, B)$ $< x \le 5$ $< x \le 7$ $herwise$ $< x \le 4$ $< x \le 9$ $herwise = 5$ |   |                                       |                            |      | 06 |
| Q.7 | a) | For the following fuzz<br>Elements $x_1$<br>A(x) = 0.1<br>B(x) = 0.9<br>Find S(P, A) & 0.4 A  | xy sets<br>x <sub>2</sub><br>0.6<br>0.7  | x <sub>3</sub><br>0.8<br>0.5   | x <sub>4</sub><br>0.9<br>0.2                      | x <sub>5</sub><br>0.7<br>0.1          | x <sub>6</sub><br>0.1<br>0 |      | 04 |
|     | b) | Find S(B, A) & 0.4 A<br>Find A - B for the follo<br>$B(x) = \frac{x - 10}{10}$ $= \frac{35 - x}{15}$ $= 0$ $A(x) = x - 4$ $= 6 - x$ $= 0$ | by by by the formula | embership<br>$\leq 20$<br>$\leq 35$<br>vise<br>$\leq 5$<br>$\leq 6$<br>vise          | function:   |                                       |                            |      | 05 |
| Q.8 | a) | Let A be fuzzy set de membership function   | fined on $A(x) = \frac{1}{2}$  | $X = \{-3, \frac{12-x}{15} \text{ for all } \}$                                      | -2, -1, 0, 1<br>x and f(x)                        | [1, 2, 3, 4, 5]<br>$x^2 + 2$          | by<br>is crisp             |      | 05 |
|     | b) | function for all $x \in X$<br>Calculate $\alpha$ -cuts and<br>B(x) = 0<br>$= \frac{x - 7}{3}$<br>$= \frac{13 - x}{3}$                     | then by $x$<br>strong $\alpha$<br>x > 13, x<br>$7 < x \le$<br>10 < x   | using exter<br>-cuts for th<br>c < 7<br>10<br>$\leq 13$ wher                         | nsion princ<br>ne fuzzy se<br>e $\alpha = 0.7, 0$ | iple find <i>f</i><br>et B,<br>).8, 1 | r(A).                      |      | 04 |
| Q.9 | a) | Solve the fuzzy equation<br>$A(x) = x - 3$ $= 5 - x$ $= 0$ $B(x) = \frac{(x - 12)}{8}$ $= \frac{32 - x}{12}$ $= 0$                        | $\begin{array}{l} \text{tion } A + \\ 3 < x \leq \\ 4 < x < \\ otherw \\ 12 < x \\ 20 < x \\ \text{otherw} \end{array}$  | $X = B wh$ $\leq 4$ $\leq 5$ ise $\leq 20$ $\leq 32$ vise                            | iere  |                                       |                            |      | 05 |
|     | b) | = 0<br>Explain the concept of   | otnerw<br>of fuzzy c   | uantifiers   | and their ty                                      | ypes.                                 |                            |      | 04 |

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

**APPLIED MATHEMATICS - II** 

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q. P. Set (A, B, C, D) on Top of Page.

3) Use of non programmable calculator is allowed.

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat

No.

| Q 1      | Choose the correct alternatives from the options and rewrite the sentence | 14 |
|----------|---|----|
| <b>A</b> |   |    |

| 1) | Cor | nsider         |
|----|-----|----------------|
| -  | i)  | $\Lambda(x) =$ |

|    | i) $A(x) = x$ $0 \le x \le 1$  |                                |   |
|----|--|--------------------------------|---|
|    | ii) $B(x) = 0  ow \\ min\{1, x\}  x \ge 0 \\ min\{1, x\}  x < 0$                                       |                                |   |
|    | = 0 $x < 0Then the fuzzy number are$   |                                |   |
|    | a) Both i) and ii)   | b)                             | Only ii)  |
|    | c) Only i)   | d)                             | Neither i) or nor ii)                                   |
| 2) | For any set A defined on universal   | set X,                         | 0 <sub>4</sub> =  |
| ,  | a) Ø   | b)                             | X   |
|    | c) <i>A</i>  | d)                             | A <sup>c</sup>  |
| 3) | The fuzzy sets A and B are defined   | as fo                          | llows,  |
|    | $A = \frac{0.2}{0.2} + \frac{0.5}{0.5} + \frac{0.6}{0.6} \qquad B = \frac{0.1}{0.1} + \frac{0.6}{0.1}$ | $\frac{.4}{-} + \frac{0.5}{-}$ | the set $A \cap B^c$ is                                 |
|    | <b>a)</b> $\begin{array}{cccccccccccccccccccccccccccccccccccc$   | $x_3$                          | 0.2 0.5 0.5   |
|    | $x_{1} - \frac{x_{1}}{x_{1}} + \frac{x_{2}}{x_{2}} + \frac{x_{3}}{x_{3}}$                              | 0)                             | $\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3}$         |
|    | c) $\frac{0.3}{r_1} + \frac{0.9}{r_2} + \frac{0.1}{r_2}$   | d)                             | $\frac{0.9}{r_1} + \frac{0.6}{r_2} + \frac{0.6}{r_2}$   |
| 4) |  |                                | $\begin{array}{c} x_1 \\ x_2 \\ x_3 \end{array}$        |
| 4) | For the fuzzy set defined by the fur   | nction .                       | $A(x) = 1 - \frac{1}{10}, x \in \{0, 1, 2, \dots, 10\}$ |
|    | The scalar cardinality of t set A is _   |                                | ·   |
|    | a) 5.2   | b)                             | 5.4   |
|    | C) 5.5   | a)                             | 5.6   |
| 5) | The largest membership grade obtact called as  | ained                          | by an element in a fuzzy set is                         |
|    | <ul> <li>Support of fuzzy set</li> </ul>   | b)                             | Height of Fuzzy set                                     |

d)

Fuzzy number

6) The use of Romberg's method is \_\_\_\_\_

Normal of fuzzy set

C)

- a) To solve simultaneous linear equations
- b) To find root of the equation
- c) To evaluate definite integration
- d) To find eigen values

Max. Marks: 70

Marks: 14

Set S

|     |                                   |   |                                 | <b>SLR-FM-710</b>   |
|-----|-----------------------------------|---|---------------------------------|---|
|     |                                   |   |                                 | Set S   |
| 7)  | As<br>imn<br>a)<br>c)             | soon as a new value of a variab<br>nediately in the next step, this m<br>Gauss-Jacobi's method<br>Gauss-Jordan method | ole is fo<br>nethod<br>b)<br>d) | und by iteration, it is used<br>is called as<br>Gauss-Seidal method<br>Gauss Elimination method |
| 8)  | Wh<br>ma <sup>:</sup><br>a)<br>c) | en Gauss Elimination method is<br>trix A is transformed to<br>Upper triangular matrix<br>Lower triangular matrix      | b)<br>d)                        | o solve set of equation AX = B,<br>Diagonal matrix<br>Identity matrix                           |
| 9)  | Tru<br>a)<br>c)                   | ncation error in Trapezoidal rule<br>h<br>h <sup>3</sup>  | e is of o<br>b)<br>d)           | rder<br>h <sup>2</sup><br>h <sup>4</sup>  |
| 10) | The<br>equ<br>a)<br>c)            | e order of convergence of Regulation $f(x) = 0$ is<br>Second order<br>First order                                     | la falsi i<br>b)<br>d)          | method for finding roots of<br>Cubic order<br>Very slow   |
| 11) | A ro<br>a)<br>c)                  | bot of the equation $x - \cos x =$<br>1 and 2<br>0 and 1  | 0 lies<br>b)<br>d)              | between<br>2 and 3<br>-1 and 0  |
| 12) | Th∉<br>a)<br>c)                   | e Newton - Raphson method fail $f'(x)$ is negative Never fails  | ls wher<br>b)<br>d)             | f'(x) is positive<br>f'(x) is zero  |
| 13) | Th∉<br>a)                         | e Multiplication of closed interva<br>[-15,20]  | l [-3,4]<br>b)                  | $.[-3,5] = \$<br>$\left[\frac{1}{15}, \frac{1}{20}\right]$                                      |
|     | c)                                | [20, -15]   | d)                              | [9, 15]   |
| 14) | Qua<br>a)<br>c)                   | antifiers of the second kind are<br>Absolute<br>Approximate   | called _<br>b)<br>d)            | Quantifiers<br>Relative<br>Modified   |

| Seat |  |
|------|--|
| No.  |  |

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology APPLIED MATHEMATICS - II

Day & Date: Friday, 22-11-2019 Time: 02:30 PM To 05:30 PM

| Instructions: 1) | Question No. 3 is compulsory in Section –I solve any two questions from |
|------------------|---|
|                  | Q. No.2, 4, 5.  |

- 2) Question No. 6 is compulsory in Section –II solve any two questions from Q. No.7, 8, 9.
- 2) Figures to the right indicate full marks.
- 3) Use of non programmable calculator is allowed.

### Section – I

| Q.2 | a)   | Find the positive real root of the equation $e^{-x} = \sin x$ Correct to three decimal places by Regula falsi method  | 05 |  |  |
|-----|--|---|----|--|--|
|     | b)   | Find the positive real root of the equation $x^3 - 9x + 1 = 0$ by Bisection method. (Carry out 6 iterations)  | 04 |  |  |
|     |  | OR  |    |  |  |
|     | b)   | Use N R method to find a positive root of $e^{0.4x} - 0.4x = 9$   | 04 |  |  |
| Q.3 | a)   | Perform two iterations of the $N - R$ method to solve non-linear equations $x^2 + y = 11$ and $y^2 - x = 7$ starting with initial conditions as $x_0 = 3.5$ , | 05 |  |  |
|     | b)   | $y_0 = -1.8$<br>Solve the following equations by using factorization method.<br>x + 5y + z = 14,2x + y + 3z = 13,3x + y + 4z = 17                             | 05 |  |  |
| Q.4 | <b>a. a)</b> Evaluate $\int_{-\infty}^{1} \frac{dx}{dx}$ by using Trapezoidal Rule by taking $h = 0.2$ |   |    |  |  |
|     | ,<br>b)  | Evaluate $\int_{0}^{1} 2x+3$ by doing mapping bound interest with $M = 0.2$   | 06 |  |  |
|     | 5)   | Use Romberg's method to evaluate $\int_0^{\infty} \frac{dx}{x^2+4} dx$ take $n=2$   | 00 |  |  |
| Q.5 | a)   | Solve the following equations by Gauss Elimination method.<br>x + 4y + 9z = 16.2x + y + z = 10.3x + 2y + 3z = 18  | 04 |  |  |
|     | b)   | Using Trapezoidal rule evaluate $\int_{1}^{2} \int_{3}^{4} \frac{1}{(x+y)^{2}} dx dy$ , $h = k = 0.5$   | 05 |  |  |
|     |  | Section – II  |    |  |  |
| Q.6 | a)   | State the conditions for fuzzy set to be a fuzzy number and hence determine whether the following fuzzy set is a fuzzy number.<br>$C(x) = 1$ $0 \le x \le h$  | 04 |  |  |
|     |  | O(x) = 1 $O(x) = 0= 0 otherwise$  |    |  |  |
|     |  | OR  |    |  |  |
|     | a)   | Prove that:   | 04 |  |  |
|     |  | i) $\alpha(A \cup B) = \alpha_A \cup \alpha_B$  |    |  |  |

i)  $\alpha(A \cup B) = \alpha_A \cup \alpha_B$ ii)  $\alpha_+(A \cap B) = \alpha_{+A} \cap \alpha_{+B}$  Set

Max. Marks: 70

et S

|     |    |   |  |  |   |                                       | SLR-                       | FM-7 | 10 |
|-----|----|---|--|--|---|---------------------------------------|----------------------------|------|----|
|     |    |   |  |  |   |                                       |                            | Set  | S  |
|     | b) | For given fuzzy number<br>$Where A(x) = \frac{x-2}{3}$ $= \frac{7-x}{3}$ $= 0$ $B(x) = x-3$ $= \frac{9-x}{3}$ $= 0$                       | oers find<br>2<br>5<br>ot.<br>3<br>4   | $MIN (A, B)$ $< x \le 5$ $< x \le 7$ $herwise$ $< x \le 4$ $< x \le 9$ $herwise$ |   |                                       |                            |      | 06 |
| Q.7 | a) | For the following fuzz<br>Elements $x_1$<br>A(x) = 0.1<br>B(x) = 0.9<br>Find S(P, A) & 0.4 A  | xy sets<br>x <sub>2</sub><br>0.6<br>0.7  | x <sub>3</sub><br>0.8<br>0.5   | x <sub>4</sub><br>0.9<br>0.2                      | x <sub>5</sub><br>0.7<br>0.1          | x <sub>6</sub><br>0.1<br>0 |      | 04 |
|     | b) | Find S(B, A) & 0.4 A<br>Find A - B for the follo<br>$B(x) = \frac{x - 10}{10}$ $= \frac{35 - x}{15}$ $= 0$ $A(x) = x - 4$ $= 6 - x$ $= 0$ | by by by the formula | embership<br>$\leq 20$<br>$\leq 35$<br>vise<br>$\leq 5$<br>$\leq 6$<br>vise      | function:   |                                       |                            |      | 05 |
| Q.8 | a) | Let A be fuzzy set de<br>membership function  | fined on $A(x) = \frac{1}{2}$  | $X = \{-3, \frac{12-x}{15} \text{ for all } \}$                                  | -2, -1, 0, 1<br>x and f(x)                        | 1, 2, 3, 4, 5<br>$0 = x^2 + 2$        | by<br>is crisp             |      | 05 |
|     | b) | function for all $x \in X$<br>Calculate $\alpha$ -cuts and<br>B(x) = 0<br>$= \frac{x - 7}{3}$<br>$= \frac{13 - x}{3}$                     | then by $x$<br>strong $\alpha$<br>x > 13, x<br>$7 < x \le$<br>$10 < x \le$   | using exter<br>-cuts for th<br>c < 7<br>10<br>$\leq 13$ wher                     | nsion princ<br>ne fuzzy se<br>e $\alpha = 0.7, 0$ | iple find <i>f</i><br>et B,<br>).8, 1 | r(A).                      |      | 04 |
| Q.9 | a) | Solve the fuzzy equation<br>$A(x) = x - 3$ $= 5 - x$ $= 0$ $B(x) = \frac{(x - 12)}{8}$ $= \frac{32 - x}{12}$                              | $\begin{array}{l} \text{tion } A + \\ 3 < x \leq \\ 4 < x < \\ otherwise \\ 12 < x \\ 20 < x \end{array}$  | $X = B wh$ $\leq 4$ $\leq 5$ ise $\leq 20$ $\leq 32$ viae                        | iere  |                                       |                            |      | 05 |
|     | b) | = 0<br>Explain the concept of   | otnerw<br>of fuzzy q   | uantifiers   | and their ty                                      | ypes.                                 |                            |      | 04 |

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology THEORY OF COMPUTATION

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

### MCQ/Objective Type Questions

### Duration: 30 Minutes

Seat

No.

Q.1

sentence.Which of the following will not be accepted by the following DFA?

Choose the correct alternatives from the options and rewrite the

- b Dumping State
- a) ababaabaab) abbbaac) abbbaabbd) abbaabb
- c) abbbaabb d) a
- 2) Can a DFA recognize a palindrome number?
   a) Yes
   b) No
  - c) Yes, with input alphabet as  $\Sigma^*$  d) Can't be determined
- 3) Which of the following does not represents the given language? Language: {0,01}
  - a) 0+01b)  $\{0\} \cup \{01\}$ c)  $\{0\} \cup \{0\}\{1\}$ d)  $\{0\} \wedge \{01\}$
- 4)  $\delta^{-}$  tells us the best: \_
  - a) how the DFA S behaves on a word u
  - b) the state is the dumping state
  - c) the final state has been reached
  - d) Kleene operation is performed on the set
- 5) A regular language over an alphabet a is one that can be obtained from \_\_\_\_\_.
  - a) union b) concatenation
  - c) kleene d) All of the mentioned
- 6) Which of the following is a regular language?
  - a) String whose length is a sequence of prime numbers
  - b) String with substring ww<sup>r</sup> in between
  - c) Palindrome string
  - d) String with even number of Zero's

Max. Marks: 70

Marks: 14

14



Set P



Page **2** of **12** 

**SLR-FM-711** 

Set

- 7) Following context free grammar \_\_\_\_\_.
  - $S \rightarrow aB \mid bA$
  - $A \rightarrow b \mid aS \mid bAA$
  - $B \rightarrow b \mid bS \mid aBB$  generates strings of terminals that have
  - a) equal number of a's and b's
  - b) odd number of a's and odd number b's
  - c) even number of a's and even number of b's
  - d) None
- 8) The regular expression with all strings of 0's and 1's with atleast two consecutive 0's, is: \_\_\_\_\_.
  - a)  $1 + (10)^*$  b)  $(0+1)^*00(0+1)^*$
  - c) (0+1)\*011 d) 0\*1\*2\*
- 9) In one move the turing machine: \_\_\_\_\_.
  - a) May change its state
  - b) Write a symbol on the cell being scanned
  - c) Move the head one position left or right
  - d) All of the above
- 10) A push down automata is different than finite automata by \_\_\_\_\_.
  - a) Its memory (stack) b) Number of states
  - c) Both (a) and (b) d) None of these
- 11) In the Universal TM, the non halting states of a TM T1 are encoded as \_\_\_\_\_.
  - a)  $s(qi) = 0^{i+1}$  b) e(qi) = 0i + 2
  - c) s(qi) = 0i d) s(qi) = 0i+2
- 12) Which of the following is not true?
  - a) Power of deterministic automata is equivalent to power of nondeterministic automata
  - b) Power of deterministic pushdown automata is equivalent to power of non-deterministic pushdown automata
  - c) Power of deterministic TM is equivalent to power of non- deterministic TM
  - d) All above
- 13) The  $^{\delta}$  (transition function ) for PDA is \_
  - a)  $\delta: Q \times \Sigma \times [ => Q \times [^* ]$  b)  $\delta: Q \times \Sigma => Q \times [$
  - c)  $\delta: Q \times [ => \Sigma \times [^*$  d)  $\delta: Q \times [=> Q \times \Sigma$
- 14) The instantaneous description is PDA shows \_\_\_\_\_
  - a) Present state
- b) Stack symbol
- c) String to be processed of
- hows \_\_\_\_\_.
- d) All of these

| Seat<br>No.    |                              |   |  |   |                             | Set        | Ρ     |  |
|----------------|------------------------------|---|--|---|-----------------------------|------------|-------|--|
|                |                              | S.E. (Part – II)  | (Old) (CGP)<br>Informatic<br>THEORY OF   | A) Examinat<br>on Technolo<br>COMPUTA                     | ion Nov/Dec-2<br>gy<br>TION | 2019       |       |  |
| Day &<br>Time: | k Dat<br>02:3                | e: Saturday, 23-1<br>0 PM To 05:30 P  | I-2019<br>∕I   |   |                             | Max. Marks | s: 56 |  |
| Instru         | uctio                        | ns: 1) All question<br>2) Figures to  | is are compulso<br>he right indicat  | ory.<br>es full marks.                                    |                             |            |       |  |
|                |                              |   | Se   | ction – I   |                             |            |       |  |
| Q.2            | Atte<br>a)<br>b)<br>c)<br>d) | mpt any three of<br>What is useless<br>Determine wheth<br>Define:<br>1) Finite Autom<br>2) NFA<br>Define CNF. | <b>the following</b><br>symbol?<br>er the gramma<br>aton (FA)                          | <b>question.</b><br>r G has a usele                       | ess production?             |            | 12    |  |
| Q.3            | a)<br>b)                     | Explain Kleen's t<br>Write short notes  | neorem.<br>on Minimizatio  | n of DFA with   | example.                    |            | 16    |  |
|                |                              |   | Sec  | ction – II  |                             |            |       |  |
| Q.4            | Atte<br>a)<br>b)<br>c)<br>d) | mpt any three of<br>TM with semi infi<br>Define PDA and<br>Design a TM to r<br>Prove that L={0 <sup>p</sup>   | the following<br>nite tape.<br>explain types o<br>ecognize all str<br>  p is prime} is | <b>question.</b><br>f PDA.<br>ings consisting<br>not CFL. | of an odd numbe             | er of α's. | 12    |  |
| Q.5            | Atte<br>a)<br>b)             | mpt any two of t<br>Explain the follow<br>1) TM with mul<br>2) Offline TM<br>Write a note on U                | h <b>e following q</b><br><sub>/ing.</sub><br>tiple track<br>Iniversal TM.             | uestion.  |                             |            | 16    |  |

**c)** State pumping lemma. Prove that  $L = \{a^i b^i c^i | n \ge 0\}$  is not regular.

**SLR-FM-711** 

| $\delta: \mathbb{Q} \times [ => \Sigma \times [^*]$ | d)     | $\delta: Q \times \Sigma => Q \times \Sigma$<br>$\delta: Q \times [=> Q \times \Sigma$ |
|---|--------|--|
| nstantaneous description is PE                      | DA sho | DWS<br>Stack symbol  |
| String to be processed                              | d)     | All of these   |
|   |        |  |
|   |        |  |
|   |        |  |

Time: 02:30 PM To 05:30 PM Instructions: 1) All questions are compulsory. 2) Figures to the right indicates full marks. MCQ/Objective Type Questions **Duration: 30 Minutes** 14 Q.1 Choose the correct alternatives from the options and rewrite the sentence. 1) The regular expression with all strings of 0's and 1's with atleast two consecutive 0's, is: \_\_\_\_\_.  $1 + (10)^*$ (0+1)\*00(0+1)\*b) a) C) (0+1)\*011d) 0\*1\*2\* 2) In one move the turing machine: . May change its state a) Write a symbol on the cell being scanned b) Move the head one position left or right c) d) All of the above 3) A push down automata is different than finite automata by \_\_\_\_\_. Its memory (stack) b) Number of states a) Both (a) and (b) d) None of these c) 4) In the Universal TM, the non halting states of a TM T1 are encoded as \_\_\_\_\_.  $s(qi) = 0^{i+1}$ a) b) e(qi) = 0i + 2s(qi) = 0id) s(qi) = 0i+2C) 5) Which of the following is not true? Power of deterministic automata is equivalent to power of nona)

THEORY OF COMPUTATION

- - deterministic automata b)
  - Power of deterministic pushdown automata is equivalent to power of non-deterministic pushdown automata
  - Power of deterministic TM is equivalent to power of non- deterministic C) ТΜ
  - All above d)

C)

- 6)
- The  $^{\delta}$  (transition function ) for PDA is \_\_\_\_\_. b)  $\delta: Q \times \Sigma => Q \times [$ 
  - $\delta: 0 \times [ = > \Sigma$ C)
- 7) The instantaneous
  - Present state a)

Day & Date: Saturday, 23-11-2019

No.

## Seat S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

SLR-FM-711

Max. Marks: 70

8) Which of the following will not be accepted by the following DFA?



- Kleene operation is performed on the set d)
- 12) A regular language over an alphabet a is one that can be obtained from \_ .
  - a) union b) concatenation
  - d) c) kleene
    - All of the mentioned
- 13) Which of the following is a regular language?
  - String whose length is a sequence of prime numbers a)
  - b) String with substring ww<sup>r</sup> in between
  - Palindrome string c)
  - String with even number of Zero's d)
- 14) Following context free grammar \_\_\_\_\_.
  - $S \rightarrow aB \mid bA$
  - $A \rightarrow b \mid aS \mid bAA$
  - $B \rightarrow b \mid bS \mid aBB$  generates strings of terminals that have
  - equal number of a's and b's a)
  - odd number of a's and odd number b's b)
  - even number of a's and even number of b's C)
  - d) None

**SLR-FM-711** 

Set Q

| Seat<br>No.   | t   | Set        | Q  |  |  |  |  |  |  |  |
|---|---|------------|----|--|--|--|--|--|--|--|
| S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>THEORY OF COMPUTATION |   |            |    |  |  |  |  |  |  |  |
| Day & Date: Saturday, 23-11-2019 Max. M<br>Time: 02:30 PM To 05:30 PM                                     |   |            |    |  |  |  |  |  |  |  |
| Instructions: 1) All questions are compulsory.<br>2) Figures to the right indicates full marks.           |   |            |    |  |  |  |  |  |  |  |
|   | Section – I   |            |    |  |  |  |  |  |  |  |
| Q.2   | <ul> <li>Attempt any three of the following question.</li> <li>a) What is useless symbol?</li> <li>b) Determine whether the grammar G has a useless production?</li> <li>c) Define: <ol> <li>1) Finite Automaton (FA)</li> <li>2) NFA</li> </ol> </li> <li>d) Define CNF.</li> </ul>                |            | 12 |  |  |  |  |  |  |  |
| Q.3   | <ul> <li>a) Explain Kleen's theorem.</li> <li>b) Write short notes on Minimization of DFA with example.</li> </ul>  |            |    |  |  |  |  |  |  |  |
|   | Section – II  |            |    |  |  |  |  |  |  |  |
| Q.4   | <ul> <li>Attempt any three of the following question.</li> <li>a) TM with semi infinite tape.</li> <li>b) Define PDA and explain types of PDA.</li> <li>c) Design a TM to recognize all strings consisting of an odd number of the prove that L={0<sup>p</sup>   p is prime} is not CFL.</li> </ul> | er of α's. | 12 |  |  |  |  |  |  |  |
| Q.5   | <ul> <li>Attempt any two of the following question.</li> <li>a) Explain the following. <ol> <li>TM with multiple track</li> <li>Offline TM</li> </ol> </li> <li>b) Write a note on Universal TM.</li> </ul>   |            | 16 |  |  |  |  |  |  |  |

**c)** State pumping lemma. Prove that  $L = \{a^i b^i c^i | n \ge 0\}$  is not regular.

**SLR-FM-711** 

# S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

Day & Date: Saturday, 23-11-2019 Time: 02:30 PM To 05:30 PM

Seat

No.

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicates full marks.

### MCQ/Objective Type Questions

THEORY OF COMPUTATION

### **Duration: 30 Minutes** Q.1 Choose the correct alternatives from the options and rewrite the sentence. 1) A regular language over an alphabet a is one that can be obtained from union b) concatenation a) C) kleene d) All of the mentioned

- 2) Which of the following is a regular language?
  - String whose length is a sequence of prime numbers a)
  - String with substring ww<sup>r</sup> in between b)
  - Palindrome string C)
  - String with even number of Zero's d)
- 3) Following context free grammar \_\_\_\_\_.
  - $S \rightarrow aB \mid bA$
  - $A \rightarrow b \mid aS \mid bAA$
  - $B \rightarrow b \mid bS \mid aBB$  generates strings of terminals that have
  - equal number of a's and b's a)
  - odd number of a's and odd number b's b)
  - even number of a's and even number of b's c)
  - d) None
- 4) The regular expression with all strings of 0's and 1's with atleast two consecutive 0's, is: \_\_\_\_\_.
  - $1 + (10)^*$ (0+1)\*00(0+1)\*a) b)
  - (0+1)\*011d) 0\*1\*2\* c)
- In one move the turing machine: \_\_\_\_\_. 5)
  - May change its state a)
  - b) Write a symbol on the cell being scanned
  - Move the head one position left or right C)
  - All of the above d)

### 6) A push down automata is different than finite automata by \_\_\_\_\_.

- Its memory (stack) b) Number of states a)
- Both (a) and (b) d) None of these c)
- In the Universal TM, the non halting states of a TM T1 are encoded as \_\_\_\_\_. 7)
  - $s(qi) = 0^{i+1}$ a) c) s(qi) = 0i
    - e(qi) = 0i + 2b) d) s(qi) = 0i+2

SLR-FM-711



Max. Marks: 70

Marks: 14

14

- 8) Which of the following is not true?
  - Power of deterministic automata is equivalent to power of nona) deterministic automata
  - Power of deterministic pushdown automata is equivalent to power of b) non-deterministic pushdown automata
  - Power of deterministic TM is equivalent to power of non- deterministic C) ТΜ
  - All above d)

a)

- The  $^{\circ}$  (transition function ) for PDA is 9)
  - $\delta: \mathbb{Q} \times \Sigma \times [=> \mathbb{Q} \times [^*]$  $\delta: Q \times \Sigma => Q \times [$ a) b)
  - $\delta: Q \times [ = \Sigma \times [^*]$ d) C)  $\delta: Q \times [=> Q \times \Sigma$
- 10) The instantaneous description is PDA shows \_
  - Stack symbol b)

**SLR-FM-711** 

Set

- C) String to be processed d) All of these
- 11) Which of the following will not be accepted by the following DFA?



Present state

- ababaabaa b) abbbaa a)
  - abbaabb
- abbbaabb c) d)
- 12) Can a DFA recognize a palindrome number?
  - Yes a) b) No
  - C) Yes, with input alphabet as  $\Sigma^*$ d) Can't be determined
- Which of the following does not represents the given language? 13) Language: {0,01}
  - 0+01 a) b)  $\{0\} \cup \{01\}$ {0} ^ {01}  $\{0\} \cup \{0\}\{1\}$ d) C)
- 14)  $\delta^{\Lambda}$  tells us the best:
  - how the DFA S behaves on a word u a)
  - the state is the dumping state b)
  - the final state has been reached c)
  - d) Kleene operation is performed on the set

| Seat<br>No.   |   |  |  |   |                 | Set        | R  | ] |  |  |  |
|---|---|--|--|---|-----------------|------------|----|---|--|--|--|
| S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>THEORY OF COMPUTATION |   |  |  |   |                 |            |    |   |  |  |  |
| Day &<br>Time:  | Day & Date: Saturday, 23-11-2019         Max. Mar           Time: 02:30 PM To 05:30 PM         Max. Mar         |  |  |   |                 |            |    |   |  |  |  |
| Instru  | Instructions: 1) All questions are compulsory.<br>2) Figures to the right indicates full marks.                 |  |  |   |                 |            |    |   |  |  |  |
|   | Section – I   |  |  |   |                 |            |    |   |  |  |  |
| Q.2   | Atte<br>a)<br>b)<br>c)<br>d)  | mpt any three of<br>What is useless s<br>Determine wheth<br>Define:<br>1) Finite Autom<br>2) NFA<br>Define CNF.    | <b>the following</b><br>symbol?<br>er the gramma<br>aton (FA)                          | <b>question.</b><br>r G has a usele                       | ess production? |            | 12 |   |  |  |  |
| Q.3   | <ul><li>a) Explain Kleen's theorem.</li><li>b) Write short notes on Minimization of DFA with example.</li></ul> |  |  |   |                 |            | 16 |   |  |  |  |
|   |   |  | Sec  | tion – II   |                 |            |    |   |  |  |  |
| Q.4   | Atte<br>a)<br>b)<br>c)<br>d)  | <b>mpt any three of</b><br>TM with semi infi<br>Define PDA and<br>Design a TM to r<br>Prove that L={0 <sup>p</sup> | the following<br>nite tape.<br>explain types o<br>ecognize all str<br>  p is prime} is | <b>question.</b><br>f PDA.<br>ings consisting<br>not CFL. | of an odd numbe | er of α's. | 12 |   |  |  |  |
| Q.5   | Atte<br>a)<br>b)  | mpt any two of t<br>Explain the follow<br>1) TM with mul<br>2) Offline TM<br>Write a note on U                     | h <b>e following q</b><br><sub>/ing.</sub><br>tiple track<br>Iniversal TM.             | uestion.  |                 |            | 16 |   |  |  |  |

**c)** State pumping lemma. Prove that  $L = \{a^i b^i c^i | n \ge 0\}$  is not regular.

**SLR-FM-711** 

|                         |                   | S.E.                                   | (Part – II) (Old) (CGPA) E<br>Information Te<br>THEORY OF CO  | xam<br>echn<br>MPU                 | ination Nov/Dec-2019<br>lology<br>ITATION   |
|-------------------------|-------------------|--|---|------------------------------------|---|
| Day a<br>Time           | & Date<br>: 02:30 | e: Sat<br>0 PM                         | urday, 23-11-2019<br>To 05:30 PM  |                                    | Max. Marks: 70  |
| Instr                   | uctior            | <b>is:</b> 1)<br>2)                    | All questions are compulsory.<br>Figures to the right indicates fu  | ll mar                             | ks.   |
|                         |                   |  | MCQ/Objective Ty  | /pe (                              | Questions   |
| Dura                    | tion: 3           | 0 Mir                                  | nutes   |                                    | Marks: 14   |
| Q.1                     | Choo              | ose ti<br>ence                         | ne correct alternatives from th   | e opt                              | tions and rewrite the 14  |
|                         | 1)                | A pu<br>a)<br>c)                       | ish down automata is different tł<br>Its memory (stack)<br>Both (a) and (b)   | nan fir<br>b)<br>d)                | nite automata by<br>Number of states<br>None of these   |
|                         | 2)                | In th<br>a)<br>c)                      | e Universal TM, the non halting<br>s(qi) = 0 <sup>i+1</sup><br>s(qi) = 0i   | state<br>b)<br>d)                  | s of a TM T1 are encoded as<br>e(qi) = 0i + 2<br>s(qi) = 0i+2   |
| 3) Wi<br>a)<br>b)<br>c) |                   |  | ch of the following is not true?<br>Power of deterministic automat<br>deterministic automata<br>Power of deterministic pushdow<br>non-deterministic pushdown au<br>Power of deterministic TM is eo<br>TM<br>All above | a is e<br>wn au<br>Itoma<br>quival | equivalent to power of non-<br>tomata is equivalent to power of<br>ta<br>ent to power of non- deterministic |
|                         | 4)                | ,<br>The<br>a)<br>c)                   | <sup>δ</sup> (transition function ) for PDA is<br>$\delta: Q \times \Sigma \times [ => Q \times [^*]$<br>$\delta: Q \times [ => \Sigma \times [^*]$   | s<br>b)<br>d)                      | $\delta: Q \times \Sigma => Q \times [$<br>$\delta: Q \times [=> Q \times \Sigma$                           |
|                         | 5)                | The<br>a)<br>c)                        | instantaneous description is PD<br>Present state<br>String to be processed  | A sho<br>b)<br>d)                  | ows<br>Stack symbol<br>All of these   |
|                         | 6)                | White<br>Initial S<br>Dumping<br>State | tababaabaa<br>ababaabaa<br>abbbaabb   | b)                                 | d by the following DFA?<br>abbbaa<br>abbaabb  |
|                         | 7)                | Can<br>a)<br>c)                        | a DFA recognize a palindrome Yes<br>Yes, with input alphabet as $\Sigma^*$  | u)<br>numb<br>b)<br>d)             | No<br>Can't be determined   |

Set S

 Which of the following does not represents the given language? Language: {0,01}

a) 0+01 b)  $\{0\} \cup \{01\}$ 

c)  $\{0\} \cup \{0\}\{1\}$  d)  $\{0\}^{\wedge}\{01\}$ 

- 9)  $\delta^{+}$  tells us the best: \_\_\_\_
  - a) how the DFA S behaves on a word u
  - b) the state is the dumping state
  - c) the final state has been reached
  - d) Kleene operation is performed on the set
- 10) A regular language over an alphabet a is one that can be obtained from \_\_\_\_\_.
  - a) union

b) concatenation

**SLR-FM-711** 

Set S

- c) kleene d) All of the mentioned
- 11) Which of the following is a regular language?
  - a) String whose length is a sequence of prime numbers
  - b) String with substring ww<sup>r</sup> in between
  - c) Palindrome string
  - d) String with even number of Zero's
- 12) Following context free grammar \_\_\_\_\_.
  - $S \rightarrow aB \mid bA$
  - $A \rightarrow b \mid aS \mid bAA$
  - $B \rightarrow b \mid bS \mid aBB$  generates strings of terminals that have
  - a) equal number of a's and b's
  - b) odd number of a's and odd number b's
  - c) even number of a's and even number of b's
  - d) None
- 13) The regular expression with all strings of 0's and 1's with atleast two consecutive 0's, is: \_\_\_\_\_.
  - a) 1 + (10)\*
- b) (0+1)\*00(0+1)\*
- c) (0+1)\*011 d) 0\*1\*2\*
- 14) In one move the turing machine: \_\_\_\_\_.
  - a) May change its state
  - b) Write a symbol on the cell being scanned
  - c) Move the head one position left or right
  - d) All of the above

| Seat   |  |   |   |                                      |             | Sot | C  | l |  |  |
|--|--|---|---|--------------------------------------|-------------|-----|----|---|--|--|
| No.  |  |   |   |                                      |             | JEI | 3  |   |  |  |
| S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>THEORY OF COMPUTATION  |  |   |   |                                      |             |     |    |   |  |  |
| Day &<br>Time:   | Day & Date: Saturday, 23-11-2019         Max. Max. Max           Time: 02:30 PM To 05:30 PM         Max. Max |   |   |                                      |             |     |    |   |  |  |
| Instru   | Instructions: 1) All questions are compulsory.<br>2) Figures to the right indicates full marks.              |   |   |                                      |             |     |    |   |  |  |
|  | Section – I  |   |   |                                      |             |     |    |   |  |  |
| Q.2  | Atte<br>a)<br>b)<br>c)<br>d)   | mpt any three of<br>What is useless<br>Determine wheth<br>Define:<br>1) Finite Autom<br>2) NFA<br>Define CNF. | <b>the following qu</b><br>symbol?<br>er the grammar (<br>aton (FA)     | <b>lestion.</b><br>6 has a useless ( | production? |     | 12 |   |  |  |
| Q.3  | a)<br>b)   | Explain Kleen's theorem.<br>Write short notes on Minimization of DFA with example.                            |   |                                      |             |     | 16 |   |  |  |
|  |  |   | Secti   | on – II                              |             |     |    |   |  |  |
| <ul> <li>Q.4 Attempt any three of the following question.</li> <li>a) TM with semi infinite tape.</li> <li>b) Define PDA and explain types of PDA.</li> <li>c) Design a TM to recognize all strings consisting of an odd number of α's.</li> <li>d) Prove that L={0<sup>p</sup>   p is prime} is not CFL.</li> </ul> |  |   |   |                                      |             | 12  |    |   |  |  |
| Q.5  | Atte<br>a)<br>b)   | mpt any two of t<br>Explain the follow<br>1) TM with mul<br>2) Offline TM<br>Write a note on U                | <b>ne following que</b><br><i>r</i> ing.<br>iple track<br>Iniversal TM. | estion.                              |             |     | 16 |   |  |  |

**c)** State pumping lemma. Prove that  $L = \{a^i b^i c^i | n \ge 0\}$  is not regular.

## SLR-FM-711

# S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

MICROPROCESSORS

2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

**Duration: 30 Minutes** 

### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

b)

b)

One or more ALU

All of these

Intel 8086

- 1) Which is the microprocessor comprises?
  - Register section a)
  - Control unit d) c)
- 2) Accumulator based microprocessor example are:
  - Intel 8085 a)
  - C) Both a and b d) None of these
- 3) Consider the following statements: In 8085 microprocessor, data-bus and address bus are multiplexed in order to
  - 1) Increase the speed of microprocessor.
  - Reduce the number of pins. 2)
  - Connect more peripheral chips. 3)

Which of these statements is/are correct?

- (I) only (II) only a) b)
- (I), (II) & (III)(II) & (III)d) C)
- In intel 8085A microprocessor ALE signal is made high to \_ 4)
  - Enable the data bus to be used as low order address bus a)
  - To latch data  $D_0 D_7$  from data bus b)
  - To disable data bus c)
  - To achieve all the functions listed above d)
- 5) Temporary registers in 8085 are \_
  - B and C D and E a) b)
  - c) H and L d) W and Z
- 6) 8085 Instruction MOV M B operation is \_\_\_\_\_.
  - copy the data from register B in to a memory location a)
  - copy the data from register M in to a memory location b)
  - copy the data from register B in to Accumulator Register C)
  - none of the above d)
- 7) Which of the instructions perform logic operations on the contents of the accumulator?
  - ANA ANI a) b)
  - c) ORA d) All of the above

Set

SLR-FM-712

Max. Marks: 70

Marks: 14

Set P 8) NMI Stand for: . Non maskable interrupt b) Non mistake interrupt a) C) Both a and b d) None of these Port C of 8255 can function independently as \_\_\_\_\_. 9) output port input port a) b) either input or output ports d) both input and output ports C) Timing diagram of 8085 Instruction MVI A, 45h contains \_\_\_\_\_ many 10) machine cycle. a) Op-Code Fetch Cycle b) Memory Read Cycle Both a and b None C) d) Time required to execute and fetch an entire instruction is called 11) instruction cycle It consists . a) Fetch cycle Decode instruction b) Reading effective address & Execution cycle C) All of the above d) 12) The advantage of memory mapped I/O over I/O mapped I/O is, \_\_\_\_\_. Faster a) Many instructions supporting memory mapped I/O b) Require a bigger address decoder C) All of the above d) In 8086 the overflow flag is set when \_\_\_\_\_. 13) the sum is more than 16 bits a) signed numbers go out of their range after an arithmetic operation b) carry and sign flags are set c) Subtraction d) 14) The processor 80386/80486 and the Pentium processor uses \_\_\_\_\_ bits

- address bus. a) 16 b) 32
  - c) 36 d) 64

**SLR-FM-712** 

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MICROPROCESSORS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Attempt any three.

Seat

No.

- a) Describe the salient features of 8085 microprocessor.
- **b**) With a neat diagram explain the demultiplexing of address and data bus.
- c) Mention the purpose of SID and SOD lines and Explain the difference between a JMP instruction and CALL instruction.
- d) Explain the different 8085 instruction formats with examples.
  - 1) LXI SP, FFFFH
  - 2) PUSH B
  - 3) POP D
  - 4) CALL 4000H
- e) Explain the purpose of the I/O instructions IN and OUT.

### Q.3 Attempt any two.

- a) With a neat diagram describe the 8085 MPU architecture.
- b) With a neat diagram explain the Timing Diagram of LXI A, FO45h instruction.
- c) Describe the Thumbwheel switches application of microprocessor.

### Section – II

### Q.4 Attempt any three.

- a) Explain priority interrupts of 8085.
- b) Describe the Features and Block Diagram of DMA Controller 8257.
- c) What are the basic modes of operation of 8255?
- d) Write the features of 80286 microprocessor in detail.
- e) What is the purpose of segment registers in 8086?

### Q.5 Attempt any two.

- a) List the four instructions which control the interrupt structure of the 8085 microprocessor.
- b) Describe the Block Diagram of 8255 Programmable Peripheral Interface.
- c) Write the features and architecture of 8086 in detail.

SLR-FM-712

Set

Max. Marks: 56

16

12

12

16

Seat No.

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MICROPROCESSORS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
  - 2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

### **Duration: 30 Minutes**

### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

b)

- NMI Stand for: 1)
  - a) Non maskable interrupt Both a and b c)
- b) Non mistake interrupt None of these d)

output port

- 2) Port C of 8255 can function independently as \_\_\_\_
  - input port a)
  - either input or output ports d) both input and output ports C)
- Timing diagram of 8085 Instruction MVI A, 45h contains many 3) machine cycle.
  - a) Op-Code Fetch Cycle
- b) Memory Read Cycle
- Both a and b d) None C)
- 4) Time required to execute and fetch an entire instruction is called instruction cycle It consists \_\_\_\_\_.
  - Fetch cycle a)
  - b) Decode instruction
  - Reading effective address & Execution cycle c)
  - All of the above d)
- 5) The advantage of memory mapped I/O over I/O mapped I/O is, \_\_\_\_\_.
  - Faster a)
  - b) Many instructions supporting memory mapped I/O
  - Require a bigger address decoder C)
  - All of the above d)
- 6) In 8086 the overflow flag is set when \_\_\_\_\_.
  - the sum is more than 16 bits a)
  - signed numbers go out of their range after an arithmetic operation b)
  - carry and sign flags are set C)
  - Subtraction d)
- 7) The processor 80386/80486 and the Pentium processor uses \_\_\_\_\_ bits address bus.
  - 16 b) 32 a)
  - 36 d) 64 C)
- Which is the microprocessor comprises? 8)
  - Register section One or more ALU b) a) C)
    - Control unit d) All of these

SLR-FM-712



Max. Marks: 70

Marks: 14

- 9) Accumulator based microprocessor example are:
  - Intel 8085 a)

Intel 8086 b)

None of these

**SLR-FM-712** 

Set Q

- C) Both a and b
- Consider the following statements: 10) In 8085 microprocessor, data-bus and address bus are multiplexed in order to

d)

- 1) Increase the speed of microprocessor.
- 2) Reduce the number of pins.
- Connect more peripheral chips. 3)

Which of these statements is/are correct?

- (I) only a)
- b) (II) only (II) & (III) d) (I), (II) & (III) C)
- 11) In intel 8085A microprocessor ALE signal is made high to \_\_\_\_-
  - Enable the data bus to be used as low order address bus a)
  - To latch data  $D_0 D_7$  from data bus b)
  - To disable data bus C)
  - To achieve all the functions listed above d)
- 12) Temporary registers in 8085 are \_\_\_\_
  - B and C b) D and E a)
  - H and L d) W and Z C)
- 13) 8085 Instruction MOV M B operation is \_\_\_\_\_.
  - copy the data from register B in to a memory location a)
  - b) copy the data from register M in to a memory location
  - copy the data from register B in to Accumulator Register c)
  - none of the above d)
- Which of the instructions perform logic operations on the contents of the 14) accumulator?
  - ANA a)
  - ORA C)

- ANI b)
- d) All of the above

# S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

### Information Technology MICROPROCESSORS Day & Date: Monday, 25-11-2019

Time: 02:30 PM To 05:30 PM

Seat No.

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

### Section – I

### Q.2 Attempt any three.

- a) Describe the salient features of 8085 microprocessor.
- **b)** With a neat diagram explain the demultiplexing of address and data bus.
- c) Mention the purpose of SID and SOD lines and Explain the difference between a JMP instruction and CALL instruction.
- d) Explain the different 8085 instruction formats with examples.
  - 1) LXI SP, FFFFH
  - 2) PUSH B
  - 3) POP D
  - 4) CALL 4000H
- e) Explain the purpose of the I/O instructions IN and OUT.

### Q.3 Attempt any two.

- a) With a neat diagram describe the 8085 MPU architecture.
- b) With a neat diagram explain the Timing Diagram of LXI A, FO45h instruction.
- c) Describe the Thumbwheel switches application of microprocessor.

### Section – II

### Q.4 Attempt any three.

- a) Explain priority interrupts of 8085.
- b) Describe the Features and Block Diagram of DMA Controller 8257.
- c) What are the basic modes of operation of 8255?
- d) Write the features of 80286 microprocessor in detail.
- e) What is the purpose of segment registers in 8086?

### Q.5 Attempt any two.

- a) List the four instructions which control the interrupt structure of the 8085 microprocessor.
- b) Describe the Block Diagram of 8255 Programmable Peripheral Interface.
- c) Write the features and architecture of 8086 in detail.

SLR-FM-712

## Max. Marks: 56

12

16

16

12

### S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MICROPROCESSORS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
  - 2) Figures to the right indicate full marks.

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - 1) Temporary registers in 8085 are
    - B and C D and E a) b)
    - H and L W and Z d) c)
  - 2) 8085 Instruction MOV M B operation is \_\_\_\_
    - copy the data from register B in to a memory location a)
    - copy the data from register M in to a memory location b)
    - copy the data from register B in to Accumulator Register c)
    - none of the above d)
  - 3) Which of the instructions perform logic operations on the contents of the accumulator? ANI b)

d)

d)

- a) ANA
- ORA C)
- 4) NMI Stand for: Non maskable interrupt

a)

b) Non mistake interrupt None of these

All of the above

- Both a and b C)
- Port C of 8255 can function independently as \_\_\_\_\_. 5)
  - input port b) output port a)
  - either input or output ports d) both input and output ports C)
- 6) Timing diagram of 8085 Instruction MVI A, 45h contains many machine cycle.
  - Op-Code Fetch Cycle a)
- b) Memory Read Cycle
- C) Both a and b d) None
- Time required to execute and fetch an entire instruction is called 7) instruction cycle It consists \_\_\_\_\_.
  - a) Fetch cycle
  - b) Decode instruction
  - Reading effective address & Execution cycle c)
  - All of the above d)
- 8) The advantage of memory mapped I/O over I/O mapped I/O is, \_\_\_\_\_.
  - a) Faster
  - Many instructions supporting memory mapped I/O b)
  - Require a bigger address decoder C)
  - All of the above d)

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Max. Marks: 70

Marks: 14

### 9) In 8086 the overflow flag is set when \_\_\_\_\_.

- a) the sum is more than 16 bits
- b) signed numbers go out of their range after an arithmetic operation

**SLR-FM-712** 

Set R

- c) carry and sign flags are set
- d) Subtraction

a)

- 10) The processor 80386/80486 and the Pentium processor uses \_\_\_\_\_ bits address bus.
  - a) 16 b) 32
  - c) 36 d) 64
- 11) Which is the microprocessor comprises?
  - Register section b) One or more ALU
  - c) Control unit d) All of these
- 12) Accumulator based microprocessor example are: \_\_\_\_\_
  - a) Intel 8085 b) Intel 8086
  - c) Both a and b d) None of these
- 13) Consider the following statements: In 8085 microprocessor, data-bus and address bus are multiplexed in order to
  - 1) Increase the speed of microprocessor.
  - 2) Reduce the number of pins.
  - 3) Connect more peripheral chips.

Which of these statements is/are correct?

- a) (I) only b) (II) only
- c) (II) & (III) d) (I), (II) & (III)
- 14) In intel 8085A microprocessor ALE signal is made high to \_\_\_\_
  - a) Enable the data bus to be used as low order address bus
  - b) To latch data  $D_0 D_7$  from data bus
  - c) To disable data bus
  - d) To achieve all the functions listed above
# S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

Information Technology MICROPROCESSORS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

## Section – I

### Q.2 Attempt any three.

Seat

No.

- a) Describe the salient features of 8085 microprocessor.
- **b)** With a neat diagram explain the demultiplexing of address and data bus.
- c) Mention the purpose of SID and SOD lines and Explain the difference between a JMP instruction and CALL instruction.
- d) Explain the different 8085 instruction formats with examples.
  - 1) LXI SP, FFFFH
  - 2) PUSH B
  - 3) POP D
  - 4) CALL 4000H
- e) Explain the purpose of the I/O instructions IN and OUT.

#### Q.3 Attempt any two.

- a) With a neat diagram describe the 8085 MPU architecture.
- b) With a neat diagram explain the Timing Diagram of LXI A, FO45h instruction.
- c) Describe the Thumbwheel switches application of microprocessor.

#### Section – II

#### Q.4 Attempt any three.

- a) Explain priority interrupts of 8085.
- b) Describe the Features and Block Diagram of DMA Controller 8257.
- c) What are the basic modes of operation of 8255?
- d) Write the features of 80286 microprocessor in detail.
- e) What is the purpose of segment registers in 8086?

#### Q.5 Attempt any two.

- a) List the four instructions which control the interrupt structure of the 8085 microprocessor.
- b) Describe the Block Diagram of 8255 Programmable Peripheral Interface.
- c) Write the features and architecture of 8086 in detail.

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Max. Marks: 56

12

16

12

16

# SLR-FM-712

Seat No.

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MICROPROCESSORS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.

2) Figures to the right indicate full marks.

## **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

C)

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Timing diagram of 8085 Instruction MVI A, 45h contains \_\_\_\_\_ many machine cycle.
  - Op-Code Fetch Cycle a)

Both a and b

- b) Memory Read Cycle d) None
- 2) Time required to execute and fetch an entire instruction is called instruction cycle It consists \_\_\_\_\_.
  - Fetch cycle a)
  - b) Decode instruction
  - c) Reading effective address & Execution cycle
  - All of the above d)
- 3) The advantage of memory mapped I/O over I/O mapped I/O is,
  - Faster a)
  - Many instructions supporting memory mapped I/O b)
  - Require a bigger address decoder c)
  - All of the above d)
- 4) In 8086 the overflow flag is set when \_\_\_\_\_.
  - the sum is more than 16 bits a)
  - signed numbers go out of their range after an arithmetic operation b)
  - c) carry and sign flags are set
  - d) Subtraction
- 5) The processor 80386/80486 and the Pentium processor uses \_\_\_\_\_ bits address bus.
  - a) 16 b) 32 64
  - C) 36 d)
- 6) Which is the microprocessor comprises?
  - Register section One or more ALU a) b)
  - Control unit d) All of these C)
- Accumulator based microprocessor example are: 7) Intel 8086
  - Intel 8085 b) a)
  - C) Both a and b d) None of these

Set



Marks: 14

Max. Marks: 70

Page **11** of **12** 

8) Consider the following statements:

> In 8085 microprocessor, data-bus and address bus are multiplexed in order to

- Increase the speed of microprocessor. 1)
- 2) Reduce the number of pins.
- Connect more peripheral chips. 3)

Which of these statements is/are correct?

- a) (I) only b) (II) only
- d) (I), (II) & (III) C) (II) & (III)
- 9) In intel 8085A microprocessor ALE signal is made high to
  - Enable the data bus to be used as low order address bus a)
    - b) To latch data  $D_0 - D_7$  from data bus
    - To disable data bus C)
    - To achieve all the functions listed above d)
- 10) Temporary registers in 8085 are
  - B and C b) D and E a)
  - H and L W and Z C) d)
- 11) 8085 Instruction MOV M B operation is \_\_\_\_\_
  - copy the data from register B in to a memory location a)
  - copy the data from register M in to a memory location b)
  - copy the data from register B in to Accumulator Register C)
  - none of the above d)
- 12) Which of the instructions perform logic operations on the contents of the accumulator?

b)

- a) ANA
- ORA c) d)
- 13) NMI Stand for:
  - Non maskable interrupt a)
- b) Non mistake interrupt

All of the above

**SLR-FM-712** 

Set S

- Both a and b C)
- None of these d)

ANI

- 14) Port C of 8255 can function independently as .
  - input port a)
  - either input or output ports C)
- output port b)
- d) both input and output ports

## S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology MICROPROCESSORS

Day & Date: Monday, 25-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

## Section – I

#### Q.2 Attempt any three.

Seat No.

- a) Describe the salient features of 8085 microprocessor.
- With a neat diagram explain the demultiplexing of address and data bus. b)
- Mention the purpose of SID and SOD lines and Explain the difference C) between a JMP instruction and CALL instruction.
- Explain the different 8085 instruction formats with examples. d)
  - 1) LXI SP, FFFFH
  - 2) PUSH B
  - 3) POP D
  - 4) CALL 4000H
- Explain the purpose of the I/O instructions IN and OUT. e)

#### Q.3 Attempt any two.

- With a neat diagram describe the 8085 MPU architecture. a)
- With a neat diagram explain the Timing Diagram of LXI A, FO45h b) instruction.
- c) Describe the Thumbwheel switches application of microprocessor.

#### Section – II

#### Q.4 Attempt any three.

- Explain priority interrupts of 8085. a)
- Describe the Features and Block Diagram of DMA Controller 8257. b)
- What are the basic modes of operation of 8255? c)
- Write the features of 80286 microprocessor in detail. d)
- What is the purpose of segment registers in 8086? e)

#### Attempt any two. Q.5

- List the four instructions which control the interrupt structure of the 8085 a) microprocessor.
- Describe the Block Diagram of 8255 Programmable Peripheral Interface. b)
- Write the features and architecture of 8086 in detail. C)

**SLR-FM-712** 

Max. Marks: 56

12

16

16

12

## SLR-FM-713

## Seat No.

## S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 **Information Technology** DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- A binary tree can easily be converted into g 2-tree 1)
  - by replacing each empty sub tree by a new internal node · a)
  - by inserting an internal nodes for non-empty node b)
  - by inserting an external nodes for non-empty node c)
  - d) by replacing each empty Sub tree by a new external node
- 2) A binary tree in which if all its levels except possibly the last, have the maximum number of nodes and all the nodes at the last level appear as far left as possible, is known as
  - a) full binary tree
  - b) AVL tree c) threaded tree d) complete binary tree
- 3) A binary tree of depth d is an almost complete binary tree if
  - a) Each leaf in the tree is either at level d or at level d-1
  - For any node n in the tree with a right descendant at level d all the b) left descendants of n that are leaves, are also at level d
  - Both (a) & (b) c)
  - d) None of the above

#### 4) A binary tree whose every node has either zero or two children is called Binary search tree b)

- a) Complete binary tree
- c) Extended binary tree None of above d)

#### A full binary tree with 2n+1 nodes contain 5)

- a) n leaf nodes n non-leaf nodes b) c) n-1 leaf nodes. n-1 non-leaf nodes d)
- A full Binary tree with n leaves contains 6)
  - a) n nodes. b) 2n -1 nodes.
    - c) log n nodes. d) 2<sup>n</sup> nodes.
- If a node having two children is deleted from a binary tree, it is replaced 7) bv its
  - Inorder predecessor Inorder successor a) b)
  - Preorder predecessor d) None of the above c)

Set

Marks: 20

20

Max. Marks: 100

|     |  |  | SLR-FM-713  |
|-----|--|--|---|
|     |  |  | Set P   |
| 8)  | In a binary tree, certain null entrie<br>point to nodes higher in the tree f<br>called   | es are re<br>for efficie                 | eplaced by special pointers which<br>ency. These special pointers are |
|     | c) path  | d)                                       | thread  |
| 9)  | One can convert a binary tree int<br>a) inorder<br>c) postorder  | o its mir<br>b)<br>d)                    | ror image by traversing it in<br>preorder<br>any order                |
| 10) | The depth of a complete binary to<br>a) $Dn = n \log 2n$<br>c) $Dn = \log 2n$  | ree is giv<br>b)<br>d)                   | Ven by<br>$Dn = n \log 2n + 1$<br>$Dn = \log 2n + 1$                  |
| 11) | The number of leaf nodes in a co<br>a) 2^d<br>c) 2^(d-1)-1   | omplete k<br>b)<br>d)                    | pinary tree of depth d is<br>2^(d+1) – 1<br>2^d + 1                   |
| 12) | To arrange a binary tree in ascer<br>a) Post order traversal<br>c) Pre order traversal   | nding ord<br>b)<br>d)                    | der we need<br>In order traversal<br>None of the above                |
| 13) | <ul> <li>When converting binary tree into nodes in binary tree are</li> <li>a) internal nodes on extended t</li> <li>b) external nodes on extended</li> <li>c) vanished on extended tree</li> <li>d) None of above</li> </ul>  | extende<br>ree<br>tree                   | ed binary tree, all the original                                      |
| 14) | If a node in a BST has two children<br>a) no left child<br>c) two children   | en, then<br>b)<br>d)                     | its inorder predecessor has<br>no right child<br>no child             |
| 15) | A BST is traversed in the followin output sequence will be in  | ng order                                 | recursively: Right, root, left The                                    |
|     | <ul><li>a) Ascending order</li><li>c) Descending order</li></ul>   | b)<br>d)                                 | Bitomic sequence<br>No specific order                                 |
| 16) | Queue can be used to implemen<br>a) Radix sort<br>c) Recursion   | t<br>b)<br>d)                            | Quck Sort<br>Depth of first   |
| 17) | Two dimensional arrays are also<br>a) tables arrays<br>c) both of above  | called<br>b)<br>d)                       | matrix arrays<br>None of these  |
| 18) | <ul> <li>A variable P is called pointer if</li> <li>a) P contains the address of an</li> <li>b) P points to the address of first</li> <li>c) P can store only memory address</li> <li>d) P contain the DATA and the</li> </ul> | elemen<br>st eleme<br>dresses<br>address | t in DATA.<br>nt in DATA<br>of DATA                                   |
| 19) | The complexity of linear search a<br>a) O(n)<br>c) O(n2)   | algorithm<br>b)<br>d)                    | n is<br>O(log n)<br>O(n log n)  |
| 20) | The complexity of Binary search  | algorithr                                | n is  |

- O(log n) O(n log n) a) O(n) c) O(n2) b) d)

| lime  | : 02:30 PM To 05:30 PM  |    |  |  |
|-------|---|----|--|--|
| Instr | <ul> <li>uctions: 1) All questions from section-I &amp; II are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>3) Assume suitable data if necessary.</li> </ul>  |    |  |  |
|       | Section – I   |    |  |  |
| Q.2   | <ul> <li>Attempt any four.</li> <li>a) What is a big-O notation? Explain its significance.</li> <li>b) Write a short on complexity of algorithm.</li> <li>c) What are the factors to be considered during the selection of a sorting technique.</li> <li>d) What is the time complexity of the quick sort algorithm to sort a list of n equal elements. Explain.</li> <li>e) What is hashing? What are the different methods used for calculating hash functions? Explain with suitable example.</li> </ul> | 20 |  |  |
| Q.3   | <ul> <li>Explain the algorithm of the following collision resolution techniques.</li> <li>Closed hashing (also called linear probing)</li> <li>Open hashing (also called chaining)</li> </ul>   |    |  |  |
| Q.4   | Arrange the following elements in the sorted order using insertion sort.<br>30,20,35,14,90,25,32.<br>Show the step by step process. Explain its Best case time complexity &<br>Worst case time complexity.  |    |  |  |
|       | Section – II  |    |  |  |
| Q.5   | <ul> <li>Attempt any four.</li> <li>a) Write a C function to delete a node from a binary search tree.</li> <li>b) Explain the difference between depth-first search and breadth-first search traversing technique of a graph.</li> <li>c) Define &amp; explain Strictly binary tree &amp; Completely binary tree.</li> <li>d) Write a C function to count the number of leaf nodes in a binary tree.</li> <li>e) Explain in detail shortest path using Dijkstra's Algorithm.</li> </ul>                     | 20 |  |  |
| Q.6   | Draw the AVL tree resulting from the insertion of the following integer keys. 50, 72, 96,94,107,26,12,11,9,2  | 10 |  |  |
| Q.7   | Construct the tree if preorder & Inorder traversal of a binary tree is Given.<br>Preorder :G B Q A C K F P D E R H<br>Inorder :Q B K C F A G P E D H R  | 10 |  |  |

## S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

# **SLR-FM-713**

Set

Max. Marks: 80

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|             |                  |                        | Information To<br>DATA STRU  | echr<br>CTU        | nology<br>RES  |                    |
|-------------|------------------|------------------------|--|--------------------|--|--------------------|
| Day<br>Time | & Date<br>: 02:3 | e: Tu<br>0 PM          | esday, 26-11-2019<br>I To 05:30 PM   |                    | Ма   | x. Marks: 100      |
| Instru      | uction           | <b>s:</b> 1)           | Q. No. 1 is compulsory and it sh book.   | ould               | be solved in first 30 minu   | ites in answer     |
|             |                  | 2<br>3                 | ) Figures to the right indicate full<br>) Assume suitable data if necess   | mark<br>ary.       | KS.  |                    |
| _           |                  |                        | MCQ/Objective Ty   | /pe (              | Questions  |                    |
| Dura        | ition: 3         | BO Mi                  | nutes  |                    |  | Marks: 20          |
| Q.1         | Choo<br>sent     | ose t<br>ence          | he correct alternatives from th  | e op               | tions and rewrite the  | 20                 |
|             | 1)               | A fu                   | II Binary tree with n leaves conta   | ains               |  |                    |
|             |                  | a)<br>c)               | n nodes.<br>log n nodes.   | b)<br>d)           | 2n -1 nodes.<br>2^n nodes.   |                    |
|             | 2)               | lf a                   | node having two children is dele   | ted fr             | om a binary tree, it is rep  | laced              |
|             |                  | a)                     | Inorder predecessor  | b)                 | Inorder successor  |                    |
|             |                  | c)                     | Preorder predecessor   | d)                 | None of the above  |                    |
|             | 3)               | In a<br>poir<br>calle  | binary tree, certain null entries and to nodes higher in the tree for each of the tree for the t | are re<br>efficie  | placed by special pointer<br>ency. These special point   | s which<br>ers are |
|             |                  | a)<br>c)               | Leaf<br>path   | b)<br>d)           | branch<br>thread   |                    |
|             | 4)               | One<br>a)<br>c)        | e can convert a binary tree into it<br>inorder<br>postorder  | s mirı<br>b)<br>d) | or image by traversing it preorder any order   | in                 |
|             | 5)               | The<br>a)<br>c)        | depth of a complete binary tree<br>$Dn = n \log 2n$<br>$Dn = \log 2n$  | is giv<br>b)<br>d) | $ \begin{array}{l} \text{ven by} \\ Dn \ = \ n \ log 2n + 1 \\ Dn \ = \ log 2n + 1 \end{array} $ |                    |
|             | 6)               | The<br>a)<br>c)        | number of leaf nodes in a comp<br>2^d<br>2^(d-1)-1   | lete b<br>b)<br>d) | binary tree of depth d is<br>2^(d+1) – 1<br>2^d + 1  |                    |
|             | 7)               | To a<br>a)<br>c)       | arrange a binary tree in ascendir<br>Post order traversal<br>Pre order traversal   | ng ord<br>b)<br>d) | ler we need<br>In order traversal<br>None of the above   |                    |
|             | 8)               | Who<br>nod<br>a)<br>b) | en converting binary tree into ext<br>es in binary tree are<br>internal nodes on extended tree<br>external nodes on extended tree  | ende:<br>e         | d binary tree, all the origi   | nal                |

- c) vanished on extended tree
- d) None of above

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# **SLR-FM-713**

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019

a) Ascending order **Bitomic sequence** b) c) Descending order d) No specific order Queue can be used to implement a) Radix sort b) **Quck Sort** c) Recursion d) Depth of first Two dimensional arrays are also called a) tables arrays b) matrix arrays both of above d) None of these C) A variable P is called pointer if a) P contains the address of an element in DATA. b) P points to the address of first element in DATA c) P can store only memory addresses d) P contain the DATA and the address of DATA The complexity of linear search algorithm is a) O(n) b) O(log n) c) O(n2) d)  $O(n \log n)$ The complexity of Binary search algorithm is O(log n) a) O(n) b) c) O(n2) d) O(n log n) A binary tree can easily be converted into q 2-tree by replacing each empty sub tree by a new internal node · a) b) by inserting an internal nodes for non-empty node c) by inserting an external nodes for non-empty node d) by replacing each empty Sub tree by a new external node far left as possible, is known as a) full binary tree b) AVL tree c) threaded tree complete binary tree d) A binary tree of depth d is an almost complete binary tree if Each leaf in the tree is either at level d or at level d-1 a) b) left descendants of n that are leaves, are also at level d Both (a) & (b) C) d) None of the above Complete binary tree Binary search tree a) b) Extended binary tree None of above d) c) A full binary tree with 2n+1 nodes contain a) n leaf nodes n non-leaf nodes b) c) n-1 leaf nodes. d) n-1 non-leaf nodes

- 9) If a node in a BST has two children, then its inorder predecessor has
  - a) no left child
  - c) two children
- A BST is traversed in the following order recursively: Right, root, left The 10) output sequence will be in

b)

d)

no right child

no child

- 11)
- 12)
- 13)
- 14)
- 15)
- 16)
- 17) A binary tree in which if all its levels except possibly the last, have the maximum number of nodes and all the nodes at the last level appear as
- 18)
  - For any node n in the tree with a right descendant at level d all the
- 19) A binary tree whose every node has either zero or two children is called
- 20)



|     | a)                                 | what is a big-O notation? Explain its significance.  |    |  |  |  |  |  |
|-----|------------------------------------|--|----|--|--|--|--|--|
|     | b)                                 | Write a short on complexity of algorithm.  |    |  |  |  |  |  |
|     | c)                                 | What are the factors to be considered during the selection of a sorting technique.   |    |  |  |  |  |  |
|     | d)                                 | What is the time complexity of the quick sort algorithm to sort a list of n equal elements. Explain.   |    |  |  |  |  |  |
|     | e)                                 | What is hashing? What are the different methods used for calculating hash functions? Explain with suitable example.  |    |  |  |  |  |  |
| Q.3 | Exp<br><b>a)</b><br>b)             | lain the algorithm of the following collision resolution techniques.<br>Closed hashing (also called linear probing)<br>Open hashing (also called chaining)   | 10 |  |  |  |  |  |
| Q.4 | Arra<br>Sho<br>Wor                 | inge the following elements in the sorted order using insertion sort.<br>30,20,35,14,90,25,32.<br>w the step by step process. Explain its Best case time complexity &<br>rst case time complexity.   | 10 |  |  |  |  |  |
|     |                                    | Section – II   |    |  |  |  |  |  |
| Q.5 | Atte<br>a)<br>b)<br>c)<br>d)<br>e) | empt any four.<br>Write a C function to delete a node from a binary search tree.<br>Explain the difference between depth-first search and breadth-first<br>search traversing technique of a graph.<br>Define & explain Strictly binary tree & Completely binary tree.<br>Write a C function to count the number of leaf nodes in a binary tree.<br>Explain in detail shortest path using Dijkstra's Algorithm. | 20 |  |  |  |  |  |
| Q.6 | Dra<br>50,                         | Draw the AVL tree resulting from the insertion of the following integer keys. <b>10</b> 50, 72, 96,94,107,26,12,11,9,2   |    |  |  |  |  |  |
| Q.7 | Con<br>Pre<br>Inor                 | struct the tree if preorder & Inorder traversal of a binary tree is Given.<br>order :G B Q A C K F P D E R H<br>der :Q B K C F A G P E D H R   | 10 |  |  |  |  |  |
|     |                                    |  |    |  |  |  |  |  |

## Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions from section-I & II are compulsory.

- 2) Figures to the right indicate full marks.
  - 3) Assume suitable data if necessary.

## Section – I

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

## Q.2 Attempt any four.

a) What is a hig\_O notation? Explain its significance

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Set Q

Max. Marks: 80

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# S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

- 2) Figures to the right indicate full marks.
- 3) Assume suitable data if necessary.

## MCQ/Objective Type Questions

**Duration: 30 Minutes** 

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence.

- The number of leaf nodes in a complete binary tree of depth d is 1)
  - a) 2^d b)
  - c) 2<sup>(d-1)-1</sup>
- 2) To arrange a binary tree in ascending order we need
  - Post order traversal b) In order traversal a) Pre order traversal d) None of the above c)
- When converting binary tree into extended binary tree, all the original 3) nodes in binary tree are
  - a) internal nodes on extended tree
  - b) external nodes on extended tree
  - vanished on extended tree c)
  - d) None of above
- 4) If a node in a BST has two children, then its inorder predecessor has
  - a) no left child no right child b)
  - c) two children no child d)
- A BST is traversed in the following order recursively: Right, root, left The 5) output sequence will be in
  - a) Ascending order b) **Bitomic sequence**
  - c) Descending order d) No specific order
- Queue can be used to implement 6)
  - a) Radix sort b) **Quck Sort**
  - Recursion d) Depth of first c)
- Two dimensional arrays are also called 7)
  - tables arrays matrix arrays a) b)
  - both of above None of these c) d)
- 8) A variable P is called pointer if
  - a) P contains the address of an element in DATA.
  - b) P points to the address of first element in DATA
  - c) P can store only memory addresses
  - d) P contain the DATA and the address of DATA

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Max. Marks: 100



Marks: 20

20

 $2^{(d+1)} - 1$ d) 2^d + 1

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9) The complexity of linear search algorithm is

- a) O(n) b) O(log n)
- c) O(n2) d) O(n log n)
- 10) The complexity of Binary search algorithm is
  - a) O(n) b) O(log n)
  - c) O(n2) d) O(n log n)
- 11) A binary tree can easily be converted into q 2-tree
  - a) by replacing each empty sub tree by a new internal node ·
  - b) by inserting an internal nodes for non-empty node
  - c) by inserting an external nodes for non-empty node
  - d) by replacing each empty Sub tree by a new external node
- 12) A binary tree in which if all its levels except possibly the last, have the maximum number of nodes and all the nodes at the last level appear as far left as possible, is known as
  - a) full binary tree
- b) AVL tree

Binary search tree None of above

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- c) threaded tree d) complete binary tree
- 13) A binary tree of depth d is an almost complete binary tree if
  - a) Each leaf in the tree is either at level d or at level d-1
  - b) For any node n in the tree with a right descendant at level d all the left descendants of n that are leaves, are also at level d

d)

- c) Both (a) & (b)
- d) None of the above
- 14) A binary tree whose every node has either zero or two children is called
  - a) Complete binary tree b)
  - c) Extended binary tree
- 15) A full binary tree with 2n+1 nodes contain
  - a) n leaf nodes b) n non-leaf nodes
  - c) n-1 leaf nodes. d) n-1 non-leaf nodes
- 16) A full Binary tree with n leaves contains
  - a) n nodes. b) 2n -1 nodes.
  - c) log n nodes. d) 2^n nodes.
- 17) If a node having two children is deleted from a binary tree, it is replaced by its
  - a) Inorder predecessor b) Inorder successor
  - c) Preorder predecessor d) None of the above
- 18) In a binary tree, certain null entries are replaced by special pointers which point to nodes higher in the tree for efficiency. These special pointers are called
  - a) Leaf b) branch
  - c) path d) thread
- 19) One can convert a binary tree into its mirror image by traversing it in
  - a) inorder b) preorder
  - c) postorder d) any order
- 20) The depth of a complete binary tree is given by
  - a)  $Dn = n \log 2n$  b)  $Dn = n \log 2n + 1$
  - c) Dn = log2n d) Dn = log2n + 1

| Time   | : 02:3   | 30 PM To 05:30 PM   |    |  |
|--------|--|---|----|--|
| Instru | uctio  | <ul> <li>ns: 1) All questions from section-I &amp; II are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>3) Assume suitable data if necessary.</li> </ul>   |    |  |
|        |  | Section – I   |    |  |
| Q.2    | Atte<br>a)<br>b)<br>c)<br>d)<br>e)   | <ul> <li>What is a big-O notation? Explain its significance.</li> <li>Write a short on complexity of algorithm.</li> <li>What are the factors to be considered during the selection of a sorting technique.</li> <li>What is the time complexity of the quick sort algorithm to sort a list of n equal elements. Explain.</li> <li>What is hashing? What are the different methods used for calculating hash functions? Explain with suitable example.</li> </ul> | 20 |  |
| Q.3    | Expl<br>a)<br>b)   | lain the algorithm of the following collision resolution techniques.<br>Closed hashing (also called linear probing)<br>Open hashing (also called chaining)  | 10 |  |
| Q.4    | Arrange the following elements in the sorted order using insertion sort.<br>30,20,35,14,90,25,32.<br>Show the step by step process. Explain its Best case time complexity &<br>Worst case time complexity. |   |    |  |
|        |  | Section – II  |    |  |
| Q.5    | Atte<br>a)<br>b)<br>c)<br>d)<br>e)   | <ul> <li>Write a C function to delete a node from a binary search tree.</li> <li>Explain the difference between depth-first search and breadth-first search traversing technique of a graph.</li> <li>Define &amp; explain Strictly binary tree &amp; Completely binary tree.</li> <li>Write a C function to count the number of leaf nodes in a binary tree.</li> <li>Explain in detail shortest path using Dijkstra's Algorithm.</li> </ul>                     | 20 |  |
| Q.6    | Drav<br>50, 1  | w the AVL tree resulting from the insertion of the following integer keys. 72, 96,94,107,26,12,11,9,2   | 10 |  |
| Q.7    | Con<br>Pre<br>Inor   | struct the tree if preorder & Inorder traversal of a binary tree is Given.<br>order :G B Q A C K F P D E R H<br>der :Q B K C F A G P E D H R  | 10 |  |

# S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019

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Max. Marks: 80

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|             | S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>DATA STRUCTURES |                               |  |  |   |  |                   |
|-------------|---|-------------------------------|--|--|---|--|-------------------|
| Day<br>Time | & Dat<br>e: 02:3  | e: Tu<br>80 PM                | esday, 26-11-2019<br>1 To 05:30 PM   |  |   | N  | lax. Marks: 100   |
| Instru      | uction  | n <b>s:</b> 1)<br>2<br>3      | Q. No. 1 is compulsory a<br>book.<br>P Figures to the right indi<br>Assume suitable data it  | and it sho<br>cate full<br>f necessa                                 | ould<br>marł<br>ary.                      | be solved in first 30 mir<br><s.< td=""><td>nutes in answer</td></s.<>                     | nutes in answer   |
| _           | _   |                               | MCQ/Objec  | tive Ty  | pe (                                      | Questions  |                   |
| Dura        | ition: 3  | 30 Mi                         | nutes  |  |   |  | Marks: 20         |
| Q.1         | Cho<br>senf   | ose t<br>tence                | the correct alternatives   | from the   | e op                                      | tions and rewrite the  | 20                |
|             | 1)  | Que<br>a)<br>c)               | eue can be used to imple<br>Radix sort<br>Recursion  | ment   | b)<br>d)                                  | Quck Sort<br>Depth of first  |                   |
|             | 2)  | Two<br>a)<br>c)               | o dimensional arrays are<br>tables arrays<br>both of above   | also call  | ed<br>b)<br>d)                            | matrix arrays<br>None of these   |                   |
|             | 3)  | A va<br>a)<br>b)<br>c)<br>d)  | ariable P is called pointer<br>P contains the address<br>P points to the address<br>P can store only memor<br>P contain the DATA and       | <sup>r</sup> if<br>of an ele<br>of first el<br>y addres<br>I the add | men<br>eme<br>ses<br>ress                 | t in DATA.<br>nt in DATA<br>of DATA  |                   |
|             | 4)  | The<br>a)<br>c)               | e complexity of linear sea<br>O(n)<br>O(n2)  | rch algor  | rithm<br>b)<br>d)                         | is<br>O(log n)<br>O(n log n)   |                   |
|             | 5)  | The<br>a)<br>c)               | e complexity of Binary sea<br>O(n)<br>O(n2)  | arch algc  | orithn<br>b)<br>d)                        | n is<br>O(log n)<br>O(n log n)   |                   |
|             | 6)  | A b<br>a)<br>b)<br>c)<br>d)   | inary tree can easily be c<br>by replacing each empty<br>by inserting an internal r<br>by inserting an external<br>by replacing each empty | onverted<br>sub tree<br>nodes for<br>nodes fo<br>v Sub tre           | d into<br>e by<br>r nor<br>or nor<br>e by | o q 2-tree<br>a new internal node ·<br>o-empty node<br>n-empty node<br>a new external node |                   |
|             | 7)  | A b<br>max<br>far<br>a)<br>c) | inary tree in which if all it<br>ximum number of nodes<br>left as possible, is known<br>full binary tree<br>threaded tree                  | s levels e<br>and all th<br>as                                       | exce<br>ne no<br>b)<br>d)                 | pt possibly the last, hav<br>odes at the last level ap<br>AVL tree<br>complete binary tree | re the<br>pear as |

**SLR-FM-713** 

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|     |                                   |  |                                   | SLR-FM-7  | 13 |
|-----|-----------------------------------|--|-----------------------------------|---|----|
|     |                                   |  |                                   | Set   | S  |
| 8)  | A b<br>a)<br>b)<br>c)<br>d)       | inary tree of depth d is an almost<br>Each leaf in the tree is either at l<br>For any node n in the tree with a<br>left descendants of n that are lea<br>Both (a) & (b)<br>None of the above | comp<br>level d<br>right<br>aves, | blete binary tree if<br>d or at level d-1<br>descendant at level d all the<br>are also at level d |    |
| 9)  | A b<br>a)<br>c)                   | inary tree whose every node has<br>Complete binary tree<br>Extended binary tree  | eithe<br>b)<br>d)                 | r zero or two children is called<br>Binary search tree<br>None of above                           |    |
| 10) | A fu<br>a)<br>c)                  | Ill binary tree with 2n+1 nodes co<br>n leaf nodes<br>n-1 leaf nodes.  | ntain<br>b)<br>d)                 | n non-leaf nodes<br>n-1 non-leaf nodes  |    |
| 11) | A fu<br>a)<br>c)                  | Ill Binary tree with n leaves conta<br>n nodes.<br>log n nodes.  | ins<br>b)<br>d)                   | 2n -1 nodes.<br>2^n nodes.  |    |
| 12) | lf a<br>by i<br>a)<br>c)          | node having two children is delet<br>ts<br>Inorder predecessor<br>Preorder predecessor   | ed fro<br>b)<br>d)                | om a binary tree, it is replaced<br>Inorder successor<br>None of the above                        |    |
| 13) | In a<br>poir<br>call<br>a)<br>c)  | t binary tree, certain null entries a<br>nt to nodes higher in the tree for e<br>ed<br>Leaf<br>path  | b)<br>d)<br>d)                    | blaced by special pointers which<br>ncy. These special pointers are<br>branch<br>thread           |    |
| 14) | One<br>a)                         | e can convert a binary tree into its<br>inorder  | s mirro<br>b)<br>d)               | or image by traversing it in<br>preorder<br>any order   |    |
| 15) | The<br>a)                         | depth of a complete binary tree<br>$Dn = n \log 2n$<br>$Dn = \log 2n$  | is give<br>b)<br>d)               | $Dn = n \log 2n + 1$ $Dn = \log 2n + 1$   |    |
| 16) | The a)                            | e number of leaf nodes in a comp<br>2^d<br>2^(d-1)-1   | d)<br>b)<br>d)                    | inary tree of depth d is<br>$2^{(d+1)} - 1$<br>$2^{d} + 1$  |    |
| 17) | To<br>a)<br>c)                    | arrange a binary tree in ascendin<br>Post order traversal<br>Pre order traversal   | g orde<br>b)<br>d)                | er we need<br>In order traversal<br>None of the above   |    |
| 18) | Wh<br>noc<br>a)<br>b)<br>c)<br>d) | en converting binary tree into ext<br>les in binary tree are<br>internal nodes on extended tree<br>external nodes on extended tree<br>vanished on extended tree<br>None of above             | endeo                             | binary tree, all the original   |    |
| 19) | lf a<br>a)<br>c)                  | node in a BST has two children,<br>no left child<br>two children   | then i<br>b)<br>d)                | ts inorder predecessor has<br>no right child<br>no child  |    |
| 20) | A B<br>out<br>a)                  | ST is traversed in the following o<br>put sequence will be in<br>Ascending order   | rder r<br>b)                      | ecursively: Right, root, left The<br>Bitomic sequence   |    |

c) Descending order d) No specific order

| Time  | . 02.30 FM TO 03.30 FM  |    |
|-------|---|----|
| Instr | <ul> <li>uctions: 1) All questions from section-I &amp; II are compulsory.</li> <li>2) Figures to the right indicate full marks.</li> <li>3) Assume suitable data if necessary.</li> </ul>  |    |
|       | Section – I   |    |
| Q.2   | <ul> <li>Attempt any four.</li> <li>a) What is a big-O notation? Explain its significance.</li> <li>b) Write a short on complexity of algorithm.</li> <li>c) What are the factors to be considered during the selection of a sorting technique.</li> <li>d) What is the time complexity of the quick sort algorithm to sort a list of n equal elements. Explain.</li> <li>e) What is hashing? What are the different methods used for calculating hash functions? Explain with suitable example.</li> </ul> | 20 |
| Q.3   | <ul> <li>Explain the algorithm of the following collision resolution techniques.</li> <li>a) Closed hashing (also called linear probing)</li> <li>b) Open hashing (also called chaining)</li> </ul>   | 10 |
| Q.4   | Arrange the following elements in the sorted order using insertion sort.<br>30,20,35,14,90,25,32.<br>Show the step by step process. Explain its Best case time complexity &<br>Worst case time complexity.  | 10 |
|       | Section – II  |    |
| Q.5   | <ul> <li>Attempt any four.</li> <li>a) Write a C function to delete a node from a binary search tree.</li> <li>b) Explain the difference between depth-first search and breadth-first search traversing technique of a graph.</li> <li>c) Define &amp; explain Strictly binary tree &amp; Completely binary tree.</li> <li>d) Write a C function to count the number of leaf nodes in a binary tree.</li> <li>e) Explain in detail shortest path using Dijkstra's Algorithm.</li> </ul>                     | 20 |
| Q.6   | Draw the AVL tree resulting from the insertion of the following integer keys. 50, 72, 96,94,107,26,12,11,9,2  | 10 |
| Q.7   | Construct the tree if preorder & Inorder traversal of a binary tree is Given.<br>Preorder :G B Q A C K F P D E R H<br>Inorder :Q B K C F A G P E D H R  | 10 |

## S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019 Time: 02:30 PM To 05:30 PM **SLR-FM-713** 

Set

Max. Marks: 80

S

Seat No.

|        |             |                          | book.   |                                |  |      |
|--------|-------------|--------------------------|---|--------------------------------|--|------|
|        |             | 2                        | ) Figures to the right indicate full  | mark                           | S.   |      |
|        |             |                          | MCQ/Objective Ty  | pe Q                           | uestions   |      |
| Durati | on: 3       | 80 Mi                    | nutes   |                                | Marks  | : 14 |
| Q.1    | Cho<br>sent | ose                      | the correct alternatives from th<br>e.  | e opt                          | tions and rewrite the  | 14   |
|        | 1)          | A te<br>a)<br>c)         | levision broadcast is an example<br>Half-duplex<br>Full-duplex  | of<br>b)<br>d)                 | transmission.<br>Simplex<br>Automatic  |      |
|        | 2)          | The<br>of th<br>a)<br>c) | Process-to-Process delivery of the layer.<br>Transport<br>Physical  | ne en <sup>.</sup><br>b)<br>d) | tire message is the responsibility<br>Application<br>Network   |      |
|        | 3)          | Whe<br>whic<br>a)<br>c)  | en a host on network A sends a m<br>ch address does the router look a<br>Logical<br>Port                            | nessa<br>t?<br>b)<br>d)        | ge to a host on network B,<br>Physical<br>None of the above  |      |
|        | 4)          | stre<br>mał<br>a)<br>c)  | is a type of transmission impai<br>ngth due to the different propagat<br>kes up the signal.<br>Noise<br>Attenuation | rmen<br>ion sj<br>b)<br>d)     | t in which the signal loses<br>peeds of each frequency that<br>Distortion<br>Decibel                       |      |
|        | 5)          | In M<br>mid<br>a)<br>c)  | lanchester and differential Manch<br>dle of the bit is used for<br>Bit transfer<br>Baud transfer                    | ester<br>b)<br>d)              | encoding, the transition at the<br>Synchronization<br>None of the above                                    |      |
|        | 6)          | a)<br>c)                 | consists of a central conductor<br>Twisted-pair<br>Fiber-optic  | r and<br>b)<br>d)              | a shield.<br>Coaxial<br>None of the above  |      |
|        | 7)          | The<br>they<br>a)<br>c)  | technique of temporarily delaying<br>can be hooked onto the next out<br>Piggybacking<br>Fletcher's checksum         | g outg<br>going<br>b)<br>d)    | oing acknowledgements so that<br>data frame is called.<br>Cyclic redundancy check<br>None of the mentioned |      |
|        | 8)          | A B<br>a)<br>c)          | it map protocol is also known as _<br>Collision free protocol<br>Limited contention protocol                        | b)<br>d)                       | Reservation protocol<br>None   |      |

Seat No.

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer

Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM



Max. Marks: 70

- 4

Page **2** of **12** 

- How many bytes are reserved for data field of IEEE 802.3 std? 9)
  - 32 Bytes a)

- b) 1500 Bytes 16 Bytes
- 8182 d) C)
- Algorithm in which Route from source to destination is already computed in 10) advanced.
  - a) Adaptive Routing algorithm
  - b) Non- Adaptive Routing algorithm
  - c) Both a & b
  - d) None of above
- 11) Flooding routing algorithm is \_\_\_\_\_.
  - a) Static Routing algorithm
  - c) Both a &b d)
- 12) Looping problem is occur in which type of bridge.
  - a) Spanning tree bridge Source routing bridge b)
  - c) Remote bridge d) Transparent Bridge
- 13) Find the class of address 123.12.14.87.
  - a) A b) В
  - D c) C d)
- 14) Host id of class A reserve \_\_\_\_\_ bits.
  - a) 32 bits b) 16 bits
  - c) 8 bits d) 24 bits



- b)
  - Dynamic Routing algorithm
  - None of above

| Seat<br>No.   | :   |   |   | Set      | Ρ     |  |  |
|---------------|---|---|---|----------|-------|--|--|
|               | S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>DATA COMMUNICATION                                |   |   |          |       |  |  |
| Day a<br>Time | & Date: Wednesday, 2<br>: 02:30 PM To 05:30 F   | 7-11-2019<br>PM   | Max   | k. Marks | s: 56 |  |  |
| Instr         | u <b>ctions:</b> 1) All question<br>2) Figures to   | ons are compulsory.<br>the right indicate full m  | arks.   |          |       |  |  |
|               |   | Section -   | I   |          |       |  |  |
| Q.2           | Attempt Any three (<br>a) Explain different<br>b) Write a short not<br>c) Write a short not<br>d) Explain Simplex                     | each carries 4 marks)<br>types of errors in data<br>e on Flow control and E<br>e on Channel Capacity<br>Stop and Wait Protoco | ransmission.<br>Fror Control.                 |          | 12    |  |  |
| Q.3           | Attempt any one.<br>a) Explain Hammin<br>b) What is framing?  | g Code in detail with a<br>' Explain different frami  | suitable example.<br>ng methods with example? |          | 08    |  |  |
| Q.4           | Explain TCP/IP reference  | ence model with neat d  | agram.  |          | 08    |  |  |
|               |   | Section -   | II  |          |       |  |  |
| Q.5           | Attempt any four (e<br>a) Describe the cor<br>b) Explain ALOHA<br>c) Explain class of<br>d) Explain difference<br>e) Explain Link Sta | ach carries 5 marks).<br>Icept of CSMA/CD.<br>with diagram.<br>P4 address.<br>e between switch and l<br>e Routing algorithm   | oridge.                                       |          | 20    |  |  |
| Q.6           | Explain shortest path   | routing algorithm.<br><b>OR</b>   |   |          | 08    |  |  |

Short Note on NAT.

# S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION Day & Date: Wednesday, 27-11-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - A Bit map protocol is also known as 1) b) Reservation protocol
    - Collision free protocol a) C)
      - Limited contention protocol d) None
  - 2) How many bytes are reserved for data field of IEEE 802.3 std?

| a) | 32 Bytes | b) | 1500 Bytes |
|----|----------|----|------------|
| c) | 8182     | d) | 16 Bytes   |

- 3) Algorithm in which Route from source to destination is already computed in advanced.
  - Adaptive Routing algorithm a)
  - Non- Adaptive Routing algorithm b)
  - Both a & b C)
  - d) None of above
- 4) Flooding routing algorithm is \_
  - Static Routing algorithm a)
  - Both a &b C) d)
- 5) Looping problem is occur in which type of bridge.
  - Spanning tree bridge Source routing bridge a) b)
  - Remote bridge d) **Transparent Bridge** c)
- Find the class of address 123.12.14.87. 6) a) Α b)
  - В С D C) d)
- 7) Host id of class A reserve \_\_\_\_\_ bits. 32 bits 16 bits b) a)
  - c) 8 bits d) 24 bits
- A television broadcast is an example of transmission. 8)
  - Half-duplex b) Simplex a) Full-duplex d) Automatic c)
- The Process-to-Process delivery of the entire message is the 9) responsibility of the \_\_\_\_\_ layer.
  - Transport a) b) Application
  - c) Physical d) Network

SLR-FM-714

Max. Marks: 70

Marks: 14

Set

- Dynamic Routing algorithm
- None of above
- b)



When a host on network A sends a message to a host on network B, 10) which address does the router look at?

- a) Logical b) Port
  - d) None of the above
- 11) is a type of transmission impairment in which the signal loses strength due to the different propagation speeds of each frequency that makes up the signal.
  - Noise a)

C)

a)

- Distortion b)
- Attenuation d) Decibel c)
- 12) In Manchester and differential Manchester encoding, the transition at the middle of the bit is used for \_\_\_\_\_.
  - Bit transfer a) C) Baud transfer
- b) Synchronization

Physical

- d) None of the above
- 13) consists of a central conductor and a shield.
  - b) Coaxial
  - C) Fiber-optic d) None of the above
- The technique of temporarily delaying outgoing acknowledgements so 14) that they can be hooked onto the next outgoing data frame is called.
  - Piggybacking a)

Twisted-pair

- Cyclic redundancy check b)
- Fletcher's checksum C)
- None of the mentioned d)

**SLR-FM-714** 

Set Q

| Seat<br>No.   |   | Set       | Q     |
|---------------|---|-----------|-------|
|               | S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-20 <sup>-</sup><br>Information Technology<br>DATA COMMUNICATION   | 19        |       |
| Day a<br>Time | & Date: Wednesday, 27-11-2019 M<br>02:30 PM To 05:30 PM   | ax. Marks | s: 56 |
| Instr         | <b>uctions:</b> 1) All questions are compulsory.<br>2) Figures to the right indicate full marks.  |           |       |
|               | Section – I   |           |       |
| Q.2           | <ul> <li>Attempt Any three (each carries 4 marks).</li> <li>a) Explain different types of errors in data transmission.</li> <li>b) Write a short note on Flow control and Error Control.</li> <li>c) Write a short note on Channel Capacity.</li> <li>d) Explain Simplex Stop and Wait Protocol.</li> </ul> |           | 12    |
| Q.3           | <ul><li>Attempt any one.</li><li>a) Explain Hamming Code in detail with a suitable example.</li><li>b) What is framing? Explain different framing methods with example?</li></ul>   |           | 08    |
| Q.4           | Explain TCP/IP reference model with neat diagram.   |           | 08    |
|               | Section – II  |           |       |
| Q.5           | <ul> <li>Attempt any four (each carries 5 marks).</li> <li>a) Describe the concept of CSMA/CD.</li> <li>b) Explain ALOHA with diagram.</li> <li>c) Explain class of IP4 address.</li> <li>d) Explain difference between switch and bridge.</li> <li>e) Explain Link State Routing algorithm</li> </ul>      |           | 20    |
| Q.6           | Explain shortest path routing algorithm.<br><b>OR</b>   |           | 08    |

Short Note on NAT.

|          | MCQ/Objective Type Questions  |   |                             |  |  |  |  |
|----------|---|---|-----------------------------|--|--|--|--|
| : 3      | 80 Mi   | nutes   |                             | Mark   |  |  |  |
| no<br>ni | ose<br>ence   | the correct alternatives from th<br>e.  | e opt                       | ions and rewrite the   |  |  |  |
|          | In Manchester and differential Manchester encoding, the transition at the middle of the bit is used for |   |                             |  |  |  |  |
|          | a)<br>c)  | Bit transfer<br>Baud transfer   | b)<br>d)                    | Synchronization<br>None of the above   |  |  |  |
|          | a)<br>c)  | consists of a central conductor<br>Twisted-pair<br>Fiber-optic  | and<br>b)<br>d)             | a shield.<br>Coaxial<br>None of the above  |  |  |  |
|          | The<br>they<br>a)<br>c)   | technique of temporarily delaying<br>can be hooked onto the next out<br>Piggybacking<br>Fletcher's checksum                                 | j outg<br>going<br>b)<br>d) | oing acknowledgements so that<br>data frame is called.<br>Cyclic redundancy check<br>None of the mentioned |  |  |  |
|          | A Bi<br>a)<br>c)  | it map protocol is also known as _<br>Collision free protocol<br>Limited contention protocol  | b)<br>d)                    | Reservation protocol<br>None   |  |  |  |
|          | How<br>a)<br>c)   | v many bytes are reserved for data<br>32 Bytes<br>8182  | a fielo<br>b)<br>d)         | d of IEEE 802.3 std?<br>1500 Bytes<br>16 Bytes   |  |  |  |
|          | Algo<br>adva<br>a)<br>b)<br>c)<br>d)  | orithm in which Route from source<br>anced.<br>Adaptive Routing algorithm<br>Non- Adaptive Routing algorithm<br>Both a & b<br>None of above | e to de                     | estination is already computed in  |  |  |  |
|          | Floc<br>a)<br>c)  | oding routing algorithm is<br>Static Routing algorithm<br>Both a &b   | b)<br>d)                    | Dynamic Routing algorithm<br>None of above   |  |  |  |
|          | Loo<br>a)<br>c)   | ping problem is occur in which typ<br>Spanning tree bridge<br>Remote bridge   | be of l<br>b)<br>d)         | bridge.<br>Source routing bridge<br>Transparent Bridge   |  |  |  |

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION

Duration:

Day & Date: Wednesday, 27-11-2019

Time: 02:30 PM To 05:30 PM

Seat

No.

- Q.1 Ch se
  - 1)
    - 2)
    - 3)
    - 4)
    - 5)
  - 6)
  - 7)
  - 8)
    - Remote bridge C) u)
  - Find the class of address 123.12.14.87. 9)
    - В a) А b) D d)
    - c) C

**SLR-FM-714** 



Max. Marks: 70

ks: 14

14

Host id of class A reserve \_\_\_\_\_ bits.

- 16 bits a) 32 bits b) c) 8 bits 24 bits d)
- A television broadcast is an example of \_\_\_\_ 11) transmission.
  - a) Half-duplex b) Simplex c)
    - Full-duplex d) Automatic
- The Process-to-Process delivery of the entire message is the responsibility 12) of the \_\_\_\_\_ layer.
  - Transport b) Application a)
  - Physical d) Network C)
- 13) When a host on network A sends a message to a host on network B, which address does the router look at?
  - a) Logical Physical b)
  - c) Port d) None of the above
- 14) \_\_\_\_ is a type of transmission impairment in which the signal loses strength due to the different propagation speeds of each frequency that makes up the signal.
  - a) Noise

10)

b) Distortion **SLR-FM-714** 

Set | R

Attenuation C)

d) Decibel

| Seat<br>No.  |   |  | S   | Set | R  |  |  |
|--|---|--|---|-----|----|--|--|
| S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>DATA COMMUNICATION |   |  |   |     |    |  |  |
| Day a<br>Time  | Day & Date: Wednesday, 27-11-2019 Max. Marks: 56<br>Time: 02:30 PM To 05:30 PM  |  |   |     |    |  |  |
| Instr  | u <b>ctions:</b> 1) All question<br>2) Figures to   | ons are compulsory.<br>the right indicate full m   | arks.                                       |     |    |  |  |
|  |   | Section -  | I   |     |    |  |  |
| Q.2  | <ul> <li>Attempt Any three (</li> <li>a) Explain different</li> <li>b) Write a short not</li> <li>c) Write a short not</li> <li>d) Explain Simplex</li> </ul> | each carries 4 marks).<br>types of errors in data to<br>e on Flow control and E<br>e on Channel Capacity.<br>Stop and Wait Protocol. | ansmission.<br>rror Control.                |     | 12 |  |  |
| Q.3  | Attempt any one.<br>a) Explain Hammin<br>b) What is framing?  | g Code in detail with a s<br>' Explain different framir  | uitable example.<br>g methods with example? |     | 08 |  |  |
| Q.4  | Explain TCP/IP refer  | ence model with neat dia   | agram.                                      |     | 08 |  |  |
|  | Section – II  |  |   |     |    |  |  |
| Q.5  | Attempt any four (e<br>a) Describe the cor<br>b) Explain ALOHA<br>c) Explain class of<br>d) Explain difference<br>e) Explain Link Sta                         | ach carries 5 marks).<br>acept of CSMA/CD.<br>with diagram.<br>IP4 address.<br>e between switch and b<br>re Routing algorithm        | ridge.                                      |     | 20 |  |  |
| Q.6  | Explain shortest path   | routing algorithm.<br><b>OR</b>  |   |     | 08 |  |  |

Short Note on NAT.

## Set S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DATA COMMUNICATION Day & Date: Wednesday, 27-11-2019 Max. Marks: 70 Time: 02:30 PM To 05:30 PM Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### **MCQ/Objective Type Questions**

#### **Duration: 30 Minutes**

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence.
  - 1) Algorithm in which Route from source to destination is already computed in advanced.
    - Adaptive Routing algorithm a)
    - b) Non- Adaptive Routing algorithm
    - Both a & b c)
    - d) None of above

#### 2) Flooding routing algorithm is \_

- a) Static Routing algorithm Dynamic Routing algorithm b)
- c) Both a &b d) None of above

#### Looping problem is occur in which type of bridge. 3)

- a) Spanning tree bridge
- Source routing bridge b) c) Remote bridge **Transparent Bridge** d)
- Find the class of address 123.12.14.87. 4)
  - В a) A b)
  - c) C d) D
- Host id of class A reserve \_\_\_\_\_ bits. 5) a) 32 bits b) 16 bits
  - c) 8 bits d) 24 bits
- 6) A television broadcast is an example of \_\_\_\_\_transmission.
  - a) Half-duplex Simplex b) Full-duplex d) Automatic c)
- The Process-to-Process delivery of the entire message is the responsibility 7) of the layer.
  - Transport Application a) b)
  - Physical d) Network C)
- When a host on network A sends a message to a host on network B, 8) which address does the router look at?
  - Logical Physical a) b)
  - Port d) None of the above c)

# SLR-FM-714



Marks: 14

14

- 9) is a type of transmission impairment in which the signal loses strength due to the different propagation speeds of each frequency that makes up the signal.
  - Noise a) Attenuation c)

C)

C)

14)

- Distortion b)
- d) Decibel
- 10) In Manchester and differential Manchester encoding, the transition at the middle of the bit is used for \_\_\_\_\_.
  - Bit transfer a) Baud transfer

- b) Synchronization
- d) None of the above
- consists of a central conductor and a shield. 11)
  - Twisted-pair a) Fiber-optic

- Coaxial b)
- d) None of the above
- 12) The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called.

b)

d)

- a) Piggybacking
- Fletcher's checksum C)
- 13) A Bit map protocol is also known as \_
  - Collision free protocol a)
  - Limited contention protocol C)
- **Reservation protocol** b) d) None

Cyclic redundancy check

None of the mentioned

- How many bytes are reserved for data field of IEEE 802.3 std?
  - 1500 Bytes b)

32 Bytes a) 8182 C)

- 16 Bytes d)

SLR-FM-714

# Set

| Seat<br>No.  | :   |   | Set                                    | S  |  |  |  |
|--|---|---|--|----|--|--|--|
| S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>DATA COMMUNICATION |   |   |  |    |  |  |  |
| Day a<br>Time  | Day & Date: Wednesday, 27-11-2019         Max. Marks: 56           Time: 02:30 PM To 05:30 PM         Max. Marks: 56                    |   |  |    |  |  |  |
| Instr  | u <b>ctions:</b> 1) All questic<br>2) Figures to  | ns are compulsory.<br>the right indicate full mark  | S.                                     |    |  |  |  |
|  |   | Section – I   |  |    |  |  |  |
| Q.2  | Attempt Any three (<br>a) Explain different<br>b) Write a short not<br>c) Write a short not<br>d) Explain Simplex                       | each carries 4 marks).<br>types of errors in data tran<br>e on Flow control and Erro<br>e on Channel Capacity.<br>Stop and Wait Protocol. | smission.<br><sup>-</sup> Control.     | 12 |  |  |  |
| Q.3  | Attempt any one.<br>a) Explain Hammin<br>b) What is framing?  | g Code in detail with a suita<br>Explain different framing r  | able example.<br>nethods with example? | 08 |  |  |  |
| Q.4  | Explain TCP/IP refere   | ence model with neat diagr  | am.                                    | 08 |  |  |  |
|  | Section – II  |   |  |    |  |  |  |
| Q.5  | Attempt any four (ea<br>a) Describe the cor<br>b) Explain ALOHA<br>c) Explain class of<br>d) Explain difference<br>e) Explain Link Stat | ach carries 5 marks).<br>cept of CSMA/CD.<br>with diagram.<br>P4 address.<br>e between switch and bridg<br>e Routing algorithm            | ge.                                    | 20 |  |  |  |
| Q.6  | Explain shortest path   | routing algorithm.<br><b>OR</b>   |  | 08 |  |  |  |

Short Note on NAT.

| Time  | e: 02:3  | 80 PN            | M To 05:30 PM   |                      |   | . 70 |
|-------|--|------------------|---|----------------------|---|------|
| Instr | ructio   | ns: ´            | 1) Q. No. 1 is compulsory and book.                                       | should               | l be solved in first 30 minutes in ans              | wer  |
|       |  | 2                | ) Figures to the right indicate   | tull mar             | ks.   |      |
| _     | _  |                  | MCQ/Objective   | еТуре                | Questions   |      |
| Dura  | ation: 3   | 30 M             | inutes  |                      | Marks   | : 14 |
| Q.1   | <ul><li>Choose the correct alternatives from the options and rewrite the sent</li><li>1) Which protocol ensures reliable delivery?</li></ul> |                  |   |                      |   | 14   |
|       |  | a)<br>c)         | TCP<br>Both a and b   | b)<br>d)             | UDP<br>None of these                                |      |
|       | 2)   | TC<br>a)<br>c)   | P/IP is mainly used for<br>File transfer<br>Remote Login                  | b)<br>d)             | Email<br>All of these                               |      |
|       | 3)   | TC<br>a)<br>c)   | P/IP is<br>Network hardware<br>Protocol                                   | b)<br>d)             | Network software<br>None of these                   |      |
|       | 4)   | Wh<br>a)<br>c)   | iich is the lowest layer of the T<br>Host to Host layer<br>Internet layer | CP/IP<br>b)<br>d)    | model?<br>Network Access layer<br>Application layer |      |
|       | 5)   | In a<br>a)<br>c) | a TCP header source and des<br>8 bits<br>32 bits                          | tination<br>b)<br>d) | header contains.<br>16 bits<br>128 bits             |      |
|       | 6)   | Wh<br>a)<br>c)   | iich of the following is not a ne<br>gateways<br>routers                  | etworkin<br>b)<br>d) | ng device?<br>linux<br>bridges                      |      |
|       | 7)   | Wh<br>a)<br>c)   | iich of the following can be a s<br>routers<br>gateways                   | oftware<br>b)<br>d)  | e?<br>modems<br>firewalls                           |      |
|       | 8)   | a)<br>c)         | Management is also refer<br>SNMP<br>Both                                  | red as I<br>b)<br>d) | nternet management.<br>SMTP<br>None                 |      |
|       | 9)   | SN<br>a)<br>c)   | MP management is mostly wi<br>NMS   | dely us<br>b)<br>d)  | ed<br>NOC   |      |

Day & Date: Friday, 13-12-2019 Time

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **NETWORK MANAGEMENT** 

# **SLR-FM-715**

- c) MOC d) none
- In SNMP information model consists of 10)
  - a) MIB b) SMI C) Both d) None

Seat No.

Max. Marks: 70

Set P

#### ICMP was developed to manage \_\_\_\_ 11)

- a) ARPANET c) INTRANET
- b) INTERNET d) none
- 12) PING stands for \_\_\_\_\_.
  - a) Packet internal group
  - c) Packet Internet Groper
- b) Packet internet group

**SLR-FM-715** 

Set P

d) None

#### SNMP manager contains additional object than SNMP agent is \_\_\_\_\_. 13)

- a) DLC b) Trap c) Management data
  - d) None
- RFC 1157 describes SNMP \_\_\_\_\_. 14)
  - a) Architecture c) Management information
- b) Structure
- d) None

| Seat  | t S   | Set    | Ρ     |  |  |  |
|---|---|--------|-------|--|--|--|
| T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>NETWORK MANAGEMENT |   |        |       |  |  |  |
| Time  | e: 02:30 PM To 05:30 PM   | /iarks | 5. 00 |  |  |  |
| Instr   | <b>Tuctions:</b> 1) All questions are compulsory.<br>2) Figure to the right indicates full marks.   |        |       |  |  |  |
|   | Section – I   |        |       |  |  |  |
| Q.2   | <ul> <li>Attempt any three of the following.</li> <li>a) Explain the different UDP operations.</li> <li>b) Explain the Three Way Handshaking in TCP connection.</li> <li>c) Explain DHCP packet format.</li> </ul>  |        | 12    |  |  |  |
|   | <ul><li>d) Explain DNS query and DNS response message in detail.</li><li>e) Explain BOOTP and the operations on BOOTP.</li></ul>  |        |       |  |  |  |
| Q.3   | <ul> <li>Q.3 Attempt any two of the following.</li> <li>a) What is Congestion window? Explain all congestion control policies used by TCP</li> </ul>  |        |       |  |  |  |
|   | <ul> <li>b) Explain the architecture of E-Mail along with neat diagrams of all scenarios.</li> </ul>  |        |       |  |  |  |
|   | c) Describe the Hyper Text transfer Protocol in detail.   |        |       |  |  |  |
|   | Section – II  |        |       |  |  |  |
| Q.4   | <ul> <li>Attempt any three of the following</li> <li>a) What are security policies?</li> <li>b) Explain proxy server organization model with diagram.</li> <li>c) What factors involve in configuration management of SNMP?</li> <li>d) How SNMP manage objects and management information base?</li> </ul> |        | 12    |  |  |  |
| Q.5   | <ul> <li>Attempt any two of the following.</li> <li>a) What are the event correlation techniques?</li> <li>b) What are the performance metrics in performance management?</li> </ul>  |        | 16    |  |  |  |

c) Explain network provisioning.

| Day<br>Time | & Dat<br>e: 02:3 | e: Friday, 13-12-2019<br>0 PM To 05:30 PM   |                                     | Max. Marks: 70  |
|-------------|------------------|---|-------------------------------------|---|
| Instr       | ructio           | ns: 1) Q. No. 1 is compulsory and s book.   | should                              | be solved in first 30 minutes in answer                                     |
|             |                  | 2) Figures to the right indicate fu   | ull mai                             | ks.   |
|             |                  | MCQ/Objective   | Туре                                | Questions   |
| Dura        | ation: 3         | 30 Minutes  |                                     | Marks: 14   |
| Q.1         | Cho<br>1)        | ose the correct alternatives from<br>Management is also referre<br>a) SNMP<br>c) Both | <b>the o</b><br>ed as l<br>b)<br>d) | ptions and rewrite the sentence. 14<br>Internet management.<br>SMTP<br>None |
|             | 2)               | SNMP management is mostly wid<br>a) NMS<br>c) MOC                                     | ely us<br>b)<br>d)                  | ed<br>NOC<br>none   |
|             | 3)               | In SNMP information model consis<br>a) MIB<br>c) Both                                 | sts of<br>b)<br>d)                  | SMI<br>None   |
|             | 4)               | ICMP was developed to manage _<br>a) ARPANET<br>c) INTRANET                           | b)<br>d)                            | INTERNET<br>none  |
|             | 5)               | PING stands for<br>a) Packet internal group<br>c) Packet Internet Groper              | b)<br>d)                            | Packet internet group<br>None   |
|             | 6)               | SNMP manager contains addition<br>a) DLC<br>c) Management data                        | al obje<br>b)<br>d)                 | ect than SNMP agent is<br>Trap<br>None                                      |
|             | 7)               | RFC 1157 describes SNMP<br>a) Architecture<br>c) Management information               | <br>b)<br>d)                        | Structure<br>None   |
|             | 8)               | Which protocol ensures reliable de<br>a) TCP<br>c) Both a and b                       | elivery<br>b)<br>d)                 | ?<br>UDP<br>None of these   |
|             | 9)               | TCP/IP is mainly used for<br>a) File transfer<br>c) Remote Login                      | b)<br>d)                            | Email<br>All of these   |
|             | 10)              | TCP/IP is<br>a) Network hardware<br>c) Protocol                                       | b)<br>d)                            | Network software<br>None of these   |

# T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology NETWORK MANAGEMENT

Seat No.

## **SLR-FM-715**

Set Q

- SLR-FM-715 Set Q
- 11) Which is the lowest layer of the TCP/IP model?
  - a) Host to Host layer
- b) Network Access layer
- c) Internet layer
- d) Application layer
- 12) In a TCP header source and destination header contains.
  - a) 8 bits b) 16 bits
  - c) 32 bits d) 128 bits
- 13) Which of the following is not a networking device?
  - a) gateways b) linux
  - c) routers d) bridges
- 14) Which of the following can be a software?
  - a) routers

gateways

C)

- b) modems
- d) firewalls

| Seat  | t   | Set  | Q  |  |  |  |
|---|---|--|----|--|--|--|
| T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>NETWORK MANAGEMENT |   |  |    |  |  |  |
| Day &<br>Time<br>Instru   | Day & Date: Friday, 13-12-2019 Max. Marks: 56<br>Time: 02:30 PM To 05:30 PM<br>Instructions: 1) All questions are compulsory.                       |  |    |  |  |  |
|   | , 0   | Section – I  |    |  |  |  |
| Q.2   | Attempt any three<br>a) Explain the diff  | of the following.<br>Ferent UDP operations.  | 12 |  |  |  |
|   | <ul> <li>c) Explain the Third</li> <li>c) Explain DHCP</li> <li>d) Explain DNS q</li> <li>e) Explain BOOT</li> </ul>                                | packet format.<br>uery and DNS response message in detail.<br>P and the operations on BOOTP.   |    |  |  |  |
| Q.3   | <ul> <li>Q.3 Attempt any two of the following.</li> <li>a) What is Congestion window? Explain all congestion control policies used</li> </ul>       |  |    |  |  |  |
|   | <ul> <li>b) Explain the architecture of E-Mail along with neat diagrams of all scenarios.</li> </ul>  |  |    |  |  |  |
|   | c) Describe the H   | lyper Text transfer Protocol in detail.  |    |  |  |  |
|   |   | Section – II   |    |  |  |  |
| Q.4   | <ul> <li>Attempt any three</li> <li>a) What are secu</li> <li>b) Explain proxy s</li> <li>c) What factors in</li> <li>d) How SNMP matrix</li> </ul> | <b>of the following</b><br>rity policies?<br>server organization model with diagram.<br>wolve in configuration management of SNMP?<br>anage objects and management information base? | 12 |  |  |  |
| Q.5   | <ul><li>Attempt any two of</li><li>a) What are the e</li><li>b) What are the p</li></ul>  | f the following.<br>event correlation techniques?<br>erformance metrics in performance management?   | 16 |  |  |  |

c) Explain network provisioning.

|     | a)<br>c)         | routers   | (d                 | bridges                               |
|-----|------------------|---|--------------------|---------------------------------------|
| 3)  | Whi<br>a)<br>c)  | ch of the following can be a soft<br>routers<br>gateways        | ware<br>b)<br>d)   | ?<br>modems<br>firewalls              |
| 4)  | a)<br>c)         | Management is also referred<br>SNMP<br>Both                     | as lı<br>b)<br>d)  | nternet management.<br>SMTP<br>None   |
| 5)  | SNN<br>a)<br>c)  | MP management is mostly widely<br>NMS<br>MOC                    | y use<br>b)<br>d)  | ed<br>NOC<br>none                     |
| 6)  | In S<br>a)<br>c) | NMP information model consists<br>MIB<br>Both                   | s of _<br>b)<br>d) | SMI<br>None                           |
| 7)  | ICM<br>a)<br>c)  | IP was developed to manage<br>ARPANET<br>INTRANET               | b)<br>d)           | INTERNET<br>none                      |
| 8)  | PIN<br>a)<br>c)  | G stands for<br>Packet internal group<br>Packet Internet Groper | b)<br>d)           | Packet internet group<br>None         |
| 9)  | SNN<br>a)<br>c)  | MP manager contains additional<br>DLC<br>Management data        | obje<br>b)<br>d)   | ct than SNMP agent is<br>Trap<br>None |
| 10) | RFC<br>a)<br>c)  | C 1157 describes SNMP<br>Architecture<br>Management information | b)<br>d)           | Structure<br>None                     |

Seat No.

Day & Date: Friday, 13-12-2019 Time: 02:30 PM To 05:30 PM

8 bits

32 bits

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

In a TCP header source and destination header contains.

Which of the following is not a networking device?

Choose the correct alternatives from the options and rewrite the sentence. 14

d)

L- \

b) 16 bits

128 bits

Duration: 30 Minutes

a)

C)

1)

2)

Q.1

Marks: 14

**SLR-FM-715** 

Set

Max. Marks: 70

R

11) Which protocol ensures reliable delivery?

a) TCP

c) Both a and b

b) UDP

b) Email

d) All of these

d) None of these

**SLR-FM-715** 

Set R

- 12) TCP/IP is mainly used for \_\_\_\_\_.
  - a) File transfer
  - c) Remote Login
- 13) TCP/IP is \_\_\_\_\_.
  - a) Network hardware
  - c) Protocol

- b) Network software
- d) None of these
- 14) Which is the lowest layer of the TCP/IP model?
  - a) Host to Host layer
  - c) Internet layer

- b) Network Access layer
- d) Application layer

Page **8** of **12**
| Seat          | t   |  |   | Sot   | D     |  |  |  |
|---------------|---|--|---|---|-------|--|--|--|
| No.           |   |  |   | Set   | Γ     |  |  |  |
|               | T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>NETWORK MANAGEMENT |  |   |   |       |  |  |  |
| Day &<br>Time | & Da<br>: 02:   | ate: Friday, 13-12-2<br>30 PM To 05:30 P   | 2019<br>M   | Max. Mark   | s: 56 |  |  |  |
| Instr         | ucti  | ons: 1) All questio<br>2) Figure to t  | ns are compulsory.<br>ne right indicates full marks   |   |       |  |  |  |
|               |   |  | Section – I   |   |       |  |  |  |
| Q.2           | Atte<br>a)<br>b)<br>c)  | empt any three or<br>Explain the differ<br>Explain the Thre<br>Explain DHCP o  | t <b>he following.</b><br>ent UDP operations.<br>e Way Handshaking in TCF<br>acket format.                              | connection.   | 12    |  |  |  |
|               | d)<br>e)  | Explain DNS que<br>Explain BOOTP   | and the operations on BOC   | sage in detail.<br>TP.                                |       |  |  |  |
| Q.3           | Atte<br>a)  | empt any two of t<br>What is Congest<br>by TCP.  | he following.<br>ion window? Explain all cor  | gestion control policies used                         | 16    |  |  |  |
|               | b)  | Explain the arch scenarios.  | tecture of E-Mail along with  | neat diagrams of all                                  |       |  |  |  |
|               | C)  | Describe the Hy  | per Text transfer Protocol In   | detail.   |       |  |  |  |
|               |   |  | Section – II  |   |       |  |  |  |
| Q.4           | Atte<br>a)<br>b)<br>c)<br>d)  | empt any three of<br>What are securit<br>Explain proxy se<br>What factors inv<br>How SNMP mar  | the following<br>y policies?<br>rver organization model with<br>olve in configuration manag<br>age objects and manageme | n diagram.<br>ement of SNMP?<br>ent information base? | 12    |  |  |  |
| Q.5           | Atte<br>a)<br>b)  | empt any two of the What are the even What are the performance of the performance of the matching of the term of t | <b>he following.</b><br>ent correlation techniques?<br>formance metrics in perforr                                      | nance management?                                     | 16    |  |  |  |

c) Explain network provisioning.

| lime  | e: 02:3          | 30 PM To 05:30 PM   |                            |   |       |
|-------|------------------|---|----------------------------|---|-------|
| Insti | ructio           | ns: 1) Q. No. 1 is compulsory and sl<br>book.<br>2) Figures to the right indicate ful | noulo<br>I mai             | d be solved in first 30 minutes in ans<br>rks.      | swer  |
|       |                  | MCQ/Objective T   | уре                        | Questions   |       |
| Dura  | ation: 3         | 30 Minutes  |                            | Marks   | s: 14 |
| Q.1   | <b>Cho</b><br>1) | ose the correct alternatives from the In SNMP information model consist a) MIB        | h <b>e o</b><br>s of<br>b) | ptions and rewrite the sentence.                    | 14    |
|       |                  | c) Both   | d)                         | None  |       |
|       | 2)               | ICMP was developed to manage<br>a) ARPANET<br>c) INTRANET                             | b)<br>d)                   | INTERNET<br>none                                    |       |
|       | 3)               | PING stands for<br>a) Packet internal group<br>c) Packet Internet Groper              | b)<br>d)                   | Packet internet group<br>None                       |       |
|       | 4)               | SNMP manager contains additional<br>a) DLC<br>c) Management data                      | l obje<br>b)<br>d)         | ect than SNMP agent is<br>Trap<br>None              |       |
|       | 5)               | RFC 1157 describes SNMP<br>a) Architecture<br>c) Management information               | b)<br>d)                   | Structure<br>None                                   |       |
|       | 6)               | Which protocol ensures reliable del   | ivery                      | /?  |       |
|       | -                | a) TCP<br>c) Both a and b   | b)<br>d)                   | UDP<br>None of these                                |       |
|       | 7)               | TCP/IP is mainly used for<br>a) File transfer<br>c) Remote Login                      | b)<br>d)                   | Email<br>All of these                               |       |
|       | 8)               | TCP/IP is<br>a) Network hardware<br>c) Protocol                                       | b)<br>d)                   | Network software<br>None of these                   |       |
|       | 9)               | Which is the lowest layer of the TC<br>a) Host to Host layer<br>c) Internet layer     | P/IP<br>b)<br>d)           | model?<br>Network Access layer<br>Application layer |       |
|       | 10)              | In a TCP header source and destin a) 8 bits   | atior<br>b)                | header contains.<br>16 bits                         |       |

C) 32 bits d) 128 bits **SLR-FM-715** 

### Seat No.

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **NETWORK MANAGEMENT** 

# Day & Date: Friday, 13-12-2019

# Max. Marks: 70

Set S

- Which of the following is not a networking device? 11)
  - b) linux a) gateways
  - c) routers d) bridges
- Which of the following can be a software? 12)
  - b) modems a) routers
  - c) gateways d) firewalls
- \_ Management is also referred as Internet management. 13)
  - SNMP b) SMTP a) Both C)
    - d) None
- SNMP management is mostly widely used \_ 14)
  - a) NMS MOC

C)

b) NOC

**SLR-FM-715** 

Set S

d) none

| Seat           | t   |  |   |  | Sat        | S     |  |
|----------------|---|--|---|--|------------|-------|--|
| No.            |   |  |   |  | Jei        | 5     |  |
|                | T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>NETWORK MANAGEMENT           |  |   |  |            |       |  |
| Day &<br>Time: | & Date: Frida<br>: 02:30 PM T   | y, 13-12-2<br>o 05:30 F  | 2019<br>M   |  | Max. Marks | s: 56 |  |
| Instru         | uctions: 1) A<br>2) F   | Il questio   | ns are compulsory.<br>ne right indicates full m   | arks.  |            |       |  |
|                |   |  | Section -   | I  |            |       |  |
| Q.2            | <ul> <li>Attempt any</li> <li>a) Explain</li> <li>b) Explain</li> <li>c) Explain</li> <li>d) Explain</li> </ul> | y three o<br>the diffe<br>the Three<br>DHCP p<br>DNS qu              | the following.<br>ent UDP operations.<br>e Way Handshaking in<br>acket format.<br>ery and DNS response    | TCP connection.  |            | 12    |  |
|                | e) Explair  | BOOTP  | and the operations on   | BOOTP.   |            |       |  |
| Q.3            | a) What is by TCF   | <b>y two of</b> t<br>s Conges<br>P.                                  | he following.<br>ion window? Explain a  | l congestion control pol   | icies used | 16    |  |
|                | b) Explair<br>scenar  | n the arch<br>ios.   | tecture of E-Mail along   | with neat diagrams of a  | all        |       |  |
|                | c) Describ  | be the Hy  | per Text transfer Proto   | col in detail.   |            |       |  |
|                | Section – II  |  |   |  |            |       |  |
| Q.4            | <ul> <li>Attempt any</li> <li>a) What a</li> <li>b) Explain</li> <li>c) What fa</li> <li>d) How Si</li> </ul>   | <b>y three o</b><br>are securit<br>proxy se<br>actors inv<br>NMP mar | the following<br>y policies?<br>rver organization mode<br>olve in configuration m<br>age objects and mana | el with diagram.<br>Anagement of SNMP?<br>gement information bas | e?         | 12    |  |
| Q.5            | Attempt and<br>a) What a<br>b) What a   | <b>y two of</b><br>are the ev<br>are the pe                          | <b>he following.</b><br>Ent correlation techniqu<br>formance metrics in pe                                | es?<br>erformance managemer                                      | nt?        | 16    |  |

c) Explain network provisioning.

| Coot        |  |                                  |                        |                            |           |                               |           |       |
|-------------|--|----------------------------------|------------------------|----------------------------|-----------|-------------------------------|-----------|-------|
| Seat<br>No. |  |                                  |                        |                            |           |                               | Set       | Ρ     |
|             | T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019      |                                  |                        |                            |           |                               |           |       |
|             |  | COMPUTI                          | Informa<br>ER ORGAI    | ition Tech                 | nn<br>I 8 | ology<br>& ARCHITECTURE       |           |       |
| Day &       | Date: M  | onday, 16-12                     | 2-2019                 |                            |           | Max                           | . Marks:  | 100   |
| Time. (     | J2.30 PI   | VI TO UD.30 P                    | IVI                    |                            |           | a a chua din firat 00 minuta  |           |       |
| Instruc     |  | book.                            | compulsory             | and should                 | d I       | e solved in first 30 minute   | es in ans | wer   |
|             | 2  | <ol> <li>Figures to t</li> </ol> | he right indic         | cate full mai              | rk        | S.                            |           |       |
| Duratia     |  | N                                | ICQ/Objec              | tive Type                  | e (       | Questions                     | Maulu     |       |
| Duratio     | on: 30 ivi   |                                  | -   (                  | fuere the e                |           | ( <b>!</b>                    | Mark      | s: 20 |
| Q.1 (       | noose  | the correct a                    | riod of third of       | trom the o<br>peneration o |           | nputer.                       |           | 20    |
| •           | , <u> </u>   | 1965-1971                        |                        | b)                         |           | 1979-1985                     |           |       |
|             | c)   | 1989-1995                        |                        | d)                         |           | None                          |           |       |
| 2           | 2) Wł  | no is regarde                    | d as the four          | der of Com                 | ιpι       | uter Architecture?            |           |       |
|             | a)   | Alan Turing                      | Aumann                 | b)<br>d)                   |           | Konrad Zuse                   |           |       |
| 2           | 0)<br>2) Th  | o two's comp                     | lomont ronro           | u)<br>Sontation o          | f         |                               |           |       |
|             | a)   | 11110110                         | iement iepie           | b)                         | - 1       | 11011001                      |           |       |
|             | c)   | 00001010                         |                        | d)                         |           | 1111100                       |           |       |
| 4           | l) Bo<br>the   | th the CISC a                    | and RISC are           | chitectures                | ha        | ave been developed to red     | luce      |       |
|             | a)   | Cost                             |                        | b)                         |           | Time delay                    |           |       |
|             | C)   | Semantic g                       | ар                     | d)                         |           | All of the mentioned          |           |       |
| 5           | 5) In  | IEEE 32-bit r                    | epresentatio           | ns, the man                | tis       | ssa of the fraction is said t | 0         |       |
|             | a)   | 24                               | bito.                  | b)                         |           | 23                            |           |       |
|             | c)   | 20                               |                        | d)                         |           | 16                            |           |       |
| 6           | S) A"<br>a   | 0" in the sign                   | bit represer           | nts a                      | a         | nd a "1"in the sign bit repr  | esents    |       |
|             | a)   | Positive nu                      | mber                   | b)                         |           | Negative number               |           |       |
|             | c)   | Both                             |                        | d)                         |           | None of these                 |           |       |
| 7           | ()   | are the                          | different type         | e/s of gener               | at        | ting control signals.         |           |       |
|             | a)<br>b)   | Hardwired                        | ammed                  |                            |           |                               |           |       |
|             | c)   | Micro-instru                     | iction                 |                            |           |                               |           |       |
|             | d)   | Both Micro-                      | programmed             | d and Hardv                | vir       | ed                            |           |       |
| 8           | B) Th  | e disadvanta                     | ge/s of the h          | ardwired ap                | р         | roach is                      |           |       |
|             | a)<br>h)   | It is less fle                   | xible<br>e used for co | molex instru               | IC        | tions                         |           |       |
|             | c)   | It is costly                     |                        |                            |           |                               |           |       |
|             | d) less flexible & cannot be used for complex instructions |                                  |                        |                            |           |                               |           |       |

- 9) Which is the fastest storage unit in a usual memory hierarchy? b)
  - a) Cache c) Hard disk

- Main memory d) Register
- What is usually regarded as the von Neumann Bottleneck? 10)
  - a) Processor/memory interface b) Control unit c) Arithmetic logical unit d) Instruction set
- 11) The effectiveness of the cache memory is based on the property of \_\_\_\_\_.
  - a) Locality of reference
- Memory localization b)
- c) Memory size None of the above d)
- Consider a small two-way set-associative cache memory, consisting of 12) four blocks. For choosing the block to be replaced, use the least recently used (LRU) scheme. The number of cache misses for the following sequence of block addresses is 8, 12, 0, 12, 8.
  - a) 2 b) 3
  - c) 4
- 13) Virtual memory is
  - a) Large secondary memory
  - b) Large main memory
  - c) The illusion of large main memory
  - d) None of the above
- 14) To which class of systems does the von Neumann computer belong?
  - a) SIMD (Single Instruction Multiple Data)
  - b) MIMD (Multiple Instruction Multiple Data)
  - c) MISD (Multiple Instruction Single Data)
  - d) SISD (Single Instruction Single Data)
- Which value has the speedup of a parallel program that achieves an 15) efficiency of 75% on 32 processors?
  - 24 a) 18 b)
  - 20 c) 16 d)
- How many latches are required in an n-stage pipelined processor? 16)
  - n-1 a) n b)
  - c) 2n d) n/2
- An instruction pipeline can be implemented using a 17)
  - a) LIFO buffer FIFO buffer b) c) Stack
    - d) None of the above
- A branch instruction is known as a \_\_\_\_\_ if the processor assumes that 18) all the succeeding instructions that are fetched before its outcome has been determined, are on the correct path.
  - Taken branch Frozen branch a) b)
  - Delayed branch None of the above C) d)

Set

- d) 5

# **SLR-FM-716** Set P

- A multiprocessor operating system should perform \_ 19)
- \_\_· a) a mechanism to split a task into concurrent subtasks
  - b) optimize the system performance
  - c) handling structural or architectural changes
  - d) all of the mentioned
- Which of the following is not a pipeline stage? 20)
  - a) Operand fetch

- Execute b)
- c) Pipeline flush d) Memory Access

| Seat |  |
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| No.  |  |

### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology COMPUTER ORGANIZATION & ARCHITECTURE

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

#### Q.2 Attempt any four.

- a) Describe the five generations of computers in detail.
- **b)** Describe IEEE format for floating point numbers.
- c) Define Virtual memory and explain its advantages.
- d) Explain Segmentation and paging in memory with an example.
- e) List and explain different instruction types.

#### Q.3 Attempt any two.

- a) Describe the Hardwired Control Unit using Sequence counter Design Method.
- b) Multiply the following using Booth's algorithm. Multiplicand = -8 Multiplier = -9
- c) Explain First fit and Best fit memory allocations with diagrams.

#### Section – II

#### Q.4 Attempt any four.

- a) What is cache memory? Discuss how to improve cache performance?
- b) What are the different Flynn's classifications of computers?
- c) Explain in brief concept of interleaved memories.
- d) What is need of replacement algorithm explain in detail?
- e) Write Difference between Linear and Nonlinear pipeline.

#### Q.5 Attempt any two.

- a) With a neat diagram, discuss the classic 5-stage pipeline for a RISC processor, that highlight how an instruction flows through the data path?
- **b)** Explain the structure of associative memory. Give the logic diagram of 1 bit associative memory cell.

#### c) Write notes.

- 1) Tightly coupled multiprocessor
- 2) Loosely coupled multiprocessor

Max. Marks: 80

Set

20

20

20

# T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology

**COMPUTER ORGANIZATION & ARCHITECTURE** 

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
  - 2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

Duration: 30 Minutes

7)

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No.

#### Q.1 Choose the correct alternatives from the options.

- 1) A "0" in the sign bit represents a \_\_\_\_\_ and a "1" in the sign bit represents a
  - a) Positive number

- b) Negative number
- d) None of these
- 2) \_\_\_\_\_ are the different type/s of generating control signals.
  - a) Micro-programmed
  - b) Hardwired

c) Both

- c) Micro-instruction
- d) Both Micro-programmed and Hardwired
- 3) The disadvantage/s of the hardwired approach is \_\_\_\_\_.
  - a) It is less flexible
  - b) It cannot be used for complex instructions
  - c) It is costly
  - d) less flexible & cannot be used for complex instructions
- 4) Which is the fastest storage unit in a usual memory hierarchy?
  - a) Cache b) Main memory
  - c) Hard disk d) Register
- 5) What is usually regarded as the von Neumann Bottleneck?
  - a) Processor/memory interface b) Control unit
  - c) Arithmetic logical unit d) Instruction set

6) The effectiveness of the cache memory is based on the property of \_\_\_\_\_.

- a) Locality of referenceb) Memory localizationc) Memory sized) None of the above
- c) Memory size
   d) None of the above
   Consider a small two-way set-associative cache memory, consisting of four blocks. For choosing the block to be replaced, use the least recently
- used (LRU) scheme. The number of cache misses for the following sequence of block addresses is 8, 12, 0, 12, 8.
  - a) 2 b) 3
  - c) 4 d) 5

SLR-FM-716



Max. Marks: 100

Marks: 20

8) Virtual memory is \_\_\_\_\_.

- a) Large secondary memory
- b) Large main memory
- c) The illusion of large main memory
- d) None of the above
- 9) To which class of systems does the von Neumann computer belong?
  - a) SIMD (Single Instruction Multiple Data)
  - b) MIMD (Multiple Instruction Multiple Data)
  - c) MISD (Multiple Instruction Single Data)
  - d) SISD (Single Instruction Single Data)
- 10) Which value has the speedup of a parallel program that achieves an efficiency of 75% on 32 processors?
  - a) 18 b) 24
  - c) 16 d) 20
- 11) How many latches are required in an n-stage pipelined processor?
  - a) n b) n-1
  - c) 2n d) n/2
- 12) An instruction pipeline can be implemented using a \_\_\_\_\_
  - a) LIFO buffer b) FIFO buffer
  - c) Stack d) None of the above
- 13) A branch instruction is known as a \_\_\_\_\_ if the processor assumes that all the succeeding instructions that are fetched before its outcome has been determined, are on the correct path.
  - a) Taken branch
- b) Frozen branch

**SLR-FM-716** 

Set

- c) Delayed branch d) None of the above
- 14) A multiprocessor operating system should perform \_\_\_\_\_
  - a) a mechanism to split a task into concurrent subtasks
  - b) optimize the system performance
  - c) handling structural or architectural changes
  - d) all of the mentioned

15) Which of the following is not a pipeline stage?

- a) Operand fetch b) Execute
- c) Pipeline flush d) Memory Access
- 16) \_\_\_\_\_ is the period of third generation computer.
  - a) 1965-1971 b) 1979-1985
  - c) 1989-1995 d) None
- 17) Who is regarded as the founder of Computer Architecture?
  - a) Alan Turing b) Konrad Zuse
  - c) John von Neumann d) None
- 18) The two's complement representation of -10 is \_\_\_\_\_.
  - a) 11110110 b) 11011001
  - c) 00001010 d) 11111100

# 19) Both the CISC and RISC architectures have been developed to reduce the \_\_\_\_\_.

a) Cost

b) Time delay

**SLR-FM-716** 

Set Q

- c) Semantic gap d) All of the mentioned
- 20) In IEEE 32-bit representations, the mantissa of the fraction is said to occupy \_\_\_\_\_ bits.
  - a) 24
  - c) 20

b) 23 d) 16

### Seat No.

#### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology COMPUTER ORGANIZATION & ARCHITECTURE

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

#### Q.2 Attempt any four.

- a) Describe the five generations of computers in detail.
- **b)** Describe IEEE format for floating point numbers.
- c) Define Virtual memory and explain its advantages.
- d) Explain Segmentation and paging in memory with an example.
- e) List and explain different instruction types.

#### Q.3 Attempt any two.

- a) Describe the Hardwired Control Unit using Sequence counter Design Method.
- b) Multiply the following using Booth's algorithm. Multiplicand = -8 Multiplier = -9
- c) Explain First fit and Best fit memory allocations with diagrams.

#### Section – II

#### Q.4 Attempt any four.

- a) What is cache memory? Discuss how to improve cache performance?
- b) What are the different Flynn's classifications of computers?
- c) Explain in brief concept of interleaved memories.
- d) What is need of replacement algorithm explain in detail?
- e) Write Difference between Linear and Nonlinear pipeline.

#### Q.5 Attempt any two.

- a) With a neat diagram, discuss the classic 5-stage pipeline for a RISC processor, that highlight how an instruction flows through the data path?
- **b)** Explain the structure of associative memory. Give the logic diagram of 1 bit associative memory cell.

#### c) Write notes.

- 1) Tightly coupled multiprocessor
- 2) Loosely coupled multiprocessor

Max. Marks: 80

20

20

20

### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology COMPUTER ORGANIZATION & ARCHITECTURE

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

- Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
  - 2) Figures to the right indicate full marks.

### MCQ/Objective Type Questions

Duration: 30 Minutes

#### Q.1 Choose the correct alternatives from the options.

- 1) The effectiveness of the cache memory is based on the property of \_\_\_\_\_
  - a) Locality of referencec) Memory size
- b) Memory localizationd) None of the above
- 2) Consider a small two-way set-associative cache memory, consisting of four blocks. For choosing the block to be replaced, use the least recently used (LRU) scheme. The number of cache misses for the following sequence of block addresses is 8, 12, 0, 12, 8.
  - a) 2 b) 3
  - c) 4 d) 5
- 3) Virtual memory is \_\_\_\_\_
  - a) Large secondary memory
  - b) Large main memory
  - c) The illusion of large main memory
  - d) None of the above

#### 4) To which class of systems does the von Neumann computer belong?

- a) SIMD (Single Instruction Multiple Data)
- b) MIMD (Multiple Instruction Multiple Data)
- c) MISD (Multiple Instruction Single Data)
- d) SISD (Single Instruction Single Data)
- 5) Which value has the speedup of a parallel program that achieves an efficiency of 75% on 32 processors?
  - a) 18 b) 24
  - c) 16 d) 20
- 6) How many latches are required in an n-stage pipelined processor?
  - a) n b) n-1
  - c) 2n d) n/2
- 7) An instruction pipeline can be implemented using a \_\_\_\_\_
  - a) LIFO buffer b) FIFO buffer
  - c) Stack d) None of the above

# Seat No.

Max. Marks: 100

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Marks: 20

|     | Set R   |
|-----|---|
| 8)  | A branch instruction is known as a if the processor assumes that<br>all the succeeding instructions that are fetched before its outcome has<br>been determined, are on the correct path   |
| 9)  | <ul> <li>a) Taken branch</li> <li>b) Frozen branch</li> <li>c) Delayed branch</li> <li>d) None of the above</li> <li>A multiprocessor operating system should perform</li> <li>a) a mechanism to split a task into concurrent subtasks</li> <li>b) optimize the system performance</li> <li>c) handling structural or architectural changes</li> <li>d) all of the mentioned</li> </ul> |
| 10) | Which of the following is not a pipeline stage?a) Operand fetchb) Executec) Pipeline flushd) Memory Access  |
| 11) | is the period of third generation computer.<br>a) 1965-1971 b) 1979-1985<br>c) 1989-1995 d) None  |
| 12) | Who is regarded as the founder of Computer Architecture?<br>a) Alan Turing b) Konrad Zuse<br>c) John von Neumann d) None  |
| 13) | The two's complement representation of -10 is         a) 11110110       b) 11011001         c) 00001010       d) 11111100   |
| 14) | Both the CISC and RISC architectures have been developed to reduce the  |
|     | a) Costb) Time delayc) Semantic gapd) All of the mentioned  |
| 15) | In IEEE 32-bit representations, the mantissa of the fraction is said to   |
|     | a) 24 b) 23<br>c) 20 d) 16  |
| 16) | A "0" in the sign bit represents a and a "1"in the sign bit represents  |
|     | a<br>a) Positive number b) Negative number<br>c) Both d) None of these  |
| 17) | <ul> <li>are the different type/s of generating control signals.</li> <li>a) Micro-programmed</li> <li>b) Hardwired</li> <li>c) Micro-instruction</li> <li>d) Both Micro-programmed and Hardwired</li> </ul>  |
| 18) | <ul> <li>The disadvantage/s of the hardwired approach is</li> <li>a) It is less flexible</li> <li>b) It cannot be used for complex instructions</li> <li>c) It is costly</li> <li>d) less flexible &amp; cannot be used for complex instructions</li> </ul>   |



a) Cache

Main memory b)

**SLR-FM-716** 

Set R

- c) Hard disk
- d) Register
- What is usually regarded as the von Neumann Bottleneck? 20) a) Processor/memory interface
  - b) Control unit
  - c) Arithmetic logical unit
- d) Instruction set

### Seat No.

### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology COMPUTER ORGANIZATION & ARCHITECTURE

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

#### Q.2 Attempt any four.

- a) Describe the five generations of computers in detail.
- **b)** Describe IEEE format for floating point numbers.
- c) Define Virtual memory and explain its advantages.
- d) Explain Segmentation and paging in memory with an example.
- e) List and explain different instruction types.

#### Q.3 Attempt any two.

- a) Describe the Hardwired Control Unit using Sequence counter Design Method.
- b) Multiply the following using Booth's algorithm. Multiplicand = -8 Multiplier = -9
- c) Explain First fit and Best fit memory allocations with diagrams.

#### Section – II

#### Q.4 Attempt any four.

- a) What is cache memory? Discuss how to improve cache performance?
- b) What are the different Flynn's classifications of computers?
- c) Explain in brief concept of interleaved memories.
- d) What is need of replacement algorithm explain in detail?
- e) Write Difference between Linear and Nonlinear pipeline.

#### Q.5 Attempt any two.

- a) With a neat diagram, discuss the classic 5-stage pipeline for a RISC processor, that highlight how an instruction flows through the data path?
- **b)** Explain the structure of associative memory. Give the logic diagram of 1 bit associative memory cell.

#### c) Write notes.

- 1) Tightly coupled multiprocessor
- 2) Loosely coupled multiprocessor

Max. Marks: 80

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| NO.           |                   |   |  |  |  |                               |  |               |       |
|---------------|-------------------|---|--|--|--|-------------------------------|--|---------------|-------|
|               |                   | T.E. (  | Part – I)  | (Old) (C<br>Inform   | GPA) Ex<br>ation Te                                  | ami<br>echn                   | nation Nov/Dec-2019<br>ology   | )             |       |
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| Day &<br>Time | & Date<br>: 02:30 | e: Mond<br>0 PM To                            | lay, 16-12⋅<br>o 05:30 PI  | -2019<br>M   |  |                               | Max  | . Marks:      | 100   |
| Instr         | uctior            | <b>ns:</b> 1) C<br>bo<br>2) Fi                | ). No. 1 is<br>ook.<br>gures to tł                                 | compulso   | ry and sho<br>dicate full r                          | uld b<br>narks                | e solved in first 30 minute<br>s.  | s in ans      | wer   |
|               |                   | ·   | M  | CQ/Obie  | ective Tv  | ne (                          | Duestions  |               |       |
| Durat         | tion: 3           | 0 Minut                                       | es   |  |  |                               |  | Mark          | s: 20 |
| Q.1           | <b>Choo</b><br>1) | <b>ose the</b><br>How m<br>a) n<br>c) 2r      | a <b>correct a</b><br>nany latche                                  | <b>llternative</b><br>es are req                                     | s from the<br>uired in an                            | e opt<br>n-sta<br>b)<br>d)    | <b>ions.</b><br>age pipelined processor?<br>n-1<br>n/2                                     |               | 20    |
|               | 2)                | An ins<br>a) Lli<br>c) St                     | truction pi<br>FO buffer<br>ack                                    | peline can   | be implen  | nente<br>b)<br>d)             | d using a<br>FIFO buffer<br>None of the above  |               |       |
|               | 3)                | A bran<br>all the<br>been c<br>a) Ta<br>c) De | ich instruc<br>succeedir<br>determined<br>aken brand<br>elayed bra | tion is kno<br>ng instructi<br>d, are on th<br>ch<br>inch            | wn as a<br>ons that a<br>ne correct                  | re fet<br>path.<br>b)<br>d)   | if the processor assume<br>ched before its outcome h<br>Frozen branch<br>None of the above | s that<br>las |       |
|               | 4)                | A mult<br>a) a<br>b) op<br>c) ha<br>d) all    | iprocesso<br>mechanisr<br>ptimize the<br>andling stru<br>of the me | r operating<br>m to split a<br>system pe<br>uctural or a<br>entioned | g system s<br>task into<br>erformance<br>architectur | hould<br>conci<br>e<br>al chi | l perform<br>urrent subtasks<br>anges  |               |       |
|               | 5)                | Which<br>a) Or<br>c) Pi                       | of the follo<br>perand fet<br>peline flus                          | owing is n<br>ch<br>h  | ot a pipelir   | ne sta<br>b)<br>d)            | ige?<br>Execute<br>Memory Access   |               |       |
|               | 6)                | a) 19<br>c) 19                                | is the per<br>965-1971<br>989-1995                                 | iod of thirc   | l generatio  | n coi<br>b)<br>d)             | nputer.<br>1979-1985<br>None   |               |       |
|               | 7)                | Who is<br>a) Al<br>c) Jo                      | s regarded<br>an Turing<br>hn von Ne                               | l as the fou<br>eumann   | under of C   | ompu<br>b)<br>d)              | iter Architecture?<br>Konrad Zuse<br>None  |               |       |
|               | 8)                | The tw<br>a) 11<br>c) 00                      | /o's compl<br>110110<br>)001010                                    | ement rep  | resentatio   | n of -<br>b)<br>d)            | 10 is<br>11011001<br>11111100  |               |       |
|               |                   |   |  |  |  |                               |  |               |       |

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|-----|---------------------------------------|---|---|---|---|
|     |                                       |   |   | Set S   | 3 |
| 9)  | Bot<br>the<br>a)                      | h the CISC and RISC architecture<br><br>Cost<br>Semantic cap  | es ha<br>b)<br>d)                                       | ve been developed to reduce<br>Time delay<br>All of the mentioned   |   |
| 10) | In II<br>occ<br>a)<br>c)              | EEE 32-bit representations, the m<br>upy bits.<br>24<br>20  | d)<br>nantis<br>b)<br>d)                                | 23<br>16  |   |
| 11) | ,<br>A "(<br>a<br>a)<br>c)            | D" in the sign bit represents a<br><br>Positive number<br>Both  | ,<br>ar<br>b)<br>d)                                     | nd a "1"in the sign bit represents<br>Negative number<br>None of these  |   |
| 12) | a)<br>b)<br>c)<br>d)                  | are the different type/s of ge<br>Micro-programmed<br>Hardwired<br>Micro-instruction<br>Both Micro-programmed and Ha                                      | nerat   | ing control signals.<br>ed  |   |
| 13) | The<br>a)<br>b)<br>c)<br>d)           | e disadvantage/s of the hardwired<br>It is less flexible<br>It cannot be used for complex in<br>It is costly<br>less flexible & cannot be used fo         | appi<br>struct  | roach is<br>tions<br>nplex instructions   |   |
| 14) | Wh<br>a)<br>c)                        | ich is the fastest storage unit in a<br>Cache<br>Hard disk  | usua<br>b)<br>d)  | al memory hierarchy?<br>Main memory<br>Register   |   |
| 15) | Wh<br>a)<br>c)                        | at is usually regarded as the von<br>Processor/memory interface<br>Arithmetic logical unit  | Neur<br>b)<br>d)  | nann Bottleneck?<br>Control unit<br>Instruction set   |   |
| 16) | The<br>a)<br>c)                       | e effectiveness of the cache mem<br>Locality of reference<br>Memory size  | ory is<br>b)<br>d)                                      | based on the property of<br>Memory localization<br>None of the above  |   |
| 17) | Cor<br>four<br>use<br>seq<br>a)<br>c) | nsider a small two-way set-associ<br>r blocks. For choosing the block t<br>ed (LRU) scheme. The number of<br>juence of block addresses is 8, 12<br>2<br>4 | ative<br>o be<br>cach<br>2, 0, <sup>-</sup><br>b)<br>d) | cache memory, consisting of<br>replaced, use the least recently<br>e misses for the following<br>12, 8.<br>3<br>5 |   |
| 18) | Virt<br>a)<br>b)                      | ual memory is<br>Large secondary memory<br>Large main memory  |   |   |   |

- c) The illusion of large main memoryd) None of the above

#### 19) To which class of systems does the von Neumann computer belong?

- a) SIMD (Single Instruction Multiple Data)
- b) MIMD (Multiple Instruction Multiple Data)
- MISD (Multiple Instruction Single Data) c)
- d) SISD (Single Instruction Single Data)
- Which value has the speedup of a parallel program that achieves an 20) efficiency of 75% on 32 processors?
  - a) 18 b) 24 20
  - 16 C) d)

**SLR-FM-716** 

Set S

| Seat |  |
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| No.  |  |

### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology COMPUTER ORGANIZATION & ARCHITECTURE

Day & Date: Monday, 16-12-2019 Time: 02:30 PM To 05:30 PM

Max. Marks: 80

20

20

20

20

**Instructions:** 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

#### Q.2 Attempt any four.

- a) Describe the five generations of computers in detail.
  b) Describe IEEE format for floating point numbers.
  - c) Define Virtual memory and explain its advantages.
  - d) Explain Segmentation and paging in memory with an example.
  - e) List and explain different instruction types.

#### Q.3 Attempt any two.

- a) Describe the Hardwired Control Unit using Sequence counter Design Method.
- b) Multiply the following using Booth's algorithm. Multiplicand = -8 Multiplier = -9
- c) Explain First fit and Best fit memory allocations with diagrams.

#### Section – II

#### Q.4 Attempt any four.

- a) What is cache memory? Discuss how to improve cache performance?
- b) What are the different Flynn's classifications of computers?
- c) Explain in brief concept of interleaved memories.
- d) What is need of replacement algorithm explain in detail?
- e) Write Difference between Linear and Nonlinear pipeline.

#### Q.5 Attempt any two.

- a) With a neat diagram, discuss the classic 5-stage pipeline for a RISC processor, that highlight how an instruction flows through the data path?
- **b)** Explain the structure of associative memory. Give the logic diagram of 1 bit associative memory cell.

#### c) Write notes.

- 1) Tightly coupled multiprocessor
- 2) Loosely coupled multiprocessor

| Day<br>Time | & Dat<br>e: 02:3 | te: Monda<br>30 PM To                        | ay, 09-12-2019<br>05:30 PM  |                          | Max. Marks: 70  |
|-------------|------------------|--|---|--------------------------|---|
| Insti       | ructio           | o <b>ns:</b> 1) C<br>ar<br>2) Fi             | Q. No. 1 is compulsory and<br>newer book.<br>gures to the right indicate full   | it sh<br>mark            | ould be solved in first 30 minutes in<br>ks.                                |
|             |                  |  | MCQ/Objective Ty  | pe Q                     | uestions  |
| Dura        | tion:            | 30 Minute                                    | es  |                          | Marks: 14   |
| Q.1         | <b>Cho</b><br>1) | A macro<br>a) Na<br>b) Na<br>c) Bo<br>d) No  | correct alternatives from th<br>o prototype statement declare<br>me of the macro<br>me and kinds of its paramete<br>th (a) & (b)<br>ne of the above | <b>e op</b> r<br>s<br>rs | tions and rewrite the sentence. 14  |
|             | 2)               | Which o<br>linking?<br>a) Re<br>c) Dy        | of the following loading metho<br>locating loader<br>namic loading  | d use<br>b)<br>d)        | es various cards for relocation &<br>Direct-linking loader<br>None of these |
|             | 3)               | Instruct<br>a) 2<br>c) 4                     | ion cost of ADD 4(R0), *12(R  | 1) is _<br>b)<br>d)      | <br>3<br>5  |
|             | 4)               | Peepho<br>a) Re<br>b) Alg<br>c) Us<br>d) All | le optimization uses which of<br>dundant instruction eliminatio<br>gebraic transformations<br>e of machine idioms<br>of these                       | the f<br>n               | ollowing transformations  |
|             | 5)               | Problen<br>a) Sp<br>c) Bo                    | n oriented language used in la<br>ecification gap<br>th a & b   | angua<br>b)<br>d)        | age processing affects.<br>Execution gap<br>Semantic gap                    |
|             | 6)               | Which (<br>a) <i>A</i> :<br>c) <i>A</i> :    | of the following is a Phrase-str<br>≔ π<br>≔ Bt∣ t  | ructu<br>b)<br>d)        | re grammar?<br>$\alpha ::= \beta$<br>$\alpha A\beta ::= \alpha \pi \beta$   |
|             | 7)               | Which t<br>progran<br>a) Syn<br>c) FR        | able is used to process forwa<br>n?<br>mbol Table & CRT<br>T  | rd re<br>b)<br>d)        | ferences during assembly of a<br>SRT<br>All of these                        |
|             | 8)               | Parsing                                      | table used for Predictive pars  | ser ca                   | an be constructed by using  |

#### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SYSTEM SOFTWARE

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# **SLR-FM-717**

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9) Compilers are \_\_\_\_\_. Recursive a)

C)

a) Subset construction algorithm

Shift-reduce algorithm

Re-enterable C)

Non-reusable b)

None of these

b)

d)

First & follow algorithm

d) Serially usable Set P

**SLR-FM-717** Set P

- Number of digits used for Opcode in m/c instruction format are. 10)
  - a) 1

a)

- b) 2
- C) 3 d) None
- Regular expressions are used as input for \_ 11)
  - a) Assembler LEX C)
- b) Syntax analysis d) YACC

\_.

- Which of the following is not an advanced assembler directive? 12)
  - START ORIGIN a) b) EQU C)
    - d) LTORG
- 13) Action & Goto tables are part of \_\_\_\_
  - b) Predictive parser Shif-reduce parser
  - LR parser d) None of these C)
- Which of the following is not a part of Object modules? 14)
  - Machine program a) C)
- Relocation table b)
- Linking table None of these d)

| Sea<br>No.  | t  | Set   | Ρ     |  |  |  |  |  |
|-------------|--|---|-------|--|--|--|--|--|
| L           | T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019  |   |       |  |  |  |  |  |
|             | SYSTEM SO  | TWARE   |       |  |  |  |  |  |
| Day<br>Time | & Date: Monday, 09-12-2019<br>e: 02:30 PM To 05:30 PM  | Max. Marks  | s: 56 |  |  |  |  |  |
| Instr       | <b>ructions:</b> 1) All questions are compulsory.<br>2) Figure to the right indicates full   | marks.  |       |  |  |  |  |  |
|             | Section  | -1  |       |  |  |  |  |  |
| Q.2         | <ul> <li>Attempt any four.</li> <li>a) What is a execution gap? Illustrate.</li> <li>b) What is a language processor? Give e</li> <li>c) List the aspects of compilation.</li> <li>d) How is input buffering useful?</li> <li>a) What are the argonizational insures in a specific processor.</li> </ul> | xamples.  | 08    |  |  |  |  |  |
| • •         | e) What are the organizational issues in a   | assembler design?   | 4.0   |  |  |  |  |  |
| Q.3         | <ul> <li>Attempt any I wo.</li> <li>a) List the language processing activities</li> <li>b) Compare between: <ol> <li>Problem and procedure oriented I</li> <li>Compilers and assemblers</li> </ol> </li> <li>c) State and elaborate on the component</li> </ul>  | and explain each in detail?<br>anguages<br>is of assembly language programming?                 | 10    |  |  |  |  |  |
|             | Illustrate each.   |   |       |  |  |  |  |  |
| Q.4         | <ul> <li>Attempt any Two.</li> <li>a) What are sentinels? Illustrate their use</li> <li>b) Explain the concept of Nested macro.</li> <li>c) Explain the role of a analyzer in complete</li> </ul>  | How do they work?<br>lers.  | 10    |  |  |  |  |  |
|             | Section  | - 11  |       |  |  |  |  |  |
| Q.5         | <ul> <li>Attempt any Four.</li> <li>a) Give the characteristics of a basic bloc</li> <li>b) What are pre address codes?</li> <li>c) What are the situations under which re</li> <li>d) What is relocation factor? What values</li> <li>e) List the different loader schemes.</li> </ul>                  | ck.<br>elocation is required?<br>s is it permitted to take?                                     | 08    |  |  |  |  |  |
| Q.6         | <ul> <li>Attempt any Two.</li> <li>a) How relocation factor is calculated? Tage and find relocation factor</li> </ul>  | ake examples of different situations  | 10    |  |  |  |  |  |
|             | <ul> <li>b) Develop a design of a linker in form of</li> <li>c) Explain steps involved in design of –</li> <li>1) Compile and go loader</li> <li>2) Direct linking loaders</li> </ul>  | an algorithm?   |       |  |  |  |  |  |
| Q.7         | <ul> <li>Attempt any Two.</li> <li>a) List the cards used in Direct Linking Lo</li> <li>b) What are Subroutine linkages? Give it scheme.</li> <li>c) What is Peephole optimization? Give it</li> </ul>   | baders and give functions of each.<br>s involvement in Relocating Loader<br>ts characteristics. | 10    |  |  |  |  |  |

**SLR-FM-717** 

|  | 3131EW 30  |                              | ANE   |
|--|--|------------------------------|---|
| Day & Date: M<br>Time: 02:30 Pl        | londay, 09-12-2019<br>M To 05:30 PM  |                              | Max. Marks: 70  |
| Instructions:                          | <ol> <li>Q. No. 1 is compulsory and<br/>answer book.</li> <li>Figures to the right indicate ful</li> </ol>                           | it sh<br>I mark              | ould be solved in first 30 minutes in<br>ks.  |
|  | MCQ/Objective Ty   | /pe Q                        | uestions  |
| Duration: 30 M                         | linutes  |                              | Marks: 14   |
| <b>Q.1 Choose</b><br>1) Pa<br>a)<br>c) | the correct alternatives from the<br>arsing table used for Predictive par<br>Subset construction algorithm<br>Shift-reduce algorithm | ne op<br>Irser d<br>b)<br>d) | tions and rewrite the sentence. 14<br>an be constructed by using<br>First & follow algorithm<br>None of these |
| 2) Co<br>a)<br>c)                      | ompilers are<br>Recursive<br>Re-enterable  | b)<br>d)                     | Non-reusable<br>Serially usable   |
| 3) Nu<br>a)<br>c)                      | Imber of digits used for Opcode in<br>1<br>3   | n m/c<br>b)<br>d)            | instruction format are.<br>2<br>None  |

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#### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SVSTEM SOFTWARE

- hese
- able
- sable
- format are.
- 4) Regular expressions are used as input for
- a) Assembler b) Syntax analysis LEX d) YACC c)
- 5) Which of the following is not an advanced assembler directive?
  - ORIGIN a) START b)
  - c) EQU d) LTORG
- 6) Action & Goto tables are part of \_\_\_\_
  - b) a) Predictive parser Shif-reduce parser
  - c) LR parser d) None of these
- 7) Which of the following is not a part of Object modules?
  - a) Machine program Relocation table b)
  - c) Linking table d) None of these
- A macro prototype statement declares \_\_\_\_\_. 8)
  - a) Name of the macro
  - b) Name and kinds of its parameters
  - c) Both (a) & (b)
  - d) None of the above
- 9) Which of the following loading method uses various cards for relocation & linking?
  - a) Relocating loader Direct-linking loader b)
  - c) Dynamic loading None of these d)
- Instruction cost of ADD 4(R0), \*12(R1) is \_ 10)
  - a) 2 b) 3 d) 5
  - c) 4





- 11) Peephole optimization uses which of the following transformations
  - a) Redundant instruction elimination
  - b) Algebraic transformations
  - c) Use of machine idioms
  - d) All of these
- 12) Problem oriented language used in language processing affects.
  - a) Specification gap b) Execution gap
  - c) Both a & b d) Semantic gap
- 13) Which of the following is a Phrase-structure grammar?
  - a)  $A ::= \pi$  b)  $\alpha ::= \beta$
  - c) A ::= Bt | t d)  $\alpha A \beta ::= \alpha \pi \beta$
- 14) Which table is used to process forward references during assembly of a program?

b)

SRT

- a) Symbol Table & CRT
- c) FRT d) All of these

**SLR-FM-717** 

Set Q

| Seat          | t  | Set  | Q  |  |  |  |
|---------------|--|--|----|--|--|--|
|               | T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019<br>Information Technology<br>SYSTEM SOFTWARE |  |    |  |  |  |
| Day a<br>Time | Day & Date: Monday, 09-12-2019 Max. Marks: 56<br>Time: 02:30 PM To 05:30 PM                        |  |    |  |  |  |
| Instr         | Instructions: 1) All questions are compulsory.<br>2) Figure to the right indicates full marks.     |  |    |  |  |  |
|               |  | Section – I  |    |  |  |  |
| Q.2           | Att<br>a)<br>b)<br>c)<br>d)<br>e)  | empt any four.<br>What is a execution gap? Illustrate.<br>What is a language processor? Give examples.<br>List the aspects of compilation.<br>How is input buffering useful?<br>What are the organizational issues in assembler design?  | 08 |  |  |  |
| Q.3           | Att<br>a)<br>b)  | <ul> <li>tempt any Two.</li> <li>List the language processing activities and explain each in detail?</li> <li>Compare between:</li> <li>1) Problem and procedure oriented languages</li> <li>2) Compilers and assemblers</li> </ul>  |    |  |  |  |
|               | c)   | State and elaborate on the components of assembly language programming? Illustrate each.   | •  |  |  |  |
| Q.4           | Att<br>a)<br>b)<br>c)  | empt any Two.<br>What are sentinels? Illustrate their use.<br>Explain the concept of Nested macro. How do they work?<br>Explain the role of a analyzer in compilers.   | 10 |  |  |  |
|               |  | Section – II   |    |  |  |  |
| Q.5           | Att<br>a)<br>b)<br>c)<br>d)<br>e)  | empt any Four.<br>Give the characteristics of a basic block.<br>What are pre address codes?<br>What are the situations under which relocation is required?<br>What is relocation factor? What values is it permitted to take?<br>List the different loader schemes.  | 08 |  |  |  |
| Q.6           | Att<br>a)<br>b)<br>c)  | <ul> <li>empt any Two.</li> <li>How relocation factor is calculated? Take examples of different situations and find relocation factor.</li> <li>Develop a design of a linker in form of an algorithm?</li> <li>Explain steps involved in design of –</li> <li>1) Compile and go loader</li> <li>2) Direct linking loaders</li> </ul> | 10 |  |  |  |
| Q.7           | Att<br>a)<br>b)<br>c)  | empt any Two.<br>List the cards used in Direct Linking Loaders and give functions of each.<br>What are Subroutine linkages? Give its involvement in Relocating Loader<br>scheme.<br>What is Peephole optimization? Give its characteristics.   | 10 |  |  |  |

|      |                  |                        | answer book.<br>2) Figures to the right indicate ful   | l marl                            | (9  |       |
|------|------------------|------------------------|--|-----------------------------------|---|-------|
|      |                  |                        | MCQ/Objective Ty   | /pe Q                             | uestions  |       |
| Dura | ition: (         | 30 M                   | linutes  |                                   | Marks   | s: 14 |
| Q.1  | <b>Cho</b><br>1) | ose<br>Pro<br>a)<br>c) | the correct alternatives from the blem oriented language used in I Specification gap<br>Both a & b | <b>ne op</b><br>angua<br>b)<br>d) | tions and rewrite the sentence.<br>age processing affects.<br>Execution gap<br>Semantic gap | 14    |
|      | 2)               | Wh<br>a)<br>c)         | ich of the following is a Phrase-st<br>$A ::= \pi$<br>A ::= Bt   t                                 | tructu<br>b)<br>d)                | re grammar?<br>$\alpha ::= \beta$<br>$\alpha A\beta ::= \alpha \pi \beta$                   |       |
|      | 3)               | Wh<br>pro<br>a)<br>c)  | ich table is used to process forwa<br>gram?<br>Symbol Table & CRT<br>FRT                           | ard re<br>b)<br>d)                | ferences during assembly of a<br>SRT<br>All of these  |       |
|      | 4)               | Par<br>a)<br>c)        | sing table used for Predictive par<br>Subset construction algorithm<br>Shift-reduce algorithm      | rser ca<br>b)<br>d)               | an be constructed by using<br>First & follow algorithm<br>None of these                     | 1     |
|      | 5)               | Cor<br>a)<br>c)        | mpilers are<br>Recursive<br>Re-enterable   | b)<br>d)                          | Non-reusable<br>Serially usable   |       |
|      | 6)               | Nur<br>a)<br>c)        | mber of digits used for Opcode in<br>1<br>3  | m/c i<br>b)<br>d)                 | nstruction format are.<br>2<br>None   |       |
|      | 7)               | Reg<br>a)<br>c)        | gular expressions are used as inp<br>Assembler<br>LEX  | but for<br>b)<br>d)               | <br>Syntax analysis<br>YACC   |       |
|      | 8)               | Wh<br>a)<br>c)         | ich of the following is not an adva<br>START<br>EQU  | anced<br>b)<br>d)                 | assembler directive?<br>ORIGIN<br>LTORG   |       |

#### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SYSTEM SOFTWARE

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

No.

## **SLR-FM-717**

- EQU c) d)
- 9) Action & Goto tables are part of \_\_\_\_
  - Predictive parser b) Shif-reduce parser a) None of these c) LR parser d)
- Which of the following is not a part of Object modules? 10)
  - Machine program a) Linking table C)
- Relocation table b)
- d) None of these

Max. Marks: 70

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Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in

- 11) A macro prototype statement declares \_\_\_\_\_.
  - a) Name of the macro
  - b) Name and kinds of its parameters
  - c) Both (a) & (b)
  - d) None of the above
- 12) Which of the following loading method uses various cards for relocation & linking?
  - a) Relocating loader b) Direct
    - ) Direct-linking loader

Set R

- c) Dynamic loading d) None of these
- 13) Instruction cost of ADD 4(R0), \*12(R1) is \_\_\_\_
  - a) 2 b) 3
  - c) 4 d) 5
- 14) Peephole optimization uses which of the following transformations
  - a) Redundant instruction elimination
  - b) Algebraic transformations
  - c) Use of machine idioms
  - d) All of these

| Sea<br>No.                                | t        | Set  | R     |  |  |  |
|---|----------|--|-------|--|--|--|
|   |          | T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019  |       |  |  |  |
| Information Technology<br>SYSTEM SOFTWARE |          |  |       |  |  |  |
| Day<br>Time                               | & Da     | ate: Monday, 09-12-2019 Max. Mark  | s: 56 |  |  |  |
| Instr                                     | ucti     | ons: 1) All questions are compulsory.  |       |  |  |  |
|   |          | 2) Figure to the right indicates full marks.   |       |  |  |  |
| 02  | Δtt      | Section – I  | 08    |  |  |  |
| Q.2                                       | a)       | What is a execution gap? Illustrate.   | 00    |  |  |  |
|   | b)<br>c) | What is a language processor? Give examples.   |       |  |  |  |
|   | d)       | How is input buffering useful?   |       |  |  |  |
|   | e)       | What are the organizational issues in assembler design?  |       |  |  |  |
| Q.3                                       | Att      | empt any Two.  | 10    |  |  |  |
|   | b)       | Compare between:   |       |  |  |  |
|   |          | <ol> <li>Problem and procedure oriented languages</li> <li>Compilers and assemblers</li> </ol> |       |  |  |  |
|   | c)       | State and elaborate on the components of assembly language programming                         | ?     |  |  |  |
|   | -        | Illustrate each.   |       |  |  |  |
| Q.4                                       | Att      | empt any Two.<br>What are sentinels? Illustrate their use                                      | 10    |  |  |  |
|   | b)       | Explain the concept of Nested macro. How do they work?   |       |  |  |  |
|   | C)       | Explain the role of a analyzer in compilers.   |       |  |  |  |
|   |          | Section – II   |       |  |  |  |
| Q.5                                       | Att      | empt any Four.   | 08    |  |  |  |
|   | b)       | What are pre address codes?  |       |  |  |  |
|   | c)       | What are the situations under which relocation is required?                                    |       |  |  |  |
|   | u)<br>e) | List the different loader schemes.   |       |  |  |  |
| Q.6                                       | Att      | empt any Two.  | 10    |  |  |  |
|   | a)       | How relocation factor is calculated? Take examples of different situations                     |       |  |  |  |
|   | b)       | Develop a design of a linker in form of an algorithm?  |       |  |  |  |
|   | c)       | Explain steps involved in design of –  |       |  |  |  |
|   |          | <ol> <li>2) Direct linking loaders</li> </ol>  |       |  |  |  |
| Q.7                                       | Att      | empt any Two.  | 10    |  |  |  |
|   | a)       | List the cards used in Direct Linking Loaders and give functions of each.                      |       |  |  |  |
|   | D)       | scheme.  |       |  |  |  |
|   | C)       | What is Peephole optimization? Give its characteristics.                                       |       |  |  |  |

**SLR-FM-717** 

# Set

#### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology SYSTEM SOFTWARE

Day & Date: Monday, 09-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

#### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat

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#### Choose the correct alternatives from the options and rewrite the sentence. 14 Q.1

- Number of digits used for Opcode in m/c instruction format are. 1)
  - a) 1 b) 2 3 C) d) None
- 2) Regular expressions are used as input for \_
  - Syntax analysis a) Assembler b)
    - C) LEX d) YACC
- Which of the following is not an advanced assembler directive? 3)
  - a) START ORIGIN b) d) c) EQU LTORG
- 4) Action & Goto tables are part of \_
  - a) Predictive parser b) Shif-reduce parser
  - None of these LR parser d) C)
- Which of the following is not a part of Object modules? 5)
  - a) Machine program Relocation table b)
  - c) Linking table d)
- A macro prototype statement declares \_\_\_\_\_. 6)
  - a) Name of the macro
  - Name and kinds of its parameters b)
  - Both (a) & (b) c)
  - None of the above d)
- Which of the following loading method uses various cards for relocation & 7) linking?
  - Relocating loader **Direct-linking loader** a) b)
  - Dynamic loading d) None of these C)

Instruction cost of ADD 4(R0), \*12(R1) is 8)

- 3 a) 2 b) 4 c) d) 5
- 9) Peephole optimization uses which of the following transformations .
  - Redundant instruction elimination a)
  - b) Algebraic transformations
  - c) Use of machine idioms
  - All of these d)



Max. Marks: 70

None of these

Marks: 14

- Problem oriented language used in language processing affects. 10)
  - a) Specification gap
- Execution gap b)
- c) Both a & b d) Semantic gap
- Which of the following is a Phrase-structure grammar? 11)
  - a)  $A := \pi$ b)  $\alpha ::= \beta$
  - c) A ::= Bt | td)  $\alpha A\beta ::= \alpha \pi \beta$
- 12) Which table is used to process forward references during assembly of a program? SRT b)
  - a) Symbol Table & CRT
  - c) FRT d) All of these
- Parsing table used for Predictive parser can be constructed by using \_\_\_\_\_. 13) First & follow algorithm
  - a) Subset construction algorithm b) c) Shift-reduce algorithm
    - None of these d)
- 14) Compilers are \_\_\_\_\_.
  - a) Recursive
  - c) Re-enterable

- Non-reusable b)
- Serially usable d)

| Sea         | t   | Set  | S     |  |  |  |
|-------------|---|--|-------|--|--|--|
| NO.         |   | T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019  |       |  |  |  |
|             | Information Technology                          |  |       |  |  |  |
| Dav         | o D   | SYSTEM SOFTWARE  | FC    |  |  |  |
| Day<br>Time | & Da<br>: 02                                    | :30 PM To 05:30 PM   | S: 56 |  |  |  |
| Instr       | ucti  | <b>ons:</b> 1) All questions are compulsory.   |       |  |  |  |
|             |   | 2) Figure to the right indicates full marks.   |       |  |  |  |
| Q.2         | Att   | empt any four.   | 08    |  |  |  |
|             | a)  | What is a execution gap? Illustrate.   |       |  |  |  |
|             | b)<br>c)  | What is a language processor? Give examples.   |       |  |  |  |
|             | d)  | How is input buffering useful?   |       |  |  |  |
|             | e)  | What are the organizational issues in assembler design?  |       |  |  |  |
| Q.3         | Att   | empt any Two.  | 10    |  |  |  |
|             | b)  | Compare between:   |       |  |  |  |
|             |   | <ol> <li>Problem and procedure oriented languages</li> <li>Compilers and assemblers</li> </ol>   |       |  |  |  |
|             | c)  | State and elaborate on the components of assembly language programming   | ?     |  |  |  |
|             |   | Illustrate each.   |       |  |  |  |
| Q.4         | Att   | empt any Two.<br>What are sentinels? Illustrate their use  | 10    |  |  |  |
|             | b)  | Explain the concept of Nested macro. How do they work?   |       |  |  |  |
|             | c) Explain the role of a analyzer in compilers. |  |       |  |  |  |
|             | _   | Section – II   |       |  |  |  |
| Q.5         | Att   | empt any Four.<br>Give the characteristics of a basic block  | 80    |  |  |  |
|             | b)  | What are pre address codes?  |       |  |  |  |
|             | c)<br>d)  | What are the situations under which relocation is required?  |       |  |  |  |
|             | e)  | List the different loader schemes.   |       |  |  |  |
| Q.6         | Att   | empt any Two.  | 10    |  |  |  |
|             | a)  | How relocation factor is calculated? Take examples of different situations   |       |  |  |  |
|             | b)  | Develop a design of a linker in form of an algorithm?  |       |  |  |  |
|             | c)  | Explain steps involved in design of –  |       |  |  |  |
|             |   | 2) Direct linking loaders  |       |  |  |  |
| Q.7         | Att   | empt any Two.  | 10    |  |  |  |
|             | a)<br>b)  | List the cards used in Direct Linking Loaders and give functions of each.<br>What are Subroutine linkages? Give its involvement in Relocating Loader |       |  |  |  |
|             | 5)  | scheme.  |       |  |  |  |
|             | c)  | What is Peephole optimization? Give its characteristics.   |       |  |  |  |

### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DESIGN & ANALYSIS OF ALGORITHMS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

**Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to right indicate marks to question.

#### **MCQ/Objective Type Questions**

Duration: 30 Minutes

Seat

No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - 1) Definiteness property of algorithm means \_\_\_\_\_.
    - a) Instruction is clear and unambiguous
    - b) Algorithm terminates after a finite number of steps
    - c) At least one quantity is produced
    - d) None
  - 2) Which of the following shows correct relationships?
    - a)  $O(\log n) < O(n) < O(n \log n) < O(2^n)$
    - b)  $O(1) < O(\log n) < O(n) < O(n \log n)$
    - c)  $0(1) < O(n \log n) < O(n) < O(\log n)$
    - d) None
  - 3) Which is partition exchange?
    - a) merge sort b) quick sort
    - c) selection sort d) None
  - 4) Worst case time complexity of selection sort \_\_\_\_\_
    - a)  $O(\log n)$  b)  $O(n^{2})$
    - c) 0(1) d)  $0(n \log n)$

5) If there are n vertex then in spanning tree will contain \_\_\_\_\_ edges.

- a) n b)  $n^2$
- c) n-1 d) None
- 6) Using greedy method an object is placed into the knapsack the value of solution vector  $x_i$  is \_\_\_\_\_.
  - a) 0 or 1 b) 0 and 1
  - c)  $0 <= x_i <= 1$  d) None
- 7) \_\_\_\_\_ turns out that one can find the shortest paths from a given source to all points in a graph the same time.
  - a) kruskal's algorithm b) Prim's algorithm
  - c) Dijkstra's algorithm d) None
- 8) Which of the following statement is incorrect?
  - a) Greedy method uses principle of optimality
  - b) Greedy method has forward approach
  - c) Greedy method generates only a single decision
  - d) Knapsack problem can be solved using greedy method



Marks: 14

Max. Marks: 70

|   |  |                    | Set   |  |  |
|---|--|--------------------|---|--|--|
| In reliability design problem, if cost of system is 120 and cost of devices are 15, 20, 25 respectively, then maximum no of devices for stage 2 are |  |                    |   |  |  |
| a)  | 2  | b)                 | 3   |  |  |
| c)  | 4  | d)                 | 6   |  |  |
| Whi<br>a)<br>c)   | ch of the following is not a backtra<br>Knapsack problem<br>Tower of Hanoi | acking<br>b)<br>d) | g algorithm?<br>N queen problem<br>M coloring problem |  |  |
| A greedy algorithm can be used to solve all the dynamic programming problems.   |  |                    |   |  |  |
| a)  | Irue   | b)                 | False   |  |  |
| A node which has been generated and all of whose children have not yet  |  |                    |   |  |  |

- 12) A node been generated is called \_\_\_\_\_.
  - a) Live node b)
  - c) Dead node
- Branch and Bound uses \_\_\_\_\_ like state space serach. 13)
  - a) DFS

9)

10)

11)

C)

- BFS
- Which of the following problems is NOT solved using dynamic programming? 14)
  - 0/1 knapsack problem a)

either of these

- Optimal Search Binary Tree c)
- Reliability Design problem b) Fractional knapsack problem d)

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- b) d) None of these
- E-node d) None of these

#### Seat No. T.E. (Part – I) (Old) (C

#### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DESIGN & ANALYSIS OF ALGORITHMS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

#### Q.2 Answer any Three.

- a) Write a note on space and time complexity with example.
- b) Find the time complexity of following algorithm statements. for (i=1;i<=n;i++)</li>

{ for (j=1;j<=m;j++)

{ for (k=1;k<=p;k++)

1 X=x+1;} } }

- c) Sort the elements using selection sort. 45, -19, 50, 70, 85, 80
- d) Search the elements 50, 60, 85 from the following array using step by step binary search method.
   45, 50, 55, 60, 65, 70, 80, 85, 90
- e) Find feasible solution for job sequencing with deadlines. N = 5, (p1, p2, p3, p4, p5) = (20, 15, 10, 5, 1) and deadlines(d1, d2, d3, d4, d5) = (2, 2, 1, 3, 3)

#### Q.3 Answer any one.

- a) Solve the following knapsack problem.
   n=7, m=15, (p1-----p7)=(10,5,15,7,6,18,3) And (w1....w7)=(2,3,5,7,1,4,1)
   OR
- **b)** Sort the following array elements using merge and quick sort. 50, 25, 28, 7, 38, 35, 49, 80, 89, 84
- Q.4 Find minimum cost spanning tree using prim's algorithm and kruskal's algorithm. 08



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Set

Max. Marks: 56

12

#### Section – II

#### Q.5 Attempt any Three.

- a) let w= {5,7,10,12,15,18,20} and m=35. Find all possible subsets of w that sum to m.
- **b)** Draw state space tree for m-coloring when n=3 and m=3.
- c) Explain least cost search in branch and bound.
- d) Find the shortest path from every node to every other node



e) n=3, (w1,w2,w3)=(2,3,4), (p1,p2,p3)=(1,2,5) and m=6. Obtain maximum profit using dynamic programming.

#### Q.6 Attempt any One.

a) Find shortest path from S to T using backward approach.



- **b)** How to obtain reduced cost matrix for travelling salesperson problem using branch and bound.
- Q.7 Write an algorithm to find whether Hamilton cycle is present in the graph? Using 08 algorithm find whether Hamilton cycle is present in the following graph?



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#### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **DESIGN & ANALYSIS OF ALGORITHMS**

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.

2) Figures to right indicate marks to question.

#### **MCQ/Objective Type Questions**

#### **Duration: 30 Minutes**

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Which of the following statement is incorrect? 1)
  - Greedy method uses principle of optimality a)
  - Greedy method has forward approach b)
  - Greedy method generates only a single decision c)
  - Knapsack problem can be solved using greedy method d)
- 2) In reliability design problem, if cost of system is 120 and cost of devices are 15, 20, 25 respectively, then maximum no of devices for stage 2 are a) 2 b) 3
  - 4 d) C) 6
- Which of the following is not a backtracking algorithm? 3)
  - Knapsack problem N queen problem a) b)
  - c) Tower of Hanoi d) M coloring problem
- 4) A greedy algorithm can be used to solve all the dynamic programming problems. b)
  - True a)
- A node which has been generated and all of whose children have not yet 5) been generated is called \_\_\_\_\_.
  - a) Live node b) Dead node d) c)
- 6) Branch and Bound uses \_\_\_\_\_ like state space serach.
  - DFS a) b)
  - either of these d) None of these c)
- Which of the following problems is NOT solved using dynamic programming? 7) Reliability Design problem

b)

d)

- 0/1 knapsack problem a)
- **Optimal Search Binary Tree** C)
- 8) Definiteness property of algorithm means .
  - Instruction is clear and unambiguous a)
  - Algorithm terminates after a finite number of steps b)
  - C) At least one quantity is produced
  - None d)

Set

Max. Marks: 70

Marks: 14

**SLR-FM-718** 



- False
- E-node
  - None of these

Fractional knapsack problem



9) Which of the following shows correct relationships?

- $O(\log n) < O(n) < O(n \log n) < O(2^n)$ a)
- $0(1) < O(\log n) < O(n) < O(n \log n)$ b)
- $0(1) < O(n \log n) < O(n) < O(\log n)$ C)
- None d)

a)

10) Which is partition exchange?

merge sort

- b) quick sort
- selection sort d) None C)
- Worst case time complexity of selection sort \_ 11)
  - 0(n<sup>2)</sup> a)  $O(\log n)$ b)
  - 0(1)d)  $O(n \log n)$ C)
- If there are n vertex then in spanning tree will contain \_\_\_\_\_ edges. 12)
  - $n^2$ b) a) п
  - d) C) n-1None
- Using greedy method an object is placed into the knapsack the value of 13) solution vector x<sub>i</sub> is \_\_\_\_\_.
  - a) 0 or 1

C)

- b) 0 and 1  $0 <= x_i <= 1$ d) None
- \_ turns out that one can find the shortest paths from a given source to 14) all points in a graph the same time.
  - a) kruskal's algorithm
  - Dijkstra's algorithm C)
- b) Prim's algorithm

**SLR-FM-718** 

Set Q

d) None

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#### Seat No. T.E. (Part – I) (Old) (C

#### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DESIGN & ANALYSIS OF ALGORITHMS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

### Q.2 Answer any Three.

- a) Write a note on space and time complexity with example.
- b) Find the time complexity of following algorithm statements. for (i=1;i<=n;i++)</li>

{ for (j=1;j<=m;j++)

{ for (k=1;k<=p;k++)

X=x+1;}}

- c) Sort the elements using selection sort. 45, -19, 50, 70, 85, 80
- d) Search the elements 50, 60, 85 from the following array using step by step binary search method.
  45, 50, 55, 60, 65, 70, 80, 85, 90
- e) Find feasible solution for job sequencing with deadlines. N = 5, (p1, p2, p3, p4, p5) = (20, 15, 10, 5, 1) and deadlines(d1, d2, d3, d4, d5) = (2, 2, 1, 3, 3)

#### Q.3 Answer any one.

- a) Solve the following knapsack problem.
  n=7, m=15, (p1-----p7)=(10,5,15,7,6,18,3) And (w1....w7)=(2,3,5,7,1,4,1)
  OR
- **b)** Sort the following array elements using merge and quick sort. 50, 25, 28, 7, 38, 35, 49, 80, 89, 84
- Q.4 Find minimum cost spanning tree using prim's algorithm and kruskal's algorithm. 08



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Max. Marks: 56

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#### Section – II

#### Q.5 Attempt any Three.

- a) let w= {5,7,10,12,15,18,20} and m=35. Find all possible subsets of w that sum to m.
- **b)** Draw state space tree for m-coloring when n=3 and m=3.
- c) Explain least cost search in branch and bound.
- d) Find the shortest path from every node to every other node



e) n=3, (w1,w2,w3)= (2,3,4), (p1,p2,p3)= (1,2,5) and m=6. Obtain maximum profit using dynamic programming.

#### Q.6 Attempt any One.

a) Find shortest path from S to T using backward approach.



- **b)** How to obtain reduced cost matrix for travelling salesperson problem using branch and bound.
- Q.7 Write an algorithm to find whether Hamilton cycle is present in the graph? Using 08 algorithm find whether Hamilton cycle is present in the following graph?



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**SLR-FM-718** 

Set Q

|             |                  | T.I                        | E. (Part – I) (Old) (CGP<br>Informatio   | A) Exam<br>on Techi   | nination Nov/Dec-2019<br>nology   |
|-------------|------------------|----------------------------|--|---|---|
|             |                  |                            | DESIGN & ANAL  | SIS OF  | ALGORITHMS  |
| Day<br>Time | & Dat<br>e: 02:3 | e: W<br>80 PN              | /ednesday, 11-12-2019<br>M To 05:30 PM   |   | Max. Marks: 70  |
| Inst        | ructio           | ons:                       | 1) Q. No. 1 is compulsory a book.  | nd should   | be solved in first 30 minutes in answer                                       |
|             |                  | 4                          | <ol><li>Figures to right indicate m</li></ol>  | harks to qu   | uestion.  |
|             |                  |                            | MCQ/Objecti  | ve Туре С   | Questions   |
| Dura        | ation: (         | 30 M                       | inutes   |   | Marks: 14   |
| Q.1         | <b>Cho</b><br>1) | ose<br>If th<br>a)<br>c)   | the correct alternatives from<br>the ere are n vertex then in space $n$<br>n = n = 1   | om the op<br>Inning tree<br>b)<br>d)                                  | ptions and rewrite the sentence. 14<br>e will contain edges.<br>$n^2$<br>None |
|             | 2)               | Usi<br>solu<br>a)<br>c)    | ng greedy method an object<br>ution vector $x_i$ is<br>0 or 1<br>$0 \le x_i \le 1$   | is placed<br>b)<br>d)   | into the knapsack the value of<br>0 and 1<br>None                             |
|             | 3)               | all p<br>a)<br>c)          | turns out that one can fir<br>points in a graph the same ti<br>kruskal's algorithm<br>Dijkstra's algorithm                                 | nd the sho<br>ime.<br>b)<br>d)  | rtest paths from a given source to<br>Prim's algorithm<br>None                |
|             | 4)               | Wh<br>a)<br>b)<br>c)<br>d) | ich of the following statemer<br>Greedy method uses princ<br>Greedy method has forwa<br>Greedy method generates<br>Knapsack problem can be | nt is incorr<br>ciple of opt<br>rd approac<br>only a sin<br>solved us | rect?<br>timality<br>ch<br>ngle decision<br>sing greedy method                |
|             | 5)               | In r<br>15,<br>a)<br>c)    | eliability design problem, if a<br>20, 25 respectively, then ma<br>2<br>4  | cost of sys<br>aximum no<br>b)<br>d)                                  | tem is 120 and cost of devices are<br>o of devices for stage 2 are<br>3<br>6  |
|             | 6)               | Wh<br>a)<br>c)             | ich of the following is not a t<br>Knapsack problem<br>Tower of Hanoi  | backtrackii<br>b)<br>d)   | ng algorithm?<br>N queen problem<br>M coloring problem                        |
|             | 7)               | A g<br>pro<br>a)           | reedy algorithm can be used<br>blems.<br>True  | d to solve :<br>b)  | all the dynamic programming<br>False  |
|             | 8)               | A n<br>bee<br>a)<br>c)     | ode which has been genera<br>en generated is called<br>Live node<br>Dead node  | ted and al<br><br>b)<br>d)  | ll of whose children have not yet<br>E-node<br>None of these                  |
|             | 9)               | Bra<br>a)<br>c)            | nch and Bound uses<br>DFS<br>either of these   | like state<br>b)<br>d)  | space serach.<br>BFS<br>None of these   |

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## **SLR-FM-718**

Set R

#### Seat No. - `

## **SLR-FM-718**

## Set | R

- Which of the following problems is NOT solved using dynamic programming? 10)
  - 0/1 knapsack problem a)
- Reliability Design problem b)
- **Optimal Search Binary Tree** C)
- d) Fractional knapsack problem
- Definiteness property of algorithm means \_\_\_\_\_ 11)
  - Instruction is clear and unambiguous a)
  - Algorithm terminates after a finite number of steps b)
  - At least one quantity is produced c)
  - None d)
- 12) Which of the following shows correct relationships?
  - $O(\log n) < O(n) < O(n \log n) < O(2^n)$ a)
  - $O(1) < O(\log n) < O(n) < O(n \log n)$ b)
  - $O(1) < O(n \log n) < O(n) < O(\log n)$ C)
  - None d)

a)

c)

- Which is partition exchange? 13) merge sort
- b) quick sort
- selection sort None C) d)
- 14) Worst case time complexity of selection sort
  - $O(\log n)$ a) 0(1)

- $0(\overline{n^{2)}}$ b)
- $O(n \log n)$ d)

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology DESIGN & ANALYSIS OF ALGORITHMS

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

### Q.2 Answer any Three.

- a) Write a note on space and time complexity with example.
- b) Find the time complexity of following algorithm statements. for (i=1;i<=n;i++)</li>

{ for (j=1;j<=m;j++)

{ for (k=1;k<=p;k++)

X=x+1;} } }

- c) Sort the elements using selection sort. 45, -19, 50, 70, 85, 80
- d) Search the elements 50, 60, 85 from the following array using step by step binary search method.
  45, 50, 55, 60, 65, 70, 80, 85, 90
- e) Find feasible solution for job sequencing with deadlines. N = 5, (p1, p2, p3, p4, p5) = (20, 15, 10, 5, 1) and deadlines(d1, d2, d3, d4, d5) = (2, 2, 1, 3, 3)

#### Q.3 Answer any one.

- a) Solve the following knapsack problem.
  n=7, m=15, (p1-----p7)=(10,5,15,7,6,18,3) And (w1....w7)=(2,3,5,7,1,4,1)
  OR
- **b)** Sort the following array elements using merge and quick sort. 50, 25, 28, 7, 38, 35, 49, 80, 89, 84
- Q.4 Find minimum cost spanning tree using prim's algorithm and kruskal's algorithm. 08



Max. Marks: 56

3) 08



12



Set

R

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#### Section – II

### Q.5 Attempt any Three.

- a) let w= {5,7,10,12,15,18,20} and m=35. Find all possible subsets of w that sum to m.
- **b)** Draw state space tree for m-coloring when n=3 and m=3.
- c) Explain least cost search in branch and bound.
- d) Find the shortest path from every node to every other node



e) n=3, (w1,w2,w3)= (2,3,4), (p1,p2,p3)= (1,2,5) and m=6. Obtain maximum profit using dynamic programming.

#### Q.6 Attempt any One.

a) Find shortest path from S to T using backward approach.



- **b)** How to obtain reduced cost matrix for travelling salesperson problem using branch and bound.
- Q.7 Write an algorithm to find whether Hamilton cycle is present in the graph? Using 08 algorithm find whether Hamilton cycle is present in the following graph?





**SLR-FM-718** 

Set R

|             |                  | T.E                          | E. (Part – I) (Old) (CGPA)<br>Information<br>DESIGN & ANALYSI   | Exami<br>Techn<br>S OF                                 | ination Nov/Dec-2019<br>lology<br>ALGORITHMS  |
|-------------|------------------|------------------------------|---|--|---|
| Day<br>Time | & Date<br>: 02:3 | e: W<br>60 PN                | ednesday, 11-12-2019<br>I To 05:30 PM   |  | Max. Marks: 70  |
| Inst        | ructio           | ons:                         | 1) Q. No. 1 is compulsory and s book.   | should b   | be solved in first 30 minutes in answer   |
|             |                  | 2                            | 2) Figures to right indicate mark   | s to qu  | estion.   |
| _           |                  |                              | MCQ/Objective   | Гуре Q   | uestions  |
| Dura        | tion: 3          | 30 Mi                        | nutes   |  | Marks: 14   |
| Q.1         | <b>Cho</b><br>1) | ose f<br>Whi<br>a)<br>c)     | the correct alternatives from<br>ch of the following is not a back<br>Knapsack problem<br>Tower of Hanoi  | t <b>he opt</b><br>ktrackin<br>b)<br>d)                | tions and rewrite the sentence. 14<br>g algorithm?<br>N queen problem<br>M coloring problem   |
|             | 2)               | A gr<br>prot<br>a)           | reedy algorithm can be used to<br>plems.<br>True  | solve a  | Il the dynamic programming<br>False   |
|             | 3)               | A no<br>bee<br>a)<br>c)      | ode which has been generated<br>n generated is called<br>Live node<br>Dead node   | and all<br>b)<br>d)                                    | of whose children have not yet<br>E-node<br>None of these                                     |
|             | 4)               | Brai<br>a)<br>c)             | nch and Bound uses like<br>DFS<br>either of these   | e state s<br>b)<br>d)                                  | space serach.<br>BFS<br>None of these   |
|             | 5)               | Whi<br>a)<br>c)              | ch of the following problems is<br>0/1 knapsack problem<br>Optimal Search Binary Tree   | NOT so<br>b)<br>d)                                     | olved using dynamic programming?<br>Reliability Design problem<br>Fractional knapsack problem |
|             | 6)               | Defi<br>a)<br>b)<br>c)<br>d) | initeness property of algorithm<br>Instruction is clear and unamb<br>Algorithm terminates after a fin<br>At least one quantity is produc<br>None  | means<br>biguous<br>nite nur<br>ced                    | nber of steps   |
|             | 7)               | Whi<br>a)<br>b)<br>c)<br>d)  | ch of the following shows corre<br>$0(\log n) < O(n) < O(n \log n) < 0(1) < O(\log n) < O(n) < O$ | ct relati<br>( 0(2 <sup>n</sup> )<br>log n)<br>(log n) | onships?  |
|             | 8)               | Whi<br>a)<br>c)              | ch is partition exchange?<br>merge sort<br>selection sort   | b)<br>d)   | quick sort<br>None  |
|             | 9)               | Woi<br>a)<br>c)              | rst case time complexity of sele<br>0(log n)<br>0(1)  | ction so<br>b)<br>d)                                   | ort<br>$O(n^{2)}$<br>$O(n \log n)$  |

SLR-FM-718 Set S

If there are n vertex then in spanning tree will contain \_\_\_\_\_ edges. 10)  $n^2$ 

- b) a) п
- c) n-1d) None
- Using greedy method an object is placed into the knapsack the value of 11) solution vector x<sub>i</sub> is \_\_\_\_\_.
  - b) 0 and 1 a) 0 or 1
  - $0 <= x_i <= 1$ d) None C)
- \_\_\_\_\_ turns out that one can find the shortest paths from a given source to 12) all points in a graph the same time.
  - a) kruskal's algorithm
- b) Prim's algorithm

**SLR-FM-718** 

Set S

- c) Dijkstra's algorithm d) None
- 13) Which of the following statement is incorrect?
  - Greedy method uses principle of optimality a)
  - Greedy method has forward approach b)
  - Greedy method generates only a single decision c)
  - Knapsack problem can be solved using greedy method d)
- In reliability design problem, if cost of system is 120 and cost of devices are 14) 15, 20, 25 respectively, then maximum no of devices for stage 2 are \_\_\_\_\_.
  - a) 2 b) 3
  - c) 4 d) 6

#### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology **DESIGN & ANALYSIS OF ALGORITHMS**

Day & Date: Wednesday, 11-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

### Q.2 Answer any Three.

- Write a note on space and time complexity with example. a)
- **b)** Find the time complexity of following algorithm statements. for  $(i=1;i\leq=n;i++)$

for (j=1;j<=m;j++)

for (k=1;k<=p;k++)

 $X = x + 1; \} \}$ 

- Sort the elements using selection sort. c) 45, -19, 50, 70, 85, 80
- Search the elements 50, 60, 85 from the following array using step by step d) binary search method. 45, 50, 55, 60, 65, 70, 80, 85, 90
- e) Find feasible solution for job sequencing with deadlines. N = 5, (p1, p2, p3, p4, p5) = (20, 15, 10, 5, 1) and deadlines(d1, d2, d3, d4, d5) = (2, 2, 1, 3, 3)

#### Q.3 Answer any one.

- Solve the following knapsack problem. a) n=7, m=15, (p1-----p7)=(10,5,15,7,6,18,3) And (w1....w7)=(2,3,5,7,1,4,1) OR
- b) Sort the following array elements using merge and quick sort. 50, 25, 28, 7, 38, 35, 49, 80, 89, 84
- Q.4 Find minimum cost spanning tree using prim's algorithm and kruskal's algorithm. 08



Max. Marks: 56

80

12

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#### Section – II

#### Q.5 Attempt any Three.

- a) let w= {5,7,10,12,15,18,20} and m=35. Find all possible subsets of w that sum to m.
- **b)** Draw state space tree for m-coloring when n=3 and m=3.
- c) Explain least cost search in branch and bound.
- d) Find the shortest path from every node to every other node



e) n=3, (w1,w2,w3)= (2,3,4), (p1,p2,p3)= (1,2,5) and m=6. Obtain maximum profit using dynamic programming.

#### Q.6 Attempt any One.

a) Find shortest path from S to T using backward approach.



- **b)** How to obtain reduced cost matrix for travelling salesperson problem using branch and bound.
- Q.7 Write an algorithm to find whether Hamilton cycle is present in the graph? Using 08 algorithm find whether Hamilton cycle is present in the following graph?





**SLR-FM-718** 

## **SLR-FM-719**

## Set

### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory should be solved in first 30 minutes in answer book.

2) Figures to the right indicate full marks.

### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat

No.

#### Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

a)

- Which one of the following is False? 1)
  - Multiprogramming will cause starvation a)
  - Time sharing does not improve performance b)
  - Scheduler should able to prioritize some applications C)
  - Kernel runs in a protected mode d)

#### 2) Match the following.

- i) a.out
- ii) Process state
- iii) gcc hello.c iv) Process

- Stored in hard disk b)
- executes from RAM c)
- d) Hidden section of process maintained by OS

compiles the program

a) i-b, ii-d, iii-a, iv-c

- b) i-b, ii-d, iii-c, iv-a
- c) i-d, ii-b, iii-a, iv-c d) i-a, ii-d, iii-b, iv-c
- 3) The bootloader switches the OS from \_\_\_\_\_ to \_\_\_\_\_.
  - Protected mode, real mode a)
  - User mode, kernel mode b)
  - C) User mode, protected mode
  - Real mode, Protected mode d)
- Consider a set of process P1, P2, P3, P4 arriving in the same order at 4) time zero in the ready queue. Their burst times are 7ms, 5ms, 3ms, 4ms respectively. Using Round Robin scheduling, with time slice of 4 ms. What is the time at which process P1 completes execution?
  - 7 b) 18 a) c) 19 d)
  - 8 Which process can affect of be affected by other processes executing in
  - the system?
    - a) cooperating process parent process c)
- child process b) d) init process
- A solution to the problem of indefinite blockage of low priority processes is \_\_\_\_. 6)
  - Starvation a)

5)

Ready queue C)

- Wait queue b)
- Aging d)

Max. Marks: 70

Marks: 14

- 7) State True/False: In dining philosopher problem (with K philosophers), all the even numbered philosophers takes the right fork first and then the left fork and the odd numbered philosopher takes the left fork first and then the right fork. This arrangement will prevent deadlock. b) False
  - a) True
- 8) Response time is \_\_\_\_
  - the total time taken from the submission time till the completion time a)
  - the total time taken from the submission time till the first response is b) produced
  - the total time taken from submission time till the response is output c)
  - none of these d)
- 9) Statement is True or False - In hold and wait, a process holding at least one resource is waiting to acquire additional resources held by other processes.
  - a) True b) False
- 10) Physical memory is broken into fixed-sized blocks called \_\_\_\_\_. b) pages
  - frames a)
  - backing store d) none of these c)
- A solution to the problem of external fragmentation is 11)
  - compaction b)
- c) smaller memory space 12)
  - External fragmentation exists when enough total memory exists to satisfy a request but it is not contiguous a)
    - the total memory is insufficient to satisfy a request b)
    - a request cannot be satisfied even when the total memory is free c)
    - d) none of these

a)

- With paging there is no \_\_\_\_\_ fragmentation. 13)
  - a) internal b) external
  - either type of d) None of these c)
- 14) The segment base contains the
  - starting logical address of the process a)
  - b) starting physical address of the segment in memory
  - c) segment length
  - none of these d)

larger memory space

d) none of these SLR-FM-719 Set

### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

#### Q.2 Attempt any Three.

- a) Explain the concept of Cooperating processes with example.
- b) Explain different states of process with the help of diagram.
- c) Explain multiprogramming and multiprocessing system with its pros and cons.
- d) Explain race condition and critical-section problem.

#### Q.3 Attempt any One.

- Explain in detail the following schedulers with diagram. a)
  - Short-term scheduler i)
  - ii) Lona-term scheduler
- b) Explain the following Scheduling algorithms with help of example.
  - First Come First Serve Scheduling i)
  - ii) **Priority scheduling**

#### Q.4 Attempt any One.

- Write and explain Banker's algorithm to solve the critical section problem a) with example.
- Differentiate between First Come First Serve and Shortest Job First b) scheduling algorithms (minimum four differentiate points). Consider the following 5 processes (that arrive at time 0) with the length of CPU burst time given in milliseconds. The order of arrival of processes at time '0' is P1, P2, P3, P4, P5.

| Process | Burst Time |
|---------|------------|
| P1      | 11         |
| P2      | 12         |
| P3      | 4          |
| P4      | 6          |
| P5      | 8          |

If Non-preemptive SJF scheduling is used then what will be average waiting time and average turnaround time?

#### Section – II

#### Q.5 Attempt any Three.

- a) Explain deadlock problem using bridge crossing example.
- **b)** Explain Polling in I/O with example.
- Explain Virtual memory concept with necessity. c)
- d) Explain contiguous allocation mechanism in memory management with diagram.

08

Max. Marks: 56

Set

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12

08

#### Q.6 Attempt any One.

- a) Explain the concept of transforming I/O requests to Hardware operations with the help of diagram.
- **b)** What is deadlock avoidance? Explain different ways available for recovery from deadlock.

#### Q.7 Attempt any One.

- a) i) Given five memory partitions of 100KB, 500KB, 200KB, 300KB, and 600KB (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212KB. 417KB, 112KB, and 426 KB (in order)? Which algorithm makes the most efficient use of memory?
  - ii) Consider the following segment table.

| Segment | Base | Length |
|---------|------|--------|
| 0       | 219  | 600    |
| 1       | 2300 | 14     |
| 2       | 90   | 100    |
| 3       | 1327 | 580    |

What are the physical addresses for the following logical addresses?

- i) 0,430
- ii) 1,10
- iii) 2,500
- iv) 3,400
- **b)** Explain the concept of segmentation with paging with the help of diagram and demonstrate address translation.

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## T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS

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### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat No.

- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14
  - Response time is 1)
    - the total time taken from the submission time till the completion time a)
    - the total time taken from the submission time till the first response is b) produced
    - c) the total time taken from submission time till the response is output
    - none of these d)
  - Statement is True or False In hold and wait, a process holding at least 2) one resource is waiting to acquire additional resources held by other processes.
    - a) True b) False
  - 3) Physical memory is broken into fixed-sized blocks called \_\_\_\_\_.
    - a) frames backing store

C)

4)

- A solution to the problem of external fragmentation is
- a) compaction
  - d)
- c) smaller memory space
- 5) External fragmentation exists when \_
  - enough total memory exists to satisfy a request but it is not contiguous a)
  - b) the total memory is insufficient to satisfy a request
  - a request cannot be satisfied even when the total memory is free C)
  - d) none of these
- With paging there is no \_\_\_\_\_ fragmentation. 6)
  - internal b) external a)
  - None of these c) either type of d)
- The segment base contains the 7)
  - starting logical address of the process a)
  - b) starting physical address of the segment in memory
  - segment length c)
  - none of these d)

Max. Marks: 70

Marks: 14



- pages
- b) d)
  - none of these
- larger memory space b)
- none of these

- 8) Which one of the following is False?
  - a) Multiprogramming will cause starvation
  - b) Time sharing does not improve performance
  - c) Scheduler should able to prioritize some applications
  - d) Kernel runs in a protected mode
- 9) Match the following.
  - i) a.out
  - ii) Process state
  - iii) gcc hello.c
  - iv) Process

- a) compiles the program
- b) Stored in hard disk
- c) executes from RAM
- d) Hidden section of process maintained by OS

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- a) i-b, ii-d, iii-a, iv-c
- b) i-b, ii-d, iii-c, iv-a
- c) i-d, ii-b, iii-a, iv-c
- d) i-a, ii-d, iii-b, iv-c
- 10) The bootloader switches the OS from \_\_\_\_\_ to \_\_\_\_\_.
  - a) Protected mode, real mode
  - b) User mode, kernel mode
  - c) User mode, protected mode
  - d) Real mode, Protected mode
- 11) Consider a set of process P1, P2, P3, P4 arriving in the same order at time zero in the ready queue. Their burst times are 7ms, 5ms, 3ms, 4ms respectively. Using Round Robin scheduling, with time slice of 4 ms. What is the time at which process P1 completes execution?
  - a) 7 b) 18
  - c) 19 d) 8
- 12) Which process can affect of be affected by other processes executing in the system?
  - a) cooperating process
- b) child process
- c) parent process d) init process
- 13) A solution to the problem of indefinite blockage of low priority processes is \_\_\_\_.
  - a) Starvation
- b) Wait queued) Aging
- c) Ready queue d) Ag
- 14) State True/False: In dining philosopher problem (with K philosophers), all the even numbered philosophers takes the right fork first and then the left fork and the odd numbered philosopher takes the left fork first and then the right fork. This arrangement will prevent deadlock.
  - a) True

b) False

12

## Seat No.

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS

Day & Date: Friday, 06-12-2019 Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

#### Section – I

#### Q.2 Attempt any Three.

- a) Explain the concept of Cooperating processes with example.
- **b)** Explain different states of process with the help of diagram.
- c) Explain multiprogramming and multiprocessing system with its pros and cons.
- d) Explain race condition and critical-section problem.

#### Q.3 Attempt any One.

- a) Explain in detail the following schedulers with diagram.
  - i) Short-term scheduler
  - ii) Long-term scheduler
- **b)** Explain the following Scheduling algorithms with help of example.
  - i) First Come First Serve Scheduling
  - ii) Priority scheduling

#### Q.4 Attempt any One.

- a) Write and explain Banker's algorithm to solve the critical section problem with example.
- b) Differentiate between First Come First Serve and Shortest Job First scheduling algorithms (minimum four differentiate points). Consider the following 5 processes (that arrive at time 0) with the length of CPU burst time given in milliseconds. The order of arrival of processes at time '0' is P1, P2, P3, P4, P5.

| Process | Burst Time |
|---------|------------|
| P1      | 11         |
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| P4      | 6          |
| P5      | 8          |

If Non-preemptive SJF scheduling is used then what will be average waiting time and average turnaround time?

#### Section – II

#### Q.5 Attempt any Three.

- a) Explain deadlock problem using bridge crossing example.
- **b)** Explain Polling in I/O with example.
- c) Explain Virtual memory concept with necessity.
- d) Explain contiguous allocation mechanism in memory management with diagram.

08

12

**08** 

Max. Marks: 56

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Set

#### Q.6 Attempt any One.

- a) Explain the concept of transforming I/O requests to Hardware operations with the help of diagram.
- **b)** What is deadlock avoidance? Explain different ways available for recovery from deadlock.

#### Q.7 Attempt any One.

- a) i) Given five memory partitions of 100KB, 500KB, 200KB, 300KB, and 600KB (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212KB. 417KB, 112KB, and 426 KB (in order)? Which algorithm makes the most efficient use of memory?
  - ii) Consider the following segment table.

| Segment | Base | Length |
|---------|------|--------|
| 0       | 219  | 600    |
| 1       | 2300 | 14     |
| 2       | 90   | 100    |
| 3       | 1327 | 580    |

What are the physical addresses for the following logical addresses?

- i) 0,430
- ii) 1,10
- iii) 2,500
- iv) 3,400
- **b)** Explain the concept of segmentation with paging with the help of diagram and demonstrate address translation.

# Set

### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS

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### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

Seat

No.

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- Which process can affect of be affected by other processes executing in 1) the system?
  - a) cooperating process
  - child process parent process init process C) d)
- 2) A solution to the problem of indefinite blockage of low - priority processes is \_\_\_. Wait queue

b)

b)

b)

Aging

False

- a) Starvation
- C) Ready queue d)
- 3) State True/False: In dining philosopher problem (with K philosophers), all the even numbered philosophers takes the right fork first and then the left fork and the odd numbered philosopher takes the left fork first and then the right fork. This arrangement will prevent deadlock.
  - a) True
- 4) Response time is
  - the total time taken from the submission time till the completion time a)
  - the total time taken from the submission time till the first response is b) produced
  - c) the total time taken from submission time till the response is output
  - none of these d)

5) Statement is True or False - In hold and wait, a process holding at least one resource is waiting to acquire additional resources held by other processes.

- a) True b) False
- 6) Physical memory is broken into fixed-sized blocks called \_\_\_\_\_.
  - a) frames
  - backing store d) none of these C)
- A solution to the problem of external fragmentation is \_ 7)
  - compaction a) smaller memory space c)
- larger memory space b)

pages

none of these d)

b)

Max. Marks: 70

Marks: 14





8) External fragmentation exists when \_\_\_\_\_.

- enough total memory exists to satisfy a request but it is not contiguous a)
- the total memory is insufficient to satisfy a request b)
- c) a request cannot be satisfied even when the total memory is free
- d) none of these
- 9) With paging there is no \_\_\_\_\_ fragmentation.
  - a) internal

b) external SLR-FM-719

Set

- either type of d) None of these c)
- 10) The segment base contains the \_\_\_\_
  - starting logical address of the process a)
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- 12) Match the following.
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13)

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- compiles the program a)
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- d) Hidden section of process maintained by OS
- i-b, ii-d, iii-c, iv-a a) i-b, ii-d, iii-a, iv-c b) d) i-a, ii-d, iii-b, iv-c
- c) i-d, ii-b, iii-a, iv-c
- The bootloader switches the OS from \_\_\_\_\_ to \_\_\_\_\_.
  - a) Protected mode, real mode
  - User mode, kernel mode b)
  - User mode, protected mode C)
  - Real mode, Protected mode d)
- 14) Consider a set of process P1, P2, P3, P4 arriving in the same order at time zero in the ready queue. Their burst times are 7ms, 5ms, 3ms, 4ms respectively. Using Round Robin scheduling, with time slice of 4 ms. What is the time at which process P1 completes execution?
  - a) 7 b) 18
  - C) 19

- d)
  - 8

### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS

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#### Section – I

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#### Q.3 Attempt any One.

- a) Explain in detail the following schedulers with diagram.
  - i) Short-term scheduler
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#### Q.4 Attempt any One.

- a) Write and explain Banker's algorithm to solve the critical section problem with example.
- b) Differentiate between First Come First Serve and Shortest Job First scheduling algorithms (minimum four differentiate points). Consider the following 5 processes (that arrive at time 0) with the length of CPU burst time given in milliseconds. The order of arrival of processes at time '0' is P1, P2, P3, P4, P5.

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#### Section – II

#### Q.5 Attempt any Three.

- a) Explain deadlock problem using bridge crossing example.
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08

Max. Marks: 56

Set

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08

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- a) Explain the concept of transforming I/O requests to Hardware operations with the help of diagram.
- **b)** What is deadlock avoidance? Explain different ways available for recovery from deadlock.

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- a) i) Given five memory partitions of 100KB, 500KB, 200KB, 300KB, and 600KB (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212KB. 417KB, 112KB, and 426 KB (in order)? Which algorithm makes the most efficient use of memory?
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What are the physical addresses for the following logical addresses?

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- **b)** Explain the concept of segmentation with paging with the help of diagram and demonstrate address translation.

### T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019 Information Technology PRINCIPLES OF OPERATING SYSTEMS

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### **MCQ/Objective Type Questions**

**Duration: 30 Minutes** 

c)

c)

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14 1)

- Physical memory is broken into fixed-sized blocks called .
  - a) frames
    - backing store d)
- A solution to the problem of external fragmentation is \_\_\_\_\_ 2)
  - compaction a)

larger memory space b) d) none of these

none of these

pages

3) External fragmentation exists when \_\_\_\_

smaller memory space

enough total memory exists to satisfy a request but it is not contiguous a)

b)

- the total memory is insufficient to satisfy a request b)
- a request cannot be satisfied even when the total memory is free c)
- none of these d)
- 4) With paging there is no \_\_\_\_\_ fragmentation. external
  - a) internal
  - b) either type of None of these c) d)
- The segment base contains the \_\_\_\_ 5)
  - starting logical address of the process a)
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- 6) Which one of the following is False?
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  - Scheduler should able to prioritize some applications C)
  - Kernel runs in a protected mode d)
- Match the following. 7)
  - a.out i)
  - ii) Process state
  - iii) gcc hello.c
  - iv) Process
  - i-b, ii-d, iii-a, iv-c a)
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- compiles the program a)
- Stored in hard disk b)
- executes from RAM C)
- Hidden section of process d) maintained by OS
- i-b, ii-d, iii-c, iv-a b)
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Max. Marks: 70

Marks: 14

## **SLR-FM-719**

- 8) The bootloader switches the OS from \_\_\_\_\_ to \_\_\_\_\_.
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Set S

- C) parent process d) init process
- 11) A solution to the problem of indefinite blockage of low - priority processes is \_\_\_.
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C)

Ready queue

- b) Wait queue d) Aging
- State True/False: In dining philosopher problem (with K philosophers), all 12) the even numbered philosophers takes the right fork first and then the left fork and the odd numbered philosopher takes the left fork first and then the right fork. This arrangement will prevent deadlock. False
  - a) True b)
- 13) Response time is \_\_\_\_
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  - d) none of these
- Statement is True or False In hold and wait, a process holding at least 14) one resource is waiting to acquire additional resources held by other processes.
  - b) a) True False

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- c) Explain Virtual memory concept with necessity.
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Max. Marks: 56

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#### Q.6 Attempt any One.

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- a) i) Given five memory partitions of 100KB, 500KB, 200KB, 300KB, and 600KB (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212KB. 417KB, 112KB, and 426 KB (in order)? Which algorithm makes the most efficient use of memory?
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