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**S.E. (CSE) (Part – I) (CGPA) Examination, 2017**  
**APPLIED MATHEMATICS – I**

Day and Date : Thursday, 4-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- N.B. :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

(1×14=14)

1)  $\frac{1}{D^2 + a^2} \cos ax$  is equal to

- a)  $\frac{x}{2a} \cos ax$       b)  $\frac{x}{2a^2} \cos ax$       c)  $\frac{-x}{2a} \sin ax$       d) none of these

2)  $(C_1 + C_2x)e^{2x} + (C_3 + C_4x)e^{-2x}$  is general solution of

- a)  $(D^2 - 4)^2y = 0$       b)  $(D^2 + 4)^2y = 0$   
c)  $(D^2 - 2)^2y = 0$       d)  $(D^2 + 2)^2y = 0$

3)  $L\{\sin t\} =$ 

- a)  $\frac{-2s}{s^2 + 1}$       b)  $\frac{-2s}{(s^2 + 1)^2}$       c)  $\frac{2s}{(s^2 + 1)^2}$       d)  $\frac{2}{(s^2 + 1)^2}$

4) If  $L\{f(t)\} = \phi(s)$  then  $L\left\{\frac{f(t)}{t}\right\} = \dots$ 

- a)  $\int_0^\infty \phi(s) ds$       b)  $\frac{1}{s} \phi'(s)$  (c)  $\int_s^\infty \phi(s) ds$       d)  $-\phi'(s)$





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SECTION – I

2. a) Solve  $(D^2 - 6D + 13)y = e^{3x} \sin 4x$ . 3  
 b) Solve  $(D^2 + 4D + 5)y = -2 \cosh x$ . 3  
 c) Solve  $(D^4 + 2D^3 - 3D^2)y = x^2 + 3e^{2x}$ . 4

OR

d) Solve  $(D^2 + a^2)y = \sec ax$ .

3. Attempt **any three** : 9

a) Find  $L \left\{ \frac{\sin t \sin 5t}{t} \right\}$ .

b) Find  $L^{-1} \left\{ \frac{s + 29}{(s + 4)(s^2 + 9)} \right\}$ .

c) Find  $L^{-1} \left\{ \frac{s^2}{(s^2 + 4)^2} \right\}$  by convolution theorem.

d) Evaluate  $\int_0^{\infty} e^{-3t} t \cos t dt$  by Laplace transform.

4. a) Find the Z-transform and its ROC of 3

$$f(k) = \begin{cases} 3^k, & k < 0 \\ 2^k, & k \geq 0 \end{cases}$$



- b) Find the Z-transform and its ROC of  $f(k) = \cos \alpha k, k \geq 0$ . **3**
- c) Find half-range cosine series of  $f(x) = x(\pi - x)$ , in the interval  $(0, \pi)$ . **3**
5. a) Find  $Z^{-1}\left(\frac{1}{(Z-3)(Z-2)}\right), 2 < |Z| < 3$ . **4**
- b) Find the Fourier series of **5**
- $$f(x) = x, \quad -1 < x < 0$$
- $$= x + 2, \quad 0 < x < 1$$

## SECTION – II

6. Attempt the following.
- a) An insurance company found that only 0.01 percent of the population is involved in a certain type of accident each year. If its 1000 policy holders were randomly selected from the population. What is the probability that more than two of this clients are involved in such an accident next year ? **3**
- b) Fit a straight line to the following data and estimate the value of y when  $x = 73$ . **4**
- |           |    |    |    |    |    |    |    |    |
|-----------|----|----|----|----|----|----|----|----|
| <b>x:</b> | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| <b>y:</b> | 1  | 3  | 5  | 10 | 6  | 4  | 2  | 1  |
- c) The probability that a student in an evening college will graduate is 0.4. Determine the probability that out of 5 students
- i) none
  - ii) one
  - iii) at least one will graduate. **3**
7. Attempt the following.
- a) Find the constants a, b if the directional derivative of  $\phi = ay^2 + 2bxy + xz$  at point  $(1, 2, -1)$  is maximum in the direction of the tangent to the curve  $\bar{r} = (t^3 - 1)\mathbf{i} + (3t - 1)\mathbf{j} + (t^2 - 1)\mathbf{k}$  at  $(0, 2, 0)$ . **3**
- b) The life time of certain type of battery has mean life of 400 hours and a standard deviation of 50 hours. Assuming that distribution of life time to be normal, find



- i) percentage of batteries which have life time of more than 350 hours
- ii) the proportion of batteries which have life time between 300 and 500 hours.  
(Given : For S.N.V. z are between  $z = 0$  and  $z = 1$  is 0.3413 and from  $z = 0$  to  $z = 2$  is 0.4772). 3
- c) Prove that,  $\nabla \cdot (r^n \bar{r}) = (n+3)r^n$ . 3

8. Attempt the following.

- a) Show that  $\bar{F} = (y^2 \cos z + z^3)\mathbf{i} + (2y \sin x - 4)\mathbf{j} + (3xz^2 + 2)\mathbf{k}$  is irrotational. Find scalar potential  $\phi$  such that  $\bar{F} = \nabla \phi$ . 4
- b) To find correlation coefficient of a bivariate data following results were obtained :  
 $n = 25, \sum x = 125, \sum y = 100, \sum x^2 = 650, \sum y^2 = 460, \sum xy = 508$  : At the time of checking it was discovered that two pairs of  $(x, y)$ ,  $(8, 12)$ ,  $(6, 8)$  were wrongly recorded as  $(6, 14)$ ,  $(8, 6)$ . Find the correct correlation. 5

9. Attempt the following.

- a) A supermarket has two girls serving at the two counters. The customers arrive in a Poisson fashion at the rate of 12 per hour. The service time for each customer is exponential with mean 6 minutes. Find
  - i) the probability that an arriving customer has to wait.
  - ii) the average number of customers in the system.
  - iii) the average time spent by a customer in the supermarket. 5
- b) With the usual notation find the average waiting time per customer in the queue and in the system for M/M/1/∞ model, if  $\lambda = 9$  and  $\mu = 15$  per hour. 4





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**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

**(1×14=14)**

- 1) If  $\vec{F} = (x + 3y)\mathbf{i} + (y - 2z)\mathbf{j} + (x + az)\mathbf{k}$  is solenoidal then  $a =$   
a) 0                      b) 2                      c) -2                      d) 1
- 2) For a vector function  $\vec{F}$  there exist a scalar potential when  
a)  $\text{div}(\vec{F}) = 0$                       b)  $\text{grad}(\text{div}\vec{F}) = 0$   
c)  $\text{curl}(\vec{F}) = 0$                       d)  $\vec{F} \cdot \text{curl}(\vec{F}) = 0$
- 3) The area under the normal curve from  $\delta = -\infty$  to  $\delta = 0$  is  
a) 1                      b) 0                      c)  $\frac{1}{2}$                       d)  $\frac{3}{2}$
- 4) A discrete probability distribution is given by  
x: 0    1    2  
P(x):  $\frac{1}{9}$     $\frac{2}{9}$     $\frac{2}{3}$  then  $P(x \leq 1) =$   
a)  $\frac{1}{9}$                       b)  $\frac{2}{9}$                       c)  $\frac{2}{3}$                       d)  $\frac{1}{3}$
- 5) The equations of the lines of regression are  $x + 2y = 5$  and  $2x + 3y = 8$  then  $\bar{x}, \bar{y}$  are  
a) 1 and 3                      b) 2 and 3                      c) 2 and 5                      d) 1 and 2
- 6) Idle time of the queuing system is  
a)  $\frac{\lambda}{\mu}$                       b)  $1 - \frac{\lambda}{\mu}$                       c)  $\frac{\mu}{\lambda}$                       d)  $1 - \frac{\mu}{\lambda}$







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SECTION – I

2. a) Solve  $(D^2 - 6D + 13)y = e^{3x} \sin 4x$ . 3  
b) Solve  $(D^2 + 4D + 5)y = -2 \cosh x$ . 3  
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OR

d) Solve  $(D^2 + a^2)y = \sec ax$ .

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## SECTION – II

6. Attempt the following.
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- b) Fit a straight line to the following data and estimate the value of y when  $x = 73$ . **4**
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- i) percentage of batteries which have life time of more than 350 hours
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(Given : For S.N.V. z are between  $z = 0$  and  $z = 1$  is 0.3413 and from  $z = 0$  to  $z = 2$  is 0.4772). 3
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7) A discrete probability distribution is given by

$$x: \quad 0 \quad 1 \quad 2$$

$$P(x): \quad \frac{1}{9} \quad \frac{2}{9} \quad \frac{2}{3} \quad \text{then } P(x \leq 1) =$$

a)  $\frac{1}{9}$                       b)  $\frac{2}{9}$                       c)  $\frac{2}{3}$                       d)  $\frac{1}{3}$

8) The equations of the lines of regression are  $x + 2y = 5$  and  $2x + 3y = 8$  then  $\bar{x}, \bar{y}$  are

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a)  $\frac{\lambda}{\mu}$                       b)  $1 - \frac{\lambda}{\mu}$                       c)  $\frac{\mu}{\lambda}$                       d)  $1 - \frac{\mu}{\lambda}$

10) If coefficient of correlation  $r = \pm 1$  then the regression lines are

a) coincident                      b) perpendicular  
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11)  $\frac{1}{D^2 + a^2} \cos ax$  is equal to

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13)  $L\{t \sin t\} =$

a)  $\frac{-2s}{s^2 + 1}$                       b)  $\frac{-2s}{(s^2 + 1)^2}$                       c)  $\frac{2s}{(s^2 + 1)^2}$                       d)  $\frac{2}{(s^2 + 1)^2}$

14) If  $L\{f(t)\} = \phi(s)$  then  $L\left\{\frac{f(t)}{t}\right\} = \dots$

a)  $\int_0^{\infty} \phi(s) ds$                       b)  $\frac{1}{s} \phi'(s)$                       c)  $\int_s^{\infty} \phi(s) ds$                       d)  $-\phi'(s)$



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**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

(1×14=14)

- 1) The area under the normal curve from  $\delta = -\infty$  to  $\delta = 0$  is
  - a) 1
  - b) 0
  - c)  $\frac{1}{2}$
  - d)  $\frac{3}{2}$
- 2) A discrete probability distribution is given by
  - x: 0    1    2
  - P(x):  $\frac{1}{9}$     $\frac{2}{9}$     $\frac{2}{3}$  then  $P(x \leq 1) =$
  - a)  $\frac{1}{9}$
  - b)  $\frac{2}{9}$
  - c)  $\frac{2}{3}$
  - d)  $\frac{1}{3}$
- 3) The equations of the lines of regression are  $x + 2y = 5$  and  $2x + 3y = 8$  then  $\bar{x}, \bar{y}$  are
  - a) 1 and 3
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  - c) 2 and 5
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- 4) Idle time of the queuing system is
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7)  $(C_1 + C_2x)e^{2x} + (C_3 + C_4x)e^{-2x}$  is general solution of

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8)  $L\{t \sin t\} =$

a)  $\frac{-2s}{s^2 + 1}$

b)  $\frac{-2s}{(s^2 + 1)^2}$

c)  $\frac{2s}{(s^2 + 1)^2}$

d)  $\frac{2}{(s^2 + 1)^2}$

9) If  $L\{f(t)\} = \phi(s)$  then  $L\left\{\frac{f(t)}{t}\right\} = \dots$

a)  $\int_0^{\infty} \phi(s) ds$

b)  $\frac{1}{s} \phi'(s)$

c)  $\int_s^{\infty} \phi(s) ds$

d)  $-\phi'(s)$

10) The Fourier series of the function

$$f(x) = -x + 1, -\pi \leq x \leq 0$$

$$= x + 1, 0 \leq x \leq \pi$$

contains

a) only sine terms

b) only cosine terms

c) both sine and cosine terms

d) cannot be predicted

11) Which of the following function cannot be expanded in Fourier series in  $(-\pi, \pi)$  ?

a)  $|x|$

b)  $e^{-x}$

c)  $\operatorname{cosec} x$

d)  $x^3$

12) Since  $Z\{1\} = \frac{Z}{Z-1}$ ,  $Z\{a^k\}, k \geq 0 =$

a)  $\frac{Z}{a(Z-1)}$

b)  $\frac{Z}{aZ-1}$

c)  $\frac{Z}{(Z-a)}$

d)  $\frac{a}{Z-a}$

13) If  $\bar{F} = (x + 3y)i + (y - 2z)j + (x + az)k$  is solenoidal then  $a =$

a) 0

b) 2

c) -2

d) 1

14) For a vector function  $\bar{F}$  there exist a scalar potential when

a)  $\operatorname{div}(\bar{F}) = 0$

b)  $\operatorname{grad}(\operatorname{div} \bar{F}) = 0$

c)  $\operatorname{curl}(\bar{F}) = 0$

d)  $\bar{F} \cdot \operatorname{curl}(\bar{F}) = 0$



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**S.E. (CSE) (Part – I) (CGPA) Examination, 2017  
APPLIED MATHEMATICS – I**

Day and Date : Thursday, 4-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- N.B. :** 1) Attempt **any three** questions from **each** Section.  
2) Figures to the **right** indicate **full** marks.  
3) **Use of calculator is allowed.**

SECTION – I

2. a) Solve  $(D^2 - 6D + 13)y = e^{3x} \sin 4x$ . 3  
b) Solve  $(D^2 + 4D + 5)y = -2 \cosh x$ . 3  
c) Solve  $(D^4 + 2D^3 - 3D^2)y = x^2 + 3e^{2x}$ . 4

OR

d) Solve  $(D^2 + a^2)y = \sec ax$ .

3. Attempt **any three** : 9

a) Find  $L \left\{ \frac{\sin t \sin 5t}{t} \right\}$ .

b) Find  $L^{-1} \left\{ \frac{s + 29}{(s + 4)(s^2 + 9)} \right\}$ .

c) Find  $L^{-1} \left\{ \frac{s^2}{(s^2 + 4)^2} \right\}$  by convolution theorem.

d) Evaluate  $\int_0^{\infty} e^{-3t} t \cos t dt$  by Laplace transform.

4. a) Find the Z-transform and its ROC of 3

$$f(k) = \begin{cases} 3^k, & k < 0 \\ 2^k, & k \geq 0 \end{cases}$$



- b) Find the Z-transform and its ROC of  $f(k) = \cos \alpha k, k \geq 0$ . **3**
- c) Find half-range cosine series of  $f(x) = x(\pi - x)$ , in the interval  $(0, \pi)$ . **3**
5. a) Find  $Z^{-1}\left(\frac{1}{(Z-3)(Z-2)}\right), 2 < |Z| < 3$ . **4**
- b) Find the Fourier series of **5**
- $$f(x) = x, \quad -1 < x < 0$$
- $$= x + 2, \quad 0 < x < 1$$

## SECTION – II

6. Attempt the following.
- a) An insurance company found that only 0.01 percent of the population is involved in a certain type of accident each year. If its 1000 policy holders were randomly selected from the population. What is the probability that more than two of this clients are involved in such an accident next year ? **3**
- b) Fit a straight line to the following data and estimate the value of y when  $x = 73$ . **4**
- |           |    |    |    |    |    |    |    |    |
|-----------|----|----|----|----|----|----|----|----|
| <b>x:</b> | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| <b>y:</b> | 1  | 3  | 5  | 10 | 6  | 4  | 2  | 1  |
- c) The probability that a student in an evening college will graduate is 0.4. Determine the probability that out of 5 students
- i) none
  - ii) one
  - iii) at least one will graduate. **3**
7. Attempt the following.
- a) Find the constants a, b if the directional derivative of  $\phi = ay^2 + 2bxy + xz$  at point  $(1, 2, -1)$  is maximum in the direction of the tangent to the curve  $\bar{r} = (t^3 - 1)\mathbf{i} + (3t - 1)\mathbf{j} + (t^2 - 1)\mathbf{k}$  at  $(0, 2, 0)$ . **3**
- b) The life time of certain type of battery has mean life of 400 hours and a standard deviation of 50 hours. Assuming that distribution of life time to be normal, find



- i) percentage of batteries which have life time of more than 350 hours
- ii) the proportion of batteries which have life time between 300 and 500 hours.  
(Given : For S.N.V. z are between  $z = 0$  and  $z = 1$  is 0.3413 and from  $z = 0$  to  $z = 2$  is 0.4772). 3
- c) Prove that,  $\nabla \cdot (r^n \bar{r}) = (n+3)r^n$ . 3

8. Attempt the following.

- a) Show that  $\bar{F} = (y^2 \cos z + z^3)\mathbf{i} + (2y \sin x - 4)\mathbf{j} + (3xz^2 + 2)\mathbf{k}$  is irrotational. Find scalar potential  $\phi$  such that  $\bar{F} = \nabla \phi$ . 4
- b) To find correlation coefficient of a bivariate data following results were obtained :  
 $n = 25, \sum x = 125, \sum y = 100, \sum x^2 = 650, \sum y^2 = 460, \sum xy = 508$  : At the time of checking it was discovered that two pairs of  $(x, y)$ ,  $(8, 12)$ ,  $(6, 8)$  were wrongly recorded as  $(6, 14)$ ,  $(8, 6)$ . Find the correct correlation. 5

9. Attempt the following.

- a) A supermarket has two girls serving at the two counters. The customers arrive in a Poisson fashion at the rate of 12 per hour. The service time for each customer is exponential with mean 6 minutes. Find
  - i) the probability that an arriving customer has to wait.
  - ii) the average number of customers in the system.
  - iii) the average time spent by a customer in the supermarket. 5
- b) With the usual notation find the average waiting time per customer in the queue and in the system for M/M/1/∞ model, if  $\lambda = 9$  and  $\mu = 15$  per hour. 4







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**S.E. (Computer Science and Engineering) (Part – I) (CGPA Pattern) Examination, 2017  
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All** questions are **compulsory**.
  - 2) Figures to the right indicate full marks.
  - 3) **Assume** suitable data if **necessary**.
  - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
  - 5) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers :

(14×1=14)

- 1)  $R = \{(1, 1), (1, 2), (2, 3)\}$  and  $S = \{(1, 2), (2, 3), (3, 3)\}$  on  $A \times A$ , where  $A = \{1, 2, 3\}$   $R \oplus S$  is, ( $\oplus$  – symmetric difference)
  - a)  $\{(1, 1), (3, 3)\}$
  - b)  $\{(1, 1), (2, 3), (3, 3)\}$
  - c)  $\{(1, 2), (2, 3), (3, 3)\}$
  - d)  $A \times A$
- 2) If set A has n elements, then total number of subsets of A is
  - a)  $n^2$
  - b)  $2^n$
  - c)  $2^{n^2}$
  - d)  $(2^n)^2$
- 3) A relation R on a non empty set A is called equivalence relation iff
  - a) R is reflexive, antisymmetric and transitive
  - b) R is reflexive, asymmetric and transitive
  - c) R is reflexive, symmetric and transitive
  - d) None of the above
- 4) Match List – I and List – II and select the correct answer using the codes given below the lists :

**List – I**

- A) Associative law
- B) Absorption law
- C) Demorgans law
- D) Commutative law

**List – II**

- 1)  $P \vee (Q \vee R) \equiv (P \vee Q) \vee R$
- 2)  $P \vee Q \equiv Q \vee P$
- 3)  $\neg(P \vee Q) \equiv \neg P \wedge \neg Q$
- 4)  $P \vee (P \wedge Q) \equiv P$

**Codes :**

|    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 2 | 3 | 4 |
| b) | 4 | 3 | 1 | 2 |
| c) | 1 | 4 | 3 | 2 |
| d) | 2 | 1 | 4 | 3 |

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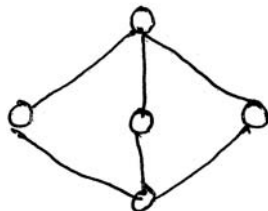


- 5) If  $|A| = k$  and  $|B| = m$ , how many relations are between A and B ? If in addition  $|C| = n$ , then how many relations are there in  $A \times B \times C$  ?
- a)  $k + m$  and  $k + m + n$                       b)  $k \times m$  and  $k \times m \times n$   
 c)  $2^{k+m}$  and  $2^{k+m+n}$                       d)  $2^{km}$  and  $2^{kmn}$
- 6) Which of the following are symmetric ?
- a)  $R : x$  is greater than  $y$                       b)  $R : x + y = 10$   
 c)  $R : x + 4y = 10$                                   d) None of the above
- 7) Consider a binary relation R shown in the following matrix on set  $S = \{1, 2, 3, 4\}$

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

The relation R is

- a) Equivalence relation                                  b) Irreflexive and antisymmetric  
 c) Irreflexive, symmetric and transitive          d) Transitive but neither reflexive nor irreflexive
- 8) A mapping of  $f : X \rightarrow Y$  is called \_\_\_\_\_ if the range  $R_f = Y$ .
- a) into                                  b) one-to-one                      c) onto                                  d) none of the above
- 9) The inverse function  $f^{-1}$  for a given function  $f$  exists if function  $f$  is \_\_\_\_\_
- a) one-to-one                      b) into                                  c) onto                                  d) both a) and c)
- 10) A semigroup  $\langle M, 0 \rangle$  with an identity element with respect to the operation 0 is called \_\_\_\_\_
- a) semi group                      b) subsemigroup                  c) monoid                              d) group
- 11) Let  $g$  be a homomorphism from  $\langle X, 0 \rangle$  to  $\langle Y, * \rangle$ . If  $g : X \rightarrow Y$  is one-to-one, then  $g$  is called \_\_\_\_\_
- a) epimorphism                      b) monomorphism                  c) isomorphism                      d) all
- 12) A group cannot have a zero element because every element in a group is invertible
- a) False                                  b) True                                  c) Can't Say                          d) None of above
- 13) A lattice is called \_\_\_\_\_ if each of its subset has a LUB and GLB.
- a) complete                              b) bounded                          c) complemented                      d) distributed
- 14) Following Hasse diagram represent \_\_\_\_\_ lattice.



- a) complete                              b) bounded                          c) complemented                      d) all



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**S.E. (Computer Science and Engineering) (Part – I) (CGPA Pattern) Examination, 2017  
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Assume suitable data if necessary.**

SECTION – I

2. Answer the following (**any 3**) : **(3×4=12)**
- a) Write a note on matrix and graph representation of relation. Explain with example.
  - b) Draw the Hasse diagram for  $(P(A), \subseteq)$  for :
    - a)  $A = \{a, b\}$  and
    - b)  $A = \{a, b, c\}$
  - c) Obtain the PCNF and PDNF of  $(P \wedge Q) \vee (\neg P \wedge R)$ .
  - d) Show that D is a valid conclusion from the premises.  
 $(A \rightarrow B) \wedge (A \rightarrow C), \neg(B \wedge C), D \vee A$
3. Answer the following (**any 2**) : **(2×8=16)**
- a) Define relation and explain the properties of relation with example.
  - b) Define composition of relation and solve the following problem.  
Let  $R = \{(1, 2), (3, 4), (2, 2)\}$  and  
 $S = \{(4, 2), (2, 5), (3, 1), (1, 3)\}$   
Find :
    - 1)  $R.S$
    - 2)  $S.R$
    - 3)  $(R.S).R$
  - c) Define the following with example.
    - a) Cartesian product
    - b) Power set
    - c) DNF
    - d) PDNF.



## SECTION – II

4. Attempt **any three** (each carries 4 marks) : **12**
- A) Define and explain inverse function with example.
  - B) Define and explain semigroup homomorphism and monoid homomorphism.
  - C) Explain following terms :
    - i) Permutation groups
    - ii) Kernel of homomorphism.
  - D) Define lattice and state the properties of lattice.
5. Attempt **any two** (each carries 8 marks) : **16**
- A) Let  $X = \{1, 2, 3\}$  and  $f, g$  and  $h$  be functions from  $X$  to  $X$  given by
- $$f = \{\langle 1, 2 \rangle, \langle 2, 3 \rangle, \langle 3, 1 \rangle\}$$
- $$g = \{\langle 1, 2 \rangle, \langle 2, 1 \rangle, \langle 3, 3 \rangle\} \text{ and}$$
- $$h = \{\langle 1, 1 \rangle, \langle 2, 2 \rangle, \langle 3, 3 \rangle\}$$
- Find :
- i)  $f \circ g$
  - ii)  $h \circ g$
  - iii)  $g \circ f \circ h$
  - iv)  $h \circ h \circ f$ .
- B) Define Well formed expression.  
Derive the reverse polish (suffix) expression for the following infix expression  
 $(a - b) + (c \uparrow d) \uparrow (e * f)$
- C) What is boolean algebra ? List and explain properties of boolean algebra.
-



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**S.E. (Computer Science and Engineering) (Part – I) (CGPA Pattern) Examination, 2017  
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All** questions are **compulsory**.
  - 2) Figures to the right indicate full marks.
  - 3) **Assume** suitable data if **necessary**.
  - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
  - 5) **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.**

**MCQ/Objective Type Questions**

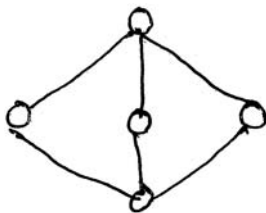
Duration : 30 Minutes

Marks : 14

1. Choose the correct answers :

(14×1=14)

- 1) A mapping of  $f : X \rightarrow Y$  is called \_\_\_\_\_ if the range  $R_f = Y$ .  
a) into                      b) one-to-one              c) onto                      d) none of the above
- 2) The inverse function  $f^{-1}$  for a given function  $f$  exists if function  $f$  is \_\_\_\_\_.  
a) one-to-one              b) into                      c) onto                      d) both a) and c)
- 3) A semigroup  $\langle M, 0 \rangle$  with an identity element with respect to the operation 0 is called \_\_\_\_\_.  
a) semi group              b) subsemigroup              c) monoid                      d) group
- 4) Let  $g$  be a homomorphism from  $\langle X, 0 \rangle$  to  $\langle Y, * \rangle$ . If  $g : X \rightarrow Y$  is one-to-one, then  $g$  is called \_\_\_\_\_.  
a) epimorphism              b) monomorphism              c) isomorphism              d) all
- 5) A group cannot have a zero element because every element in a group is invertible  
a) False                      b) True                      c) Can't Say                      d) None of above
- 6) A lattice is called \_\_\_\_\_ if each of its subset has a LUB and GLB.  
a) complete                      b) bounded                      c) complemented                      d) distributed
- 7) Following Hasse diagram represent \_\_\_\_\_ lattice.



- a) complete                      b) bounded                      c) complemented                      d) all

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**S.E. (Computer Science and Engineering) (Part – I) (CGPA Pattern) Examination, 2017  
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Assume suitable data if necessary.**

SECTION – I

2. Answer the following (**any 3**) : **(3×4=12)**
- a) Write a note on matrix and graph representation of relation. Explain with example.
  - b) Draw the Hasse diagram for  $(P(A), \subseteq)$  for :
    - a)  $A = \{a, b\}$  and
    - b)  $A = \{a, b, c\}$
  - c) Obtain the PCNF and PDNF of  $(P \wedge Q) \vee (\neg P \wedge R)$ .
  - d) Show that D is a valid conclusion from the premises.  
 $(A \rightarrow B) \wedge (A \rightarrow C), \neg(B \wedge C), D \vee A$
3. Answer the following (**any 2**) : **(2×8=16)**
- a) Define relation and explain the properties of relation with example.
  - b) Define composition of relation and solve the following problem.  
Let  $R = \{(1, 2), (3, 4), (2, 2)\}$  and  
 $S = \{(4, 2), (2, 5), (3, 1), (1, 3)\}$   
Find :
    - 1) R.S
    - 2) S.R
    - 3) (R.S).R
  - c) Define the following with example.
    - a) Cartesian product
    - b) Power set
    - c) DNF
    - d) PDNF.



## SECTION – II

4. Attempt **any three** (each carries 4 marks) : **12**
- A) Define and explain inverse function with example.
  - B) Define and explain semigroup homomorphism and monoid homomorphism.
  - C) Explain following terms :
    - i) Permutation groups
    - ii) Kernel of homomorphism.
  - D) Define lattice and state the properties of lattice.
5. Attempt **any two** (each carries 8 marks) : **16**
- A) Let  $X = \{1, 2, 3\}$  and  $f, g$  and  $h$  be functions from  $X$  to  $X$  given by
- $$f = \{\langle 1, 2 \rangle, \langle 2, 3 \rangle, \langle 3, 1 \rangle\}$$
- $$g = \{\langle 1, 2 \rangle, \langle 2, 1 \rangle, \langle 3, 3 \rangle\} \text{ and}$$
- $$h = \{\langle 1, 1 \rangle, \langle 2, 2 \rangle, \langle 3, 3 \rangle\}$$
- Find :
- i)  $f \circ g$
  - ii)  $h \circ g$
  - iii)  $g \circ f \circ h$
  - iv)  $h \circ h \circ f$ .
- B) Define Well formed expression.  
Derive the reverse polish (suffix) expression for the following infix expression  
 $(a - b) + (c \uparrow d) \uparrow (e * f)$
- C) What is boolean algebra ? List and explain properties of boolean algebra.
-





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**S.E. (Computer Science and Engineering) (Part – I) (CGPA Pattern) Examination, 2017**  
**DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All** questions are **compulsory**.
  - 2) Figures to the right indicate full marks.
  - 3) **Assume** suitable data if **necessary**.
  - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
  - 5) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers :

(14×1=14)

- 1) If  $|A| = k$  and  $|B| = m$ , how many relations are between A and B ? If in addition  $|C| = n$ , then how many relations are there in  $A \times B \times C$  ?
  - a)  $k + m$  and  $k + m + n$
  - b)  $k \times m$  and  $k \times m \times n$
  - c)  $2^{k+m}$  and  $2^{k+m+n}$
  - d)  $2^{km}$  and  $2^{kmn}$
- 2) Which of the following are symmetric ?
  - a)  $R : x$  is greater than  $y$
  - b)  $R : x + y = 10$
  - c)  $R : x + 4y = 10$
  - d) None of the above
- 3) Consider a binary relation R shown in the following matrix on set  $S = \{1, 2, 3, 4\}$

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

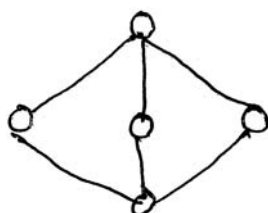
The relation R is

- a) Equivalence relation
  - b) Irreflexive and antisymmetric
  - c) Irreflexive, symmetric and transitive
  - d) Transitive but neither reflexive nor irreflexive
- 4) A mapping of  $f : X \rightarrow Y$  is called \_\_\_\_\_ if the range  $R_f = Y$ .
    - a) into
    - b) one-to-one
    - c) onto
    - d) none of the above
  - 5) The inverse function  $f^{-1}$  for a given function  $f$  exists if function  $f$  is \_\_\_\_\_.
    - a) one-to-one
    - b) into
    - c) onto
    - d) both a) and c)
  - 6) A semigroup  $\langle M, 0 \rangle$  with an identity element with respect to the operation 0 is called \_\_\_\_\_.
    - a) semi group
    - b) subsemigroup
    - c) monoid
    - d) group

P.T.O.



- 7) Let  $g$  be a homomorphism from  $\langle X, 0 \rangle$  to  $\langle Y, * \rangle$ . If  $g : X \rightarrow Y$  is one-to-one, then  $g$  is called \_\_\_\_\_  
 a) epimorphism    b) monomorphism    c) isomorphism    d) all
- 8) A group cannot have a zero element because every element in a group is invertible  
 a) False    b) True    c) Can't Say    d) None of above
- 9) A lattice is called \_\_\_\_\_ if each of its subset has a LUB and GLB.  
 a) complete    b) bounded    c) complemented    d) distributed
- 10) Following Hasse diagram represent \_\_\_\_\_ lattice.



- a) complete    b) bounded    c) complemented    d) all
- 11)  $R = \{(1, 1), (1, 2), (2, 3)\}$  and  $S = \{(1, 2), (2, 3), (3, 3)\}$  on  $A \times A$ , where  $A = \{1, 2, 3\}$   $R \oplus S$  is, ( $\oplus$  – symmetric difference)  
 a)  $\{(1, 1), (3, 3)\}$     b)  $\{(1, 1), (2, 3), (3, 3)\}$   
 c)  $\{(1, 2), (2, 3), (3, 3)\}$     d)  $A \times A$
- 12) If set  $A$  has  $n$  elements, then total number of subsets of  $A$  is  
 a)  $n^2$     b)  $2^n$     c)  $2^{n^2}$     d)  $(2^n)^2$
- 13) A relation  $R$  on a non empty set  $A$  is called equivalence relation iff  
 a)  $R$  is reflexive, antisymmetric and transitive    b)  $R$  is reflexive, asymmetric and transitive  
 c)  $R$  is reflexive, symmetric and transitive    d) None of the above
- 14) Match List – I and List – II and select the correct answer using the codes given below the lists :

**List – I**

- A) Associative law
- B) Absorption law
- C) Demorgans law
- D) Commutative law

**List – II**

- 1)  $P \vee (Q \vee R) \equiv (P \vee Q) \vee R$
- 2)  $P \vee Q \equiv Q \vee P$
- 3)  $\neg(P \vee Q) \equiv \neg P \wedge \neg Q$
- 4)  $P \vee (P \wedge Q) \equiv P$

**Codes :**

|    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
|----|----------|----------|----------|----------|
| a) | 1        | 2        | 3        | 4        |
| b) | 4        | 3        | 1        | 2        |
| c) | 1        | 4        | 3        | 2        |
| d) | 2        | 1        | 4        | 3        |



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**S.E. (Computer Science and Engineering) (Part – I) (CGPA Pattern) Examination, 2017  
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Assume suitable data if necessary.**

SECTION – I

2. Answer the following (**any 3**) : **(3×4=12)**
- a) Write a note on matrix and graph representation of relation. Explain with example.
  - b) Draw the Hasse diagram for  $(P(A), \subseteq)$  for :
    - a)  $A = \{a, b\}$  and
    - b)  $A = \{a, b, c\}$
  - c) Obtain the PCNF and PDNF of  $(P \wedge Q) \vee (\neg P \wedge R)$ .
  - d) Show that D is a valid conclusion from the premises.  
 $(A \rightarrow B) \wedge (A \rightarrow C), \neg(B \wedge C), D \vee A$
3. Answer the following (**any 2**) : **(2×8=16)**
- a) Define relation and explain the properties of relation with example.
  - b) Define composition of relation and solve the following problem.  
Let  $R = \{(1, 2), (3, 4), (2, 2)\}$  and  
 $S = \{(4, 2), (2, 5), (3, 1), (1, 3)\}$   
Find :
    - 1)  $R.S$
    - 2)  $S.R$
    - 3)  $(R.S).R$
  - c) Define the following with example.
    - a) Cartesian product
    - b) Power set
    - c) DNF
    - d) PDNF.



## SECTION – II

4. Attempt **any three** (each carries 4 marks) : **12**
- A) Define and explain inverse function with example.
  - B) Define and explain semigroup homomorphism and monoid homomorphism.
  - C) Explain following terms :
    - i) Permutation groups
    - ii) Kernel of homomorphism.
  - D) Define lattice and state the properties of lattice.
5. Attempt **any two** (each carries 8 marks) : **16**
- A) Let  $X = \{1, 2, 3\}$  and  $f, g$  and  $h$  be functions from  $X$  to  $X$  given by
- $$f = \{\langle 1, 2 \rangle, \langle 2, 3 \rangle, \langle 3, 1 \rangle\}$$
- $$g = \{\langle 1, 2 \rangle, \langle 2, 1 \rangle, \langle 3, 3 \rangle\} \text{ and}$$
- $$h = \{\langle 1, 1 \rangle, \langle 2, 2 \rangle, \langle 3, 3 \rangle\}$$
- Find :
- i)  $f \circ g$
  - ii)  $h \circ g$
  - iii)  $g \circ f \circ h$
  - iv)  $h \circ h \circ f$ .
- B) Define Well formed expression.  
Derive the reverse polish (suffix) expression for the following infix expression  
 $(a - b) + (c \uparrow d) \uparrow (e * f)$
- C) What is boolean algebra ? List and explain properties of boolean algebra.
-



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**S.E. (Computer Science and Engineering) (Part – I) (CGPA Pattern) Examination, 2017  
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All** questions are **compulsory**.
  - 2) Figures to the right indicate full marks.
  - 3) **Assume** suitable data if **necessary**.
  - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
  - 5) **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.**

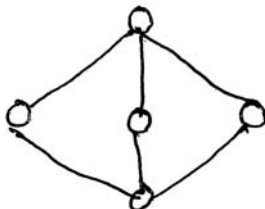
**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers : (14×1=14)

- 1) A semigroup  $\langle M, 0 \rangle$  with an identity element with respect to the operation 0 is called \_\_\_\_\_  
 a) semi group      b) subsemigroup      c) monoid      d) group
- 2) Let  $g$  be a homomorphism from  $\langle X, 0 \rangle$  to  $\langle Y, * \rangle$ . If  $g : X \rightarrow Y$  is one-to-one, then  $g$  is called \_\_\_\_\_  
 a) epimorphism      b) monomorphism      c) isomorphism      d) all
- 3) A group cannot have a zero element because every element in a group is invertible  
 a) False      b) True      c) Can't Say      d) None of above
- 4) A lattice is called \_\_\_\_\_ if each of its subset has a LUB and GLB.  
 a) complete      b) bounded      c) complemented      d) distributed
- 5) Following Hasse diagram represent \_\_\_\_\_ lattice.



- a) complete      b) bounded      c) complemented      d) all
- 6)  $R = \{(1, 1), (1, 2), (2, 3)\}$  and  $S = \{(1, 2), (2, 3), (3, 3)\}$  on  $A \times A$ , where  $A = \{1, 2, 3\}$   $R \oplus S$  is, ( $\oplus$  – symmetric difference)  
 a)  $\{(1, 1), (3, 3)\}$       b)  $\{(1, 1), (2, 3), (3, 3)\}$   
 c)  $\{(1, 2), (2, 3), (3, 3)\}$       d)  $A \times A$

P.T.O.



- 7) If set A has n elements, then total number of subsets of A is  
 a)  $n^2$                       b)  $2^n$                       c)  $2^{n^2}$                       d)  $(2^n)^2$
- 8) A relation R on a non empty set A is called equivalence relation iff  
 a) R is reflexive, antisymmetric and transitive    b) R is reflexive, asymmetric and transitive  
 c) R is reflexive, symmetric and transitive        d) None of the above
- 9) Match List – I and List – II and select the correct answer using the codes given below the lists :

**List – I**

- A) Associative law  
 B) Absorption law  
 C) Demorgans law  
 D) Commutative law

**List – II**

- 1)  $P \vee (Q \vee R) \equiv (P \vee Q) \vee R$   
 2)  $P \vee Q \equiv Q \vee P$   
 3)  $\neg(P \vee Q) \equiv \neg P \wedge \neg Q$   
 4)  $P \vee (P \wedge Q) \equiv P$

**Codes :**

|    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
|----|----------|----------|----------|----------|
| a) | 1        | 2        | 3        | 4        |
| b) | 4        | 3        | 1        | 2        |
| c) | 1        | 4        | 3        | 2        |
| d) | 2        | 1        | 4        | 3        |

- 10) If  $|A| = k$  and  $|B| = m$ , how many relations are between A and B ? If in addition  $|C| = n$ , then how many relations are there in  $A \times B \times C$  ?  
 a)  $k + m$  and  $k + m + n$                       b)  $k \times m$  and  $k \times m \times n$   
 c)  $2^{k+m}$  and  $2^{k+m+n}$                       d)  $2^{km}$  and  $2^{kmn}$
- 11) Which of the following are symmetric ?  
 a)  $R : x$  is greater than  $y$                       b)  $R : x + y = 10$   
 c)  $R : x + 4y = 10$                       d) None of the above
- 12) Consider a binary relation R shown in the following matrix on set  $S = \{1, 2, 3, 4\}$

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

The relation R is

- a) Equivalence relation                      b) Irreflexive and antisymmetric  
 c) Irreflexive, symmetric and transitive    d) Transitive but neither reflexive nor irreflexive
- 13) A mapping of  $f : X \rightarrow Y$  is called \_\_\_\_\_ if the range  $R_f = Y$ .  
 a) into                      b) one-to-one                      c) onto                      d) none of the above
- 14) The inverse function  $f^{-1}$  for a given function f exists if function f is \_\_\_\_\_.  
 a) one-to-one                      b) into                      c) onto                      d) both a) and c)



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**S.E. (Computer Science and Engineering) (Part – I) (CGPA Pattern) Examination, 2017  
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Assume suitable data if necessary.**

SECTION – I

2. Answer the following (**any 3**) : **(3×4=12)**
- a) Write a note on matrix and graph representation of relation. Explain with example.
  - b) Draw the Hasse diagram for  $(P(A), \subseteq)$  for :
    - a)  $A = \{a, b\}$  and
    - b)  $A = \{a, b, c\}$
  - c) Obtain the PCNF and PDNF of  $(P \wedge Q) \vee (\neg P \wedge R)$ .
  - d) Show that D is a valid conclusion from the premises.  
 $(A \rightarrow B) \wedge (A \rightarrow C), \neg(B \wedge C), D \vee A$
3. Answer the following (**any 2**) : **(2×8=16)**
- a) Define relation and explain the properties of relation with example.
  - b) Define composition of relation and solve the following problem.  
Let  $R = \{(1, 2), (3, 4), (2, 2)\}$  and  
 $S = \{(4, 2), (2, 5), (3, 1), (1, 3)\}$   
Find :
    - 1)  $R.S$
    - 2)  $S.R$
    - 3)  $(R.S).R$
  - c) Define the following with example.
    - a) Cartesian product
    - b) Power set
    - c) DNF
    - d) PDNF.



## SECTION – II

4. Attempt **any three** (each carries 4 marks) : **12**
- A) Define and explain inverse function with example.
  - B) Define and explain semigroup homomorphism and monoid homomorphism.
  - C) Explain following terms :
    - i) Permutation groups
    - ii) Kernel of homomorphism.
  - D) Define lattice and state the properties of lattice.
5. Attempt **any two** (each carries 8 marks) : **16**
- A) Let  $X = \{1, 2, 3\}$  and  $f, g$  and  $h$  be functions from  $X$  to  $X$  given by
- $$f = \{\langle 1, 2 \rangle, \langle 2, 3 \rangle, \langle 3, 1 \rangle\}$$
- $$g = \{\langle 1, 2 \rangle, \langle 2, 1 \rangle, \langle 3, 3 \rangle\} \text{ and}$$
- $$h = \{\langle 1, 1 \rangle, \langle 2, 2 \rangle, \langle 3, 3 \rangle\}$$
- Find :
- i)  $f \circ g$
  - ii)  $h \circ g$
  - iii)  $g \circ f \circ h$
  - iv)  $h \circ h \circ f$ .
- B) Define Well formed expression.  
Derive the reverse polish (suffix) expression for the following infix expression  
 $(a - b) + (c \uparrow d) \uparrow (e * f)$
- C) What is boolean algebra ? List and explain properties of boolean algebra.
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SLR-VB – 201

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**S.E. (CSE) (Part – I) (CGPA) Examination, 2017  
ADVANCED C CONCEPTS**

Day and Date : Saturday, 6-5-2017

Max. Marks : 70

Time : 3.00 p.m. to 6.00 p.m.

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

2) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**

3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

**(1×14=14)**

1) What strcmp(s1,s2) returns when s1 and s2 are equal ?

- a) 1                      b) -1                      c) 0                      d) &

2) What is the output of this C code ?

```
#include<stdio.h>
```

```
Void main()
```

```
{
```

```
Char *s="hello";
```

```
Char *p=s;
```

```
printf("%c\n%c",*(p+1),s[1]);
```

```
}
```

- a) h e                      b) e l                      c) h h                      d) e e

3) In the Tower of Hanoi if the numbers of disks are 5 the total number of moves is equal to

- a) 5                      b) 10                      c) 30                      d) 31

4) The return type of malloc is

- a) int                      b) char                      c) void                      d) none of these

P.T.O.



5) What will be output of following code ?

```
Static int i=10;
main()
{
Static int i=10;
Printf ("%d", i);
}
```

- a) 10                      b) 0                      c) Compile error    d) Gabbage value
- 6) Which of the following are incorrect declarations ?  
a) extern int i;      b) auto int i;      c) static int i;      d) global int i;
- 7) Which data structure is used to store the return addresses of functions which are repeatedly called in recursion ?  
a) stack              b) array              c) structure              d) queue
- 8) The worst case occurs in linear search algorithm when ?  
a) Item is somewhere in the middle of array  
b) Item is not in the array  
c) Item is the last element in the array  
d) Both b) and c)
- 9) Contents of existing file are overwritten if the file is opened in  
a) "w+" mode      b) "a" mode      c) "a+" mode      d) "r" mode
- 10) The goal of hashing is to produce a search that takes  
a)  $O(1)$               b)  $O(n)$               c)  $O(\log n)$               d)  $O(n \log n)$
- 11) Quick sort is also known as  
a) Fast sort                      b) Diminishing increment sort  
c) Partition exchange sort      d) None of above
- 12) The best case analysis of bubble sort is  
a)  $O(n)$               b)  $O(n \log n)$       c)  $O(n^2)$               d)  $O(\log n)$
- 13) Two main measures for the efficiency of an algorithm are  
a) Processor and memory              b) Complexity and capacity  
c) Time and space                      d) Data and space
- 14) Which of the following sorting algorithm is of divide-and-conquer type ?  
a) Bubble sort      b) Insertion sort    c) Quick sort      d) None of these



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**S.E. (CSE) (Part – I) (CGPA) Examination, 2017  
ADVANCED C CONCEPTS**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

***Instruction: All questions are compulsory.***

**SECTION – I**

2. Attempt **any three** : **(3×4)**

- a) What is recursion ? Write a C-program to find factorial of a given number using recursion.
- b) Write a short note on 'Dynamic Memory Allocation'.
- c) List and explain any two string library functions with a simple code.
- d) Explain time related functions in detail.
- e) Define string. Give different ways to declare and initialize string. Show how strings are stored in memory.

3. Attempt **any two** : **(2×8)**

- a) What is use of storage classes ? Explain all 4 types of storage class with help of following points :
  - i) Storage
  - ii) Default initial value
  - iii) Scope
  - iv) Life.
- b) Write a detail note on the concept of array of pointer and pointer to array with the help of example.
- c) Solve Tower of Hanoi problem taking 04 numbers of disks. Also write recursive C Program for tower of Hanoi problem.



## SECTION – II

4. Attempt **any three** questions : **(4×3)**
- a) Explain time complexity and space complexity of an algorithm.
  - b) Explain different file functions available in C library.
  - c) Write a program for selection sort.
  - d) Write a note on merge sort with example.
  - e) Explain collision resolution by chaining.
5. Attempt **any two** questions : **(2×8)**
- a) Sort the following no using Heap Sort :  
30, 55, 50, 45, 25, 65, 60, 40.
  - b) Explain collision resolution by open addressing.
  - c) Explain different file modes. WAP to copy content from one file to another.
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SLR-VB – 201

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**S.E. (CSE) (Part – I) (CGPA) Examination, 2017  
ADVANCED C CONCEPTS**

Day and Date : Saturday, 6-5-2017

Max. Marks : 70

Time : 3.00 p.m. to 6.00 p.m.

- Instructions:** 1) **All questions are compulsory.**  
2) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**  
3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

**(1×14=14)**

- 1) The worst case occurs in linear search algorithm when ?
  - a) Item is somewhere in the middle of array
  - b) Item is not in the array
  - c) Item is the last element in the array
  - d) Both b) and c)
- 2) Contents of existing file are overwritten if the file is opened in
  - a) "w+" mode
  - b) "a" mode
  - c) "a+" mode
  - d) "r" mode
- 3) The goal of hashing is to produce a search that takes
  - a)  $O(1)$
  - b)  $O(n)$
  - c)  $O(\log n)$
  - d)  $O(n \log n)$
- 4) Quick sort is also known as
  - a) Fast sort
  - b) Diminishing increment sort
  - c) Partition exchange sort
  - d) None of above
- 5) The best case analysis of bubble sort is
  - a)  $O(n)$
  - b)  $O(n \log n)$
  - c)  $O(n^2)$
  - d)  $O(\log n)$
- 6) Two main measures for the efficiency of an algorithm are
  - a) Processor and memory
  - b) Complexity and capacity
  - c) Time and space
  - d) Data and space

P.T.O.



- 7) Which of the following sorting algorithm is of divide-and-conquer type ?  
a) Bubble sort      b) Insertion sort      c) Quick sort      d) None of these
- 8) What strcmp(s1,s2) returns when s1 and s2 are equal ?  
a) 1                      b) -1                      c) 0                      d) &
- 9) What is the output of this C code ?

```
#include<stdio.h>
Void main()
{
Char *s="hello";
Char *p=s;
printf("%c\n%c",*(p+1),s[1]);
}
```

- a) h e                      b) e l                      c) h h                      d) e e
- 10) In the Tower of Hanoi if the numbers of disks are 5 the total number of moves is equal to  
a) 5                      b) 10                      c) 30                      d) 31
- 11) The return type of malloc is  
a) int                      b) char                      c) void                      d) none of these
- 12) What will be output of following code ?
- ```
Static int i=10;
main()
{
Static int i=10;
Printf ("%d", i);
}
```
- a) 10                      b) 0                      c) Compile error      d) Gabbage value
- 13) Which of the following are incorrect declarations ?  
a) extern int i;      b) auto int i;      c) static int i;      d) global int i;
- 14) Which data structure is used to store the return addresses of functions which are repeatedly called in recursion ?  
a) stack                      b) array                      c) structure                      d) queue



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**S.E. (CSE) (Part – I) (CGPA) Examination, 2017  
ADVANCED C CONCEPTS**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

***Instruction: All questions are compulsory.***

**SECTION – I**

2. Attempt **any three** : **(3×4)**
- a) What is recursion ? Write a C-program to find factorial of a given number using recursion.
  - b) Write a short note on 'Dynamic Memory Allocation'.
  - c) List and explain any two string library functions with a simple code.
  - d) Explain time related functions in detail.
  - e) Define string. Give different ways to declare and initialize string. Show how strings are stored in memory.
3. Attempt **any two** : **(2×8)**
- a) What is use of storage classes ? Explain all 4 types of storage class with help of following points :
    - i) Storage
    - ii) Default initial value
    - iii) Scope
    - iv) Life.
  - b) Write a detail note on the concept of array of pointer and pointer to array with the help of example.
  - c) Solve Tower of Hanoi problem taking 04 numbers of disks. Also write recursive C Program for tower of Hanoi problem.



## SECTION – II

4. Attempt **any three** questions : **(4×3)**
- a) Explain time complexity and space complexity of an algorithm.
  - b) Explain different file functions available in C library.
  - c) Write a program for selection sort.
  - d) Write a note on merge sort with example.
  - e) Explain collision resolution by chaining.
5. Attempt **any two** questions : **(2×8)**
- a) Sort the following no using Heap Sort :  
30, 55, 50, 45, 25, 65, 60, 40.
  - b) Explain collision resolution by open addressing.
  - c) Explain different file modes. WAP to copy content from one file to another.
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SLR-VB – 201

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**S.E. (CSE) (Part – I) (CGPA) Examination, 2017  
ADVANCED C CONCEPTS**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) **All questions are compulsory.**  
2) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**  
3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

**(1×14=14)**

1) What will be output of following code ?

```
Static int i=10;
main()
{
Static int i=10;
Printf ("%d", i);
}
```

a) 10                      b) 0                      c) Compile error      d) Gabbage value

2) Which of the following are incorrect declarations ?

a) extern int i;      b) auto int i;      c) static int i;      d) global int i;

3) Which data structure is used to store the return addresses of functions which are repeatedly called in recursion ?

a) stack                      b) array                      c) structure                      d) queue

4) The worst case occurs in linear search algorithm when ?

a) Item is somewhere in the middle of array  
b) Item is not in the array  
c) Item is the last element in the array  
d) Both b) and c)

P.T.O.



- 5) Contents of existing file are overwritten if the file is opened in  
a) "w+" mode      b) "a" mode      c) "a+" mode      d) "r" mode
- 6) The goal of hashing is to produce a search that takes  
a)  $O(1)$       b)  $O(n)$       c)  $O(\log n)$       d)  $O(n \log n)$
- 7) Quick sort is also known as  
a) Fast sort      b) Diminishing increment sort  
c) Partition exchange sort      d) None of above
- 8) The best case analysis of bubble sort is  
a)  $O(n)$       b)  $O(n \log n)$       c)  $O(n^2)$       d)  $O(\log n)$
- 9) Two main measures for the efficiency of an algorithm are  
a) Processor and memory      b) Complexity and capacity  
c) Time and space      d) Data and space
- 10) Which of the following sorting algorithm is of divide-and-conquer type ?  
a) Bubble sort      b) Insertion sort      c) Quick sort      d) None of these
- 11) What strcmp(s1,s2) returns when s1 and s2 are equal ?  
a) 1      b) -1      c) 0      d) &
- 12) What is the output of this C code ?  

```
#include<stdio.h>
Void main()
{
Char *s="hello";
Char *p=s;
printf("%c\n%c",*(p+1),s[1]);
}
```

  
a) h e      b) e l      c) h h      d) e e
- 13) In the Tower of Hanoi if the numbers of disks are 5 the total number of moves is equal to  
a) 5      b) 10      c) 30      d) 31
- 14) The return type of malloc is  
a) int      b) char      c) void      d) none of these
-



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**S.E. (CSE) (Part – I) (CGPA) Examination, 2017  
ADVANCED C CONCEPTS**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

***Instruction: All questions are compulsory.***

**SECTION – I**

2. Attempt **any three** : **(3×4)**
- a) What is recursion ? Write a C-program to find factorial of a given number using recursion.
  - b) Write a short note on 'Dynamic Memory Allocation'.
  - c) List and explain any two string library functions with a simple code.
  - d) Explain time related functions in detail.
  - e) Define string. Give different ways to declare and initialize string. Show how strings are stored in memory.
3. Attempt **any two** : **(2×8)**
- a) What is use of storage classes ? Explain all 4 types of storage class with help of following points :
    - i) Storage
    - ii) Default initial value
    - iii) Scope
    - iv) Life.
  - b) Write a detail note on the concept of array of pointer and pointer to array with the help of example.
  - c) Solve Tower of Hanoi problem taking 04 numbers of disks. Also write recursive C Program for tower of Hanoi problem.



## SECTION – II

4. Attempt **any three** questions : **(4×3)**
- a) Explain time complexity and space complexity of an algorithm.
  - b) Explain different file functions available in C library.
  - c) Write a program for selection sort.
  - d) Write a note on merge sort with example.
  - e) Explain collision resolution by chaining.
5. Attempt **any two** questions : **(2×8)**
- a) Sort the following no using Heap Sort :  
30, 55, 50, 45, 25, 65, 60, 40.
  - b) Explain collision resolution by open addressing.
  - c) Explain different file modes. WAP to copy content from one file to another.
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SLR-VB – 201

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**S.E. (CSE) (Part – I) (CGPA) Examination, 2017  
ADVANCED C CONCEPTS**

Day and Date : Saturday, 6-5-2017

Max. Marks : 70

Time : 3.00 p.m. to 6.00 p.m.

- Instructions:** 1) **All questions are compulsory.**  
2) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**  
3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

**(1×14=14)**

- 1) The goal of hashing is to produce a search that takes  
a)  $O(1)$                       b)  $O(n)$                       c)  $O(\log n)$                       d)  $O(n \log n)$
- 2) Quick sort is also known as  
a) Fast sort                                              b) Diminishing increment sort  
c) Partition exchange sort                      d) None of above
- 3) The best case analysis of bubble sort is  
a)  $O(n)$                       b)  $O(n \log n)$                       c)  $O(n^2)$                       d)  $O(\log n)$
- 4) Two main measures for the efficiency of an algorithm are  
a) Processor and memory                      b) Complexity and capacity  
c) Time and space                                      d) Data and space
- 5) Which of the following sorting algorithm is of divide-and-conquer type ?  
a) Bubble sort                                              b) Insertion sort  
c) Quick sort                                              d) None of these
- 6) What `strcmp(s1,s2)` returns when `s1` and `s2` are equal ?  
a) 1                                              b) -1                                              c) 0                                              d) &

P.T.O.



7) What is the output of this C code ?

```
#include<stdio.h>
Void main()
{
Char *s="hello";
Char *p=s;
printf("%c\n%c",*(p+1),s[1]);
}
```

- a) h e                      b) e l                      c) h h                      d) e e

8) In the Tower of Hanoi if the numbers of disks are 5 the total number of moves is equal to

- a) 5                      b) 10                      c) 30                      d) 31

9) The return type of malloc is

- a) int                      b) char                      c) void                      d) none of these

10) What will be output of following code ?

```
Static int i=10;
main()
{
Static int i=10;
Printf ("%d", i);
}
```

- a) 10                      b) 0                      c) Compile error                      d) Gabbage value

11) Which of the following are incorrect declarations ?

- a) extern int i;                      b) auto int i;                      c) static int i;                      d) global int i;

12) Which data structure is used to store the return addresses of functions which are repeatedly called in recursion ?

- a) stack                      b) array                      c) structure                      d) queue

13) The worst case occurs in linear search algorithm when ?

- a) Item is somewhere in the middle of array  
b) Item is not in the array  
c) Item is the last element in the array  
d) Both b) and c)

14) Contents of existing file are overwritten if the file is opened in

- a) "w+" mode                      b) "a" mode                      c) "a+" mode                      d) "r" mode



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**S.E. (CSE) (Part – I) (CGPA) Examination, 2017  
ADVANCED C CONCEPTS**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

***Instruction: All questions are compulsory.***

**SECTION – I**

2. Attempt **any three** : **(3×4)**
- a) What is recursion ? Write a C-program to find factorial of a given number using recursion.
  - b) Write a short note on 'Dynamic Memory Allocation'.
  - c) List and explain any two string library functions with a simple code.
  - d) Explain time related functions in detail.
  - e) Define string. Give different ways to declare and initialize string. Show how strings are stored in memory.
3. Attempt **any two** : **(2×8)**
- a) What is use of storage classes ? Explain all 4 types of storage class with help of following points :
    - i) Storage
    - ii) Default initial value
    - iii) Scope
    - iv) Life.
  - b) Write a detail note on the concept of array of pointer and pointer to array with the help of example.
  - c) Solve Tower of Hanoi problem taking 04 numbers of disks. Also write recursive C Program for tower of Hanoi problem.



## SECTION – II

4. Attempt **any three** questions : **(4×3)**
- a) Explain time complexity and space complexity of an algorithm.
  - b) Explain different file functions available in C library.
  - c) Write a program for selection sort.
  - d) Write a note on merge sort with example.
  - e) Explain collision resolution by chaining.
5. Attempt **any two** questions : **(2×8)**
- a) Sort the following no using Heap Sort :  
30, 55, 50, 45, 25, 65, 60, 40.
  - b) Explain collision resolution by open addressing.
  - c) Explain different file modes. WAP to copy content from one file to another.
-







- 5) Master Slave JK flip-flop is used to eliminate
- a) Race around condition
  - b) Increase the clocking rate
  - c) Both a) and b)
  - d) None of the above
- 6) A ripple counter is known as \_\_\_\_\_ counter.
- a) Synchronous
  - b) Asynchronous
  - c) Modulus
  - d) None
- 7) Use of multiplexers offers the advantages
- a) Logic design is simplified
  - b) Minimizes the IC package count
  - c) Logic expression simplification is not required
  - d) All of the above
- 8) IC 74154 is used as
- a) 1 : 16 DEMUX
  - b) 1 : 8 DEMUX
  - c) 8 : 1 MUX
  - d) 16 : 1 MUX
- 9) Memory can be categorized on the basis of their
- a) Fabrication Technology
  - b) Physical Characteristics
  - c) Mode of Access
  - d) All of the above
- 10) \_\_\_\_\_ flip-flop is cascade of two SR-FF, with feedback from the output of the second to the input of the first FF.
- a) SR-FF
  - b) JK-FF
  - c) Master-slave JK-FF
  - d) D-FF
- 11) While specifying the memory size the letter K stands for
- a) 1024
  - b) 2048
  - c) 1000
  - d) 100
- 12) In  $16 \times 8$  memory the word size is
- a) 16
  - b) 8
  - c) 4
  - d) 12
- 13) The output of S-R flip-flop when  $S = 1, R = 0$  is
- a) 1
  - b) 0
  - c) Q
  - d) Both a) and b)
- 14) The race-around condition can be avoided if
- a)  $t_p < \Delta t < T$
  - b)  $\Delta t < t_p < T$
  - c) Both a) and b)
  - d) None
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**S.E. (C.S.E.) (Part – I) (CGPA) Examination, 2017  
DIGITAL TECHNIQUES**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

SECTION – I

2. Attempt **any two** : **(2×5=10)**

- a) Explain half subtractor using K-map.
- b) For the logic function

$$Y = \prod M(2, 3, 4, 5, 6, 7, 8, 11, 12)$$

Design the logic circuit with minimum number of NOR gates.

- c) Perform the following operations using 2's complement method, use 8-bit representation of numbers.
  - i)  $22 - 12$
  - ii)  $-22 + 12$

3. Attempt **any two** : **(2×5=10)**

- a) Explain ALU in detail.
- b) Write a short note on Excitation Table of Flip-Flop.
- c) Explain in look ahead carry generator.

4. Attempt **any one** : **(1×8=8)**

- a) Explain the operation of the 4-bit bi-direction shift register along with diagram. List out applications of shift register.
- b) Minimize the function  $f(A, B, C, D) = \sum m(1, 3, 5, 8, 9, 11, 15) + d(2, 13)$ . Realize using AND-OR and NAND-NAND gates.

**Set P**



## SECTION – II

5. Attempt **any two** : **(2×5=10)**
- a) Implement the expression using multiplexer  
 $f(A, B, C, D) = \sum m (0, 2, 3, 7, 8, 9, 11, 13)$
- b) Write a VHDL code for full adder.
- c) Explain RAM Architecture.
6. Attempt **any two** : **(2×5=10)**
- a) Explain write operation of RAM with waveform.
- b) Explain BCD-to-7 segment display decoder/driver.
- c) Design 32 : 1 multiplexer using 16 : 1 multiplexer ICs.
7. Attempt **any one** : **(1×8=8)**
- a) Explain classification of memory also explain ROM Architecture in detail.
- b) What is word size expansion ? Obtain a  $16 \times 8$  memory using  $16 \times 4$  memory ICs.
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SLR-VB – 202

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**S.E. (C.S.E.) (Part – I) (CGPA) Examination, 2017  
DIGITAL TECHNIQUES**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:** 1) Figures to the **right** indicate **full** marks.  
2) **All** questions are **compulsory**.  
3) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.  
4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**

- 1) IC 74154 is used as
  - a) 1 : 16 DEMUX
  - b) 1 : 8 DEMUX
  - c) 8 : 1 MUX
  - d) 16 : 1 MUX
- 2) Memory can be categorized on the basis of their
  - a) Fabrication Technology
  - b) Physical Characteristics
  - c) Mode of Access
  - d) All of the above
- 3) \_\_\_\_\_ flip-flop is cascade of two SR-FF, with feedback from the output of the second to the input of the first FF.
  - a) SR-FF
  - b) JK-FF
  - c) Master-slave JK-FF
  - d) D-FF
- 4) While specifying the memory size the letter K stands for
  - a) 1024
  - b) 2048
  - c) 1000
  - d) 100
- 5) In  $16 \times 8$  memory the word size is
  - a) 16
  - b) 8
  - c) 4
  - d) 12

P.T.O.



- 6) The output of S-R flip-flop when  $S = 1$ ,  $R = 0$  is  
a) 1                      b) 0                      c) Q                      d) Both a) and b)
- 7) The race-around condition can be avoided if  
a)  $t_p < \Delta t < T$                       b)  $\Delta t < t_p < T$   
c) Both a) and b)                      d) None
- 8) In n-variable K-map, there are \_\_\_\_\_ cells.  
a) n                      b)  $2^n$   
c)  $n + 1$                       d)  $n + 2$
- 9) BCD to 7-segment display decoder consist of  
a) 4 input and 7 output                      b) 4 input and 8 output  
c) 3 input and 7 output                      d) None of the above
- 10) A digital circuit that can store one bit is known as  
a) XOR gate                      b) Gate  
c) Flip-flop                      d) Register
- 11) Which number system has a base of 16  
a) Decimal                      b) Octal  
c) Hexadecimal                      d) None
- 12) Master Slave JK flip-flop is used to eliminate  
a) Race around condition                      b) Increase the clocking rate  
c) Both a) and b)                      d) None of the above
- 13) A ripple counter is known as \_\_\_\_\_ counter.  
a) Synchronous                      b) Asynchronous  
c) Modulus                      d) None
- 14) Use of multiplexers offers the advantages  
a) Logic design is simplified  
b) Minimizes the IC package count  
c) Logic expression simplification is not required  
d) All of the above
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**S.E. (C.S.E.) (Part – I) (CGPA) Examination, 2017  
DIGITAL TECHNIQUES**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

SECTION – I

2. Attempt **any two** : **(2×5=10)**

- a) Explain half subtractor using K-map.
- b) For the logic function

$$Y = \prod M(2, 3, 4, 5, 6, 7, 8, 11, 12)$$

Design the logic circuit with minimum number of NOR gates.

- c) Perform the following operations using 2's complement method, use 8-bit representation of numbers.
  - i)  $22 - 12$
  - ii)  $-22 + 12$

3. Attempt **any two** : **(2×5=10)**

- a) Explain ALU in detail.
- b) Write a short note on Excitation Table of Flip-Flop.
- c) Explain in look ahead carry generator.

4. Attempt **any one** : **(1×8=8)**

- a) Explain the operation of the 4-bit bi-direction shift register along with diagram. List out applications of shift register.
- b) Minimize the function  $f(A, B, C, D) = \sum m(1, 3, 5, 8, 9, 11, 15) + d(2, 13)$ . Realize using AND-OR and NAND-NAND gates.

**Set Q**



## SECTION – II

5. Attempt **any two** : **(2×5=10)**
- a) Implement the expression using multiplexer  
 $f(A, B, C, D) = \sum m(0, 2, 3, 7, 8, 9, 11, 13)$
- b) Write a VHDL code for full adder.
- c) Explain RAM Architecture.
6. Attempt **any two** : **(2×5=10)**
- a) Explain write operation of RAM with waveform.
- b) Explain BCD-to-7 segment display decoder/driver.
- c) Design 32 : 1 multiplexer using 16 : 1 multiplexer ICs.
7. Attempt **any one** : **(1×8=8)**
- a) Explain classification of memory also explain ROM Architecture in detail.
- b) What is word size expansion ? Obtain a  $16 \times 8$  memory using  $16 \times 4$  memory ICs.
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SLR-VB – 202

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**S.E. (C.S.E.) (Part – I) (CGPA) Examination, 2017  
DIGITAL TECHNIQUES**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:** 1) Figures to the **right** indicate **full** marks.  
2) **All** questions are **compulsory**.  
3) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.  
4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**

- 1) Master Slave JK flip-flop is used to eliminate
  - a) Race around condition
  - b) Increase the clocking rate
  - c) Both a) and b)
  - d) None of the above
- 2) A ripple counter is known as \_\_\_\_\_ counter.
  - a) Synchronous
  - b) Asynchronous
  - c) Modulus
  - d) None
- 3) Use of multiplexers offers the advantages
  - a) Logic design is simplified
  - b) Minimizes the IC package count
  - c) Logic expression simplification is not required
  - d) All of the above
- 4) IC 74154 is used as
  - a) 1 : 16 DEMUX
  - b) 1 : 8 DEMUX
  - c) 8 : 1 MUX
  - d) 16 : 1 MUX

P.T.O.



- 5) Memory can be categorized on the basis of their
- a) Fabrication Technology
  - b) Physical Characteristics
  - c) Mode of Access
  - d) All of the above
- 6) \_\_\_\_\_ flip-flop is cascade of two SR-FF, with feedback from the output of the second to the input of the first FF.
- a) SR-FF
  - b) JK-FF
  - c) Master-slave JK-FF
  - d) D-FF
- 7) While specifying the memory size the letter K stands for
- a) 1024
  - b) 2048
  - c) 1000
  - d) 100
- 8) In  $16 \times 8$  memory the word size is
- a) 16
  - b) 8
  - c) 4
  - d) 12
- 9) The output of S-R flip-flop when  $S = 1, R = 0$  is
- a) 1
  - b) 0
  - c) Q
  - d) Both a) and b)
- 10) The race-around condition can be avoided if
- a)  $t_p < \Delta t < T$
  - b)  $\Delta t < t_p < T$
  - c) Both a) and b)
  - d) None
- 11) In n-variable K-map, there are \_\_\_\_\_ cells.
- a) n
  - b)  $2^n$
  - c)  $n + 1$
  - d)  $n + 2$
- 12) BCD to 7-segment display decoder consist of
- a) 4 input and 7 output
  - b) 4 input and 8 output
  - c) 3 input and 7 output
  - d) None of the above
- 13) A digital circuit that can store one bit is known as
- a) XOR gate
  - b) Gate
  - c) Flip-flop
  - d) Register
- 14) Which number system has a base of 16
- a) Decimal
  - b) Octal
  - c) Hexadecimal
  - d) None



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**S.E. (C.S.E.) (Part – I) (CGPA) Examination, 2017  
DIGITAL TECHNIQUES**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

SECTION – I

2. Attempt **any two** : **(2×5=10)**

- a) Explain half subtractor using K-map.
- b) For the logic function

$$Y = \prod M(2, 3, 4, 5, 6, 7, 8, 11, 12)$$

Design the logic circuit with minimum number of NOR gates.

- c) Perform the following operations using 2's complement method, use 8-bit representation of numbers.
  - i)  $22 - 12$
  - ii)  $-22 + 12$

3. Attempt **any two** : **(2×5=10)**

- a) Explain ALU in detail.
- b) Write a short note on Excitation Table of Flip-Flop.
- c) Explain in look ahead carry generator.

4. Attempt **any one** : **(1×8=8)**

- a) Explain the operation of the 4-bit bi-direction shift register along with diagram.  
List out applications of shift register.
- b) Minimize the function  $f(A, B, C, D) = \sum m(1, 3, 5, 8, 9, 11, 15) + d(2, 13)$ .  
Realize using AND-OR and NAND-NAND gates.

**Set R**



## SECTION – II

5. Attempt **any two** : **(2×5=10)**
- a) Implement the expression using multiplexer  
 $f(A, B, C, D) = \sum m (0, 2, 3, 7, 8, 9, 11, 13)$
- b) Write a VHDL code for full adder.
- c) Explain RAM Architecture.
6. Attempt **any two** : **(2×5=10)**
- a) Explain write operation of RAM with waveform.
- b) Explain BCD-to-7 segment display decoder/driver.
- c) Design 32 : 1 multiplexer using 16 : 1 multiplexer ICs.
7. Attempt **any one** : **(1×8=8)**
- a) Explain classification of memory also explain ROM Architecture in detail.
- b) What is word size expansion ? Obtain a  $16 \times 8$  memory using  $16 \times 4$  memory ICs.
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**S.E. (C.S.E.) (Part – I) (CGPA) Examination, 2017  
DIGITAL TECHNIQUES**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

SECTION – I

2. Attempt **any two** : **(2×5=10)**

- a) Explain half subtractor using K-map.
- b) For the logic function

$$Y = \prod M(2, 3, 4, 5, 6, 7, 8, 11, 12)$$

Design the logic circuit with minimum number of NOR gates.

- c) Perform the following operations using 2's complement method, use 8-bit representation of numbers.
  - i)  $22 - 12$
  - ii)  $-22 + 12$

3. Attempt **any two** : **(2×5=10)**

- a) Explain ALU in detail.
- b) Write a short note on Excitation Table of Flip-Flop.
- c) Explain in look ahead carry generator.

4. Attempt **any one** : **(1×8=8)**

- a) Explain the operation of the 4-bit bi-direction shift register along with diagram.  
List out applications of shift register.
- b) Minimize the function  $f(A, B, C, D) = \sum m(1, 3, 5, 8, 9, 11, 15) + d(2, 13)$ .  
Realize using AND-OR and NAND-NAND gates.

**Set S**



## SECTION – II

5. Attempt **any two** : **(2×5=10)**
- a) Implement the expression using multiplexer  
 $f(A, B, C, D) = \sum m (0, 2, 3, 7, 8, 9, 11, 13)$
- b) Write a VHDL code for full adder.
- c) Explain RAM Architecture.
6. Attempt **any two** : **(2×5=10)**
- a) Explain write operation of RAM with waveform.
- b) Explain BCD-to-7 segment display decoder/driver.
- c) Design 32 : 1 multiplexer using 16 : 1 multiplexer ICs.
7. Attempt **any one** : **(1×8=8)**
- a) Explain classification of memory also explain ROM Architecture in detail.
- b) What is word size expansion ? Obtain a  $16 \times 8$  memory using  $16 \times 4$  memory ICs.
-







- 7) \_\_\_\_\_ used to regulate the flow of electron in CRT.  
a) Control grid    b) Focusing anode    c) Electron gun    d) All
- 8) The region code of a point within window is \_\_\_\_\_  
a) 1111                      b) 0000                      c) 1000                      d) 0001
- 9) Co-ordinates of window are known as \_\_\_\_\_  
a) Screen co-ordinates                      b) World co-ordinates  
c) Device co-ordinates                      d) Cartesian co-ordinates
- 10) According to Cohen-Sutherland algorithm a line is completely outside the window if \_\_\_\_\_  
a) The region code of line end points have a '1' in same bit position  
b) The end points region code is non-zero values  
c) If L bit and R bit are non-zero  
d) The region code of line end points have a '0' in same bit position
- 11) The algorithm divides 2D space into 9 regions, of which only the middle part (view port) is known as \_\_\_\_\_  
a) Cohen-Sutherland                      b) Liang Barsky  
c) Sutherland-Hodgeman                      d) N – L – N
- 12) The process of mapping a world window in world co-ordinate system to view port are called as \_\_\_\_\_  
a) View port                      b) Transformation viewing  
c) Clipping window                      d) All
- 13) The rectangle portion of interface window that defines where image will actually appear are called \_\_\_\_\_  
a) Transformation                      b) View port  
c) Clipping window                      d) Screen co-ordinates
- 14) The region against which an object is clipped is called as \_\_\_\_\_  
a) Clip window    b) Boundary    c) Rectangle    d) Clip square
- \_\_\_\_\_



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**S.E. (Computer Sci. and Engg.) (Part – I) (CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**N.B.** : 1) *All questions are compulsory.*  
2) *Figures to the right indicates full marks.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on RLE.
  - 2) Write DDA line algorithm.
  - 3) Explain 2D reflection with diagram.
  - 4) Consider a triangle A (6, 2), B (9, 2) and C (6, 8) :
    - i) Translate it with  $T_x = 4$  and  $T_y = 3$
    - ii) Compress it with scaling factors  $S_x = S_y = 0.5$ .
3. Write a generalise Bresenham circle algorithm. **8**
- OR
- Describe 3D translation and 3D reflection.
4. Describe color CRT in detail. **8**

SECTION – II

5. Solve **any three** : **(3×4=12)**
- 1) Describe different application of multimedia.
  - 2) Describe parametric and non-parametric curve in detail.
  - 3) Define compression and its standards.
  - 4) Describe viewing transformation.
6. What are different types of curves ? Explain Bspline curve in detail. **8**
- OR
- Write down Warnock algorithm and its role.
7. Describe Cohen-Sutherland algorithm for line clipping. **8**





SLR-VB – 203

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**S.E. (Computer Sci. and Engg.) (Part – I) (CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- N.B. :** 1) **All questions are compulsory.**  
2) **Figures to the right indicates full marks.**  
3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**  
4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**
- 1) The region code of a point within window is \_\_\_\_\_  
a) 1111                      b) 0000                      c) 1000                      d) 0001
  - 2) Co-ordinates of window are known as \_\_\_\_\_  
a) Screen co-ordinates                      b) World co-ordinates  
c) Device co-ordinates                      d) Cartesian co-ordinates
  - 3) According to Cohen-Sutherland algorithm a line is completely outside the window if \_\_\_\_\_  
a) The region code of line end points have a '1' in same bit position  
b) The end points region code is non-zero values  
c) If L bit and R bit are non-zero  
d) The region code of line end points have a '0' in same bit position
  - 4) The algorithm divides 2D space into 9 regions, of which only the middle part (view port) is known as \_\_\_\_\_  
a) Cohen-Sutherland                      b) Liang Barsky  
c) Sutherland-Hodgeman                      d) N – L – N
  - 5) The process of mapping a world window in world co-ordinate system to view port are called as \_\_\_\_\_  
a) View port  
b) Transformation viewing  
c) Clipping window  
d) All

P.T.O.





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**S.E. (Computer Sci. and Engg.) (Part – I) (CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**N.B.** : 1) *All questions are compulsory.*  
2) *Figures to the right indicates full marks.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on RLE.
  - 2) Write DDA line algorithm.
  - 3) Explain 2D reflection with diagram.
  - 4) Consider a triangle A (6, 2), B (9, 2) and C (6, 8) :
    - i) Translate it with  $T_x = 4$  and  $T_y = 3$
    - ii) Compress it with scaling factors  $S_x = S_y = 0.5$ .
3. Write a generalise Bresenham circle algorithm. **8**
- OR
- Describe 3D translation and 3D reflection.
4. Describe color CRT in detail. **8**

SECTION – II

5. Solve **any three** : **(3×4=12)**
- 1) Describe different application of multimedia.
  - 2) Describe parametric and non-parametric curve in detail.
  - 3) Define compression and its standards.
  - 4) Describe viewing transformation.
6. What are different types of curves ? Explain Bspline curve in detail. **8**
- OR
- Write down Warnock algorithm and its role.
7. Describe Cohen-Sutherland algorithm for line clipping. **8**









- 7) The algorithm divides 2D space into 9 regions, of which only the middle part (view port) is known as \_\_\_\_\_
- a) Cohen-Sutherland                      b) Liang Barsky  
c) Sutherland-Hodgeman                d) N – L – N
- 8) The process of mapping a world window in world co-ordinate system to view port are called as \_\_\_\_\_
- a) View port                                      b) Transformation viewing  
c) Clipping window                          d) All
- 9) The rectangle portion of interface window that defines where image will actually appear are called \_\_\_\_\_
- a) Transformation                              b) View port  
c) Clipping window                          d) Screen co-ordinates
- 10) The region against which an object is clipped is called as \_\_\_\_\_
- a) Clip window      b) Boundary      c) Rectangle      d) Clip square
- 11) A bitmap is \_\_\_\_\_ (bits) per pixels.
- a) 0                                                      b) 1  
c) 2                                                      d) 4
- 12) \_\_\_\_\_ is the ratio of horizontal points to vertical points necessary to produce equal length lines in both directions.
- a) Aspect ratio                                      b) Resolution  
c) Dot pitch                                              d) Height weight ratio
- 13) Refreshing is not needed in DVST because of the presence of \_\_\_\_\_
- a) Primary gun                                      b) Flood gun  
c) Focusing node                                  d) Control grid
- 14) Digitalizing a picture definition into a set of intensity values is known as \_\_\_\_\_
- a) Scanning                                              b) Refreshing  
c) Scan conversion                              d) All
- \_\_\_\_\_



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**S.E. (Computer Sci. and Engg.) (Part – I) (CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**N.B.** : 1) *All questions are compulsory.*  
2) *Figures to the right indicates full marks.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on RLE.
  - 2) Write DDA line algorithm.
  - 3) Explain 2D reflection with diagram.
  - 4) Consider a triangle A (6, 2), B (9, 2) and C (6, 8) :
    - i) Translate it with  $T_x = 4$  and  $T_y = 3$
    - ii) Compress it with scaling factors  $S_x = S_y = 0.5$ .
3. Write a generalise Bresenham circle algorithm. **8**
- OR
- Describe 3D translation and 3D reflection.
4. Describe color CRT in detail. **8**

SECTION – II

5. Solve **any three** : **(3×4=12)**
- 1) Describe different application of multimedia.
  - 2) Describe parametric and non-parametric curve in detail.
  - 3) Define compression and its standards.
  - 4) Describe viewing transformation.
6. What are different types of curves ? Explain Bspline curve in detail. **8**
- OR
- Write down Warnock algorithm and its role.
7. Describe Cohen-Sutherland algorithm for line clipping. **8**





SLR-VB – 203

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**S.E. (Computer Sci. and Engg.) (Part – I) (CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- N.B. :** 1) **All questions are compulsory.**  
2) **Figures to the right indicates full marks.**  
3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**  
4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**
- 1) According to Cohen-Sutherland algorithm a line is completely outside the window if \_\_\_\_\_
    - a) The region code of line end points have a '1' in same bit position
    - b) The end points region code is non-zero values
    - c) If L bit and R bit are non-zero
    - d) The region code of line end points have a '0' in same bit position
  - 2) The algorithm divides 2D space into 9 regions, of which only the middle part (view port) is known as \_\_\_\_\_
    - a) Cohen-Sutherland
    - b) Liang Barsky
    - c) Sutherland-Hodgeman
    - d) N – L – N
  - 3) The process of mapping a world window in world co-ordinate system to view port are called as \_\_\_\_\_
    - a) View port
    - b) Transformation viewing
    - c) Clipping window
    - d) All
  - 4) The rectangle portion of interface window that defines where image will actually appear are called \_\_\_\_\_
    - a) Transformation
    - b) View port
    - c) Clipping window
    - d) Screen co-ordinates
  - 5) The region against which an object is clipped is called as \_\_\_\_\_
    - a) Clip window
    - b) Boundary
    - c) Rectangle
    - d) Clip square

P.T.O.





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**S.E. (Computer Sci. and Engg.) (Part – I) (CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**N.B.** : 1) *All questions are compulsory.*  
2) *Figures to the right indicates full marks.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on RLE.
  - 2) Write DDA line algorithm.
  - 3) Explain 2D reflection with diagram.
  - 4) Consider a triangle A (6, 2), B (9, 2) and C (6, 8) :
    - i) Translate it with  $T_x = 4$  and  $T_y = 3$
    - ii) Compress it with scaling factors  $S_x = S_y = 0.5$ .
3. Write a generalise Bresenham circle algorithm. **8**
- OR
- Describe 3D translation and 3D reflection.
4. Describe color CRT in detail. **8**

SECTION – II

5. Solve **any three** : **(3×4=12)**
- 1) Describe different application of multimedia.
  - 2) Describe parametric and non-parametric curve in detail.
  - 3) Define compression and its standards.
  - 4) Describe viewing transformation.
6. What are different types of curves ? Explain Bspline curve in detail. **8**
- OR
- Write down Warnock algorithm and its role.
7. Describe Cohen-Sutherland algorithm for line clipping. **8**







SLR-VB – 204

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**S.E. (CSE) (Part – I) (Old) Examination, 2017  
DATA STRUCTURES – I (Old)**

Day and Date : Monday, 15-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(20×1=20)

- 1) Number of parameters in malloc( ) function is/are  
a) 1                      b) 2                      c) 3                      d) 0
- 2) A pointer to float accesses following bytes of memory.  
a) 1                      b) 2                      c) 4                      d) 10
- 3) In the declaration : char \* argv[ ]; argv is  
a) array of strings                      b) array of pointers to strings  
c) pointer to an array of strings                      d) pointer to a string
- 4) While initializing a string variable during its declaration  
a) We must include a null character  
b) Not required to include the null character  
c) It is optional to include null character  
d) String cannot be initialized during declaration
- 5) Which of the following data structure is used in recursion ?  
a) Stack                      b) Queue                      c) Link list                      d) Tree
- 6) Which function is appropriate for writing records in a binary file ?  
a) fputc( )                      b) fgets( )                      c) fputs( )                      d) fwrite( )
- 7) Two main measures for the efficiency of an algorithm are  
a) Processor and memory                      b) Complexity and capacity  
c) Time and space                      d) Data and space
- 8) Function strcmp( ) returns  
a) an ascii value                      b) a character value  
c) only zero                      d) an integer value

P.T.O.



- 9) Which of the following is not a file opening mode ?  
a) r+                      b) wb+                      c) rw                      d) ab
- 10) abc[ ] and xyz[ ] are two strings, and we have to copy xyz[ ] in abc[ ]. Which of the following function is used ?  
a) strcmp()              b) strcat()              c) strcpy()              d) strconcat()
- 11) The postfix form of the expression  $(A + B) * (C * D - E) * F / G$  is  
a)  $AB + CD * E - FG / **$                       b)  $AB + CD * E - F ** G /$   
c)  $AB + CD * E - * F * G /$                       d)  $AB + CDE * - * F * G /$
- 12) In linked lists there are no NULL links in  
a) single linked list                      b) linear doubly linked list  
c) doubly circular linked list              d) linked list
- 13) \_\_\_\_\_ form of access is used to add and remove nodes from a queue.  
a) LIFO                      b) FIFO                      c) Both a and b              d) None of these
- 14) In linked representation of stack \_\_\_\_\_ holds the elements of the stack.  
a) INFO fields              b) TOP fields              c) LINK fields              d) NULL fields
- 15) Deletion operation is done using \_\_\_\_\_ in a queue.  
a) front                      b) rear                      c) top                      d) list
- 16) Which of the following is an application of stack ?  
a) finding factorial    b) tower of hanoi    c) infix to postfix    d) all of the above
- 17) A doubly linked list has \_\_\_\_\_ pointers with each node.  
a) 0                      b) 1                      c) 2                      d) 3
- 18) The disadvantage in using a circular linked list is  
a) it is possible to get into infinite loop    b) last node points to first node  
c) time consuming                      d) requires more memory space
- 19) The pointer that points to the first node in the list is  
a) FIRST                      b) AVAIL                      c) TOP                      d) REAR
- 20) If the MAX\_SIZE is the size of the array used in the implementation of circular queue, array index start with 0, front point to the first element in the queue, and rear point to the last element in the queue. Which of the following condition specify that circular queue is EMPTY ?  
a)  $Front = rear = 0$                       b)  $Front = rear = - 1$   
c)  $Front = rear + 1$                       d)  $Front = (rear + 1) \% MAX\_SIZE$



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**S.E. (CSE) (Part – I) (Old) Examination, 2017  
DATA STRUCTURES – I (Old)**

Day and Date : Monday, 15-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **20**
- a) Explain with example the concept of array of pointers.
  - b) What is recursion ? Write a recursive program for finding factorial of a number.
  - c) Write a program to accept elements of employee structure and display them using pointer to structure.
  - d) Discuss strlen( ) and strcpy( ) functions with example.
  - e) Discuss the functions used for moving the pointer in a file at desired location.
3. Write a recursive program for Towers of Hanoi and draw a tree structure of recursive calls for 3 disks. **10**

**OR**

- Explain different file opening modes in detail. **10**
4. Write a program which accepts some strings from the user and sort them in alphabetically sorted order. **10**

**SECTION – II**

5. Attempt **any 4** : **(5×4=20)**
- 1) What is stack ? Explain its different operations.
  - 2) Write a C function to implement insert and delete operations of queue.
  - 3) Explain different types of queue with diagram.
  - 4) Explain linked list with its operations in details.
  - 5) Write a function to insert and delete a node from singly linked list.
6. Attempt **any 2** : **(10×2=20)**
- 1) Explain different types of linked list with example.
  - 2) Explain the concept of addition of two polynomials using singly linked list.
  - 3) List all applications of stack. Explain the procedure for evaluation of infix to postfix expression using stack with example.

**Set P**





SLR-VB – 204

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**S.E. (CSE) (Part – I) (Old) Examination, 2017  
DATA STRUCTURES – I (Old)**

Day and Date : Monday, 15-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(20×1=20)

- 1) Which of the following is an application of stack ?  
a) finding factorial    b) tower of hanoi    c) infix to postfix    d) all of the above
- 2) A doubly linked list has \_\_\_\_\_ pointers with each node.  
a) 0                      b) 1                      c) 2                      d) 3
- 3) The disadvantage in using a circular linked list is  
a) it is possible to get into infinite loop    b) last node points to first node  
c) time consuming                              d) requires more memory space
- 4) The pointer that points to the first node in the list is  
a) FIRST                      b) AVAIL                      c) TOP                      d) REAR
- 5) If the MAX\_SIZE is the size of the array used in the implementation of circular queue, array index start with 0, front point to the first element in the queue, and rear point to the last element in the queue. Which of the following condition specify that circular queue is EMPTY ?  
a) Front = rear = 0                              b) Front = rear = - 1  
c) Front = rear + 1                              d) Front = (rear + 1) % MAX\_SIZE
- 6) Number of parameters in malloc( ) function is/are  
a) 1                              b) 2                              c) 3                              d) 0
- 7) A pointer to float accesses following bytes of memory.  
a) 1                              b) 2                              c) 4                              d) 10

P.T.O.



- 8) In the declaration : `char * argv[ ]`; `argv` is
- a) array of strings
  - b) array of pointers to strings
  - c) pointer to an array of strings
  - d) pointer to a string
- 9) While initializing a string variable during its declaration
- a) We must include a null character
  - b) Not required to include the null character
  - c) It is optional to include null character
  - d) String cannot be initialized during declaration
- 10) Which of the following data structure is used in recursion ?
- a) Stack
  - b) Queue
  - c) Link list
  - d) Tree
- 11) Which function is appropriate for writing records in a binary file ?
- a) `fputc()`
  - b) `fgets()`
  - c) `fputs()`
  - d) `fwrite()`
- 12) Two main measures for the efficiency of an algorithm are
- a) Processor and memory
  - b) Complexity and capacity
  - c) Time and space
  - d) Data and space
- 13) Function `strcmp()` returns
- a) an ascii value
  - b) a character value
  - c) only zero
  - d) an integer value
- 14) Which of the following is not a file opening mode ?
- a) `r+`
  - b) `wb+`
  - c) `rw`
  - d) `ab`
- 15) `abc[ ]` and `xyz[ ]` are two strings, and we have to copy `xyz[ ]` in `abc[ ]`. Which of the following function is used ?
- a) `strcmp()`
  - b) `strcat()`
  - c) `strcpy()`
  - d) `strconcat()`
- 16) The postfix form of the expression  $(A + B) * (C * D - E) * F / G$  is
- a) `AB + CD * E - FG / **`
  - b) `AB + CD * E - F ** G /`
  - c) `AB + CD * E - * F * G /`
  - d) `AB + CDE * - * F * G /`
- 17) In linked lists there are no NULL links in
- a) single linked list
  - b) linear doubly linked list
  - c) doubly circular linked list
  - d) linked list
- 18) \_\_\_\_\_ form of access is used to add and remove nodes from a queue.
- a) LIFO
  - b) FIFO
  - c) Both a and b
  - d) None of these
- 19) In linked representation of stack \_\_\_\_\_ holds the elements of the stack.
- a) INFO fields
  - b) TOP fields
  - c) LINK fields
  - d) NULL fields
- 20) Deletion operation is done using \_\_\_\_\_ in a queue.
- a) front
  - b) rear
  - c) top
  - d) list



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**S.E. (CSE) (Part – I) (Old) Examination, 2017  
DATA STRUCTURES – I (Old)**

Day and Date : Monday, 15-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **20**
- a) Explain with example the concept of array of pointers.
  - b) What is recursion ? Write a recursive program for finding factorial of a number.
  - c) Write a program to accept elements of employee structure and display them using pointer to structure.
  - d) Discuss strlen( ) and strcpy( ) functions with example.
  - e) Discuss the functions used for moving the pointer in a file at desired location.
3. Write a recursive program for Towers of Hanoi and draw a tree structure of recursive calls for 3 disks. **10**

**OR**

- Explain different file opening modes in detail. **10**
4. Write a program which accepts some strings from the user and sort them in alphabetically sorted order. **10**

**SECTION – II**

5. Attempt **any 4** : **(5×4=20)**
- 1) What is stack ? Explain its different operations.
  - 2) Write a C function to implement insert and delete operations of queue.
  - 3) Explain different types of queue with diagram.
  - 4) Explain linked list with its operations in details.
  - 5) Write a function to insert and delete a node from singly linked list.
6. Attempt **any 2** : **(10×2=20)**
- 1) Explain different types of linked list with example.
  - 2) Explain the concept of addition of two polynomials using singly linked list.
  - 3) List all applications of stack. Explain the procedure for evaluation of infix to postfix expression using stack with example.

**Set Q**







SLR-VB – 204

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**S.E. (CSE) (Part – I) (Old) Examination, 2017  
DATA STRUCTURES – I (Old)**

Day and Date : Monday, 15-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(20×1=20)

- 1) The postfix form of the expression  $(A + B) * (C * D - E) * F / G$  is
  - a)  $AB + CD * E - FG / **$
  - b)  $AB + CD * E - F ** G /$
  - c)  $AB + CD * E - * F * G /$
  - d)  $AB + CDE * - * F * G /$
- 2) In linked lists there are no NULL links in
  - a) single linked list
  - b) linear doubly linked list
  - c) doubly circular linked list
  - d) linked list
- 3) \_\_\_\_\_ form of access is used to add and remove nodes from a queue.
  - a) LIFO
  - b) FIFO
  - c) Both a and b
  - d) None of these
- 4) In linked representation of stack \_\_\_\_\_ holds the elements of the stack.
  - a) INFO fields
  - b) TOP fields
  - c) LINK fields
  - d) NULL fields
- 5) Deletion operation is done using \_\_\_\_\_ in a queue.
  - a) front
  - b) rear
  - c) top
  - d) list
- 6) Which of the following is an application of stack ?
  - a) finding factorial
  - b) tower of hanoi
  - c) infix to postfix
  - d) all of the above
- 7) A doubly linked list has \_\_\_\_\_ pointers with each node.
  - a) 0
  - b) 1
  - c) 2
  - d) 3
- 8) The disadvantage in using a circular linked list is
  - a) it is possible to get into infinite loop
  - b) last node points to first node
  - c) time consuming
  - d) requires more memory space
- 9) The pointer that points to the first node in the list is
  - a) FIRST
  - b) AVAIL
  - c) TOP
  - d) REAR

P.T.O.





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**S.E. (CSE) (Part – I) (Old) Examination, 2017  
DATA STRUCTURES – I (Old)**

Day and Date : Monday, 15-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **20**
- a) Explain with example the concept of array of pointers.
  - b) What is recursion ? Write a recursive program for finding factorial of a number.
  - c) Write a program to accept elements of employee structure and display them using pointer to structure.
  - d) Discuss strlen( ) and strcpy( ) functions with example.
  - e) Discuss the functions used for moving the pointer in a file at desired location.
3. Write a recursive program for Towers of Hanoi and draw a tree structure of recursive calls for 3 disks. **10**

**OR**

- Explain different file opening modes in detail. **10**
4. Write a program which accepts some strings from the user and sort them in alphabetically sorted order. **10**

**SECTION – II**

5. Attempt **any 4** : **(5×4=20)**
- 1) What is stack ? Explain its different operations.
  - 2) Write a C function to implement insert and delete operations of queue.
  - 3) Explain different types of queue with diagram.
  - 4) Explain linked list with its operations in details.
  - 5) Write a function to insert and delete a node from singly linked list.
6. Attempt **any 2** : **(10×2=20)**
- 1) Explain different types of linked list with example.
  - 2) Explain the concept of addition of two polynomials using singly linked list.
  - 3) List all applications of stack. Explain the procedure for evaluation of infix to postfix expression using stack with example.

**Set R**





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**S.E. (CSE) (Part – I) (Old) Examination, 2017  
DATA STRUCTURES – I (Old)**

Day and Date : Monday, 15-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(20×1=20)

- 1) Which function is appropriate for writing records in a binary file ?  
a) fputc()                      b) fgets()                      c) fputs()                      d) fwrite()
- 2) Two main measures for the efficiency of an algorithm are  
a) Processor and memory                      b) Complexity and capacity  
c) Time and space                      d) Data and space
- 3) Function strcmp() returns  
a) an ascii value                      b) a character value  
c) only zero                      d) an integer value
- 4) Which of the following is not a file opening mode ?  
a) r+                      b) wb+                      c) rw                      d) ab
- 5) abc[ ] and xyz[ ] are two strings, and we have to copy xyz[ ] in abc[ ]. Which of the following function is used ?  
a) strcmp()                      b) strcat()                      c) strcpy()                      d) strconcat()
- 6) The postfix form of the expression  $(A + B) * (C * D - E) * F / G$  is  
a)  $AB + CD * E - FG / **$                       b)  $AB + CD * E - F ** G /$   
c)  $AB + CD * E - * F * G /$                       d)  $AB + CDE * - * F * G /$
- 7) In linked lists there are no NULL links in  
a) single linked list                      b) linear doubly linked list  
c) doubly circular linked list                      d) linked list
- 8) \_\_\_\_\_ form of access is used to add and remove nodes from a queue.  
a) LIFO                      b) FIFO                      c) Both a and b                      d) None of these

P.T.O.



- 9) In linked representation of stack \_\_\_\_\_ holds the elements of the stack.  
a) INFO fields      b) TOP fields      c) LINK fields      d) NULL fields
- 10) Deletion operation is done using \_\_\_\_\_ in a queue.  
a) front      b) rear      c) top      d) list
- 11) Which of the following is an application of stack ?  
a) finding factorial    b) tower of hanoi    c) infix to postfix    d) all of the above
- 12) A doubly linked list has \_\_\_\_\_ pointers with each node.  
a) 0      b) 1      c) 2      d) 3
- 13) The disadvantage in using a circular linked list is  
a) it is possible to get into infinite loop    b) last node points to first node  
c) time consuming      d) requires more memory space
- 14) The pointer that points to the first node in the list is  
a) FIRST      b) AVAIL      c) TOP      d) REAR
- 15) If the MAX\_SIZE is the size of the array used in the implementation of circular queue, array index start with 0, front point to the first element in the queue, and rear point to the last element in the queue. Which of the following condition specify that circular queue is EMPTY ?  
a) Front = rear = 0      b) Front = rear = - 1  
c) Front = rear + 1      d) Front = (rear + 1) % MAX\_SIZE
- 16) Number of parameters in malloc( ) function is/are  
a) 1      b) 2      c) 3      d) 0
- 17) A pointer to float accesses following bytes of memory.  
a) 1      b) 2      c) 4      d) 10
- 18) In the declaration : char \* argv[ ]; argv is  
a) array of strings      b) array of pointers to strings  
c) pointer to an array of strings      d) pointer to a string
- 19) While initializing a string variable during its declaration  
a) We must include a null character  
b) Not required to include the null character  
c) It is optional to include null character  
d) String cannot be initialized during declaration
- 20) Which of the following data structure is used in recursion ?  
a) Stack      b) Queue      c) Link list      d) Tree



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**S.E. (CSE) (Part – I) (Old) Examination, 2017  
DATA STRUCTURES – I (Old)**

Day and Date : Monday, 15-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **20**
- a) Explain with example the concept of array of pointers.
  - b) What is recursion ? Write a recursive program for finding factorial of a number.
  - c) Write a program to accept elements of employee structure and display them using pointer to structure.
  - d) Discuss strlen( ) and strcpy( ) functions with example.
  - e) Discuss the functions used for moving the pointer in a file at desired location.
3. Write a recursive program for Towers of Hanoi and draw a tree structure of recursive calls for 3 disks. **10**

**OR**

- Explain different file opening modes in detail. **10**
4. Write a program which accepts some strings from the user and sort them in alphabetically sorted order. **10**

**SECTION – II**

5. Attempt **any 4** : **(5×4=20)**
- 1) What is stack ? Explain its different operations.
  - 2) Write a C function to implement insert and delete operations of queue.
  - 3) Explain different types of queue with diagram.
  - 4) Explain linked list with its operations in details.
  - 5) Write a function to insert and delete a node from singly linked list.
6. Attempt **any 2** : **(10×2=20)**
- 1) Explain different types of linked list with example.
  - 2) Explain the concept of addition of two polynomials using singly linked list.
  - 3) List all applications of stack. Explain the procedure for evaluation of infix to postfix expression using stack with example.

**Set S**







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Set **P**

**S.E. (CSE) (Part– I) Examination, 2017  
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017

Max. Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

SECTION – I

- 1) \_\_\_\_\_ input decides whether ALU performs a logical operation or an arithmetic operation.
  - a) Cin
  - b) Mode select (M)
  - c) Select inputs
  - d) None of these
- 2) Maximum MOD number for a 3-bit binary counter is
  - a) 3
  - b) 6
  - c) 8
  - d) 16
- 3) To parallelly load a byte of data into a shift register, there must be
  - a) 1 clock pulse
  - b) 4 clock pulses
  - c) 8 clock pulses
  - d) 1 clock pulse for each 1
- 4) Master Slave configuration is used in J-K flip flop to eliminate
  - a) Forbidden
  - b) Ambiguous
  - c) Race around condition
  - d) Not allowed
- 5) The output of combinational circuits depends upon
  - a) Present input only
  - b) Past inputs only
  - c) Both present & past inputs
  - d) None of these
- 6) While converting the SR flip flop into D flip flop, the SR inputs are
  - a)  $S = D$   $R = \overline{D}$
  - b)  $\overline{S} = \overline{D}$ ,  $R = D$
  - c)  $S = R = D$
  - d)  $S = \overline{R} = \overline{D}$
- 7) A carry look ahead adder is frequently used for addition because it
  - a) is faster
  - b) is more accurate
  - c) less number of gates
  - d) costs less

P.T.O.



- 8) POS expression of  $F(A,B,C) = \sum m(1, 3, 7)$  is  
a)  $\sum m(0, 2, 4, 5, 6)$     b)  $\pi M(1, 3, 7)$     c)  $\pi M(0, 2, 4, 5, 6)$     d) None of these
- 9) A MOD-10 counter must have  
a) 10 flip flops    b) 3 flip flops    c) 4 flip flops    d) 2 flip flops
- 10) A digital circuit that can count the clock pulse is called  
a) Latch    b) Counter    c) Shift Register    d) Trigger

## SECTION – II

- 11) A MUX with 4 bit data select inputs is a  
a) 2 : 1 MUX    b) 4:1 MUX    c) 16: 1 MUX    d) 8 : 1 MUX
- 12) The address width/ lines of a memory of size 1024x8 bit is  
a) 10 bits    b) 8 bits    c) 16 bits    d) 12 bits
- 13) A memory whose data need to be refreshed is called  
a) Static memory    b) Dynamic memory  
c) ROM    d) None of these
- 14) Electrically erasable programmable read only memory is called  
a) ROM    b) PROM    c) EEPROM    d) EAROM
- 15) PLA contains  
a) Programmable AND array & non-programmable OR array  
b) Non-Programmable AND array & programmable OR array  
c) Programmable AND array & programmable OR array  
d) No-programmable AND array & non-programmable OR array
- 16) IC 74151 is used as  
a) Encoder    b) Decoder    c) Multiplexer    d) De-multiplexer
- 17) For conserving power in multiplexed display in IC 7447 following pin is used  
a) LT    b) RBI    c) BI    d) RBO
- 18) While specifying memory size, the letter K stands for  
a) 1024    b) 1000    c) 2048    d) 10
- 19) A number of 4 line to 16 line decoders required to make a 8 line to 250 line decoder is  
a) 16    b) 17    c) 32    d) 64
- 20) Decoder IC 7448 is used for  
a) Common anode display    b) Common cathode display  
c) For both    d) None of above



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**S.E. (CSE) (Part– I) Examination, 2017  
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to the right indicate full marks.**
  - 3) **Draw neat diagrams.**
  - 4) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Implement Ex-OR gate using minimum NOR gates.
  - b) Write a short note on synchronous counter.
  - c) Explain ring counter.
  - d) Explain don't care condition with example.
  - e) Minimize the function using K-map.

$$F = \sum m (0, 2, 4, 6, 8, 11)$$

3. a) Explain Carry look ahead adder in detail. **10**
- b) What is a counter ? Explain asynchronous counter in detail. **10**

OR

- b) Design half adder & full adder using K-map. **10**

SECTION – II

4. Attempt **any four**. **(4×5=20)**
- a) Implement full adder using decoder.
  - b) Write a short note on 'Demultiplexer'.

**Set P**



- c) Define the follow terms
  - i) Write cycle time ( $t_{WC}$ )
  - ii) Access cycle time( $t_A$ )
- d) Compare ROM & RAM.
- e) Write a short note on processor level.

5. Attempt **any two** :

**(2×10=20)**

- a) What is encoder ? Explain IC 74148 in detail and give function of each pin.
  - b) Design and obtain 6144×4 memory using 1024×4 memory chips.
  - c) What are the components of gate level design ? Explain each component of it with examples in detail.
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Set **Q**

**S.E. (CSE) (Part– I) Examination, 2017  
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017

Max. Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**SECTION – I**

- 1) While converting the SR flip flop into D flip flop, the SR inputs are
  - a)  $S = D \quad R = \overline{D}$
  - b)  $\overline{S} = \overline{D}, R = D$
  - c)  $S = R = D$
  - d)  $S = \overline{R} = \overline{D}$
- 2) A carry look ahead adder is frequently used for addition because it
  - a) is faster
  - b) is more accurate
  - c) less number of gates
  - d) costs less
- 3) POS expression of  $F(A,B,C) = \sum m(1, 3, 7)$  is
  - a)  $\sum m(0, 2, 4, 5, 6)$
  - b)  $\pi M(1, 3, 7)$
  - c)  $\pi M(0, 2, 4, 5, 6)$
  - d) None of these
- 4) A MOD-10 counter must have
  - a) 10 flip flops
  - b) 3 flip flops
  - c) 4 flip flops
  - d) 2 flip flops
- 5) A digital circuit that can count the clock pulse is called
  - a) Latch
  - b) Counter
  - c) Shift Register
  - d) Trigger
- 6) \_\_\_\_\_ input decides whether ALU performs a logical operation or an arithmetic operation.
  - a) Cin
  - b) Mode select (M)
  - c) Select inputs
  - d) None of these
- 7) Maximum MOD number for a 3-bit binary counter is
  - a) 3
  - b) 6
  - c) 8
  - d) 16
- 8) To parallelly load a byte of data into a shift register, there must be
  - a) 1 clock pulse
  - b) 4 clock pulses
  - c) 8 clock pulses
  - d) 1 clock pulse for each 1

P.T.O.



- 9) Master Slave configuration is used in J-K flip flop to eliminate
- a) Forbidden
  - b) Ambiguous
  - c) Race around condition
  - d) Not allowed
- 10) The output of combinational circuits depends upon
- a) Present input only
  - b) Past inputs only
  - c) Both present & past inputs
  - d) None of these

## SECTION – II

- 11) IC 74151 is used as
- a) Encoder
  - b) Decoder
  - c) Multiplexer
  - d) De-multiplexer
- 12) For conserving power in multiplexed display in IC 7447 following pin is used
- a) LT
  - b) RBI
  - c) BI
  - d) RBO
- 13) While specifying memory size, the letter K stands for
- a) 1024
  - b) 1000
  - c) 2048
  - d) 10
- 14) A number of 4 line to 16 line decoders required to make a 8 line to 250 line decoder is
- a) 16
  - b) 17
  - c) 32
  - d) 64
- 15) Decoder IC 7448 is used for
- a) Common anode display
  - b) Common cathode display
  - c) For both
  - d) None of above
- 16) A MUX with 4 bit data select inputs is a
- a) 2 : 1 MUX
  - b) 4:1 MUX
  - c) 16: 1 MUX
  - d) 8 : 1 MUX
- 17) The address width/ lines of a memory of size 1024×8 bit is
- a) 10 bits
  - b) 8 bits
  - c) 16 bits
  - d) 12 bits
- 18) A memory whose data need to be refreshed is called
- a) Static memory
  - b) Dynamic memory
  - c) ROM
  - d) None of these
- 19) Electrically erasable programmable read only memory is called
- a) ROM
  - b) PROM
  - c) EEPROM
  - d) EAROM
- 20) PLA contains
- a) Programmable AND array & non-programmable OR array
  - b) Non-Programmable AND array & programmable OR array
  - c) Programmable AND array & programmable OR array
  - d) No-programmable AND array & non-programmable OR array



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**S.E. (CSE) (Part– I) Examination, 2017  
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*  
3) *Draw neat diagrams.*  
4) *Assume suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Implement Ex-OR gate using minimum NOR gates.
  - b) Write a short note on synchronous counter.
  - c) Explain ring counter.
  - d) Explain don't care condition with example.
  - e) Minimize the function using K-map.

$$F = \sum m (0, 2, 4, 6, 8, 11)$$

3. a) Explain Carry look ahead adder in detail. **10**
- b) What is a counter ? Explain asynchronous counter in detail. **10**

OR

- b) Design half adder & full adder using K-map. **10**

SECTION – II

4. Attempt **any four**. **(4×5=20)**
- a) Implement full adder using decoder.
  - b) Write a short note on 'Demultiplexer'.

**Set Q**



- c) Define the follow terms
  - i) Write cycle time ( $t_{WC}$ )
  - ii) Access cycle time( $t_A$ )
- d) Compare ROM & RAM.
- e) Write a short note on processor level.

5. Attempt **any two** :

**(2×10=20)**

- a) What is encoder ? Explain IC 74148 in detail and give function of each pin.
  - b) Design and obtain 6144×4 memory using 1024×4 memory chips.
  - c) What are the components of gate level design ? Explain each component of it with examples in detail.
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**S.E. (CSE) (Part– I) Examination, 2017  
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017

Max. Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

SECTION – I

- 1) POS expression of  $F(A,B,C) = \sum m(1, 3, 7)$  is
  - a)  $\sum m(0, 2, 4, 5, 6)$
  - b)  $\pi M(1, 3, 7)$
  - c)  $\pi M(0, 2, 4, 5, 6)$
  - d) None of these
- 2) A MOD-10 counter must have
  - a) 10 flip flops
  - b) 3 flip flops
  - c) 4 flip flops
  - d) 2 flip flops
- 3) A digital circuit that can count the clock pulse is called
  - a) Latch
  - b) Counter
  - c) Shift Register
  - d) Trigger
- 4) \_\_\_\_\_ input decides whether ALU performs a logical operation or an arithmetic operation.
  - a) Cin
  - b) Mode select (M)
  - c) Select inputs
  - d) None of these
- 5) Maximum MOD number for a 3-bit binary counter is
  - a) 3
  - b) 6
  - c) 8
  - d) 16
- 6) To parallelly load a byte of data into a shift register, there must be
  - a) 1 clock pulse
  - b) 4 clock pulses
  - c) 8 clock pulses
  - d) 1 clock pulse for each 1
- 7) Master Slave configuration is used in J-K flip flop to eliminate
  - a) Forbidden
  - b) Ambiguous
  - c) Race around condition
  - d) Not allowed

P.T.O.





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**S.E. (CSE) (Part– I) Examination, 2017  
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Draw neat diagrams.**  
4) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Implement Ex-OR gate using minimum NOR gates.
  - b) Write a short note on synchronous counter.
  - c) Explain ring counter.
  - d) Explain don't care condition with example.
  - e) Minimize the function using K-map.

$$F = \sum m (0, 2, 4, 6, 8, 11)$$

3. a) Explain Carry look ahead adder in detail. **10**
- b) What is a counter ? Explain asynchronous counter in detail. **10**

OR

- b) Design half adder & full adder using K-map. **10**

SECTION – II

4. Attempt **any four**. **(4×5=20)**
- a) Implement full adder using decoder.
  - b) Write a short note on 'Demultiplexer'.

**Set R**



- c) Define the follow terms
  - i) Write cycle time ( $t_{WC}$ )
  - ii) Access cycle time( $t_A$ )
- d) Compare ROM & RAM.
- e) Write a short note on processor level.

5. Attempt **any two** :

**(2×10=20)**

- a) What is encoder ? Explain IC 74148 in detail and give function of each pin.
  - b) Design and obtain 6144×4 memory using 1024×4 memory chips.
  - c) What are the components of gate level design ? Explain each component of it with examples in detail.
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SLR-VB – 205

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**S.E. (CSE) (Part– I) Examination, 2017  
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017

Max. Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**SECTION – I**

- 1) Master Slave configuration is used in J-K flip flop to eliminate
  - a) Forbidden
  - b) Ambiguous
  - c) Race around condition
  - d) Not allowed
- 2) The output of combinational circuits depends upon
  - a) Present input only
  - b) Past inputs only
  - c) Both present & past inputs
  - d) None of these
- 3) While converting the SR flip flop into D flip flop, the SR inputs are
  - a)  $S = D$   $\overline{R} = \overline{D}$
  - b)  $\overline{S} = \overline{D}$ ,  $R = D$
  - c)  $S = R = D$
  - d)  $S = \overline{R} = \overline{D}$
- 4) A carry look ahead adder is frequently used for addition because it
  - a) is faster
  - b) is more accurate
  - c) less number of gates
  - d) costs less
- 5) POS expression of  $F(A,B,C) = \sum m(1, 3, 7)$  is
  - a)  $\sum m(0, 2, 4, 5, 6)$
  - b)  $\pi M(1, 3, 7)$
  - c)  $\pi M(0, 2, 4, 5, 6)$
  - d) None of these
- 6) A MOD-10 counter must have
  - a) 10 flip flops
  - b) 3 flip flops
  - c) 4 flip flops
  - d) 2 flip flops
- 7) A digital circuit that can count the clock pulse is called
  - a) Latch
  - b) Counter
  - c) Shift Register
  - d) Trigger

**P.T.O.**





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**S.E. (CSE) (Part– I) Examination, 2017  
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the **right** indicate full marks.*  
3) *Draw **neat** diagrams.*  
4) *Assume suitable data **if necessary**.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Implement Ex-OR gate using minimum NOR gates.
  - b) Write a short note on synchronous counter.
  - c) Explain ring counter.
  - d) Explain don't care condition with example.
  - e) Minimize the function using K-map.

$$F = \sum m (0, 2, 4, 6, 8, 11)$$

3. a) Explain Carry look ahead adder in detail. **10**
- b) What is a counter ? Explain asynchronous counter in detail. **10**

OR

- b) Design half adder & full adder using K-map. **10**

SECTION – II

4. Attempt **any four**. **(4×5=20)**
- a) Implement full adder using decoder.
  - b) Write a short note on 'Demultiplexer'.

**Set S**



- c) Define the follow terms
  - i) Write cycle time ( $t_{WC}$ )
  - ii) Access cycle time( $t_A$ )
- d) Compare ROM & RAM.
- e) Write a short note on processor level.

5. Attempt **any two** :

**(2×10=20)**

- a) What is encoder ? Explain IC 74148 in detail and give function of each pin.
  - b) Design and obtain 6144×4 memory using 1024×4 memory chips.
  - c) What are the components of gate level design ? Explain each component of it with examples in detail.
-





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| Set | <b>P</b> |
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
APPLIED MATHEMATICS – II**

Day and Date : Tuesday, 16-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- N. B. :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
2) **Use** of scientific calculator is **allowed**.  
3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**14**

- 1) It is known that a root of the equation  $x^3 + x - 1 = 0$  lies in the interval (0, 1). The value of first approximation to the root by method of false position is  
a) 0.5                      b) 0.6                      c) -1                      d) -0.675
- 2) This method is called as method of chords  
a) Newton-Raphson                      b) Method of false position  
c) Bisection                      d) None
- 3) To solve the simultaneous system of linear equations  $AX = B$ , this method reduces the coefficient matrix to upper-triangular form  
a) Gauss-Jordan                      b) Gauss-Seidal  
c) Gauss-Jacobi                      d) Gauss elimination
- 4) For the data
- |             |     |      |   |      |   |
|-------------|-----|------|---|------|---|
| <b>x</b>    | : 0 | 0.5  | 1 | 1.5  | 2 |
| <b>f(x)</b> | : 0 | 0.25 | 1 | 2.25 | 4 |

then the value of  $\int_0^2 f(x)dx$  by Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule is approximately

- a) 2.6667                      b) 3.67                      c) 4.6667                      d) 3.677
- 5) This method makes repeated use of Trapezoidal rule  
a) Gaussian quadrature                      b) Weddles Rule  
c) Romberg method                      d) Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule
- 6) Largest eigen value of the matrix  $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$  is  
a) 2                      b) 3                      c) 5                      d) 6

P.T.O.



7) The Newton-Raphson's algorithm to find square root of a positive number N is

a)  $\frac{1}{2}\left(x_n + \frac{N}{x_n}\right) = x_{n+1}$

b)  $\frac{-1}{2}\left(x_n + \frac{N}{x_n}\right) = x_{n+1}$

c)  $\frac{1}{2}\left(x_n - \frac{N}{x_n}\right) = x_{n+1}$

d)  $\left(x_n + \frac{N}{x_n}\right) = x_{n+1}$

8) The fuzzy cardinality of fuzzy set A is defined as

a)  $|\tilde{A}| = \sum_{\alpha} \frac{1}{|\tilde{A}|}$

b)  $|\tilde{A}| = \sum_{\alpha} \frac{\alpha}{|\alpha_A|}$

c)  $|\tilde{A}| = \sum_{\alpha} \frac{\alpha}{\alpha_A}$

d)  $|\tilde{A}| = \sum_{\alpha} \frac{|\alpha_A|}{\alpha}$

9) For any fuzzy set A defined on universal set X,  $O_A =$  \_\_\_\_\_

a)  $\phi$

b) X

c) A

d)  $\bar{A}$

10) If A, B are two fuzzy sets defined on universal set X,  $\alpha \in [0, 1]$  then which of the following is not true ?

a)  $\alpha_{A \cup B} = \alpha_A \cup \alpha_B$

b)  $\alpha_{\bar{A}} = (1 - \alpha)_{+\bar{A}}$

c)  $\alpha_{A \cup B} = \alpha_A \cap \alpha_B$

d) If  $\alpha \leq \beta$ ,  $\beta_{+A} \subseteq \alpha_{+A}$

11) The fuzzy operation on the interval  $[-2, 4] - [3, 6] =$

a)  $[-5, 2]$

b)  $[-5, -2]$

c)  $[5, 2]$

d)  $[-8, 1]$

12) For the fuzzy set

$$A(x) = \begin{cases} \frac{x-2}{3} & 2 < x \leq 5 \\ \frac{7-x}{2} & 5 < x \leq 7 \\ 0 & \text{otherwise} \end{cases}$$

the  $\alpha$ -cut of A(x) is given by

a)  $[3\alpha - 2, 2\alpha - 7]$

b)  $[7 - 2\alpha, 3\alpha + 2]$

c)  $[3\alpha + 2, 7 - 2\alpha]$

d)  $[3\alpha + 2, 7 + 2\alpha]$

13) The crisp rule  $((a \Rightarrow b) \cap (b \Rightarrow c)) \Rightarrow (a \Rightarrow c)$  is called

a) Hypothetical syllogism

b) Modus tollens

c) Modus ponens

d) Disjunctive syllogism

14) The solution of  $AX = B$  will exist if for  $\alpha, \beta \in (0, 1]$  such that  $\alpha \leq \beta$ ,  $\beta_X \subseteq \alpha_X$  and second condition is  $\forall \alpha \in (0, 1]$

a)  $\frac{\alpha_{b_1}}{\alpha_{a_1}} \leq \frac{\alpha_{b_2}}{\alpha_{a_2}}$

b)  $\frac{\alpha_{a_1}}{\alpha_{b_1}} \geq \frac{\alpha_{a_2}}{\alpha_{b_2}}$

c)  $\frac{\alpha_{a_1}}{\alpha_{b_1}} = \frac{\alpha_{a_2}}{\alpha_{b_2}}$

d)  $\frac{\alpha_{a_1}}{\alpha_{a_2}} \leq \frac{\alpha_{b_1}}{\alpha_{b_2}}$



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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
APPLIED MATHEMATICS – II**

Day and Date : Tuesday, 16-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions:** 1) Attempt **any three** questions from **each** Section.  
2) Figures to the **right** indicate **full** marks.  
3) **Use** of scientific calculator is **allowed**.

SECTION – I

2. a) Perform five iterations of Bisection method to find a positive root of the equation  $2x - 3\sin x - 5 = 0$ . 3
- b) Find a real root of the equation  $2x - \log_{10}x - 7 = 0$  perform two iterations of method of false position. 3
- c) The bacteria concentration in a reservoir varies as  $C = 4e^{-2t} + e^{-0.1t}$ . Using Newton-Raphson method, calculate the time required for the bacteria concentration to be 0.5. Take initial approximation  $t_0 = 6$ . 3
3. a) Solve the following system of linear equations by Gauss-Elimination method  $3x + 4y + 5z = 18, 2x - y + 8z = 13, 5x - 2y + 7z = 20$ . 4
- b) Solve by LU-decomposition method  $x + 5y + z = 14, 2x + y + 3z = 13, 3x + y + 4z = 17$ . 5

OR

- b) Perform four iterations of Gauss-Jacobi method to solve the system  $8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$ . 5
4. a) Solve the following integral by Gaussian three point rule  $\int_{-1}^1 (3x^2 + 5x^4) dx$ . 2
- b) Evaluate  $\int_4^{5.2} \log x \, dx$  by Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule and weddles rule dividing the range into six equal sub-intervals. 4
- c) Use Romberg's method to evaluate  $\int_0^1 \frac{dx}{x^2 + 4}$ . Take values of h : 0.5, 0.25 and 0.125 respectively. 4

Set P



5. a) Evaluate the double integral  $\int_0^1 \int_1^2 \frac{2xy}{(1+x^2)(1+y^2)} dx dy$  by Trapezoidal rule.

Take  $h = k = 0.5$ .

4

- b) Perform two iterations of Newton-Raphson method to find a solution of the system  $x^2 + xy + y^2 = 7$ ,  $x^3 + y^3 = 9$ . Take initial vector as (1.5, 0.5).

5

OR

- b) A curve passes through the points (1, 2), (1.5, 2.4), (2.0, 2.7), (2.5, 2.8), (3, 3), (3.5, 2.6) (4, 2.1). Obtain the volume of solid of revolution when the curve is rotated around x-axis within lines  $x = 1$  and  $x = 4$ .

5

### SECTION – II

6. a) If A and B are two fuzzy sets defined by the membership functions

$$A(x) = \frac{2x}{x+5}, B(x) = 1 - \frac{x}{5}$$

$$x \in \{0, 1, 2, 3, 4, 5\}$$

Find  $A \cup B$ ,  $A \cap B$  and verify that  $|A| + |B| = |A \cup B| + |A \cap B|$ .

4

- b) Find  $S(|\tilde{A}|, |\tilde{B}|)$  where  $A(x) = \frac{x}{x+1}$ ,  $B(x) = 1 - \frac{x}{10}$ ,  $x \in \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ .

5

7. a) Find special fuzzy sets of fuzzy set A and also verify first decomposition theorem

$$A = \frac{0.2}{x} + \frac{0.4}{y} + \frac{0.6}{z} + \frac{0.8}{u} + \frac{1}{v}$$

3

- b) Solve the fuzzy equation  $A + X = B$  where  $A(x) = \begin{cases} x-1 & 1 \leq x \leq 2 \\ 3-x & 2 < x \leq 3 \\ 0 & \text{otherwise} \end{cases}$ ,

$$B(x) = \begin{cases} \frac{x-13}{27} & 13 < x \leq 40 \\ \frac{60-x}{20} & 40 < x \leq 60 \\ 0 & \text{otherwise} \end{cases}$$

6

Set P



8. a) If A and B are fuzzy sets defined on universal set X given by

$$A(x) = \frac{0.2}{1} + \frac{0.4}{2} + \frac{0.6}{3} + \frac{0.5}{4}$$

$$B(x) = \frac{0.1}{-1} + \frac{0.3}{0} + \frac{0.4}{1} + \frac{0.7}{3} + \frac{0.9}{-5}$$

and let  $f : XXX \rightarrow X$  be defined by  $f(x_1, x_2) = 2x_1 + x_2$ ,  $x_1, x_2 \in X$  then find  $f(A, B)$ . **6**

OR

a) Explain fuzzy propositions and their four types in short. **6**

b) Determine which of the following fuzzy sets qualify as fuzzy numbers with justification : **4**

$$i) A(x) = \begin{cases} 1 & \text{for } 0 \leq x \leq 10 \\ 0 & \text{otherwise} \end{cases}$$

$$ii) B(x) = \begin{cases} \sin x & \text{for } 0 \leq x \leq \pi \\ 0 & \text{otherwise} \end{cases}$$

9. a) Let A and B be two fuzzy numbers whose membership functions are given by

$$A(x) = \begin{cases} \frac{x+1}{2} & -1 < x \leq 1 \\ \frac{3-x}{2} & 1 < x \leq 3 \\ 0 & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x-1}{2} & 1 < x \leq 3 \\ \frac{5-x}{2} & 3 < x \leq 5 \\ 0 & \text{otherwise} \end{cases}$$

then find  $\text{MIN}(A, B)$ . **6**

b) Complete the following table using Lukasiewicz implication : **3**

| x             | y             | $x \wedge y$ | $x \vee y$ | $x \Rightarrow y$ |
|---------------|---------------|--------------|------------|-------------------|
| 0             | $\frac{1}{2}$ |              |            |                   |
| 0             | 1             |              |            |                   |
| $\frac{1}{2}$ | $\frac{1}{2}$ |              |            |                   |
| $\frac{1}{2}$ | 1             |              |            |                   |
| 1             | $\frac{1}{2}$ |              |            |                   |
| 1             | 1             |              |            |                   |





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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
APPLIED MATHEMATICS – II**

Day and Date : Tuesday, 16-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- N. B. :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
2) **Use** of scientific calculator is **allowed**.  
3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**14**

1) The fuzzy cardinality of fuzzy set A is defined as

a)  $|\tilde{A}| = \sum_{\alpha} \frac{1}{|A|}$

b)  $|\tilde{A}| = \sum_{\alpha} \frac{\alpha}{|\alpha_A|}$

c)  $|\tilde{A}| = \sum_{\alpha} \frac{\alpha}{\alpha_A}$

d)  $|\tilde{A}| = \sum_{\alpha} \frac{|\alpha_A|}{\alpha}$

2) For any fuzzy set A defined on universal set X,  $O_A =$  \_\_\_\_\_

a)  $\phi$

b) X

c) A

d)  $\bar{A}$

3) If A, B are two fuzzy sets defined on universal set X,  $\alpha \in [0, 1]$  then which of the following is not true ?

a)  $\alpha_{A \cup B} = \alpha_A \cup \alpha_B$

b)  $\alpha_{\bar{A}} = (1 - \alpha)_{+\bar{A}}$

c)  $\alpha_{A \cup B} = \alpha_A \cap \alpha_B$

d) If  $\alpha \leq \beta$ ,  $\beta_{+A} \subseteq \alpha_{+A}$

4) The fuzzy operation on the interval  $[-2, 4] - [3, 6] =$

a)  $[-5, 2]$

b)  $[-5, -2]$

c)  $[5, 2]$

d)  $[-8, 1]$

5) For the fuzzy set

$$A(x) = \begin{cases} \frac{x-2}{3} & 2 < x \leq 5 \\ \frac{7-x}{2} & 5 < x \leq 7 \\ 0 & \text{otherwise} \end{cases}$$

the  $\alpha$ -cut of A(x) is given by

a)  $[3\alpha - 2, 2\alpha - 7]$

b)  $[7 - 2\alpha, 3\alpha + 2]$

c)  $[3\alpha + 2, 7 - 2\alpha]$

d)  $[3\alpha + 2, 7 + 2\alpha]$

P.T.O.



- 6) The crisp rule  $((a \Rightarrow b) \cap (b \Rightarrow c)) \Rightarrow (a \Rightarrow c)$  is called
- a) Hypothetical syllogism                      b) Modus tollens  
c) Modus ponens                                      d) Disjunctive syllogism
- 7) The solution of  $AX = B$  will exist if for  $\alpha, \beta \in (0, 1]$  such that  $\alpha \leq \beta$ ,  $\beta_X \subseteq \alpha_X$  and second condition is  $\forall \alpha \in (0, 1]$

a)  $\frac{\alpha_{b_1}}{\alpha_{a_1}} \leq \frac{\alpha_{b_2}}{\alpha_{a_2}}$               b)  $\frac{\alpha_{a_1}}{\alpha_{b_1}} \geq \frac{\alpha_{a_2}}{\alpha_{b_2}}$               c)  $\frac{\alpha_{a_1}}{\alpha_{b_1}} = \frac{\alpha_{a_2}}{\alpha_{b_2}}$               d)  $\frac{\alpha_{a_1}}{\alpha_{a_2}} \leq \frac{\alpha_{b_1}}{\alpha_{b_2}}$

- 8) It is known that a root of the equation  $x^3 + x - 1 = 0$  lies in the interval  $(0, 1)$ . The value of first approximation to the root by method of false position is
- a) 0.5                      b) 0.6                      c) -1                      d) -0.675
- 9) This method is called as method of chords
- a) Newton-Raphson                      b) Method of false position  
c) Bisection                                      d) None
- 10) To solve the simultaneous system of linear equations  $AX = B$ , this method reduces the coefficient matrix to upper-triangular form
- a) Gauss-Jordan                                      b) Gauss-Seidal  
c) Gauss-Jacobi                                      d) Gauss elimination

- 11) For the data

$$\begin{array}{l} \mathbf{x} : 0 \quad 0.5 \quad 1 \quad 1.5 \quad 2 \\ \mathbf{f(x)} : 0 \quad 0.25 \quad 1 \quad 2.25 \quad 4 \end{array}$$

then the value of  $\int_0^2 f(x)dx$  by Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule is approximately

a) 2.6667                      b) 3.67                      c) 4.6667                      d) 3.677

- 12) This method makes repeated use of Trapezoidal rule
- a) Gaussian quadrature                      b) Weddles Rule  
c) Romberg method                                      d) Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule

- 13) Largest eigen value of the matrix  $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$  is

a) 2                      b) 3                      c) 5                      d) 6

- 14) The Newton-Raphson's algorithm to find square root of a positive number N is

a)  $\frac{1}{2} \left( x_n + \frac{N}{x_n} \right) = x_{n+1}$                       b)  $\frac{-1}{2} \left( x_n + \frac{N}{x_n} \right) = x_{n+1}$   
c)  $\frac{1}{2} \left( x_n - \frac{N}{x_n} \right) = x_{n+1}$                       d)  $\left( x_n + \frac{N}{x_n} \right) = x_{n+1}$





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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
APPLIED MATHEMATICS – II**

Day and Date : Tuesday, 16-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions:** 1) Attempt **any three** questions from **each** Section.  
2) Figures to the **right** indicate **full** marks.  
3) **Use** of scientific calculator is **allowed**.

SECTION – I

2. a) Perform five iterations of Bisection method to find a positive root of the equation  $2x - 3\sin x - 5 = 0$ . 3
- b) Find a real root of the equation  $2x - \log_{10}x - 7 = 0$  perform two iterations of method of false position. 3
- c) The bacteria concentration in a reservoir varies as  $C = 4e^{-2t} + e^{-0.1t}$ . Using Newton-Raphson method, calculate the time required for the bacteria concentration to be 0.5. Take initial approximation  $t_0 = 6$ . 3
3. a) Solve the following system of linear equations by Gauss-Elimination method  $3x + 4y + 5z = 18, 2x - y + 8z = 13, 5x - 2y + 7z = 20$ . 4
- b) Solve by LU-decomposition method  $x + 5y + z = 14, 2x + y + 3z = 13, 3x + y + 4z = 17$ . 5

OR

- b) Perform four iterations of Gauss-Jacobi method to solve the system  $8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$ . 5
4. a) Solve the following integral by Gaussian three point rule  $\int_{-1}^1 (3x^2 + 5x^4) dx$ . 2
- b) Evaluate  $\int_4^{5.2} \log x dx$  by Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule and weddles rule dividing the range into six equal sub-intervals. 4
- c) Use Romberg's method to evaluate  $\int_0^1 \frac{dx}{x^2 + 4}$ . Take values of h : 0.5, 0.25 and 0.125 respectively. 4

Set Q



5. a) Evaluate the double integral  $\int_0^1 \int_1^2 \frac{2xy}{(1+x^2)(1+y^2)} dx dy$  by Trapezoidal rule.

Take  $h = k = 0.5$ .

4

- b) Perform two iterations of Newton-Raphson method to find a solution of the system  $x^2 + xy + y^2 = 7$ ,  $x^3 + y^3 = 9$ . Take initial vector as (1.5, 0.5).

5

OR

- b) A curve passes through the points (1, 2), (1.5, 2.4), (2.0, 2.7), (2.5, 2.8), (3, 3), (3.5, 2.6) (4, 2.1). Obtain the volume of solid of revolution when the curve is rotated around x-axis within lines  $x = 1$  and  $x = 4$ .

5

#### SECTION – II

6. a) If A and B are two fuzzy sets defined by the membership functions

$$A(x) = \frac{2x}{x+5}, B(x) = 1 - \frac{x}{5}$$

$$x \in \{0, 1, 2, 3, 4, 5\}$$

Find  $A \cup B$ ,  $A \cap B$  and verify that  $|A| + |B| = |A \cup B| + |A \cap B|$ .

4

- b) Find  $S(|\tilde{A}|, |\tilde{B}|)$  where  $A(x) = \frac{x}{x+1}$ ,  $B(x) = 1 - \frac{x}{10}$ ,  $x \in \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ .

5

7. a) Find special fuzzy sets of fuzzy set A and also verify first decomposition theorem

$$A = \frac{0.2}{x} + \frac{0.4}{y} + \frac{0.6}{z} + \frac{0.8}{u} + \frac{1}{v}$$

3

- b) Solve the fuzzy equation  $A + X = B$  where  $A(x) = \begin{cases} x-1 & 1 \leq x \leq 2 \\ 3-x & 2 < x \leq 3 \\ 0 & \text{otherwise} \end{cases}$ ,

$$B(x) = \begin{cases} \frac{x-13}{27} & 13 < x \leq 40 \\ \frac{60-x}{20} & 40 < x \leq 60 \\ 0 & \text{otherwise} \end{cases}$$

6

Set Q



8. a) If A and B are fuzzy sets defined on universal set X given by

$$A(x) = \frac{0.2}{1} + \frac{0.4}{2} + \frac{0.6}{3} + \frac{0.5}{4}$$

$$B(x) = \frac{0.1}{-1} + \frac{0.3}{0} + \frac{0.4}{1} + \frac{0.7}{3} + \frac{0.9}{-5}$$

and let  $f : XXX \rightarrow X$  be defined by  $f(x_1, x_2) = 2x_1 + x_2$ ,  $x_1, x_2 \in X$  then find  $f(A, B)$ . **6**

OR

a) Explain fuzzy propositions and their four types in short. **6**

b) Determine which of the following fuzzy sets qualify as fuzzy numbers with justification : **4**

i)  $A(x) = \begin{cases} 1 & \text{for } 0 \leq x \leq 10 \\ 0 & \text{otherwise} \end{cases}$

ii)  $B(x) = \begin{cases} \sin x & \text{for } 0 \leq x \leq \pi \\ 0 & \text{otherwise} \end{cases}$

9. a) Let A and B be two fuzzy numbers whose membership functions are given by

$$A(x) = \begin{cases} \frac{x+1}{2} & -1 < x \leq 1 \\ \frac{3-x}{2} & 1 < x \leq 3 \\ 0 & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x-1}{2} & 1 < x \leq 3 \\ \frac{5-x}{2} & 3 < x \leq 5 \\ 0 & \text{otherwise} \end{cases}$$

then find  $\text{MIN}(A, B)$ . **6**

b) Complete the following table using Lukasiewicz implication : **3**

| x             | y             | $x \wedge y$ | $x \vee y$ | $x \Rightarrow y$ |
|---------------|---------------|--------------|------------|-------------------|
| 0             | $\frac{1}{2}$ |              |            |                   |
| 0             | 1             |              |            |                   |
| $\frac{1}{2}$ | $\frac{1}{2}$ |              |            |                   |
| $\frac{1}{2}$ | 1             |              |            |                   |
| 1             | $\frac{1}{2}$ |              |            |                   |
| 1             | 1             |              |            |                   |





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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
APPLIED MATHEMATICS – II**

Day and Date : Tuesday, 16-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- N. B. :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
2) **Use** of scientific calculator is **allowed**.  
3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**14**

- 1) This method makes repeated use of Trapezoidal rule
  - a) Gaussian quadrature
  - b) Weddles Rule
  - c) Romberg method
  - d) Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule
- 2) Largest eigen value of the matrix  $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$  is
  - a) 2
  - b) 3
  - c) 5
  - d) 6
- 3) The Newton-Raphson's algorithm to find square root of a positive number N is
  - a)  $\frac{1}{2}\left(x_n + \frac{N}{x_n}\right) = x_{n+1}$
  - b)  $\frac{-1}{2}\left(x_n + \frac{N}{x_n}\right) = x_{n+1}$
  - c)  $\frac{1}{2}\left(x_n - \frac{N}{x_n}\right) = x_{n+1}$
  - d)  $\left(x_n + \frac{N}{x_n}\right) = x_{n+1}$
- 4) The fuzzy cardinality of fuzzy set A is defined as
  - a)  $|\tilde{A}| = \sum_{\alpha} \frac{1}{|A|}$
  - b)  $|\tilde{A}| = \sum_{\alpha} \frac{\alpha}{|\alpha_A|}$
  - c)  $|\tilde{A}| = \sum_{\alpha} \frac{\alpha}{\alpha_A}$
  - d)  $|\tilde{A}| = \sum_{\alpha} \frac{|\alpha_A|}{\alpha}$
- 5) For any fuzzy set A defined on universal set X,  $O_A =$  \_\_\_\_\_
  - a)  $\phi$
  - b) X
  - c) A
  - d)  $\bar{A}$
- 6) If A, B are two fuzzy sets defined on universal set X,  $\alpha \in [0, 1]$  then which of the following is not true ?
  - a)  $\alpha_{A \cup B} = \alpha_A \cup \alpha_B$
  - b)  $\alpha_{\bar{A}} = (1 - \alpha)_{+\bar{A}}$
  - c)  $\alpha_{A \cup B} = \alpha_A \cap \alpha_B$
  - d) If  $\alpha \leq \beta$ ,  $\beta_{+A} \subseteq \alpha_{+A}$

P.T.O.



- 7) The fuzzy operation on the interval  $[-2, 4] - [3, 6] =$   
 a)  $[-5, 2]$                       b)  $[-5, -2]$                       c)  $[5, 2]$                       d)  $[-8, 1]$

- 8) For the fuzzy set

$$A(x) = \begin{cases} \frac{x-2}{3} & 2 < x \leq 5 \\ \frac{7-x}{2} & 5 < x \leq 7 \\ 0 & \text{otherwise} \end{cases}$$

the  $\alpha$ -cut of  $A(x)$  is given by

- a)  $[3\alpha - 2, 2\alpha - 7]$                       b)  $[7 - 2\alpha, 3\alpha + 2]$   
 c)  $[3\alpha + 2, 7 - 2\alpha]$                       d)  $[3\alpha + 2, 7 + 2\alpha]$
- 9) The crisp rule  $((a \Rightarrow b) \cap (b \Rightarrow c)) \Rightarrow (a \Rightarrow c)$  is called  
 a) Hypothetical syllogism                      b) Modus tollens  
 c) Modus ponens                      d) Disjunctive syllogism
- 10) The solution of  $AX = B$  will exist if for  $\alpha, \beta \in (0, 1]$  such that  $\alpha \leq \beta$ ,  $\beta_X \subseteq \alpha_X$  and second condition is  $\forall \alpha \in (0, 1]$

a)  $\frac{\alpha_{b_1}}{\alpha_{a_1}} \leq \frac{\alpha_{b_2}}{\alpha_{a_2}}$                       b)  $\frac{\alpha_{a_1}}{\alpha_{b_1}} \geq \frac{\alpha_{a_2}}{\alpha_{b_2}}$                       c)  $\frac{\alpha_{a_1}}{\alpha_{b_1}} = \frac{\alpha_{a_2}}{\alpha_{b_2}}$                       d)  $\frac{\alpha_{a_1}}{\alpha_{a_2}} \leq \frac{\alpha_{b_1}}{\alpha_{b_2}}$

- 11) It is known that a root of the equation  $x^3 + x - 1 = 0$  lies in the interval  $(0, 1)$ . The value of first approximation to the root by method of false position is  
 a) 0.5                      b) 0.6                      c) -1                      d) -0.675
- 12) This method is called as method of chords  
 a) Newton-Raphson                      b) Method of false position  
 c) Bisection                      d) None
- 13) To solve the simultaneous system of linear equations  $AX = B$ , this method reduces the coefficient matrix to upper-triangular form  
 a) Gauss-Jordan                      b) Gauss-Seidal  
 c) Gauss-Jacobi                      d) Gauss elimination

- 14) For the data

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

then the value of  $\int_0^2 f(x)dx$  by Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule is approximately

- a) 2.6667                      b) 3.67                      c) 4.6667                      d) 3.677



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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
APPLIED MATHEMATICS – II**

Day and Date : Tuesday, 16-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions:** 1) Attempt **any three** questions from **each** Section.  
2) Figures to the **right** indicate **full** marks.  
3) **Use** of scientific calculator is **allowed**.

SECTION – I

2. a) Perform five iterations of Bisection method to find a positive root of the equation  $2x - 3\sin x - 5 = 0$ . 3
- b) Find a real root of the equation  $2x - \log_{10}x - 7 = 0$  perform two iterations of method of false position. 3
- c) The bacteria concentration in a reservoir varies as  $C = 4e^{-2t} + e^{-0.1t}$ . Using Newton-Raphson method, calculate the time required for the bacteria concentration to be 0.5. Take initial approximation  $t_0 = 6$ . 3
3. a) Solve the following system of linear equations by Gauss-Elimination method  $3x + 4y + 5z = 18, 2x - y + 8z = 13, 5x - 2y + 7z = 20$ . 4
- b) Solve by LU-decomposition method  $x + 5y + z = 14, 2x + y + 3z = 13, 3x + y + 4z = 17$ . 5

OR

- b) Perform four iterations of Gauss-Jacobi method to solve the system  $8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$ . 5
4. a) Solve the following integral by Gaussian three point rule  $\int_{-1}^1 (3x^2 + 5x^4) dx$ . 2
- b) Evaluate  $\int_4^{5.2} \log x \, dx$  by Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule and weddles rule dividing the range into six equal sub-intervals. 4
- c) Use Romberg's method to evaluate  $\int_0^1 \frac{dx}{x^2 + 4}$ . Take values of h : 0.5, 0.25 and 0.125 respectively. 4

Set R



5. a) Evaluate the double integral  $\int_0^1 \int_1^2 \frac{2xy}{(1+x^2)(1+y^2)} dx dy$  by Trapezoidal rule.

Take  $h = k = 0.5$ .

4

- b) Perform two iterations of Newton-Raphson method to find a solution of the system  $x^2 + xy + y^2 = 7, x^3 + y^3 = 9$ . Take initial vector as (1.5, 0.5).

5

OR

- b) A curve passes through the points (1, 2), (1.5, 2.4), (2.0, 2.7), (2.5, 2.8), (3, 3), (3.5, 2.6) (4, 2.1). Obtain the volume of solid of revolution when the curve is rotated around x-axis within lines  $x = 1$  and  $x = 4$ .

5

### SECTION – II

6. a) If A and B are two fuzzy sets defined by the membership functions

$$A(x) = \frac{2x}{x+5}, B(x) = 1 - \frac{x}{5}$$

$$x \in \{0, 1, 2, 3, 4, 5\}$$

Find  $A \cup B, A \cap B$  and verify that  $|A| + |B| = |A \cup B| + |A \cap B|$ .

4

- b) Find  $S(|\tilde{A}|, |\tilde{B}|)$  where  $A(x) = \frac{x}{x+1}, B(x) = 1 - \frac{x}{10}, x \in \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ .

5

7. a) Find special fuzzy sets of fuzzy set A and also verify first decomposition theorem

$$A = \frac{0.2}{x} + \frac{0.4}{y} + \frac{0.6}{z} + \frac{0.8}{u} + \frac{1}{v}$$

3

- b) Solve the fuzzy equation  $A + X = B$  where  $A(x) = \begin{cases} x-1 & 1 \leq x \leq 2 \\ 3-x & 2 < x \leq 3 \\ 0 & \text{otherwise} \end{cases}$ ,

$$B(x) = \begin{cases} \frac{x-13}{27} & 13 < x \leq 40 \\ \frac{60-x}{20} & 40 < x \leq 60 \\ 0 & \text{otherwise} \end{cases}$$

6

Set R





8. a) If A and B are fuzzy sets defined on universal set X given by

$$A(x) = \frac{0.2}{1} + \frac{0.4}{2} + \frac{0.6}{3} + \frac{0.5}{4}$$

$$B(x) = \frac{0.1}{-1} + \frac{0.3}{0} + \frac{0.4}{1} + \frac{0.7}{3} + \frac{0.9}{-5}$$

and let  $f : XXX \rightarrow X$  be defined by  $f(x_1, x_2) = 2x_1 + x_2, x_1, x_2 \in X$  then find  $f(A, B)$ . **6**

OR

a) Explain fuzzy propositions and their four types in short. **6**

b) Determine which of the following fuzzy sets qualify as fuzzy numbers with justification : **4**

$$i) A(x) = \begin{cases} 1 & \text{for } 0 \leq x \leq 10 \\ 0 & \text{otherwise} \end{cases}$$

$$ii) B(x) = \begin{cases} \sin x & \text{for } 0 \leq x \leq \pi \\ 0 & \text{otherwise} \end{cases}$$

9. a) Let A and B be two fuzzy numbers whose membership functions are given by

$$A(x) = \begin{cases} \frac{x+1}{2} & -1 < x \leq 1 \\ \frac{3-x}{2} & 1 < x \leq 3 \\ 0 & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x-1}{2} & 1 < x \leq 3 \\ \frac{5-x}{2} & 3 < x \leq 5 \\ 0 & \text{otherwise} \end{cases}$$

then find  $\text{MIN}(A, B)$ . **6**

b) Complete the following table using Lukasiewicz implication : **3**

| x             | y             | $x \wedge y$ | $x \vee y$ | $x \Rightarrow y$ |
|---------------|---------------|--------------|------------|-------------------|
| 0             | $\frac{1}{2}$ |              |            |                   |
| 0             | 1             |              |            |                   |
| $\frac{1}{2}$ | $\frac{1}{2}$ |              |            |                   |
| $\frac{1}{2}$ | 1             |              |            |                   |
| 1             | $\frac{1}{2}$ |              |            |                   |
| 1             | 1             |              |            |                   |





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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017**  
**APPLIED MATHEMATICS – II**

Day and Date : Tuesday, 16-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- N. B. :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 2) **Use** of scientific calculator is **allowed**.
  - 3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) If A, B are two fuzzy sets defined on universal set X,  $\alpha \in [0, 1]$  then which of the following is not true ?
 

|                                                 |                                                                |
|-------------------------------------------------|----------------------------------------------------------------|
| a) $\alpha_{A \cup B} = \alpha_A \cup \alpha_B$ | b) $\alpha_{\bar{A}} = (1 - \alpha)_{+\bar{A}}$                |
| c) $\alpha_{A \cup B} = \alpha_A \cap \alpha_B$ | d) If $\alpha \leq \beta$ , $\beta_{+A} \subseteq \alpha_{+A}$ |
- 2) The fuzzy operation on the interval  $[-2, 4] - [3, 6] =$ 

|              |               |             |              |
|--------------|---------------|-------------|--------------|
| a) $[-5, 2]$ | b) $[-5, -2]$ | c) $[5, 2]$ | d) $[-8, 1]$ |
|--------------|---------------|-------------|--------------|
- 3) For the fuzzy set

$$A(x) = \begin{cases} \frac{x-2}{3} & 2 < x \leq 5 \\ \frac{7-x}{2} & 5 < x \leq 7 \\ 0 & \text{otherwise} \end{cases}$$

the  $\alpha$ -cut of A(x) is given by

- |                                 |                                 |
|---------------------------------|---------------------------------|
| a) $[3\alpha - 2, 2\alpha - 7]$ | b) $[7 - 2\alpha, 3\alpha + 2]$ |
| c) $[3\alpha + 2, 7 - 2\alpha]$ | d) $[3\alpha + 2, 7 + 2\alpha]$ |
- 4) The crisp rule  $((a \Rightarrow b) \cap (b \Rightarrow c)) \Rightarrow (a \Rightarrow c)$  is called
 

|                           |                          |
|---------------------------|--------------------------|
| a) Hypothetical syllogism | b) Modus tollens         |
| c) Modus ponens           | d) Disjunctive syllogism |
  - 5) The solution of  $AX = B$  will exist if for  $\alpha, \beta \in (0, 1]$  such that  $\alpha \leq \beta$ ,  $\beta_X \subseteq \alpha_X$  and second condition is  $\forall \alpha \in (0, 1]$

|                                                                               |                                                                               |                                                                            |                                                                               |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| a) $\frac{\alpha_{b_1}}{\alpha_{a_1}} \leq \frac{\alpha_{b_2}}{\alpha_{a_2}}$ | b) $\frac{\alpha_{a_1}}{\alpha_{b_1}} \geq \frac{\alpha_{a_2}}{\alpha_{b_2}}$ | c) $\frac{\alpha_{a_1}}{\alpha_{b_1}} = \frac{\alpha_{a_2}}{\alpha_{b_2}}$ | d) $\frac{\alpha_{a_1}}{\alpha_{a_2}} \leq \frac{\alpha_{b_1}}{\alpha_{b_2}}$ |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------|

P.T.O.



- 6) It is known that a root of the equation  $x^3 + x - 1 = 0$  lies in the interval (0, 1).  
The value of first approximation to the root by method of false position is  
a) 0.5                      b) 0.6                      c) -1                      d) -0.675
- 7) This method is called as method of chords  
a) Newton-Raphson                      b) Method of false position  
c) Bisection                      d) None
- 8) To solve the simultaneous system of linear equations  $AX = B$ , this method reduces the coefficient matrix to upper-triangular form  
a) Gauss-Jordan                      b) Gauss-Seidal  
c) Gauss-Jacobi                      d) Gauss elimination
- 9) For the data
- |        |   |   |      |   |      |   |
|--------|---|---|------|---|------|---|
| $x$    | : | 0 | 0.5  | 1 | 1.5  | 2 |
| $f(x)$ | : | 0 | 0.25 | 1 | 2.25 | 4 |

then the value of  $\int_0^2 f(x)dx$  by Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule is approximately

- a) 2.6667                      b) 3.67                      c) 4.6667                      d) 3.677
- 10) This method makes repeated use of Trapezoidal rule  
a) Gaussian quadrature                      b) Weddles Rule  
c) Romberg method                      d) Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule
- 11) Largest eigen value of the matrix  $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$  is  
a) 2                      b) 3                      c) 5                      d) 6
- 12) The Newton-Raphson's algorithm to find square root of a positive number N is  
a)  $\frac{1}{2}\left(x_n + \frac{N}{x_n}\right) = x_{n+1}$                       b)  $\frac{-1}{2}\left(x_n + \frac{N}{x_n}\right) = x_{n+1}$   
c)  $\frac{1}{2}\left(x_n - \frac{N}{x_n}\right) = x_{n+1}$                       d)  $\left(x_n + \frac{N}{x_n}\right) = x_{n+1}$
- 13) The fuzzy cardinality of fuzzy set A is defined as  
a)  $|\tilde{A}| = \sum_{\alpha} \frac{1}{|A|}$                       b)  $|\tilde{A}| = \sum_{\alpha} \frac{\alpha}{|\alpha_A|}$   
c)  $|\tilde{A}| = \sum_{\alpha} \frac{\alpha}{\alpha_A}$                       d)  $|\tilde{A}| = \sum_{\alpha} \frac{|\alpha_A|}{\alpha}$
- 14) For any fuzzy set A defined on universal set X,  $O_A =$  \_\_\_\_\_  
a)  $\phi$                       b) X                      c) A                      d)  $\bar{A}$



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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
APPLIED MATHEMATICS – II**

Day and Date : Tuesday, 16-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions:** 1) Attempt **any three** questions from **each** Section.  
2) Figures to the **right** indicate **full** marks.  
3) **Use** of scientific calculator is **allowed**.

SECTION – I

2. a) Perform five iterations of Bisection method to find a positive root of the equation  $2x - 3\sin x - 5 = 0$ . 3
- b) Find a real root of the equation  $2x - \log_{10}x - 7 = 0$  perform two iterations of method of false position. 3
- c) The bacteria concentration in a reservoir varies as  $C = 4e^{-2t} + e^{-0.1t}$ . Using Newton-Raphson method, calculate the time required for the bacteria concentration to be 0.5. Take initial approximation  $t_0 = 6$ . 3
3. a) Solve the following system of linear equations by Gauss-Elimination method  $3x + 4y + 5z = 18, 2x - y + 8z = 13, 5x - 2y + 7z = 20$ . 4
- b) Solve by LU-decomposition method  $x + 5y + z = 14, 2x + y + 3z = 13, 3x + y + 4z = 17$ . 5

OR

- b) Perform four iterations of Gauss-Jacobi method to solve the system  $8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$ . 5
4. a) Solve the following integral by Gaussian three point rule  $\int_{-1}^1 (3x^2 + 5x^4) dx$ . 2
- b) Evaluate  $\int_4^{5.2} \log x \, dx$  by Simpson's  $\frac{1}{3}$ <sup>rd</sup> rule and weddles rule dividing the range into six equal sub-intervals. 4
- c) Use Romberg's method to evaluate  $\int_0^1 \frac{dx}{x^2 + 4}$ . Take values of h : 0.5, 0.25 and 0.125 respectively. 4

**Set S**



5. a) Evaluate the double integral  $\int_0^1 \int_1^2 \frac{2xy}{(1+x^2)(1+y^2)} dx dy$  by Trapezoidal rule.

Take  $h = k = 0.5$ .

4

- b) Perform two iterations of Newton-Raphson method to find a solution of the system  $x^2 + xy + y^2 = 7$ ,  $x^3 + y^3 = 9$ . Take initial vector as (1.5, 0.5).

5

OR

- b) A curve passes through the points (1, 2), (1.5, 2.4), (2.0, 2.7), (2.5, 2.8), (3, 3), (3.5, 2.6) (4, 2.1). Obtain the volume of solid of revolution when the curve is rotated around x-axis within lines  $x = 1$  and  $x = 4$ .

5

### SECTION – II

6. a) If A and B are two fuzzy sets defined by the membership functions

$$A(x) = \frac{2x}{x+5}, B(x) = 1 - \frac{x}{5}$$

$$x \in \{0, 1, 2, 3, 4, 5\}$$

Find  $A \cup B$ ,  $A \cap B$  and verify that  $|A| + |B| = |A \cup B| + |A \cap B|$ .

4

- b) Find  $S(|\tilde{A}|, |\tilde{B}|)$  where  $A(x) = \frac{x}{x+1}$ ,  $B(x) = 1 - \frac{x}{10}$ ,  $x \in \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ .

5

7. a) Find special fuzzy sets of fuzzy set A and also verify first decomposition theorem

$$A = \frac{0.2}{x} + \frac{0.4}{y} + \frac{0.6}{z} + \frac{0.8}{u} + \frac{1}{v}$$

3

- b) Solve the fuzzy equation  $A + X = B$  where  $A(x) = \begin{cases} x-1 & 1 \leq x \leq 2 \\ 3-x & 2 < x \leq 3 \\ 0 & \text{otherwise} \end{cases}$ ,

$$B(x) = \begin{cases} \frac{x-13}{27} & 13 < x \leq 40 \\ \frac{60-x}{20} & 40 < x \leq 60 \\ 0 & \text{otherwise} \end{cases}$$

6

Set S



8. a) If A and B are fuzzy sets defined on universal set X given by

$$A(x) = \frac{0.2}{1} + \frac{0.4}{2} + \frac{0.6}{3} + \frac{0.5}{4}$$

$$B(x) = \frac{0.1}{-1} + \frac{0.3}{0} + \frac{0.4}{1} + \frac{0.7}{3} + \frac{0.9}{-5}$$

and let  $f : XXX \rightarrow X$  be defined by  $f(x_1, x_2) = 2x_1 + x_2$ ,  $x_1, x_2 \in X$  then find  $f(A, B)$ . **6**

OR

a) Explain fuzzy propositions and their four types in short. **6**

b) Determine which of the following fuzzy sets qualify as fuzzy numbers with justification : **4**

$$i) A(x) = \begin{cases} 1 & \text{for } 0 \leq x \leq 10 \\ 0 & \text{otherwise} \end{cases}$$

$$ii) B(x) = \begin{cases} \sin x & \text{for } 0 \leq x \leq \pi \\ 0 & \text{otherwise} \end{cases}$$

9. a) Let A and B be two fuzzy numbers whose membership functions are given by

$$A(x) = \begin{cases} \frac{x+1}{2} & -1 < x \leq 1 \\ \frac{3-x}{2} & 1 < x \leq 3 \\ 0 & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x-1}{2} & 1 < x \leq 3 \\ \frac{5-x}{2} & 3 < x \leq 5 \\ 0 & \text{otherwise} \end{cases}$$

then find  $\text{MIN}(A, B)$ . **6**

b) Complete the following table using Lukasiewicz implication : **3**

| x             | y             | $x \wedge y$ | $x \vee y$ | $x \Rightarrow y$ |
|---------------|---------------|--------------|------------|-------------------|
| 0             | $\frac{1}{2}$ |              |            |                   |
| 0             | 1             |              |            |                   |
| $\frac{1}{2}$ | $\frac{1}{2}$ |              |            |                   |
| $\frac{1}{2}$ | 1             |              |            |                   |
| 1             | $\frac{1}{2}$ |              |            |                   |
| 1             | 1             |              |            |                   |







SLR-VB – 207

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| Set | P |
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
THEORY OF COMPUTATION**

Day and Date : Thursday, 18-5-2017  
Time : 10.00 a.m.to 1.00 p.m.

Total Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(14×1=14)

- 1) Which of the following is true ?
  - a) All NFA are DFA
  - b) All DFA are NFA
  - c) Both a) and b)
  - d) None of the above
- 2) Inability of FA is
  - a) Writing
  - b) Finite memory
  - c) Sequential memory (Input tape)
  - d) All a), b), c)
- 3) Choose regular productions
  - a)  $S \rightarrow aS|a$
  - b)  $S \rightarrow aaSbb|^\wedge$
  - c)  $S \rightarrow aA|bB|^\wedge, A \rightarrow a|aS, B \rightarrow b|bS$
  - d) Both a) and c)
- 4) Which pair is equivalent regular expression ?
  - a)  $(ab)^*$  and  $a^*b^*$
  - b)  $r(rr)^*$  and  $(rr)^*r$
  - c)  $r^+$  and  $r^*rr$
  - d) b) and c)
- 5) A language containing all words over  $\{a, b\}$  having even number of a's and b's is
  - a)  $((aa+bb)(ab+ba)(aa+bb)^*(ab+ba))^*$
  - b)  $((ab+ba)(ab+ba)(aa+bb)^*(ab+ba))^*$
  - c)  $(aa+bb+ab+ba)^*$
  - d) None

P.T.O.



- 6) Match the pair given following :
- |                              |                    |
|------------------------------|--------------------|
| A) Finite Automation         | P) Type 0 language |
| B) Turing machine            | Q) Type 1 language |
| C) PDA                       | R) Type 3 language |
| D) Linear Bounded Automation | S) Type 2 language |
- a) (A, R), (B, P), (C, S), (D, Q)  
 b) (A, S), (B, P), (C, R), (D, Q)  
 c) (A, R) (B, S), (C, P), (D, Q)  
 d) (A, R), (B, P), (C, Q), (D, S)
- 7) There are \_\_\_\_\_ tuples in finite state machine.
- |      |      |      |              |
|------|------|------|--------------|
| a) 4 | b) 5 | c) 6 | d) Unlimited |
|------|------|------|--------------|
- 8) Number of states require to accept string ends with 10.
- |      |                         |
|------|-------------------------|
| a) 3 | b) 2                    |
| c) 1 | d) Can't be represented |
- 9)  $\delta^*(q, ya)$  is equivalent to
- |                        |                                       |
|------------------------|---------------------------------------|
| a) $\delta((q, y), a)$ | b) $\delta(\delta^*(q, y), a)$        |
| c) $\delta(q, ya)$     | d) Independent from $\delta$ notation |
- 10) For which of the following application regular expressions cannot be used ?
- |                                   |                            |
|-----------------------------------|----------------------------|
| a) Designing compilers            | b) Developing text editors |
| c) Simulating sequential circuits | d) All of these            |
- 11) UTM influenced the concept of
- |                                                        |
|--------------------------------------------------------|
| a) Computability                                       |
| b) Interpretive implementation of programming language |
| c) Program and data is in same memory                  |
| d) All of above                                        |
- 12) A grammer G can be described by
- |                          |                       |
|--------------------------|-----------------------|
| a) $(V_n, \Sigma, P, S)$ | b) $(V_n, P, S)$      |
| c) $(\Sigma, P, S)$      | d) $(V_n, \Sigma, P)$ |
- 13) A PDA accepts
- |                     |                   |
|---------------------|-------------------|
| a) Regular language | b) CFL            |
| c) CSL              | d) Both a) and b) |
- 14) We think a TM as a
- |                    |                 |
|--------------------|-----------------|
| a) Computer system | b) Software     |
| c) Hardware        | d) All of above |



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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
THEORY OF COMPUTATION**

Day and Date : Thursday, 18-5-2017  
Time : 10.00 a.m.to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** :

**12**

- 1) In each case, find a string of minimum length  $\{0, 1\}^*$  not in language corresponding to the given regular expression.
  - a)  $1^*(01)^*0^*$
  - b)  $(0^*+1^*)(0^*+1^*)(0^*+1^*)$
  - c)  $0^*(100)^*1^*$
  - d)  $1^*(0+10)^*1^*$
- 2) Find a regular expression corresponding to each of the following subset of  $\{0, 1\}^*$ 
  - a) The language of all strings in which every 0 is followed immediately by 11.
  - b) The language of all strings containing both 11 and 010 as substrings.
- 3) Explain with example derivation tree with ambiguity.
- 4) Define  $\wedge$ -closure. Explain an algorithm to calculate.

3. Solve **any one** :

**8**

- 1) For the given NFA, state whether given strings accepted by it or not
  - a) 11
  - b) 01
  - c) 111
  - d) 011

|       |                  |                  |
|-------|------------------|------------------|
| q     | $\partial(q, 0)$ | $\partial(q, 1)$ |
| $q^0$ | $\{q0\}$         | $\{q0, q1\}$     |
| $q^1$ | $\{q2\}$         | $\{q2\}$         |
| $q^2$ | $\{q3\}$         | $\{q3\}$         |
| $q^3$ | $\phi$           | $\phi$           |



2) Minimize the following FA :

| State | $\delta(q, 0)$ | $\delta(q, 1)$ |
|-------|----------------|----------------|
| 1     | 2              | 3              |
| 2     | 4              | 5              |
| 3     | 6              | 7              |
| 4     | 4              | 5              |
| 5     | 6              | 7              |
| 6     | 4              | 5              |
| 7     | 6              | 7              |

4. Draw NFA- $\wedge$  using Kleens theorem.

$(00 + 1)^*(10)^*$

8

### SECTION – II

5. Attempt **any three** :

- 1) State and explain pumping lemma for Regular language.
- 2) Show that  $\{0^i 1^j | i \geq 1\}$  is not regular.
- 3) Explain the types of acceptance by PDA.
- 4) Design Turing Machine to accept language  $\{a, b\}^* \{ab\}$ .

12

6. Attempt **any one** :

- 1) Construct a DPDA accepting balanced string of brackets.
- 2) Design a Turing Machine to accept a language.  
 $L = \{a^n b^n | n \geq 1\}$ .

8

7. Explain Universal Turing Machine.

8



SLR-VB – 207

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|-----|---|
| Set | Q |
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
THEORY OF COMPUTATION**

Day and Date : Thursday, 18-5-2017  
Time : 10.00 a.m.to 1.00 p.m.

Total Marks : 70

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
- 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**
- 1) Number of states require to accept string ends with 10.
    - a) 3
    - b) 2
    - c) 1
    - d) Can't be represented
  - 2)  $\delta^*(q, ya)$  is equivalent to
    - a)  $\delta((q, y), a)$
    - b)  $\delta(\delta^*(q, y), a)$
    - c)  $\delta(q, ya)$
    - d) Independent from  $\delta$  notation
  - 3) For which of the following application regular expressions cannot be used ?
    - a) Designing compilers
    - b) Developing text editors
    - c) Simulating sequential circuits
    - d) All of these
  - 4) UTM influenced the concept of
    - a) Computability
    - b) Interpretive implementation of programming language
    - c) Program and data is in same memory
    - d) All of above
  - 5) A grammer G can be described by
    - a)  $(V_n, \Sigma, P, S)$
    - b)  $(V_n, P, S)$
    - c)  $(\Sigma, P, S)$
    - d)  $(V_n, \Sigma, P)$

P.T.O.



- 6) A PDA accepts
- |                     |                   |
|---------------------|-------------------|
| a) Regular language | b) CFL            |
| c) CSL              | d) Both a) and b) |
- 7) We think a TM as a
- |                    |                 |
|--------------------|-----------------|
| a) Computer system | b) Software     |
| c) Hardware        | d) All of above |
- 8) Which of the following is true ?
- |                    |                      |
|--------------------|----------------------|
| a) All NFA are DFA | b) All DFA are NFA   |
| c) Both a) and b)  | d) None of the above |
- 9) Inability of FA is
- |                                   |                   |
|-----------------------------------|-------------------|
| a) Writing                        | b) Finite memory  |
| c) Sequential memory (Input tape) | d) All a), b), c) |
- 10) Choose regular productions
- |                                                                          |                                  |
|--------------------------------------------------------------------------|----------------------------------|
| a) $S \rightarrow aS a$                                                  | b) $S \rightarrow aaSbb ^\wedge$ |
| c) $S \rightarrow aA bB ^\wedge, A \rightarrow a aS, B \rightarrow b bS$ | d) Both a) and c)                |
- 11) Which pair is equivalent regular expression ?
- |                          |                            |
|--------------------------|----------------------------|
| a) $(ab)^*$ and $a^*b^*$ | b) $r(rr)^*$ and $(rr)^*r$ |
| c) $r^+$ and $r^*rr$     | d) b) and c)               |
- 12) A language containing all words over  $\{a, b\}$  having even number of a's and b's is
- |                                         |
|-----------------------------------------|
| a) $((aa+bb)(ab+ba)(aa+bb)^*(ab+ba))^*$ |
| b) $((ab+ba)(ab+ba)(aa+bb)^*(ab+ba))^*$ |
| c) $(aa+bb+ab+ba)^*$                    |
| d) None                                 |
- 13) Match the pair given following :
- |                              |                    |
|------------------------------|--------------------|
| A) Finite Automation         | P) Type 0 language |
| B) Turing machine            | Q) Type 1 language |
| C) PDA                       | R) Type 3 language |
| D) Linear Bounded Automation | S) Type 2 language |
- |                                   |
|-----------------------------------|
| a) (A, R), (B, P), (C, S), (D, Q) |
| b) (A, S), (B, P), (C, R), (D, Q) |
| c) (A, R) (B, S), (C, P), (D, Q)  |
| d) (A, R), (B, P), (C, Q), (D, S) |
- 14) There are \_\_\_\_\_ tuples in finite state machine.
- |      |      |      |              |
|------|------|------|--------------|
| a) 4 | b) 5 | c) 6 | d) Unlimited |
|------|------|------|--------------|
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
THEORY OF COMPUTATION**

Day and Date : Thursday, 18-5-2017  
Time : 10.00 a.m.to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** :

**12**

- 1) In each case, find a string of minimum length  $\{0, 1\}^*$  not in language corresponding to the given regular expression.
  - a)  $1^*(01)^*0^*$
  - b)  $(0^*+1^*)(0^*+1^*)(0^*+1^*)$
  - c)  $0^*(100)^*1^*$
  - d)  $1^*(0+10)^*1^*$
- 2) Find a regular expression corresponding to each of the following subset of  $\{0, 1\}^*$ 
  - a) The language of all strings in which every 0 is followed immediately by 11.
  - b) The language of all strings containing both 11 and 010 as substrings.
- 3) Explain with example derivation tree with ambiguity.
- 4) Define  $\wedge$ -closure. Explain an algorithm to calculate.

3. Solve **any one** :

**8**

- 1) For the given NFA, state whether given strings accepted by it or not
 

|       |       |        |        |
|-------|-------|--------|--------|
| a) 11 | b) 01 | c) 111 | d) 011 |
|-------|-------|--------|--------|

|       |                  |                  |
|-------|------------------|------------------|
| q     | $\partial(q, 0)$ | $\partial(q, 1)$ |
| $q^0$ | {q0}             | {q0, q1}         |
| $q^1$ | {q2}             | {q2}             |
| $q^2$ | {q3}             | {q3}             |
| $q^3$ | $\phi$           | $\phi$           |

**Set Q**



2) Minimize the following FA :

| State | $\delta(q, 0)$ | $\delta(q, 1)$ |
|-------|----------------|----------------|
| 1     | 2              | 3              |
| 2     | 4              | 5              |
| 3     | 6              | 7              |
| 4     | 4              | 5              |
| 5     | 6              | 7              |
| 6     | 4              | 5              |
| 7     | 6              | 7              |

4. Draw NFA- $\wedge$  using Kleens theorem.

$(00 + 1)^*(10)^*$

8

### SECTION – II

5. Attempt **any three** :

- 1) State and explain pumping lemma for Regular language.
- 2) Show that  $\{0^i 1^j | i \geq 1\}$  is not regular.
- 3) Explain the types of acceptance by PDA.
- 4) Design Turing Machine to accept language  $\{a, b\}^* \{ab\}$ .

12

6. Attempt **any one** :

- 1) Construct a DPDA accepting balanced string of brackets.
- 2) Design a Turing Machine to accept a language.  
 $L = \{a^n b^n | n \geq 1\}$ .

8

7. Explain Universal Turing Machine.

8





SLR-VB – 207

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| Seat No. |  |
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| Set | R |
|-----|---|

**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
THEORY OF COMPUTATION**

Day and Date : Thursday, 18-5-2017  
Time : 10.00 a.m.to 1.00 p.m.

Total Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(14×1=14)**

1) A language containing all words over {a, b} having even number of a's and b's is

- a)  $((aa+bb)(ab+ba)(aa+bb)^*(ab+ba))^*$
- b)  $((ab+ba)(ab+ba)(aa+bb)^*(ab+ba))^*$
- c)  $(aa+bb+ab+ba)^*$
- d) None

2) Match the pair given following :

- |                              |                    |
|------------------------------|--------------------|
| A) Finite Automation         | P) Type 0 language |
| B) Turing machine            | Q) Type 1 language |
| C) PDA                       | R) Type 3 language |
| D) Linear Bounded Automation | S) Type 2 language |

- a) (A, R), (B, P), (C, S), (D, Q)
- b) (A, S), (B, P), (C, R), (D, Q)
- c) (A, R) (B, S), (C, P), (D, Q)
- d) (A, R), (B, P), (C, Q), (D, S)

3) There are \_\_\_\_\_ tuples in finite state machine.

- a) 4
- b) 5
- c) 6
- d) Unlimited

4) Number of states require to accept string ends with 10.

- a) 3
- b) 2
- c) 1
- d) Can't be represented

P.T.O.



- 5)  $\delta^*(q, ya)$  is equivalent to
- |                        |                                       |
|------------------------|---------------------------------------|
| a) $\delta((q, y), a)$ | b) $\delta(\delta^*(q, y), a)$        |
| c) $\delta(q, ya)$     | d) Independent from $\delta$ notation |
- 6) For which of the following application regular expressions cannot be used ?
- |                                   |                            |
|-----------------------------------|----------------------------|
| a) Designing compilers            | b) Developing text editors |
| c) Simulating sequential circuits | d) All of these            |
- 7) UTM influenced the concept of
- Computability
  - Interpretive implementation of programming language
  - Program and data is in same memory
  - All of above
- 8) A grammer G can be described by
- |                          |                       |
|--------------------------|-----------------------|
| a) $(V_n, \Sigma, P, S)$ | b) $(V_n, P, S)$      |
| c) $(\Sigma, P, S)$      | d) $(V_n, \Sigma, P)$ |
- 9) A PDA accepts
- |                     |                   |
|---------------------|-------------------|
| a) Regular language | b) CFL            |
| c) CSL              | d) Both a) and b) |
- 10) We think a TM as a
- |                    |                 |
|--------------------|-----------------|
| a) Computer system | b) Software     |
| c) Hardware        | d) All of above |
- 11) Which of the following is true ?
- |                    |                      |
|--------------------|----------------------|
| a) All NFA are DFA | b) All DFA are NFA   |
| c) Both a) and b)  | d) None of the above |
- 12) Inability of FA is
- |                                   |                   |
|-----------------------------------|-------------------|
| a) Writing                        | b) Finite memory  |
| c) Sequential memory (Input tape) | d) All a), b), c) |
- 13) Choose regular productions
- |                                                                          |                                  |
|--------------------------------------------------------------------------|----------------------------------|
| a) $S \rightarrow aS a$                                                  | b) $S \rightarrow aaSbb ^\wedge$ |
| c) $S \rightarrow aA bB ^\wedge, A \rightarrow a aS, B \rightarrow b bS$ | d) Both a) and c)                |
- 14) Which pair is equivalent regular expression ?
- |                          |                            |
|--------------------------|----------------------------|
| a) $(ab)^*$ and $a^*b^*$ | b) $r(rr)^*$ and $(rr)^*r$ |
| c) $r^+$ and $r^*rr$     | d) b) and c)               |



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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
THEORY OF COMPUTATION**

Day and Date : Thursday, 18-5-2017  
Time : 10.00 a.m.to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** :

**12**

- 1) In each case, find a string of minimum length  $\{0, 1\}^*$  not in language corresponding to the given regular expression.
  - a)  $1^*(01)^*0^*$
  - b)  $(0^*+1^*) (0^*+1^*) (0^*+1^*)$
  - c)  $0^*(100)^*1^*$
  - d)  $1^*(0+10)^*1^*$
- 2) Find a regular expression corresponding to each of the following subset of  $\{0, 1\}^*$ 
  - a) The language of all strings in which every 0 is followed immediately by 11.
  - b) The language of all strings containing both 11 and 010 as substrings.
- 3) Explain with example derivation tree with ambiguity.
- 4) Define  $\wedge$ -closure. Explain an algorithm to calculate.

3. Solve **any one** :

**8**

- 1) For the given NFA, state whether given strings accepted by it or not
  - a) 11
  - b) 01
  - c) 111
  - d) 011

|       |                  |                  |
|-------|------------------|------------------|
| q     | $\partial(q, 0)$ | $\partial(q, 1)$ |
| $q^0$ | $\{q0\}$         | $\{q0, q1\}$     |
| $q^1$ | $\{q2\}$         | $\{q2\}$         |
| $q^2$ | $\{q3\}$         | $\{q3\}$         |
| $q^3$ | $\phi$           | $\phi$           |



2) Minimize the following FA :

| State | $\delta(q, 0)$ | $\delta(q, 1)$ |
|-------|----------------|----------------|
| 1     | 2              | 3              |
| 2     | 4              | 5              |
| 3     | 6              | 7              |
| 4     | 4              | 5              |
| 5     | 6              | 7              |
| 6     | 4              | 5              |
| 7     | 6              | 7              |

4. Draw NFA- $\wedge$  using Kleens theorem.

$(00 + 1)^*(10)^*$

8

### SECTION – II

5. Attempt **any three** :

- 1) State and explain pumping lemma for Regular language.
- 2) Show that  $\{0^i1^j | i \geq 1\}$  is not regular.
- 3) Explain the types of acceptance by PDA.
- 4) Design Turing Machine to accept language  $\{a, b\}^*\{ab\}$ .

12

6. Attempt **any one** :

- 1) Construct a DPDA accepting balanced string of brackets.
- 2) Design a Turing Machine to accept a language.  
 $L = \{a^n b^n | n \geq 1\}$ .

8

7. Explain Universal Turing Machine.

8



SLR-VB – 207

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|     |          |
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| Set | <b>S</b> |
|-----|----------|

**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
THEORY OF COMPUTATION**

Day and Date : Thursday, 18-5-2017  
Time : 10.00 a.m.to 1.00 p.m.

Total Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(14×1=14)**

- 1) For which of the following application regular expressions cannot be used ?
  - a) Designing compilers
  - b) Developing text editors
  - c) Simulating sequential circuits
  - d) All of these
- 2) UTM influenced the concept of
  - a) Computability
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  - a)  $(V_n, \Sigma, P, S)$
  - b)  $(V_n, P, S)$
  - c)  $(\Sigma, P, S)$
  - d)  $(V_n, \Sigma, P)$
- 4) A PDA accepts
  - a) Regular language
  - b) CFL
  - c) CSL
  - d) Both a) and b)
- 5) We think a TM as a
  - a) Computer system
  - b) Software
  - c) Hardware
  - d) All of above

P.T.O.



- 6) Which of the following is true ?
- a) All NFA are DFA  
b) All DFA are NFA  
c) Both a) and b)  
d) None of the above
- 7) Inability of FA is
- a) Writing  
b) Finite memory  
c) Sequential memory (Input tape)  
d) All a), b), c)
- 8) Choose regular productions
- a)  $S \rightarrow aS|a$   
b)  $S \rightarrow aaSbb|^\wedge$   
c)  $S \rightarrow aA|bB|^\wedge, A \rightarrow a|aS, B \rightarrow b|bS$   
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- 9) Which pair is equivalent regular expression ?
- a)  $(ab)^*$  and  $a^*b^*$   
b)  $r(rr)^*$  and  $(rr)^*r$   
c)  $r^+$  and  $r^*rr$   
d) b) and c)
- 10) A language containing all words over  $\{a, b\}$  having even number of a's and b's is
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b)  $((ab+ba)(ab+ba)(aa+bb)^*(ab+ba))^*$   
c)  $(aa+bb+ab+ba)^*$   
d) None
- 11) Match the pair given following :
- |                              |                    |
|------------------------------|--------------------|
| A) Finite Automation         | P) Type 0 language |
| B) Turing machine            | Q) Type 1 language |
| C) PDA                       | R) Type 3 language |
| D) Linear Bounded Automation | S) Type 2 language |
- a) (A, R), (B, P), (C, S), (D, Q)  
b) (A, S), (B, P), (C, R), (D, Q)  
c) (A, R) (B, S), (C, P), (D, Q)  
d) (A, R), (B, P), (C, Q), (D, S)
- 12) There are \_\_\_\_\_ tuples in finite state machine.
- a) 4  
b) 5  
c) 6  
d) Unlimited
- 13) Number of states require to accept string ends with 10.
- a) 3  
b) 2  
c) 1  
d) Can't be represented
- 14)  $\delta^*(q, ya)$  is equivalent to
- a)  $\delta((q, y), a)$   
b)  $\delta(\delta^*(q, y), a)$   
c)  $\delta(q, ya)$   
d) Independent from  $\delta$  notation
-



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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
THEORY OF COMPUTATION**

Day and Date : Thursday, 18-5-2017  
Time : 10.00 a.m.to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** :

**12**

- 1) In each case, find a string of minimum length  $\{0, 1\}^*$  not in language corresponding to the given regular expression.
  - a)  $1^*(01)^*0^*$
  - b)  $(0^*+1^*)(0^*+1^*)(0^*+1^*)$
  - c)  $0^*(100)^*1^*$
  - d)  $1^*(0+10)^*1^*$
- 2) Find a regular expression corresponding to each of the following subset of  $\{0, 1\}^*$ 
  - a) The language of all strings in which every 0 is followed immediately by 11.
  - b) The language of all strings containing both 11 and 010 as substrings.
- 3) Explain with example derivation tree with ambiguity.
- 4) Define  $\wedge$ -closure. Explain an algorithm to calculate.

3. Solve **any one** :

**8**

- 1) For the given NFA, state whether given strings accepted by it or not
  - a) 11
  - b) 01
  - c) 111
  - d) 011

|       |                  |                  |
|-------|------------------|------------------|
| q     | $\partial(q, 0)$ | $\partial(q, 1)$ |
| $q^0$ | $\{q0\}$         | $\{q0, q1\}$     |
| $q^1$ | $\{q2\}$         | $\{q2\}$         |
| $q^2$ | $\{q3\}$         | $\{q3\}$         |
| $q^3$ | $\phi$           | $\phi$           |



2) Minimize the following FA :

| State | $\delta(q, 0)$ | $\delta(q, 1)$ |
|-------|----------------|----------------|
| 1     | 2              | 3              |
| 2     | 4              | 5              |
| 3     | 6              | 7              |
| 4     | 4              | 5              |
| 5     | 6              | 7              |
| 6     | 4              | 5              |
| 7     | 6              | 7              |

4. Draw NFA- $\wedge$  using Kleens theorem.

$(00 + 1)^*(10)^*$

8

### SECTION – II

5. Attempt **any three** :

- 1) State and explain pumping lemma for Regular language.
- 2) Show that  $\{0^i 1^j | i \geq 1\}$  is not regular.
- 3) Explain the types of acceptance by PDA.
- 4) Design Turing Machine to accept language  $\{a, b\}^* \{ab\}$ .

12

6. Attempt **any one** :

- 1) Construct a DPDA accepting balanced string of brackets.
- 2) Design a Turing Machine to accept a language.

$L = \{a^n b^n | n \geq 1\}$ .

8

7. Explain Universal Turing Machine.

8





SLR-VB – 208

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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
MICROPROCESSORS**

Day and Date : Saturday, 20-5-2017

Max. Marks : 70

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All questions are compulsory.**
  - 4) Figures to **right** indicate **full** marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- 1) The register in the 8085 that is used to keep track of the memory address of the next op-code to be run in the program is the
    - a) Stack pointer
    - b) Program counter
    - c) Instruction pointer
    - d) Accumulator
  - 2) Ready pin of microprocessor is used
    - a) To indicate that the microprocessor is ready to receive inputs
    - b) To indicate that the microprocessor is ready to receive outputs
    - c) To introduce wait state
    - d) To provide direct memory access
  - 3) Which of the following is not a 8085 instruction ?
    - a) STAX B
    - b) STAX H
    - c) MOV A, A
    - d) MOV A, B
  - 4) DAA : Decimal Adjust Accumulator is a
    - a) 1 byte instruction
    - b) 2 byte instruction
    - c) 3 byte instruction
    - d) 4 byte instruction
  - 5) How many T state are required for ADI 8 bit data instruction ?
    - a) 2
    - b) 5
    - c) 9
    - d) 7
  - 6) A low memory can be connected to 8085 by using
    - a) INTR
    - b) HOLD
    - c) READY
    - d) None

P.T.O.



- 7) Number of machine cycle required for RET instruction in 8085 microprocessor is
- a) 1                      b) 2                      c) 3                      d) 5
- 8) Which of the following is a non vectored interrupt of 8085 ?
- a) RST 7.5              b) TRAP              c) INTR              d) RST 6.5
- 9) For SOD pin, \_\_\_\_\_ instruction is used to transmit serial data bit on SOD line.
- a) IN                      b) RIM                      c) SIM                      d) OUT
- 10) Which of the following is USART IC ?
- a) 8251                      b) 8255                      c) 8259                      d) 8085
- 11) 'Mode 1' of 8255 PPI is \_\_\_\_\_
- a) Simple I/O mode                      b) Strobed Bidirectional I/O  
c) Strobed I/O                      d) None of these
- 12) 8257 DMA controller uses \_\_\_\_\_ signal to isolate CPU and other devices from system bus.
- a) MARK                      b) TC                      c) AEN                      d) ADSTB
- 13) Vector address of RST 7.5 interrupt is \_\_\_\_\_
- a) 0024 H                      b) 003C H                      c) 0034 H                      d) 002C H
- 14) 8086 flag register has \_\_\_\_\_ no. of flags.
- a) 7                      b) 5                      c) 8                      d) 9
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
MICROPROCESSORS**

Day and Date : Saturday, 20-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) *All questions are compulsory.*  
2) *Figures to right indicate full marks.*

**SECTION – I**

2. Attempt **any 3** : **(3×4=12)**
- 1) Draw and explain 8085 clock circuit.
  - 2) List the important machine cycles and explain any one in detail.
  - 3) What are the different addressing modes ? Explain any three with example.
  - 4) Draw timing diagram of memory read without wait state.
3. Attempt **any 1**: **(1×8= 8)**
- 1) Draw and explain timing diagram of IN instruction.
  - 2) Write assembly language program to arrange numbers in ascending order.  
(Assume that array is stored from memory location 4050H)
4. Draw internal architecture of 8085 and explain features of 8085. **(1×8= 8)**

**SECTION – II**

5. Attempt **any 3** : **(3×4=12)**
- 1) What is BSR mode ? Write a program to set D7 bit of port C.
  - 2) Write a short note on DMA transfer.

**Set P**



3) Explain memory segmentation in 8086.

4) Write short note on 8251 USART.

6. Attempt **any one** :

**(1×8= 8)**

1) Draw and explain block diagram of 8257 DMA controller.

2) Explain synchronous and asynchronous transmission format.

7. Draw and explain block diagram of 8255.

**(1×8= 8)**

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SLR-VB – 208

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| Set | Q |
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
MICROPROCESSORS**

Day and Date : Saturday, 20-5-2017

Max. Marks : 70

Time : 10.00 a.m. to 1.00 p.m.

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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) **All questions are compulsory.**  
4) Figures to **right** indicate **full** marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(1×14=14)**

- 1) Which of the following is a non vectored interrupt of 8085 ?  
a) RST 7.5                      b) TRAP                      c) INTR                      d) RST 6.5
- 2) For SOD pin, \_\_\_\_\_ instruction is used to transmit serial data bit on SOD line.  
a) IN                      b) RIM                      c) SIM                      d) OUT
- 3) Which of the following is USART IC ?  
a) 8251                      b) 8255                      c) 8259                      d) 8085
- 4) 'Mode 1' of 8255 PPI is \_\_\_\_\_  
a) Simple I/O mode                      b) Strobed Bidirectional I/O  
c) Strobed I/O                      d) None of these
- 5) 8257 DMA controller uses \_\_\_\_\_ signal to isolate CPU and other devices from system bus.  
a) MARK                      b) TC                      c) AEN                      d) ADSTB
- 6) Vector address of RST 7.5 interrupt is \_\_\_\_\_  
a) 0024 H                      b) 003C H                      c) 0034 H                      d) 002C H

P.T.O.



- 7) 8086 flag register has \_\_\_\_\_ no. of flags.  
a) 7                                      b) 5                                      c) 8                                      d) 9
- 8) The register in the 8085 that is used to keep track of the memory address of the next op-code to be run in the program is the  
a) Stack pointer                                      b) Program counter  
c) Instruction pointer                                      d) Accumulator
- 9) Ready pin of microprocessor is used  
a) To indicate that the microprocessor is ready to receive inputs  
b) To indicate that the microprocessor is ready to receive outputs  
c) To introduce wait state  
d) To provide direct memory access
- 10) Which of the following is not a 8085 instruction ?  
a) STAX B                                      b) STAX H                                      c) MOV A, A                                      d) MOV A, B
- 11) DAA : Decimal Adjust Accumulator is a  
a) 1 byte instruction                                      b) 2 byte instruction  
c) 3 byte instruction                                      d) 4 byte instruction
- 12) How many T state are required for ADI 8 bit data instruction ?  
a) 2                                      b) 5                                      c) 9                                      d) 7
- 13) A low memory can be connected to 8085 by using  
a) INTR                                      b) HOLD                                      c) READY                                      d) None
- 14) Number of machine cycle required for RET instruction in 8085 microprocessor is  
a) 1                                      b) 2                                      c) 3                                      d) 5
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
MICROPROCESSORS**

Day and Date : Saturday, 20-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to right indicate full marks.**

**SECTION – I**

2. Attempt **any 3** : **(3×4=12)**
- 1) Draw and explain 8085 clock circuit.
  - 2) List the important machine cycles and explain any one in detail.
  - 3) What are the different addressing modes ? Explain any three with example.
  - 4) Draw timing diagram of memory read without wait state.
3. Attempt **any 1**: **(1×8= 8)**
- 1) Draw and explain timing diagram of IN instruction.
  - 2) Write assembly language program to arrange numbers in ascending order.  
(Assume that array is stored from memory location 4050H)
4. Draw internal architecture of 8085 and explain features of 8085. **(1×8= 8)**

**SECTION – II**

5. Attempt **any 3** : **(3×4=12)**
- 1) What is BSR mode ? Write a program to set D7 bit of port C.
  - 2) Write a short note on DMA transfer.

**Set Q**



3) Explain memory segmentation in 8086.

4) Write short note on 8251 USART.

6. Attempt **any one** :

**(1×8= 8)**

1) Draw and explain block diagram of 8257 DMA controller.

2) Explain synchronous and asynchronous transmission format.

7. Draw and explain block diagram of 8255.

**(1×8= 8)**

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SLR-VB – 208

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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
MICROPROCESSORS**

Day and Date : Saturday, 20-5-2017

Max. Marks : 70

Time : 10.00 a.m. to 1.00 p.m.

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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) **All questions are compulsory.**  
4) Figures to **right** indicate **full** marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(1×14=14)**

- 1) How many T state are required for ADI 8 bit data instruction ?  
a) 2                      b) 5                      c) 9                      d) 7
- 2) A low memory can be connected to 8085 by using  
a) INTR                      b) HOLD                      c) READY                      d) None
- 3) Number of machine cycle required for RET instruction in 8085 microprocessor is  
a) 1                      b) 2                      c) 3                      d) 5
- 4) Which of the following is a non vectored interrupt of 8085 ?  
a) RST 7.5                      b) TRAP                      c) INTR                      d) RST 6.5
- 5) For SOD pin, \_\_\_\_\_ instruction is used to transmit serial data bit on SOD line.  
a) IN                      b) RIM                      c) SIM                      d) OUT
- 6) Which of the following is USART IC ?  
a) 8251                      b) 8255                      c) 8259                      d) 8085
- 7) 'Mode 1' of 8255 PPI is \_\_\_\_\_  
a) Simple I/O mode                      b) Strobed Bidirectional I/O  
c) Strobed I/O                      d) None of these

P.T.O.



- 8) 8257 DMA controller uses \_\_\_\_\_ signal to isolate CPU and other devices from system bus.
- a) MARK                      b) TC                      c) AEN                      d) ADSTB
- 9) Vector address of RST 7.5 interrupt is \_\_\_\_\_
- a) 0024 H                      b) 003C H                      c) 0034 H                      d) 002C H
- 10) 8086 flag register has \_\_\_\_\_ no. of flags.
- a) 7                      b) 5                      c) 8                      d) 9
- 11) The register in the 8085 that is used to keep track of the memory address of the next op-code to be run in the program is the
- a) Stack pointer                      b) Program counter  
c) Instruction pointer                      d) Accumulator
- 12) Ready pin of microprocessor is used
- a) To indicate that the microprocessor is ready to receive inputs  
b) To indicate that the microprocessor is ready to receive outputs  
c) To introduce wait state  
d) To provide direct memory access
- 13) Which of the following is not a 8085 instruction ?
- a) STAX B                      b) STAX H                      c) MOV A, A                      d) MOV A, B
- 14) DAA : Decimal Adjust Accumulator is a
- a) 1 byte instruction                      b) 2 byte instruction  
c) 3 byte instruction                      d) 4 byte instruction
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
MICROPROCESSORS**

Day and Date : Saturday, 20-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to right indicate full marks.**

**SECTION – I**

2. Attempt **any 3** : **(3×4=12)**
- 1) Draw and explain 8085 clock circuit.
  - 2) List the important machine cycles and explain any one in detail.
  - 3) What are the different addressing modes ? Explain any three with example.
  - 4) Draw timing diagram of memory read without wait state.
3. Attempt **any 1**: **(1×8= 8)**
- 1) Draw and explain timing diagram of IN instruction.
  - 2) Write assembly language program to arrange numbers in ascending order.  
(Assume that array is stored from memory location 4050H)
4. Draw internal architecture of 8085 and explain features of 8085. **(1×8= 8)**

**SECTION – II**

5. Attempt **any 3** : **(3×4=12)**
- 1) What is BSR mode ? Write a program to set D7 bit of port C.
  - 2) Write a short note on DMA transfer.

**Set R**



3) Explain memory segmentation in 8086.

4) Write short note on 8251 USART.

6. Attempt **any one** :

**(1×8= 8)**

1) Draw and explain block diagram of 8257 DMA controller.

2) Explain synchronous and asynchronous transmission format.

7. Draw and explain block diagram of 8255.

**(1×8= 8)**

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SLR-VB – 208

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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
MICROPROCESSORS**

Day and Date : Saturday, 20-5-2017

Max. Marks : 70

Time : 10.00 a.m. to 1.00 p.m.

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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) **All questions are compulsory.**  
4) Figures to **right** indicate **full** marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) Which of the following is USART IC ?  
a) 8251                      b) 8255                      c) 8259                      d) 8085
- 2) 'Mode 1' of 8255 PPI is \_\_\_\_\_  
a) Simple I/O mode                      b) Strobed Bidirectional I/O  
c) Strobed I/O                      d) None of these
- 3) 8257 DMA controller uses \_\_\_\_\_ signal to isolate CPU and other devices from system bus.  
a) MARK                      b) TC                      c) AEN                      d) ADSTB
- 4) Vector address of RST 7.5 interrupt is \_\_\_\_\_  
a) 0024 H                      b) 003C H                      c) 0034 H                      d) 002C H
- 5) 8086 flag register has \_\_\_\_\_ no. of flags.  
a) 7                      b) 5                      c) 8                      d) 9
- 6) The register in the 8085 that is used to keep track of the memory address of the next op-code to be run in the program is the  
a) Stack pointer                      b) Program counter  
c) Instruction pointer                      d) Accumulator

P.T.O.



- 7) Ready pin of microprocessor is used
- a) To indicate that the microprocessor is ready to receive inputs
  - b) To indicate that the microprocessor is ready to receive outputs
  - c) To introduce wait state
  - d) To provide direct memory access
- 8) Which of the following is not a 8085 instruction ?
- a) STAX B
  - b) STAX H
  - c) MOV A, A
  - d) MOV A, B
- 9) DAA : Decimal Adjust Accumulator is a
- a) 1 byte instruction
  - b) 2 byte instruction
  - c) 3 byte instruction
  - d) 4 byte instruction
- 10) How many T state are required for ADI 8 bit data instruction ?
- a) 2
  - b) 5
  - c) 9
  - d) 7
- 11) A low memory can be connected to 8085 by using
- a) INTR
  - b) HOLD
  - c) READY
  - d) None
- 12) Number of machine cycle required for RET instruction in 8085 microprocessor is
- a) 1
  - b) 2
  - c) 3
  - d) 5
- 13) Which of the following is a non vectored interrupt of 8085 ?
- a) RST 7.5
  - b) TRAP
  - c) INTR
  - d) RST 6.5
- 14) For SOD pin, \_\_\_\_\_ instruction is used to transmit serial data bit on SOD line.
- a) IN
  - b) RIM
  - c) SIM
  - d) OUT
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
MICROPROCESSORS**

Day and Date : Saturday, 20-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) *All questions are compulsory.*  
2) *Figures to right indicate full marks.*

**SECTION – I**

2. Attempt **any 3** : **(3×4=12)**
- 1) Draw and explain 8085 clock circuit.
  - 2) List the important machine cycles and explain any one in detail.
  - 3) What are the different addressing modes ? Explain any three with example.
  - 4) Draw timing diagram of memory read without wait state.
3. Attempt **any 1**: **(1×8= 8)**
- 1) Draw and explain timing diagram of IN instruction.
  - 2) Write assembly language program to arrange numbers in ascending order.  
(Assume that array is stored from memory location 4050H)
4. Draw internal architecture of 8085 and explain features of 8085. **(1×8= 8)**

**SECTION – II**

5. Attempt **any 3** : **(3×4=12)**
- 1) What is BSR mode ? Write a program to set D7 bit of port C.
  - 2) Write a short note on DMA transfer.

**Set S**



3) Explain memory segmentation in 8086.

4) Write short note on 8251 USART.

6. Attempt **any one** :

**(1×8= 8)**

1) Draw and explain block diagram of 8257 DMA controller.

2) Explain synchronous and asynchronous transmission format.

7. Draw and explain block diagram of 8255.

**(1×8= 8)**

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**S.E. (CSE) (Part – II) (CGPA Pattern) Examination, 2017  
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- N.B. :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternative : 14
- 1) An infix expression can be converted to a postfix expression using a  
A) Stack                      B) Queue                      C) Dequeue                      D) None of these
  - 2) In a circular linked list \_\_\_\_\_ is most appropriate statement.  
A) components are all linked together in some sequential manner  
B) there is no beginning and no end  
C) components are arranged hierarchically  
D) forward and backward traversal within the list is permitted
  - 3) If the MAX\_SIZE is the size of the array used in the implementation of circular queue. How is rear manipulated while inserting an element in the queue ?  
A)  $rear=(rear\%1)+MAX\_SIZE$                       B)  $rear=rear\%(MAX\_SIZE+1)$   
C)  $rear=(rear+1)\%MAX\_SIZE$                       D)  $rear=rear+(1\%MAX\_SIZE)$
  - 4) Null pointer is used to tell  
A) End of linked list                      B) Empty pointer field of structure  
C) The linked list is empty                      D) All of the above
  - 5) Given a binary search tree, which traversal type would print the values in the nodes in sorted order ?  
A) Preorder                      B) Postorder  
C) Inorder                      D) None of the above



- 6) Which of the following types of expressions do not require precedence rules for evaluation ?
- A) Fully parenthesised infix expression
  - B) Postfix expression
  - C) Partially parenthesised infix expression
  - D) Prefix expression
- 7) In \_\_\_\_\_ all key values are present at leaf level.
- A) B+tree
  - B) B tree
  - C) Red black tree
  - D) AVL tree
- 8) In \_\_\_\_\_ the difference between the height of the left sub tree and height of right sub tree, for each node, is not more than one.
- A) BST
  - B) Complete Binary Tree
  - C) AVL-tree
  - D) B-tree
- 9) An adjacency matrix representation of a graph cannot contain information of
- A) Nodes
  - B) Edges
  - C) Direction of edges
  - D) Parallel edges
- 10) Consider a B+-tree in which degree of a node is 5. What is the minimum number of keys in root node ?
- A) 4
  - B) 2
  - C) 5
  - D) 3
- 11) For empty AVL tree if we insert node in order as : 45, 35, 39 then which of the following rotation is applied ?
- A) RL rotation
  - B) LR rotation
  - C) RR rotation
  - D) LL rotation
- 12) Topological sort can be apply to only
- A) Directed acyclic graph
  - B) Cyclic graph
  - C) All types of graph
  - D) None of the above
- 13) What is the maximum and minimum height of a binary tree with 28 nodes ?
- A) 28, 4
  - B) 23, 5
  - C) 14, 5
  - D) 28, 5
- 14) Which data structure allows deleting data elements from front and inserting at rear ?
- A) Stacks
  - B) Queues
  - C) Deques
  - D) Binary search tree
-



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**S.E. (CSE) (Part – II) (CGPA Pattern) Examination, 2017  
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

***Instruction: Attempt all Sections.***

**SECTION – I**

2. Attempt **any four** : **(4×4=16)**
- A) Convert the following expression into postfix form (show all steps)  
 $(X + (B/Q - (D * W ^ F) + G) * P)$
  - B) Define the structure for a node used for STACK and QUEUE in dynamic implementation. Show memory diagram.
  - C) What are different types of linked list ? Explain with diagram.
  - D) Draw the expression tree for  $5 * 7 - 6 + 90/2 + 6 * 2 - 4$  (state precedence rule).
  - E) Define following terms :
    - 1) Binary search tree
    - 2) Complete binary tree
    - 3) Strict binary tree
    - 4) Binary search tree (Draw diagram for example)
  - F) Write a short note on Queue and its operations.
3. Attempt **any two** : **(2×6=12)**
- A) Write an algorithm to convert the given infix expression to prefix expression. Show example.
  - B) Write a program to implement a circular queue without using count variable for boundary conditions.
  - C) Write a C function for deleting a given node from a Double Linked List. (State all required variables and parameters)
  - D) Write a C function to implement a recursive insertion for a Binary Search Tree. Consider all cases of insertion.  
(Insertion (NODE \* tree, int ele) and main( ) functions only)

**Set P**



## SECTION – II

4. Attempt **any four** : **(4×4=16)**
- A) What is graph ? With an example explain Adjacency Matrix Graph Representation.
  - B) What is Height Balanced Tree ? Why it is required ? Give example.
  - C) Define B tree. Give structure of nodes in B tree and its properties.
  - D) With proper diagram explain :
    - i) Cycle
    - ii) Weighted Graph
    - iii) DAG
    - iv) Shortest Path
  - E) What is Topological Sort ? Give its Algorithm.
  - F) What is multiway search tree ? List difference between binary search tree and multiway search tree.
5. Attempt **any two** : **(2×6=12)**
- A) Explain B + trees. Show the growth of B + tree of order 5 by inserting following keys :  
10, 5, 3, 7, 6, 4, 37, 11, 13, 15, 67, 53, 12, 16, 2  
Show the status of B + tree after every insertion. Also show the status after delete 11.
  - B) Write algorithms for DFS and BFS traversal of graph.
  - C) What is AVL tree ? Explain different cases of rotations with examples in order to balance the AVL tree during insertion.
  - D) With an example explain the Dijkstra shortest path algorithm.
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| Set | Q |
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**S.E. (CSE) (Part – II) (CGPA Pattern) Examination, 2017  
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- N.B. :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternative : 14
- 1) In \_\_\_\_\_ the difference between the height of the left sub tree and height of right sub tree, for each node, is not more than one.  
A) BST  
B) Complete Binary Tree  
C) AVL-tree  
D) B-tree
  - 2) An adjacency matrix representation of a graph cannot contain information of  
A) Nodes  
B) Edges  
C) Direction of edges  
D) Parallel edges
  - 3) Consider a B+-tree in which degree of a node is 5. What is the minimum number of keys in root node ?  
A) 4  
B) 2  
C) 5  
D) 3
  - 4) For empty AVL tree if we insert node in order as : 45, 35, 39 then which of the following rotation is applied ?  
A) RL rotation  
B) LR rotation  
C) RR rotation  
D) LL rotation
  - 5) Topological sort can be apply to only  
A) Directed acyclic graph  
B) Cyclic graph  
C) All types of graph  
D) None of the above
  - 6) What is the maximum and minimum height of a binary tree with 28 nodes ?  
A) 28, 4  
B) 23, 5  
C) 14, 5  
D) 28, 5



- 7) Which data structure allows deleting data elements from front and inserting at rear ?  
A) Stacks  
B) Queues  
C) Deques  
D) Binary search tree
- 8) An infix expression can be converted to a postfix expression using a  
A) Stack  
B) Queue  
C) Dequeue  
D) None of these
- 9) In a circular linked list \_\_\_\_\_ is most appropriate statement.  
A) components are all linked together in some sequential manner  
B) there is no beginning and no end  
C) components are arranged hierarchically  
D) forward and backward traversal within the list is permitted
- 10) If the MAX\_SIZE is the size of the array used in the implementation of circular queue. How is rear manipulated while inserting an element in the queue ?  
A)  $\text{rear} = (\text{rear} \% 1) + \text{MAX\_SIZE}$   
B)  $\text{rear} = \text{rear} \% (\text{MAX\_SIZE} + 1)$   
C)  $\text{rear} = (\text{rear} + 1) \% \text{MAX\_SIZE}$   
D)  $\text{rear} = \text{rear} + (1 \% \text{MAX\_SIZE})$
- 11) Null pointer is used to tell  
A) End of linked list  
B) Empty pointer field of structure  
C) The linked list is empty  
D) All of the above
- 12) Given a binary search tree, which traversal type would print the values in the nodes in sorted order ?  
A) Preorder  
B) Postorder  
C) Inorder  
D) None of the above
- 13) Which of the following types of expressions do not require precedence rules for evaluation ?  
A) Fully parenthesised infix expression  
B) Postfix expression  
C) Partially parenthesised infix expression  
D) Prefix expression
- 14) In \_\_\_\_\_ all key values are present at leaf level.  
A) B+tree  
B) B tree  
C) Red black tree  
D) AVL tree



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**S.E. (CSE) (Part – II) (CGPA Pattern) Examination, 2017  
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

***Instruction: Attempt all Sections.***

**SECTION – I**

2. Attempt **any four** : **(4×4=16)**
- A) Convert the following expression into postfix form (show all steps)  
 $(X + (B/Q - (D * W ^ F) + G) * P)$
  - B) Define the structure for a node used for STACK and QUEUE in dynamic implementation. Show memory diagram.
  - C) What are different types of linked list ? Explain with diagram.
  - D) Draw the expression tree for  $5 * 7 - 6 + 90/2 + 6 * 2 - 4$  (state precedence rule).
  - E) Define following terms :
    - 1) Binary search tree
    - 2) Complete binary tree
    - 3) Strict binary tree
    - 4) Binary search tree (Draw diagram for example)
  - F) Write a short note on Queue and its operations.
3. Attempt **any two** : **(2×6=12)**
- A) Write an algorithm to convert the given infix expression to prefix expression. Show example.
  - B) Write a program to implement a circular queue without using count variable for boundary conditions.
  - C) Write a C function for deleting a given node from a Double Linked List. (State all required variables and parameters)
  - D) Write a C function to implement a recursive insertion for a Binary Search Tree. Consider all cases of insertion.  
(Insertion (NODE \* tree, int ele) and main( ) functions only)

**Set Q**



## SECTION – II

4. Attempt **any four** : **(4×4=16)**
- A) What is graph ? With an example explain Adjacency Matrix Graph Representation.
  - B) What is Height Balanced Tree ? Why it is required ? Give example.
  - C) Define B tree. Give structure of nodes in B tree and its properties.
  - D) With proper diagram explain :
    - i) Cycle
    - ii) Weighted Graph
    - iii) DAG
    - iv) Shortest Path
  - E) What is Topological Sort ? Give its Algorithm.
  - F) What is multiway search tree ? List difference between binary search tree and multiway search tree.
5. Attempt **any two** : **(2×6=12)**
- A) Explain B + trees. Show the growth of B + tree of order 5 by inserting following keys :  
10, 5, 3, 7, 6, 4, 37, 11, 13, 15, 67, 53, 12, 16, 2  
Show the status of B + tree after every insertion. Also show the status after delete 11.
  - B) Write algorithms for DFS and BFS traversal of graph.
  - C) What is AVL tree ? Explain different cases of rotations with examples in order to balance the AVL tree during insertion.
  - D) With an example explain the Dijkstra shortest path algorithm.
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SLR-VB – 209

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**S.E. (CSE) (Part – II) (CGPA Pattern) Examination, 2017  
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- N.B. :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
- 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternative :

14

- 1) Given a binary search tree, which traversal type would print the values in the nodes in sorted order ?
  - A) Preorder
  - B) Postorder
  - C) Inorder
  - D) None of the above
- 2) Which of the following types of expressions do not require precedence rules for evaluation ?
  - A) Fully parenthesised infix expression
  - B) Postfix expression
  - C) Partially parenthesised infix expression
  - D) Prefix expression
- 3) In \_\_\_\_\_ all key values are present at leaf level.
  - A) B+tree
  - B) B tree
  - C) Red black tree
  - D) AVL tree
- 4) In \_\_\_\_\_ the difference between the height of the left sub tree and height of right sub tree, for each node, is not more than one.
  - A) BST
  - B) Complete Binary Tree
  - C) AVL-tree
  - D) B-tree
- 5) An adjacency matrix representation of a graph cannot contain information of
  - A) Nodes
  - B) Edges
  - C) Direction of edges
  - D) Parallel edges

P.T.O.



- 6) Consider a B+-tree in which degree of a node is 5. What is the minimum number of keys in root node ?  
A) 4                      B) 2                      C) 5                      D) 3
- 7) For empty AVL tree if we insert node in order as : 45, 35, 39 then which of the following rotation is applied ?  
A) RL rotation      B) LR rotation      C) RR rotation      D) LL rotation
- 8) Topological sort can be apply to only  
A) Directed acyclic graph                      B) Cyclic graph  
C) All types of graph                      D) None of the above
- 9) What is the maximum and minimum height of a binary tree with 28 nodes ?  
A) 28, 4                      B) 23, 5                      C) 14, 5                      D) 28, 5
- 10) Which data structure allows deleting data elements from front and inserting at rear ?  
A) Stacks                                              B) Queues  
C) Deques                                              D) Binary search tree
- 11) An infix expression can be converted to a postfix expression using a  
A) Stack                      B) Queue                      C) Dequeue                      D) None of these
- 12) In a circular linked list \_\_\_\_\_ is most appropriate statement.  
A) components are all linked together in some sequential manner  
B) there is no beginning and no end  
C) components are arranged hierarchically  
D) forward and backward traversal within the list is permitted
- 13) If the MAX\_SIZE is the size of the array used in the implementation of circular queue. How is rear manipulated while inserting an element in the queue ?  
A)  $rear=(rear\%1)+MAX\_SIZE$                       B)  $rear=rear\%(MAX\_SIZE+1)$   
C)  $rear=(rear+1)\%MAX\_SIZE$                       D)  $rear=rear+(1\%MAX\_SIZE)$
- 14) Null pointer is used to tell  
A) End of linked list                                              B) Empty pointer field of structure  
C) The linked list is empty                                              D) All of the above
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**S.E. (CSE) (Part – II) (CGPA Pattern) Examination, 2017  
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

***Instruction: Attempt all Sections.***

**SECTION – I**

2. Attempt **any four** : **(4×4=16)**
- A) Convert the following expression into postfix form (show all steps)  
 $(X + (B/Q - (D * W ^ F) + G) * P)$
  - B) Define the structure for a node used for STACK and QUEUE in dynamic implementation. Show memory diagram.
  - C) What are different types of linked list ? Explain with diagram.
  - D) Draw the expression tree for  $5 * 7 - 6 + 90/2 + 6 * 2 - 4$  (state precedence rule).
  - E) Define following terms :
    - 1) Binary search tree
    - 2) Complete binary tree
    - 3) Strict binary tree
    - 4) Binary search tree (Draw diagram for example)
  - F) Write a short note on Queue and its operations.
3. Attempt **any two** : **(2×6=12)**
- A) Write an algorithm to convert the given infix expression to prefix expression. Show example.
  - B) Write a program to implement a circular queue without using count variable for boundary conditions.
  - C) Write a C function for deleting a given node from a Double Linked List. (State all required variables and parameters)
  - D) Write a C function to implement a recursive insertion for a Binary Search Tree. Consider all cases of insertion.  
(Insertion (NODE \* tree, int ele) and main( ) functions only)

**Set R**



## SECTION – II

4. Attempt **any four** : **(4×4=16)**
- A) What is graph ? With an example explain Adjacency Matrix Graph Representation.
  - B) What is Height Balanced Tree ? Why it is required ? Give example.
  - C) Define B tree. Give structure of nodes in B tree and its properties.
  - D) With proper diagram explain :
    - i) Cycle
    - ii) Weighted Graph
    - iii) DAG
    - iv) Shortest Path
  - E) What is Topological Sort ? Give its Algorithm.
  - F) What is multiway search tree ? List difference between binary search tree and multiway search tree.
5. Attempt **any two** : **(2×6=12)**
- A) Explain B + trees. Show the growth of B + tree of order 5 by inserting following keys :  
10, 5, 3, 7, 6, 4, 37, 11, 13, 15, 67, 53, 12, 16, 2  
Show the status of B + tree after every insertion. Also show the status after delete 11.
  - B) Write algorithms for DFS and BFS traversal of graph.
  - C) What is AVL tree ? Explain different cases of rotations with examples in order to balance the AVL tree during insertion.
  - D) With an example explain the Dijkstra shortest path algorithm.
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SLR-VB – 209

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**S.E. (CSE) (Part – II) (CGPA Pattern) Examination, 2017  
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- N.B. :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternative : 14
- 1) Consider a B+-tree in which degree of a node is 5. What is the minimum number of keys in root node ?  
A) 4                      B) 2                      C) 5                      D) 3
  - 2) For empty AVL tree if we insert node in order as : 45, 35, 39 then which of the following rotation is applied ?  
A) RL rotation      B) LR rotation      C) RR rotation      D) LL rotation
  - 3) Topological sort can be apply to only  
A) Directed acyclic graph      B) Cyclic graph  
C) All types of graph      D) None of the above
  - 4) What is the maximum and minimum height of a binary tree with 28 nodes ?  
A) 28, 4                      B) 23, 5                      C) 14, 5                      D) 28, 5
  - 5) Which data structure allows deleting data elements from front and inserting at rear ?  
A) Stacks                      B) Queues  
C) Deques                      D) Binary search tree
  - 6) An infix expression can be converted to a postfix expression using a  
A) Stack                      B) Queue                      C) Dequeue                      D) None of these

P.T.O.



- 7) In a circular linked list \_\_\_\_\_ is most appropriate statement.
- A) components are all linked together in some sequential manner
  - B) there is no beginning and no end
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  - D) forward and backward traversal within the list is permitted
- 8) If the MAX\_SIZE is the size of the array used in the implementation of circular queue. How is rear manipulated while inserting an element in the queue ?
- A)  $\text{rear} = (\text{rear} \% 1) + \text{MAX\_SIZE}$
  - B)  $\text{rear} = \text{rear} \% (\text{MAX\_SIZE} + 1)$
  - C)  $\text{rear} = (\text{rear} + 1) \% \text{MAX\_SIZE}$
  - D)  $\text{rear} = \text{rear} + (1 \% \text{MAX\_SIZE})$
- 9) Null pointer is used to tell
- A) End of linked list
  - B) Empty pointer field of structure
  - C) The linked list is empty
  - D) All of the above
- 10) Given a binary search tree, which traversal type would print the values in the nodes in sorted order ?
- A) Preorder
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  - C) Inorder
  - D) None of the above
- 11) Which of the following types of expressions do not require precedence rules for evaluation ?
- A) Fully parenthesised infix expression
  - B) Postfix expression
  - C) Partially parenthesised infix expression
  - D) Prefix expression
- 12) In \_\_\_\_\_ all key values are present at leaf level.
- A) B+tree
  - B) B tree
  - C) Red black tree
  - D) AVL tree
- 13) In \_\_\_\_\_ the difference between the height of the left sub tree and height of right sub tree, for each node, is not more than one.
- A) BST
  - B) Complete Binary Tree
  - C) AVL-tree
  - D) B-tree
- 14) An adjacency matrix representation of a graph cannot contain information of
- A) Nodes
  - B) Edges
  - C) Direction of edges
  - D) Parallel edges
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**S.E. (CSE) (Part – II) (CGPA Pattern) Examination, 2017  
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

***Instruction: Attempt all Sections.***

**SECTION – I**

2. Attempt **any four** : **(4×4=16)**
- A) Convert the following expression into postfix form (show all steps)  
 $(X + (B/Q - (D * W ^ F) + G) * P)$
  - B) Define the structure for a node used for STACK and QUEUE in dynamic implementation. Show memory diagram.
  - C) What are different types of linked list ? Explain with diagram.
  - D) Draw the expression tree for  $5 * 7 - 6 + 90/2 + 6 * 2 - 4$  (state precedence rule).
  - E) Define following terms :
    - 1) Binary search tree
    - 2) Complete binary tree
    - 3) Strict binary tree
    - 4) Binary search tree (Draw diagram for example)
  - F) Write a short note on Queue and its operations.
3. Attempt **any two** : **(2×6=12)**
- A) Write an algorithm to convert the given infix expression to prefix expression. Show example.
  - B) Write a program to implement a circular queue without using count variable for boundary conditions.
  - C) Write a C function for deleting a given node from a Double Linked List. (State all required variables and parameters)
  - D) Write a C function to implement a recursive insertion for a Binary Search Tree. Consider all cases of insertion.  
(Insertion (NODE \* tree, int ele) and main( ) functions only)

**Set S**



## SECTION – II

4. Attempt **any four** : **(4×4=16)**
- A) What is graph ? With an example explain Adjacency Matrix Graph Representation.
  - B) What is Height Balanced Tree ? Why it is required ? Give example.
  - C) Define B tree. Give structure of nodes in B tree and its properties.
  - D) With proper diagram explain :
    - i) Cycle
    - ii) Weighted Graph
    - iii) DAG
    - iv) Shortest Path
  - E) What is Topological Sort ? Give its Algorithm.
  - F) What is multiway search tree ? List difference between binary search tree and multiway search tree.
5. Attempt **any two** : **(2×6=12)**
- A) Explain B + trees. Show the growth of B + tree of order 5 by inserting following keys :  
10, 5, 3, 7, 6, 4, 37, 11, 13, 15, 67, 53, 12, 16, 2  
Show the status of B + tree after every insertion. Also show the status after delete 11.
  - B) Write algorithms for DFS and BFS traversal of graph.
  - C) What is AVL tree ? Explain different cases of rotations with examples in order to balance the AVL tree during insertion.
  - D) With an example explain the Dijkstra shortest path algorithm.
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
DATA COMMUNICATION**

Day and Date : Thursday, 25-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**

- 1) To provide a flicker-free image without increasing the bandwidth requirement, a technique known as \_\_\_\_\_ is used.  
A) Interfacing                                      B) Interlacing  
C) Both (A) and (B)                                D) None of the above
- 2) \_\_\_\_\_ occurs because the velocity of propagation of a signal through a guided medium varies with frequency.  
A) Delay distortion                                B) Attenuation  
C) Noise                                                D) Both (A) and (B)
- 3) Nyquist formulation for capacity evaluation is given by  
A)  $C = 2B \log_2 M$                                 B)  $C = B \log_2 (1 + \text{SNR})$   
C)  $C = 2B \log_{10} M$                                 D)  $C = B \log_{10} (1 + \text{SNR})$
- 4) Which of the following noise is also called as white noise ?  
A) Impulse                                            B) Inter-modulation  
C) Crosstalk                                         D) Thermal
- 5) ATM networks are  
A) Connection oriented                            B) Connection less  
C) Both (A) and (B)                                D) None of the above
- 6) The AAL layer is split into a  
A) AAT and CS                                      B) AAP and SR  
C) SAR and CS                                      D) CS and OSI

P.T.O.





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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
DATA COMMUNICATION**

Day and Date : Thursday, 25-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**SECTION – I**

2. Attempt **any four** : **(4×4=16)**  
A) Describe Manchester and differential Manchester encoding.  
B) List the uses of computer network.  
C) Explain CRC with suitable example.  
D) Write a note on character stuffing.  
E) What is Attenuation ?
3. Attempt **any one** : **(6×1=6)**  
A) Write a note on ATM reference model.  
B) List and explain design issues of data link layer.
4. Attempt the following : **(6×1=6)**  
Explain Elementary Data Link Protocols.

**SECTION – II**

5. Attempt **any four** : **(4×4=16)**  
A) Explain ALOHA protocol and its types.  
B) Write a note on load shedding.  
C) Describe IPv4 addresses and discuss different classes of IP address.  
D) Describe working of limited contention protocol.  
E) Describe count to infinity problem.
6. Attempt **any one** : **(6×1=6)**  
A) Explain link state routing algorithm in detail.  
B) Explain leaky bucket and token bucket algorithm.
7. Attempt the following : **(6×1=6)**  
Explain collision free protocols.

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**Set P**





SLR-VB – 210

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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
DATA COMMUNICATION**

Day and Date : Thursday, 25-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(1×14=14)**

- 1) Which of the following methods corrects error ?  
A) CRC  
B) Parity checks  
C) Checksum  
D) Hamming Code
- 2) Which of the following protocols is collision-free protocol ?  
A) Bit-map protocol  
B) Pure ALOHA  
C) CSMA/CD  
D) CSMA
- 3) According to \_\_\_\_\_ if router J is on the minimum path from router I to router K, then the minimum path from J to K also falls along the same route.  
A) Bellman-Ford principle  
B) Ford-Fulkerson principle  
C) Optimality principle  
D) None of the above
- 4) 10Base2 cabling is also called as  
A) Thin Ethernet  
B) Thick Ethernet  
C) Base Ethernet  
D) None of the above
- 5) The variation in the packet arrival times is called  
A) Piggybacking  
B) Jitter  
C) Delayed delivery  
D) None of the above

P.T.O.





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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
DATA COMMUNICATION**

Day and Date : Thursday, 25-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**SECTION – I**

2. Attempt **any four** : **(4×4=16)**  
A) Describe Manchester and differential Manchester encoding.  
B) List the uses of computer network.  
C) Explain CRC with suitable example.  
D) Write a note on character stuffing.  
E) What is Attenuation ?
3. Attempt **any one** : **(6×1=6)**  
A) Write a note on ATM reference model.  
B) List and explain design issues of data link layer.
4. Attempt the following : **(6×1=6)**  
Explain Elementary Data Link Protocols.

**SECTION – II**

5. Attempt **any four** : **(4×4=16)**  
A) Explain ALOHA protocol and its types.  
B) Write a note on load shedding.  
C) Describe IPv4 addresses and discuss different classes of IP address.  
D) Describe working of limited contention protocol.  
E) Describe count to infinity problem.
6. Attempt **any one** : **(6×1=6)**  
A) Explain link state routing algorithm in detail.  
B) Explain leaky bucket and token bucket algorithm.
7. Attempt the following : **(6×1=6)**  
Explain collision free protocols.

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**Set Q**







SLR-VB – 210

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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
DATA COMMUNICATION**

Day and Date : Thursday, 25-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(1×14=14)**

- 1) ATM networks are
  - A) Connection oriented
  - B) Connection less
  - C) Both (A) and (B)
  - D) None of the above
- 2) The AAL layer is split into a
  - A) AAT and CS
  - B) AAP and SR
  - C) SAR and CS
  - D) CS and OSI
- 3) Unrestricted Simplex Protocol is also called as
  - A) utopia
  - B) ubscas
  - C) uspl
  - D) none of these
- 4) Which of the following methods corrects error ?
  - A) CRC
  - B) Parity checks
  - C) Checksum
  - D) Hamming Code
- 5) Which of the following protocols is collision-free protocol ?
  - A) Bit-map protocol
  - B) Pure ALOHA
  - C) CSMA/CD
  - D) CSMA
- 6) According to \_\_\_\_\_ if router J is on the minimum path from router I to router K, then the minimum path from J to K also falls along the same route.
  - A) Bellman-Ford principle
  - B) Ford-Fulkerson principle
  - C) Optimality principle
  - D) None of the above

P.T.O.



- 7) 10Base2 cabling is also called as  
A) Thin Ethernet  
B) Thick Ethernet  
C) Base Ethernet  
D) None of the above
- 8) The variation in the packet arrival times is called  
A) Piggybacking  
B) Jitter  
C) Delayed delivery  
D) None of the above
- 9) In load shedding newer packet is preferred to drop than older, this is also called as  
A) Wine  
B) Milk  
C) Water  
D) None of the above
- 10) In distance vector routing \_\_\_\_\_ packets are used to exchange information between routers.  
A) ECHO  
B) SYN  
C) FIN  
D) Any type of packet
- 11) To provide a flicker-free image without increasing the bandwidth requirement, a technique known as \_\_\_\_\_ is used.  
A) Interfacing  
B) Interlacing  
C) Both (A) and (B)  
D) None of the above
- 12) \_\_\_\_\_ occurs because the velocity of propagation of a signal through a guided medium varies with frequency.  
A) Delay distortion  
B) Attenuation  
C) Noise  
D) Both (A) and (B)
- 13) Nyquist formulation for capacity evaluation is given by  
A)  $C = 2B \log_2 M$   
B)  $C = B \log_2 (1 + \text{SNR})$   
C)  $C = 2B \log_{10} M$   
D)  $C = B \log_{10} (1 + \text{SNR})$
- 14) Which of the following noise is also called as white noise ?  
A) Impulse  
B) Inter-modulation  
C) Crosstalk  
D) Thermal
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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
DATA COMMUNICATION**

Day and Date : Thursday, 25-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**SECTION – I**

2. Attempt **any four** : **(4×4=16)**
- A) Describe Manchester and differential Manchester encoding.
  - B) List the uses of computer network.
  - C) Explain CRC with suitable example.
  - D) Write a note on character stuffing.
  - E) What is Attenuation ?
3. Attempt **any one** : **(6×1=6)**
- A) Write a note on ATM reference model.
  - B) List and explain design issues of data link layer.
4. Attempt the following : **(6×1=6)**
- Explain Elementary Data Link Protocols.

**SECTION – II**

5. Attempt **any four** : **(4×4=16)**
- A) Explain ALOHA protocol and its types.
  - B) Write a note on load shedding.
  - C) Describe IPv4 addresses and discuss different classes of IP address.
  - D) Describe working of limited contention protocol.
  - E) Describe count to infinity problem.
6. Attempt **any one** : **(6×1=6)**
- A) Explain link state routing algorithm in detail.
  - B) Explain leaky bucket and token bucket algorithm.
7. Attempt the following : **(6×1=6)**
- Explain collision free protocols.





SLR-VB – 210

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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
DATA COMMUNICATION**

Day and Date : Thursday, 25-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(1×14=14)**

- 1) According to \_\_\_\_\_ if router J is on the minimum path from router I to router K, then the minimum path from J to K also falls along the same route.
  - A) Bellman-Ford principle
  - B) Ford-Fulkerson principle
  - C) Optimality principle
  - D) None of the above
- 2) 10Base2 cabling is also called as
  - A) Thin Ethernet
  - B) Thick Ethernet
  - C) Base Ethernet
  - D) None of the above
- 3) The variation in the packet arrival times is called
  - A) Piggybacking
  - B) Jitter
  - C) Delayed delivery
  - D) None of the above
- 4) In load shedding newer packet is preferred to drop than older, this is also called as
  - A) Wine
  - B) Milk
  - C) Water
  - D) None of the above
- 5) In distance vector routing \_\_\_\_\_ packets are used to exchange information between routers.
  - A) ECHO
  - B) SYN
  - C) FIN
  - D) Any type of packet

P.T.O.





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**S.E. (CSE) (Part – II) (CGPA) Examination, 2017  
DATA COMMUNICATION**

Day and Date : Thursday, 25-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**SECTION – I**

2. Attempt **any four** : **(4×4=16)**
- A) Describe Manchester and differential Manchester encoding.
  - B) List the uses of computer network.
  - C) Explain CRC with suitable example.
  - D) Write a note on character stuffing.
  - E) What is Attenuation ?
3. Attempt **any one** : **(6×1=6)**
- A) Write a note on ATM reference model.
  - B) List and explain design issues of data link layer.
4. Attempt the following : **(6×1=6)**
- Explain Elementary Data Link Protocols.

**SECTION – II**

5. Attempt **any four** : **(4×4=16)**
- A) Explain ALOHA protocol and its types.
  - B) Write a note on load shedding.
  - C) Describe IPv4 addresses and discuss different classes of IP address.
  - D) Describe working of limited contention protocol.
  - E) Describe count to infinity problem.
6. Attempt **any one** : **(6×1=6)**
- A) Explain link state routing algorithm in detail.
  - B) Explain leaky bucket and token bucket algorithm.
7. Attempt the following : **(6×1=6)**
- Explain collision free protocols.







SLR-VB – 211

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**S.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 19-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose correct alternatives :

- 1) The complexity of quick sort algorithm  
A)  $O(n)$                       B)  $O(\log n)$                       C)  $O(n^2)$                       D)  $O(n \log n)$
- 2) Which of the following is not a hash function ?  
A) Division                      B) Chaining                      C) Mid-square                      D) Truncation
- 3) Two main measures of the efficiency of an algorithm are  
A) Processor and Memory                      B) Time and Space  
C) Complexity                      D) Date and Time
- 4) Rehashing is used for  
A) To avoid clustering                      B) To avoid collision  
C) To avoid traversal                      D) To avoid space wastage
- 5) The average number of comparisons in sequential search is  
A)  $2^k$                       B)  $\frac{n(n-1)}{2}$                       C)  $\frac{n(n+1)}{2}$                       D)  $\frac{n+1}{2}$
- 6) The complexity of binary search algorithm is  
A)  $O(n)$                       B)  $O(\log n)$                       C)  $O(n^2)$                       D)  $O(n \log n)$
- 7) Which of the following is not collision resolution technique ?  
A) Division                      B) Chaining  
C) Open Addressing                      D) All of above
- 8) Hashing is an  
A) Searching technique                      B) Sorting technique  
C) Both A) and B)                      D) None of these

P.T.O.



- 9) The tree traversal technique in which the root is traversed before its children is known as  
A) Post order traversal                      B) Pre order traversal  
C) In order traversal                         D) None of above
- 10) In a Threaded binary tree, left pointer of a leaf node contains the address of its \_\_\_\_\_ in inorder traversal.  
A) Successor            B) Parent            C) Predecessor    D) Left child
- 11) The function that maps key values to the position in table is called a  
A) Key function                                B) Mod function  
C) Recursive function                         D) Hash function
- 12) If in degree of a node is one and out degree is zero then that vertex is called as  
A) Connected            B) Isolated            C) Pendant            D) Child
- 13) A graph can be represented by following  
A) Incident matrix                              B) Adjacency matrix  
C) Both A) and B)                              D) None of these
- 14) In depth first search traversal of graph which data structure is used ?  
A) Stack                      B) Queue                      C) Priority queue    D) Binary tree
- 15) Which of the following is a balanced tree ?  
A) Binary Tree                                 B) Treaded Binary Tree  
C) B ++ Tree                                    D) AVL tree
- 16) Which of the following is not a valid balance factor for an AVL Tree ?  
A) 3                              B) 0                              C) - 1                              D) +1
- 17) If all the leaves are present at same level in binary tree, then it is called as  
A) Binary search tree                            B) Strictly BT  
C) Complete BT                                 D) None of these
- 18) The algorithm technique used in Dijkstra's algorithm is  
A) Divide and Conquer                         B) Dynamic Programming  
C) Greedy Technique                            D) None
- 19) In computer memory, a graph can be represented by following  
A) One D array            B) Two D array    C) Hash Table            D) None of these
- 20) A B-tree having order of 5 can have maximum of \_\_\_\_\_ number of keys.  
A) 1                              B) 4                              C) 5                              D) 6



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**S.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 19-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** : **20**
- 1) Explain Bubble sort with example.
  - 2) Explain shell sort with example.
  - 3) What is hash table, hash function and hash address ?
  - 4) Create a Binary Search Tree for following data :  
60,100, 150, 40, 75, 50, 48
  - 5) What do you mean by time complexity and space complexity ?
3. Answer **any one** of the following : **10**
- 1) Explain collision resolution techniques with example in detail.
  - 2) Explain different traversal techniques for tree traversal with example.
4. Explain sequential search and binary search with example. Write a program for sequential search. **10**

**SECTION – II**

5. Answer **any four** : **20**
- 1) What is AVL tree ? Discuss single rotations in AVL tree.
  - 2) Explain B Tree with example.
  - 3) Write a program for representing a graph using Adjacency matrix.
  - 4) Create AVL tree for following elements  
69, 80, 73, 40, 33, 70, 1, 86, 90
  - 5) What is Multiway search tree ? Explain with example.



6. Answer **any one** of the following : **10**
- 1) Write BFS traversal algorithm for graph. Give suitable example.
  - 2) Explain B + trees. Show the growth of B + tree of order 5 by inserting following keys  
10, 5, 3, 7, 6, 4, 37, 11, 13, 15, 67, 53, 12, 16, 2  
Show the status of B+ tree after every insertion.
7. Define following terminologies of the Graph with examples. **10**
- 1) Directed Graph
  - 2) Cyclic Graph
  - 3) Complete Graph
  - 4) In-degree of a node
  - 5) Path in a Graph.
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SLR-VB – 211

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**S.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 19-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose correct alternatives :

- 1) Which of the following is not a valid balance factor for an AVL Tree ?  
A) 3                      B) 0                      C) -1                      D) +1
- 2) If all the leaves are present at same level in binary tree, then it is called as  
A) Binary search tree                      B) Strictly BT  
C) Complete BT                      D) None of these
- 3) The algorithm technique used in Dijkstra's algorithm is  
A) Divide and Conquer                      B) Dynamic Programming  
C) Greedy Technique                      D) None
- 4) In computer memory, a graph can be represented by following  
A) One D array      B) Two D array      C) Hash Table      D) None of these
- 5) A B-tree having order of 5 can have maximum of \_\_\_\_\_ number of keys.  
A) 1                      B) 4                      C) 5                      D) 6
- 6) The complexity of quick sort algorithm  
A)  $O(n)$                       B)  $O(\log n)$                       C)  $O(n^2)$                       D)  $O(n \log n)$
- 7) Which of the following is not a hash function ?  
A) Division                      B) Chaining                      C) Mid-square                      D) Truncation
- 8) Two main measures of the efficiency of an algorithm are  
A) Processor and Memory                      B) Time and Space  
C) Complexity                      D) Date and Time
- 9) Rehashing is used for  
A) To avoid clustering                      B) To avoid collision  
C) To avoid traversal                      D) To avoid space wastage

P.T.O.



- 10) The average number of comparisons in sequential search is
- A)  $2^k$                       B)  $\frac{n(n-1)}{2}$                       C)  $\frac{n(n+1)}{2}$                       D)  $\frac{n+1}{2}$
- 11) The complexity of binary search algorithm is
- A)  $O(n)$                       B)  $O(\log n)$                       C)  $O(n^2)$                       D)  $O(n \log n)$
- 12) Which of the following is not collision resolution technique ?
- A) Division                      B) Chaining  
C) Open Addressing                      D) All of above
- 13) Hashing is an
- A) Searching technique                      B) Sorting technique  
C) Both A) and B)                      D) None of these
- 14) The tree traversal technique in which the root is traversed before its children is known as
- A) Post order traversal                      B) Pre order traversal  
C) In order traversal                      D) None of above
- 15) In a Threaded binary tree, left pointer of a leaf node contains the address of its \_\_\_\_\_ in inorder traversal.
- A) Successor                      B) Parent                      C) Predecessor                      D) Left child
- 16) The function that maps key values to the position in table is called a
- A) Key function                      B) Mod function  
C) Recursive function                      D) Hash function
- 17) If in degree of a node is one and out degree is zero then that vertex is called as
- A) Connected                      B) Isolated                      C) Pendant                      D) Child
- 18) A graph can be represented by following
- A) Incident matrix                      B) Adjacency matrix  
C) Both A) and B)                      D) None of these
- 19) In depth first search traversal of graph which data structure is used ?
- A) Stack                      B) Queue                      C) Priority queue                      D) Binary tree
- 20) Which of the following is a balanced tree ?
- A) Binary Tree                      B) Treaded Binary Tree  
C) B ++ Tree                      D) AVL tree



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**S.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 19-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** : **20**
- 1) Explain Bubble sort with example.
  - 2) Explain shell sort with example.
  - 3) What is hash table, hash function and hash address ?
  - 4) Create a Binary Search Tree for following data :  
60,100, 150, 40, 75, 50, 48
  - 5) What do you mean by time complexity and space complexity ?
3. Answer **any one** of the following : **10**
- 1) Explain collision resolution techniques with example in detail.
  - 2) Explain different traversal techniques for tree traversal with example.
4. Explain sequential search and binary search with example. Write a program for sequential search. **10**

**SECTION – II**

5. Answer **any four** : **20**
- 1) What is AVL tree ? Discuss single rotations in AVL tree.
  - 2) Explain B Tree with example.
  - 3) Write a program for representing a graph using Adjacency matrix.
  - 4) Create AVL tree for following elements  
69, 80, 73, 40, 33, 70, 1, 86, 90
  - 5) What is Multiway search tree ? Explain with example.



6. Answer **any one** of the following : **10**
- 1) Write BFS traversal algorithm for graph. Give suitable example.
  - 2) Explain B + trees. Show the growth of B + tree of order 5 by inserting following keys  
10, 5, 3, 7, 6, 4, 37, 11, 13, 15, 67, 53, 12, 16, 2  
Show the status of B+ tree after every insertion.
7. Define following terminologies of the Graph with examples. **10**
- 1) Directed Graph
  - 2) Cyclic Graph
  - 3) Complete Graph
  - 4) In-degree of a node
  - 5) Path in a Graph.
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SLR-VB – 211

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**S.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 19-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose correct alternatives :

- 1) The function that maps key values to the position in table is called a
  - A) Key function
  - B) Mod function
  - C) Recursive function
  - D) Hash function
- 2) If in degree of a node is one and out degree is zero then that vertex is called as
  - A) Connected
  - B) Isolated
  - C) Pendant
  - D) Child
- 3) A graph can be represented by following
  - A) Incident matrix
  - B) Adjacency matrix
  - C) Both A) and B)
  - D) None of these
- 4) In depth first search traversal of graph which data structure is used ?
  - A) Stack
  - B) Queue
  - C) Priority queue
  - D) Binary tree
- 5) Which of the following is a balanced tree ?
  - A) Binary Tree
  - B) Treaded Binary Tree
  - C) B ++ Tree
  - D) AVL tree
- 6) Which of the following is not a valid balance factor for an AVL Tree ?
  - A) 3
  - B) 0
  - C) - 1
  - D) +1
- 7) If all the leaves are present at same level in binary tree, then it is called as
  - A) Binary search tree
  - B) Strictly BT
  - C) Complete BT
  - D) None of these
- 8) The algorithm technique used in Dijkstra's algorithm is
  - A) Divide and Conquer
  - B) Dynamic Programming
  - C) Greedy Technique
  - D) None

P.T.O.



- 9) In computer memory, a graph can be represented by following  
A) One D array    B) Two D array    C) Hash Table    D) None of these
- 10) A B-tree having order of 5 can have maximum of \_\_\_\_\_ number of keys.  
A) 1                      B) 4                      C) 5                      D) 6
- 11) The complexity of quick sort algorithm  
A)  $O(n)$                       B)  $O(\log n)$                       C)  $O(n^2)$                       D)  $O(n \log n)$
- 12) Which of the following is not a hash function ?  
A) Division                      B) Chaining                      C) Mid-square                      D) Truncation
- 13) Two main measures of the efficiency of an algorithm are  
A) Processor and Memory                      B) Time and Space  
C) Complexity                      D) Date and Time
- 14) Rehashing is used for  
A) To avoid clustering                      B) To avoid collision  
C) To avoid traversal                      D) To avoid space wastage
- 15) The average number of comparisons in sequential search is  
A)  $2^k$                       B)  $\frac{n(n-1)}{2}$                       C)  $\frac{n(n+1)}{2}$                       D)  $\frac{n+1}{2}$
- 16) The complexity of binary search algorithm is  
A)  $O(n)$                       B)  $O(\log n)$                       C)  $O(n^2)$                       D)  $O(n \log n)$
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A) Division                      B) Chaining  
C) Open Addressing                      D) All of above
- 18) Hashing is an  
A) Searching technique                      B) Sorting technique  
C) Both A) and B)                      D) None of these
- 19) The tree traversal technique in which the root is traversed before its children is known as  
A) Post order traversal                      B) Pre order traversal  
C) In order traversal                      D) None of above
- 20) In a Threaded binary tree, left pointer of a leaf node contains the address of its \_\_\_\_\_ in inorder traversal.  
A) Successor                      B) Parent                      C) Predecessor                      D) Left child



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**S.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 19-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** : **20**
- 1) Explain Bubble sort with example.
  - 2) Explain shell sort with example.
  - 3) What is hash table, hash function and hash address ?
  - 4) Create a Binary Search Tree for following data :  
60,100, 150, 40, 75, 50, 48
  - 5) What do you mean by time complexity and space complexity ?
3. Answer **any one** of the following : **10**
- 1) Explain collision resolution techniques with example in detail.
  - 2) Explain different traversal techniques for tree traversal with example.
4. Explain sequential search and binary search with example. Write a program for sequential search. **10**

**SECTION – II**

5. Answer **any four** : **20**
- 1) What is AVL tree ? Discuss single rotations in AVL tree.
  - 2) Explain B Tree with example.
  - 3) Write a program for representing a graph using Adjacency matrix.
  - 4) Create AVL tree for following elements  
69, 80, 73, 40, 33, 70, 1, 86, 90
  - 5) What is Multiway search tree ? Explain with example.



6. Answer **any one** of the following : **10**
- 1) Write BFS traversal algorithm for graph. Give suitable example.
  - 2) Explain B + trees. Show the growth of B + tree of order 5 by inserting following keys  
10, 5, 3, 7, 6, 4, 37, 11, 13, 15, 67, 53, 12, 16, 2  
Show the status of B+ tree after every insertion.
7. Define following terminologies of the Graph with examples. **10**
- 1) Directed Graph
  - 2) Cyclic Graph
  - 3) Complete Graph
  - 4) In-degree of a node
  - 5) Path in a Graph.
-



SLR-VB – 211

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**S.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 19-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose correct alternatives :

- 1) The complexity of binary search algorithm is  
A)  $O(n)$                       B)  $O(\log n)$                       C)  $O(n^2)$                       D)  $O(n \log n)$
- 2) Which of the following is not collision resolution technique ?  
A) Division                      B) Chaining  
C) Open Addressing                      D) All of above
- 3) Hashing is an  
A) Searching technique                      B) Sorting technique  
C) Both A) and B)                      D) None of these
- 4) The tree traversal technique in which the root is traversed before its children is known as  
A) Post order traversal                      B) Pre order traversal  
C) In order traversal                      D) None of above
- 5) In a Threaded binary tree, left pointer of a leaf node contains the address of its \_\_\_\_\_ in inorder traversal.  
A) Successor                      B) Parent                      C) Predecessor                      D) Left child
- 6) The function that maps key values to the position in table is called a  
A) Key function                      B) Mod function  
C) Recursive function                      D) Hash function
- 7) If in degree of a node is one and out degree is zero then that vertex is called as  
A) Connected                      B) Isolated                      C) Pendant                      D) Child

P.T.O.





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**S.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 19-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** : **20**
- 1) Explain Bubble sort with example.
  - 2) Explain shell sort with example.
  - 3) What is hash table, hash function and hash address ?
  - 4) Create a Binary Search Tree for following data :  
60,100, 150, 40, 75, 50, 48
  - 5) What do you mean by time complexity and space complexity ?
3. Answer **any one** of the following : **10**
- 1) Explain collision resolution techniques with example in detail.
  - 2) Explain different traversal techniques for tree traversal with example.
4. Explain sequential search and binary search with example. Write a program for sequential search. **10**

**SECTION – II**

5. Answer **any four** : **20**
- 1) What is AVL tree ? Discuss single rotations in AVL tree.
  - 2) Explain B Tree with example.
  - 3) Write a program for representing a graph using Adjacency matrix.
  - 4) Create AVL tree for following elements  
69, 80, 73, 40, 33, 70, 1, 86, 90
  - 5) What is Multiway search tree ? Explain with example.



6. Answer **any one** of the following : **10**
- 1) Write BFS traversal algorithm for graph. Give suitable example.
  - 2) Explain B + trees. Show the growth of B + tree of order 5 by inserting following keys  
10, 5, 3, 7, 6, 4, 37, 11, 13, 15, 67, 53, 12, 16, 2  
Show the status of B+ tree after every insertion.
7. Define following terminologies of the Graph with examples. **10**
- 1) Directed Graph
  - 2) Cyclic Graph
  - 3) Complete Graph
  - 4) In-degree of a node
  - 5) Path in a Graph.
-





SLR-VB – 212

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**S.E. (CSE) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

**Instructions:** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer book Page No. 3. Each question carries one mark.*

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

**20**

- 1) Finite automata has
  - a) Finite memory
  - b) Finite control
  - c) Read only head
  - d) All a), b), c)
- 2) The language accepted by finite automata is
  - a) Context free
  - b) Regular
  - c) Non-regular
  - d) None
- 3) A FA can be used for
  - a) String recognition
  - b) Arithmetic operations
  - c) Both a) and b)
  - d) None
- 4) A finite automata is a/an
  - a) Acceptor
  - b) Computing device
  - c) Both a) and b)
  - d) None
- 5) Regular expressions are
  - a) Compact representation of strings
  - b) Representation of strings over some alphabet
  - c) Compact representation of certain set of strings in algebraic manner
  - d) None
- 6) If  $L_1$  and  $L_2$  are two regular languages, then concatenation of  $L_1$  and  $L_2$  is
  - a)  $L_1 L_2$
  - b)  $L_1.L_2$
  - c)  $L_1 \times L_2$
  - d) None
- 7) If  $G = (\{S\}, \{a\}, \{S \rightarrow SS\}, S)$  then language  $L(G)$  is
  - a)  $\phi$
  - b)  $aa(a)^*$
  - c)  $(aa)^*$
  - d) None
- 8) A FA with null string capability is known as
  - a) NFA
  - b) DFA
  - c)  $NFA-\wedge$
  - d) All

P.T.O.



- 9) The word 'FORMAL' in formal language means
- No meaning
  - The symbol used have well defined meaning
  - Only strings are significant
  - None of the above
- 10) A NFA can be enhanced to move forward without reading the input tape is
- True
  - False
- 11) A TM is more powerful than FA because
- Head movement is confinement to one direction
  - Head movement is in both direction (L, R)
  - It has capability to remember arbitrary long sequence of input string
  - All of above
- 12) A PDA behaves like a Tm when it has number of auxiliary memory
- 0
  - Exactly 2
  - 2 or more
  - Both a) and b)
- 13) The language  $L = \{a^n b^n a^n : n \geq 1\}$  is recognized by
- TM
  - 2PDA
  - Post Machine
  - All of the above
- 14) A turing can solve every computational problem only if given an infinite amount of time.
- True
  - False
- 15) UTM influenced the concept of
- Computability
  - Interpretive implementation of programming language
  - Program and data is in same memory
  - All of above
- 16) A UTM is a
- Programmable TM
  - Two-tape TM
  - Single tape TM
  - None
- 17) The CFL are accepted by
- Finite automaton
  - PDA
  - Turing machine only
  - None
- 18) A grammer G can be described by
- $(V_n, \Sigma, P, S)$
  - $(V_n, P, S)$
  - $(\Sigma, P, S)$
  - $(V_n, \Sigma, P)$
- 19) Which of the following statement is false ?
- Turing machine was developed by Alan turing
  - PDA is less powerful than turing machine
  - Both a) and b)
  - None of these
- 20) Choose the correct statement
- All regular grammars are CFG
  - All CHGs are CSG
  - Regular grammars are most restricted grammars
  - All of the above



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**S.E. (CSE) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** :

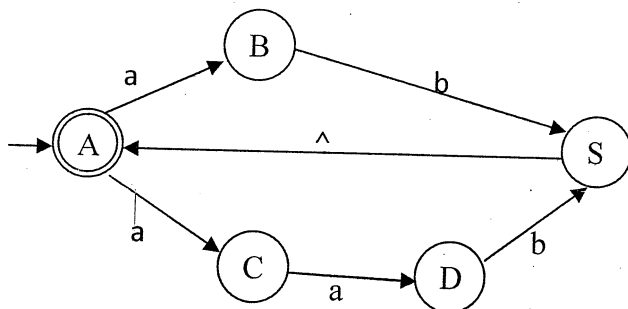
(5×4=20)

- 1) Define regular language with example.
- 2) Compare NFA and DFA.
- 3) Construct the DFA for  $(00)^*(11)^*$ .
- 4) Determine all the strings in  $L = ((a + b)^* b (a + ab)^*)$  of length less than four.
- 5) Define  $\wedge$ -closure. Explain an algorithm to calculate.
- 6) What is meant by direct proof ? Prove that  $\sqrt{2}$  is irrational.

3. Solve **any one** :

10

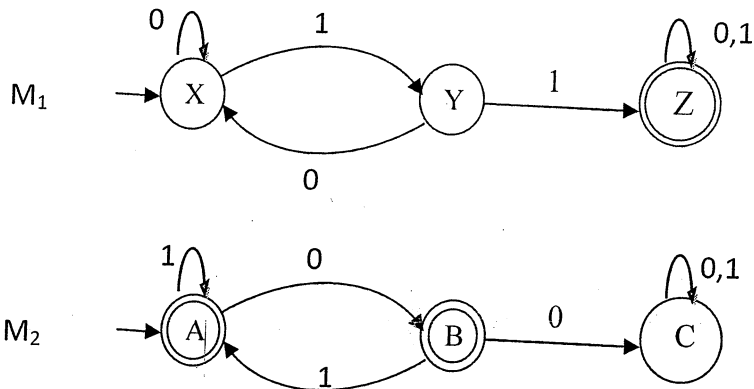
- 1) Convert the following NFA- $\wedge$  to DFA by applying steps in the algorithm and draw transition diagrams for equivalent NFA and DFA.





2) Following FAs recognize the languages  $L_1$  and  $L_2$ . Draw FAs recognizing languages

$$L_1 \cup L_2, L_1 \cap L_2, L_1 - L_2.$$



4. State and explain different types of grammar.

10

### SECTION – II

5. Solve **any four** :

(5×4=20)

- 1) What is PDA ? Explain with e.g.
- 2) Explain Basic Turing machine model.
- 3) Explain Multitape Turing machine.
- 4) State and explain pumping lemma for regular language.
- 5) Show that  $\{0^i 1^j \mid j \geq 1\}$  is not regular.
- 6) Explain the types of acceptance by PDA.

6. Attempt **any one** :

10

- 1) Explain in detail the variations in Turing Machine.
- 2) Construct a PDA for accepting Palindromes with marker over  $\{a, b\}$ .

7. Explain in detail Universal Turing machine.

10

Set P



SLR-VB – 212

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**S.E. (CSE) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

20

- 1) A UTM is a
  - a) Programmable TM
  - b) Two-tape TM
  - c) Single tape TM
  - d) None
- 2) The CFL are accepted by
  - a) Finite automaton
  - b) PDA
  - c) Turing machine only
  - d) None
- 3) A grammar G can be described by
  - a)  $(V_n, \Sigma, P, S)$
  - b)  $(V_n, P, S)$
  - c)  $(\Sigma, P, S)$
  - d)  $(V_n, \Sigma, P)$
- 4) Which of the following statement is false ?
  - a) Turing machine was developed by Alan Turing
  - b) PDA is less powerful than Turing machine
  - c) Both a) and b)
  - d) None of these
- 5) Choose the correct statement
  - a) All regular grammars are CFG
  - b) All CHGs are CSG
  - c) Regular grammars are most restricted grammars
  - d) All of the above
- 6) Finite automata has
  - a) Finite memory
  - b) Finite control
  - c) Read only head
  - d) All a), b), c)
- 7) The language accepted by finite automata is
  - a) Context free
  - b) Regular
  - c) Non-regular
  - d) None

P.T.O.



- 8) A FA can be used for  
 a) String recognition  
 b) Arithmetic operations  
 c) Both a) and b)  
 d) None
- 9) A finite automata is a/an  
 a) Acceptor  
 b) Computing device  
 c) Both a) and b)  
 d) None
- 10) Regular expressions are  
 a) Compact representation of strings  
 b) Representation of strings over some alphabet  
 c) Compact representation of certain set of strings in algebraic manner  
 d) None
- 11) If  $L_1$  and  $L_2$  are two regular languages, then concatenation of  $L_1$  and  $L_2$  is  
 a)  $L_1 L_2$   
 b)  $L_1.L_2$   
 c)  $L_1 \times L_2$   
 d) None
- 12) If  $G = (\{S\}, \{a\}, \{S \rightarrow SS\}, S)$  then language  $L(G)$  is  
 a)  $\phi$   
 b)  $aa(a)^*$   
 c)  $(aa)^*$   
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- 13) A FA with null string capability is known as  
 a) NFA  
 b) DFA  
 c) NFA- $\wedge$   
 d) All
- 14) The word 'FORMAL' in formal language means  
 a) No meaning  
 b) The symbol used have well defined meaning  
 c) Only strings are significant  
 d) None of the above
- 15) A NFA can be enhanced to move forward without reading the input tape is  
 a) True  
 b) False
- 16) A TM is more powerful than FA because  
 a) Head movement is confinement to one direction  
 b) Head movement is in both direction (L, R)  
 c) It has capability to remember arbitrary long sequence of input string  
 d) All of above
- 17) A PDA behaves like a Tm when it has number of auxiliary memory  
 a) 0  
 b) Exactly 2  
 c) 2 or more  
 d) Both a) and b)
- 18) The language  $L = \{a^n b^n a^n : n \geq 1\}$  is recognized by  
 a) TM  
 b) 2PDA  
 c) Post Machine  
 d) All of the above
- 19) A turing can solve every computational problem only if given an infinite amount of time.  
 a) True  
 b) False
- 20) UTM influenced the concept of  
 a) Computability  
 b) Interpretive implementation of programming language  
 c) Program and data is in same memory  
 d) All of above



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**S.E. (CSE) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** :

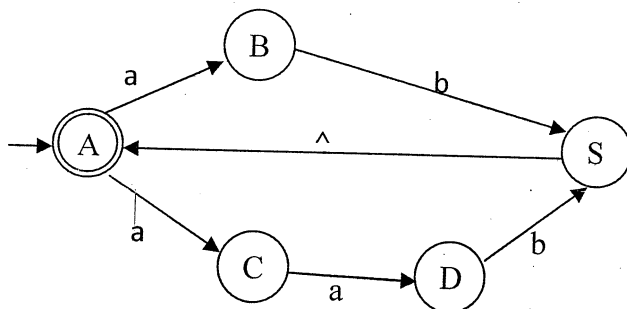
(5×4=20)

- 1) Define regular language with example.
- 2) Compare NFA and DFA.
- 3) Construct the DFA for  $(00)^*(11)^*$ .
- 4) Determine all the strings in  $L = ((a + b)^* b (a + ab)^*)$  of length less than four.
- 5) Define  $\wedge$ -closure. Explain an algorithm to calculate.
- 6) What is meant by direct proof ? Prove that  $\sqrt{2}$  is irrational.

3. Solve **any one** :

10

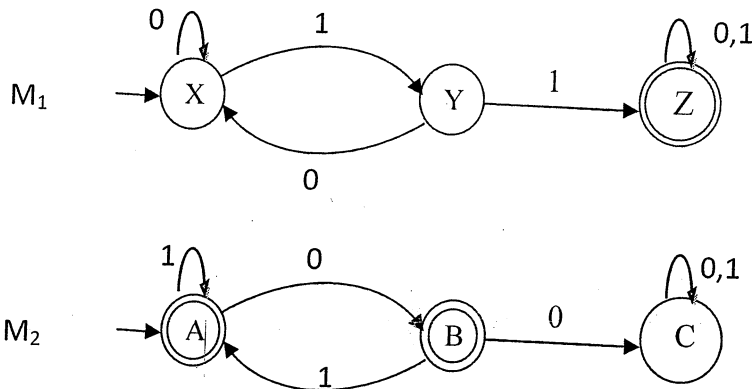
- 1) Convert the following NFA- $\wedge$  to DFA by applying steps in the algorithm and draw transition diagrams for equivalent NFA and DFA.





2) Following FAs recognize the languages  $L_1$  and  $L_2$ . Draw FAs recognizing languages

$L_1 \cup L_2, L_1 \cap L_2, L_1 - L_2$ .



4. State and explain different types of grammar.

10

### SECTION – II

5. Solve **any four** :

(5×4=20)

- 1) What is PDA ? Explain with e.g.
- 2) Explain Basic Turing machine model.
- 3) Explain Multitape Turing machine.
- 4) State and explain pumping lemma for regular language.
- 5) Show that  $\{0^i 1^j | i \geq 1\}$  is not regular.
- 6) Explain the types of acceptance by PDA.

6. Attempt **any one** :

10

- 1) Explain in detail the variations in Turing Machine.
- 2) Construct a PDA for accepting Palindromes with marker over  $\{a, b\}$ .

7. Explain in detail Universal Turing machine.

10

Set Q





SLR-VB – 212

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**S.E. (CSE) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

**Instructions:** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer book Page No. 3. Each question carries one mark.*

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

20

- 1) A TM is more powerful than FA because
  - a) Head movement is confinement to one direction
  - b) Head movement is in both direction (L, R)
  - c) It has capability to remember arbitrary long sequence of input string
  - d) All of above
- 2) A PDA behaves like a Tm when it has number of auxiliary memory
  - a) 0
  - b) Exactly 2
  - c) 2 or more
  - d) Both a) and b)
- 3) The language  $L = \{a^n b^n a^n : n \geq 1\}$  is recognized by
  - a) TM
  - b) 2PDA
  - c) Post Machine
  - d) All of the above
- 4) A turing can solve every computational problem only if given an infinite amount of time.
  - a) True
  - b) False
- 5) UTM influenced the concept of
  - a) Computability
  - b) Interpretive implementation of programming language
  - c) Program and data is in same memory
  - d) All of above
- 6) A UTM is a
  - a) Programmable TM
  - b) Two-tape TM
  - c) Single tape TM
  - d) None
- 7) The CFL are accepted by
  - a) Finite automaton
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  - c) Turing machine only
  - d) None

P.T.O.



- 8) A grammar  $G$  can be described by  
 a)  $(V_n, \Sigma, P, S)$     b)  $(V_n, P, S)$     c)  $(\Sigma, P, S)$     d)  $(V_n, \Sigma, P)$
- 9) Which of the following statement is false ?  
 a) Turing machine was developed by Alan Turing  
 b) PDA is less powerful than Turing machine  
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 d) None of these
- 10) Choose the correct statement  
 a) All regular grammars are CFG  
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 c) Regular grammars are most restricted grammars  
 d) All of the above
- 11) Finite automata has  
 a) Finite memory    b) Finite control    c) Read only head    d) All a), b), c)
- 12) The language accepted by finite automata is  
 a) Context free    b) Regular    c) Non-regular    d) None
- 13) A FA can be used for  
 a) String recognition    b) Arithmetic operations  
 c) Both a) and b)    d) None
- 14) A finite automata is a/an  
 a) Acceptor    b) Computing device  
 c) Both a) and b)    d) None
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 a) Compact representation of strings  
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- 16) If  $L_1$  and  $L_2$  are two regular languages, then concatenation of  $L_1$  and  $L_2$  is  
 a)  $L_1 L_2$     b)  $L_1.L_2$     c)  $L_1 \times L_2$     d) None
- 17) If  $G = (\{S\}, \{a\}, \{S \rightarrow SS\}, S)$  then language  $L(G)$  is  
 a)  $\phi$     b)  $aa(a)^*$     c)  $(aa)^*$     d) None
- 18) A FA with null string capability is known as  
 a) NFA    b) DFA    c) NFA- $\epsilon$     d) All
- 19) The word 'FORMAL' in formal language means  
 a) No meaning  
 b) The symbols used have well defined meaning  
 c) Only strings are significant  
 d) None of the above
- 20) A NFA can be enhanced to move forward without reading the input tape is  
 a) True    b) False



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**S.E. (CSE) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** :

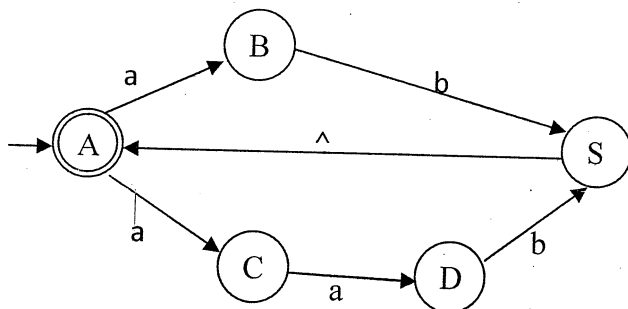
(5×4=20)

- 1) Define regular language with example.
- 2) Compare NFA and DFA.
- 3) Construct the DFA for  $(00)^*(11)^*$ .
- 4) Determine all the strings in  $L = ((a + b)^* b (a + ab)^*)$  of length less than four.
- 5) Define  $\wedge$ -closure. Explain an algorithm to calculate.
- 6) What is meant by direct proof ? Prove that  $\sqrt{2}$  is irrational.

3. Solve **any one** :

10

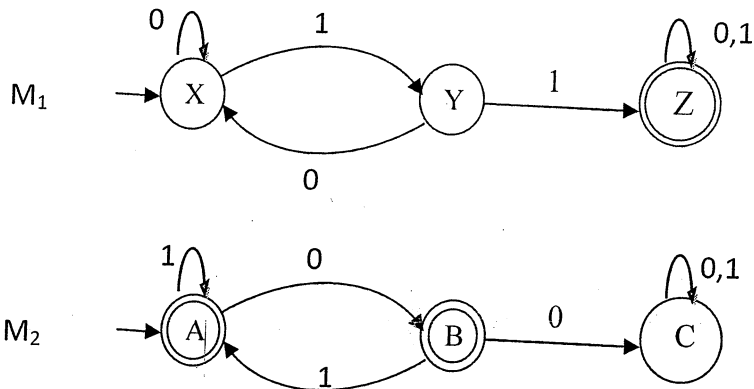
- 1) Convert the following NFA- $\wedge$  to DFA by applying steps in the algorithm and draw transition diagrams for equivalent NFA and DFA.





2) Following FAs recognize the languages  $L_1$  and  $L_2$ . Draw FAs recognizing languages

$L_1 \cup L_2, L_1 \cap L_2, L_1 - L_2$ .



4. State and explain different types of grammar.

10

### SECTION – II

5. Solve **any four** :

(5×4=20)

- 1) What is PDA ? Explain with e.g.
- 2) Explain Basic Turing machine model.
- 3) Explain Multitape Turing machine.
- 4) State and explain pumping lemma for regular language.
- 5) Show that  $\{0^i 1^j | i \geq 1\}$  is not regular.
- 6) Explain the types of acceptance by PDA.

6. Attempt **any one** :

10

- 1) Explain in detail the variations in Turing Machine.
- 2) Construct a PDA for accepting Palindromes with marker over  $\{a, b\}$ .

7. Explain in detail Universal Turing machine.

10

Set R



SLR-VB – 212

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**S.E. (CSE) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

**20**

- 1) If  $L_1$  and  $L_2$  are two regular languages, then concatenation of  $L_1$  and  $L_2$  is
  - a)  $L_1 L_2$
  - b)  $L_1.L_2$
  - c)  $L_1 \times L_2$
  - d) None
- 2) If  $G = (\{S\}, \{a\}, \{S \rightarrow SS\}, S)$  then language  $L(G)$  is
  - a)  $\phi$
  - b)  $aa(a)^*$
  - c)  $(aa)^*$
  - d) None
- 3) A FA with null string capability is known as
  - a) NFA
  - b) DFA
  - c)  $NFA-\wedge$
  - d) All
- 4) The word 'FORMAL' in formal language means
  - a) No meaning
  - b) The symbol used have well defined meaning
  - c) Only strings are significant
  - d) None of the above
- 5) A NFA can be enhanced to move forward without reading the input tape is
  - a) True
  - b) False
- 6) A TM is more powerful than FA because
  - a) Head movement is confinement to one direction
  - b) Head movement is in both direction (L, R)
  - c) It has capability to remember arbitrary long sequence of input string
  - d) All of above
- 7) A PDA behaves like a Tm when it has number of auxiliary memory
  - a) 0
  - b) Exactly 2
  - c) 2 or more
  - d) Both a) and b)
- 8) The language  $L = \{a^n b^n a^n : n \geq 1\}$  is recognized by
  - a) TM
  - b) 2PDA
  - c) Post Machine
  - d) All of the above

P.T.O.





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**S.E. (CSE) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** :

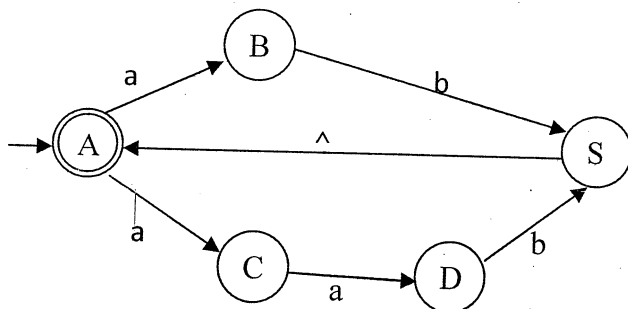
(5×4=20)

- 1) Define regular language with example.
- 2) Compare NFA and DFA.
- 3) Construct the DFA for  $(00)^*(11)^*$ .
- 4) Determine all the strings in  $L = ((a + b)^* b (a + ab)^*)$  of length less than four.
- 5) Define  $\wedge$ -closure. Explain an algorithm to calculate.
- 6) What is meant by direct proof ? Prove that  $\sqrt{2}$  is irrational.

3. Solve **any one** :

10

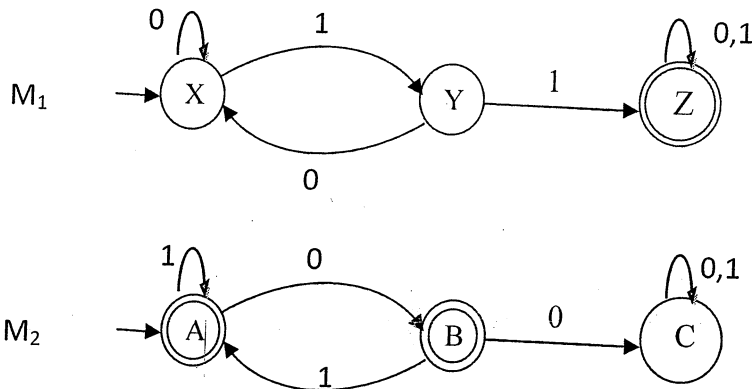
- 1) Convert the following NFA- $\wedge$  to DFA by applying steps in the algorithm and draw transition diagrams for equivalent NFA and DFA.





2) Following FAs recognize the languages  $L_1$  and  $L_2$ . Draw FAs recognizing languages

$L_1 \cup L_2, L_1 \cap L_2, L_1 - L_2$ .



4. State and explain different types of grammar.

10

### SECTION – II

5. Solve **any four** :

(5×4=20)

- 1) What is PDA ? Explain with e.g.
- 2) Explain Basic Turing machine model.
- 3) Explain Multitape Turing machine.
- 4) State and explain pumping lemma for regular language.
- 5) Show that  $\{0^i 1^j | i \geq 1\}$  is not regular.
- 6) Explain the types of acceptance by PDA.

6. Attempt **any one** :

10

- 1) Explain in detail the variations in Turing Machine.
- 2) Construct a PDA for accepting Palindromes with marker over  $\{a, b\}$ .

7. Explain in detail Universal Turing machine.

10





SLR-VB – 213

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**S.E. (Computer Science and Engineering) (Part – II) (Old)  
Examination, 2017  
COMPUTER NETWORK – I**

Day and Date : Wednesday, 24-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **20**
- 1) In \_\_\_\_\_ intensity maintains a constant level for some period and then changes to another constant level.  
a) Digital Signal    b) Analog Signal    c) Both a) and b)    d) None of these
  - 2) \_\_\_\_\_ is a least expensive guided transmission medium.  
a) Fiber Optic    b) Co-axial Cable    c) Twisted Pair    d) None of these
  - 3) Which of the following is main function of transport layer ?  
a) Node to Node delivery    b) Process to Process Communication  
c) Synchronization    d) None of these
  - 4) An N-bit unit containing data and check bits is called  
a) Word    b) Codeword    c) Checksum    d) Parity
  - 5) A simplest sort of signal is \_\_\_\_\_ signal, in which the same signal pattern repeats over time.  
a) Aperiodic    b) Periodic    c) Continuous    d) None of these
  - 6) A device which converts analog signal to digital signal is  
a) Modem    b) Telephone    c) CODEC    d) None of above
  - 7) Which of the following methods detects error ?  
a) Hamming Code    b) CRC    c) Parity bit    d) None of the above
  - 8) FTP and TELNET protocols are used in \_\_\_\_\_ Layer of TCP/IP.  
a) Transport    b) Internet    c) Application    d) Host-To-Network
  - 9) A set of layers and protocols is called  
a) Protocol    b) Network  
c) Interface    d) Network Architecture

P.T.O.



- 10) The sine wave is the fundamental \_\_\_\_\_ signal.  
a) Periodic                      b) Digital                      c) Aperiodic                      d) All above
- 11) MAC Address is of \_\_\_\_\_ bits.  
a) 32                                  b) 64                                  c) 48                                  d) 6
- 12) Distance vector routing is \_\_\_\_\_ type of algorithm.  
a) Static                              b) Dynamic                              c) Link                              d) None of above
- 13) Which policy of network layer affects congestion ?  
a) Flow Control                              b) ACK Policy  
c) Packet Discard Policy                              d) All above
- 14) \_\_\_\_\_ is used to synchronize receivers clock with sender.  
a) Pad                                  b) Preamble                                  c) Type                                  d) SOF
- 15) \_\_\_\_\_ is used when router cannot handle congestion.  
a) Jitter                                  b) RED                                  c) Load Shedding                                  d) Choke packet
- 16) Protocols in station listens for a carrier and act accordingly is called \_\_\_\_\_ protocol.  
a) ALOHA                                  b) Contention                                  c) Carrier Sense                                  d) All above
- 17) Limited contention protocol uses \_\_\_\_\_ at high load.  
a) CSMA                                  b) ALOHA  
c) Collision Free techniques                                  d) None of above
- 18) In 802.4 IEEE standard, logically stations are organized into  
a) Bus                                  b) Mesh                                  c) Ring                                  d) Star
- 19) In \_\_\_\_\_ algorithms, change their routing decisions to reflect changes in the topology or traffic.  
a) Static                                  b) Adaptive                                  c) Non-Adaptive                                  d) None of above
- 20) \_\_\_\_\_ always chooses the shortest path.  
a) Flooding                                  b) Flow-based  
c) Distance-vector                                  d) None of above
-



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**S.E. (Computer Science and Engineering) (Part – II) (Old)**  
**Examination, 2017**  
**COMPUTER NETWORK – I**

Day and Date : Wednesday, 24-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to *right* indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) What is protocol ? Why protocol hierarchy is needed ?
  - b) Explain time and frequency domain concepts.
  - c) What is flow control ? How it is handled by DLL ?
  - d) Differentiate between LAN, WAN and MAN.
  - e) Explain CRC with suitable example.
3. Attempt **any one** : **10**
- a) Draw and explain OSI reference model.
  - b) Describe DLL design issues in detail.
4. What is need of sliding window protocol ? Explain. Describe Go Back N and Selective Repeat Methods. **10**



## SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) What is CSMA ? Explain different types of CSMA.
  - b) Describe BGP in detail.
  - c) Explain Tunneling.
  - d) What is flooding ? What are the advantages and disadvantages of flooding ?
  - e) Describe IEEE standard 802.4 in detail.
6. What is adaptive and non adaptive routing ? Describe shortest path routing with algorithm and suitable example. **10**
- OR
- What is IP Protocol ? Explain IP header format. **10**
7. List and explain congestion control algorithms. **10**
-





- 9) An N-bit unit containing data and check bits is called  
a) Word                      b) Codeword              c) Checksum              d) Parity
- 10) A simplest sort of signal is \_\_\_\_\_ signal, in which the same signal pattern repeats over time.  
a) Aperiodic              b) Periodic              c) Continuous              d) None of these
- 11) A device which converts analog signal to digital signal is  
a) Modem                      b) Telephone              c) CODEC                      d) None of above
- 12) Which of the following methods detects error ?  
a) Hamming Code      b) CRC                      c) Parity bit                      d) None of the above
- 13) FTP and TELNET protocols are used in \_\_\_\_\_ Layer of TCP/IP.  
a) Transport              b) Internet                      c) Application                      d) Host-To-Network
- 14) A set of layers and protocols is called  
a) Protocol                                              b) Network  
c) Interface                                              d) Network Architecture
- 15) The sine wave is the fundamental \_\_\_\_\_ signal.  
a) Periodic                      b) Digital                      c) Aperiodic                      d) All above
- 16) MAC Address is of \_\_\_\_\_ bits.  
a) 32                              b) 64                              c) 48                              d) 6
- 17) Distance vector routing is \_\_\_\_\_ type of algorithm.  
a) Static                              b) Dynamic                      c) Link                              d) None of above
- 18) Which policy of network layer affects congestion ?  
a) Flow Control                                      b) ACK Policy  
c) Packet Discard Policy                              d) All above
- 19) \_\_\_\_\_ is used to synchronize receivers clock with sender.  
a) Pad                              b) Preamble                      c) Type                              d) SOF
- 20) \_\_\_\_\_ is used when router cannot handle congestion.  
a) Jitter                              b) RED                              c) Load Shedding                      d) Choke packet
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**S.E. (Computer Science and Engineering) (Part – II) (Old)**  
**Examination, 2017**  
**COMPUTER NETWORK – I**

Day and Date : Wednesday, 24-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to *right* indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) What is protocol ? Why protocol hierarchy is needed ?
  - b) Explain time and frequency domain concepts.
  - c) What is flow control ? How it is handled by DLL ?
  - d) Differentiate between LAN, WAN and MAN.
  - e) Explain CRC with suitable example.
3. Attempt **any one** : **10**
- a) Draw and explain OSI reference model.
  - b) Describe DLL design issues in detail.
4. What is need of sliding window protocol ? Explain. Describe Go Back N and Selective Repeat Methods. **10**



## SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) What is CSMA ? Explain different types of CSMA.
  - b) Describe BGP in detail.
  - c) Explain Tunneling.
  - d) What is flooding ? What are the advantages and disadvantages of flooding ?
  - e) Describe IEEE standard 802.4 in detail.
6. What is adaptive and non adaptive routing ? Describe shortest path routing with algorithm and suitable example. **10**
- OR
- What is IP Protocol ? Explain IP header format. **10**
7. List and explain congestion control algorithms. **10**
-





SLR-VB – 213

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**S.E. (Computer Science and Engineering) (Part – II) (Old)  
Examination, 2017  
COMPUTER NETWORK – I**

Day and Date : Wednesday, 24-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**20**

- 1) MAC Address is of \_\_\_\_\_ bits.  
a) 32                      b) 64                      c) 48                      d) 6
- 2) Distance vector routing is \_\_\_\_\_ type of algorithm.  
a) Static                      b) Dynamic                      c) Link                      d) None of above
- 3) Which policy of network layer affects congestion ?  
a) Flow Control                      b) ACK Policy  
c) Packet Discard Policy                      d) All above
- 4) \_\_\_\_\_ is used to synchronize receivers clock with sender.  
a) Pad                      b) Preamble                      c) Type                      d) SOF
- 5) \_\_\_\_\_ is used when router cannot handle congestion.  
a) Jitter                      b) RED                      c) Load Shedding                      d) Choke packet
- 6) Protocols in station listens for a carrier and act accordingly is called \_\_\_\_\_ protocol.  
a) ALOHA                      b) Contention                      c) Carrier Sense                      d) All above
- 7) Limited contention protocol uses \_\_\_\_\_ at high load.  
a) CSMA                      b) ALOHA  
c) Collision Free techniques                      d) None of above
- 8) In 802.4 IEEE standard, logically stations are organized into  
a) Bus                      b) Mesh                      c) Ring                      d) Star

P.T.O.



- 9) In \_\_\_\_\_ algorithms, change their routing decisions to reflect changes in the topology or traffic.  
a) Static                      b) Adaptive                      c) Non-Adaptive                      d) None of above
- 10) \_\_\_\_\_ always chooses the shortest path.  
a) Flooding                                              b) Flow-based  
c) Distance-vector                                              d) None of above
- 11) In \_\_\_\_\_ intensity maintains a constant level for some period and then changes to another constant level.  
a) Digital Signal                      b) Analog Signal                      c) Both a) and b)                      d) None of these
- 12) \_\_\_\_\_ is a least expensive guided transmission medium.  
a) Fiber Optic                      b) Co-axial Cable                      c) Twisted Pair                      d) None of these
- 13) Which of the following is main function of transport layer ?  
a) Node to Node delivery                                              b) Process to Process Communication  
c) Synchronization                                              d) None of these
- 14) An N-bit unit containing data and check bits is called  
a) Word                      b) Codeword                      c) Checksum                      d) Parity
- 15) A simplest sort of signal is \_\_\_\_\_ signal, in which the same signal pattern repeats over time.  
a) Aperiodic                      b) Periodic                      c) Continuous                      d) None of these
- 16) A device which converts analog signal to digital signal is  
a) Modem                      b) Telephone                      c) CODEC                      d) None of above
- 17) Which of the following methods detects error ?  
a) Hamming Code                      b) CRC                      c) Parity bit                      d) None of the above
- 18) FTP and TELNET protocols are used in \_\_\_\_\_ Layer of TCP/IP.  
a) Transport                      b) Internet                      c) Application                      d) Host-To-Network
- 19) A set of layers and protocols is called  
a) Protocol                                              b) Network  
c) Interface                                              d) Network Architecture
- 20) The sine wave is the fundamental \_\_\_\_\_ signal.  
a) Periodic                      b) Digital                      c) Aperiodic                      d) All above
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**S.E. (Computer Science and Engineering) (Part – II) (Old)**  
**Examination, 2017**  
**COMPUTER NETWORK – I**

Day and Date : Wednesday, 24-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to *right* indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) What is protocol ? Why protocol hierarchy is needed ?
  - b) Explain time and frequency domain concepts.
  - c) What is flow control ? How it is handled by DLL ?
  - d) Differentiate between LAN, WAN and MAN.
  - e) Explain CRC with suitable example.
3. Attempt **any one** : **10**
- a) Draw and explain OSI reference model.
  - b) Describe DLL design issues in detail.
4. What is need of sliding window protocol ? Explain. Describe Go Back N and Selective Repeat Methods. **10**



## SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) What is CSMA ? Explain different types of CSMA.
  - b) Describe BGP in detail.
  - c) Explain Tunneling.
  - d) What is flooding ? What are the advantages and disadvantages of flooding ?
  - e) Describe IEEE standard 802.4 in detail.
6. What is adaptive and non adaptive routing ? Describe shortest path routing with algorithm and suitable example. **10**
- OR
- What is IP Protocol ? Explain IP header format. **10**
7. List and explain congestion control algorithms. **10**
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SLR-VB – 213

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**S.E. (Computer Science and Engineering) (Part – II) (Old)  
Examination, 2017  
COMPUTER NETWORK – I**

Day and Date : Wednesday, 24-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **20**
- 1) A device which converts analog signal to digital signal is  
a) Mode                      b) Telephone              c) CODEK                      d) None of above
  - 2) Which of the following methods detects error ?  
a) Hamming Code    b) CRC                      c) Parity bit                      d) None of the above
  - 3) FTP and TELNET protocols are used in \_\_\_\_\_ Layer of TCP/IP.  
a) Transport              b) Internet                      c) Application                      d) Host-To-Network
  - 4) A set of layers and protocols is called  
a) Protocol                                              b) Network  
c) Interface                                              d) Network Architecture
  - 5) The sine wave is the fundamental \_\_\_\_\_ signal.  
a) Periodic                      b) Digital                      c) Aperiodic                      d) All above
  - 6) MAC Address is of \_\_\_\_\_ bits.  
a) 32                                      b) 64                                      c) 48                                      d) 6
  - 7) Distance vector routing is \_\_\_\_\_ type of algorithm.  
a) Static                                      b) Dynamic                      c) Link                                      d) None of above
  - 8) Which policy of network layer affects congestion ?  
a) Flow Control                                      b) ACK Policy  
c) Packet Discard Policy                                      d) All above
  - 9) \_\_\_\_\_ is used to synchronize receivers clock with sender.  
a) Pad                                      b) Preamble                      c) Type                                      d) SOF

P.T.O.



- 10) \_\_\_\_\_ is used when router cannot handle congestion.  
a) Jitter                      b) RED                      c) Load Shedding   d) Choke packet
- 11) Protocols in station listens for a carrier and act accordingly is called \_\_\_\_\_ protocol.  
a) ALOHA                      b) Contention              c) Carrier Sense   d) All above
- 12) Limited contention protocol uses \_\_\_\_\_ at high load.  
a) CSMA                                              b) ALOHA  
c) Collision Free techniques                      d) None of above
- 13) In 802.4 IEEE standard, logically stations are organized into  
a) Bus                              b) Mesh                      c) Ring                      d) Star
- 14) In \_\_\_\_\_ algorithms, change their routing decisions to reflect changes in the topology or traffic.  
a) Static                              b) Adaptive                      c) Non-Adaptive   d) None of above
- 15) \_\_\_\_\_ always chooses the shortest path.  
a) Flooding                                              b) Flow-based  
c) Distance-vector                                      d) None of above
- 16) In \_\_\_\_\_ intensity maintains a constant level for some period and then changes to another constant level.  
a) Digital Signal      b) Analog Signal   c) Both a) and b)   d) None of these
- 17) \_\_\_\_\_ is a least expensive guided transmission medium.  
a) Fiber Optic              b) Co-axial Cable   c) Twisted Pair      d) None of these
- 18) Which of the following is main function of transport layer ?  
a) Node to Node delivery                              b) Process to Process Communication  
c) Synchronization                                      d) None of these
- 19) An N-bit unit containing data and check bits is called  
a) Word                              b) Codeword              c) Checksum              d) Parity
- 20) A simplest sort of signal is \_\_\_\_\_ signal, in which the same signal pattern repeats over time.  
a) Aperiodic                      b) Periodic                      c) Continuous              d) None of these
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**S.E. (Computer Science and Engineering) (Part – II) (Old)**  
**Examination, 2017**  
**COMPUTER NETWORK – I**

Day and Date : Wednesday, 24-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to *right* indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) What is protocol ? Why protocol hierarchy is needed ?
  - b) Explain time and frequency domain concepts.
  - c) What is flow control ? How it is handled by DLL ?
  - d) Differentiate between LAN, WAN and MAN.
  - e) Explain CRC with suitable example.
3. Attempt **any one** : **10**
- a) Draw and explain OSI reference model.
  - b) Describe DLL design issues in detail.
4. What is need of sliding window protocol ? Explain. Describe Go Back N and Selective Repeat Methods.

**10**

**Set S**



## SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) What is CSMA ? Explain different types of CSMA.
  - b) Describe BGP in detail.
  - c) Explain Tunneling.
  - d) What is flooding ? What are the advantages and disadvantages of flooding ?
  - e) Describe IEEE standard 802.4 in detail.
6. What is adaptive and non adaptive routing ? Describe shortest path routing with algorithm and suitable example. **10**
- OR
- What is IP Protocol ? Explain IP header format. **10**
7. List and explain congestion control algorithms. **10**
-





**T.E. (CSE) (Part – I) (CGPA) Examination, 2017**  
**OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 4-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All** questions are **compulsory**.
  - 4) Assume suitable data **if** necessary.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option.

(1×14=14)

1) The process executes the following code

```
while (i<n)
{
    fork();
    i++;
}
```

The total number of child processes created is

- a) n                      b)  $2^n$                       c)  $2^{(n+1)} - 1$                       d)  $2^n - 1$
- 2) What is operating system ?
- a) collection of programs that manages hardware resources
  - b) system service provider to the application programs
  - c) link to interface the hardware and application programs
  - d) all of these
- 3) Which of these statements are true ?
- (i) the long term scheduler controls the degree of multiprogramming
  - (ii) the short term scheduler executes much less frequently, compare to long term scheduler.
- a) both the statements are false                      b) statement (i) is false and (ii) is true  
c) statement (i) is true and (ii) is false                      d) both the statements are true





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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 4-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instructions :** 1) **All questions are compulsory.**  
2) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any three** questions. **(3×4=12)**

- a) Define the system call. Explain the use of ‘fork’ system call.
- b) Draw and explain the steps performed by an operating system whenever interrupt occurs or it finds the request for execution of system call when it is busy in executing two user processes concurrently.
- c) List various scheduling criteria that can be used to choose specific algorithm. Also explain any two criteria.
- d) Consider two processes (cooperating) running concurrently in the system. Both processes access a shared data in their critical section. In order to avoid a race condition provide a solution to critical section problem that fulfills all the three requirements.

3. Attempt **any two** questions. **(2×8=16)**

- a) Explain the following operations
  - process creation
  - process termination
- b) Consider the following set of processes, with the length of the cpu burst time given in milliseconds,

| Process | Burst time |
|---------|------------|
| P1      | 10         |
| P2      | 1          |
| P3      | 2          |
| P4      | 1          |
| P5      | 5          |

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

Answer the following.

- i) Draw Gantt charts that illustrate the execution of these processes using FCFS and SJF - non preemptive.

**Set P**



- ii) What is average waiting time for both are scheduling algorithms in part (i) ?
- iii) What is average turnaround time for both the scheduling algorithms in part (i) ?
- iv) Which scheduling algorithm results in minimal average waiting time (over all process) ?

Represent waiting time and turnaround time for all processes in table.

- c) What is semaphore ? Give the definitions of wait and signal. Explain how it can be used to solve the bounded – buffer problem.

### SECTION – II

4. Attempt **any three** questions. **(3×4=12)**

- a) Explain 4 essential conditions for the occurrence of deadlock.
- b) Explain demand paging mechanism.
- c) Explain IO hardware.
- d) Write a note on thrashing.

5. Attempt **any two** questions. **(2×8=16)**

- a) Let there be five processes (P1 to P5) and three resource types A, B and C. Resource type A has 10 instances. Resource type B has 5 instances. Resource type C has 7 instances.

Suppose that at time,  $t_0$ , the following snapshot of the system has been taken :

|    | Allocation |   |   | Max |   |   | Available |   |   |
|----|------------|---|---|-----|---|---|-----------|---|---|
|    | A          | B | C | A   | B | C | A         | B | C |
| P1 | 0          | 1 | 0 | 7   | 5 | 3 | 3         | 3 | 2 |
| P2 | 2          | 0 | 0 | 3   | 2 | 2 |           |   |   |
| P3 | 3          | 0 | 2 | 9   | 0 | 2 |           |   |   |
| P4 | 2          | 1 | 1 | 2   | 2 | 2 |           |   |   |
| P5 | 0          | 0 | 2 | 4   | 3 | 3 |           |   |   |

- i) What is the content of need matrix ?
- ii) Find the safe sequence. Is this system safe at time  $t_0$  ?
- iii) If process, P2 sends one additional request, can it be granted ? Say P2 send the request of (1, 0, 2).
- b) Explain page replacement algorithm LRU, optimal algorithm. Calculate number of page fault with following reference (assume 3 frames are available to store pages).  
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
- c) Explain TLB hardware and address translation in paging.



SLR-VB – 214

Set **Q**

**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 4-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All questions are compulsory.**
  - 4) **Assume suitable data if necessary.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option. **(1×14=14)**
- 1) Line from process to resource in RAG indicates
    - a) process has requested a resource
    - b) process has acquired a resource
    - c) resource is not available
    - d) none of these
  - 2) System is in a safe state if
    - a) the system can allocate resources to each process in some order and still avoid a deadlock
    - b) there exist a safe sequence
    - c) both a) and b)
    - d) none of these
  - 3) \_\_\_\_\_ page replacement algorithm suffers from baladys anomaly.
    - a) FIFO
    - b) OPTIMAL
    - c) LRU
    - d) ALL
  - 4) Which of the following is true in case of fixed partitioning ?
    - a) internal and external fragmentation can occur
    - b) partitions are generated at system generation time
    - c) both a) and b)
    - d) none
  - 5) \_\_\_\_\_ page replacement algorithm generates least page faults.
    - a) LRU
    - b) Optimal
    - c) FIFO
    - d) MFU
  - 6) Translation look ahead buffer is fast \_\_\_\_\_ memory.
    - a) associative
    - b) permanent
    - c) RAM
    - d) secondary

P.T.O.



- 7) Hardware to measure an elapsed time and to trigger operations is called a
- a) programmable interval timer
  - b) counter
  - c) interrupt
  - d) trigger

- 8) The process executes the following code

```
while (i<n)
{
    fork( );
    i++;
}
```

The total number of child processes created is

- a) n
  - b)  $2^n$
  - c)  $2^{(n+1)} - 1$
  - d)  $2^n - 1$
- 9) What is operating system ?
- a) collection of programs that manages hardware resources
  - b) system service provider to the application programs
  - c) link to interface the hardware and application programs
  - d) all of these
- 10) Which of these statements are true ?
- (i) the long term scheduler controls the degree of multiprogramming
  - (ii) the short term scheduler executes much less frequently, compare to long term scheduler.
- a) both the statements are false
  - b) statement (i) is false and (ii) is true
  - c) statement (i) is true and (ii) is false
  - d) both the statements are true
- 11) On the occurrence of an interrupt in a system process needs to change its state from \_\_\_\_\_ to \_\_\_\_\_
- a) running to ready
  - b) waiting to ready
  - c) running to terminated
  - d) running to waiting
- 12) Time quantum is defined in
- a) SJF scheduling algorithm
  - b) FCFS scheduling algorithm
  - c) RR scheduling algorithm
  - d) Priority scheduling algorithm
- 13) A solution to the critical section problem must satisfy which of the following condition ?
- a) mutual exclusion
  - b) progress
  - c) bounded waiting
  - d) all of these
- 14) Which of the following is a synchronization tool ?
- a) pipe
  - b) semaphore
  - c) socket
  - d) thread



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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 4-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instructions :** 1) **All questions are compulsory.**  
2) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any three** questions. **(3×4=12)**

- a) Define the system call. Explain the use of ‘fork’ system call.
- b) Draw and explain the steps performed by an operating system whenever interrupt occurs or it finds the request for execution of system call when it is busy in executing two user processes concurrently.
- c) List various scheduling criteria that can be used to choose specific algorithm. Also explain any two criteria.
- d) Consider two processes (cooperating) running concurrently in the system. Both processes access a shared data in their critical section. In order to avoid a race condition provide a solution to critical section problem that fulfills all the three requirements.

3. Attempt **any two** questions. **(2×8=16)**

- a) Explain the following operations
  - process creation
  - process termination
- b) Consider the following set of processes, with the length of the cpu burst time given in milliseconds,

| Process | Burst time |
|---------|------------|
| P1      | 10         |
| P2      | 1          |
| P3      | 2          |
| P4      | 1          |
| P5      | 5          |

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

Answer the following.

- i) Draw Gantt charts that illustrate the execution of these processes using FCFS and SJF - non preemptive.

**Set Q**



- ii) What is average waiting time for both are scheduling algorithms in part (i) ?
- iii) What is average turnaround time for both the scheduling algorithms in part (i) ?
- iv) Which scheduling algorithm results in minimal average waiting time (over all process) ?

Represent waiting time and turnaround time for all processes in table.

- c) What is semaphore ? Give the definitions of wait and signal. Explain how it can be used to solve the bounded – buffer problem.

### SECTION – II

4. Attempt **any three** questions. **(3×4=12)**

- a) Explain 4 essential conditions for the occurrence of deadlock.
- b) Explain demand paging mechanism.
- c) Explain IO hardware.
- d) Write a note on thrashing.

5. Attempt **any two** questions. **(2×8=16)**

- a) Let there be five processes (P1 to P5) and three resource types A, B and C. Resource type A has 10 instances. Resource type B has 5 instances. Resource type C has 7 instances.

Suppose that at time,  $t_0$ , the following snapshot of the system has been taken :

|    | Allocation |   |   | Max |   |   | Available |   |   |
|----|------------|---|---|-----|---|---|-----------|---|---|
|    | A          | B | C | A   | B | C | A         | B | C |
| P1 | 0          | 1 | 0 | 7   | 5 | 3 | 3         | 3 | 2 |
| P2 | 2          | 0 | 0 | 3   | 2 | 2 |           |   |   |
| P3 | 3          | 0 | 2 | 9   | 0 | 2 |           |   |   |
| P4 | 2          | 1 | 1 | 2   | 2 | 2 |           |   |   |
| P5 | 0          | 0 | 2 | 4   | 3 | 3 |           |   |   |

- i) What is the content of need matrix ?
- ii) Find the safe sequence. Is this system safe at time  $t_0$  ?
- iii) If process, P2 sends one additional request, can it be granted ? Say P2 send the request of (1, 0, 2).
- b) Explain page replacement algorithm LRU, optimal algorithm. Calculate number of page fault with following reference (assume 3 frames are available to store pages).  
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
- c) Explain TLB hardware and address translation in paging.





SLR-VB – 214

Set **R**

**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 4-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All questions are compulsory.**
  - 4) Assume suitable data **if necessary**.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option.

**(1×14=14)**

- 1) Time quantum is defined in
  - a) SJF scheduling algorithm
  - b) FCFS scheduling algorithm
  - c) RR scheduling algorithm
  - d) Priority scheduling algorithm
- 2) A solution to the critical section problem must satisfy which of the following condition ?
  - a) mutual exclusion
  - b) progress
  - c) bounded waiting
  - d) all of these
- 3) Which of the following is a synchronization tool ?
  - a) pipe
  - b) semaphore
  - c) socket
  - d) thread
- 4) Line from process to resource in RAG indicates
  - a) process has requested a resource
  - b) process has acquired a resource
  - c) resource is not available
  - d) none of these
- 5) System is in a safe state if
  - a) the system can allocate resources to each process in some order and still avoid a deadlock
  - b) there exist a safe sequence
  - c) both a) and b)
  - d) none of these
- 6) \_\_\_\_\_ page replacement algorithm suffers from baladys anomaly.
  - a) FIFO
  - b) OPTIMAL
  - c) LRU
  - d) ALL

P.T.O.



- 7) Which of the following is true in case of fixed partitioning ?
- internal and external fragmentation can occur
  - partitions are generated at system generation time
  - both a) and b)
  - none
- 8) \_\_\_\_\_ page replacement algorithm generates least page faults.
- LRU
  - Optimal
  - FIFO
  - MFU
- 9) Translation look ahead buffer is fast \_\_\_\_\_ memory.
- associative
  - permanent
  - RAM
  - secondary
- 10) Hardware to measure an elapsed time and to trigger operations is called a
- programmable interval timer
  - counter
  - interrupt
  - trigger
- 11) The process executes the following code
- ```
while (i<n)
{
    fork();
    i++;
}
```
- The total number of child processes created is
- n
  - $2^n$
  - $2^{(n+1)} - 1$
  - $2^n - 1$
- 12) What is operating system ?
- collection of programs that manages hardware resources
  - system service provider to the application programs
  - link to interface the hardware and application programs
  - all of these
- 13) Which of these statements are true ?
- the long term scheduler controls the degree of multiprogramming
  - the short term scheduler executes much less frequently, compare to long term scheduler.
- both the statements are false
  - statement (i) is false and (ii) is true
  - statement (i) is true and (ii) is false
  - both the statements are true
- 14) On the occurrence of an interrupt in a system process needs to change its state from \_\_\_\_\_ to \_\_\_\_\_
- running to ready
  - waiting to ready
  - running to terminated
  - running to waiting



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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 4-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instructions :** 1) **All questions are compulsory.**  
2) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any three** questions. **(3×4=12)**

- a) Define the system call. Explain the use of ‘fork’ system call.
- b) Draw and explain the steps performed by an operating system whenever interrupt occurs or it finds the request for execution of system call when it is busy in executing two user processes concurrently.
- c) List various scheduling criteria that can be used to choose specific algorithm. Also explain any two criteria.
- d) Consider two processes (cooperating) running concurrently in the system. Both processes access a shared data in their critical section. In order to avoid a race condition provide a solution to critical section problem that fulfills all the three requirements.

3. Attempt **any two** questions. **(2×8=16)**

- a) Explain the following operations
  - process creation
  - process termination
- b) Consider the following set of processes, with the length of the cpu burst time given in milliseconds,

| Process | Burst time |
|---------|------------|
| P1      | 10         |
| P2      | 1          |
| P3      | 2          |
| P4      | 1          |
| P5      | 5          |

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

Answer the following.

- i) Draw Gantt charts that illustrate the execution of these processes using FCFS and SJF - non preemptive.

**Set R**



- ii) What is average waiting time for both are scheduling algorithms in part (i) ?
- iii) What is average turnaround time for both the scheduling algorithms in part (i) ?
- iv) Which scheduling algorithm results in minimal average waiting time (over all process) ?

Represent waiting time and turnaround time for all processes in table.

- c) What is semaphore ? Give the definitions of wait and signal. Explain how it can be used to solve the bounded – buffer problem.

### SECTION – II

4. Attempt **any three** questions. **(3×4=12)**

- a) Explain 4 essential conditions for the occurrence of deadlock.
- b) Explain demand paging mechanism.
- c) Explain IO hardware.
- d) Write a note on thrashing.

5. Attempt **any two** questions. **(2×8=16)**

- a) Let there be five processes (P1 to P5) and three resource types A, B and C. Resource type A has 10 instances. Resource type B has 5 instances. Resource type C has 7 instances.

Suppose that at time,  $t_0$ , the following snapshot of the system has been taken :

|    | Allocation |   |   | Max |   |   | Available |   |   |
|----|------------|---|---|-----|---|---|-----------|---|---|
|    | A          | B | C | A   | B | C | A         | B | C |
| P1 | 0          | 1 | 0 | 7   | 5 | 3 | 3         | 3 | 2 |
| P2 | 2          | 0 | 0 | 3   | 2 | 2 |           |   |   |
| P3 | 3          | 0 | 2 | 9   | 0 | 2 |           |   |   |
| P4 | 2          | 1 | 1 | 2   | 2 | 2 |           |   |   |
| P5 | 0          | 0 | 2 | 4   | 3 | 3 |           |   |   |

- i) What is the content of need matrix ?
- ii) Find the safe sequence. Is this system safe at time  $t_0$  ?
- iii) If process, P2 sends one additional request, can it be granted ? Say P2 send the request of (1, 0, 2).
- b) Explain page replacement algorithm LRU, optimal algorithm. Calculate number of page fault with following reference (assume 3 frames are available to store pages).  
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
- c) Explain TLB hardware and address translation in paging.



**T.E. (CSE) (Part – I) (CGPA) Examination, 2017**  
**OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 4-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All** questions are **compulsory**.
  - 4) Assume suitable data **if** necessary.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option.

**(1×14=14)**

- 1) \_\_\_\_\_ page replacement algorithm suffers from baladys anomaly.  
a) FIFO                      b) OPTIMAL                      c) LRU                      d) ALL
- 2) Which of the following is true in case of fixed partitioning ?  
a) internal and external fragmentation can occur  
b) partitions are generated at system generation time  
c) both a) and b)  
d) none
- 3) \_\_\_\_\_ page replacement algorithm generates least page faults.  
a) LRU                      b) Optimal                      c) FIFO                      d) MFU
- 4) Translation look ahead buffer is fast \_\_\_\_\_ memory.  
a) associative                      b) permanent                      c) RAM                      d) secondary
- 5) Hardware to measure an elapsed time and to trigger operations is called a  
a) programmable interval timer                      b) counter  
c) interrupt                      d) trigger
- 6) The process executes the following code  
    while (i<n)  
    {  
        fork();  
        i++;  
    }  
The total number of child processes created is  
a) n                      b)  $2^n$                       c)  $2^{(n+1)} - 1$                       d)  $2^n - 1$



- 7) What is operating system ?
- a) collection of programs that manages hardware resources
  - b) system service provider to the application programs
  - c) link to interface the hardware and application programs
  - d) all of these
- 8) Which of these statements are true ?
- (i) the long term scheduler controls the degree of multiprogramming
  - (ii) the short term scheduler executes much less frequently, compare to long term scheduler.
- a) both the statements are false
  - b) statement (i) is false and (ii) is true
  - c) statement (i) is true and (ii) is false
  - d) both the statements are true
- 9) On the occurrence of an interrupt in a system process needs to change its state from \_\_\_\_\_ to \_\_\_\_\_
- a) running to ready
  - b) waiting to ready
  - c) running to terminated
  - d) running to waiting
- 10) Time quantum is defined in
- a) SJF scheduling algorithm
  - b) FCFS scheduling algorithm
  - c) RR scheduling algorithm
  - d) Priority scheduling algorithm
- 11) A solution to the critical section problem must satisfy which of the following condition ?
- a) mutual exclusion
  - b) progress
  - c) bounded waiting
  - d) all of these
- 12) Which of the following is a synchronization tool ?
- a) pipe
  - b) semaphore
  - c) socket
  - d) thread
- 13) Line from process to resource in RAG indicates
- a) process has requested a resource
  - b) process has acquired a resource
  - c) resource is not available
  - d) none of these
- 14) System is in a safe state if
- a) the system can allocate resources to each process in some order and still avoid a deadlock
  - b) there exist a safe sequence
  - c) both a) and b)
  - d) none of these
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 4-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instructions :** 1) **All questions are compulsory.**  
2) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any three** questions. **(3×4=12)**

- a) Define the system call. Explain the use of ‘fork’ system call.
- b) Draw and explain the steps performed by an operating system whenever interrupt occurs or it finds the request for execution of system call when it is busy in executing two user processes concurrently.
- c) List various scheduling criteria that can be used to choose specific algorithm. Also explain any two criteria.
- d) Consider two processes (cooperating) running concurrently in the system. Both processes access a shared data in their critical section. In order to avoid a race condition provide a solution to critical section problem that fulfills all the three requirements.

3. Attempt **any two** questions. **(2×8=16)**

- a) Explain the following operations
  - process creation
  - process termination
- b) Consider the following set of processes, with the length of the cpu burst time given in milliseconds,

| Process | Burst time |
|---------|------------|
| P1      | 10         |
| P2      | 1          |
| P3      | 2          |
| P4      | 1          |
| P5      | 5          |

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

Answer the following.

- i) Draw Gantt charts that illustrate the execution of these processes using FCFS and SJF - non preemptive.

**Set S**



- ii) What is average waiting time for both are scheduling algorithms in part (i) ?
- iii) What is average turnaround time for both the scheduling algorithms in part (i) ?
- iv) Which scheduling algorithm results in minimal average waiting time (over all process) ?

Represent waiting time and turnaround time for all processes in table.

- c) What is semaphore ? Give the definitions of wait and signal. Explain how it can be used to solve the bounded – buffer problem.

### SECTION – II

4. Attempt **any three** questions. **(3×4=12)**

- a) Explain 4 essential conditions for the occurrence of deadlock.
- b) Explain demand paging mechanism.
- c) Explain IO hardware.
- d) Write a note on thrashing.

5. Attempt **any two** questions. **(2×8=16)**

- a) Let there be five processes (P1 to P5) and three resource types A, B and C. Resource type A has 10 instances. Resource type B has 5 instances. Resource type C has 7 instances.

Suppose that at time,  $t_0$ , the following snapshot of the system has been taken :

|    | Allocation |   |   | Max |   |   | Available |   |   |
|----|------------|---|---|-----|---|---|-----------|---|---|
|    | A          | B | C | A   | B | C | A         | B | C |
| P1 | 0          | 1 | 0 | 7   | 5 | 3 | 3         | 3 | 2 |
| P2 | 2          | 0 | 0 | 3   | 2 | 2 |           |   |   |
| P3 | 3          | 0 | 2 | 9   | 0 | 2 |           |   |   |
| P4 | 2          | 1 | 1 | 2   | 2 | 2 |           |   |   |
| P5 | 0          | 0 | 2 | 4   | 3 | 3 |           |   |   |

- i) What is the content of need matrix ?
- ii) Find the safe sequence. Is this system safe at time  $t_0$  ?
- iii) If process, P2 sends one additional request, can it be granted ? Say P2 send the request of (1, 0, 2).
- b) Explain page replacement algorithm LRU, optimal algorithm. Calculate number of page fault with following reference (assume 3 frames are available to store pages).  
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
- c) Explain TLB hardware and address translation in paging.





SLR-VB – 215

Seat  
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Set

**P**

**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
SYSTEM PROGRAMMING**

Day and Date : Friday, 5-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **Assume suitable data if necessary.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

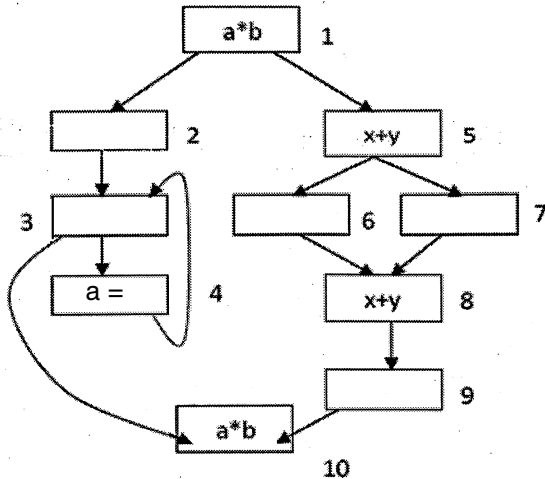
**(1×14=14)**

- 1) \_\_\_\_\_ is a software which bridges a specification or execution gap.
  - a) Language processor
  - b) Language migrator
  - c) Destructor
  - d) None of the above
- 2) The program generator is a software system which accepts \_\_\_\_\_ and generates a \_\_\_\_\_.
  - a) program in assembly, machine equivalent of source
  - b) program in source language, program in destination language
  - c) program specification, program in target PL
  - d) none of the above
- 3) Assembler directives are used in assembly language to
  - a) specifying the mnemonics
  - b) instruct the assembler to perform certain action during assembly
  - c) specify the various data structure used in the assembler
  - d) specify the data flow of the program during flow analysis
- 4) If for a program P, its  $l\_origin\ p = 350$ ,  $t\_origin\ p = 950$ , considering  $l\_origin\ p == load\_origin\ p$ , then the relocation factor is
  - a) 600
  - b) - 600
  - c) 1300
  - d) none
- 5) In a MACRO preprocessor design, APT (ACTUAL PARAMETER TABLE) has been split into PNTAB – Parameter Name Table  
APTAB – Actual Parameter Table  
Which table/tables is/are used during macro expansion time
  - a) PNTAB
  - b) APTAB
  - c) Both a and b
  - d) None
- 6) Which of the following is not a task, involved in macro expansion ?
  - a) Perform expansion of a model statement
  - b) Organize expansion time control flow
  - c) Translation of expansion time variables
  - d) Identify the macro calls
- 7) Live variable is a data flow concept used to eliminate
  - a) Frequency reduction
  - b) Strength reduction
  - c) Common sub expression elimination
  - d) Dead code elimination

P.T.O.



- 8) The process of binding the external references to the link time address is possible with the help of following data structure  
 a) LINKTAB                      b) RELOCTAB                      c) NTAB                      d) Both a and c
- 9) Which of the following is true about pseudo code ?  
 a) High level language                      b) Assembly language  
 c) A machine language                      d) None of the above
- 10) Consider the following program flow graph, and give



- Avail\_in = true for blocks \_\_\_\_\_, for the equation a\*b
- a) a\*b : Avail\_in = true for block 1, 2, 5, 6, 7, 8, 9, 10  
 b) a\*b : Avail\_in = true for block 2, 5, 6, 7, 8, 9  
 c) a\*b : Avail\_in = true for block 2, 5, 6, 7, 8, 9, 10  
 d) none of the above
- 11) In an absolute loading scheme the four functions are accomplished as,  
 a) Allocation\_\_by programmer, Linking\_\_by assembler, Relocation\_\_by assembler, loading-Loader  
 b) Allocation\_\_by assembler, Linking\_\_by linker, Relocation\_\_by assembler, loading-Loader  
 c) Allocation\_\_by programmer, Linking\_\_by programmer, Relocation\_\_by assembler, loading-Loader  
 d) Allocation\_\_by programmer, Linking\_\_by programmer, Relocation\_\_by programmer, loading-Loader
- 12) If translated origin and linked origin are different, then relocation is performed by  
 a) linker                      b) loader                      c) translator                      d) programmer
- 13) A macro prototype statement declares  
 a) name of the macro                      b) name and kinds of its parameters  
 c) both a and b                      d) none
- 14) \_\_\_\_\_ are generated as an output of parsing.  
 a) Tokens                      b) Sequence of actions  
 c) Parse trees                      d) Both a and c



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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
SYSTEM PROGRAMMING**

Day and Date : Friday, 5-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Assume suitable data if necessary.**

SECTION – I

(28)

2. Solve **any four** questions.

(4×4=16)

- 1) Discuss the following with example.
  - a) Declarative statements
  - b) Assembler directives.
- 2) Explain binding and different binding times in detail.
- 3) Explain the elements of assembly language programming in detail with example.
- 4) Discuss the program execution activity as a part of language processing activity.
- 5) Explain the notion of lexical substitution with respect to macro expansion activity.

3. Solve **any one** :

6

- 1) Define the Assembler Directive and explain the following Assembler Directives with syntax and examples.
  - a) ORIGIN
  - b) EQU
  - c) LTORG
  - d) START
  - e) END
- 2) Explain the front end of the Toy compiler. Explain every activity with example.

4. Solve **any one** :

6

- 1) Discuss the following Advanced MACRO facilities with its syntax and semantics
  - a) Facilities for alteration of flow of control during expansion.
  - b) Expansion time variables.

Set P



2) Show the contents of the following data structures after macro definition processing.

- |           |           |           |        |
|-----------|-----------|-----------|--------|
| 1) PNTAB  | 2) EVNTAB | 3) SSNTAB | 4) MNT |
| 5) KPDTAB | 6) SSTAB  | 7) MDT    |        |

Macro definition :

```

MACRO
CLEARMEM    &X, &N, &REG=AREG
LCL         &M
&M         SET    0
MOVER       &REG, = '0'
.MORE      MOVEM  &REG, &X + &M
&M         SET    & M+1
AIF         (&M NE N) .MORE
MEND

```

#### SECTION – II

(28)

5. Solve **any four** :

(4×4=16)

- 1) Define the optimization transformation and explain the following with example.
  - a) Elimination of common sub expression.
  - b) Frequency reduction.
- 2) Describe the local optimization using value numbering concept with proper example.
- 3) Explain the object module with its components.
- 4) Explain the concept of
  - a) translated origin
  - b) linked origin
  - c) load origin of program P with example and how to calculate the relocation factor.
- 5) Define loader and explain the four function performed by the loader.

6. Solve **any one** :

6

- 1) Explain the concept of data flow analysis and control flow analysis.
- 2) Explain the compile and go loader scheme along with its advantages and disadvantages.

7. Solve **any one** :

6

- 1) Write and explain the relocation algorithm in detail.
- 2) Describe the concept of absolute loading scheme along with its advantages and disadvantages.

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Set P



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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
SYSTEM PROGRAMMING**

Day and Date : Friday, 5-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) Assume suitable data **if necessary**.

**MCQ/Objective Type Questions**

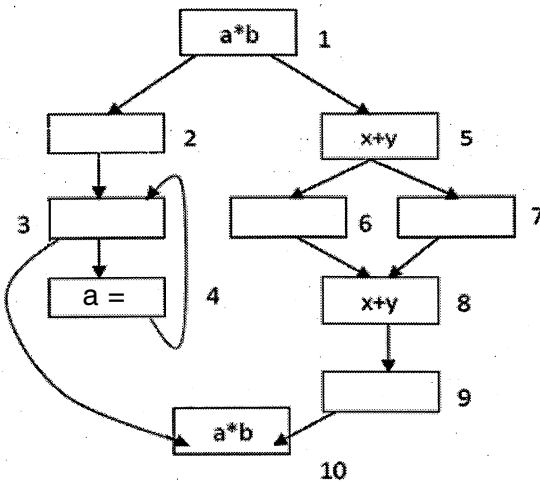
Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(1×14=14)**

- 1) The process of binding the external references to the link time address is possible with the help of following data structure
  - a) LINKTAB
  - b) RELOCTAB
  - c) NTAB
  - d) Both a and c
- 2) Which of the following is true about pseudo code ?
  - a) High level language
  - b) Assembly language
  - c) A machine language
  - d) None of the above
- 3) Consider the following program flow graph, and give



Avail\_in = true for blocks \_\_\_\_\_, for the equation a\*b

- a) a\*b : Avail\_in = true for block 1, 2, 5, 6, 7, 8, 9, 10
- b) a\*b : Avail\_in = true for block 2, 5, 6, 7, 8, 9
- c) a\*b : Avail\_in = true for block 2, 5, 6, 7, 8, 9, 10
- d) none of the above



- 4) In an absolute loading scheme the four functions are accomplished as,
- Allocation\_\_by programmer, Linking\_\_by assembler, Relocation\_\_by assembler, loading-Loader
  - Allocation\_\_by assembler, Linking\_\_by linker, Relocation\_\_by assembler, loading-Loader
  - Allocation\_\_by programmer, Linking\_\_by programmer, Relocation\_\_by assembler, loading-Loader
  - Allocation\_\_by programmer, Linking\_\_by programmer, Relocation\_\_by programmer, loading-Loader
- 5) If translated origin and linked origin are different, then relocation is performed by
- linker
  - loader
  - translator
  - programmer
- 6) A macro prototype statement declares
- name of the macro
  - name and kinds of its parameters
  - both a and b
  - none
- 7) \_\_\_\_\_ are generated as an output of parsing.
- Tokens
  - Sequence of actions
  - Parse trees
  - Both a and c
- 8) \_\_\_\_\_ is a software which bridges a specification or execution gap.
- Language processor
  - Language migrator
  - Destructor
  - None of the above
- 9) The program generator is a software system which accepts \_\_\_\_\_ and generates a \_\_\_\_\_.
- program in assembly, machine equivalent of source
  - program in source language, program in destination language
  - program specification, program in target PL
  - none of the above
- 10) Assembler directives are used in assembly language to
- specifying the mnemonics
  - instruct the assembler to perform certain action during assembly
  - specify the various data structure used in the assembler
  - specify the data flow of the program during flow analysis
- 11) If for a program P, its  $l\_origin\ p = 350$ ,  $t\_origin\ p = 950$ , considering  $l\_origin\ p = load\_origin\ p$ , then the relocation factor is
- 600
  - 600
  - 1300
  - none
- 12) In a MACRO preprocessor design, APT (ACTUAL PARAMETER TABLE) has been split into PNTAB – Parameter Name Table  
APTAB – Actual Parameter Table  
Which table/tables is/are used during macro expansion time
- PNTAB
  - APTAB
  - Both a and b
  - None
- 13) Which of the following is not a task, involved in macro expansion ?
- Perform expansion of a model statement
  - Organize expansion time control flow
  - Translation of expansion time variables
  - Identify the macro calls
- 14) Live variable is a data flow concept used to eliminate
- Frequency reduction
  - Strength reduction
  - Common sub expression elimination
  - Dead code elimination



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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
SYSTEM PROGRAMMING**

Day and Date : Friday, 5-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Assume suitable data if necessary.**

SECTION – I

(28)

2. Solve **any four** questions.

(4×4=16)

- 1) Discuss the following with example.
  - a) Declarative statements
  - b) Assembler directives.
- 2) Explain binding and different binding times in detail.
- 3) Explain the elements of assembly language programming in detail with example.
- 4) Discuss the program execution activity as a part of language processing activity.
- 5) Explain the notion of lexical substitution with respect to macro expansion activity.

3. Solve **any one** :

6

- 1) Define the Assembler Directive and explain the following Assembler Directives with syntax and examples.
  - a) ORIGIN
  - b) EQU
  - c) LTORG
  - d) START
  - e) END
- 2) Explain the front end of the Toy compiler. Explain every activity with example.

4. Solve **any one** :

6

- 1) Discuss the following Advanced MACRO facilities with its syntax and semantics
  - a) Facilities for alteration of flow of control during expansion.
  - b) Expansion time variables.

**Set Q**



2) Show the contents of the following data structures after macro definition processing.

- |           |           |           |        |
|-----------|-----------|-----------|--------|
| 1) PNTAB  | 2) EVNTAB | 3) SSNTAB | 4) MNT |
| 5) KPDTAB | 6) SSTAB  | 7) MDT    |        |

Macro definition :

```

MACRO
CLEARMEM    &X, &N, &REG=AREG
LCL         &M
&M         SET          0
MOVER       &REG, = '0'
.MORE      MOVEM       &REG, &X + &M
&M         SET          & M+1
AIF        (&M NE N) .MORE
MEND

```

SECTION – II

(28)

5. Solve **any four** :

(4×4=16)

- 1) Define the optimization transformation and explain the following with example.
  - a) Elimination of common sub expression.
  - b) Frequency reduction.
- 2) Describe the local optimization using value numbering concept with proper example.
- 3) Explain the object module with its components.
- 4) Explain the concept of
  - a) translated origin
  - b) linked origin
  - c) load origin of program P with example and how to calculate the relocation factor.
- 5) Define loader and explain the four function performed by the loader.

6. Solve **any one** :

6

- 1) Explain the concept of data flow analysis and control flow analysis.
- 2) Explain the compile and go loader scheme along with its advantages and disadvantages.

7. Solve **any one** :

6

- 1) Write and explain the relocation algorithm in detail.
- 2) Describe the concept of absolute loading scheme along with its advantages and disadvantages.

Set Q





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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017**  
**SYSTEM PROGRAMMING**

Day and Date : Friday, 5-5-2017  
 Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. Each question carries **one** mark.
  - 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) **Assume suitable data if necessary.**

**MCQ/Objective Type Questions**

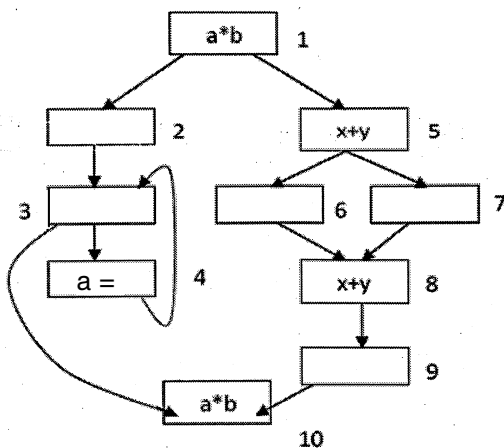
Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) In a MACRO preprocessor design, APT (ACTUAL PARAMETER TABLE) has been split into PNTAB – Parameter Name Table      APTAB – Actual Parameter Table  
Which table/tables is/are used during macro expansion time  
a) PNTAB                      b) APTAB                      c) Both a and b                      d) None
- 2) Which of the following is not a task, involved in macro expansion ?  
a) Perform expansion of a model statement    b) Organize expansion time control flow  
c) Translation of expansion time variables    d) Identify the macro calls
- 3) Live variable is a data flow concept used to eliminate  
a) Frequency reduction                      b) Strength reduction  
c) Common sub expression elimination      d) Dead code elimination
- 4) The process of binding the external references to the link time address is possible with the help of following data structure  
a) LINKTAB                      b) RELOCTAB                      c) NTAB                      d) Both a and c
- 5) Which of the following is true about pseudo code ?  
a) High level language                      b) Assembly language  
c) A machine language                      d) None of the above
- 6) Consider the following program flow graph, and give



Avail\_in = true for blocks \_\_\_\_\_, for the equation a\*b

- a) a\*b : Avail\_in = true for block 1, 2, 5, 6, 7, 8, 9, 10
- b) a\*b : Avail\_in = true for block 2, 5, 6, 7, 8, 9
- c) a\*b : Avail\_in = true for block 2, 5, 6, 7, 8, 9, 10
- d) none of the above



- 7) In an absolute loading scheme the four functions are accomplished as,
- a) Allocation\_\_by programmer, Linking\_\_by assembler, Relocation\_\_by assembler, loading-Loader
  - b) Allocation\_\_by assembler, Linking\_\_by linker, Relocation\_\_by assembler, loading-Loader
  - c) Allocation\_\_by programmer, Linking\_\_by programmer, Relocation\_\_by assembler, loading-Loader
  - d) Allocation\_\_by programmer, Linking\_\_by programmer, Relocation\_\_by programmer, loading-Loader
- 8) If translated origin and linked origin are different, then relocation is performed by
- a) linker
  - b) loader
  - c) translator
  - d) programmer
- 9) A macro prototype statement declares
- a) name of the macro
  - b) name and kinds of its parameters
  - c) both a and b
  - d) none
- 10) \_\_\_\_\_ are generated as an output of parsing.
- a) Tokens
  - b) Sequence of actions
  - c) Parse trees
  - d) Both a and c
- 11) \_\_\_\_\_ is a software which bridges a specification or execution gap.
- a) Language processor
  - b) Language migrator
  - c) Destructor
  - d) None of the above
- 12) The program generator is a software system which accepts \_\_\_\_\_ and generates a \_\_\_\_\_.
- a) program in assembly, machine equivalent of source
  - b) program in source language, program in destination language
  - c) program specification, program in target PL
  - d) none of the above
- 13) Assembler directives are used in assembly language to
- a) specifying the mnemonics
  - b) instruct the assembler to perform certain action during assembly
  - c) specify the various data structure used in the assembler
  - d) specify the data flow of the program during flow analysis
- 14) If for a program P, its  $L\_origin\ p = 350$ ,  $t\_origin\ p = 950$ , considering  $L\_origin\ p = load\_origin\ p$ , then the relocation factor is
- a) 600
  - b) - 600
  - c) 1300
  - d) none
-



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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
SYSTEM PROGRAMMING**

Day and Date : Friday, 5-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Assume suitable data if necessary.**

SECTION – I

(28)

2. Solve **any four** questions.

(4×4=16)

- 1) Discuss the following with example.
  - a) Declarative statements
  - b) Assembler directives.
- 2) Explain binding and different binding times in detail.
- 3) Explain the elements of assembly language programming in detail with example.
- 4) Discuss the program execution activity as a part of language processing activity.
- 5) Explain the notion of lexical substitution with respect to macro expansion activity.

3. Solve **any one** :

6

- 1) Define the Assembler Directive and explain the following Assembler Directives with syntax and examples.
  - a) ORIGIN
  - b) EQU
  - c) LTORG
  - d) START
  - e) END
- 2) Explain the front end of the Toy compiler. Explain every activity with example.

4. Solve **any one** :

6

- 1) Discuss the following Advanced MACRO facilities with its syntax and semantics
  - a) Facilities for alteration of flow of control during expansion.
  - b) Expansion time variables.

Set R



2) Show the contents of the following data structures after macro definition processing.

- |           |           |           |        |
|-----------|-----------|-----------|--------|
| 1) PNTAB  | 2) EVNTAB | 3) SSNTAB | 4) MNT |
| 5) KPDTAB | 6) SSTAB  | 7) MDT    |        |

Macro definition :

```

MACRO
CLEARMEM    &X, &N, &REG=AREG
LCL         &M
&M         SET          0
MOVER       &REG, = '0'
.MORE      MOVEM       &REG, &X + &M
&M         SET          & M+1
AIF        (&M NE N) .MORE
MEND

```

SECTION – II

(28)

5. Solve **any four** :

(4×4=16)

- 1) Define the optimization transformation and explain the following with example.
  - a) Elimination of common sub expression.
  - b) Frequency reduction.
- 2) Describe the local optimization using value numbering concept with proper example.
- 3) Explain the object module with its components.
- 4) Explain the concept of
  - a) translated origin
  - b) linked origin
  - c) load origin of program P with example and how to calculate the relocation factor.
- 5) Define loader and explain the four function performed by the loader.

6. Solve **any one** :

6

- 1) Explain the concept of data flow analysis and control flow analysis.
- 2) Explain the compile and go loader scheme along with its advantages and disadvantages.

7. Solve **any one** :

6

- 1) Write and explain the relocation algorithm in detail.
- 2) Describe the concept of absolute loading scheme along with its advantages and disadvantages.

Set R



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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
SYSTEM PROGRAMMING**

Day and Date : Friday, 5-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
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**MCQ/Objective Type Questions**

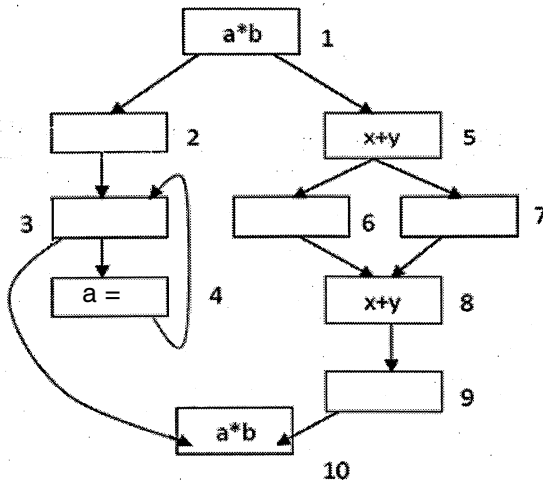
Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(1×14=14)**

1) Consider the following program flow graph, and give



Avail\_in = true for blocks \_\_\_\_\_, for the equation a\*b

- a) a\*b : Avail\_in = true for block 1, 2, 5, 6, 7, 8, 9, 10
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  - c) a\*b : Avail\_in = true for block 2, 5, 6, 7, 8, 9, 10
  - d) none of the above
- 2) In an absolute loading scheme the four functions are accomplished as,
- a) Allocation\_\_by programmer, Linking\_\_by assembler, Relocation\_\_by assembler, loading-Loader
  - b) Allocation\_\_by assembler, Linking\_\_by linker, Relocation\_\_by assembler, loading-Loader
  - c) Allocation\_\_by programmer, Linking\_\_by programmer, Relocation\_\_by assembler, loading-Loader
  - d) Allocation\_\_by programmer, Linking\_\_by programmer, Relocation\_\_by programmer, loading-Loader



- 3) If translated origin and linked origin are different, then relocation is performed by  
a) linker                      b) loader                      c) translator                      d) programmer
- 4) A macro prototype statement declares  
a) name of the macro                      b) name and kinds of its parameters  
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a) Tokens                      b) Sequence of actions  
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APTAB – Actual Parameter Table  
Which table/tables is/are used during macro expansion time  
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
SYSTEM PROGRAMMING**

Day and Date : Friday, 5-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Assume suitable data if necessary.**

SECTION – I

(28)

2. Solve **any four** questions.

(4×4=16)

- 1) Discuss the following with example.
  - a) Declarative statements
  - b) Assembler directives.
- 2) Explain binding and different binding times in detail.
- 3) Explain the elements of assembly language programming in detail with example.
- 4) Discuss the program execution activity as a part of language processing activity.
- 5) Explain the notion of lexical substitution with respect to macro expansion activity.

3. Solve **any one** :

6

- 1) Define the Assembler Directive and explain the following Assembler Directives with syntax and examples.
  - a) ORIGIN
  - b) EQU
  - c) LTORG
  - d) START
  - e) END
- 2) Explain the front end of the Toy compiler. Explain every activity with example.

4. Solve **any one** :

6

- 1) Discuss the following Advanced MACRO facilities with its syntax and semantics
  - a) Facilities for alteration of flow of control during expansion.
  - b) Expansion time variables.

Set S



2) Show the contents of the following data structures after macro definition processing.

- |           |           |           |        |
|-----------|-----------|-----------|--------|
| 1) PNTAB  | 2) EVNTAB | 3) SSNTAB | 4) MNT |
| 5) KPDTAB | 6) SSTAB  | 7) MDT    |        |

Macro definition :

```

MACRO
CLEARMEM    &X, &N, &REG=AREG
LCL         &M
&M         SET          0
MOVER       &REG, = '0'
.MORE      MOVEM       &REG, &X + &M
&M         SET          & M+1
AIF        (&M NE N) .MORE
MEND

```

SECTION – II

(28)

5. Solve **any four** :

(4×4=16)

- 1) Define the optimization transformation and explain the following with example.
  - a) Elimination of common sub expression.
  - b) Frequency reduction.
- 2) Describe the local optimization using value numbering concept with proper example.
- 3) Explain the object module with its components.
- 4) Explain the concept of
  - a) translated origin
  - b) linked origin
  - c) load origin of program P with example and how to calculate the relocation factor.
- 5) Define loader and explain the four function performed by the loader.

6. Solve **any one** :

6

- 1) Explain the concept of data flow analysis and control flow analysis.
- 2) Explain the compile and go loader scheme along with its advantages and disadvantages.

7. Solve **any one** :

6

- 1) Write and explain the relocation algorithm in detail.
- 2) Describe the concept of absolute loading scheme along with its advantages and disadvantages.

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SLR-VB – 216

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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER NETWORKS**

Day and Date : Saturday, 6-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

14

- 1) Ethernet uses a \_\_\_\_\_ bit physical address that is imprinted on the Network Interface Card (NIC).  
a) 32                      b) 16                      c) 48                      d) 64
- 2) In a host running a TCP/IP protocol suite, there is only one UDP but possibly several processes that may want to use the services of UDP. UDP handles this situation using  
a) Encapsulation and decapsulation  
b) Multiplexing and demultiplexing  
c) Incoming and outgoing  
d) Queuing
- 3) A serious problem can arise in the sliding window operation when either the sending application program creates data slowly or the receiving application program consumes data slowly, or both. This problem is called the  
a) Unexpected syndrome                      b) Silly-window syndrome  
c) Window shutdown                      d) Window bug
- 4) In TCP, one end can stop sending data while still receiving data. This is called a  
a) Half-close                      b) Half-open  
c) One-way termination                      d) None

P.T.O.



- 5) A \_\_\_\_\_ timer is used to prevent a long idle connection between two TCPs.  
a) Time-wait      b) Keepalive      c) Retransmission      d) Persistence
- 6) SOCK\_DGRAM sockets are used by \_\_\_\_\_ processes.  
a) UDP      b) TCP      c) SCTP      d) None
- 7) \_\_\_\_\_ server can process multiple requests at a time.  
a) An iterative      b) A concurrent  
c) An iterative or a concurrent      d) None
- 8) \_\_\_\_\_ is a client/server protocol designed to provide vital network information for a diskless computer or a computer that is booted for the first time.  
a) DHCP      b) DNS      c) TELNET      d) SMTP
- 9) The \_\_\_\_\_ domain is used to map IP address to a name.  
a) Country      b) Generic      c) Inverse      d) Both a) and b)
- 10) In TELNET, to distinguish data from control characters, each sequence of control characters is preceded by a special control character called  
a) ICA      b) IAC      c) AIC      d) None
- 11) In FTP, the well-known port \_\_\_\_\_ is used for the control connection and the well-known port \_\_\_\_\_ for the data connection.  
a) 21; 22      b) 21; 20      c) 20; 21      d) None
- 12) TFTP uses the services of  
a) TCP      b) UDP      c) IP      d) None
- 13) \_\_\_\_\_ is a protocol used mainly to access data on the World Wide Web.  
a) HTTP      b) IMAPv4      c) MIME      d) SMTP
- 14) The actual mail transfer is done through  
a) UAs      b) MTAs      c) MAAs      d) None
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER NETWORKS**

Day and Date : Saturday, 6-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instructions :** 1) **Each Section carries 28 marks.**  
2) **Attempt all questions in each Section.**

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Give comparison between OSI model and TCP/IP protocol suite.
  - b) What is UDP ? Draw and explain UDP user datagram format.
  - c) Explain multiple streams and multihoming concept of SCTP.
  - d) What is socket ? Draw and explain socket structure.
  - e) Explain connection establishment using three-way handshaking in TCP.
3. Attempt **any two** : **(2×8=16)**
- a) Explain with diagram congestion control policies in TCP.
  - b) Draw and explain TCP segment format.
  - c) Describe concept of connection-oriented concurrent server with suitable diagram.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) Explain recursive and iterative resolution in the DNS.
  - b) Describe the concept of TELNET and NVT.
  - c) Explain HTTP.
  - d) Write a short note on TFTP.
  - e) Explain concept of MIME with the help of suitable diagram.
5. Attempt **any two** : **(2×8=16)**
- a) What is DHCP ? Explain how DHCP works if client and server are on the same network and on two different networks.
  - b) What is FTP ? Explain two FTP connections with suitable diagram.
  - c) Explain architecture of e-mail with the help of four scenarios.





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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER NETWORKS**

Day and Date : Saturday, 6-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

14

- 1) \_\_\_\_\_ is a client/server protocol designed to provide vital network information for a diskless computer or a computer that is booted for the first time.  
a) DHCP                      b) DNS                      c) TELNET                      d) SMTP
- 2) The \_\_\_\_\_ domain is used to map IP address to a name.  
a) Country                      b) Generic                      c) Inverse                      d) Both a) and b)
- 3) In TELNET, to distinguish data from control characters, each sequence of control characters is preceded by a special control character called  
a) ICA                      b) IAC                      c) AIC                      d) None
- 4) In FTP, the well-known port \_\_\_\_\_ is used for the control connection and the well-known port \_\_\_\_\_ for the data connection.  
a) 21; 22                      b) 21; 20                      c) 20; 21                      d) None
- 5) TFTP uses the services of  
a) TCP                      b) UDP                      c) IP                      d) None
- 6) \_\_\_\_\_ is a protocol used mainly to access data on the World Wide Web.  
a) HTTP                      b) IMAPv4                      c) MIME                      d) SMTP
- 7) The actual mail transfer is done through  
a) UAs                      b) MTAs                      c) MAAs                      d) None

P.T.O.



- 8) Ethernet uses a \_\_\_\_\_ bit physical address that is imprinted on the Network Interface Card (NIC).
- a) 32                      b) 16                      c) 48                      d) 64
- 9) In a host running a TCP/IP protocol suite, there is only one UDP but possibly several processes that may want to use the services of UDP. UDP handles this situation using
- a) Encapsulation and decapsulation  
b) Multiplexing and demultiplexing  
c) Incoming and outgoing  
d) Queuing
- 10) A serious problem can arise in the sliding window operation when either the sending application program creates data slowly or the receiving application program consumes data slowly, or both. This problem is called the
- a) Unexpected syndrome                      b) Silly-window syndrome  
c) Window shutdown                      d) Window bug
- 11) In TCP, one end can stop sending data while still receiving data. This is called a
- a) Half-close                      b) Half-open  
c) One-way termination                      d) None
- 12) A \_\_\_\_\_ timer is used to prevent a long idle connection between two TCPs.
- a) Time-wait                      b) Keepalive                      c) Retransmission d) Persistence
- 13) SOCK\_DGRAM sockets are used by \_\_\_\_\_ processes.
- a) UDP                      b) TCP                      c) SCTP                      d) None
- 14) \_\_\_\_\_ server can process multiple requests at a time.
- a) An iterative                      b) A concurrent  
c) An iterative or a concurrent                      d) None
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER NETWORKS**

Day and Date : Saturday, 6-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instructions :** 1) **Each Section carries 28 marks.**  
2) **Attempt all questions in each Section.**

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Give comparison between OSI model and TCP/IP protocol suite.
  - b) What is UDP ? Draw and explain UDP user datagram format.
  - c) Explain multiple streams and multihoming concept of SCTP.
  - d) What is socket ? Draw and explain socket structure.
  - e) Explain connection establishment using three-way handshaking in TCP.
3. Attempt **any two** : **(2×8=16)**
- a) Explain with diagram congestion control policies in TCP.
  - b) Draw and explain TCP segment format.
  - c) Describe concept of connection-oriented concurrent server with suitable diagram.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) Explain recursive and iterative resolution in the DNS.
  - b) Describe the concept of TELNET and NVT.
  - c) Explain HTTP.
  - d) Write a short note on TFTP.
  - e) Explain concept of MIME with the help of suitable diagram.
5. Attempt **any two** : **(2×8=16)**
- a) What is DHCP ? Explain how DHCP works if client and server are on the same network and on two different networks.
  - b) What is FTP ? Explain two FTP connections with suitable diagram.
  - c) Explain architecture of e-mail with the help of four scenarios.







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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER NETWORKS**

Day and Date : Saturday, 6-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

14

- 1) A \_\_\_\_\_ timer is used to prevent a long idle connection between two TCPs.  
a) Time-wait      b) Keepalive      c) Retransmission      d) Persistence
- 2) SOCK\_DGRAM sockets are used by \_\_\_\_\_ processes.  
a) UDP      b) TCP      c) SCTP      d) None
- 3) \_\_\_\_\_ server can process multiple requests at a time.  
a) An iterative      b) A concurrent  
c) An iterative or a concurrent      d) None
- 4) \_\_\_\_\_ is a client/server protocol designed to provide vital network information for a diskless computer or a computer that is booted for the first time.  
a) DHCP      b) DNS      c) TELNET      d) SMTP
- 5) The \_\_\_\_\_ domain is used to map IP address to a name.  
a) Country      b) Generic  
c) Inverse      d) Both a) and b)
- 6) In TELNET, to distinguish data from control characters, each sequence of control characters is preceded by a special control character called  
a) ICA      b) IAC      c) AIC      d) None

P.T.O.



- 7) In FTP, the well-known port \_\_\_\_\_ is used for the control connection and the well-known port \_\_\_\_\_ for the data connection.
- a) 21; 22                      b) 21; 20                      c) 20; 21                      d) None
- 8) TFTP uses the services of
- a) TCP                      b) UDP                      c) IP                      d) None
- 9) \_\_\_\_\_ is a protocol used mainly to access data on the World Wide Web.
- a) HTTP                      b) IMAPv4                      c) MIME                      d) SMTP
- 10) The actual mail transfer is done through
- a) UAs                      b) MTAs                      c) MAAs                      d) None
- 11) Ethernet uses a \_\_\_\_\_ bit physical address that is imprinted on the Network Interface Card (NIC).
- a) 32                      b) 16                      c) 48                      d) 64
- 12) In a host running a TCP/IP protocol suite, there is only one UDP but possibly several processes that may want to use the services of UDP. UDP handles this situation using
- a) Encapsulation and decapsulation  
b) Multiplexing and demultiplexing  
c) Incoming and outgoing  
d) Queuing
- 13) A serious problem can arise in the sliding window operation when either the sending application program creates data slowly or the receiving application program consumes data slowly, or both. This problem is called the
- a) Unexpected syndrome                      b) Silly-window syndrome  
c) Window shutdown                      d) Window bug
- 14) In TCP, one end can stop sending data while still receiving data. This is called a
- a) Half-close                      b) Half-open  
c) One-way termination                      d) None
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER NETWORKS**

Day and Date : Saturday, 6-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instructions :** 1) **Each Section carries 28 marks.**  
2) **Attempt all questions in each Section.**

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Give comparison between OSI model and TCP/IP protocol suite.
  - b) What is UDP ? Draw and explain UDP user datagram format.
  - c) Explain multiple streams and multihoming concept of SCTP.
  - d) What is socket ? Draw and explain socket structure.
  - e) Explain connection establishment using three-way handshaking in TCP.
3. Attempt **any two** : **(2×8=16)**
- a) Explain with diagram congestion control policies in TCP.
  - b) Draw and explain TCP segment format.
  - c) Describe concept of connection-oriented concurrent server with suitable diagram.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) Explain recursive and iterative resolution in the DNS.
  - b) Describe the concept of TELNET and NVT.
  - c) Explain HTTP.
  - d) Write a short note on TFTP.
  - e) Explain concept of MIME with the help of suitable diagram.
5. Attempt **any two** : **(2×8=16)**
- a) What is DHCP ? Explain how DHCP works if client and server are on the same network and on two different networks.
  - b) What is FTP ? Explain two FTP connections with suitable diagram.
  - c) Explain architecture of e-mail with the help of four scenarios.





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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER NETWORKS**

Day and Date : Saturday, 6-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

14

- 1) In TELNET, to distinguish data from control characters, each sequence of control characters is preceded by a special control character called
  - a) ICA
  - b) IAC
  - c) AIC
  - d) None
- 2) In FTP, the well-known port \_\_\_\_\_ is used for the control connection and the well-known port \_\_\_\_\_ for the data connection.
  - a) 21; 22
  - b) 21; 20
  - c) 20; 21
  - d) None
- 3) TFTP uses the services of
  - a) TCP
  - b) UDP
  - c) IP
  - d) None
- 4) \_\_\_\_\_ is a protocol used mainly to access data on the World Wide Web.
  - a) HTTP
  - b) IMAPv4
  - c) MIME
  - d) SMTP
- 5) The actual mail transfer is done through
  - a) UAs
  - b) MTAs
  - c) MAAs
  - d) None
- 6) Ethernet uses a \_\_\_\_\_ bit physical address that is imprinted on the Network Interface Card (NIC).
  - a) 32
  - b) 16
  - c) 48
  - d) 64

P.T.O.



- 7) In a host running a TCP/IP protocol suite, there is only one UDP but possibly several processes that may want to use the services of UDP. UDP handles this situation using
- a) Encapsulation and decapsulation
  - b) Multiplexing and demultiplexing
  - c) Incoming and outgoing
  - d) Queuing
- 8) A serious problem can arise in the sliding window operation when either the sending application program creates data slowly or the receiving application program consumes data slowly, or both. This problem is called the
- a) Unexpected syndrome
  - b) Silly-window syndrome
  - c) Window shutdown
  - d) Window bug
- 9) In TCP, one end can stop sending data while still receiving data. This is called a
- a) Half-close
  - b) Half-open
  - c) One-way termination
  - d) None
- 10) A \_\_\_\_\_ timer is used to prevent a long idle connection between two TCPs.
- a) Time-wait
  - b) Keepalive
  - c) Retransmission
  - d) Persistence
- 11) SOCK\_DGRAM sockets are used by \_\_\_\_\_ processes.
- a) UDP
  - b) TCP
  - c) SCTP
  - d) None
- 12) \_\_\_\_\_ server can process multiple requests at a time.
- a) An iterative
  - b) A concurrent
  - c) An iterative or a concurrent
  - d) None
- 13) \_\_\_\_\_ is a client/server protocol designed to provide vital network information for a diskless computer or a computer that is booted for the first time.
- a) DHCP
  - b) DNS
  - c) TELNET
  - d) SMTP
- 14) The \_\_\_\_\_ domain is used to map IP address to a name.
- a) Country
  - b) Generic
  - c) Inverse
  - d) Both a) and b)
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER NETWORKS**

Day and Date : Saturday, 6-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instructions :** 1) **Each Section carries 28 marks.**  
2) **Attempt all questions in each Section.**

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Give comparison between OSI model and TCP/IP protocol suite.
  - b) What is UDP ? Draw and explain UDP user datagram format.
  - c) Explain multiple streams and multihoming concept of SCTP.
  - d) What is socket ? Draw and explain socket structure.
  - e) Explain connection establishment using three-way handshaking in TCP.
3. Attempt **any two** : **(2×8=16)**
- a) Explain with diagram congestion control policies in TCP.
  - b) Draw and explain TCP segment format.
  - c) Describe concept of connection-oriented concurrent server with suitable diagram.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) Explain recursive and iterative resolution in the DNS.
  - b) Describe the concept of TELNET and NVT.
  - c) Explain HTTP.
  - d) Write a short note on TFTP.
  - e) Explain concept of MIME with the help of suitable diagram.
5. Attempt **any two** : **(2×8=16)**
- a) What is DHCP ? Explain how DHCP works if client and server are on the same network and on two different networks.
  - b) What is FTP ? Explain two FTP connections with suitable diagram.
  - c) Explain architecture of e-mail with the help of four scenarios.







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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
DESIGN AND ANALYSIS OF ALGORITHM  
Class TECSE**

Day and Date : Monday, 8-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers : **14**

- 1) Following algorithm(s) can be used to sort  $n$  integers in the range  $[1 \dots n^3]$  in  $O(n)$  time ?
  - a) Heap Sort
  - b) Quick Sort
  - c) Merge Sort
  - d) Radix Sort
- 2) A sorting technique is called stable if
  - a) it takes  $O(n \log n)$  time
  - b) it maintains the relative order of occurrence of non-distinct elements
  - c) it uses divide and conquer paradigm
  - d) it takes  $O(n)$  space
- 3) Which of the following sorting algorithms has the lowest worst-case complexity ?
  - a) Merge sort
  - b) Bubble sort
  - c) Quick sort
  - d) Selection sort
- 4) Which of the following is the tightest upper bound that represents the time complexity of inserting an object into a binary search tree of  $n$  nodes ?
  - a)  $O(1)$
  - b)  $O(\log n)$
  - c)  $O(n)$
  - d)  $O(n \log n)$

P.T.O.



- 5) The recurrence relation that arises in relation with the complexity of binary search is
- a)  $T(n) = T(n/2) + K$ ,  $K$  a constant      b)  $T(n) = 2T(n/2) + K$ ,  $K$  a constant  
c)  $T(n) = T(n/2) + \log n$                       d)  $T(n) = T(n/2) + n$
- 6) Kruskal's algorithm for finding a minimum spanning tree of a weighted graph  $G$  with  $n$  vertices and  $m$  edges has the time complexity of
- a)  $O(n^2)$                       b)  $O(mn)$                       c)  $O(m + n)$                       d)  $O(m \log n)$
- 7) An algorithm is a sequence of unambiguous instructions for solving a problem, i.e., for obtaining a required output for any legitimate input in an infinite amount of time.
- a) True    b) False
- 8) In flow shop scheduling OFT stands for
- a) Optimal Find Time                              b) Organized Finish Time  
c) Optimal Finish Time                              d) None of these
- 9) \_\_\_\_\_ is a generated node which is to expanded further or all of whose children have been generated.
- a) Live node                      b) E-node                      c) Dead node                      d) Root node
- 10) The smallest number of colors needed to color a graph  $G$  is called its
- a) Face number                                      b) Chromatic number  
c) Edges number                                      d) Vertex number
- 11) Total time required for  $m$ -coloring algorithm is \_\_\_\_\_ where  $m =$  no. of colors,  $n =$  no. of nodes.
- a)  $O(nm)$                       b)  $O(nm^n)$                       c)  $O(n^n)$                       d)  $O(m^n)$
- 12) In quick sort, after the completion of every pass the pivot/key element moves to the \_\_\_\_\_ position.
- a) exact sorted position                              b) First  
c) Second    d) Intermediate
- 13) For two functions  $f(n)$  and  $g(n)$ , if  $f(n) = \Omega(g(n))$ , we know that  $f(n)$  is asymptotically larger than  $g(n)$ .
- a) False    b) True
- 14) For merging two sorted lists of sizes  $m$  and  $n$  into sorted list of size  $m + n$ , we require comparison of
- a)  $O(m + n)$                       b)  $O(m)$                       c)  $O(n)$                       d)  $O(\log m + \log n)$
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
DESIGN AND ANALYSIS OF ALGORITHM  
Class TECSE**

Day and Date : Monday, 8-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instruction : All questions are compulsory.**

SECTION – I

2. Solve **any 4** questions : **(5×4=20)**

- 1) Define space and Time Complexity with suitable example.
- 2) State and prove time complexity of Merge sort.
- 3) Explain Binary search with suitable example.
- 4) Using Greedy approach find maximum profit earned for the given knapsack problem.  
Profit = (12, 10, 8, 11, 14, 7, 9)  
Weight = (4, 6, 5, 7, 3, 1, 6)  
M = 18.

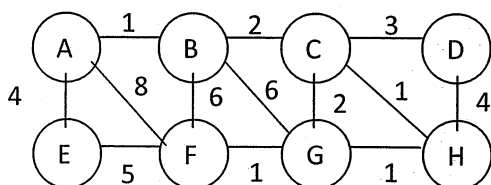
5) **Symbol      Frequency**

|   |            |
|---|------------|
| A | 70 million |
| B | 3 million  |
| C | 20 million |
| D | 37 million |

Find decode tree and code for particular symbol.

3. Solve **any one** : **8**

1) Find Minimum Cost Spanning Tree using Prims Algorithm (Show each iteration).



2) Sort following elements using Quick sort (Show each iteration).  
65, 70, 75, 80, 85, 60, 55, 50, 45.

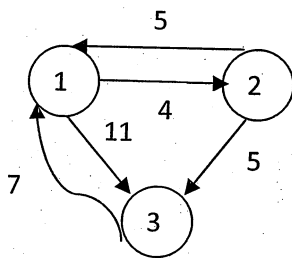


SECTION – II

4. Solve any 4 :

(5×4=20)

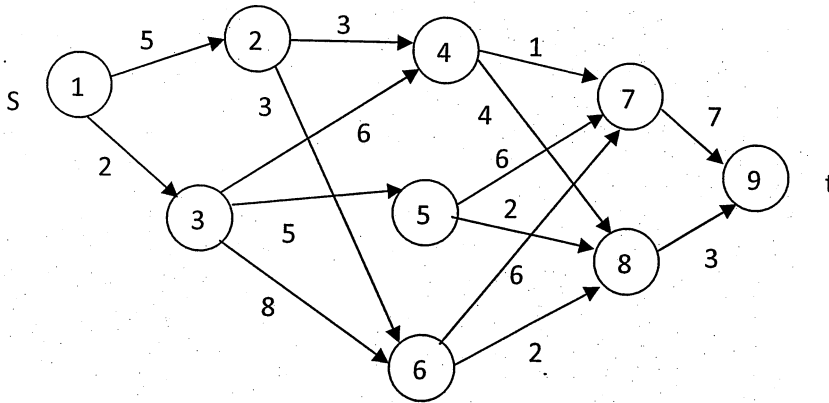
- 1) Write a note on – Reliability design.
- 2) Solve 0/1 Knapsack problem using Dynamic Programming  
N = 3, m = 6  
Profit = {1, 2, 5} and weight = {2, 3, 4}.
- 3) Draw portion of solution space tree for 4- Queen problem using backtracking.
- 4) Explain Hamilton cycle.
- 5) Define P, NP, NP-hard problem.
- 6) Find all pair shortest path using dynamic programming for following diagraph.



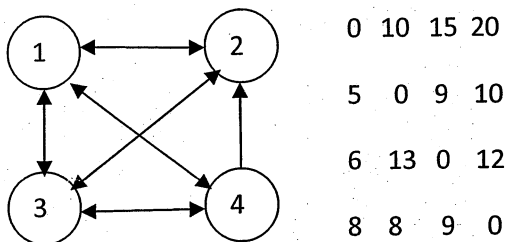
5. Solve any one :

8

- 1) Find the minimum cost from s to t in multistage graph using backward approach.



2. Consider following directed graph and edge lengths are given by matrix.  
Find optimal tour travelling sales person.





SLR-VB – 217

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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017**  
**DESIGN AND ANALYSIS OF ALGORITHM**  
**Class TECSE**

Day and Date : Monday, 8-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers :

14

- 1) In flow shop scheduling OFT stands for
  - a) Optimal Find Time
  - b) Organized Finish Time
  - c) Optimal Finish Time
  - d) None of these
- 2) \_\_\_\_\_ is a generated node which is to expanded further or all of whose children have been generated.
  - a) Live node
  - b) E-node
  - c) Dead node
  - d) Root node
- 3) The smallest number of colors needed to color a graph G is called its
  - a) Face number
  - b) Chromatic number
  - c) Edges number
  - d) Vertex number
- 4) Total time required for m-coloring algorithm is \_\_\_\_\_ where m = no. of colors, n = no. of nodes.
  - a)  $O(nm)$
  - b)  $O(nm^n)$
  - c)  $O(n^n)$
  - d)  $O(m^n)$
- 5) In quick sort, after the completion of every pass the pivot/key element moves to the \_\_\_\_\_ position.
  - a) exact sorted position
  - b) First
  - c) Second
  - d) Intermediate

P.T.O.





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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
DESIGN AND ANALYSIS OF ALGORITHM  
Class TECSE**

Day and Date : Monday, 8-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instruction : All questions are compulsory.**

SECTION – I

2. Solve **any 4** questions : **(5×4=20)**

- 1) Define space and Time Complexity with suitable example.
- 2) State and prove time complexity of Merge sort.
- 3) Explain Binary search with suitable example.
- 4) Using Greedy approach find maximum profit earned for the given knapsack problem.  
Profit = (12, 10, 8, 11, 14, 7, 9)  
Weight = (4, 6, 5, 7, 3, 1, 6)  
M = 18.

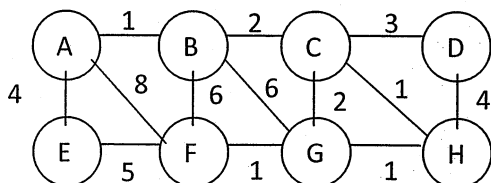
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|   |            |
|---|------------|
| A | 70 million |
| B | 3 million  |
| C | 20 million |
| D | 37 million |

Find decode tree and code for particular symbol.

3. Solve **any one** : **8**

1) Find Minimum Cost Spanning Tree using Prims Algorithm (Show each iteration).



2) Sort following elements using Quick sort (Show each iteration).  
65, 70, 75, 80, 85, 60, 55, 50, 45.

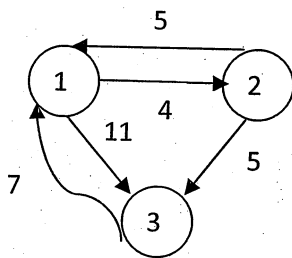


SECTION – II

4. Solve **any 4** :

(5×4=20)

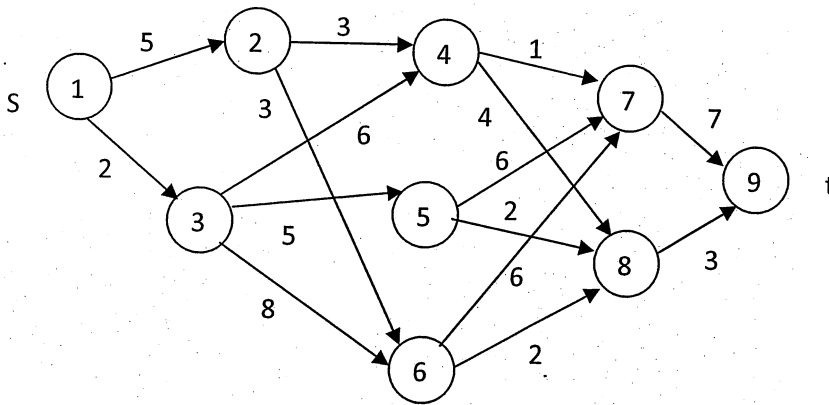
- 1) Write a note on – Reliability design.
- 2) Solve 0/1 Knapsack problem using Dynamic Programming  
N = 3, m = 6  
Profit = {1, 2, 5} and weight = {2, 3, 4}.
- 3) Draw portion of solution space tree for 4- Queen problem using backtracking.
- 4) Explain Hamilton cycle.
- 5) Define P, NP, NP-hard problem.
- 6) Find all pair shortest path using dynamic programming for following diagram.



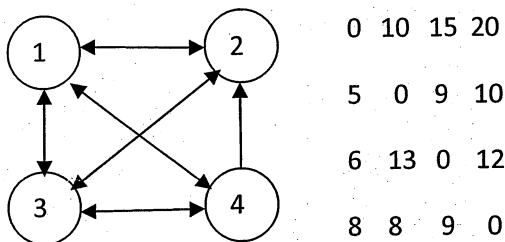
5. Solve **any one** :

8

- 1) Find the minimum cost from s to t in multistage graph using backward approach.



2. Consider following directed graph and edge lengths are given by matrix.  
Find optimal tour travelling sales person.







SLR-VB – 217

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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
DESIGN AND ANALYSIS OF ALGORITHM  
Class TECSE**

Day and Date : Monday, 8-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers :

14

- 1) The recurrence relation that arises in relation with the complexity of binary search is
  - a)  $T(n) = T(n/2) + K$ , K a constant
  - b)  $T(n) = 2T(n/2) + K$ , K a constant
  - c)  $T(n) = T(n/2) + \log n$
  - d)  $T(n) = T(n/2) + n$
- 2) Kruskal's algorithm for finding a minimum spanning tree of a weighted graph G with n vertices and m edges has the time complexity of
  - a)  $O(n^2)$
  - b)  $O(mn)$
  - c)  $O(m + n)$
  - d)  $O(m \log n)$
- 3) An algorithm is a sequence of unambiguous instructions for solving a problem, i.e., for obtaining a required output for any legitimate input in an infinite amount of time.
  - a) True
  - b) False
- 4) In flow shop scheduling OFT stands for
  - a) Optimal Find Time
  - b) Organized Finish Time
  - c) Optimal Finish Time
  - d) None of these
- 5) \_\_\_\_\_ is a generated node which is to expanded further or all of whose children have been generated.
  - a) Live node
  - b) E-node
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  - d) Root node

P.T.O.



- 6) The smallest number of colors needed to color a graph  $G$  is called its
- a) Face number
  - b) Chromatic number
  - c) Edges number
  - d) Vertex number
- 7) Total time required for  $m$ -coloring algorithm is \_\_\_\_\_ where  $m$  = no. of colors,  $n$  = no. of nodes.
- a)  $O(nm)$
  - b)  $O(nm^n)$
  - c)  $O(n^n)$
  - d)  $O(m^n)$
- 8) In quick sort, after the completion of every pass the pivot/key element moves to the \_\_\_\_\_ position.
- a) exact sorted position
  - b) First
  - c) Second
  - d) Intermediate
- 9) For two functions  $f(n)$  and  $g(n)$ , if  $f(n) = \Omega(g(n))$ , we know that  $f(n)$  is asymptotically larger than  $g(n)$ .
- a) False
  - b) True
- 10) For merging two sorted lists of sizes  $m$  and  $n$  into sorted list of size  $m + n$ , we require comparison of
- a)  $O(m + n)$
  - b)  $O(m)$
  - c)  $O(n)$
  - d)  $O(\log m + \log n)$
- 11) Following algorithm(s) can be used to sort  $n$  integers in the range  $[1 \dots n^3]$  in  $O(n)$  time ?
- a) Heap Sort
  - b) Quick Sort
  - c) Merge Sort
  - d) Radix Sort
- 12) A sorting technique is called stable if
- a) it takes  $O(n \log n)$  time
  - b) it maintains the relative order of occurrence of non-distinct elements
  - c) it uses divide and conquer paradigm
  - d) it takes  $O(n)$  space
- 13) Which of the following sorting algorithms has the lowest worst-case complexity ?
- a) Merge sort
  - b) Bubble sort
  - c) Quick sort
  - d) Selection sort
- 14) Which of the following is the tightest upper bound that represents the time complexity of inserting an object into a binary search tree of  $n$  nodes ?
- a)  $O(1)$
  - b)  $O(\log n)$
  - c)  $O(n)$
  - d)  $O(n \log n)$
-



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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
DESIGN AND ANALYSIS OF ALGORITHM  
Class TECSE**

Day and Date : Monday, 8-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instruction : All questions are compulsory.**

SECTION – I

2. Solve **any 4** questions : **(5×4=20)**

- 1) Define space and Time Complexity with suitable example.
- 2) State and prove time complexity of Merge sort.
- 3) Explain Binary search with suitable example.
- 4) Using Greedy approach find maximum profit earned for the given knapsack problem.  
Profit = (12, 10, 8, 11, 14, 7, 9)  
Weight = (4, 6, 5, 7, 3, 1, 6)  
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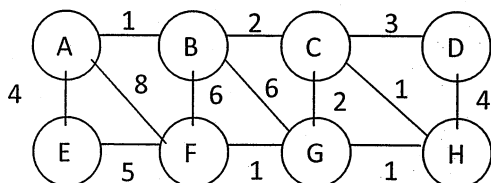
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Find decode tree and code for particular symbol.

3. Solve **any one** : **8**

1) Find Minimum Cost Spanning Tree using Prims Algorithm (Show each iteration).



2) Sort following elements using Quick sort (Show each iteration).  
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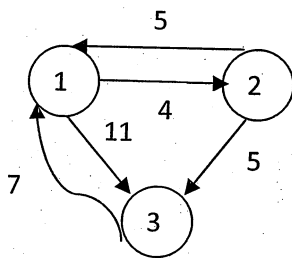


SECTION – II

4. Solve **any 4** :

(5×4=20)

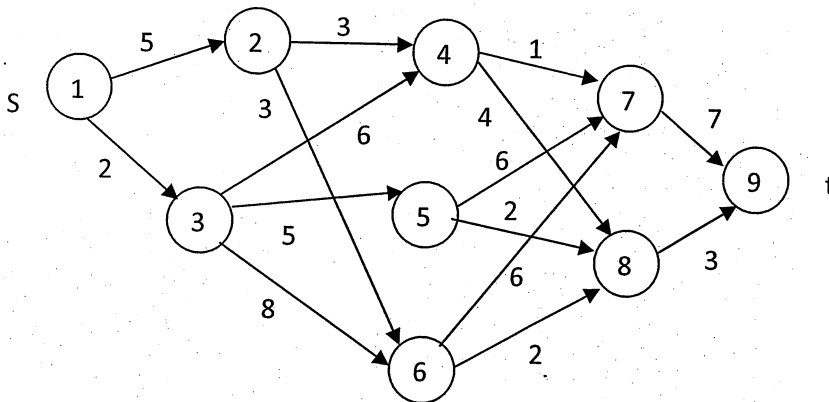
- 1) Write a note on – Reliability design.
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N = 3, m = 6  
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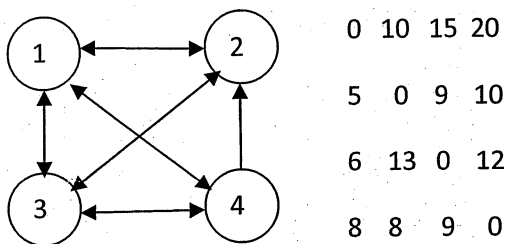
5. Solve **any one** :

8

- 1) Find the minimum cost from s to t in multistage graph using backward approach.



2. Consider following directed graph and edge lengths are given by matrix. Find optimal tour travelling sales person.





SLR-VB – 217

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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
DESIGN AND ANALYSIS OF ALGORITHM  
Class TECSE**

Day and Date : Monday, 8-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers :

14

- 1) The smallest number of colors needed to color a graph G is called its
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P.T.O.





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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
DESIGN AND ANALYSIS OF ALGORITHM  
Class TECSE**

Day and Date : Monday, 8-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instruction : All questions are compulsory.**

SECTION – I

2. Solve **any 4** questions : **(5×4=20)**

- 1) Define space and Time Complexity with suitable example.
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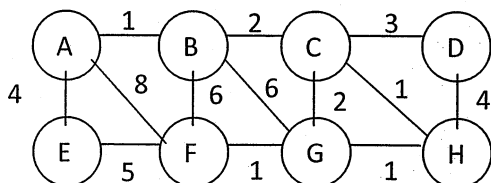
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Find decode tree and code for particular symbol.

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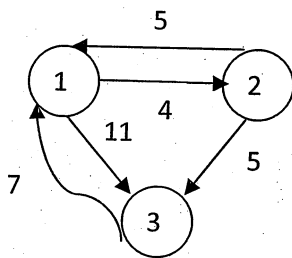


SECTION – II

4. Solve **any 4** :

(5×4=20)

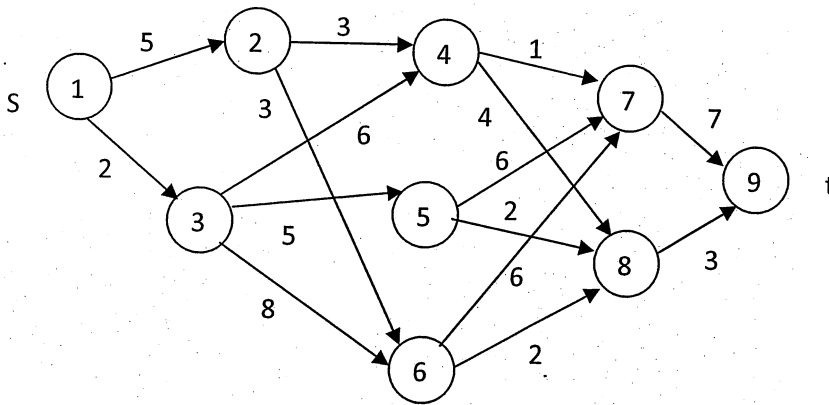
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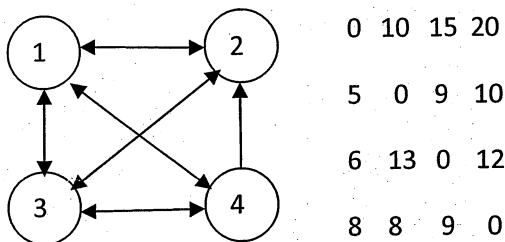
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2. Consider following directed graph and edge lengths are given by matrix.  
Find optimal tour travelling sales person.







SLR-VB – 218

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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER ORGANIZATION**

Day and Date : Tuesday, 9-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:** 1) Answer **all** the questions from Section I and II.  
2) Figures to the **right** indicate **full** marks.  
3) **Assume** data **wherever** necessary.  
4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
5) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- \_\_\_\_\_ is a component of computer which coordinates functional units of computer.  
a) Control unit      b) Output unit      c) Memory unit      d) Processor unit
  - Which of the following information is carried by bus ?  
a) Address only                                      b) Data only  
c) Control only                                        d) Address, Data and Control
  - The purpose of an instruction is to specify both an \_\_\_\_\_ to be carried out by a CPU and the set of \_\_\_\_\_ to be used in the operation.  
a) Operation, operands                              b) Operands, operation  
c) Opcode, operation                                d) Operation, opcode
  - Motorola 680X0 is a \_\_\_\_\_ microprocessor.  
a) Both RISC and CISC                              b) RISC  
c) CISC    d) None of the options
  - Addressing mode of operand X affects the following issues.  
a) The speed with which current value V(X) can be accessed by the CPU  
b) The ease with which current value V(X) can be specified and altered  
c) Both a) and b) Options  
d) None of the options

P.T.O.



- 6) Which of the following method uses one flip flop per state ?
    - a) One-hot
    - b) Classical
    - c) Both one-hot and classical
    - d) None of the options
  - 7) Which of the following function is performed by C2 control signal of two's complement multiplier ?
    - a) Transfer adder output to A
    - b) Transfer A to left input of adder
    - c) Transfer M to right input of adder
    - d) Transfer A to OUTBUS
  - 8) If both segments and paging are used, every memory address generated by a program goes through a two stage address translation process by the sequence
    - a) Linear address N  $\rightarrow$  Virtual address  $A_V \rightarrow$  Real address  $A_R$
    - b) Virtual address  $A_V \rightarrow$  Linear address N  $\rightarrow$  Real address  $A_R$
    - c) Real address  $A_R \rightarrow$  Linear address N  $\rightarrow$  Virtual address  $A_V$
    - d) Real address  $A_R \rightarrow$  Virtual address  $A_V \rightarrow$  Linear address N
  - 9) In which replacement policy the block which was least recently accessed by processor is replaced ?
    - a) LRU
    - b) FIFO
    - c) Optimal
    - d) Best Fit
  - 10) Feedback connection in nonlinear pipeline connects stages  $S_i$  to  $S_j$  such that
    - a)  $i > j$
    - b)  $j > i + 2$
    - c)  $j \leq i$
    - d)  $i \leq j$
  - 11) Which of the following is unary operation in vector processing ?
    - a)  $F : V \times V \rightarrow V$
    - b)  $F : V \rightarrow V$
    - c)  $F : V \times S \rightarrow V$
    - d)  $F : V \times S \rightarrow S$
  - 12) WAR is a type of
    - a) Control Hazard
    - b) Data Hazard
    - c) Structural Hazard
    - d) None
  - 13) Virtual memory is implemented through
    - a) Segmentation
    - b) Paging
    - c) Demand paging
    - d) None
  - 14) A single instruction with multiple scalar instructions is characteristics of which processor ?
    - a) Multi-processor
    - b) Uniprocessor
    - c) Concurrent Processor
    - d) None
-



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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017**  
**COMPUTER ORGANIZATION**

Day and Date : Tuesday, 9-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Answer **all** the questions from Section I and II.  
2) Figures to the **right** indicate **full** marks.  
3) **Assume** data **wherever** necessary.

SECTION – I

2. Answer **any three** questions : **(3×4=12)**

- 1) What are the functional units of computer ? Define the function of each functional unit. How functional units are arranged in computer.
- 2) Write a note on bus hierarchical architecture.
- 3) Represent + 54.125 into single precision format.
- 4) What are the practical disadvantages of using state tables ?

3. Answer **any two** questions : **(2×8=16)**

- 1) Draw and explain the structure of Babbage's Analytical engine.
- 2) Design 16 bit adder composed of 4 bit adders linked by carry lookahead.
- 3) Draw circuit diagram and explain the two's-complement multiplier with control points.



## SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) Difference between memory mapped I/O and I/O mapped I/O.
  - 2) Write a short note on DMA.
  - 3) With neat diagram explain different types of memory hierarchy.
  - 4) With diagram, explain COMA model of multiprocessor.
5. Attempt **any two** : **(2×8=16)**
- 1) Explain :
    - a) Look aside organization of cache
    - b) Look through organization of cache.
  - 2) Describe FIFO, LRU and optimal page replacement policies. Consider the paging system in which  $M_1$  has capacity of three pages. The page address stream is as follows :  
3 1 5 2 2 4 3 2 1 5 2 4  
Show that how these pages are assigned to  $M_1$  using FIFO, LRU and optimal replacement policies.
  - 3) Difference between pipelined processor and vector processor.
-



SLR-VB – 218

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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER ORGANIZATION**

Day and Date : Tuesday, 9-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) Answer **all** the questions from Section I and II.
  - 2) Figures to the **right** indicate **full** marks.
  - 3) **Assume** data **wherever** necessary.
  - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 5) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**

- 1) If both segments and paging are used, every memory address generated by a program goes through a two stage address translation process by the sequence
  - a) Linear address  $N \rightarrow$  Virtual address  $A_V \rightarrow$  Real address  $A_R$
  - b) Virtual address  $A_V \rightarrow$  Linear address  $N \rightarrow$  Real address  $A_R$
  - c) Real address  $A_R \rightarrow$  Linear address  $N \rightarrow$  Virtual address  $A_V$
  - d) Real address  $A_R \rightarrow$  Virtual address  $A_V \rightarrow$  Linear address  $N$
- 2) In which replacement policy the block which was least recently accessed by processor is replaced ?
  - a) LRU
  - b) FIFO
  - c) Optimal
  - d) Best Fit
- 3) Feedback connection in nonlinear pipeline connects stages  $S_i$  to  $S_j$  such that
  - a)  $i > j$
  - b)  $j > i + 2$
  - c)  $j \leq i$
  - d)  $i \leq j$
- 4) Which of the following is unary operation in vector processing ?
  - a)  $F : V \times V \rightarrow V$
  - b)  $F : V \rightarrow V$
  - c)  $F : V \times S \rightarrow V$
  - d)  $F : V \times S \rightarrow S$
- 5) WAR is a type of
  - a) Control Hazard
  - b) Data Hazard
  - c) Structural Hazard
  - d) None
- 6) Virtual memory is implemented through
  - a) Segmentation
  - b) Paging
  - c) Demand paging
  - d) None

P.T.O.





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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017**  
**COMPUTER ORGANIZATION**

Day and Date : Tuesday, 9-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Answer **all** the questions from Section I and II.  
2) Figures to the **right** indicate **full** marks.  
3) **Assume** data **wherever** necessary.

SECTION – I

2. Answer **any three** questions : **(3×4=12)**

- 1) What are the functional units of computer ? Define the function of each functional unit. How functional units are arranged in computer.
- 2) Write a note on bus hierarchical architecture.
- 3) Represent + 54.125 into single precision format.
- 4) What are the practical disadvantages of using state tables ?

3. Answer **any two** questions : **(2×8=16)**

- 1) Draw and explain the structure of Babbage's Analytical engine.
- 2) Design 16 bit adder composed of 4 bit adders linked by carry lookahead.
- 3) Draw circuit diagram and explain the two's-complement multiplier with control points.



## SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) Difference between memory mapped I/O and I/O mapped I/O.
  - 2) Write a short note on DMA.
  - 3) With neat diagram explain different types of memory hierarchy.
  - 4) With diagram, explain COMA model of multiprocessor.
5. Attempt **any two** : **(2×8=16)**
- 1) Explain :
    - a) Look aside organization of cache
    - b) Look through organization of cache.
  - 2) Describe FIFO, LRU and optimal page replacement policies. Consider the paging system in which  $M_1$  has capacity of three pages. The page address stream is as follows :  
3 1 5 2 2 4 3 2 1 5 2 4  
Show that how these pages are assigned to  $M_1$  using FIFO, LRU and optimal replacement policies.
  - 3) Difference between pipelined processor and vector processor.
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER ORGANIZATION**

Day and Date : Tuesday, 9-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) Answer **all** the questions from Section I and II.
  - 2) Figures to the **right** indicate **full** marks.
  - 3) **Assume** data **wherever** necessary.
  - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 5) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- 1) Addressing mode of operand X affects the following issues.
    - a) The speed with which current value V(X) can be accessed by the CPU
    - b) The ease with which current value V(X) can be specified and altered
    - c) Both a) and b) Options
    - d) None of the options
  - 2) Which of the following method uses one flip flop per state ?
    - a) One-hot
    - b) Classical
    - c) Both one-hot and classical
    - d) None of the options
  - 3) Which of the following function is performed by C2 control signal of two's complement multiplier ?
    - a) Transfer adder output to A
    - b) Transfer A to left input of adder
    - c) Transfer M to right input of adder
    - d) Transfer A to OUTBUS
  - 4) If both segments and paging are used, every memory address generated by a program goes through a two stage address translation process by the sequence
    - a) Linear address N → Virtual address  $A_V$  → Real address  $A_R$
    - b) Virtual address  $A_V$  → Linear address N → Real address  $A_R$
    - c) Real address  $A_R$  → Linear address N → Virtual address  $A_V$
    - d) Real address  $A_R$  → Virtual address  $A_V$  → Linear address N

P.T.O.



- 5) In which replacement policy the block which was least recently accessed by processor is replaced ?  
a) LRU                      b) FIFO                      c) Optimal                      d) Best Fit
- 6) Feedback connection in nonlinear pipeline connects stages  $S_i$  to  $S_j$  such that  
a)  $i > j$                       b)  $j > i + 2$                       c)  $j <= i$                       d)  $i <= j$
- 7) Which of the following is unary operation in vector processing ?  
a)  $F : V \times V \rightarrow V$     b)  $F : V \rightarrow V$                       c)  $F : V \times S \rightarrow V$     d)  $F : V \times S \rightarrow S$
- 8) WAR is a type of  
a) Control Hazard                      b) Data Hazard  
c) Structural Hazard                      d) None
- 9) Virtual memory is implemented through  
a) Segmentation    b) Paging                      c) Demand paging    d) None
- 10) A single instruction with multiple scalar instructions is characteristics of which processor ?  
a) Multi-processor                      b) Uniprocessor  
c) Concurrent Processor                      d) None
- 11) \_\_\_\_\_ is a component of computer which coordinates functional units of computer.  
a) Control unit    b) Output unit    c) Memory unit    d) Processor unit
- 12) Which of the following information is carried by bus ?  
a) Address only                      b) Data only  
c) Control only                      d) Address, Data and Control
- 13) The purpose of an instruction is to specify both an \_\_\_\_\_ to be carried out by a CPU and the set of \_\_\_\_\_ to be used in the operation.  
a) Operation, operands                      b) Operands, operation  
c) Opcode, operation                      d) Operation, opcode
- 14) Motorola 680X0 is a \_\_\_\_\_ microprocessor.  
a) Both RISC and CISC                      b) RISC  
c) CISC                      d) None of the options
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017**  
**COMPUTER ORGANIZATION**

Day and Date : Tuesday, 9-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Answer **all** the questions from Section I and II.  
2) Figures to the **right** indicate **full** marks.  
3) **Assume** data **wherever** necessary.

**SECTION – I**

2. Answer **any three** questions : **(3×4=12)**

- 1) What are the functional units of computer ? Define the function of each functional unit. How functional units are arranged in computer.
- 2) Write a note on bus hierarchical architecture.
- 3) Represent + 54.125 into single precision format.
- 4) What are the practical disadvantages of using state tables ?

3. Answer **any two** questions : **(2×8=16)**

- 1) Draw and explain the structure of Babbage's Analytical engine.
- 2) Design 16 bit adder composed of 4 bit adders linked by carry lookahead.
- 3) Draw circuit diagram and explain the two's-complement multiplier with control points.



## SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) Difference between memory mapped I/O and I/O mapped I/O.
  - 2) Write a short note on DMA.
  - 3) With neat diagram explain different types of memory hierarchy.
  - 4) With diagram, explain COMA model of multiprocessor.
5. Attempt **any two** : **(2×8=16)**
- 1) Explain :
    - a) Look aside organization of cache
    - b) Look through organization of cache.
  - 2) Describe FIFO, LRU and optimal page replacement policies. Consider the paging system in which  $M_1$  has capacity of three pages. The page address stream is as follows :  
3 1 5 2 2 4 3 2 1 5 2 4  
Show that how these pages are assigned to  $M_1$  using FIFO, LRU and optimal replacement policies.
  - 3) Difference between pipelined processor and vector processor.
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017  
COMPUTER ORGANIZATION**

Day and Date : Tuesday, 9-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) Answer **all** the questions from Section I and II.
  - 2) Figures to the **right** indicate **full** marks.
  - 3) **Assume** data **wherever** necessary.
  - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 5) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) Feedback connection in nonlinear pipeline connects stages  $S_i$  to  $S_j$  such that  
a)  $i > j$                       b)  $j > i + 2$                       c)  $j \leq i$                       d)  $i \leq j$
- 2) Which of the following is unary operation in vector processing ?  
a)  $F : V \times V \rightarrow V$       b)  $F : V \rightarrow V$                       c)  $F : V \times S \rightarrow V$       d)  $F : V \times S \rightarrow S$
- 3) WAR is a type of  
a) Control Hazard                      b) Data Hazard  
c) Structural Hazard                      d) None
- 4) Virtual memory is implemented through  
a) Segmentation      b) Paging                      c) Demand paging      d) None
- 5) A single instruction with multiple scalar instructions is characteristics of which processor ?  
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c) Concurrent Processor                      d) None
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- 7) Which of the following information is carried by bus ?  
a) Address only                      b) Data only  
c) Control only                      d) Address, Data and Control

P.T.O.



- 8) The purpose of an instruction is to specify both an \_\_\_\_\_ to be carried out by a CPU and the set of \_\_\_\_\_ to be used in the operation.
- a) Operation, operands                      b) Operands, operation  
c) Opcode, operation                        d) Operation, opcode
- 9) Motorola 680X0 is a \_\_\_\_\_ microprocessor.
- a) Both RISC and CISC                      b) RISC  
c) CISC    d) None of the options
- 10) Addressing mode of operand X affects the following issues.
- a) The speed with which current value  $V(X)$  can be accessed by the CPU  
b) The ease with which current value  $V(X)$  can be specified and altered  
c) Both a) and b) Options  
d) None of the options
- 11) Which of the following method uses one flip flop per state ?
- a) One-hot                                        b) Classical  
c) Both one-hot and classical              d) None of the options
- 12) Which of the following function is performed by C2 control signal of two's complement multiplier ?
- a) Transfer adder output to A              b) Transfer A to left input of adder  
c) Transfer M to right input of adder    d) Transfer A to OUTBUS
- 13) If both segments and paging are used, every memory address generated by a program goes through a two stage address translation process by the sequence
- a) Linear address  $N \rightarrow$  Virtual address  $A_V \rightarrow$  Real address  $A_R$   
b) Virtual address  $A_V \rightarrow$  Linear address  $N \rightarrow$  Real address  $A_R$   
c) Real address  $A_R \rightarrow$  Linear address  $N \rightarrow$  Virtual address  $A_V$   
d) Real address  $A_R \rightarrow$  Virtual address  $A_V \rightarrow$  Linear address  $N$
- 14) In which replacement policy the block which was least recently accessed by processor is replaced ?
- a) LRU    b) FIFO    c) Optimal    d) Best Fit
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**T.E. (CSE) (Part – I) (CGPA) Examination, 2017**  
**COMPUTER ORGANIZATION**

Day and Date : Tuesday, 9-5-2017

Marks : 56

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Answer **all** the questions from Section I and II.  
2) Figures to the **right** indicate **full** marks.  
3) **Assume** data **wherever** necessary.

SECTION – I

2. Answer **any three** questions : **(3×4=12)**

- 1) What are the functional units of computer ? Define the function of each functional unit. How functional units are arranged in computer.
- 2) Write a note on bus hierarchical architecture.
- 3) Represent + 54.125 into single precision format.
- 4) What are the practical disadvantages of using state tables ?

3. Answer **any two** questions : **(2×8=16)**

- 1) Draw and explain the structure of Babbage's Analytical engine.
- 2) Design 16 bit adder composed of 4 bit adders linked by carry lookahead.
- 3) Draw circuit diagram and explain the two's-complement multiplier with control points.



## SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) Difference between memory mapped I/O and I/O mapped I/O.
  - 2) Write a short note on DMA.
  - 3) With neat diagram explain different types of memory hierarchy.
  - 4) With diagram, explain COMA model of multiprocessor.
5. Attempt **any two** : **(2×8=16)**
- 1) Explain :
    - a) Look aside organization of cache
    - b) Look through organization of cache.
  - 2) Describe FIFO, LRU and optimal page replacement policies. Consider the paging system in which  $M_1$  has capacity of three pages. The page address stream is as follows :  
3 1 5 2 2 4 3 2 1 5 2 4  
Show that how these pages are assigned to  $M_1$  using FIFO, LRU and optimal replacement policies.
  - 3) Difference between pipelined processor and vector processor.
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SLR-VB – 220

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**T.E. (CSE) (Part – II) (New – CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Monday, 15-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct options :

(14×1=14)

- 1) A view of database that appears to an application program is known as
  - a) Schema
  - b) Subschema
  - c) Virtual table
  - d) None of the above
- 2) An abstraction concept for building composite object from their component object is called
  - a) Specialization
  - b) Normalization
  - c) Generalization
  - d) Aggregation
- 3) Let  $R = (A, B, C, D)$  and  $F = \{A \rightarrow B, A \rightarrow C, BC \rightarrow D\}$  then  $A \twoheadrightarrow D$  is in  $F^+$ . Then which of following is correct ?
  - a)  $A \rightarrow D$  in  $F^+$  is always true
  - b)  $A \rightarrow D$  is in  $F^+$  but for that  $D \rightarrow A$  must be satisfied
  - c)  $A \rightarrow D$  in not in  $F^+$
  - d) none of these
- 4) The output of Data Definition Language (DDL) is stored in
  - a) Relation
  - b) Cache
  - c) Data dictionary
  - d) E-R diagram
- 5) Rename is binary operation
  - a) True
  - b) False
- 6) We say that a relation schema R is in first normal form (1 NF) if
  - a) The domains of all attributes of Rare atomic
  - b) The relation schema do not allow NULL values
  - c) The relation schema do not allow NULL attributes
  - d) The relation schema has a foreign key
- 7) In SQL, which command is used to remove rows from a table ?
  - a) DELETE
  - b) REMOVE
  - c) TRUNCATE
  - d) Both a and c

P.T.O.



- 8) \_\_\_\_\_ index has an index entry for every search key value in the data file.  
a) Sparse                      b) Dense                      c) Both a and b                      d) None
- 9) Consider two statements for two-phase locking protocol  
S1 : In growing phase a transaction may obtain locks  
S2 : In growing phase a transaction may not release any lock  
a) Both S1 and S2 are true                      b) Only S1 is true  
c) Only S2 is true                      d) Both S1 and S2 are false
- 10) Which of the log is not in transaction state ?  
a) Start                      b) Write                      c) Rollback                      d) Commit
- 11) Execution sequence of the instructions from transactions is called  
a) Lock                      b) Serializable                      c) Schedule                      d) Log
- 12) For the B+ tree, following is true  
a) Each non-leaf node has between  $[n/2]$  to  $n^2$  children  
b) Each non-leaf node has between  $[n/2]$  to  $[n/4]$  children  
c) Each non-leaf node has between  $[n/2]$  to  $n$  children  
d) Each non-leaf node has same number of children
- 13) Which of the following scenarios lead to a non-recoverable schedule ?  
a) A transaction writes a data item after it is read by an uncommitted transaction  
b) A transaction reads a data item after it is read by an uncommitted transaction  
c) A transaction reads a data item after it is written by a committed transaction  
d) A transaction reads a data item after it is written by an uncommitted transaction
- 14) In a two-phase locking protocol, a transaction \_\_\_\_\_ downgrade a write lock to a read lock.  
a) cannot, in the growing phase only                      b) can, under all circumstances  
c) can in the shrinking phase only                      d) cannot, under any circumstances
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**T.E. (CSE) (Part – II) (New – CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Monday, 15-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**SECTION – I**

2. Solve the following (**any three**) : **(3×4=12)**
- 1) Explain with examples Generalization and Specialization.
  - 2) Explain the basic structure of SQL queries. Also give examples.
  - 3) Explain with example Third Normal Form (3NF).
  - 4) What are the functions of database administrator ?
3. Solve **any one** : **8**
- 1) Explain fundamental relational algebra operations with examples.
  - 2) List and explain drawbacks of file processing system.
4. What is functional dependency ? Explain the way to find closure of a set of functional dependency. **8**

**SECTION – II**

5. Solve the following (**any three**) : **(3×4=12)**
- 1) Explain Conflict Serializability with example.
  - 2) Explain deferred database modifications with example.
  - 3) Give difference between Ordered indices and Hashing with one example. Which is better to use ?
  - 4) Explain the difference between the three storage types-volatile, nonvolatile and stable in terms of I/O cost.
6. Solve **any one** : **8**
- 1) Explain two-phase locking protocol in detail.
  - 2) List the ACID properties and explain each property in detail with a suitable example.
7. What are the difference between B<sup>+</sup> tree and B tree index files ? **8**

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**Set P**





SLR-VB – 220

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**T.E. (CSE) (Part – II) (New – CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Monday, 15-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

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**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct options :

(14×1=14)

- 1) \_\_\_\_\_ index has an index entry for every search key value in the data file.  
a) Sparse                      b) Dense                      c) Both a and b                      d) None
- 2) Consider two statements for two-phase locking protocol  
S1 : In growing phase a transaction may obtain locks  
S2 : In growing phase a transaction may not release any lock  
a) Both S1 and S2 are true                      b) Only S1 is true  
c) Only S2 is true                      d) Both S1 and S2 are false
- 3) Which of the log is not in transaction state ?  
a) Start                      b) Write                      c) Rollback                      d) Commit
- 4) Execution sequence of the instructions from transactions is called  
a) Lock                      b) Serializable                      c) Schedule                      d) Log
- 5) For the B+ tree, following is true  
a) Each non-leaf node has between  $[n/2]$  to  $n^2$  children  
b) Each non-leaf node has between  $[n/2]$  to  $[n/4]$  children  
c) Each non-leaf node has between  $[n/2]$  to  $n$  children  
d) Each non-leaf node has same number of children
- 6) Which of the following scenarios lead to a non-recoverable schedule ?  
a) A transaction writes a data item after it is read by an uncommitted transaction  
b) A transaction reads a data item after it is read by an uncommitted transaction  
c) A transaction reads a data item after it is written by a committed transaction  
d) A transaction reads a data item after it is written by an uncommitted transaction

P.T.O.



- 7) In a two-phase locking protocol, a transaction \_\_\_\_\_ downgrade a write lock to a read lock.
- a) cannot, in the growing phase only      b) can, under all circumstances  
c) can in the shrinking phase only      d) cannot, under any circumstances
- 8) A view of database that appears to an application program is known as
- a) Schema      b) Subschema  
c) Virtual table      d) None of the above
- 9) An abstraction concept for building composite object from their component object is called
- a) Specialization      b) Normalization      c) Generalization      d) Aggregation
- 10) Let  $R = (A, B, C, D)$  and  $F = \{A \rightarrow B, A \rightarrow C, BC \rightarrow D\}$  then  $A \rightarrow D$  is in  $F^+$ . Then which of following is correct ?
- a)  $A \rightarrow D$  in  $F^+$  is always true  
b)  $A \rightarrow D$  is in  $F^+$  but for that  $D \rightarrow A$  must be satisfied  
c)  $A \rightarrow D$  is not in  $F^+$   
d) none of these
- 11) The output of Data Definition Language (DDL) is stored in
- a) Relation      b) Cache      c) Data dictionary      d) E-R diagram
- 12) Rename is binary operation
- a) True      b) False
- 13) We say that a relation schema  $R$  is in first normal form (1 NF) if
- a) The domains of all attributes of  $R$  are atomic  
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c) The relation schema do not allow NULL attributes  
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- 14) In SQL, which command is used to remove rows from a table ?
- a) DELETE      b) REMOVE      c) TRUNCATE      d) Both a and c
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**T.E. (CSE) (Part – II) (New – CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Monday, 15-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**SECTION – I**

2. Solve the following (**any three**) : **(3×4=12)**
- 1) Explain with examples Generalization and Specialization.
  - 2) Explain the basic structure of SQL queries. Also give examples.
  - 3) Explain with example Third Normal Form (3NF).
  - 4) What are the functions of database administrator ?
3. Solve **any one** : **8**
- 1) Explain fundamental relational algebra operations with examples.
  - 2) List and explain drawbacks of file processing system.
4. What is functional dependency ? Explain the way to find closure of a set of functional dependency. **8**

**SECTION – II**

5. Solve the following (**any three**) : **(3×4=12)**
- 1) Explain Conflict Serializability with example.
  - 2) Explain deferred database modifications with example.
  - 3) Give difference between Ordered indices and Hashing with one example. Which is better to use ?
  - 4) Explain the difference between the three storage types-volatile, nonvolatile and stable in terms of I/O cost.
6. Solve **any one** : **8**
- 1) Explain two-phase locking protocol in detail.
  - 2) List the ACID properties and explain each property in detail with a suitable example.
7. What are the difference between B<sup>+</sup> tree and B tree index files ? **8**

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**Set Q**







SLR-VB – 220

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| Set | <b>R</b> |
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**T.E. (CSE) (Part – II) (New – CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Monday, 15-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct options :

(14×1=14)

- 1) Rename is binary operation  
a) True                      b) False
- 2) We say that a relation schema R is in first normal form (1 NF) if  
a) The domains of all attributes of R are atomic  
b) The relation schema do not allow NULL values  
c) The relation schema do not allow NULL attributes  
d) The relation schema has a foreign key
- 3) In SQL, which command is used to remove rows from a table ?  
a) DELETE                  b) REMOVE                  c) TRUNCATE                  d) Both a and c
- 4) \_\_\_\_\_ index has an index entry for every search key value in the data file.  
a) Sparse                      b) Dense                      c) Both a and b                  d) None
- 5) Consider two statements for two-phase locking protocol  
S1 : In growing phase a transaction may obtain locks  
S2 : In growing phase a transaction may not release any lock  
a) Both S1 and S2 are true                  b) Only S1 is true  
c) Only S2 is true                                  d) Both S1 and S2 are false
- 6) Which of the log is not in transaction state ?  
a) Start                          b) Write                          c) Rollback                          d) Commit
- 7) Execution sequence of the instructions from transactions is called  
a) Lock                          b) Serializable                  c) Schedule                          d) Log

P.T.O.



- 8) For the B+ tree, following is true
- a) Each non-leaf node has between  $\lceil n/2 \rceil$  to  $n^2$  children
  - b) Each non-leaf node has between  $\lceil n/2 \rceil$  to  $\lceil n/4 \rceil$  children
  - c) Each non-leaf node has between  $\lceil n/2 \rceil$  to  $n$  children
  - d) Each non-leaf node has same number of children
- 9) Which of the following scenarios lead to a non-recoverable schedule ?
- a) A transaction writes a data item after it is read by an uncommitted transaction
  - b) A transaction reads a data item after it is read by an uncommitted transaction
  - c) A transaction reads a data item after it is written by a committed transaction
  - d) A transaction reads a data item after it is written by an uncommitted transaction
- 10) In a two-phase locking protocol, a transaction \_\_\_\_\_ downgrade a write lock to a read lock.
- a) cannot, in the growing phase only
  - b) can, under all circumstances
  - c) can in the shrinking phase only
  - d) cannot, under any circumstances
- 11) A view of database that appears to an application program is known as
- a) Schema
  - b) Subschema
  - c) Virtual table
  - d) None of the above
- 12) An abstraction concept for building composite object from their component object is called
- a) Specialization
  - b) Normalization
  - c) Generalization
  - d) Aggregation
- 13) Let  $R = (A, B, C, D)$  and  $F = \{A \rightarrow B, A \rightarrow C, BC \rightarrow D\}$  then  $A \twoheadrightarrow D$  is in  $F^+$ . Then which of following is correct ?
- a)  $A \rightarrow D$  in  $F^+$  is always true
  - b)  $A \rightarrow D$  is in  $F^+$  but for that  $D \rightarrow A$  must be satisfied
  - c)  $A \rightarrow D$  is not in  $F^+$
  - d) none of these
- 14) The output of Data Definition Language (DDL) is stored in
- a) Relation
  - b) Cache
  - c) Data dictionary
  - d) E-R diagram
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**T.E. (CSE) (Part – II) (New – CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Monday, 15-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**SECTION – I**

2. Solve the following (**any three**) : **(3×4=12)**
- 1) Explain with examples Generalization and Specialization.
  - 2) Explain the basic structure of SQL queries. Also give examples.
  - 3) Explain with example Third Normal Form (3NF).
  - 4) What are the functions of database administrator ?
3. Solve **any one** : **8**
- 1) Explain fundamental relational algebra operations with examples.
  - 2) List and explain drawbacks of file processing system.
4. What is functional dependency ? Explain the way to find closure of a set of functional dependency. **8**

**SECTION – II**

5. Solve the following (**any three**) : **(3×4=12)**
- 1) Explain Conflict Serializability with example.
  - 2) Explain deferred database modifications with example.
  - 3) Give difference between Ordered indices and Hashing with one example. Which is better to use ?
  - 4) Explain the difference between the three storage types-volatile, nonvolatile and stable in terms of I/O cost.
6. Solve **any one** : **8**
- 1) Explain two-phase locking protocol in detail.
  - 2) List the ACID properties and explain each property in detail with a suitable example.
7. What are the difference between B<sup>+</sup> tree and B tree index files ? **8**

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**Set R**





SLR-VB – 220

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**T.E. (CSE) (Part – II) (New – CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Monday, 15-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct options :

(14×1=14)

- 1) Which of the log is not in transaction state ?  
a) Start                      b) Write                      c) Rollback                      d) Commit
- 2) Execution sequence of the instructions from transactions is called  
a) Lock                      b) Serializable                      c) Schedule                      d) Log
- 3) For the B+ tree, following is true  
a) Each non-leaf node has between  $[n/2]$  to  $n^2$  children  
b) Each non-leaf node has between  $[n/2]$  to  $[n/4]$  children  
c) Each non-leaf node has between  $[n/2]$  to  $n$  children  
d) Each non-leaf node has same number of children
- 4) Which of the following scenarios lead to a non-recoverable schedule ?  
a) A transaction writes a data item after it is read by an uncommitted transaction  
b) A transaction reads a data item after it is read by an uncommitted transaction  
c) A transaction reads a data item after it is written by a committed transaction  
d) A transaction reads a data item after it is written by an uncommitted transaction
- 5) In a two-phase locking protocol, a transaction \_\_\_\_\_ downgrade a write lock to a read lock.  
a) cannot, in the growing phase only                      b) can, under all circumstances  
c) can in the shrinking phase only                      d) cannot, under any circumstances
- 6) A view of database that appears to an application program is known as  
a) Schema                      b) Subschema  
c) Virtual table                      d) None of the above

P.T.O.



- 7) An abstraction concept for building composite object from their component object is called
- a) Specialization    b) Normalization    c) Generalization    d) Aggregation
- 8) Let  $R = (A, B, C, D)$  and  $F = \{A \rightarrow B, A \rightarrow C, BC \rightarrow D\}$  then  $A \twoheadrightarrow D$  is in  $F^+$ . Then which of following is correct ?
- a)  $A \rightarrow D$  in  $F^+$  is always true  
b)  $A \rightarrow D$  is in  $F^+$  but for that  $D \rightarrow A$  must be satisfied  
c)  $A \rightarrow D$  is not in  $F^+$   
d) none of these
- 9) The output of Data Definition Language (DDL) is stored in
- a) Relation                      b) Cache                      c) Data dictionary    d) E-R diagram
- 10) Rename is binary operation
- a) True                              b) False
- 11) We say that a relation schema R is in first normal form (1 NF) if
- a) The domains of all attributes of R are atomic  
b) The relation schema do not allow NULL values  
c) The relation schema do not allow NULL attributes  
d) The relation schema has a foreign key
- 12) In SQL, which command is used to remove rows from a table ?
- a) DELETE                      b) REMOVE                      c) TRUNCATE                      d) Both a and c
- 13) \_\_\_\_\_ index has an index entry for every search key value in the data file.
- a) Sparse                              b) Dense                              c) Both a and b                      d) None
- 14) Consider two statements for two-phase locking protocol
- S1 : In growing phase a transaction may obtain locks
- S2 : In growing phase a transaction may not release any lock
- a) Both S1 and S2 are true                      b) Only S1 is true  
c) Only S2 is true                                      d) Both S1 and S2 are false
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**T.E. (CSE) (Part – II) (New – CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Monday, 15-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**SECTION – I**

2. Solve the following (**any three**) : **(3×4=12)**
- 1) Explain with examples Generalization and Specialization.
  - 2) Explain the basic structure of SQL queries. Also give examples.
  - 3) Explain with example Third Normal Form (3NF).
  - 4) What are the functions of database administrator ?
3. Solve **any one** : **8**
- 1) Explain fundamental relational algebra operations with examples.
  - 2) List and explain drawbacks of file processing system.
4. What is functional dependency ? Explain the way to find closure of a set of functional dependency. **8**

**SECTION – II**

5. Solve the following (**any three**) : **(3×4=12)**
- 1) Explain Conflict Serializability with example.
  - 2) Explain deferred database modifications with example.
  - 3) Give difference between Ordered indices and Hashing with one example. Which is better to use ?
  - 4) Explain the difference between the three storage types-volatile, nonvolatile and stable in terms of I/O cost.
6. Solve **any one** : **8**
- 1) Explain two-phase locking protocol in detail.
  - 2) List the ACID properties and explain each property in detail with a suitable example.
7. What are the difference between B<sup>+</sup> tree and B tree index files ? **8**

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**Set S**







SLR-VB – 221

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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 17-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) Which phase of a compiler creates three-address code ?
  - a) Lexical analysis
  - b) Code generation
  - c) IC generation
  - d) Semantic analysis
- 2) Which of the following parser uses Shift-Reduce method ?
  - a) Predictive
  - b) LR parser
  - c) Recursive-descent parser
  - d) Both a) and c)
- 3) *Action* and *goto* functions are used in a parsing table of
  - a) Operator-precedence parser
  - b) LL(1) Parser
  - c) S-LR Parser
  - d) Predictive parser
- 4) First-Follow sets are used in
  - a) Symbol table creation
  - b) Generation of IC
  - c) Constructing predictive parsing table
  - d) None of these
- 5) Making repeated scans of the input in parsing is called as
  - a) Tokenizing
  - b) Backtracking
  - c) Parsing
  - d) Analysis
- 6) Leaving a label unspecified and fill it later during IC generation is called as
  - a) Jumping
  - b) Back-patching
  - c) Branching
  - d) None of these
- 7) What is the instruction cost of following code ?  
MOV b, a  
MOV c, a
  - a) 6
  - b) 5
  - c) 7
  - d) 4

P.T.O.



- 8) Which of the following technique is used to track control-flow among procedures activations ?
- a) Syntax-tree
  - b) Binding
  - c) Activation tree
  - d) Both b) and c)
- 9) Which of the following is/are basic block optimization ?
- a) Common sub-expression elimination
  - b) Dead code elimination
  - c) Both a) and b)
  - d) None of these
- 10) The form of Intermediate Representation can be
- a) Post-fix notation
  - b) DAG
  - c) Three-address code
  - d) All of these
- 11) Graph-coloring technique is used during
- a) Peephole optimization
  - b) Data flow analysis
  - c) Register allocation
  - d) None of these
- 12) Sequence of consecutive three address statements in which flow of control enters and exits without halt is called
- a) Flow-graph
  - b) Basic-block
  - c) Loop
  - d) Program
- 13) Peephole optimization does not include
- a) Unreachable code
  - b) Redundant loads and stores
  - c) Reduction in strength
  - d) None of these
- 14) Reaching definitions are used in
- a) Control flow analysis
  - b) Data flow analysis
  - c) Both a) and b)
  - d) None of these
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 17-5-2017

Marks : 56

Time : 3.00 p.m. to 6.00 p.m.

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

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- 1) Explain the recognition of tokens for operators in lexical analysis with neat a Finite Automata diagram.
- 2) Explain DFA simulation algorithm.
- 3) Explain input buffering technique.
- 4) Briefly explain Bottom-Up parser with an example.
- 5) Explain pattern matching using NFA and DFA.

3. Explain SLR parser. **8**

OR

Explain Predictive parser.

4. Explain design of lexical analyzer generator. **8**

**Set P**



## SECTION – II

5. Attempt **any three** : **(4×3=12)**
- 1) Describe activation tree and activation record in run time environment.
  - 2) Explain peephole optimization.
  - 3) Explain quadruples, triples and indirect triples.
  - 4) Explain code motion with example
  - 5) Explain short-circuit code with example.
6. Explain different sources of optimization. **8**
- OR
- Explain issues in the design of code generator.
7. Explain semantic preserving transformations. **8**
- OR
- Explain data-flow analysis by reaching definitions.
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Set **Q**

**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 17-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : 14
- 1) Which of the following technique is used to track control-flow among procedures activations ?
    - a) Syntax-tree
    - b) Binding
    - c) Activation tree
    - d) Both b) and c)
  - 2) Which of the following is/are basic block optimization ?
    - a) Common sub-expression elimination
    - b) Dead code elimination
    - c) Both a) and b)
    - d) None of these
  - 3) The form of Intermediate Representation can be
    - a) Post-fix notation
    - b) DAG
    - c) Three-address code
    - d) All of these
  - 4) Graph-coloring technique is used during
    - a) Peephole optimization
    - b) Data flow analysis
    - c) Register allocation
    - d) None of these
  - 5) Sequence of consecutive three address statements in which flow of control enters and exits without halt is called
    - a) Flow-graph
    - b) Basic-block
    - c) Loop
    - d) Program
  - 6) Peephole optimization does not include
    - a) Unreachable code
    - b) Redundant loads and stores
    - c) Reduction in strength
    - d) None of these

P.T.O.



- 7) Reaching definitions are used in  
a) Control flow analysis                      b) Data flow analysis  
c) Both a) and b)                              d) None of these
- 8) Which phase of a compiler creates three-address code ?  
a) Lexical analysis                              b) Code generation  
c) IC generation                                 d) Semantic analysis
- 9) Which of the following parser uses Shift-Reduce method ?  
a) Predictive                                      b) LR parser  
c) Recursive-descent parser                  d) Both a) and c)
- 10) *Action* and *goto* functions are used in a parsing table of  
a) Operator-precedence parser                b) LL(1) Parser  
c) S-LR Parser                                  d) Predictive parser
- 11) First-Follow sets are used in  
a) Symbol table creation  
b) Generation of IC  
c) Constructing predictive parsing table  
d) None of these
- 12) Making repeated scans of the input in parsing is called as  
a) Tokenizing              b) Backtracking    c) Parsing              d) Analysis
- 13) Leaving a label unspecified and fill it later during IC generation is called as  
a) Jumping                  b) Back-patching    c) Branching              d) None of these
- 14) What is the instruction cost of following code ?  
MOV b, a  
MOV c, a  
a) 6                              b) 5                              c) 7                              d) 4
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 17-5-2017

Marks : 56

Time : 3.00 p.m. to 6.00 p.m.

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

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- 1) Explain the recognition of tokens for operators in lexical analysis with neat a Finite Automata diagram.
- 2) Explain DFA simulation algorithm.
- 3) Explain input buffering technique.
- 4) Briefly explain Bottom-Up parser with an example.
- 5) Explain pattern matching using NFA and DFA.

3. Explain SLR parser. **8**

OR

Explain Predictive parser.

4. Explain design of lexical analyzer generator. **8**

**Set Q**



## SECTION – II

5. Attempt **any three** : **(4×3=12)**
- 1) Describe activation tree and activation record in run time environment.
  - 2) Explain peephole optimization.
  - 3) Explain quadruples, triples and indirect triples.
  - 4) Explain code motion with example
  - 5) Explain short-circuit code with example.
6. Explain different sources of optimization. **8**
- OR
- Explain issues in the design of code generator.
7. Explain semantic preserving transformations. **8**
- OR
- Explain data-flow analysis by reaching definitions.
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SLR-VB – 221

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Set **R**

**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 17-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : 14
- 1) Making repeated scans of the input in parsing is called as  
a) Tokenizing      b) Backtracking      c) Parsing      d) Analysis
  - 2) Leaving a label unspecified and fill it later during IC generation is called as  
a) Jumping      b) Back-patching      c) Branching      d) None of these
  - 3) What is the instruction cost of following code ?  
MOV b, a  
MOV c, a  
a) 6                      b) 5                      c) 7                      d) 4
  - 4) Which of the following technique is used to track control-flow among procedures activations ?  
a) Syntax-tree                      b) Binding  
c) Activation tree                      d) Both b) and c)
  - 5) Which of the following is/are basic block optimization ?  
a) Common sub-expression elimination  
b) Dead code elimination  
c) Both a) and b)  
d) None of these
  - 6) The form of Intermediate Representation can be  
a) Post-fix notation                      b) DAG  
c) Three-address code                      d) All of these

P.T.O.



- 7) Graph-coloring technique is used during
- a) Peephole optimization
  - b) Data flow analysis
  - c) Register allocation
  - d) None of these
- 8) Sequence of consecutive three address statements in which flow of control enters and exits without halt is called
- a) Flow-graph
  - b) Basic-block
  - c) Loop
  - d) Program
- 9) Peephole optimization does not include
- a) Unreachable code
  - b) Redundant loads and stores
  - c) Reduction in strength
  - d) None of these
- 10) Reaching definitions are used in
- a) Control flow analysis
  - b) Data flow analysis
  - c) Both a) and b)
  - d) None of these
- 11) Which phase of a compiler creates three-address code ?
- a) Lexical analysis
  - b) Code generation
  - c) IC generation
  - d) Semantic analysis
- 12) Which of the following parser uses Shift-Reduce method ?
- a) Predictive
  - b) LR parser
  - c) Recursive-descent parser
  - d) Both a) and c)
- 13) *Action* and *goto* functions are used in a parsing table of
- a) Operator-precedence parser
  - b) LL(1) Parser
  - c) S-LR Parser
  - d) Predictive parser
- 14) First-Follow sets are used in
- a) Symbol table creation
  - b) Generation of IC
  - c) Constructing predictive parsing table
  - d) None of these
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 17-5-2017

Marks : 56

Time : 3.00 p.m. to 6.00 p.m.

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

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- 1) Explain the recognition of tokens for operators in lexical analysis with neat a Finite Automata diagram.
- 2) Explain DFA simulation algorithm.
- 3) Explain input buffering technique.
- 4) Briefly explain Bottom-Up parser with an example.
- 5) Explain pattern matching using NFA and DFA.

3. Explain SLR parser. **8**

OR

Explain Predictive parser.

4. Explain design of lexical analyzer generator. **8**

**Set R**



## SECTION – II

5. Attempt **any three** : **(4×3=12)**
- 1) Describe activation tree and activation record in run time environment.
  - 2) Explain peephole optimization.
  - 3) Explain quadruples, triples and indirect triples.
  - 4) Explain code motion with example
  - 5) Explain short-circuit code with example.
6. Explain different sources of optimization. **8**
- OR
- Explain issues in the design of code generator.
7. Explain semantic preserving transformations. **8**
- OR
- Explain data-flow analysis by reaching definitions.
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SLR-VB – 221

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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 17-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) The form of Intermediate Representation can be
  - a) Post-fix notation
  - b) DAG
  - c) Three-address code
  - d) All of these
- 2) Graph-coloring technique is used during
  - a) Peephole optimization
  - b) Data flow analysis
  - c) Register allocation
  - d) None of these
- 3) Sequence of consecutive three address statements in which flow of control enters and exits without halt is called
  - a) Flow-graph
  - b) Basic-block
  - c) Loop
  - d) Program
- 4) Peephole optimization does not include
  - a) Unreachable code
  - b) Redundant loads and stores
  - c) Reduction in strength
  - d) None of these
- 5) Reaching definitions are used in
  - a) Control flow analysis
  - b) Data flow analysis
  - c) Both a) and b)
  - d) None of these
- 6) Which phase of a compiler creates three-address code ?
  - a) Lexical analysis
  - b) Code generation
  - c) IC generation
  - d) Semantic analysis
- 7) Which of the following parser uses Shift-Reduce method ?
  - a) Predictive
  - b) LR parser
  - c) Recursive-descent parser
  - d) Both a) and c)

P.T.O.



- 8) *Action* and *goto* functions are used in a parsing table of
- a) Operator-precedence parser
  - b) LL(1) Parser
  - c) S-LR Parser
  - d) Predictive parser
- 9) First-Follow sets are used in
- a) Symbol table creation
  - b) Generation of IC
  - c) Constructing predictive parsing table
  - d) None of these
- 10) Making repeated scans of the input in parsing is called as
- a) Tokenizing
  - b) Backtracking
  - c) Parsing
  - d) Analysis
- 11) Leaving a label unspecified and fill it later during IC generation is called as
- a) Jumping
  - b) Back-patching
  - c) Branching
  - d) None of these
- 12) What is the instruction cost of following code ?
- MOV b, a  
MOV c, a
- a) 6
  - b) 5
  - c) 7
  - d) 4
- 13) Which of the following technique is used to track control-flow among procedures activations ?
- a) Syntax-tree
  - b) Binding
  - c) Activation tree
  - d) Both b) and c)
- 14) Which of the following is/are basic block optimization ?
- a) Common sub-expression elimination
  - b) Dead code elimination
  - c) Both a) and b)
  - d) None of these
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 17-5-2017

Marks : 56

Time : 3.00 p.m. to 6.00 p.m.

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

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- 1) Explain the recognition of tokens for operators in lexical analysis with neat a Finite Automata diagram.
- 2) Explain DFA simulation algorithm.
- 3) Explain input buffering technique.
- 4) Briefly explain Bottom-Up parser with an example.
- 5) Explain pattern matching using NFA and DFA.

3. Explain SLR parser. **8**

OR

Explain Predictive parser.

4. Explain design of lexical analyzer generator. **8**

**Set S**



## SECTION – II

5. Attempt **any three** : **(4×3=12)**
- 1) Describe activation tree and activation record in run time environment.
  - 2) Explain peephole optimization.
  - 3) Explain quadruples, triples and indirect triples.
  - 4) Explain code motion with example
  - 5) Explain short-circuit code with example.
6. Explain different sources of optimization. **8**
- OR
- Explain issues in the design of code generator.
7. Explain semantic preserving transformations. **8**
- OR
- Explain data-flow analysis by reaching definitions.
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SLR-VB – 222

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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017**  
**UNIX OPERATING SYSTEMS**

Day and Date : Friday, 19-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to the right indicate full marks.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- 1) Unix Kernel minimizes the frequency of disk access by use of \_\_\_\_\_
    - a) scheduling
    - b) buffer cache
    - c) cache memory
    - d) I/O redirection
  - 2) Logical file system number is represented by \_\_\_\_\_
    - a) Block Number
    - b) Device Number
    - c) Both a) and b)
    - d) None of above
  - 3) In case of \_\_\_\_\_, Kernel raises processor execution level.
    - a) brelse
    - b) bread
    - c) bwrite
    - d) none of above
  - 4) Identify the correct sequence of interrupt levels according to increasing priority
    - a) machine error, clock, disk, network devices, terminal, s/w interrupts
    - b) s/w interrupts, terminal, network devices, disk, clock, machine error
    - c) machine errors, network devices, terminal, s/w interrupts, clock, disk
    - d) network devices, s/w interrupts, disk, clock, machine error, terminal
  - 5) The Kernel uses \_\_\_\_\_ algorithm to allocate a disk Inode.
    - a) iget
    - b) ialloc
    - c) alloc
    - d) namei

P.T.O.



- 6) \_\_\_\_\_ symbol is used to transfer the output of one command as input to other command.  
a) >                      b) <                      c) |                      d) 2 >
- 7) Every file has \_\_\_\_\_ inodes.  
a) One                      b) Two  
c) More than one                      d) None of above
- 8) Which algorithm is used for conversion of byte offset to block number ?  
a) namei                      b) iput                      c) bmap                      d) iget
- 9) A process can synchronize its execution with the termination of a child process by executing the \_\_\_\_\_ system call.  
a) exit ( )                      b) wait ( )                      c) join ( )                      d) fork ( )
- 10) A Kernel allocates a new region during \_\_\_\_\_  
a) fork                      b) exec                      c) shmget                      d) all of these
- 11) When a process accesses a page that is not part of its working set, it incurs \_\_\_\_\_ page fault.  
a) validity                      b) invalid                      c) modification                      d) recent
- 12) \_\_\_\_\_ translates a file system address, consisting of a logical device number and block number, to a particular sector on a disk.  
a) Stream                      b) Disk driver  
c) Strategy interface                      d) Kernel
- 13) Consider the following statements :  
S1 : process in Kernel mode can only access U-area  
S2 : process in user mode can access u-area  
a) Both are true                      b) Only S2 is true  
c) Only S1 is true                      d) Both are false
- 14) The memory management hardware divides physical memory into set of equal sized blocks called \_\_\_\_\_  
a) Region                      b) Pregion                      c) Pages                      d) Offset
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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017  
UNIX OPERATING SYSTEMS**

Day and Date : Friday, 19-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**Instructions:** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

SECTION – I

2. Solve **any three** : **(3×4=12)**

- 1) Draw and explain data structures of Kernel related to file system and process subsystem.
- 2) Explain creat ( ) system call.
- 3) Explain different operating system services.
- 4) Explain open system call and its algorithm in detail. Which data structures are manipulated after. Open system call ?
- 5) Describe the actions taken by Kernel while allocating a buffer for a disk block, when the Kernel can not find the block on the hash queue and free list of buffers is empty.

3. Solve **any two** : **(2×8=16)**

- 1) Explain architecture of unix operating system with the help of block diagram.
- 2) Explain in detail structure of regular file with the help of example.
- 3) Write and explain alloc algorithm in detail.
- 4) Write and explain algorithm for buffer allocation.

**Set P**



## SECTION – II

4. Write short note on **any 3** of the following : **(3×4=12)**
- 1) Swapping process in
  - 2) Loadreg
  - 3) Clists
  - 4) System call for time
  - 5) The shell.
5. Solve **any two** : **(2×8=16)**
- 1) With a neat figure explain process state transition diagram.
  - 2) What is context of process ? Explain different types of context of process with the help of diagram.
  - 3) What is validity page fault ? Explain the function of validity page fault handler with the help of algorithm.
  - 4) Describe major data structures supported by Kernel for demand paging.
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SLR-VB – 222

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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017**  
**UNIX OPERATING SYSTEMS**

Day and Date : Friday, 19-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to the right indicate full marks.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : (1×14=14)
- 1) Which algorithm is used for conversion of byte offset to block number ?  
a) namei                      b) iput                      c) bmap                      d) iget
  - 2) A process can synchronize its execution with the termination of a child process by executing the \_\_\_\_\_ system call.  
a) exit ( )                      b) wait ( )                      c) join ( )                      d) fork ( )
  - 3) A Kernel allocates a new region during \_\_\_\_\_  
a) fork                      b) exec                      c) shmget                      d) all of these
  - 4) When a process accesses a page that is not part of its working set, it incurs \_\_\_\_\_ page fault.  
a) validity                      b) invalid                      c) modification                      d) recent
  - 5) \_\_\_\_\_ translates a file system address, consisting of a logical device number and block number, to a particular sector on a disk.  
a) Stream  
b) Disk driver  
c) Strategy interface  
d) Kernel

P.T.O.



- 6) Consider the following statements :
- S1 : process in Kernel mode can only access U-area  
S2 : process in user mode can access u-area
- a) Both are true                                      b) Only S2 is true  
c) Only S1 is true                                      d) Both are false
- 7) The memory management hardware divides physical memory into set of equal sized blocks called \_\_\_\_\_
- a) Region                      b) Pregion                      c) Pages                      d) Offset
- 8) Unix Kernel minimizes the frequency of disk access by use of \_\_\_\_\_
- a) scheduling    b) buffer cache  
c) cache memory    d) I/O redirection
- 9) Logical file system number is represented by \_\_\_\_\_
- a) Block Number    b) Device Number  
c) Both a) and b)    d) None of above
- 10) In case of \_\_\_\_\_, Kernel raises processor execution level.
- a) brelse                      b) bread                      c) bwrite                      d) none of above
- 11) Identify the correct sequence of interrupt levels according to increasing priority
- a) machine error, clock, disk, network devices, terminal, s/w interrupts  
b) s/w interrupts, terminal, network devices, disk, clock, machine error  
c) machine errors, network devices, terminal, s/w interrupts, clock, disk  
d) network devices, s/w interrupts, disk, clock, machine error, terminal
- 12) The Kernel uses \_\_\_\_\_ algorithm to allocate a disk Inode.
- a) iget                      b) ialloc                      c) alloc                      d) namei
- 13) \_\_\_\_\_ symbol is used to transfer the output of one command as input to other command.
- a) >                      b) <                      c) |                      d) 2 >
- 14) Every file has \_\_\_\_\_ inodes.
- a) One    b) Two  
c) More than one    d) None of above
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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017  
UNIX OPERATING SYSTEMS**

Day and Date : Friday, 19-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**Instructions:** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

SECTION – I

2. Solve **any three** : **(3×4=12)**

- 1) Draw and explain data structures of Kernel related to file system and process subsystem.
- 2) Explain creat ( ) system call.
- 3) Explain different operating system services.
- 4) Explain open system call and its algorithm in detail. Which data structures are manipulated after. Open system call ?
- 5) Describe the actions taken by Kernel while allocating a buffer for a disk block, when the Kernel can not find the block on the hash queue and free list of buffers is empty.

3. Solve **any two** : **(2×8=16)**

- 1) Explain architecture of unix operating system with the help of block diagram.
- 2) Explain in detail structure of regular file with the help of example.
- 3) Write and explain alloc algorithm in detail.
- 4) Write and explain algorithm for buffer allocation.

**Set Q**



## SECTION – II

4. Write short note on **any 3** of the following : **(3×4=12)**
- 1) Swapping process in
  - 2) Loadreg
  - 3) Clists
  - 4) System call for time
  - 5) The shell.
5. Solve **any two** : **(2×8=16)**
- 1) With a neat figure explain process state transition diagram.
  - 2) What is context of process ? Explain different types of context of process with the help of diagram.
  - 3) What is validity page fault ? Explain the function of validity page fault handler with the help of algorithm.
  - 4) Describe major data structures supported by Kernel for demand paging.
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SLR-VB – 222

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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017**  
**UNIX OPERATING SYSTEMS**

Day and Date : Friday, 19-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**  
4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : (1×14=14)
- 1) The Kernel uses \_\_\_\_\_ algorithm to allocate a disk Inode.  
a) iget                      b) ialloc                      c) alloc                      d) namei
  - 2) \_\_\_\_\_ symbol is used to transfer the output of one command as input to other command.  
a) >                      b) <                      c) |                      d) 2 >
  - 3) Every file has \_\_\_\_\_ inodes.  
a) One                      b) Two  
c) More than one                      d) None of above
  - 4) Which algorithm is used for conversion of byte offset to block number ?  
a) namei                      b) iput                      c) bmap                      d) iget
  - 5) A process can synchronize its execution with the termination of a child process by executing the \_\_\_\_\_ system call.  
a) exit ( )                      b) wait ( )                      c) join ( )                      d) fork ( )
  - 6) A Kernel allocates a new region during \_\_\_\_\_  
a) fork                      b) exec                      c) shmget                      d) all of these

P.T.O.



- 7) When a process accesses a page that is not part of its working set, it incurs \_\_\_\_\_ page fault.  
a) validity          b) invalid          c) modification      d) recent
- 8) \_\_\_\_\_ translates a file system address, consisting of a logical device number and block number, to a particular sector on a disk.  
a) Stream                                  b) Disk driver  
c) Strategy interface                  d) Kernel
- 9) Consider the following statements :  
S1 : process in Kernel mode can only access U-area  
S2 : process in user mode can access u-area  
a) Both are true                          b) Only S2 is true  
c) Only S1 is true                          d) Both are false
- 10) The memory management hardware divides physical memory into set of equal sized blocks called \_\_\_\_\_.  
a) Region          b) Pregion          c) Pages          d) Offset
- 11) Unix Kernel minimizes the frequency of disk access by use of \_\_\_\_\_.  
a) scheduling                                  b) buffer cache  
c) cache memory                              d) I/O redirection
- 12) Logical file system number is represented by \_\_\_\_\_.  
a) Block Number                              b) Device Number  
c) Both a) and b)                              d) None of above
- 13) In case of \_\_\_\_\_, Kernel raises processor execution level.  
a) brelse          b) bread          c) bwrite          d) none of above
- 14) Identify the correct sequence of interrupt levels according to increasing priority  
a) machine error, clock, disk, network devices, terminal, s/w interrupts  
b) s/w interrupts, terminal, network devices, disk, clock, machine error  
c) machine errors, network devices, terminal, s/w interrupts, clock, disk  
d) network devices, s/w interrupts, disk, clock, machine error, terminal
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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017  
UNIX OPERATING SYSTEMS**

Day and Date : Friday, 19-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**Instructions:** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

SECTION – I

2. Solve **any three** : **(3×4=12)**

- 1) Draw and explain data structures of Kernel related to file system and process subsystem.
- 2) Explain creat ( ) system call.
- 3) Explain different operating system services.
- 4) Explain open system call and its algorithm in detail. Which data structures are manipulated after. Open system call ?
- 5) Describe the actions taken by Kernel while allocating a buffer for a disk block, when the Kernel can not find the block on the hash queue and free list of buffers is empty.

3. Solve **any two** : **(2×8=16)**

- 1) Explain architecture of unix operating system with the help of block diagram.
- 2) Explain in detail structure of regular file with the help of example.
- 3) Write and explain alloc algorithm in detail.
- 4) Write and explain algorithm for buffer allocation.

**Set R**



## SECTION – II

4. Write short note on **any 3** of the following : **(3×4=12)**
- 1) Swapping process in
  - 2) Loadreg
  - 3) Clists
  - 4) System call for time
  - 5) The shell.
5. Solve **any two** : **(2×8=16)**
- 1) With a neat figure explain process state transition diagram.
  - 2) What is context of process ? Explain different types of context of process with the help of diagram.
  - 3) What is validity page fault ? Explain the function of validity page fault handler with the help of algorithm.
  - 4) Describe major data structures supported by Kernel for demand paging.
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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017**  
**UNIX OPERATING SYSTEMS**

Day and Date : Friday, 19-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to the right indicate full marks.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- 1) A Kernel allocates a new region during \_\_\_\_\_  
a) fork                      b) exec                      c) shmget                      d) all of these
  - 2) When a process accesses a page that is not part of its working set, it incurs \_\_\_\_\_ page fault.  
a) validity                      b) invalid                      c) modification                      d) recent
  - 3) \_\_\_\_\_ translates a file system address, consisting of a logical device number and block number, to a particular sector on a disk.  
a) Stream    b) Disk driver  
c) Strategy interface    d) Kernel
  - 4) Consider the following statements :  
S1 : process in Kernel mode can only access U-area  
S2 : process in user mode can access u-area  
a) Both are true  
b) Only S2 is true  
c) Only S1 is true  
d) Both are false

P.T.O.



- 5) The memory management hardware divides physical memory into set of equal sized blocks called \_\_\_\_\_  
a) Region              b) Pregion              c) Pages              d) Offset
- 6) Unix Kernel minimizes the frequency of disk access by use of \_\_\_\_\_  
a) scheduling                      b) buffer cache  
c) cache memory                      d) I/O redirection
- 7) Logical file system number is represented by \_\_\_\_\_  
a) Block Number                      b) Device Number  
c) Both a) and b)                      d) None of above
- 8) In case of \_\_\_\_\_, Kernel raises processor execution level.  
a) brelse              b) bread              c) bwrite              d) none of above
- 9) Identify the correct sequence of interrupt levels according to increasing priority  
a) machine error, clock, disk, network devices, terminal, s/w interrupts  
b) s/w interrupts, terminal, network devices, disk, clock, machine error  
c) machine errors, network devices, terminal, s/w interrupts, clock, disk  
d) network devices, s/w interrupts, disk, clock, machine error, terminal
- 10) The Kernel uses \_\_\_\_\_ algorithm to allocate a disk Inode.  
a) iget              b) ialloc              c) alloc              d) namei
- 11) \_\_\_\_\_ symbol is used to transfer the output of one command as input to other command.  
a) >              b) <              c) |              d) 2 >
- 12) Every file has \_\_\_\_\_ inodes.  
a) One                                      b) Two  
c) More than one                                      d) None of above
- 13) Which algorithm is used for conversion of byte offset to block number ?  
a) namei              b) iput              c) bmap              d) iget
- 14) A process can synchronize its execution with the termination of a child process by executing the \_\_\_\_\_ system call.  
a) exit ( )              b) wait ( )              c) join ( )              d) fork ( )
- \_\_\_\_\_



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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017  
UNIX OPERATING SYSTEMS**

Day and Date : Friday, 19-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**Instructions:** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

SECTION – I

2. Solve **any three** : **(3×4=12)**

- 1) Draw and explain data structures of Kernel related to file system and process subsystem.
- 2) Explain creat ( ) system call.
- 3) Explain different operating system services.
- 4) Explain open system call and its algorithm in detail. Which data structures are manipulated after. Open system call ?
- 5) Describe the actions taken by Kernel while allocating a buffer for a disk block, when the Kernel can not find the block on the hash queue and free list of buffers is empty.

3. Solve **any two** : **(2×8=16)**

- 1) Explain architecture of unix operating system with the help of block diagram.
- 2) Explain in detail structure of regular file with the help of example.
- 3) Write and explain alloc algorithm in detail.
- 4) Write and explain algorithm for buffer allocation.

**Set S**



## SECTION – II

4. Write short note on **any 3** of the following : **(3×4=12)**
- 1) Swapping process in
  - 2) Loadreg
  - 3) Clists
  - 4) System call for time
  - 5) The shell.
5. Solve **any two** : **(2×8=16)**
- 1) With a neat figure explain process state transition diagram.
  - 2) What is context of process ? Explain different types of context of process with the help of diagram.
  - 3) What is validity page fault ? Explain the function of validity page fault handler with the help of algorithm.
  - 4) Describe major data structures supported by Kernel for demand paging.
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
SOFTWARE ENGINEERING**

Day and Date : Monday, 22-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) The most important feature of spiral model is
  - A) Requirement analysis
  - B) Risk management
  - C) Quality management
  - D) Configuration management
- 2) What is the normal order of activities in which software testing is organized ?
  - A) unit, integration, system, validation
  - B) system, integration, unit, validation
  - C) unit, integration, validation, system
  - D) none of the above
- 3) The \_\_\_\_\_ data elements are those data elements in the data flow diagram that are farthest removed from the physical inputs but can still be considered inputs to the system.
  - A) MAI
  - B) MAO
  - C) MOA
  - D) MIA
- 4) The problem that threatens the success of a project but which has not yet happened is a
  - A) bug
  - B) error
  - C) risk
  - D) failure
- 5) UML stands for
  - A) Union Modeling Language
  - B) Unified Monitoring Language
  - C) Unified Modeling Language
  - D) Union Monitoring Language
- 6) The testing that focuses on the variables is called
  - A) black box testing
  - B) white box testing
  - C) data variable testing
  - D) data flow testing
- 7) CASE Tool is
  - A) Computer Aided Software Engineering
  - B) Component Aided Software Engineering
  - C) Constructive Aided Software Engineering
  - D) Computer Analysis Software Engineering

P.T.O.



- 8) Software consists of
- A) Set of instructions + operating procedures
  - B) Programs + documentation + operating procedures
  - C) Programs + hardware manuals
  - D) Set of programs
- 9) Which phase is not available in software life cycle ?
- A) Coding
  - B) Testing
  - C) Maintenance
  - D) Abstraction
- 10) Which is not a step of requirement engineering ?
- A) Requirements elicitation
  - B) Requirements analysis
  - C) Requirements design
  - D) Requirements documentation
- 11) Which is not a size metric ?
- A) LOC
  - B) Function count
  - C) Program length
  - D) Cyclomatic complexity
- 12) The worst type of coupling is
- A) Data coupling
  - B) Control coupling
  - C) Stamp coupling
  - D) Content coupling
- 13) If every requirement stated in the Software Requirement Specification (SRS) has only one interpretation, SRS is said to be
- A) correct
  - B) unambiguous
  - C) consistent
  - D) verifiable
- 14) SRS is also known as specification of
- A) White box testing
  - B) Stress testing
  - C) Integrated testing
  - D) Black box testing
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
SOFTWARE ENGINEERING**

Day and Date : Monday, 22-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figure to right indicates full marks.**

**SECTION – I**

2. Attempt **any five** : **(5×4=20)**
- a) Define SDLC and explain phased development process.
  - b) What is SRS ? Explain need of SRS.
  - c) Write a short note on DFD and data dictionary.
  - d) Write a note on prototyping model.
  - e) Differentiate between top down and bottom up estimation approach.
  - f) Write a short note on OOA and OOD.

3. Explain structured design methodology. **(1×8=8)**

**OR**

Draw and explain waterfall model and give its strengths and weaknesses.

**SECTION – II**

4. Attempt **any five** : **(5×4=20)**
- a) Explain review process in detail.
  - b) Explain scrum method in agile project management process.
  - c) Compare between black box and white box testing.
  - d) Explain levels of testing.
  - e) Explain milestone analysis.
  - f) Explain CMM in detail.

5. Explain the risk management in detail with diagram. **(1×8=8)**

**OR**

Explain fish bone analysis with diagram.





SLR-VB – 223

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| Set | Q |
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
SOFTWARE ENGINEERING**

Day and Date : Monday, 22-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : (1×14=14)
- 1) Software consists of
    - A) Set of instructions + operating procedures
    - B) Programs + documentation + operating procedures
    - C) Programs + hardware manuals
    - D) Set of programs
  - 2) Which phase is not available in software life cycle ?
    - A) Coding
    - B) Testing
    - C) Maintenance
    - D) Abstraction
  - 3) Which is not a step of requirement engineering ?
    - A) Requirements elicitation
    - B) Requirements analysis
    - C) Requirements design
    - D) Requirements documentation
  - 4) Which is not a size metric ?
    - A) LOC
    - B) Function count
    - C) Program length
    - D) Cyclomatic complexity
  - 5) The worst type of coupling is
    - A) Data coupling
    - B) Control coupling
    - C) Stamp coupling
    - D) Content coupling
  - 6) If every requirement stated in the Software Requirement Specification (SRS) has only one interpretation, SRS is said to be
    - A) correct
    - B) unambiguous
    - C) consistent
    - D) verifiable
  - 7) SRS is also known as specification of
    - A) White box testing
    - B) Stress testing
    - C) Integrated testing
    - D) Black box testing

P.T.O.



- 8) The most important feature of spiral model is
- A) Requirement analysis                      B) Risk management  
C) Quality management                      D) Configuration management
- 9) What is the normal order of activities in which software testing is organized ?
- A) unit, integration, system, validation    B) system, integration, unit, validation  
C) unit, integration, validation, system    D) none of the above
- 10) The \_\_\_\_\_ data elements are those data elements in the data flow diagram that are farthest removed from the physical inputs but can still be considered inputs to the system.
- A) MAI                      B) MAO                      C) MOA                      D) MIA
- 11) The problem that threatens the success of a project but which has not yet happened is a
- A) bug                      B) error                      C) risk                      D) failure
- 12) UML stands for
- A) Union Modeling Language                      B) Unified Monitoring Language  
C) Unified Modeling Language                      D) Union Monitoring Language
- 13) The testing that focuses on the variables is called
- A) black box testing                      B) white box testing  
C) data variable testing                      D) data flow testing
- 14) CASE Tool is
- A) Computer Aided Software Engineering  
B) Component Aided Software Engineering  
C) Constructive Aided Software Engineering  
D) Computer Analysis Software Engineering
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
SOFTWARE ENGINEERING**

Day and Date : Monday, 22-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figure to right indicates full marks.**

SECTION – I

2. Attempt **any five** : **(5×4=20)**
- a) Define SDLC and explain phased development process.
  - b) What is SRS ? Explain need of SRS.
  - c) Write a short note on DFD and data dictionary.
  - d) Write a note on prototyping model.
  - e) Differentiate between top down and bottom up estimation approach.
  - f) Write a short note on OOA and OOD.

3. Explain structured design methodology. **(1×8=8)**

OR

Draw and explain waterfall model and give its strengths and weaknesses.

SECTION – II

4. Attempt **any five** : **(5×4=20)**
- a) Explain review process in detail.
  - b) Explain scrum method in agile project management process.
  - c) Compare between black box and white box testing.
  - d) Explain levels of testing.
  - e) Explain milestone analysis.
  - f) Explain CMM in detail.

5. Explain the risk management in detail with diagram. **(1×8=8)**

OR

Explain fish bone analysis with diagram.

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**Set Q**







SLR-VB – 223

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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
SOFTWARE ENGINEERING**

Day and Date : Monday, 22-5-2017

Total Marks : 70

Time : 3.00 p.m. to 6.00 p.m.

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) UML stands for
  - A) Union Modeling Language
  - B) Unified Monitoring Language
  - C) Unified Modeling Language
  - D) Union Monitoring Language
- 2) The testing that focuses on the variables is called
  - A) black box testing
  - B) white box testing
  - C) data variable testing
  - D) data flow testing
- 3) CASE Tool is
  - A) Computer Aided Software Engineering
  - B) Component Aided Software Engineering
  - C) Constructive Aided Software Engineering
  - D) Computer Analysis Software Engineering
- 4) Software consists of
  - A) Set of instructions + operating procedures
  - B) Programs + documentation + operating procedures
  - C) Programs + hardware manuals
  - D) Set of programs
- 5) Which phase is not available in software life cycle ?
  - A) Coding
  - B) Testing
  - C) Maintenance
  - D) Abstraction
- 6) Which is not a step of requirement engineering ?
  - A) Requirements elicitation
  - B) Requirements analysis
  - C) Requirements design
  - D) Requirements documentation
- 7) Which is not a size metric ?
  - A) LOC
  - B) Function count
  - C) Program length
  - D) Cyclomatic complexity

P.T.O.



- 8) The worst type of coupling is
- |                   |                     |
|-------------------|---------------------|
| A) Data coupling  | B) Control coupling |
| C) Stamp coupling | D) Content coupling |
- 9) If every requirement stated in the Software Requirement Specification (SRS) has only one interpretation, SRS is said to be
- |               |                |
|---------------|----------------|
| A) correct    | B) unambiguous |
| C) consistent | D) verifiable  |
- 10) SRS is also known as specification of
- |                       |                      |
|-----------------------|----------------------|
| A) White box testing  | B) Stress testing    |
| C) Integrated testing | D) Black box testing |
- 11) The most important feature of spiral model is
- |                         |                             |
|-------------------------|-----------------------------|
| A) Requirement analysis | B) Risk management          |
| C) Quality management   | D) Configuration management |
- 12) What is the normal order of activities in which software testing is organized ?
- |  |  |
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| A) unit, integration, system, validation | B) system, integration, unit, validation |
| C) unit, integration, validation, system | D) none of the above                     |
- 13) The \_\_\_\_\_ data elements are those data elements in the data flow diagram that are farthest removed from the physical inputs but can still be considered inputs to the system.
- |        |        |        |        |
|--------|--------|--------|--------|
| A) MAI | B) MAO | C) MOA | D) MIA |
|--------|--------|--------|--------|
- 14) The problem that threatens the success of a project but which has not yet happened is a
- |        |          |         |            |
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| A) bug | B) error | C) risk | D) failure |
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
SOFTWARE ENGINEERING**

Day and Date : Monday, 22-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figure to right indicates full marks.**

**SECTION – I**

2. Attempt **any five** : **(5×4=20)**
- a) Define SDLC and explain phased development process.
  - b) What is SRS ? Explain need of SRS.
  - c) Write a short note on DFD and data dictionary.
  - d) Write a note on prototyping model.
  - e) Differentiate between top down and bottom up estimation approach.
  - f) Write a short note on OOA and OOD.

3. Explain structured design methodology. **(1×8=8)**

OR

Draw and explain waterfall model and give its strengths and weaknesses.

**SECTION – II**

4. Attempt **any five** : **(5×4=20)**
- a) Explain review process in detail.
  - b) Explain scrum method in agile project management process.
  - c) Compare between black box and white box testing.
  - d) Explain levels of testing.
  - e) Explain milestone analysis.
  - f) Explain CMM in detail.

5. Explain the risk management in detail with diagram. **(1×8=8)**

OR

Explain fish bone analysis with diagram.

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**Set R**





SLR-VB – 223

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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
SOFTWARE ENGINEERING**

Day and Date : Monday, 22-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) Which is not a step of requirement engineering ?
  - A) Requirements elicitation
  - B) Requirements analysis
  - C) Requirements design
  - D) Requirements documentation
- 2) Which is not a size metric ?
  - A) LOC
  - B) Function count
  - C) Program length
  - D) Cyclomatic complexity
- 3) The worst type of coupling is
  - A) Data coupling
  - B) Control coupling
  - C) Stamp coupling
  - D) Content coupling
- 4) If every requirement stated in the Software Requirement Specification (SRS) has only one interpretation, SRS is said to be
  - A) correct
  - B) unambiguous
  - C) consistent
  - D) verifiable
- 5) SRS is also known as specification of
  - A) White box testing
  - B) Stress testing
  - C) Integrated testing
  - D) Black box testing
- 6) The most important feature of spiral model is
  - A) Requirement analysis
  - B) Risk management
  - C) Quality management
  - D) Configuration management

P.T.O.



- 7) What is the normal order of activities in which software testing is organized ?  
A) unit, integration, system, validation    B) system, integration, unit, validation  
C) unit, integration, validation, system    D) none of the above
- 8) The \_\_\_\_\_ data elements are those data elements in the data flow diagram that are farthest removed from the physical inputs but can still be considered inputs to the system.  
A) MAI                                    B) MAO                                    C) MOA                                    D) MIA
- 9) The problem that threatens the success of a project but which has not yet happened is a  
A) bug                                    B) error                                    C) risk                                    D) failure
- 10) UML stands for  
A) Union Modeling Language                    B) Unified Monitoring Language  
C) Unified Modeling Language                D) Union Monitoring Language
- 11) The testing that focuses on the variables is called  
A) black box testing                                B) white box testing  
C) data variable testing                            D) data flow testing
- 12) CASE Tool is  
A) Computer Aided Software Engineering  
B) Component Aided Software Engineering  
C) Constructive Aided Software Engineering  
D) Computer Analysis Software Engineering
- 13) Software consists of  
A) Set of instructions + operating procedures  
B) Programs + documentation + operating procedures  
C) Programs + hardware manuals  
D) Set of programs
- 14) Which phase is not available in software life cycle ?  
A) Coding                                    B) Testing                                    C) Maintenance                            D) Abstraction
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
SOFTWARE ENGINEERING**

Day and Date : Monday, 22-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**  
2) **Figure to right indicates full marks.**

SECTION – I

2. Attempt **any five** : **(5×4=20)**
- a) Define SDLC and explain phased development process.
  - b) What is SRS ? Explain need of SRS.
  - c) Write a short note on DFD and data dictionary.
  - d) Write a note on prototyping model.
  - e) Differentiate between top down and bottom up estimation approach.
  - f) Write a short note on OOA and OOD.

3. Explain structured design methodology. **(1×8=8)**

OR

Draw and explain waterfall model and give its strengths and weaknesses.

SECTION – II

4. Attempt **any five** : **(5×4=20)**
- a) Explain review process in detail.
  - b) Explain scrum method in agile project management process.
  - c) Compare between black box and white box testing.
  - d) Explain levels of testing.
  - e) Explain milestone analysis.
  - f) Explain CMM in detail.

5. Explain the risk management in detail with diagram. **(1×8=8)**

OR

Explain fish bone analysis with diagram.

---

**Set S**







SLR-VB – 224

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| Set | P |
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Wednesday, 24-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Objective questions. **Each** question carries **one** mark. **(1×14=14)**

- 1) \_\_\_\_\_ is typically used for directed microwave links and fixed the satellite services in the C-band.  
a) Infrared                      b) SHF                      c) UHF                      d) HF
- 2) For \_\_\_\_\_ systems, the total available bandwidth is split into many channels of smaller bandwidth plus guard spaces between the channels.  
a) FHSS                      b) DSSS                      c) MCM                      d) OFDM
- 3) Uplink and downlink are separated using different frequencies is called as  
a) phase division duplex                      b) frequency combined duplex  
c) frequency division duplex                      d) none of these
- 4) Network layer services provided is by \_\_\_\_\_ GSM service.  
a) Bearer                      b) Tele  
c) Supplementary                      d) None of these
- 5) LAPD stands for  
a) Load Access Protocol for D channel  
b) Link Active Protocol for D channel  
c) Link Access Procedure for D channel  
d) None of these

P.T.O.



- 6) PLCP in IEEE 802.11 stands for
- a) Physical Layer Communication Protocol
  - b) Physical Layer Convergence Protocol
  - c) Primary Layer Communication Protocol
  - d) Primary Layer Convergence Protocol
- 7) Frequency band of bluetooth is
- a) 2.4 GHz
  - b) 24.2 MHz
  - c) 19 GHz
  - d) None of these
- 8) In transport layer RTT stands for
- a) Radio Transport Time
  - b) Round Trip Time
  - c) Radio Trip Time
  - d) None of these
- 9) \_\_\_\_\_ assumes, low bit rates, which is not always a valid assumption.
- a) Mobile TCP
  - b) S-TCP
  - c) I-TCP
  - d) Traditional TCP
- 10) In mobile IP visitor list is maintained by
- a) Mobile node
  - b) Foreign agent
  - c) Home agent
  - d) All of the above
- 11) Mandatory for mobile IP is \_\_\_\_\_ encapsulation as specified for mobile IP.
- a) IP-in-IP
  - b) Minimal
  - c) Generic routing
  - d) Maximum
- 12) Android device must have at least \_\_\_\_\_ MB for storing the kernel and user space.
- a) 128
  - b) 162
  - c) 512
  - d) 68
- 13) The clean-room byte code interpreter implementation used in Android is
- a) Dalvik virtual machine
  - b) Runtime machine
  - c) Java virtual machine
  - d) None of these
- 14) Your device's screen must be at least \_\_\_\_\_ in physical diagonal size.
- a) 3.5"
  - b) 4.0"
  - c) 2.5"
  - d) 3.0"
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Wednesday, 24-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Answer **any three** : **12**
- 1) Draw the sinusoidal wave and represent amplitude, frequency, cycle, wavelength on it.
  - 2) Draw signal propagation ranges.
  - 3) Explain Mobile Terminated Call (MTC).
  - 4) Write a note on classical ALOHA.
  - 5) What are differences between 3G and 4G ?
3. Answer **any one** : **8**
- 1) What is MANET ? What are characteristics and application of MANET ?
  - 2) Illustrate CDMA, two transmitters A and B are transmitting at same frequency and power, the keys and data of A and B are as given below.  
Ad = 1, Ak = 110110  
Bd = 0, Bk = 101101
4. Explain the architecture of GSM with neat diagram. **8**

SECTION – II

5. Attempt **any three** : **12**
- a) Explain DHCP with suitable example.
  - b) What are features and characteristics of Android ?
  - c) Compare RFID and NFC.
  - d) Explain how packet delivery takes place to and from mobile node with suitable diagram.
  - e) Write a short note on indirect TCP.

**Set P**



6. What is CDD ? Explain software and hardware requirement of android. **8**

OR

Explain agent advertisement and agent solicitation in mobile IP with suitable diagram.

7. Explain general architecture of NFC enabled mobile phones. **8**

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SLR-VB – 224

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Set **Q**

**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Wednesday, 24-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Objective questions. **Each** question carries **one** mark. **(1×14=14)**

- 1) In transport layer RTT stands for
  - a) Radio Transport Time
  - b) Round Trip Time
  - c) Radio Trip Time
  - d) None of these
- 2) \_\_\_\_\_ assumes, low bit rates, which is not always a valid assumption.
  - a) Mobile TCP
  - b) S-TCP
  - c) I-TCP
  - d) Traditional TCP
- 3) In mobile IP visitor list is maintained by
  - a) Mobile node
  - b) Foreign agent
  - c) Home agent
  - d) All of the above
- 4) Mandatory for mobile IP is \_\_\_\_\_ encapsulation as specified for mobile IP.
  - a) IP-in-IP
  - b) Minimal
  - c) Generic routing
  - d) Maximum
- 5) Android device must have at least \_\_\_\_\_ MB for storing the kernel and user space.
  - a) 128
  - b) 162
  - c) 512
  - d) 68
- 6) The clean-room byte code interpreter implementation used in Android is
  - a) Dalvik virtual machine
  - b) Runtime machine
  - c) Java virtual machine
  - d) None of these

P.T.O.



- 7) Your device's screen must be at least \_\_\_\_\_ in physical diagonal size.  
a) 3.5"                      b) 4.0"                      c) 2.5"                      d) 3.0"
- 8) \_\_\_\_\_ is typically used for directed microwave links and fixed the satellite services in the C-band.  
a) Infrared                      b) SHF                      c) UHF                      d) HF
- 9) For \_\_\_\_\_ systems, the total available bandwidth is split into many channels of smaller bandwidth plus guard spaces between the channels.  
a) FHSS                      b) DSSS                      c) MCM                      d) OFDM
- 10) Uplink and downlink are separated using different frequencies is called as  
a) phase division duplex                      b) frequency combined duplex  
c) frequency division duplex                      d) none of these
- 11) Network layer services provided is by \_\_\_\_\_ GSM service.  
a) Bearer                      b) Tele  
c) Supplementary                      d) None of these
- 12) LAPD stands for  
a) Load Access Protocol for D channel  
b) Link Active Protocol for D channel  
c) Link Access Procedure for D channel  
d) None of these
- 13) PLCP in IEEE 802.11 stands for  
a) Physical Layer Communication Protocol  
b) Physical Layer Convergence Protocol  
c) Primary Layer Communication Protocol  
d) Primary Layer Convergence Protocol
- 14) Frequency band of bluetooth is  
a) 2.4 GHz                      b) 24.2 MHz  
c) 19 GHz                      d) None of these
-



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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Wednesday, 24-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**SECTION – I**

2. Answer **any three** : **12**
- 1) Draw the sinusoidal wave and represent amplitude, frequency, cycle, wavelength on it.
  - 2) Draw signal propagation ranges.
  - 3) Explain Mobile Terminated Call (MTC).
  - 4) Write a note on classical ALOHA.
  - 5) What are differences between 3G and 4G ?
3. Answer **any one** : **8**
- 1) What is MANET ? What are characteristics and application of MANET ?
  - 2) Illustrate CDMA, two transmitters A and B are transmitting at same frequency and power, the keys and data of A and B are as given below.  
Ad = 1, Ak = 110110  
Bd = 0, Bk = 101101
4. Explain the architecture of GSM with neat diagram. **8**

**SECTION – II**

5. Attempt **any three** : **12**
- a) Explain DHCP with suitable example.
  - b) What are features and characteristics of Android ?
  - c) Compare RFID and NFC.
  - d) Explain how packet delivery takes place to and from mobile node with suitable diagram.
  - e) Write a short note on indirect TCP.

**Set Q**



6. What is CDD ? Explain software and hardware requirement of android. **8**

OR

Explain agent advertisement and agent solicitation in mobile IP with suitable diagram.

7. Explain general architecture of NFC enabled mobile phones. **8**

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SLR-VB – 224

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Set **R**

**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Wednesday, 24-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Objective questions. **Each** question carries **one** mark.

**(1×14=14)**

1) LAPD stands for

- a) Load Access Protocol for D channel
- b) Link Active Protocol for D channel
- c) Link Access Procedure for D channel
- d) None of these

2) PLCP in IEEE 802.11 stands for

- a) Physical Layer Communication Protocol
- b) Physical Layer Convergence Protocol
- c) Primary Layer Communication Protocol
- d) Primary Layer Convergence Protocol

3) Frequency band of bluetooth is

- a) 2.4 GHz
- b) 24.2 MHz
- c) 19 GHz
- d) None of these

4) In transport layer RTT stands for

- a) Radio Transport Time
- b) Round Trip Time
- c) Radio Trip Time
- d) None of these

5) \_\_\_\_\_ assumes, low bit rates, which is not always a valid assumption.

- a) Mobile TCP
- b) S-TCP
- c) I-TCP
- d) Traditional TCP

P.T.O.



- 6) In mobile IP visitor list is maintained by
- a) Mobile node
  - b) Foreign agent
  - c) Home agent
  - d) All of the above
- 7) Mandatory for mobile IP is \_\_\_\_\_ encapsulation as specified for mobile IP.
- a) IP-in-IP
  - b) Minimal
  - c) Generic routing
  - d) Maximum
- 8) Android device must have at least \_\_\_\_\_ MB for storing the kernel and user space.
- a) 128
  - b) 162
  - c) 512
  - d) 68
- 9) The clean-room byte code interpreter implementation used in Android is
- a) Dalvik virtual machine
  - b) Runtime machine
  - c) Java virtual machine
  - d) None of these
- 10) Your device's screen must be at least \_\_\_\_\_ in physical diagonal size.
- a) 3.5"
  - b) 4.0"
  - c) 2.5"
  - d) 3.0"
- 11) \_\_\_\_\_ is typically used for directed microwave links and fixed the satellite services in the C-band.
- a) Infrared
  - b) SHF
  - c) UHF
  - d) HF
- 12) For \_\_\_\_\_ systems, the total available bandwidth is split into many channels of smaller bandwidth plus guard spaces between the channels.
- a) FHSS
  - b) DSSS
  - c) MCM
  - d) OFDM
- 13) Uplink and downlink are separated using different frequencies is called as
- a) phase division duplex
  - b) frequency combined duplex
  - c) frequency division duplex
  - d) none of these
- 14) Network layer services provided is by \_\_\_\_\_ GSM service.
- a) Bearer
  - b) Tele
  - c) Supplementary
  - d) None of these
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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Wednesday, 24-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**SECTION – I**

2. Answer **any three** : **12**
- 1) Draw the sinusoidal wave and represent amplitude, frequency, cycle, wavelength on it.
  - 2) Draw signal propagation ranges.
  - 3) Explain Mobile Terminated Call (MTC).
  - 4) Write a note on classical ALOHA.
  - 5) What are differences between 3G and 4G ?
3. Answer **any one** : **8**
- 1) What is MANET ? What are characteristics and application of MANET ?
  - 2) Illustrate CDMA, two transmitters A and B are transmitting at same frequency and power, the keys and data of A and B are as given below.  
Ad = 1, Ak = 110110  
Bd = 0, Bk = 101101
4. Explain the architecture of GSM with neat diagram. **8**

**SECTION – II**

5. Attempt **any three** : **12**
- a) Explain DHCP with suitable example.
  - b) What are features and characteristics of Android ?
  - c) Compare RFID and NFC.
  - d) Explain how packet delivery takes place to and from mobile node with suitable diagram.
  - e) Write a short note on indirect TCP.

**Set R**



6. What is CDD ? Explain software and hardware requirement of android. **8**

OR

Explain agent advertisement and agent solicitation in mobile IP with suitable diagram.

7. Explain general architecture of NFC enabled mobile phones. **8**

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SLR-VB – 224

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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Wednesday, 24-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Objective questions. **Each** question carries **one** mark. **(1×14=14)**

- 1) In mobile IP visitor list is maintained by
  - a) Mobile node
  - b) Foreign agent
  - c) Home agent
  - d) All of the above
- 2) Mandatory for mobile IP is \_\_\_\_\_ encapsulation as specified for mobile IP.
  - a) IP-in-IP
  - b) Minimal
  - c) Generic routing
  - d) Maximum
- 3) Android device must have at least \_\_\_\_\_ MB for storing the kernel and user space.
  - a) 128
  - b) 162
  - c) 512
  - d) 68
- 4) The clean-room byte code interpreter implementation used in Android is
  - a) Dalvik virtual machine
  - b) Runtime machine
  - c) Java virtual machine
  - d) None of these
- 5) Your device's screen must be at least \_\_\_\_\_ in physical diagonal size.
  - a) 3.5"
  - b) 4.0"
  - c) 2.5"
  - d) 3.0"
- 6) \_\_\_\_\_ is typically used for directed microwave links and fixed the satellite services in the C-band.
  - a) Infrared
  - b) SHF
  - c) UHF
  - d) HF

P.T.O.



- 7) For \_\_\_\_\_ systems, the total available bandwidth is split into many channels of smaller bandwidth plus guard spaces between the channels.
- a) FHSS                      b) DSSS                      c) MCM                      d) OFDM
- 8) Uplink and downlink are separated using different frequencies is called as
- a) phase division duplex                      b) frequency combined duplex  
c) frequency division duplex                      d) none of these
- 9) Network layer services provided is by \_\_\_\_\_ GSM service.
- a) Bearer                      b) Tele  
c) Supplementary                      d) None of these
- 10) LAPD stands for
- a) Load Access Protocol for D channel  
b) Link Active Protocol for D channel  
c) Link Access Procedure for D channel  
d) None of these
- 11) PLCP in IEEE 802.11 stands for
- a) Physical Layer Communication Protocol  
b) Physical Layer Convergence Protocol  
c) Primary Layer Communication Protocol  
d) Primary Layer Convergence Protocol
- 12) Frequency band of bluetooth is
- a) 2.4 GHz                      b) 24.2 MHz  
c) 19 GHz                      d) None of these
- 13) In transport layer RTT stands for
- a) Radio Transport Time                      b) Round Trip Time  
c) Radio Trip Time                      d) None of these
- 14) \_\_\_\_\_ assumes, low bit rates, which is not always a valid assumption.
- a) Mobile TCP                      b) S-TCP  
c) I-TCP                      d) Traditional TCP



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**T.E. (CSE) (Part – II) (New CGPA) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Wednesday, 24-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Answer **any three** : 12
- 1) Draw the sinusoidal wave and represent amplitude, frequency, cycle, wavelength on it.
  - 2) Draw signal propagation ranges.
  - 3) Explain Mobile Terminated Call (MTC).
  - 4) Write a note on classical ALOHA.
  - 5) What are differences between 3G and 4G ?
3. Answer **any one** : 8
- 1) What is MANET ? What are characteristics and application of MANET ?
  - 2) Illustrate CDMA, two transmitters A and B are transmitting at same frequency and power, the keys and data of A and B are as given below.  
Ad = 1, Ak = 110110  
Bd = 0, Bk = 101101
4. Explain the architecture of GSM with neat diagram. 8

SECTION – II

5. Attempt **any three** : 12
- a) Explain DHCP with suitable example.
  - b) What are features and characteristics of Android ?
  - c) Compare RFID and NFC.
  - d) Explain how packet delivery takes place to and from mobile node with suitable diagram.
  - e) Write a short note on indirect TCP.

Set S



6. What is CDD ? Explain software and hardware requirement of android. **8**

OR

Explain agent advertisement and agent solicitation in mobile IP with suitable diagram.

7. Explain general architecture of NFC enabled mobile phones. **8**

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**SLR-VB – 225 (b)**

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**T.E. (Computer Science and Engineering) (Part – II) (New-CGPA)  
Examination, 2017  
SOFTWARE LICENSING AND PRACTICES (Self Learning)  
(HSS/Technical)**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

***Instruction : All questions are compulsory.***

1. Answer **any five** of the following : **(5×6=30)**
    - 1) State and explain basic principles of copyright law.
    - 2) What are issues pertaining to copyrights and patents ?
    - 3) What are characteristics of Open Source Definition in content of
      - a) Derived works
      - b) Source code
    - 4) Write short note on Sun Community Source License.
    - 5) What are five key source code licensing attributes as defined by microsoft in microsoft shared source initiate ?
    - 6) Define the following terms with respect of Open Source and Free Software Licensing
      - a) Attribution
      - b) Share Alike
  
  2. Answer **any two** of the following : **(2×10=20)**
    - 1) When two licenses models are said to be incompatible licensing ? Explain how to overcome the incompatibility between two licensing models ? Can we really overcome the incompatibility involved ? Put your supporting arguments in favor of your answer.
    - 2) Briefly discuss legal impacts of open source and free software licensing giving relevant examples highlighting the impacts.
    - 3) Compare between proprietary and non proprietary licenses. Exemplify each difference with proper example.
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SLR-VB – 225 (C)

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**T.E. (C.S.E.) (Part – II) (New – CGPA) Examination, 2017**  
**Self-learning (HSS/Technical)**  
**COMPUTER MODELING AND SIMULATION**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Total Marks : 50

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Marks : 10

1. Choose the correct answer :

- 1) Development of a use full simulation model is often a(n) \_\_\_\_\_ and \_\_\_\_\_ task.
  - a) quick, expensive
  - b) quick, inexpensive
  - c) time-consuming, expensive
  - d) essay, trivial
- 2) To run an OTcl script, type
  - a) ns ex-tcl.tcl
  - b) tcl ex-tcl.tcl
  - c) ex-tcl.tcl
  - d) both a) and b)
- 3) \_\_\_\_\_ is a disadvantage of Network Simulation (NS2).
  - a) Bugs are unreliable
  - b) Supported platforms
  - c) Supported protocol
  - d) Modularity
- 4) Network Simulator (NS2) consists of key languages
  - a) C++
  - b) OTcl
  - c) JAVA
  - d) Both C++ and OTcl
- 5) Which node used as default node in Network simulation ?
  - a) Unicast node
  - b) Multicast node
  - c) Both a) and b)
  - d) Single node
- 6) The first step in simulation is to
  - a) Set up possible courses of action for testing
  - b) Construct a numerical model
  - c) Validate the model
  - d) Define the problem

P.T.O.



- 7) Correct to declare and initialize the variable in OTcl is
- a) Set a = 1
  - b) Set a : 1
  - c) Set a 1
  - d) Set a <-1
- 8) Principles / Principle used in modeling
- a) Block building
  - b) Relevance
  - c) Aggregation
  - d) All of the above
- 9) To simulate is to try to \_\_\_\_\_ the features, appearance and characteristics of a real system.
- a) Develop
  - b) Duplicate
  - c) Analyze
  - d) Multiply
- 10) \_\_\_\_\_ Model randomly generates the time that elapses until the next event occurs.
- a) Random simulation
  - b) Cumulative
  - c) Operational gaming
  - d) Fixed time increment
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**T.E. (C.S.E.) (Part – II) (New – CGPA) Examination, 2017  
Self-learning (HSS/Technical)  
COMPUTER MODELING AND SIMULATION**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

2. Attempt **any four** (each 10 marks) : **(4×10=10)**
- 1) What is model of system ? Write the types of model. Explain any two.
  - 2) Explain in detail Network Simulation (NS2).
  - 3) Explain scenario for TCP and UDP with example.
  - 4) Explain discrete random variables and continuous random variable with example.
  - 5) Short note :
    - a) Features of NS2
    - b) Advantages and disadvantages of simulation.
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SLR-VB – 225 (C)

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**T.E. (C.S.E.) (Part – II) (New – CGPA) Examination, 2017**  
**Self-learning (HSS/Technical)**  
**COMPUTER MODELING AND SIMULATION**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Total Marks : 50

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Marks : 10

1. Choose the correct answer :

- 1) To simulate is to try to \_\_\_\_\_ the features, appearance and characteristics of a real system.
  - a) Develop
  - b) Duplicate
  - c) Analyze
  - d) Multiply
- 2) \_\_\_\_\_ Model randomly generates the time that elapses until the next event occurs.
  - a) Random simulation
  - b) Cumulative
  - c) Operational gaming
  - d) Fixed time increment
- 3) Correct to declare and initialize the variable in OTcl is
  - a) Set a = 1
  - b) Set a : 1
  - c) Set a 1
  - d) Set a <-1
- 4) Principles / Principle used in modeling
  - a) Block building
  - b) Relevance
  - c) Aggregation
  - d) All of the above
- 5) Development of a use full simulation model is often a(n) \_\_\_\_\_ and \_\_\_\_\_ task.
  - a) quick, expensive
  - b) quick, inexpensive
  - c) time-consuming, expensive
  - d) essay, trivial
- 6) To run an OTcl script, type
  - a) ns ex-tcl.tcl
  - b) tcl ex-tcl.tcl
  - c) ex-tcl.tcl
  - d) both a) and b)

P.T.O.



- 7) \_\_\_\_\_ is a disadvantage of Network Simulation (NS2).
- a) Bugs are unreliable
  - b) Supported platforms
  - c) Supported protocol
  - d) Modularity
- 8) Network Simulator (NS2) consists of key languages
- a) C++
  - b) OTcl
  - c) JAVA
  - d) Both C++ and OTcl
- 9) Which node used as default node in Network simulation ?
- a) Unicast node
  - b) Multicast node
  - c) Both a) and b)
  - d) Single node
- 10) The first step in simulation is to
- a) Set up possible courses of action for testing
  - b) Construct a numerical model
  - c) Validate the model
  - d) Define the problem
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**T.E. (C.S.E.) (Part – II) (New – CGPA) Examination, 2017  
Self-learning (HSS/Technical)  
COMPUTER MODELING AND SIMULATION**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

2. Attempt **any four** (each 10 marks) : **(4×10=10)**
- 1) What is model of system ? Write the types of model. Explain any two.
  - 2) Explain in detail Network Simulation (NS2).
  - 3) Explain scenario for TCP and UDP with example.
  - 4) Explain discrete random variables and continuous random variable with example.
  - 5) Short note :
    - a) Features of NS2
    - b) Advantages and disadvantages of simulation.
-







SLR-VB – 225 (C)

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**T.E. (C.S.E.) (Part – II) (New – CGPA) Examination, 2017**  
**Self-learning (HSS/Technical)**  
**COMPUTER MODELING AND SIMULATION**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Total Marks : 50

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Marks : 10

1. Choose the correct answer :

- 1) Which node used as default node in Network simulation ?
  - a) Unicast node
  - b) Multicast node
  - c) Both a) and b)
  - d) Single node
- 2) The first step in simulation is to
  - a) Set up possible courses of action for testing
  - b) Construct a numerical model
  - c) Validate the model
  - d) Define the problem
- 3) To simulate is to try to \_\_\_\_\_ the features, appearance and characteristics of a real system.
  - a) Develop
  - b) Duplicate
  - c) Analyze
  - d) Multiply
- 4) \_\_\_\_\_ Model randomly generates the time that elapses until the next event occurs.
  - a) Random simulation
  - b) Cumulative
  - c) Operational gaming
  - d) Fixed time increment
- 5) \_\_\_\_\_ is a disadvantage of Network Simulation (NS2).
  - a) Bugs are unreliable
  - b) Supported platforms
  - c) Supported protocol
  - d) Modularity

P.T.O.



- 6) Network Simulator (NS2) consists of key languages
- a) C++
  - b) OTcl
  - c) JAVA
  - d) Both C++ and OTcl
- 7) Development of a use full simulation model is often a(n) \_\_\_\_\_ and \_\_\_\_\_ task.
- a) quick, expensive
  - b) quick, inexpensive
  - c) time-consuming, expensive
  - d) essay, trivial
- 8) To run an OTcl script, type
- a) ns ex-tcl.tcl
  - b) tcl ex-tcl.tcl
  - c) ex-tcl.tcl
  - d) both a) and b)
- 9) Correct to declare and initialize the variable in OTcl is
- a) Set a = 1
  - b) Set a : 1
  - c) Set a 1
  - d) Set a <-1
- 10) Principles / Principle used in modeling
- a) Block building
  - b) Relevance
  - c) Aggregation
  - d) All of the above
-



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**T.E. (C.S.E.) (Part – II) (New – CGPA) Examination, 2017  
Self-learning (HSS/Technical)  
COMPUTER MODELING AND SIMULATION**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

2. Attempt **any four** (each 10 marks) : **(4×10=10)**
- 1) What is model of system ? Write the types of model. Explain any two.
  - 2) Explain in detail Network Simulation (NS2).
  - 3) Explain scenario for TCP and UDP with example.
  - 4) Explain discrete random variables and continuous random variable with example.
  - 5) Short note :
    - a) Features of NS2
    - b) Advantages and disadvantages of simulation.
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SLR-VB – 225 (C)

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**T.E. (C.S.E.) (Part – II) (New – CGPA) Examination, 2017**  
**Self-learning (HSS/Technical)**  
**COMPUTER MODELING AND SIMULATION**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Total Marks : 50

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Marks : 10

1. Choose the correct answer :

- 1) \_\_\_\_\_ is a disadvantage of Network Simulation (NS2).
  - a) Bugs are unreliable
  - b) Supported platforms
  - c) Supported protocol
  - d) Modularity
- 2) Network Simulator (NS2) consists of key languages
  - a) C++
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  - d) Define the problem
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  - d) Set a <-1
- 6) Principles / Principle used in modeling
  - a) Block building
  - b) Relevance
  - c) Aggregation
  - d) All of the above

P.T.O.



- 7) To simulate is to try to \_\_\_\_\_ the features, appearance and characteristics of a real system.
- |            |              |
|------------|--------------|
| a) Develop | b) Duplicate |
| c) Analyze | d) Multiply  |
- 8) \_\_\_\_\_ Model randomly generates the time that elapses until the next event occurs.
- |                       |                         |
|-----------------------|-------------------------|
| a) Random simulation  | b) Cumulative           |
| c) Operational gaming | d) Fixed time increment |
- 9) Development of a use full simulation model is often a(n) \_\_\_\_\_ and \_\_\_\_\_ task.
- |                              |                       |
|------------------------------|-----------------------|
| a) quick, expensive          | b) quick, inexpensive |
| c) time-consuming, expensive | d) essay, trivial     |
- 10) To run an OTcl script, type
- |                  |                   |
|------------------|-------------------|
| a) ns ex-tcl.tcl | b) tcl ex-tcl.tcl |
| c) ex-tcl.tcl    | d) both a) and b) |
-



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**T.E. (C.S.E.) (Part – II) (New – CGPA) Examination, 2017  
Self-learning (HSS/Technical)  
COMPUTER MODELING AND SIMULATION**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

2. Attempt **any four** (each 10 marks) : **(4×10=10)**
- 1) What is model of system ? Write the types of model. Explain any two.
  - 2) Explain in detail Network Simulation (NS2).
  - 3) Explain scenario for TCP and UDP with example.
  - 4) Explain discrete random variables and continuous random variable with example.
  - 5) Short note :
    - a) Features of NS2
    - b) Advantages and disadvantages of simulation.
-







SLR-VB – 225 (a)

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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017**  
**Self Learning (HSS/Technical)**  
**NETWORK SETUP AND MANAGEMENT TOOLS**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. Each question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Marks : 10

1. Choose the correct answers :

(1×10=10)

- 1) A \_\_\_\_\_ is a very popular type of network.  
A) TCP/IP  
B) Datagram  
C) Public Switched Telephone Network (PSTN)  
D) None of these
- 2) Which of the following filters the unwanted information ?  
A) Firewall            B) Salinity            C) Logic Bomb        D) All of these
- 3) Default port used by HTTP is  
A) 60                    B) 80                    C) 50                    D) 70
- 4) A modem is a network device which  
A) Converts analog signals to digital signals  
B) Transmits data from bridges to gateways  
C) Acts as a relay  
D) None of these

P.T.O.



- 5) Which of the following is used to create robust website through Java platform ?
- A) Servlet  
B) Strut  
C) JSP  
D) All of these
- 6) \_\_\_\_\_ protocol works at the application layer.
- A) HTTP  
B) SMTP  
C) JSP  
D) All of these
- 7) OSPF is used for
- A) Routing of packets  
B) Shortest path routing of packets  
C) Simulation of packets  
D) None of these
- 8) In network management system \_\_\_\_\_ is responsible for controlling access to network based on predefined policy.
- A) Fault management  
B) Security management  
C) Active management  
D) Secured management
- 9) FTP stands for
- A) File Transfer Protocol  
B) Format Transfer Protocol  
C) File Transmit Protocol  
D) None of these
- 10) Which of the following is logical topology ?
- A) BUS  
B) TREE  
C) STAR  
D) Both A) and B)
-



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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017  
Self Learning (HSS/Technical)  
NETWORK SETUP AND MANAGEMENT TOOLS**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

**Instructions:** 1) *Figures to the **right** indicate marks.*  
2) ***Draw** neat and labelled sketches **wherever** required.*

Attempt **any four** :

**(4×10=40)**

2. Explain the various functions of a Network Interface Card (NIC).
3. Distinguish between Hubs and Switches. Explain the working of Hubs.
4. What is called fault management ? Explain fault tolerance, fault detection and fault location.
5. Explain with neat diagram network management architecture.
6. Explain in detail, event correlation techniques.
7. Write short notes on :
  - 1) Modems
  - 2) Virtual lan.





SLR-VB – 225 (a)

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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017**  
**Self Learning (HSS/Technical)**  
**NETWORK SETUP AND MANAGEMENT TOOLS**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Marks : 10

1. Choose the correct answers :

(1×10=10)

1) FTP stands for

- A) File Transfer Protocol                      B) Format Transfer Protocol  
C) File Transmit Protocol                      D) None of these

2) Which of the following is logical topology ?

- A) BUS    B) TREE  
C) STAR    D) Both A) and B)

3) OSPF is used for

- A) Routing of packets  
B) Shortest path routing of packets  
C) Simulation of packets  
D) None of these

4) In network management system \_\_\_\_\_ is responsible for controlling access to network based on predefined policy.

- A) Fault management  
B) Security management  
C) Active management  
D) Secured management

P.T.O.



- 5) A \_\_\_\_\_ is a very popular type of network.
- A) TCP/IP
  - B) Datagram
  - C) Public Switched Telephone Network (PSTN)
  - D) None of these
- 6) Which of the following filters the unwanted information ?
- A) Firewall
  - B) Sality
  - C) Logic Bomb
  - D) All of these
- 7) Default port used by HTTP is
- A) 60
  - B) 80
  - C) 50
  - D) 70
- 8) A modem is a network device which
- A) Converts analog signals to digital signals
  - B) Transmits data from bridges to gateways
  - C) Acts as a relay
  - D) None of these
- 9) Which of the following is used to create robust website through Java platform ?
- A) Servlet
  - B) Strut
  - C) JSP
  - D) All of these
- 10) \_\_\_\_\_ protocol works at the application layer.
- A) HTTP
  - B) SMTP
  - C) JSP
  - D) All of these
-



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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017  
Self Learning (HSS/Technical)  
NETWORK SETUP AND MANAGEMENT TOOLS**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

**Instructions:** 1) *Figures to the **right** indicate marks.*  
2) **Draw** neat and labelled sketches *wherever* required.

Attempt **any four** :

**(4×10=40)**

2. Explain the various functions of a Network Interface Card (NIC).
3. Distinguish between Hubs and Switches. Explain the working of Hubs.
4. What is called fault management ? Explain fault tolerance, fault detection and fault location.
5. Explain with neat diagram network management architecture.
6. Explain in detail, event correlation techniques.
7. Write short notes on :
  - 1) Modems
  - 2) Virtual lan.







SLR-VB – 225 (a)

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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017**  
**Self Learning (HSS/Technical)**  
**NETWORK SETUP AND MANAGEMENT TOOLS**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. Each question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Marks : 10

1. Choose the correct answers :

(1×10=10)

- 1) Which of the following is used to create robust website through Java platform ?  
A) Servlet  
B) Strut  
C) JSP  
D) All of these
- 2) \_\_\_\_\_ protocol works at the application layer.  
A) HTTP  
B) SMTP  
C) JSP  
D) All of these
- 3) FTP stands for  
A) File Transfer Protocol  
B) Format Transfer Protocol  
C) File Transmit Protocol  
D) None of these
- 4) Which of the following is logical topology ?  
A) BUS  
B) TREE  
C) STAR  
D) Both A) and B)
- 5) Default port used by HTTP is  
A) 60  
B) 80  
C) 50  
D) 70

P.T.O.



- 6) A modem is a network device which
- A) Converts analog signals to digital signals
  - B) Transmits data from bridges to gateways
  - C) Acts as a relay
  - D) None of these
- 7) A \_\_\_\_\_ is a very popular type of network.
- A) TCP/IP
  - B) Datagram
  - C) Public Switched Telephone Network (PSTN)
  - D) None of these
- 8) Which of the following filters the unwanted information ?
- A) Firewall
  - B) Sality
  - C) Logic Bomb
  - D) All of these
- 9) OSPF is used for
- A) Routing of packets
  - B) Shortest path routing of packets
  - C) Simulation of packets
  - D) None of these
- 10) In network management system \_\_\_\_\_ is responsible for controlling access to network based on predefined policy.
- A) Fault management
  - B) Security management
  - C) Active management
  - D) Secured management
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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017  
Self Learning (HSS/Technical)  
NETWORK SETUP AND MANAGEMENT TOOLS**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

**Instructions:** 1) *Figures to the **right** indicate marks.*  
2) **Draw** neat and labelled sketches *wherever* required.

Attempt **any four** :

**(4×10=40)**

2. Explain the various functions of a Network Interface Card (NIC).
3. Distinguish between Hubs and Switches. Explain the working of Hubs.
4. What is called fault management ? Explain fault tolerance, fault detection and fault location.
5. Explain with neat diagram network management architecture.
6. Explain in detail, event correlation techniques.
7. Write short notes on :
  - 1) Modems
  - 2) Virtual lan.





SLR-VB – 225 (a)

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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017**  
**Self Learning (HSS/Technical)**  
**NETWORK SETUP AND MANAGEMENT TOOLS**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. Each question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Marks : 10

1. Choose the correct answers :

(1×10=10)

- 1) Default port used by HTTP is  
A) 60                      B) 80                      C) 50                      D) 70
- 2) A modem is a network device which  
A) Converts analog signals to digital signals  
B) Transmits data from bridges to gateways  
C) Acts as a relay  
D) None of these
- 3) Which of the following is used to create robust website through Java platform ?  
A) Servlet                      B) Strut  
C) JSP                              D) All of these
- 4) \_\_\_\_\_ protocol works at the application layer.  
A) HTTP                              B) SMTP  
C) JSP                                  D) All of these

P.T.O.



- 5) OSPF is used for
- A) Routing of packets
  - B) Shortest path routing of packets
  - C) Simulation of packets
  - D) None of these
- 6) In network management system \_\_\_\_\_ is responsible for controlling access to network based on predefined policy.
- A) Fault management
  - B) Security management
  - C) Active management
  - D) Secured management
- 7) FTP stands for
- A) File Transfer Protocol
  - B) Format Transfer Protocol
  - C) File Transmit Protocol
  - D) None of these
- 8) Which of the following is logical topology ?
- A) BUS
  - B) TREE
  - C) STAR
  - D) Both A) and B)
- 9) A \_\_\_\_\_ is a very popular type of network.
- A) TCP/IP
  - B) Datagram
  - C) Public Switched Telephone Network (PSTN)
  - D) None of these
- 10) Which of the following filters the unwanted information ?
- A) Firewall
  - B) Sality
  - C) Logic Bomb
  - D) All of these
-



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**T.E. (CSE) (Part – II) (New) (CGPA) Examination, 2017  
Self Learning (HSS/Technical)  
NETWORK SETUP AND MANAGEMENT TOOLS**

Day and Date : Friday, 26-5-2017  
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

**Instructions:** 1) *Figures to the **right** indicate marks.*  
2) ***Draw** neat and labelled sketches **wherever** required.*

Attempt **any four** :

**(4×10=40)**

2. Explain the various functions of a Network Interface Card (NIC).
3. Distinguish between Hubs and Switches. Explain the working of Hubs.
4. What is called fault management ? Explain fault tolerance, fault detection and fault location.
5. Explain with neat diagram network management architecture.
6. Explain in detail, event correlation techniques.
7. Write short notes on :
  - 1) Modems
  - 2) Virtual lan.







SLR-VB – 226

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**T.E. (CSE) Part – II (Old) Examination, 2017  
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 27-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) In predicate logic ' $\rightarrow$ ' symbol stands for
  - a) and
  - b) or
  - c) material implication
  - d) for all
- 2) In AI technique, knowledge possesses one of the following properties.
  - a) Integrity
  - b) Isolation
  - c) Voluminous
  - d) Reusable
- 3) The \_\_\_\_\_ level, at which facts and their current goals are described.
  - a) Knowledge
  - b) Symbol
  - c) Domain
  - d) Representation
- 4) Depth-First-Search requires \_\_\_\_\_ memory, since only the nodes on current paths are stored.
  - a) More
  - b) Less
  - c) Intermediate
  - d) Average
- 5) The steepest accent hill climbing is also called as \_\_\_\_\_ Search.
  - a) Gradient
  - b) Heuristic
  - c) Non-Gradient
  - d) None of these
- 6) A \_\_\_\_\_ hypothesis has the necessary and sufficient means for general intelligent action.
  - a) Physical Symbol System
  - b) Physical Structural System
  - c) Physical Symptom System
  - d) All
- 7) Isa attribute is used to show \_\_\_\_\_.
  - a) Class inclusion
  - b) Class membership
  - c) Class dependency
  - d) None of above

P.T.O.



- 8) \_\_\_\_\_ is the technique that improves the efficiency of search process.  
a) Heuristic                      b) Implementation      c) Sorting                      d) All of above
- 9) Knowledge about which paths are most likely to lead quickly to a goal state is often called  
a) simple relational knowledge                      b) search control knowledge  
c) procedural knowledge                      d) inferential knowledge
- 10) A flat area of the search space in which a whole set of neighbouring states has the same value.  
a) Plateau    b) Ridge  
c) Local maximum                                      d) All
- 11) In \_\_\_\_\_ efficiency, there is ability to acquire new information easily in knowledge representation.  
a) Representational                                      b) Inferential  
c) Acquisitional                                      d) Logical
- 12) In \_\_\_\_\_ we are going to see the current state.  
a) Indexing                      b) Matching                      c) Hashing                      d) None of these
- 13) \_\_\_\_\_ were used to find relationship among objects.  
a) Semantic nets      b) Scripts                      c) Structure net      d) None of these
- 14) \_\_\_\_\_ program is described as a series of logical assertions, each of which is Horn clause.  
a) LISP                      b) PROLOG                      c) JAVA                      d) C
- 15) \_\_\_\_\_ is a theory of representing fairly simple action.  
a) CD                      b) CYC                      c) DC                      d) MC
- 16) A \_\_\_\_\_ is a structure that describes a stereotyped sequence of events in a particular context.  
a) Frame                      b) Script                      c) Semantic net      d) All
- 17) \_\_\_\_\_ allows us to represent set membership as a possibility distribution.  
a) Fuzzy set theory                                      b) Traditional set theory  
c) Dempster-Shafer theory                                      d) All
- 18) An \_\_\_\_\_ attribute is used in predicate logic.  
a) Instance and isa                                      b) Object and is  
c) Fact and isa                                      d) None of these
- 19) \_\_\_\_\_ is the philosophical study of what exists.  
a) CD                      b) Ontology                      c) Slots                      d) None of these
- 20) A \_\_\_\_\_ is a special kind of local maximum.  
a) Local maximum      b) Plateau                      c) Hill climbing                      d) Ridge



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**T.E. (CSE) Part – II (Old) Examination, 2017  
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 27-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(4×5=20)**
- 1) Write a short note on AI problem.
  - 2) Discuss Heuristic Search technique in detail.
  - 3) Explain generate and test algorithm with an example.
  - 4) Explain frame problem in knowledge representation.
  - 5) What are the different problem characteristics ?
3. Attempt **any one** : **10**
- A) Explain Water-Jug problem along its all production rules and its solutions in detail.
  - B) Explain constraint satisfaction algorithm in detail. Also explain cryptarithmic problem.
4. Write a short note on **any two** : **10**
- 1) The level of model in AI.
  - 2) Simple Hill Climbing Algorithm.
  - 3) Inheritable knowledge.

**SECTION – II**

5. Attempt **any four** : **(4×5=20)**
- 1) Explain probability and Bay's theorem along with example.
  - 2) How simple facts are represented in predicate logic with example ?
  - 3) Explain with an example, representing instances and isa relationship in knowledge representation techniques.
  - 4) Explain conceptual dependency in detail.
  - 5) What is an Expert system ? List all applications in detail.

**Set P**



6. Attempt **any one**: **10**
- A) Define and describe frames in slot and filter structure in detail with an examples.
  - B) Explain procedural versus declarative knowledge in knowledge representation techniques. Also briefly explain about matching.
7. Explain forward versus backward reasoning in detail with an example. **10**
-



SLR-VB – 226

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**T.E. (CSE) Part – II (Old) Examination, 2017  
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 27-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) A \_\_\_\_\_ is a structure that describes a stereotyped sequence of events in a particular context.  
a) Frame                      b) Script                      c) Semantic net                      d) All
- 2) \_\_\_\_\_ allows us to represent set membership as a possibility distribution.  
a) Fuzzy set theory                      b) Traditional set theory  
c) Dempster-Shafer theory                      d) All
- 3) An \_\_\_\_\_ attribute is used in predicate logic.  
a) Instance and isa                      b) Object and is  
c) Fact and isa                      d) None of these
- 4) \_\_\_\_\_ is the philosophical study of what exists.  
a) CD                      b) Ontology                      c) Slots                      d) None of these
- 5) A \_\_\_\_\_ is a special kind of local maximum.  
a) Local maximum                      b) Plateau                      c) Hill climbing                      d) Ridge
- 6) In predicate logic ' $\rightarrow$ ' symbol stands for  
a) and                      b) or  
c) material implication                      d) for all
- 7) In AI technique, knowledge possesses one of the following properties.  
a) Integrity                      b) Isolation                      c) Voluminous                      d) Reusable
- 8) The \_\_\_\_\_ level, at which facts and their current goals are described.  
a) Knowledge                      b) Symbol  
c) Domain                      d) Representation

P.T.O.



- 9) Depth-First-Search requires \_\_\_\_\_ memory, since only the nodes on current paths are stored.  
a) More                      b) Less                      c) Intermediate              d) Average
- 10) The steepest accent hill climbing is also called as \_\_\_\_\_ Search.  
a) Gradient                      b) Heuristic  
c) Non-Gradient                      d) None of these
- 11) A \_\_\_\_\_ hypothesis has the necessary and sufficient means for general intelligent action.  
a) Physical Symbol System                      b) Physical Structural System  
c) Physical Symptom System                      d) All
- 12) Isa attribute is used to show \_\_\_\_\_  
a) Class inclusion                      b) Class membership  
c) Class dependency                      d) None of above
- 13) \_\_\_\_\_ is the technique that improves the efficiency of search process.  
a) Heuristic                      b) Implementation              c) Sorting                      d) All of above
- 14) Knowledge about which paths are most likely to lead quickly to a goal state is often called  
a) simple relational knowledge                      b) search control knowledge  
c) procedural knowledge                      d) inferential knowledge
- 15) A flat area of the search space in which a whole set of neighbouring states has the same value.  
a) Plateau                      b) Ridge  
c) Local maximum                      d) All
- 16) In \_\_\_\_\_ efficiency, there is ability to acquire new information easily in knowledge representation.  
a) Representational                      b) Inferential  
c) Acquisitional                      d) Logical
- 17) In \_\_\_\_\_ we are going to see the current state.  
a) Indexing                      b) Matching                      c) Hashing                      d) None of these
- 18) \_\_\_\_\_ were used to find relationship among objects.  
a) Semantic nets                      b) Scripts                      c) Structure net                      d) None of these
- 19) \_\_\_\_\_ program is described as a series of logical assertions, each of which is Horn clause.  
a) LISP                      b) PROLOG                      c) JAVA                      d) C
- 20) \_\_\_\_\_ is a theory of representing fairly simple action.  
a) CD                      b) CYC                      c) DC                      d) MC
-



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**T.E. (CSE) Part – II (Old) Examination, 2017  
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 27-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(4×5=20)**
- 1) Write a short note on AI problem.
  - 2) Discuss Heuristic Search technique in detail.
  - 3) Explain generate and test algorithm with an example.
  - 4) Explain frame problem in knowledge representation.
  - 5) What are the different problem characteristics ?
3. Attempt **any one** : **10**
- A) Explain Water-Jug problem along its all production rules and its solutions in detail.
  - B) Explain constraint satisfaction algorithm in detail. Also explain cryptarithmic problem.
4. Write a short note on **any two** : **10**
- 1) The level of model in AI.
  - 2) Simple Hill Climbing Algorithm.
  - 3) Inheritable knowledge.

**SECTION – II**

5. Attempt **any four** : **(4×5=20)**
- 1) Explain probability and Bay's theorem along with example.
  - 2) How simple facts are represented in predicate logic with example ?
  - 3) Explain with an example, representing instances and isa relationship in knowledge representation techniques.
  - 4) Explain conceptual dependency in detail.
  - 5) What is an Expert system ? List all applications in detail.

**Set Q**





6. Attempt **any one**: **10**
- A) Define and describe frames in slot and filter structure in detail with an examples.
  - B) Explain procedural versus declarative knowledge in knowledge representation techniques. Also briefly explain about matching.
7. Explain forward versus backward reasoning in detail with an example. **10**
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**T.E. (CSE) Part – II (Old) Examination, 2017  
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 27-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(4×5=20)**
- 1) Write a short note on AI problem.
  - 2) Discuss Heuristic Search technique in detail.
  - 3) Explain generate and test algorithm with an example.
  - 4) Explain frame problem in knowledge representation.
  - 5) What are the different problem characteristics ?
3. Attempt **any one** : **10**
- A) Explain Water-Jug problem along its all production rules and its solutions in detail.
  - B) Explain constraint satisfaction algorithm in detail. Also explain cryptarithmic problem.
4. Write a short note on **any two** : **10**
- 1) The level of model in AI.
  - 2) Simple Hill Climbing Algorithm.
  - 3) Inheritable knowledge.

**SECTION – II**

5. Attempt **any four** : **(4×5=20)**
- 1) Explain probability and Bay's theorem along with example.
  - 2) How simple facts are represented in predicate logic with example ?
  - 3) Explain with an example, representing instances and isa relationship in knowledge representation techniques.
  - 4) Explain conceptual dependency in detail.
  - 5) What is an Expert system ? List all applications in detail.

**Set R**



6. Attempt **any one**: **10**
- A) Define and describe frames in slot and filter structure in detail with an examples.
  - B) Explain procedural versus declarative knowledge in knowledge representation techniques. Also briefly explain about matching.
7. Explain forward versus backward reasoning in detail with an example. **10**
-



SLR-VB – 226

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**T.E. (CSE) Part – II (Old) Examination, 2017  
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 27-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) A \_\_\_\_\_ hypothesis has the necessary and sufficient means for general intelligent action.
  - a) Physical Symbol System
  - b) Physical Structural System
  - c) Physical Symptom System
  - d) All
- 2) Isa attribute is used to show \_\_\_\_\_
  - a) Class inclusion
  - b) Class membership
  - c) Class dependency
  - d) None of above
- 3) \_\_\_\_\_ is the technique that improves the efficiency of search process.
  - a) Heuristic
  - b) Implementation
  - c) Sorting
  - d) All of above
- 4) Knowledge about which paths are most likely to lead quickly to a goal state is often called
  - a) simple relational knowledge
  - b) search control knowledge
  - c) procedural knowledge
  - d) inferential knowledge
- 5) A flat area of the search space in which a whole set of neighbouring states has the same value.
  - a) Plateau
  - b) Ridge
  - c) Local maximum
  - d) All
- 6) In \_\_\_\_\_ efficiency, there is ability to acquire new information easily in knowledge representation.
  - a) Representational
  - b) Inferential
  - c) Acquisitional
  - d) Logical

P.T.O.



- 7) In \_\_\_\_\_ we are going to see the current state.  
a) Indexing      b) Matching      c) Hashing      d) None of these
- 8) \_\_\_\_\_ were used to find relationship among objects.  
a) Semantic nets    b) Scripts      c) Structure net    d) None of these
- 9) \_\_\_\_\_ program is described as a series of logical assertions, each of which is Horn clause.  
a) LISP              b) PROLOG      c) JAVA              d) C
- 10) \_\_\_\_\_ is a theory of representing fairly simple action.  
a) CD                b) CYC            c) DC                d) MC
- 11) A \_\_\_\_\_ is a structure that describes a stereotyped sequence of events in a particular context.  
a) Frame            b) Script            c) Semantic net    d) All
- 12) \_\_\_\_\_ allows us to represent set membership as a possibility distribution.  
a) Fuzzy set theory                      b) Traditional set theory  
c) Dempster-Shafer theory              d) All
- 13) An \_\_\_\_\_ attribute is used in predicate logic.  
a) Instance and isa                      b) Object and is  
c) Fact and isa                            d) None of these
- 14) \_\_\_\_\_ is the philosophical study of what exists.  
a) CD                b) Ontology        c) Slots              d) None of these
- 15) A \_\_\_\_\_ is a special kind of local maximum.  
a) Local maximum    b) Plateau            c) Hill climbing    d) Ridge
- 16) In predicate logic ' $\rightarrow$ ' symbol stands for  
a) and                                      b) or  
c) material implication                d) for all
- 17) In AI technique, knowledge possesses one of the following properties.  
a) Integrity            b) Isolation        c) Voluminous      d) Reusable
- 18) The \_\_\_\_\_ level, at which facts and their current goals are described.  
a) Knowledge                              b) Symbol  
c) Domain                                  d) Representation
- 19) Depth-First-Search requires \_\_\_\_\_ memory, since only the nodes on current paths are stored.  
a) More                b) Less              c) Intermediate    d) Average
- 20) The steepest accent hill climbing is also called as \_\_\_\_\_ Search.  
a) Gradient                                b) Heuristic  
c) Non-Gradient                          d) None of these



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**T.E. (CSE) Part – II (Old) Examination, 2017  
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 27-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(4×5=20)**
- 1) Write a short note on AI problem.
  - 2) Discuss Heuristic Search technique in detail.
  - 3) Explain generate and test algorithm with an example.
  - 4) Explain frame problem in knowledge representation.
  - 5) What are the different problem characteristics ?
3. Attempt **any one** : **10**
- A) Explain Water-Jug problem along its all production rules and its solutions in detail.
  - B) Explain constraint satisfaction algorithm in detail. Also explain cryptarithmic problem.
4. Write a short note on **any two** : **10**
- 1) The level of model in AI.
  - 2) Simple Hill Climbing Algorithm.
  - 3) Inheritable knowledge.

**SECTION – II**

5. Attempt **any four** : **(4×5=20)**
- 1) Explain probability and Bay's theorem along with example.
  - 2) How simple facts are represented in predicate logic with example ?
  - 3) Explain with an example, representing instances and isa relationship in knowledge representation techniques.
  - 4) Explain conceptual dependency in detail.
  - 5) What is an Expert system ? List all applications in detail.

**Set S**





6. Attempt **any one**: **10**
- A) Define and describe frames in slot and filter structure in detail with an examples.
  - B) Explain procedural versus declarative knowledge in knowledge representation techniques. Also briefly explain about matching.
7. Explain forward versus backward reasoning in detail with an example. **10**
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SLR-VB – 227

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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Thursday, 4-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*  
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.*

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The function of control unit of array processor is to
  - a) Execute scalar instructions
  - b) Initiate vector instruction execution
  - c) Perform I/O operations
  - d) All above
- 2) Bubble in a pipeline
  - a) Stalls the pipeline
  - b) Slows down the clock
  - c) Increases the efficiency of pipeline
  - d) Decreases hardware
- 3) RISC architecture is known as
  - a) Load-store
  - b) Arithmetic
  - c) Logical
  - d) All of these
- 4) Which one is correct in case of pipelining ?
  - a) Pipelining increases the CPU instruction throughput
  - b) Pipelining does not reduce the execution time of an individual instruction
  - c) Pipelining reduces the total execution time of program
  - d) All of these
- 5) Which of the following architecture is/are not suitable for realizing SIMD ?
  - a) Vector processor
  - b) Array processor
  - c) Von Neumann
  - d) All of these
- 6) Thread synchronization is required because
  - a) all threads of a process share the same address space
  - b) all threads of a process share the same global variables
  - c) all threads of a process can share the same files
  - d) all of these

P.T.O.



- 7) Termination of the process terminates
- a) first thread of the process
  - b) first two threads of the process
  - c) all threads within the process
  - d) no thread within the process
- 8) What is the correct sequence of, stages of instruction execution in pipelined environment ?
- a) IF ID EX MEM WB
  - b) ID IF EX WB MEM
  - c) IF ID WB EX MEM
  - d) IF ID EX WB MEM
- 9) Which of the following is not a hazard ?
- a) RAW
  - b) WAW
  - c) WAR
  - d) RAR
- 10) A single instruction replacing multiple (scalar) instructions is a characteristics of which processor ?
- a) Multiprocessor
  - b) Uniprocessor
  - c) Concurrent processor
  - d) Vector processor
- 11) Example system for COMA machine is
- a) DAP
  - b) Cray T3D
  - c) KSR-1
  - d) MPP
- 12) OS describe a process by
- a) ACB
  - b) TCB
  - c) PCB
  - d) PBC
- 13) \_\_\_\_\_ OS uses process-thread model.
- a) UNIX
  - b) SunOS 5.0
  - c) DOS
  - d) IBM/360
- 14) Which is correct statement ?
- a) FORK/JOIN can be used to implement COBEGIN/COEND
  - b) COBEGIN/COEND can be used to implement FORK/JOIN
  - c) Both a) and b)
  - d) None of above
- 15) Concurrent Execution uses
- a) 1-Client, 1-Server
  - b) N-Client, 1-Server
  - c) N-Client, N-Server
  - d) 1-Client, N-Server
- 16) \_\_\_\_\_ is Not a Data Parallel Architecture.
- a) SIMD
  - b) Systolic
  - c) Vector
  - d) VLIW
- 17) \_\_\_\_\_ connectivity have low bandwidth and low diameter.
- a) NN
  - b) Tree
  - c) Hypercube
  - d) None of these
- 18) Which data type comes under Coarse-Grained system ?
- a) Single-bit
  - b) Floating point
  - c) Integer
  - d) None of these
- 19) \_\_\_\_\_ is example of Coarse-Grained Machines.
- a) MPP
  - b) CM5
  - c) DAP
  - d) CM1
- 20) \_\_\_\_\_ is disadvantage of Distributed Memory System.
- a) Contention problem
  - b) Deadlock
  - c) Message passing
  - d) Both a) and c)



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Thursday, 4-5-2017

Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

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

2) *Figures to right indicate full marks.*

**SECTION – I**

2. Attempt **any four** : **(4×5=20)**

- a) Explain basic methods of thread creation and termination in concurrent processing.
- b) What is vector processing ? How it is different than the simple pipelining ?
- c) Write a note on pipelining and replication.
- d) Classify parallel architectures introduced by Flynn.
- e) Explain 2 bit saturating counter method used for predicting branch outcome.

3. Attempt **any one** :

- a) What are the steps involved in process creation by OS ? Discuss each step in detail. **10**
- b) Draw and explain basic vector architecture. **10**

4. What is Branch Target Buffer (BTB) ? Draw flowchart for its functioning and explain. **10**

**Set P**



## SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain NN interconnection network with its properties.
  - b) Explain SIMD architecture with suitable diagram.
  - c) What is granularity ? Explain coarse grained and fine grained systems.
  - d) What are the advantages and disadvantages of distributed systems ?
  - e) Explain CM5 processing element with suitable diagram.
6. List and explain advantages and potential problems of Data Flow Machines. **10**
- OR
- Explain Static and Dynamic data flow model along with suitable diagrams. **10**
7. Explain MPP system in detail. **10**
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SLR-VB – 227

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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Thursday, 4-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*  
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.*

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) \_\_\_\_\_ is Not a Data Parallel Architecture.  
a) SIMD                      b) Systolic                      c) Vector                      d) VLIW
- 2) \_\_\_\_\_ connectivity have low bandwidth and low diameter.  
a) NN                      b) Tree                      c) Hypercube                      d) None of these
- 3) Which data type comes under Coarse-Grained system ?  
a) Single-bit                      b) Floating point                      c) Integer                      d) None of these
- 4) \_\_\_\_\_ is example of Coarse-Grained Machines.  
a) MPP                      b) CM5                      c) DAP                      d) CM1
- 5) \_\_\_\_\_ is disadvantage of Distributed Memory System.  
a) Contention problem                      b) Deadlock  
c) Message passing                      d) Both a) and c)
- 6) The function of control unit of array processor is to  
a) Execute scalar instructions                      b) Initiate vector instruction execution  
c) Perform I/O operations                      d) All above
- 7) Bubble in a pipeline  
a) Stalls the pipeline                      b) Slows down the clock  
c) Increases the efficiency of pipeline                      d) Decreases hardware
- 8) RISC architecture is known as  
a) Load-store                      b) Arithmetic                      c) Logical                      d) All of these
- 9) Which one is correct in case of pipelining ?  
a) Pipelining increases the CPU instruction throughput  
b) Pipelining does not reduce the execution time of an individual instruction  
c) Pipelining reduces the total execution time of program  
d) All of these

P.T.O.



- 10) Which of the following architecture is/are not suitable for realizing SIMD ?
- a) Vector processor
  - b) Array processor
  - c) Von Neumann
  - d) All of these
- 11) Thread synchronization is required because
- a) all threads of a process share the same address space
  - b) all threads of a process share the same global variables
  - c) all threads of a process can share the same files
  - d) all of these
- 12) Termination of the process terminates
- a) first thread of the process
  - b) first two threads of the process
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- a) IF ID EX MEM WB
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  - c) IF ID WB EX MEM
  - d) IF ID EX WB MEM
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- a) RAW
  - b) WAW
  - c) WAR
  - d) RAR
- 15) A single instruction replacing multiple (scalar) instructions is a characteristics of which processor ?
- a) Multiprocessor
  - b) Uniprocessor
  - c) Concurrent processor
  - d) Vector processor
- 16) Example system for COMA machine is
- a) DAP
  - b) Cray T3D
  - c) KSR-1
  - d) MPP
- 17) OS describe a process by
- a) ACB
  - b) TCB
  - c) PCB
  - d) PBC
- 18) \_\_\_\_\_ OS uses process-thread model.
- a) UNIX
  - b) SunOS 5.0
  - c) DOS
  - d) IBM/360
- 19) Which is correct statement ?
- a) FORK/JOIN can be used to implement COBEGIN/COEND
  - b) COBEGIN/COEND can be used to implement FORK/JOIN
  - c) Both a) and b)
  - d) None of above
- 20) Concurrent Execution uses
- a) 1-Client, 1-Server
  - b) N-Client, 1-Server
  - c) N-Client, N-Server
  - d) 1-Client, N-Server



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Thursday, 4-5-2017

Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

- Instructions :** 1) *All questions are compulsory.*  
2) *Figures to right indicate full marks.*

**SECTION – I**

2. Attempt **any four** : **(4×5=20)**
- a) Explain basic methods of thread creation and termination in concurrent processing.
  - b) What is vector processing ? How it is different than the simple pipelining ?
  - c) Write a note on pipelining and replication.
  - d) Classify parallel architectures introduced by Flynn.
  - e) Explain 2 bit saturating counter method used for predicting branch outcome.
3. Attempt **any one** :
- a) What are the steps involved in process creation by OS ? Discuss each step in detail. **10**
  - b) Draw and explain basic vector architecture. **10**
4. What is Branch Target Buffer (BTB) ? Draw flowchart for its functioning and explain. **10**

**Set Q**





## SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain NN interconnection network with its properties.
  - b) Explain SIMD architecture with suitable diagram.
  - c) What is granularity ? Explain coarse grained and fine grained systems.
  - d) What are the advantages and disadvantages of distributed systems ?
  - e) Explain CM5 processing element with suitable diagram.
6. List and explain advantages and potential problems of Data Flow Machines. **10**
- OR
- Explain Static and Dynamic data flow model along with suitable diagrams. **10**
7. Explain MPP system in detail. **10**
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SLR-VB – 227

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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Thursday, 4-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. Each question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Example system for COMA machine is  
a) DAP                      b) Cray T3D                      c) KSR-1                      d) MPP
- 2) OS describe a process by  
a) ACB                      b) TCB                      c) PCB                      d) PBC
- 3) \_\_\_\_\_ OS uses process-thread model.  
a) UNIX                      b) SunOS 5.0                      c) DOS                      d) IBM/360
- 4) Which is correct statement ?  
a) FORK/JOIN can be used to implement COBEGIN/COEND  
b) COBEGIN/COEND can be used to implement FORK/JOIN  
c) Both a) and b)  
d) None of above
- 5) Concurrent Execution uses  
a) 1-Client, 1-Server                      b) N-Client, 1-Server  
c) N-Client, N-Server                      d) 1-Client, N-Server
- 6) \_\_\_\_\_ is Not a Data Parallel Architecture.  
a) SIMD                      b) Systolic                      c) Vector                      d) VLIW
- 7) \_\_\_\_\_ connectivity have low bandwidth and low diameter.  
a) NN                      b) Tree                      c) Hypercube                      d) None of these
- 8) Which data type comes under Coarse-Grained system ?  
a) Single-bit                      b) Floating point                      c) Integer                      d) None of these
- 9) \_\_\_\_\_ is example of Coarse-Grained Machines.  
a) MPP                      b) CM5                      c) DAP                      d) CM1

P.T.O.



- 10) \_\_\_\_\_ is disadvantage of Distributed Memory System.
- a) Contention problem
  - b) Deadlock
  - c) Message passing
  - d) Both a) and c)
- 11) The function of control unit of array processor is to
- a) Execute scalar instructions
  - b) Initiate vector instruction execution
  - c) Perform I/O operations
  - d) All above
- 12) Bubble in a pipeline
- a) Stalls the pipeline
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- 13) RISC architecture is known as
- a) Load-store
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- a) Pipelining increases the CPU instruction throughput
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- a) all threads of a process share the same address space
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- 19) Which of the following is not a hazard ?
- a) RAW
  - b) WAW
  - c) WAR
  - d) RAR
- 20) A single instruction replacing multiple (scalar) instructions is a characteristics of which processor ?
- a) Multiprocessor
  - b) Uniprocessor
  - c) Concurrent processor
  - d) Vector processor



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Thursday, 4-5-2017

Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

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

2) *Figures to right indicate full marks.*

**SECTION – I**

2. Attempt **any four** : **(4×5=20)**

- a) Explain basic methods of thread creation and termination in concurrent processing.
- b) What is vector processing ? How it is different than the simple pipelining ?
- c) Write a note on pipelining and replication.
- d) Classify parallel architectures introduced by Flynn.
- e) Explain 2 bit saturating counter method used for predicting branch outcome.

3. Attempt **any one** :

- a) What are the steps involved in process creation by OS ? Discuss each step in detail. **10**
- b) Draw and explain basic vector architecture. **10**

4. What is Branch Target Buffer (BTB) ? Draw flowchart for its functioning and explain. **10**

**Set R**



## SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain NN interconnection network with its properties.
  - b) Explain SIMD architecture with suitable diagram.
  - c) What is granularity ? Explain coarse grained and fine grained systems.
  - d) What are the advantages and disadvantages of distributed systems ?
  - e) Explain CM5 processing element with suitable diagram.
6. List and explain advantages and potential problems of Data Flow Machines. **10**
- OR
- Explain Static and Dynamic data flow model along with suitable diagrams. **10**
7. Explain MPP system in detail. **10**
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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Thursday, 4-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. Each question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Thread synchronization is required because
  - a) all threads of a process share the same address space
  - b) all threads of a process share the same global variables
  - c) all threads of a process can share the same files
  - d) all of these
- 2) Termination of the process terminates
  - a) first thread of the process
  - b) first two threads of the process
  - c) all threads within the process
  - d) no thread within the process
- 3) What is the correct sequence of, stages of instruction execution in pipelined environment ?
  - a) IF ID EX MEM WB
  - b) ID IF EX WB MEM
  - c) IF ID WB EX MEM
  - d) IF ID EX WB MEM
- 4) Which of the following is not a hazard ?
  - a) RAW
  - b) WAW
  - c) WAR
  - d) RAR
- 5) A single instruction replacing multiple (scalar) instructions is a characteristics of which processor ?
  - a) Multiprocessor
  - b) Uniprocessor
  - c) Concurrent processor
  - d) Vector processor
- 6) Example system for COMA machine is
  - a) DAP
  - b) Cray T3D
  - c) KSR-1
  - d) MPP
- 7) OS describe a process by
  - a) ACB
  - b) TCB
  - c) PCB
  - d) PBC

P.T.O.



- 8) \_\_\_\_\_ OS uses process-thread model.  
a) UNIX                      b) SunOS 5.0              c) DOS                      d) IBM/360
- 9) Which is correct statement ?  
a) FORK/JOIN can be used to implement COBEGIN/COEND  
b) COBEGIN/COEND can be used to implement FORK/JOIN  
c) Both a) and b)  
d) None of above
- 10) Concurrent Execution uses  
a) 1-Client, 1-Server                      b) N-Client, 1-Server  
c) N-Client, N-Server                      d) 1-Client, N-Server
- 11) \_\_\_\_\_ is Not a Data Parallel Architecture.  
a) SIMD                      b) Systolic                      c) Vector                      d) VLIW
- 12) \_\_\_\_\_ connectivity have low bandwidth and low diameter.  
a) NN                      b) Tree                      c) Hypercube                      d) None of these
- 13) Which data type comes under Coarse-Grained system ?  
a) Single-bit                      b) Floating point                      c) Integer                      d) None of these
- 14) \_\_\_\_\_ is example of Coarse-Grained Machines.  
a) MPP                      b) CM5                      c) DAP                      d) CM1
- 15) \_\_\_\_\_ is disadvantage of Distributed Memory System.  
a) Contention problem                      b) Deadlock  
c) Message passing                      d) Both a) and c)
- 16) The function of control unit of array processor is to  
a) Execute scalar instructions                      b) Initiate vector instruction execution  
c) Perform I/O operations                      d) All above
- 17) Bubble in a pipeline  
a) Stalls the pipeline  
b) Slows down the clock  
c) Increases the efficiency of pipeline  
d) Decreases hardware
- 18) RISC architecture is known as  
a) Load-store                      b) Arithmetic                      c) Logical                      d) All of these
- 19) Which one is correct in case of pipelining ?  
a) Pipelining increases the CPU instruction throughput  
b) Pipelining does not reduce the execution time of an individual instruction  
c) Pipelining reduces the total execution time of program  
d) All of these
- 20) Which of the following architecture is/are not suitable for realizing SIMD ?  
a) Vector processor                      b) Array processor  
c) Von Neumann                      d) All of these



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Thursday, 4-5-2017

Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

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

2) *Figures to right indicate full marks.*

**SECTION – I**

2. Attempt **any four** : **(4×5=20)**

- a) Explain basic methods of thread creation and termination in concurrent processing.
- b) What is vector processing ? How it is different than the simple pipelining ?
- c) Write a note on pipelining and replication.
- d) Classify parallel architectures introduced by Flynn.
- e) Explain 2 bit saturating counter method used for predicting branch outcome.

3. Attempt **any one** :

- a) What are the steps involved in process creation by OS ? Discuss each step in detail. **10**
- b) Draw and explain basic vector architecture. **10**

4. What is Branch Target Buffer (BTB) ? Draw flowchart for its functioning and explain. **10**

**Set S**





## SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain NN interconnection network with its properties.
  - b) Explain SIMD architecture with suitable diagram.
  - c) What is granularity ? Explain coarse grained and fine grained systems.
  - d) What are the advantages and disadvantages of distributed systems ?
  - e) Explain CM5 processing element with suitable diagram.
6. List and explain advantages and potential problems of Data Flow Machines. **10**
- OR
- Explain Static and Dynamic data flow model along with suitable diagrams. **10**
7. Explain MPP system in detail. **10**
-



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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
DISTRIBUTED SYSTEM**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to right indicate marks.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

I. Choose the correct answer :

(20×1=20)

- 1) In \_\_\_\_\_ model there is no concept of home machine.  
a) Workstation model                      b) Workstation server model  
c) Processor-Pool model                      d) Hybrid model
- 2) \_\_\_\_\_ transparency means that users should not be able to know whether the resource they need is local or remote.  
a) Location transparency                      b) Access transparency  
c) Resource transparency                      d) Object transparency
- 3) Which of the following calls is not used for sending messages in FLIP ?  
a) flip\_unicast      b) flip\_multicast      c) flip\_broadcast      d) flip\_bicast
- 4) \_\_\_\_\_ semantics is used in application where response message from callee is not important for the caller and it operates in LAN where there is high probability of successful transmission of messages.  
a) May-be call      b) Last-one call      c) At-least-once      d) Exactly-once
- 5) \_\_\_\_\_ handles transmission of message across the network between client and server machine.  
a) RPC runtime      b) RPC stub      c) Server stub      d) All of above
- 6) \_\_\_\_\_ is issue of correctness in good message passing system.  
a) Atomicity      b) Ordered delivery      c) Survivability      d) All of the above
- 7) A computer clock consist \_\_\_\_\_ component.  
a) Quartz crystal      b) Counter register      c) Constant registers      d) All of the above

P.T.O.



- 8) The message passing model provides \_\_\_\_\_ basic communication primitives.  
a) SEND                      b) RECEIVE                      c) Both a) and b)                      d) None of the above
- 9) Process migration in heterogeneous system can be achieved by  
a) Internal data representation                      b) External data representation  
c) Both a) and b)                      d) None of the above
- 10) Condition variables are used in \_\_\_\_\_ techniques.  
a) Process migration                      b) Clock synchronization  
c) Deadlock avoidance                      d) Mutual exclusion
- 11) In the ring election algorithm, assuming that only coordinator has failed, as election always requires  
a)  $n - 1$  messages                      b)  $2(n - 1)$  messages                      c)  $n - 2$  messages                      d)  $n^2$  messages
- 12) What is the drawback of distributed approach for implementing mutual exclusion ?  
a) It liable of  $n$  point of failure  
b) Waiting time may large if too many processes in the system  
c) Needs to detect failure of coordinator  
d) Both a) and b)
- 13) In \_\_\_\_\_ approach, it is responsibility of cache manger at the client to validate data with the server before returning it to the client.  
a) Client initiated                      b) Server initiated                      c) Cache manager                      d) Name server
- 14) Cache can be located on \_\_\_\_\_ location in distributed system.  
a) Server main memory                      b) Client disk  
c) Client main memory                      d) All of the above
- 15) False sharing may lead to \_\_\_\_\_ problem.  
a) Thrashing                      b) Hashing                      c) Paging                      d) None of the above
- 16) The grid specific protocol that can transmit many diverse type of data in reliable manner are  
a) GridFTP                      b) GARP                      c) GARA                      d) None of the above
- 17) \_\_\_\_\_ ensure seamless communication different computers distributed across geographical locations.  
a) Middleware                      b) Location server  
c) Naming servers                      d) None of the above
- 18) The process by which client become associated with a server so that RPC can take place is called  
a) Naming                      b) Binding agent                      c) Both a) and b)                      d) Binding
- 19) The \_\_\_\_\_ model is useful for application based on the procedure consumer model.  
a) Team                      b) Dispatcher-Worker  
c) Pipeline                      d) None of the above
- 20) Threads of a single process do not share  
a) Program counter                      b) Semaphores  
c) Open files                      d) Address space



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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
DISTRIBUTED SYSTEM**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to right indicate marks.*

SECTION – I

- II. Answer **any four** : (5×4=20)
- a) How can we gain better performance in distributed system ?
  - b) Compare Network operating system with distributed operating system.
  - c) Explain different buffering strategies.
  - d) Explain architecture of workstation server model.
  - e) What are advantages of process migration in distributed system ?
- III. Answer **any one** : (10×1=10)
- a) How can we handle idempotency and duplicate request message ?
  - b) What is middleware ? Explain layered architecture of middleware in distributed system.
- IV. What is process migration ? Explain in detail the different method of address space transfer mechanism. (10×1=10)

SECTION – II

- V. Answer **any four** : (5×4=20)
- a) Explain Suzuki Kasami's broadcast algorithm with example.
  - b) Explain typical data access action in distributed file system.
  - c) Write a note on distributed shared memory full replication algorithm.
  - d) Explain working of grid computing.
  - e) Explain architectural working of Goolge File System.
- VI. Answer **any one** : (10×1=10)
- a) Explain Probe Based distributed algorithm for deadlock detection with an example.
  - b) Explain sender-initiated load distributing algorithm.
- VII. What is grid ? Explain different types of grid. (10×1=10)





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Set **Q**

**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
DISTRIBUTED SYSTEM**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to right indicate marks.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

I. Choose the correct answer :

(20×1=20)

- 1) The grid specific protocol that can transmit many diverse type of data in reliable manner are  
a) GridFTP                      b) GARP                      c) GARA                      d) None of the above
- 2) \_\_\_\_\_ ensure seamless communication different computers distributed across geographical locations.  
a) Middleware                      b) Location server  
c) Naming servers                      d) None of the above
- 3) The process by which client become associated with a server so that RPC can take place is called  
a) Naming                      b) Binding agent                      c) Both a) and b)                      d) Binding
- 4) The \_\_\_\_\_ model is useful for application based on the procedure consumer model.  
a) Team                      b) Dispatcher-Worker  
c) Pipeline                      d) None of the above
- 5) Threads of a single process do not share  
a) Program counter                      b) Semaphores  
c) Open files                      d) Address space
- 6) In \_\_\_\_\_ model there is no concept of home machine.  
a) Workstation model                      b) Workstation server model  
c) Processor-Pool model                      d) Hybrid model

P.T.O.



- 7) \_\_\_\_\_ transparency means that users should not be able to know whether the resource they need is local or remote.
  - a) Location transparency
  - b) Access transparency
  - c) Resource transparency
  - d) Object transparency
- 8) Which of the following calls is not used for sending messages in FLIP ?
  - a) flip\_unicast
  - b) flip\_multicast
  - c) flip\_broadcast
  - d) flip\_bicast
- 9) \_\_\_\_\_ semantics is used in application where response message from callee is not important for the caller and it operates in LAN where there is high probability of successful transmission of messages.
  - a) May-be call
  - b) Last-one call
  - c) At-least-once
  - d) Exactly-once
- 10) \_\_\_\_\_ handles transmission of message across the network between client and server machine.
  - a) RPC runtime
  - b) RPC stub
  - c) Server stub
  - d) All of above
- 11) \_\_\_\_\_ is issue of correctness in good message passing system.
  - a) Atomicity
  - b) Ordered delivery
  - c) Survivability
  - d) All of the above
- 12) A computer clock consist \_\_\_\_\_ component.
  - a) Quartz crystal
  - b) Counter register
  - c) Constant registers
  - d) All of the above
- 13) The message passing model provides \_\_\_\_\_ basic communication primitives.
  - a) SEND
  - b) RECEIVE
  - c) Both a) and b)
  - d) None of the above
- 14) Process migration in heterogeneous system can be achieved by
  - a) Internal data representation
  - b) External data representation
  - c) Both a) and b)
  - d) None of the above
- 15) Condition variables are used in \_\_\_\_\_ techniques.
  - a) Process migration
  - b) Clock synchronization
  - c) Deadlock avoidance
  - d) Mutual exclusion
- 16) In the ring election algorithm, assuming that only coordinator has failed, as election always requires
  - a)  $n - 1$  messages
  - b)  $2(n - 1)$  messages
  - c)  $n - 2$  messages
  - d)  $n^2$  messages
- 17) What is the drawback of distributed approach for implementing mutual exclusion ?
  - a) It liable of  $n$  point of failure
  - b) Waiting time may large if too many processes in the system
  - c) Needs to detect failure of coordinator
  - d) Both a) and b)
- 18) In \_\_\_\_\_ approach, it is responsibility of cache manger at the client to validate data with the server before returning it to the client.
  - a) Client initiated
  - b) Server initiated
  - c) Cache manager
  - d) Name server
- 19) Cache can be located on \_\_\_\_\_ location in distributed system.
  - a) Server main memory
  - b) Client disk
  - c) Client main memory
  - d) All of the above
- 20) False sharing may lead to \_\_\_\_\_ problem.
  - a) Thrashing
  - b) Hashing
  - c) Paging
  - d) None of the above



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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
DISTRIBUTED SYSTEM**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to right indicate marks.*

SECTION – I

- II. Answer **any four** : (5×4=20)
- a) How can we gain better performance in distributed system ?
  - b) Compare Network operating system with distributed operating system.
  - c) Explain different buffering strategies.
  - d) Explain architecture of workstation server model.
  - e) What are advantages of process migration in distributed system ?
- III. Answer **any one** : (10×1=10)
- a) How can we handle idempotency and duplicate request message ?
  - b) What is middleware ? Explain layered architecture of middleware in distributed system.
- IV. What is process migration ? Explain in detail the different method of address space transfer mechanism. (10×1=10)

SECTION – II

- V. Answer **any four** : (5×4=20)
- a) Explain Suzuki Kasami's broadcast algorithm with example.
  - b) Explain typical data access action in distributed file system.
  - c) Write a note on distributed shared memory full replication algorithm.
  - d) Explain working of grid computing.
  - e) Explain architectural working of Goolge File System.
- VI. Answer **any one** : (10×1=10)
- a) Explain Probe Based distributed algorithm for deadlock detection with an example.
  - b) Explain sender-initiated load distributing algorithm.
- VII. What is grid ? Explain different types of grid. (10×1=10)







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Set **R**

**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
DISTRIBUTED SYSTEM**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to right indicate marks.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

I. Choose the correct answer :

(20×1=20)

- 1) In the ring election algorithm, assuming that only coordinator has failed, as election always requires  
a)  $n - 1$  messages    b)  $2(n - 1)$  messages    c)  $n - 2$  messages    d)  $n^2$  messages
- 2) What is the drawback of distributed approach for implementing mutual exclusion ?  
a) It liable of  $n$  point of failure  
b) Waiting time may large if too many processes in the system  
c) Needs to detect failure of coordinator  
d) Both a) and b)
- 3) In \_\_\_\_\_ approach, it is responsibility of cache manger at the client to validate data with the server before returning it to the client.  
a) Client initiated    b) Server initiated    c) Cache manager    d) Name server
- 4) Cache can be located on \_\_\_\_\_ location in distributed system.  
a) Server main memory    b) Client disk  
c) Client main memory    d) All of the above
- 5) False sharing may lead to \_\_\_\_\_ problem.  
a) Thrashing    b) Hashing    c) Paging    d) None of the above
- 6) The grid specific protocol that can transmit many diverse type of data in reliable manner are  
a) GridFTP    b) GARP    c) GARA    d) None of the above

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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
DISTRIBUTED SYSTEM**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to right indicate marks.*

SECTION – I

- II. Answer **any four** : (5×4=20)
- a) How can we gain better performance in distributed system ?
  - b) Compare Network operating system with distributed operating system.
  - c) Explain different buffering strategies.
  - d) Explain architecture of workstation server model.
  - e) What are advantages of process migration in distributed system ?
- III. Answer **any one** : (10×1=10)
- a) How can we handle idempotency and duplicate request message ?
  - b) What is middleware ? Explain layered architecture of middleware in distributed system.
- IV. What is process migration ? Explain in detail the different method of address space transfer mechanism. (10×1=10)

SECTION – II

- V. Answer **any four** : (5×4=20)
- a) Explain Suzuki Kasami's broadcast algorithm with example.
  - b) Explain typical data access action in distributed file system.
  - c) Write a note on distributed shared memory full replication algorithm.
  - d) Explain working of grid computing.
  - e) Explain architectural working of Goolge File System.
- VI. Answer **any one** : (10×1=10)
- a) Explain Probe Based distributed algorithm for deadlock detection with an example.
  - b) Explain sender-initiated load distributing algorithm.
- VII. What is grid ? Explain different types of grid. (10×1=10)





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Set **S**

**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
DISTRIBUTED SYSTEM**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to right indicate marks.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

I. Choose the correct answer :

(20×1=20)

- 1) \_\_\_\_\_ is issue of correctness in good message passing system.  
a) Atomicity    b) Ordered delivery    c) Survivability    d) All of the above
- 2) A computer clock consist \_\_\_\_\_ component.  
a) Quartz crystal    b) Counter register    c) Constant registers    d) All of the above
- 3) The message passing model provides \_\_\_\_\_ basic communication primitives.  
a) SEND    b) RECEIVE    c) Both a) and b)    d) None of the above
- 4) Process migration in heterogeneous system can be achieved by  
a) Internal data representation    b) External data representation  
c) Both a) and b)    d) None of the above
- 5) Condition variables are used in \_\_\_\_\_ techniques.  
a) Process migration    b) Clock synchronization  
c) Deadlock avoidance    d) Mutual exclusion
- 6) In the ring election algorithm, assuming that only coordinator has failed, as election always requires  
a)  $n - 1$  messages    b)  $2(n - 1)$  messages    c)  $n - 2$  messages    d)  $n^2$  messages
- 7) What is the drawback of distributed approach for implementing mutual exclusion ?  
a) It liable of  $n$  point of failure  
b) Waiting time may large if too many processes in the system  
c) Needs to detect failure of coordinator  
d) Both a) and b)

P.T.O.



- 8) In \_\_\_\_\_ approach, it is responsibility of cache manger at the client to validate data with the server before returning it to the client.  
a) Client initiated    b) Server initiated    c) Cache manager    d) Name server
- 9) Cache can be located on \_\_\_\_\_ location in distributed system.  
a) Server main memory    b) Client disk  
c) Client main memory    d) All of the above
- 10) False sharing may lead to \_\_\_\_\_ problem.  
a) Thrashing    b) Hashing    c) Paging    d) None of the above
- 11) The grid specific protocol that can transmit many diverse type of data in reliable manner are  
a) GridFTP    b) GARP    c) GARA    d) None of the above
- 12) \_\_\_\_\_ ensure seamless communication different computers distributed across geographical locations.  
a) Middleware    b) Location server  
c) Naming servers    d) None of the above
- 13) The process by which client become associated with a server so that RPC can take place is called  
a) Naming    b) Binding agent    c) Both a) and b)    d) Binding
- 14) The \_\_\_\_\_ model is useful for application based on the procedure consumer model.  
a) Team    b) Dispatcher-Worker  
c) Pipeline    d) None of the above
- 15) Threads of a single process do not share  
a) Program counter    b) Semaphores  
c) Open files    d) Address space
- 16) In \_\_\_\_\_ model there is no concept of home machine.  
a) Workstation model    b) Workstation server model  
c) Processor-Pool model    d) Hybrid model
- 17) \_\_\_\_\_ transparency means that users should not be able to know whether the resource they need is local or remote.  
a) Location transparency    b) Access transparency  
c) Resource transparency    d) Object transparency
- 18) Which of the following calls is not used for sending messages in FLIP ?  
a) flip\_unicast    b) flip\_multicast    c) flip\_broadcast    d) flip\_bicast
- 19) \_\_\_\_\_ semantics is used in application where response message from callee is not important for the caller and it operates in LAN where there is high probability of successful transmission of messages.  
a) May-be call    b) Last-one call    c) At-least-once    d) Exactly-once
- 20) \_\_\_\_\_ handles transmission of message across the network between client and server machine.  
a) RPC runtime    b) RPC stub    c) Server stub    d) All of above



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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
DISTRIBUTED SYSTEM**

Day and Date : Friday, 5-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to right indicate marks.*

SECTION – I

- II. Answer **any four** : (5×4=20)
- a) How can we gain better performance in distributed system ?
  - b) Compare Network operating system with distributed operating system.
  - c) Explain different buffering strategies.
  - d) Explain architecture of workstation server model.
  - e) What are advantages of process migration in distributed system ?
- III. Answer **any one** : (10×1=10)
- a) How can we handle idempotency and duplicate request message ?
  - b) What is middleware ? Explain layered architecture of middleware in distributed system.
- IV. What is process migration ? Explain in detail the different method of address space transfer mechanism. (10×1=10)

SECTION – II

- V. Answer **any four** : (5×4=20)
- a) Explain Suzuki Kasami's broadcast algorithm with example.
  - b) Explain typical data access action in distributed file system.
  - c) Write a note on distributed shared memory full replication algorithm.
  - d) Explain working of grid computing.
  - e) Explain architectural working of Goolge File System.
- VI. Answer **any one** : (10×1=10)
- a) Explain Probe Based distributed algorithm for deadlock detection with an example.
  - b) Explain sender-initiated load distributing algorithm.
- VII. What is grid ? Explain different types of grid. (10×1=10)







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Set **P**

**B.E. (C.S.E.) (Part – I) Examination, 2017  
MODERN DATABASE SYSTEM**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**
- Which one of the following is known as the Knowledge Discovery Process from Data (KDD) ?
    - Data Mining
    - Data Warehousing
    - Database
    - None of the above
  - In Transaction server
    - Client machines ship transaction to server systems
    - Requests are made by clients to servers using SQL
    - Server ships the information to clients
    - All of the above
  - In lock de-escalation
    - Server requests its clients to transfer back locks on prefetched items
    - Client request server to grant the locks
    - Server lock to its clients
    - Clients release locks on items
  - A heterogeneous distributed database is
    - The same DBMS is used at different location and data are not distributed across all nodes
    - The same DBMS is used at different location and data are distributed across all nodes
    - A different DBMS is used at different location and data are not distributed across all nodes
    - A different DBMS is used at different location and data are distributed across all nodes
  - The read and write quorum must satisfy the condition
    - $Q_r + Q_w = S$
    - $Q_r + Q_w < S$
    - $Q_r + Q_w > S$
    - $Q_r = Q_w$
  - Two phase commit protocol ensures
    - Durability
    - Atomicity
    - Consistency
    - Isolation
  - Hash partitioning prevents
    - Loss of data
    - Speed-up
    - Skewing
    - None

P.T.O.



- 8) \_\_\_\_\_ describes the data contained in the data warehouse.
- a) Relational data
  - b) Operational data
  - c) Metadata
  - d) Informational data
- 9) Execution of a single query in parallel on multiple processors/disks for speeding up long-running queries is called
- a) Inter-Query Parallelism
  - b) Intra-Query Parallelism
  - c) Inter-Operation Parallelism
  - d) Intra-operation Parallelism
- 10) Coarse granularity parallelism is
- a) Few processors sharing main memory
  - b) Single task, single processor
  - c) Large no. of processors parallelizing single task
  - d) All
- 11) In Object Oriented Databases, nesting can be done using function \_\_\_\_\_ to create a multiset of particular attribute.
- a) Aggregate
  - b) Group by
  - c) Order by
  - d) Collect
- 12) The task of constructing a query evaluation plan, that minimizes the cost of query evaluation is called
- a) Query optimization
  - b) Query processing
  - c) Query translation
  - d) Query execution
- 13) In sort merge strategy of Query Processing, small sub files sorted are called
- a) Blocks
  - b) Folders
  - c) Runs
  - d) Indexes
- 14) Procedure of sorting relations for larger records that does not fit in main memory and are stored on disk is called as
- a) Parser sorting
  - b) External sorting
  - c) Internal sorting
  - d) Secondary sorting
- 15) \_\_\_\_\_ can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of data.
- a) MapReduce
  - b) Mahout
  - c) Oozie
  - d) All of the mentioned
- 16) Most NoSQL databases support automatic \_\_\_\_\_ , meaning that you get high availability and disaster recovery.
- a) Processing
  - b) Scalability
  - c) Replication
  - d) All of the mentioned
- 17) MongoDB is a \_\_\_\_\_ database that provides high performance, high availability and easy scalability.
- a) Graph
  - b) Key value
  - c) Document
  - d) All of the mentioned
- 18) Which of the following is a NoSQL Database Type ?
- a) SQL
  - b) Document databases
  - c) JSON
  - d) All of the mentioned
- 19) PostgreSQL runs on all major operating systems, including Linux, Unix and Windows.
- a) True
  - b) False
- 20) In type Inheritance, the keyword \_\_\_\_\_ says that, subtype may not be created from the given type.
- a) Not final
  - b) Self
  - c) Create
  - d) Final



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**B.E. (C.S.E.) (Part – I) Examination, 2017  
MODERN DATABASE SYSTEM**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** : **(5×4=20)**

- 1) List and explain issues in Data Server Architecture.
- 2) How fragment and replicate join is used to reduce the sizes of relations at each processor ?
- 3) Explain classification technique of Data Mining with example.
- 4) List and compare different partitioning techniques.
- 5) Write a short note on Data Server.
- 6) What is Support and Confidence in Association Rule ? Consider below given itemset and find out support and confidence for Rule {Pen} = > {ink}.

| Trans - id | Cust - id | Date          | Item  | Qty. |
|------------|-----------|---------------|-------|------|
| 1          | 201       | 5 / 1 / 2016  | pen   | 2    |
| 1          | 201       | 5 / 1 / 2016  | ink   | 1    |
| 1          | 201       | 5 / 1 / 2016  | milk  | 3    |
| 1          | 201       | 5 / 1 / 2016  | juice | 4    |
| 2          | 105       | 6 / 3 / 2016  | pen   | 6    |
| 2          | 105       | 6 / 3 / 2016  | ink   | 2    |
| 2          | 105       | 6 / 3 / 2016  | milk  | 3    |
| 3          | 106       | 5 / 10 / 2016 | pen   | 2    |
| 3          | 106       | 5 / 10 / 2016 | milk  | 1    |
| 4          | 201       | 6 / 1 / 2016  | pen   | 4    |
| 4          | 201       | 6 / 1 / 2016  | ink   | 1    |
| 4          | 201       | 6 / 1 / 2016  | juice | 4    |

3. Answer **any one** : **(10×1=10)**

- A) Define Data Warehouse and Data Mining. Explain KDD process in detail.
- B) Explain Range Partitioning Sort and Parallel External Sort-Merge algorithm.

4. In distributed transaction which protocol is used to ensure automocity ? Explain the protocol in detail.

**10**

**Set P**



## SECTION – II

5. Answer **any four** : **(5×4=20)**
- 1) List Hadoop Core Component. Also explain how MapReduce framework works ?
  - 2) Using type inheritance, Create Type for Person with attributes name and address. Create its subtype Student with attributes degree and department and Teacher with attributes salary and department.
  - 3) Describe characteristics of MongoDB.
  - 4) What are the different steps involved in Query processing ? Explain with diagram.
  - 5) Write a short note on Nested-Loop-Join.
  - 6) In Object Oriented Database, structured type can have methods. With example, write declaration body of method and also explain how this method can be invoked on instance of type.
6. Answer **any one** : **(10×1=10)**
- A) What is Big Data ? Explain Need of Big Data. Also explain 3 V's of Big Data.
  - B) Define NoSQL. List characteristics of NoSQL. Also define Key-value store and Document Database.
7. Explain Hadoop Distributed File System (HDFS) Architecture with diagram. **10**
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Set **Q**

**B.E. (C.S.E.) (Part – I) Examination, 2017  
MODERN DATABASE SYSTEM**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**

- 1) Most NoSQL databases support automatic \_\_\_\_\_ , meaning that you get high availability and disaster recovery.
  - a) Processing
  - b) Scalability
  - c) Replication
  - d) All of the mentioned
- 2) MongoDB is a \_\_\_\_\_ database that provides high performance, high availability and easy scalability.
  - a) Graph
  - b) Key value
  - c) Document
  - d) All of the mentioned
- 3) Which of the following is a NoSQL Database Type ?
  - a) SQL
  - b) Document databases
  - c) JSON
  - d) All of the mentioned
- 4) PostgreSQL runs on all major operating systems, including Linux, Unix and Windows.
  - a) True
  - b) False
- 5) In type Inheritance, the keyword \_\_\_\_\_ says that, subtype may not be created from the given type.
  - a) Not final
  - b) Self
  - c) Create
  - d) Final
- 6) Which one of the following is known as the Knowledge Discovery Process from Data (KDD) ?
  - a) Data Mining
  - b) Data Warehousing
  - c) Database
  - d) None of the above
- 7) In Transaction server
  - a) Client machines ship transaction to server systems
  - b) Requests are made by clients to servers using SQL
  - c) Server ships the information to clients
  - d) All of the above
- 8) In lock de-escalation
  - a) Server requests its clients to transfer back locks on prefetched items
  - b) Client request server to grant the locks
  - c) Server lock to its clients
  - d) Clients release locks on items

P.T.O.



- 9) A heterogeneous distributed database is
- The same DBMS is used at different location and data are not distributed across all nodes
  - The same DBMS is used at different location and data are distributed across all nodes
  - A different DBMS is used at different location and data are not distributed across all nodes
  - A different DBMS is used at different location and data are distributed across all nodes
- 10) The read and write quorum must satisfy the condition
- $Q_r + Q_w = S$
  - $Q_r + Q_w < S$
  - $Q_r + Q_w > S$
  - $Q_r = Q_w$
- 11) Two phase commit protocol ensures
- Durability
  - Atomicity
  - Consistency
  - Isolation
- 12) Hash partitioning prevents
- Loss of data
  - Speed-up
  - Skewing
  - None
- 13) \_\_\_\_\_ describes the data contained in the data warehouse.
- Relational data
  - Operational data
  - Metadata
  - Informational data
- 14) Execution of a single query in parallel on multiple processors/disks for speeding up long-running queries is called
- Inter-Query Parallelism
  - Intra-Query Parallelism
  - Inter-Operation Parallelism
  - Intra-operation Parallelism
- 15) Coarse granularity parallelism is
- Few processors sharing main memory
  - Single task, single processor
  - Large no. of processors parallelizing single task
  - All
- 16) In Object Oriented Databases, nesting can be done using function \_\_\_\_\_ to create a multiset of particular attribute.
- Aggregate
  - Group by
  - Order by
  - Collect
- 17) The task of constructing a query evaluation plan, that minimizes the cost of query evaluation is called
- Query optimization
  - Query processing
  - Query translation
  - Query execution
- 18) In sort merge strategy of Query Processing, small sub files sorted are called
- Blocks
  - Folders
  - Runs
  - Indexes
- 19) Procedure of sorting relations for larger records that does not fit in main memory and are stored on disk is called as
- Parser sorting
  - External sorting
  - Internal sorting
  - Secondary sorting
- 20) \_\_\_\_\_ can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of data.
- MapReduce
  - Mahout
  - Oozie
  - All of the mentioned



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**B.E. (C.S.E.) (Part – I) Examination, 2017  
MODERN DATABASE SYSTEM**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** : **(5×4=20)**

- 1) List and explain issues in Data Server Architecture.
- 2) How fragment and replicate join is used to reduce the sizes of relations at each processor ?
- 3) Explain classification technique of Data Mining with example.
- 4) List and compare different partitioning techniques.
- 5) Write a short note on Data Server.
- 6) What is Support and Confidence in Association Rule ? Consider below given itemset and find out support and confidence for Rule {Pen} = > {ink}.

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|------------|-----------|---------------|-------|------|
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| 1          | 201       | 5 / 1 / 2016  | juice | 4    |
| 2          | 105       | 6 / 3 / 2016  | pen   | 6    |
| 2          | 105       | 6 / 3 / 2016  | ink   | 2    |
| 2          | 105       | 6 / 3 / 2016  | milk  | 3    |
| 3          | 106       | 5 / 10 / 2016 | pen   | 2    |
| 3          | 106       | 5 / 10 / 2016 | milk  | 1    |
| 4          | 201       | 6 / 1 / 2016  | pen   | 4    |
| 4          | 201       | 6 / 1 / 2016  | ink   | 1    |
| 4          | 201       | 6 / 1 / 2016  | juice | 4    |

3. Answer **any one** : **(10×1=10)**

- A) Define Data Warehouse and Data Mining. Explain KDD process in detail.
- B) Explain Range Partitioning Sort and Parallel External Sort-Merge algorithm.

4. In distributed transaction which protocol is used to ensure automocity ? Explain the protocol in detail.

**10**

**Set Q**





## SECTION – II

5. Answer **any four** : **(5×4=20)**
- 1) List Hadoop Core Component. Also explain how MapReduce framework works ?
  - 2) Using type inheritance, Create Type for Person with attributes name and address. Create its subtype Student with attributes degree and department and Teacher with attributes salary and department.
  - 3) Describe characteristics of MongoDB.
  - 4) What are the different steps involved in Query processing ? Explain with diagram.
  - 5) Write a short note on Nested-Loop-Join.
  - 6) In Object Oriented Database, structured type can have methods. With example, write declaration body of method and also explain how this method can be invoked on instance of type.
6. Answer **any one** : **(10×1=10)**
- A) What is Big Data ? Explain Need of Big Data. Also explain 3 V's of Big Data.
  - B) Define NoSQL. List characteristics of NoSQL. Also define Key-value store and Document Database.
7. Explain Hadoop Distributed File System (HDFS) Architecture with diagram. **10**
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Set **R**

**B.E. (C.S.E.) (Part – I) Examination, 2017  
MODERN DATABASE SYSTEM**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**

- 1) In Object Oriented Databases, nesting can be done using function \_\_\_\_\_ to create a multiset of particular attribute.  
a) Aggregate                      b) Group by                      c) Order by                      d) Collect
- 2) The task of constructing a query evaluation plan, that minimizes the cost of query evaluation is called  
a) Query optimization                      b) Query processing  
c) Query translation                      d) Query execution
- 3) In sort merge strategy of Query Processing, small sub files sorted are called  
a) Blocks                      b) Folders                      c) Runs                      d) Indexes
- 4) Procedure of sorting relations for larger records that does not fit in main memory and are stored on disk is called as  
a) Parser sorting                      b) External sorting  
c) Internal sorting                      d) Secondary sorting
- 5) \_\_\_\_\_ can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of data.  
a) MapReduce                      b) Mahout  
c) Oozie                      d) All of the mentioned
- 6) Most NoSQL databases support automatic \_\_\_\_\_ , meaning that you get high availability and disaster recovery.  
a) Processing                      b) Scalability  
c) Replication                      d) All of the mentioned
- 7) MongoDB is a \_\_\_\_\_ database that provides high performance, high availability and easy scalability.  
a) Graph                      b) Key value  
c) Document                      d) All of the mentioned
- 8) Which of the following is a NoSQL Database Type ?  
a) SQL                      b) Document databases  
c) JSON                      d) All of the mentioned

P.T.O.





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**B.E. (C.S.E.) (Part – I) Examination, 2017  
MODERN DATABASE SYSTEM**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** : **(5×4=20)**

- 1) List and explain issues in Data Server Architecture.
- 2) How fragment and replicate join is used to reduce the sizes of relations at each processor ?
- 3) Explain classification technique of Data Mining with example.
- 4) List and compare different partitioning techniques.
- 5) Write a short note on Data Server.
- 6) What is Support and Confidence in Association Rule ? Consider below given itemset and find out support and confidence for Rule {Pen} = > {ink}.

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| 2          | 105       | 6 / 3 / 2016  | ink   | 2    |
| 2          | 105       | 6 / 3 / 2016  | milk  | 3    |
| 3          | 106       | 5 / 10 / 2016 | pen   | 2    |
| 3          | 106       | 5 / 10 / 2016 | milk  | 1    |
| 4          | 201       | 6 / 1 / 2016  | pen   | 4    |
| 4          | 201       | 6 / 1 / 2016  | ink   | 1    |
| 4          | 201       | 6 / 1 / 2016  | juice | 4    |

3. Answer **any one** : **(10×1=10)**

- A) Define Data Warehouse and Data Mining. Explain KDD process in detail.
- B) Explain Range Partitioning Sort and Parallel External Sort-Merge algorithm.

4. In distributed transaction which protocol is used to ensure automocity ? Explain the protocol in detail.

**10**



## SECTION – II

5. Answer **any four** : **(5×4=20)**
- 1) List Hadoop Core Component. Also explain how MapReduce framework works ?
  - 2) Using type inheritance, Create Type for Person with attributes name and address. Create its subtype Student with attributes degree and department and Teacher with attributes salary and department.
  - 3) Describe characteristics of MongoDB.
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  - 6) In Object Oriented Database, structured type can have methods. With example, write declaration body of method and also explain how this method can be invoked on instance of type.
6. Answer **any one** : **(10×1=10)**
- A) What is Big Data ? Explain Need of Big Data. Also explain 3 V's of Big Data.
  - B) Define NoSQL. List characteristics of NoSQL. Also define Key-value store and Document Database.
7. Explain Hadoop Distributed File System (HDFS) Architecture with diagram. **10**
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**B.E. (C.S.E.) (Part – I) Examination, 2017  
MODERN DATABASE SYSTEM**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Two phase commit protocol ensures
  - a) Durability
  - b) Atomicity
  - c) Consistency
  - d) Isolation
- 2) Hash partitioning prevents
  - a) Loss of data
  - b) Speed-up
  - c) Skewing
  - d) None
- 3) \_\_\_\_\_describes the data contained in the data warehouse.
  - a) Relational data
  - b) Operational data
  - c) Metadata
  - d) Informational data
- 4) Execution of a single query in parallel on multiple processors/disks for speeding up long-running queries is called
  - a) Inter-Query Parallelism
  - b) Intra-Query Parallelism
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- 5) Coarse granularity parallelism is
  - a) Few processors sharing main memory
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  - b) External sorting
  - c) Internal sorting
  - d) Secondary sorting

P.T.O.



- 10) \_\_\_\_\_ can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of data.
- a) MapReduce
  - b) Mahout
  - c) Oozie
  - d) All of the mentioned
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- a) SQL
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- 14) PostgreSQL runs on all major operating systems, including Linux, Unix and Windows.
- a) True
  - b) False
- 15) In type Inheritance, the keyword \_\_\_\_\_ says that, subtype may not be created from the given type.
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- a) Data Mining
  - b) Data Warehousing
  - c) Database
  - d) None of the above
- 17) In Transaction server
- a) Client machines ship transaction to server systems
  - b) Requests are made by clients to servers using SQL
  - c) Server ships the information to clients
  - d) All of the above
- 18) In lock de-escalation
- a) Server requests its clients to transfer back locks on prefetched items
  - b) Client request server to grant the locks
  - c) Server lock to its clients
  - d) Clients release locks on items
- 19) A heterogeneous distributed database is
- a) The same DBMS is used at different location and data are not distributed across all nodes
  - b) The same DBMS is used at different location and data are distributed across all nodes
  - c) A different DBMS is used at different location and data are not distributed across all nodes
  - d) A different DBMS is used at different location and data are distributed across all nodes
- 20) The read and write quorum must satisfy the condition
- a)  $Q_r + Q_w = S$
  - b)  $Q_r + Q_w < S$
  - c)  $Q_r + Q_w > S$
  - d)  $Q_r = Q_w$
-



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**B.E. (C.S.E.) (Part – I) Examination, 2017  
MODERN DATABASE SYSTEM**

Day and Date : Saturday, 6-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** : **(5×4=20)**

- 1) List and explain issues in Data Server Architecture.
- 2) How fragment and replicate join is used to reduce the sizes of relations at each processor ?
- 3) Explain classification technique of Data Mining with example.
- 4) List and compare different partitioning techniques.
- 5) Write a short note on Data Server.
- 6) What is Support and Confidence in Association Rule ? Consider below given itemset and find out support and confidence for Rule {Pen} = > {ink}.

| Trans - id | Cust - id | Date          | Item  | Qty. |
|------------|-----------|---------------|-------|------|
| 1          | 201       | 5 / 1 / 2016  | pen   | 2    |
| 1          | 201       | 5 / 1 / 2016  | ink   | 1    |
| 1          | 201       | 5 / 1 / 2016  | milk  | 3    |
| 1          | 201       | 5 / 1 / 2016  | juice | 4    |
| 2          | 105       | 6 / 3 / 2016  | pen   | 6    |
| 2          | 105       | 6 / 3 / 2016  | ink   | 2    |
| 2          | 105       | 6 / 3 / 2016  | milk  | 3    |
| 3          | 106       | 5 / 10 / 2016 | pen   | 2    |
| 3          | 106       | 5 / 10 / 2016 | milk  | 1    |
| 4          | 201       | 6 / 1 / 2016  | pen   | 4    |
| 4          | 201       | 6 / 1 / 2016  | ink   | 1    |
| 4          | 201       | 6 / 1 / 2016  | juice | 4    |

3. Answer **any one** : **(10×1=10)**

- A) Define Data Warehouse and Data Mining. Explain KDD process in detail.
- B) Explain Range Partitioning Sort and Parallel External Sort-Merge algorithm.

4. In distributed transaction which protocol is used to ensure automocity ? Explain the protocol in detail.

**10**

**Set S**





## SECTION – II

5. Answer **any four** : **(5×4=20)**
- 1) List Hadoop Core Component. Also explain how MapReduce framework works ?
  - 2) Using type inheritance, Create Type for Person with attributes name and address. Create its subtype Student with attributes degree and department and Teacher with attributes salary and department.
  - 3) Describe characteristics of MongoDB.
  - 4) What are the different steps involved in Query processing ? Explain with diagram.
  - 5) Write a short note on Nested-Loop-Join.
  - 6) In Object Oriented Database, structured type can have methods. With example, write declaration body of method and also explain how this method can be invoked on instance of type.
6. Answer **any one** : **(10×1=10)**
- A) What is Big Data ? Explain Need of Big Data. Also explain 3 V's of Big Data.
  - B) Define NoSQL. List characteristics of NoSQL. Also define Key-value store and Document Database.
7. Explain Hadoop Distributed File System (HDFS) Architecture with diagram. **10**
-





- 9) E-mail is the best example for which of the collaboration approach ?  
a) Same place, same time                      b) Different place, same time  
c) Different place, different time            d) None of these
- 10) Which traditional method of rich context says “what you need to know and when you need to know it” ?  
a) Triggers                      b) Information            c) Artifacts                      d) Placeholders
- 11) \_\_\_\_\_ discussions usually focus on the decisions to be made by network designers and operators.  
a) Quality of service                              b) Quality of productivity  
c) Quality of design                                d) None of these
- 12) \_\_\_\_\_ can provide indexes of terms, keyword searches, step by step guidance and access to complementary web information.  
a) Context-sensitive help                        b) Online help  
c) Guides    d) Journals
- 13) View large volumes of data is one of the challenge of  
a) information search                              b) information analysis  
c) information visualization                      d) all
- 14) \_\_\_\_\_ design also involves the relationship of the box with the current contents of the screen.  
a) Command box    b) Combo box    c) List box                      d) Dialog box
- 15) \_\_\_\_\_ displays are attractive to users and can often improve task performance.  
a) Color    b) Structured            c) Vertical                        d) Angular
- 16) \_\_\_\_\_ techniques are used to allow participants to meet within a virtual world.  
a) Augmented reality                              b) Virtual reality  
c) Traditional                                        d) Hierarchical
- 17) In information visualization three more structured data types are temporal, tree, and  
a) one dimensional                                b) user defined  
c) network    d) two dimensional
- 18) \_\_\_\_\_ incorporates different media such as sound, images and video.  
a) Textual data    b) Binary data    c) Analysis data    d) Multimedia
- 19) \_\_\_\_\_ web content can be used for complete web based business applications.  
a) Dynamic                                        b) Static                      c) Complex                      d) Simple
- 20) The \_\_\_\_\_ is global hypermedia system.  
a) multimedia                                      b) world wide web  
c) hypertext                                        d) virtual reality



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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017  
HUMAN COMPUTER INTERACTION (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** of the following : **(4×5=20)**
- a) Explain any two input-output channels of the human.
  - b) Explain the process of design with respect to simplified view.
  - c) List and explain the tools for layout design.
  - d) Write a short note on physical and device models.
  - e) What are the organization issues that affect the acceptance and relevance of information and communication system ?
  - f) What do you mean by backchannels ? Explain how it affects the face-to-face communication.
3. Explain the eight golden rules of interface design. **10**

OR

What are the eight stages of OSTA socio-technical approach ?

4. Define direct manipulation and explain the problems with direct manipulation. **10**

**SECTION – II**

5. Attempt **any four (Each question carries 5 marks)** : **20**
- 1) Explain the importance of online manuals and documentation in HCI.
  - 2) Write note on-quality of service in design issue.
  - 3) Explain groupware systems in HCI.

**Set P**



- 4) Explain the concept of ubiquitous computing.
  - 5) Explain multimedia document searches in information search.
  - 6) Explain error message guidelines for the end product and for the development process in design issue.
6. Define hypertext. Also explain all the application areas of hypertext in detail. **10**

OR

Explain computer mediated communication along with its examples in groupware.

7. Describe static and dynamic web content in detail. **10**
-





- 9) The prototype is not discarded and serves as the basis for the next iteration of design is \_\_\_\_\_ approach.  
a) Throw-away      b) Incremental      c) Evolutionary      d) None of these
- 10) \_\_\_\_\_ is a form of observation where the user is asked to talk through what he is doing as he is being observed.  
a) Think aloud      b) Protocol analysis  
c) Post-talk walkthroughs      d) Query techniques
- 11) Which cognitive model uses the production rule ?  
a) GOMS      b) CCT      c) TAG      d) Keystroke level
- 12) \_\_\_\_\_ stakeholders are people who are involved with the design, development and maintenance of the system.  
a) Primary      b) Secondary      c) Tertiary      d) Facilitating
- 13) The nods, grimaces, shrugs of the shoulder and small noises are called  
a) Back channels      b) Turn taking  
c) Interruption      d) Transfer effects
- 14) E-mail is the best example for which of the collaboration approach ?  
a) Same place, same time      b) Different place, same time  
c) Different place, different time      d) None of these
- 15) Which traditional method of rich context says “what you need to know and when you need to know it” ?  
a) Triggers      b) Information      c) Artifacts      d) Placeholders
- 16) \_\_\_\_\_ discussions usually focus on the decisions to be made by network designers and operators.  
a) Quality of service      b) Quality of productivity  
c) Quality of design      d) None of these
- 17) \_\_\_\_\_ can provide indexes of terms, keyword searches, step by step guidance and access to complementary web information.  
a) Context-sensitive help      b) Online help  
c) Guides      d) Journals
- 18) View large volumes of data is one of the challenge of  
a) information search      b) information analysis  
c) information visualization      d) all
- 19) \_\_\_\_\_ design also involves the relationship of the box with the current contents of the screen.  
a) Command box      b) Combo box      c) List box      d) Dialog box
- 20) \_\_\_\_\_ displays are attractive to users and can often improve task performance.  
a) Color      b) Structured      c) Vertical      d) Angular
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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017  
HUMAN COMPUTER INTERACTION (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** of the following : **(4×5=20)**
- a) Explain any two input-output channels of the human.
  - b) Explain the process of design with respect to simplified view.
  - c) List and explain the tools for layout design.
  - d) Write a short note on physical and device models.
  - e) What are the organization issues that affect the acceptance and relevance of information and communication system ?
  - f) What do you mean by backchannels ? Explain how it affects the face-to-face communication.
3. Explain the eight golden rules of interface design. **10**

OR

What are the eight stages of OSTA socio-technical approach ?

4. Define direct manipulation and explain the problems with direct manipulation. **10**

**SECTION – II**

5. Attempt **any four (Each question carries 5 marks)** : **20**
- 1) Explain the importance of online manuals and documentation in HCI.
  - 2) Write note on-quality of service in design issue.
  - 3) Explain groupware systems in HCI.

**Set Q**





- 4) Explain the concept of ubiquitous computing.
  - 5) Explain multimedia document searches in information search.
  - 6) Explain error message guidelines for the end product and for the development process in design issue.
6. Define hypertext. Also explain all the application areas of hypertext in detail. **10**

OR

Explain computer mediated communication along with its examples in groupware.

7. Describe static and dynamic web content in detail. **10**
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SLR-VB – 230

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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017  
HUMAN COMPUTER INTERACTION (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : (20×1=20)
- 1) \_\_\_\_\_ discussions usually focus on the decisions to be made by network designers and operators.  
a) Quality of service  
b) Quality of productivity  
c) Quality of design  
d) None of these
  - 2) \_\_\_\_\_ can provide indexes of terms, keyword searches, step by step guidance and access to complementary web information.  
a) Context-sensitive help  
b) Online help  
c) Guides  
d) Journals
  - 3) View large volumes of data is one of the challenge of  
a) information search  
b) information analysis  
c) information visualization  
d) all
  - 4) \_\_\_\_\_ design also involves the relationship of the box with the current contents of the screen.  
a) Command box    b) Combo box    c) List box    d) Dialog box
  - 5) \_\_\_\_\_ displays are attractive to users and can often improve task performance.  
a) Color    b) Structured    c) Vertical    d) Angular
  - 6) \_\_\_\_\_ techniques are used to allow participants to meet within a virtual world.  
a) Augmented reality  
b) Virtual reality  
c) Traditional  
d) Hierarchical
  - 7) In information visualization three more structured data types are temporal, tree, and  
a) one dimensional  
b) user defined  
c) network  
d) two dimensional

P.T.O.





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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017  
HUMAN COMPUTER INTERACTION (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** of the following : **(4×5=20)**
- a) Explain any two input-output channels of the human.
  - b) Explain the process of design with respect to simplified view.
  - c) List and explain the tools for layout design.
  - d) Write a short note on physical and device models.
  - e) What are the organization issues that affect the acceptance and relevance of information and communication system ?
  - f) What do you mean by backchannels ? Explain how it affects the face-to-face communication.
3. Explain the eight golden rules of interface design. **10**

OR

What are the eight stages of OSTA socio-technical approach ?

4. Define direct manipulation and explain the problems with direct manipulation. **10**

**SECTION – II**

5. Attempt **any four (Each question carries 5 marks)** : **20**
- 1) Explain the importance of online manuals and documentation in HCI.
  - 2) Write note on-quality of service in design issue.
  - 3) Explain groupware systems in HCI.

**Set R**



- 4) Explain the concept of ubiquitous computing.
- 5) Explain multimedia document searches in information search.
- 6) Explain error message guidelines for the end product and for the development process in design issue.

6. Define hypertext. Also explain all the application areas of hypertext in detail. **10**

OR

Explain computer mediated communication along with its examples in groupware.

7. Describe static and dynamic web content in detail. **10**

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SLR-VB – 230

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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017  
HUMAN COMPUTER INTERACTION (Elective – I)**

Day and Date : Monday, 8-5-2017

Max Marks : 100

Time : 3.00 p.m. to 6.00 p.m.

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**(20×1=20)**

- 1) Which cognitive model uses the production rule ?  
a) GOMS                      b) CCT                      c) TAG                      d) Keystroke level
- 2) \_\_\_\_\_ stakeholders are people who are involved with the design, development and maintenance of the system.  
a) Primary                      b) Secondary                      c) Tertiary                      d) Facilitating
- 3) The nods, grimaces, shrugs of the shoulder and small noises are called  
a) Back channels                      b) Turn taking  
c) Interruption                      d) Transfer effects
- 4) E-mail is the best example for which of the collaboration approach ?  
a) Same place, same time                      b) Different place, same time  
c) Different place, different time                      d) None of these
- 5) Which traditional method of rich context says “what you need to know and when you need to know it” ?  
a) Triggers                      b) Information                      c) Artifacts                      d) Placeholders
- 6) \_\_\_\_\_ discussions usually focus on the decisions to be made by network designers and operators.  
a) Quality of service                      b) Quality of productivity  
c) Quality of design                      d) None of these
- 7) \_\_\_\_\_ can provide indexes of terms, keyword searches, step by step guidance and access to complementary web information.  
a) Context-sensitive help                      b) Online help  
c) Guides                      d) Journals

P.T.O.



- 8) View large volumes of data is one of the challenge of  
a) information search                      b) information analysis  
c) information visualization              d) all
- 9) \_\_\_\_\_ design also involves the relationship of the box with the current contents of the screen.  
a) Command box    b) Combo box    c) List box              d) Dialog box
- 10) \_\_\_\_\_ displays are attractive to users and can often improve task performance.  
a) Color                      b) Structured              c) Vertical              d) Angular
- 11) \_\_\_\_\_ techniques are used to allow participants to meet within a virtual world.  
a) Augmented reality                      b) Virtual reality  
c) Traditional                              d) Hierarchical
- 12) In information visualization three more structured data types are temporal, tree, and  
a) one dimensional                      b) user defined  
c) network                              d) two dimensional
- 13) \_\_\_\_\_ incorporates different media such as sound, images and video.  
a) Textual data    b) Binary data    c) Analysis data    d) Multimedia
- 14) \_\_\_\_\_ web content can be used for complete web based business applications.  
a) Dynamic                      b) Static                      c) Complex              d) Simple
- 15) The \_\_\_\_\_ is global hypermedia system.  
a) multimedia                      b) world wide web  
c) hypertext                              d) virtual reality
- 16) \_\_\_\_\_ acts as a 'scratch-pad' for temporary recall of information.  
a) Sensory memory                      b) Short-term memory  
c) Long-term memory                      d) None of these
- 17) This is a more specialized device typically used for freehand drawing  
a) Digitizing tablet    b) Joystick              c) Trackball              d) None of these
- 18) Controls and displays are organized to reflect the order of their use in a typical interaction is known as  
a) Functional                      b) Sequential              c) Frequency              d) None of these
- 19) The prototype is not discarded and serves as the basis for the next iteration of design is \_\_\_\_\_ approach.  
a) Throw-away                      b) Incremental              c) Evolutionary              d) None of these
- 20) \_\_\_\_\_ is a form of observation where the user is asked to talk through what he is doing as he is being observed.  
a) Think aloud                      b) Protocol analysis  
c) Post-talk walkthroughs              d) Query techniques



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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017  
HUMAN COMPUTER INTERACTION (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** of the following : **(4×5=20)**
- a) Explain any two input-output channels of the human.
  - b) Explain the process of design with respect to simplified view.
  - c) List and explain the tools for layout design.
  - d) Write a short note on physical and device models.
  - e) What are the organization issues that affect the acceptance and relevance of information and communication system ?
  - f) What do you mean by backchannels ? Explain how it affects the face-to-face communication.
3. Explain the eight golden rules of interface design. **10**

OR

What are the eight stages of OSTA socio-technical approach ?

4. Define direct manipulation and explain the problems with direct manipulation. **10**

**SECTION – II**

5. Attempt **any four (Each question carries 5 marks)** : **20**
- 1) Explain the importance of online manuals and documentation in HCI.
  - 2) Write note on-quality of service in design issue.
  - 3) Explain groupware systems in HCI.

**Set S**





- 4) Explain the concept of ubiquitous computing.
  - 5) Explain multimedia document searches in information search.
  - 6) Explain error message guidelines for the end product and for the development process in design issue.
6. Define hypertext. Also explain all the application areas of hypertext in detail. **10**

OR

Explain computer mediated communication along with its examples in groupware.

7. Describe static and dynamic web content in detail. **10**
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SLR-VB – 231

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Set **P**

**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017**  
**Elective – I : DIGITAL SIGNAL PROCESSING**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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 at **right** indicate **full** marks.
  - 4) Assume suitable data **if necessary**.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**
- 1) Z-Transform reduces to Fourier transform when it is evaluated on  
a) a half circle      b) Z circle      c) Unit circle      d) Imaginary circle
  - 2) The following realization minimizes the delay elements  
a) Direct form-I realization      b) Direct form-II realization  
c) Cascade form realization      d) Parallel realization
  - 3) The ROC of Z-Transform of  $x[n] = \delta[n]$  is  
a) Entire Z-plane      b) Entire Z-plane except  $Z=0$   
c) Entire Z-plane except  $Z=\infty$       d) None of above
  - 4) With  $u(n)$  as a unit step function,  $u(n) - u(n - 1) =$   
a)  $u(n + 1)$       b)  $u(2n - 1)$       c)  $u(n^2 - 1)$       d)  $\delta(n)$
  - 5) The system with input output relation  $y(t) = x(t - 3)$  is  
a) Casual      b) Invertible  
c) Casual and stable      d) Memory less
  - 6) A signal  $x(t)$  is said to be odd if  
a)  $x(t) = -x(t)$       b)  $x(t) = x(-t)$       c)  $x(t) = -x(-t)$       d)  $-x(t) = x(-t)$
  - 7) Number of delay elements are required for direct form I realization of  
 $y(n) = 0.5y(n - 1) - 0.25y(n - 2) + x(n) + 0.4 x(n - 1)$  are  
a) 1      b) 2      c) 3      d) 4

P.T.O.



- 8) DFT of a impulse function is  
 a)  $\delta[n]$                       b) 1                      c)  $\delta[n - 1]$                       d) None
- 9) When a sequence is circularly shifted in time by 5 units, the magnitude response  
 a) increased by 5                      b) remains unchanged  
 c) remains constant                      d) shifts by 5 units
- 10) If the periodic signal  $x(t)$  has Fourier series coefficients  $X(k)$  then shifted sequence  $x(n - m)$  will have the Fourier series coefficients  
 a)  $W_N^{km} X(k)$                       b)  $W_N^{-km} X(k)$                       c)  $W_N X(k)$                       d) None of these
- 11) Frequency domain analysis of speech signals can be done using  
 a) Z Transform                      b) Laplace transform  
 c) FFT                      d) All of the above
- 12) If we multiply the continuous time signal  $x(t)$  by unit impulse sequence  $\delta(t)$  the result is  
 a)  $x(0)$                       b)  $x(0)\delta(t)$                       c)  $x(t)$                       d) zero
- 13) The value of the twiddle factor  $W_8^3$  is  
 a)  $j$                       b) 1                      c)  $-0.707 - j0.707$                       d)  $-0.707 + j0.707$
- 14) The DFT of the signal  $x(n) = \{0, 3, 0, -3\}$   
 a)  $\{0, -2, 0, 2\}$                       b)  $\{0, -6j, 0, 6j\}$   
 c)  $\{2, -6j, 0, 6j\}$                       d)  $\{2, -6j, -2, 6j\}$
- 15) The number of complex multiplications required DIF FFT algorithm to compute N point DFT is  
 a)  $N^2$                       b)  $N \log_2 N$   
 c)  $(N/2) \log_2 N$                       d) None of the above
- 16) Which of the following is true for FIR filters ?  
 a) They can have linear phase                      b) Are always stable  
 c) They are all zero filters                      d) All above a, b & c
- 17) Robot vision is the \_\_\_\_\_ application of DSP.  
 a) General                      b) Image processing  
 c) Audio                      d) Biomedical
- 18) The approximate width of the main lobe in Hanning window of length M is  
 a)  $8\pi/M$                       b)  $4\pi/M$                       c)  $12\pi/M$                       d)  $16\pi/M$
- 19) The frequency mapping from s domain to z domain using bilinear transformation is  
 a) Many to one                      b) Many to many                      c) One to one                      d) None of above
- 20) To convert the analog LPF with cutoff frequency  $\Omega_c$  to LPF with cutoff frequency  $\Omega_c^*$  we need to transform  
 a)  $s \rightarrow \frac{\Omega_c \Omega_c^*}{s}$                       b)  $s \rightarrow \frac{\Omega_c^*}{\Omega_c} s$                       c)  $s \rightarrow S \sqrt{\Omega_c \Omega_c^*}$                       d)  $s \rightarrow \frac{\Omega_c}{\Omega_c^*} S$



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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017**  
**Elective – I : DIGITAL SIGNAL PROCESSING**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures at right indicate full marks.**  
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** of the following. **(4×6=24)**

a) Sketch and label following signals

i)  $u(n - 1)$

ii)  $u(-n + 3)$

iii)  $u(n + 2) - u(n - 3)$

iv)  $\delta(n) - \delta(n - 1)$

b) Obtain and sketch the even and odd parts of discrete time signal  $x(n)$

$x(n) = u(n + 1) - u(n - 3)$ .

c) Determine the z transform of following sequence and sketch the region of convergence.

$x(n) = 2^n u(n)$ .

d) State following properties of z transform

- i) Time reversal    ii) Time shifting    iii) Time scaling    iv) Convolution

e) Determine the inverse z transform of following  $X(z)$  if the region of convergence is  $|z| < \frac{1}{2}$ .

$$X(z) = \frac{z + 2}{2z^2 - 7z + 3}$$

3. Attempt **any two** of the following. **(2×8=16)**

a) Draw direct form I and Direct form II realization structures for a filter characterized by transfer function.

$$H[z] = \frac{1 + z^{-1} + 4z^{-2}}{5 - 2z^{-1} + 0.15z^{-2}}$$

b) Obtain the cascade and parallel realization for the system function given by

$$H(z) = \frac{1 + \frac{1}{4}z^{-2}}{(1 + \frac{1}{2}z^{-1})(1 + \frac{1}{2}z^{-1} + \frac{1}{4}z^{-2})}$$

c) Explain with suitable equations representation of periodic discrete time sequence by Discrete Fourier series.



## SECTION – II

4. Attempt **any four** of the following. **(4×6=24)**

- a) Explain in place computations with respect to Fast Fourier Transform algorithm.
- b) Explain the Windowing technique for FIR filter design along with different window functions.
- c) Convert the analog filter to digital filter whose system function is

$$H(s) = \frac{1}{s^2 + 3s + 2}.$$

Use Impulse invariant method. Assume  $T = 1$  s.

- d) Describe the applications of DSP in voice processing.
- e) Explain in brief the architectural features of TMS320C2X Second generation DSP processor.

5. Attempt **any two** of the following. **(2×8=16)**

- a) Explain the Bilinear transformation for digital filters in detail.
- b) Explain in detail Decimation in Time FFT algorithm with necessary equations and flow graph.
- c) Design a digital Butterworth filter to meet the following constraints.

$$0.9 \leq |H(e^{j\omega})| \leq 1 \quad 0 \leq \omega \leq 0.5\pi$$
$$|H(e^{j\omega})| \leq 0.2 \quad 0.75\pi \leq \omega \leq \pi$$

Using Bilinear transformation. Use  $T = 1$  sec.

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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017**  
**Elective – I : DIGITAL SIGNAL PROCESSING**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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 at **right** indicate **full** marks.
  - 4) Assume suitable data **if necessary**.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Which of the following is true for FIR filters ?
  - a) They can have linear phase
  - b) Are always stable
  - c) They are all zero filters
  - d) All above a, b & c
- 2) Robot vision is the \_\_\_\_\_ application of DSP.
  - a) General
  - b) Image processing
  - c) Audio
  - d) Biomedical
- 3) The approximate width of the main lobe in Hanning window of length M is
  - a)  $8\pi/M$
  - b)  $4\pi/M$
  - c)  $12\pi/M$
  - d)  $16\pi/M$
- 4) The frequency mapping from s domain to z domain using bilinear transformation is
  - a) Many to one
  - b) Many to many
  - c) One to one
  - d) None of above
- 5) To convert the analog LPF with cutoff frequency  $\Omega_c$  to LPF with cutoff frequency  $\Omega_c^*$  we need to transform
  - a)  $s \rightarrow \frac{\Omega_c \Omega_c^*}{s}$
  - b)  $s \rightarrow \frac{\Omega_c^*}{\Omega_c} s$
  - c)  $s \rightarrow S\sqrt{\Omega_c \Omega_c^*}$
  - d)  $s \rightarrow \frac{\Omega_c}{\Omega_c^*} S$
- 6) Z-Transform reduces to Fourier transform when it is evaluated on
  - a) a half circle
  - b) Z circle
  - c) Unit circle
  - d) Imaginary circle
- 7) The following realization minimizes the delay elements
  - a) Direct form-I realization
  - b) Direct form-II realization
  - c) Cascade form realization
  - d) Parallel realization

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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017  
Elective – I : DIGITAL SIGNAL PROCESSING**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures at right indicate full marks.**  
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** of the following. **(4×6=24)**

a) Sketch and label following signals

i)  $u(n - 1)$

ii)  $u(-n + 3)$

iii)  $u(n + 2) - u(n - 3)$

iv)  $\delta(n) - \delta(n - 1)$

b) Obtain and sketch the even and odd parts of discrete time signal  $x(n)$

$x(n) = u(n + 1) - u(n - 3)$ .

c) Determine the z transform of following sequence and sketch the region of convergence.

$x(n) = 2^n u(n)$ .

d) State following properties of z transform

- i) Time reversal      ii) Time shifting      iii) Time scaling      iv) Convolution

e) Determine the inverse z transform of following  $X(z)$  if the region of convergence is  $|z| < \frac{1}{2}$ .

$$X(z) = \frac{z + 2}{2z^2 - 7z + 3}$$

3. Attempt **any two** of the following. **(2×8=16)**

a) Draw direct form I and Direct form II realization structures for a filter characterized by transfer function.

$$H[z] = \frac{1 + z^{-1} + 4z^{-2}}{5 - 2z^{-1} + 0.15z^{-2}}$$

b) Obtain the cascade and parallel realization for the system function given by

$$H(z) = \frac{1 + \frac{1}{4}z^{-2}}{(1 + \frac{1}{2}z^{-1})(1 + \frac{1}{2}z^{-1} + \frac{1}{4}z^{-2})}$$

c) Explain with suitable equations representation of periodic discrete time sequence by Discrete Fourier series.





## SECTION – II

4. Attempt **any four** of the following. **(4×6=24)**

- a) Explain in place computations with respect to Fast Fourier Transform algorithm.
- b) Explain the Windowing technique for FIR filter design along with different window functions.
- c) Convert the analog filter to digital filter whose system function is

$$H(s) = \frac{1}{s^2 + 3s + 2}.$$

Use Impulse invariant method. Assume  $T = 1$  s.

- d) Describe the applications of DSP in voice processing.
- e) Explain in brief the architectural features of TMS320C2X Second generation DSP processor.

5. Attempt **any two** of the following. **(2×8=16)**

- a) Explain the Bilinear transformation for digital filters in detail.
- b) Explain in detail Decimation in Time FFT algorithm with necessary equations and flow graph.
- c) Design a digital Butterworth filter to meet the following constraints.

$$0.9 \leq |H(e^{j\omega})| \leq 1 \quad 0 \leq \omega \leq 0.5\pi$$
$$|H(e^{j\omega})| \leq 0.2 \quad 0.75\pi \leq \omega \leq \pi$$

Using Bilinear transformation. Use  $T = 1$  sec.

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Set **R**

**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017**  
**Elective – I : DIGITAL SIGNAL PROCESSING**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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 at **right** indicate **full** marks.
  - 4) Assume suitable data **if necessary**.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Frequency domain analysis of speech signals can be done using
  - a) Z Transform
  - b) Laplace transform
  - c) FFT
  - d) All of the above
- 2) If we multiply the continuous time signal  $x(t)$  by unit impulse sequence  $\delta(t)$  the result is
  - a)  $x(0)$
  - b)  $x(0)\delta(t)$
  - c)  $x(t)$
  - d) zero
- 3) The value of the twiddle factor  $W_8^3$  is
  - a)  $j$
  - b) 1
  - c)  $-0.707 - j0.707$
  - d)  $-0.707 + j0.707$
- 4) The DFT of the signal  $x(n) = \{0, 3, 0, -3\}$ 
  - a)  $\{0, -2, 0, 2\}$
  - b)  $\{0, -6j, 0, 6j\}$
  - c)  $\{2, -6j, 0, 6j\}$
  - d)  $\{2, -6j, -2, 6j\}$
- 5) The number of complex multiplications required DIF FFT algorithm to compute N point DFT is
  - a)  $N^2$
  - b)  $N\log_2 N$
  - c)  $(N/2)\log_2 N$
  - d) None of the above
- 6) Which of the following is true for FIR filters ?
  - a) They can have linear phase
  - b) Are always stable
  - c) They are all zero filters
  - d) All above a, b & c
- 7) Robot vision is the \_\_\_\_\_ application of DSP.
  - a) General
  - b) Image processing
  - c) Audio
  - d) Biomedical

P.T.O.



- 8) The approximate width of the main lobe in Hanning window of length M is  
 a)  $8\pi/M$                       b)  $4\pi/M$                       c)  $12\pi/M$                       d)  $16\pi/M$
- 9) The frequency mapping from s domain to z domain using bilinear transformation is  
 a) Many to one                      b) Many to many                      c) One to one                      d) None of above
- 10) To convert the analog LPF with cutoff frequency  $\Omega_c$  to LPF with cutoff frequency  $\Omega_c^*$  we need to transform  
 a)  $s \rightarrow \frac{\Omega_c \Omega_c^*}{s}$                       b)  $s \rightarrow \frac{\Omega_c^*}{\Omega_c} s$                       c)  $s \rightarrow S\sqrt{\Omega_c \Omega_c^*}$                       d)  $s \rightarrow \frac{\Omega_c}{\Omega_c^*} S$
- 11) Z-Transform reduces to Fourier transform when it is evaluated on  
 a) a half circle                      b) Z circle                      c) Unit circle                      d) Imaginary circle
- 12) The following realization minimizes the delay elements  
 a) Direct form-I realization                      b) Direct form-II realization  
 c) Cascade form realization                      d) Parallel realization
- 13) The ROC of Z-Transform of  $x[n] = \delta[n]$  is  
 a) Entire Z-plane                      b) Entire Z-plane except  $Z=0$   
 c) Entire Z-plane except  $Z=\infty$                       d) None of above
- 14) With  $u(n)$  as a unit step function,  $u(n) - u(n - 1) =$   
 a)  $u(n + 1)$                       b)  $u(2n - 1)$                       c)  $u(n^2 - 1)$                       d)  $\delta(n)$
- 15) The system with input output relation  $y(t) = x(t - 3)$  is  
 a) Casual                      b) Invertible  
 c) Casual and stable                      d) Memory less
- 16) A signal  $x(t)$  is said to be odd if  
 a)  $x(t) = -x(t)$                       b)  $x(t) = x(-t)$                       c)  $x(t) = -x(-t)$                       d)  $-x(t) = x(-t)$
- 17) Number of delay elements are required for direct form I realization of  
 $y(n) = 0.5y(n - 1) - 0.25y(n - 2) + x(n) + 0.4 x(n - 1)$  are  
 a) 1                      b) 2                      c) 3                      d) 4
- 18) DFT of a impulse function is  
 a)  $\delta[n]$                       b) 1                      c)  $\delta[n - 1]$                       d) None
- 19) When a sequence is circularly shifted in time by 5 units, the magnitude response  
 a) increased by 5                      b) remains unchanged  
 c) remains constant                      d) shifts by 5 units
- 20) If the periodic signal  $x(t)$  has Fourier series coefficients  $X(k)$  then shifted sequence  $x(n - m)$  will have the Fourier series coefficients  
 a)  $W_N^{km} X(k)$                       b)  $W_N^{-km} X(k)$                       c)  $W_N X(k)$                       d) None of these



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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017  
Elective – I : DIGITAL SIGNAL PROCESSING**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures at right indicate full marks.**
  - 3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** of the following. **(4×6=24)**

a) Sketch and label following signals

i)  $u(n - 1)$

ii)  $u(-n + 3)$

iii)  $u(n + 2) - u(n - 3)$

iv)  $\delta(n) - \delta(n - 1)$

b) Obtain and sketch the even and odd parts of discrete time signal  $x(n)$

$x(n) = u(n + 1) - u(n - 3)$ .

c) Determine the z transform of following sequence and sketch the region of convergence.

$x(n) = 2^n u(n)$ .

d) State following properties of z transform

- i) Time reversal      ii) Time shifting      iii) Time scaling      iv) Convolution

e) Determine the inverse z transform of following  $X(z)$  if the region of convergence is  $|z| < \frac{1}{2}$ .

$$X(z) = \frac{z + 2}{2z^2 - 7z + 3}$$

3. Attempt **any two** of the following. **(2×8=16)**

a) Draw direct form I and Direct form II realization structures for a filter characterized by transfer function.

$$H[z] = \frac{1 + z^{-1} + 4z^{-2}}{5 - 2z^{-1} + 0.15z^{-2}}$$

b) Obtain the cascade and parallel realization for the system function given by

$$H(z) = \frac{1 + \frac{1}{4}z^{-2}}{(1 + \frac{1}{2}z^{-1})(1 + \frac{1}{2}z^{-1} + \frac{1}{4}z^{-2})}$$

c) Explain with suitable equations representation of periodic discrete time sequence by Discrete Fourier series.



## SECTION – II

4. Attempt **any four** of the following. **(4×6=24)**

- a) Explain in place computations with respect to Fast Fourier Transform algorithm.
- b) Explain the Windowing technique for FIR filter design along with different window functions.
- c) Convert the analog filter to digital filter whose system function is

$$H(s) = \frac{1}{s^2 + 3s + 2}.$$

Use Impulse invariant method. Assume  $T = 1s$ .

- d) Describe the applications of DSP in voice processing.
- e) Explain in brief the architectural features of TMS320C2X Second generation DSP processor.

5. Attempt **any two** of the following. **(2×8=16)**

- a) Explain the Bilinear transformation for digital filters in detail.
- b) Explain in detail Decimation in Time FFT algorithm with necessary equations and flow graph.
- c) Design a digital Butterworth filter to meet the following constraints.

$$0.9 \leq |H(e^{j\omega})| \leq 1 \quad 0 \leq \omega \leq 0.5\pi$$
$$|H(e^{j\omega})| \leq 0.2 \quad 0.75\pi \leq \omega \leq \pi$$

Using Bilinear transformation. Use  $T = 1$  sec.

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Set **S**

**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017**  
**Elective – I : DIGITAL SIGNAL PROCESSING**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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 at **right** indicate **full** marks.
  - 4) Assume suitable data **if necessary**.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**

- 1) A signal  $x(t)$  is said to be odd if
  - a)  $x(t) = -x(t)$
  - b)  $x(t) = x(-t)$
  - c)  $x(t) = -x(-t)$
  - d)  $-x(t) = x(-t)$
- 2) Number of delay elements are required for direct form I realization of  $y(n) = 0.5y(n-1) - 0.25y(n-2) + x(n) + 0.4x(n-1)$  are
  - a) 1
  - b) 2
  - c) 3
  - d) 4
- 3) DFT of a impulse function is
  - a)  $\delta[n]$
  - b) 1
  - c)  $\delta[n-1]$
  - d) None
- 4) When a sequence is circularly shifted in time by 5 units, the magnitude response
  - a) increased by 5
  - b) remains unchanged
  - c) remains constant
  - d) shifts by 5 units
- 5) If the periodic signal  $x(t)$  has Fourier series coefficients  $X(k)$  then shifted sequence  $x(n-m)$  will have the Fourier series coefficients
  - a)  $W_N^{km} X(k)$
  - b)  $W_N^{-km} X(k)$
  - c)  $W_N X(k)$
  - d) None of these
- 6) Frequency domain analysis of speech signals can be done using
  - a) Z Transform
  - b) Laplace transform
  - c) FFT
  - d) All of the above
- 7) If we multiply the continuous time signal  $x(t)$  by unit impulse sequence  $\delta(t)$  the result is
  - a)  $x(0)$
  - b)  $x(0)\delta(t)$
  - c)  $x(t)$
  - d) zero

P.T.O.





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**B.E. (Computer Science & Engineering) (Part – I) Examination, 2017  
Elective – I : DIGITAL SIGNAL PROCESSING**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures at right indicate full marks.**  
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** of the following. **(4×6=24)**

a) Sketch and label following signals

i)  $u(n - 1)$

ii)  $u(-n + 3)$

iii)  $u(n + 2) - u(n - 3)$

iv)  $\delta(n) - \delta(n - 1)$

b) Obtain and sketch the even and odd parts of discrete time signal  $x(n)$

$x(n) = u(n + 1) - u(n - 3)$ .

c) Determine the z transform of following sequence and sketch the region of convergence.

$x(n) = 2^n u(n)$ .

d) State following properties of z transform

- i) Time reversal    ii) Time shifting    iii) Time scaling    iv) Convolution

e) Determine the inverse z transform of following  $X(z)$  if the region of convergence is  $|z| < \frac{1}{2}$ .

$$X(z) = \frac{z + 2}{2z^2 - 7z + 3}$$

3. Attempt **any two** of the following. **(2×8=16)**

a) Draw direct form I and Direct form II realization structures for a filter characterized by transfer function.

$$H[z] = \frac{1 + z^{-1} + 4z^{-2}}{5 - 2z^{-1} + 0.15z^{-2}}$$

b) Obtain the cascade and parallel realization for the system function given by

$$H(z) = \frac{1 + \frac{1}{4}z^{-2}}{(1 + \frac{1}{2}z^{-1})(1 + \frac{1}{2}z^{-1} + \frac{1}{4}z^{-2})}$$

c) Explain with suitable equations representation of periodic discrete time sequence by Discrete Fourier series.





## SECTION – II

4. Attempt **any four** of the following. **(4×6=24)**

- a) Explain in place computations with respect to Fast Fourier Transform algorithm.
- b) Explain the Windowing technique for FIR filter design along with different window functions.
- c) Convert the analog filter to digital filter whose system function is

$$H(s) = \frac{1}{s^2 + 3s + 2}.$$

Use Impulse invariant method. Assume  $T = 1$  s.

- d) Describe the applications of DSP in voice processing.
- e) Explain in brief the architectural features of TMS320C2X Second generation DSP processor.

5. Attempt **any two** of the following. **(2×8=16)**

- a) Explain the Bilinear transformation for digital filters in detail.
- b) Explain in detail Decimation in Time FFT algorithm with necessary equations and flow graph.
- c) Design a digital Butterworth filter to meet the following constraints.

$$0.9 \leq |H(e^{j\omega})| \leq 1 \quad 0 \leq \omega \leq 0.5\pi$$
$$|H(e^{j\omega})| \leq 0.2 \quad 0.75\pi \leq \omega \leq \pi$$

Using Bilinear transformation. Use  $T = 1$  sec.

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**B.E. (CSE) (Part – I) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. Each question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

(20×1=20)

- 1) To check whether we are developing the right product according to the customer requirements are not. It is a static process \_\_\_\_\_
  - a) Validation
  - b) Verification
  - c) Quality assurance
  - d) Quality control
- 2) White box testing is not called as \_\_\_\_\_
  - a) Glass box testing
  - b) Closed box testing
  - c) Open box testing
  - d) Clear box testing
- 3) Software testing which is done without planning and documentation is known as \_\_\_\_\_
  - a) Ad hoc testing
  - b) Unit testing
  - c) Regression testing
  - d) Functional testing
- 4) Retesting the entire application after a change has been made called as \_\_\_\_\_
  - a) Full Regression Testing
  - b) Unit Regression
  - c) Regional Regression
  - d) Retesting
- 5) Which is non-functional software testing ?
  - a) Unit testing
  - b) Block box testing
  - c) Performance testing
  - d) Regression testing
- 6) Executing the same test case on a modified build called as \_\_\_\_\_
  - a) Regression Testing
  - b) Retesting
  - c) Ad hoc testing
  - d) Sanity testing
- 7) Unit testing will be done by \_\_\_\_\_
  - a) Testers
  - b) End Users
  - c) Customer
  - d) Developers
- 8) Beta testing will be done at \_\_\_\_\_
  - a) User place
  - b) Developers place
  - c) Both a) and b)
  - d) None



- 9) This type of test include, how well the user will be able to understand and interact with the system ?
- a) Usability Testing
  - b) User Acceptance Testing
  - c) Alpha Testing
  - d) Beta Testing
- 10) The testing which is done by going thro' the code is known as
- a) Unit testing
  - b) Black box testing
  - c) White box testing
  - d) Regression testing
- 11) The approach/document used to make sure all the requirements are covered when writing test cases
- a) Test Matrix
  - b) Checklist
  - c) Test bed
  - d) Traceability Matrix
- 12) Quality also can be looked at in terms of user satisfaction which includes
- 
- a) A compliant product
  - b) Good quality output
  - c) Delivery within budget and schedule
  - d) All of the mentioned
- 13) According to ISO 9001, inspection and testing comes under which management responsibility ?
- a) Process control
  - b) Document control
  - c) Control of non-conforming products
  - d) Servicing
- 14) Which of the following is not a SQA plan for a project ?
- a) Evaluations to be performed
  - b) Amount of technical work
  - c) Audits and reviews to be performed
  - d) Documents to be produced by the SQA group
- 15) 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
- 16) What allows different projects to use the same source files at the same time ?
- a) Version control
  - b) Access control
  - c) CM Process
  - d) Version control and Access control
- 17) What is group with the responsibility for reviewing and approving changes to baselines ?
- a) Software Configuration Item
  - b) Baseline
  - c) Configuration
  - d) Configuration Control Board
- 18) Software mistakes during coding are known as
- a) Errors
  - b) Failures
  - c) Bugs
  - d) Defects
- 19) Which of the following is not a part of bug report ?
- a) Test case
  - b) Output
  - c) Software Version
  - d) Line of code
- 20) Which of the following is not a tool used in automation testing ?
- a) Selenium
  - b) J unit
  - c) IBM Rational Functional Tester
  - d) Rational Rose
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**B.E. (CSE) (Part – I) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m.to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four (each carries 5 marks)** : **20**
- 1) What is the difference between Smoke testing and Sanity Testing ?
  - 2) What is defect life cycle in software testing ?
  - 3) Explain differences between verification and validation in software testing.
  - 4) What are some of the most common challenges in testing ?
  - 5) What is security testing in software testing ?
3. What are the four types of approaches in software testing team ? Explain any one approach in details. **10**

**OR**

- What is black box testing ? Explain black box testing techniques. **10**
4. What are the advantages and disadvantages of Alpha, Beta and Gamma testing ? **10**

**SECTION – II**

5. Attempt **any four (each carries 5 marks)** : **20**
- 1) What are the reasons for test case planning ?
  - 2) What are the three basic states of a software bugs life cycle ?
  - 3) What is ISO 9000 quality standard ?
  - 4) What is automation test ? Explain the benefits of automation test.
  - 5) What is the difference between QC and QA in testing ?
6. What are the elements of software quality assurance ? **10**

**OR**

- What is the difference between bug and defect ? Also explain bug fixing process using bug's life cycle. **10**
7. Briefly explain Selenium tool and its usage in functional testing of web applications. **10**







- 9) Retesting the entire application after a change has been made called as
- a) Full Regression Testing
  - b) Unit Regression
  - c) Regional Regression
  - d) Retesting
- 10) Which is non-functional software testing ?
- a) Unit testing
  - b) Block box testing
  - c) Performance testing
  - d) Regression testing
- 11) Executing the same test case on a modified build called as \_\_\_\_\_
- a) Regression Testing
  - b) Retesting
  - c) Ad hoc testing
  - d) Sanity testing
- 12) Unit testing will be done by \_\_\_\_\_
- a) Testers
  - b) End Users
  - c) Customer
  - d) Developers
- 13) Beta testing will be done at \_\_\_\_\_
- a) User place
  - b) Developers place
  - c) Both a) and b)
  - d) None
- 14) This type of test include, how well the user will be able to understand and interact with the system ?
- a) Usability Testing
  - b) User Acceptance Testing
  - c) Alpha Testing
  - d) Beta Testing
- 15) The testing which is done by going thro' the code is known as
- a) Unit testing
  - b) Black box testing
  - c) White box testing
  - d) Regression testing
- 16) The approach/document used to make sure all the requirements are covered when writing test cases
- a) Test Matrix
  - b) Checklist
  - c) Test bed
  - d) Traceability Matrix
- 17) Quality also can be looked at in terms of user satisfaction which includes \_\_\_\_\_
- a) A compliant product
  - b) Good quality output
  - c) Delivery within budget and schedule
  - d) All of the mentioned
- 18) According to ISO 9001, inspection and testing comes under which management responsibility ?
- a) Process control
  - b) Document control
  - c) Control of non-conforming products
  - d) Servicing
- 19) Which of the following is not a SQA plan for a project ?
- a) Evaluations to be performed
  - b) Amount of technical work
  - c) Audits and reviews to be performed
  - d) Documents to be produced by the SQA group
- 20) 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



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**B.E. (CSE) (Part – I) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m.to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four (each carries 5 marks)** : **20**
- 1) What is the difference between Smoke testing and Sanity Testing ?
  - 2) What is defect life cycle in software testing ?
  - 3) Explain differences between verification and validation in software testing.
  - 4) What are some of the most common challenges in testing ?
  - 5) What is security testing in software testing ?
3. What are the four types of approaches in software testing team ? Explain any one approach in details. **10**

OR

- What is black box testing ? Explain black box testing techniques. **10**
4. What are the advantages and disadvantages of Alpha, Beta and Gamma testing ? **10**

**SECTION – II**

5. Attempt **any four (each carries 5 marks)** : **20**
- 1) What are the reasons for test case planning ?
  - 2) What are the three basic states of a software bugs life cycle ?
  - 3) What is ISO 9000 quality standard ?
  - 4) What is automation test ? Explain the benefits of automation test.
  - 5) What is the difference between QC and QA in testing ?
6. What are the elements of software quality assurance ? **10**

OR

- What is the difference between bug and defect ? Also explain bug fixing process using bug's life cycle. **10**
7. Briefly explain Selenium tool and its usage in functional testing of web applications. **10**







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**B.E. (CSE) (Part – I) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. Each question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

(20×1=20)

- 1) The approach/document used to make sure all the requirements are covered when writing test cases
  - a) Test Matrix
  - b) Checklist
  - c) Test bed
  - d) Traceability Matrix
- 2) Quality also can be looked at in terms of user satisfaction which includes
  - a) A compliant product
  - b) Good quality output
  - c) Delivery within budget and schedule
  - d) All of the mentioned
- 3) According to ISO 9001, inspection and testing comes under which management responsibility ?
  - a) Process control
  - b) Document control
  - c) Control of non-conforming products
  - d) Servicing
- 4) Which of the following is not a SQA plan for a project ?
  - a) Evaluations to be performed
  - b) Amount of technical work
  - c) Audits and reviews to be performed
  - d) Documents to be produced by the SQA group
- 5) 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
- 6) What allows different projects to use the same source files at the same time ?
  - a) Version control
  - b) Access control
  - c) CM Process
  - d) Version control and Access control



- 7) What is group with the responsibility for reviewing and approving changes to baselines ?  
a) Software Configuration Item                      b) Baseline  
c) Configuration    d) Configuration Control Board
- 8) Software mistakes during coding are known as  
a) Errors                      b) Failures                      c) Bugs                      d) Defects
- 9) Which of the following is not a part of bug report ?  
a) Test case                      b) Output                      c) Software Version                      d) Line of code
- 10) Which of the following is not a tool used in automation testing ?  
a) Selenium                      b) J unit  
c) IBM Rational Functional Tester                      d) Rational Rose
- 11) To check whether we are developing the right product according to the customer requirements are not. It is a static process \_\_\_\_\_  
a) Validation                      b) Verification  
c) Quality assurance                      d) Quality control
- 12) White box testing is not called as \_\_\_\_\_  
a) Glass box testing                      b) Closed box testing  
c) Open box testing                      d) Clear box testing
- 13) Software testing which is done without planning and documentation is known as \_\_\_\_\_  
a) Ad hoc testing                      b) Unit testing  
c) Regression testing                      d) Functional testing
- 14) Retesting the entire application after a change has been made called as  
a) Full Regression Testing                      b) Unit Regression  
c) Regional Regression                      d) Retesting
- 15) Which is non-functional software testing ?  
a) Unit testing                      b) Block box testing  
c) Performance testing                      d) Regression testing
- 16) Executing the same test case on a modified build called as \_\_\_\_\_  
a) Regression Testing                      b) Retesting  
c) Ad hoc testing                      d) Sanity testing
- 17) Unit testing will be done by \_\_\_\_\_  
a) Testers                      b) End Users                      c) Customer                      d) Developers
- 18) Beta testing will be done at \_\_\_\_\_  
a) User place                      b) Developers place  
c) Both a) and b)                      d) None
- 19) This type of test include, how well the user will be able to understand and interact with the system ?  
a) Usability Testing                      b) User Acceptance Testing  
c) Alpha Testing                      d) Beta Testing
- 20) The testing which is done by going thro' the code is known as  
a) Unit testing                      b) Black box testing  
c) White box testing                      d) Regression testing



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**B.E. (CSE) (Part – I) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m.to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four (each carries 5 marks)** : **20**
- 1) What is the difference between Smoke testing and Sanity Testing ?
  - 2) What is defect life cycle in software testing ?
  - 3) Explain differences between verification and validation in software testing.
  - 4) What are some of the most common challenges in testing ?
  - 5) What is security testing in software testing ?
3. What are the four types of approaches in software testing team ? Explain any one approach in details. **10**

**OR**

- What is black box testing ? Explain black box testing techniques. **10**
4. What are the advantages and disadvantages of Alpha, Beta and Gamma testing ? **10**

**SECTION – II**

5. Attempt **any four (each carries 5 marks)** : **20**
- 1) What are the reasons for test case planning ?
  - 2) What are the three basic states of a software bugs life cycle ?
  - 3) What is ISO 9000 quality standard ?
  - 4) What is automation test ? Explain the benefits of automation test.
  - 5) What is the difference between QC and QA in testing ?
6. What are the elements of software quality assurance ? **10**

**OR**

- What is the difference between bug and defect ? Also explain bug fixing process using bug's life cycle. **10**
7. Briefly explain Selenium tool and its usage in functional testing of web applications. **10**





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**B.E. (CSE) (Part – I) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. Each question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives : **(20×1=20)**

- 1) Executing the same test case on a modified build called as \_\_\_\_\_
  - a) Regression Testing
  - b) Retesting
  - c) Ad hoc testing
  - d) Sanity testing
- 2) Unit testing will be done by \_\_\_\_\_
  - a) Testers
  - b) End Users
  - c) Customer
  - d) Developers
- 3) Beta testing will be done at \_\_\_\_\_
  - a) User place
  - b) Developers place
  - c) Both a) and b)
  - d) None
- 4) This type of test include, how well the user will be able to understand and interact with the system ?
  - a) Usability Testing
  - b) User Acceptance Testing
  - c) Alpha Testing
  - d) Beta Testing
- 5) The testing which is done by going thro' the code is known as
  - a) Unit testing
  - b) Black box testing
  - c) White box testing
  - d) Regression testing
- 6) The approach/document used to make sure all the requirements are covered when writing test cases
  - a) Test Matrix
  - b) Checklist
  - c) Test bed
  - d) Traceability Matrix
- 7) Quality also can be looked at in terms of user satisfaction which includes \_\_\_\_\_
  - a) A compliant product
  - b) Good quality output
  - c) Delivery within budget and schedule
  - d) All of the mentioned
- 8) According to ISO 9001, inspection and testing comes under which management responsibility ?
  - a) Process control
  - b) Document control
  - c) Control of non-conforming products
  - d) Servicing



- 9) Which of the following is not a SQA plan for a project ?
- Evaluations to be performed
  - Amount of technical work
  - Audits and reviews to be performed
  - Documents to be produced by the SQA group
- 10) Who identifies, documents and verifies that corrections have been made to the software ?
- Project manager
  - Project team
  - SQA group
  - All of the mentioned
- 11) What allows different projects to use the same source files at the same time ?
- Version control
  - Access control
  - CM Process
  - Version control and Access control
- 12) What is group with the responsibility for reviewing and approving changes to baselines ?
- Software Configuration Item
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  - Configuration
  - Configuration Control Board
- 13) Software mistakes during coding are known as
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  - Failures
  - Bugs
  - Defects
- 14) Which of the following is not a part of bug report ?
- Test case
  - Output
  - Software Version
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  - IBM Rational Functional Tester
  - Rational Rose
- 16) To check whether we are developing the right product according to the customer requirements are not. It is a static process \_\_\_\_\_
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  - Verification
  - Quality assurance
  - Quality control
- 17) White box testing is not called as \_\_\_\_\_
- Glass box testing
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  - Open box testing
  - Clear box testing
- 18) Software testing which is done without planning and documentation is known as \_\_\_\_\_
- Ad hoc testing
  - Unit testing
  - Regression testing
  - Functional testing
- 19) Retesting the entire application after a change has been made called as
- Full Regression Testing
  - Unit Regression
  - Regional Regression
  - Retesting
- 20) Which is non-functional software testing ?
- Unit testing
  - Block box testing
  - Performance testing
  - Regression testing



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**B.E. (CSE) (Part – I) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – I)**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m.to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four (each carries 5 marks)** : **20**
- 1) What is the difference between Smoke testing and Sanity Testing ?
  - 2) What is defect life cycle in software testing ?
  - 3) Explain differences between verification and validation in software testing.
  - 4) What are some of the most common challenges in testing ?
  - 5) What is security testing in software testing ?
3. What are the four types of approaches in software testing team ? Explain any one approach in details. **10**

OR

- What is black box testing ? Explain black box testing techniques. **10**
4. What are the advantages and disadvantages of Alpha, Beta and Gamma testing ? **10**

**SECTION – II**

5. Attempt **any four (each carries 5 marks)** : **20**
- 1) What are the reasons for test case planning ?
  - 2) What are the three basic states of a software bugs life cycle ?
  - 3) What is ISO 9000 quality standard ?
  - 4) What is automation test ? Explain the benefits of automation test.
  - 5) What is the difference between QC and QA in testing ?
6. What are the elements of software quality assurance ? **10**

OR

- What is the difference between bug and defect ? Also explain bug fixing process using bug's life cycle. **10**
7. Briefly explain Selenium tool and its usage in functional testing of web applications. **10**







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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – I : 4) BUSINESS INTELLIGENCE**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Assume suitable data if necessary.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : (1 mark each) (20×1=20)
- 1) 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) All of the above
  - 2) Fact tables are which of the following ?
    - a) Completely denormalized
    - b) Partially denormalized
    - c) Completely normalized
    - d) Partially normalized
  - 3) Data transformation includes which of the following ?
    - a) A process to change data from a detailed level to a summary level
    - b) A process to change data from a summary level to a detailed level
    - c) Joining data from one source into various sources of data
    - d) Separating data from one source into various sources of data
  - 4) Reconciled data is which of the following ?
    - a) Data stored in the various operational systems throughout the organization
    - b) Current data intended to be the single source for all decision support systems
    - c) Data stored in one operational system in the organization
    - d) Data that has been selected and formatted for end-user support applications
  - 5) The load and index is which of the following ?
    - a) A process to reject data from the data warehouse and to create the necessary indexes
    - b) A process to load the data in the data warehouse and to create the necessary indexes
    - c) A process to upgrade the quality of data after it is moved into a data warehouse
    - d) A process to upgrade the quality of data before it is moved into a data warehouse
  - 6) The extract process is which of the following ?
    - a) Capturing all of the data contained in various operational systems
    - b) Capturing a subset of the data contained in various operational systems
    - c) Capturing all of the data contained in various decision support systems
    - d) Capturing a subset of the data contained in various decision support systems
  - 7) A star shcema has what type of relationship between a dimension and fact table ?
    - a) Many-to-many
    - b) One-to-one
    - c) One-to-many
    - d) All of the above

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- 8) Transient data is which of the following ?
- a) Data in which changes to existing records cause the previous version of the records to be eliminated
  - b) Data in which changes to existing records do not cause the previous version of the records to be eliminated
  - c) Data that are never altered or deleted once they have been added
  - d) Data that are never deleted once they have been added
- 9) A multi-field transformation does which of the following ?
- a) Converts data from one field into multiple fields
  - b) Converts data from multiple fields into one field
  - c) Converts data from multiple fields into multiple fields
  - d) All of the above
- 10) 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
- 11) The type of relationship in star schema is \_\_\_\_\_
- a) many to many
  - b) one to one
  - c) one to many
  - d) many to one
- 12) The \_\_\_\_\_ allows the selection of the relevant information necessary for the data warehouse.
- a) top-down view
  - b) data warehouse view
  - c) data source view
  - d) business query view
- 13) 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
- 14) Which of the following is not a kind of data warehouse application ?
- a) Information processing
  - b) Analytical processing
  - c) Data mining
  - d) Transaction processing
- 15) Data scrubbing is which of the following ?
- a) A process to reject data from the data warehouse and to create the necessary indexes
  - b) A process to load the data in the data warehouse and to create the necessary indexes
  - c) A process to upgrade the quality of data after it is moved into a data warehouse
  - d) A process to upgrade the quality of data before it is moved into a data warehouse
- 16) The @active data warehouse architecture includes which of the following ?
- a) At least one data mart
  - b) Data that can be extracted from numerous internal and external sources
  - c) Near real-time updates
  - d) All of the above
- 17) A goal of data mining includes which of the following ?
- a) To explain some observed event or condition
  - b) To confirm that data exists
  - c) To analyse data for expected relationships
  - d) To create a new data warehouse
- 18) 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
- 19) 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
- 20) A snowflake schema is which of the following types of tables ?
- a) Fact
  - b) Dimension
  - c) Helper
  - d) All of the above



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – I : 4) BUSINESS INTELLIGENCE**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Assume suitable data if necessary.**

SECTION – 1

2. Attempt **all (5 marks each)** : **(4×5=20)**
- a) What is the value of the architecture in the context BI ?
  - b) Write a short note on common features of architecture.
  - c) Write a short note on Basic Dimensional Modeling Techniques.
  - d) Explain Database platform factors involved in infrastructure of BI.
3. Attempt **any two (10 marks each)** : **(2×10=20)**
- a) Write a short note on Front room architecture.
  - b) Explain in detail security vulnerabilities associated with a BI platform.
  - c) Explain in detail “Snowflaking” in context of Enterprise Data Warehouse Bus Architecture. Provide proper example to justify need of “Snowflaking”.

SECTION – 2

4. Attempt **all (5 marks each)** : **(4×5=20)**
- a) Write a short note on types of Business Intelligence Applications.
  - b) Explain the role of Data Mining in BI.
  - c) As a BI application developer what would be your tasks as under Business Intelligence Application Maintenance ?
  - d) Justify the need to test and verify the Applications and Data w.r.t. to BI application.
5. Attempt **any two (10 marks each)** : **(2×10=20)**
- a) Explain in detail the importance of B.I. applications w.r.t. to the market domain they belong to.
  - b) Explain in detail 10 steps involved in ETL process.
  - c) Write a short note on Analytic Cycle for Business Intelligence.





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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017**  
**Elective – I : 4) BUSINESS INTELLIGENCE**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Assume suitable data if necessary.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : (1 mark each)

(20×1=20)

- 1) 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
- 2) A goal of data mining includes which of the following ?
  - a) To explain some observed event or condition
  - b) To confirm that data exists
  - c) To analyses data for expected relationships
  - d) To create a new data warehouse
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  - 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
- 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
- 5) A snowflake schema is which of the following types of tables ?
  - a) Fact
  - b) Dimension
  - c) Helper
  - d) All of the above
- 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) All of the above
- 7) Fact tables are which of the following ?
  - a) Completely denormalized
  - b) Partially denormalized
  - c) Completely normalized
  - d) Partially normalized
- 8) Data transformation includes which of the following ?
  - a) A process to change data from a detailed level to a summary level
  - b) A process to change data from a summary level to a detailed level
  - c) Joining data from one source into various sources of data
  - d) Separating data from one source into various sources of data

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- 9) Reconciled data is which of the following ?
- Data stored in the various operational systems throughout the organization
  - Current data intended to be the single source for all decision support systems
  - Data stored in one operational system in the organization
  - Data that has been selected and formatted for end-user support applications
- 10) The load and index is which of the following ?
- A process to reject data from the data warehouse and to create the necessary indexes
  - A process to load the data in the data warehouse and to create the necessary indexes
  - A process to upgrade the quality of data after it is moved into a data warehouse
  - A process to upgrade the quality of data before it is moved into a data warehouse
- 11) The extract process is which of the following ?
- Capturing all of the data contained in various operational systems
  - Capturing a subset of the data contained in various operational systems
  - Capturing all of the data contained in various decision support systems
  - Capturing a subset of the data contained in various decision support systems
- 12) A star schema has what type of relationship between a dimension and fact table ?
- Many-to-many
  - One-to-one
  - One-to-many
  - All of the above
- 13) Transient data is which of the following ?
- Data in which changes to existing records cause the previous version of the records to be eliminated
  - Data in which changes to existing records do not cause the previous version of the records to be eliminated
  - Data that are never altered or deleted once they have been added
  - Data that are never deleted once they have been added
- 14) A multi-field transformation does which of the following ?
- Converts data from one field into multiple fields
  - Converts data from multiple fields into one field
  - Converts data from multiple fields into multiple fields
  - All of the above
- 15) The \_\_\_\_\_ exposes the information being captured, stored and managed by operational systems.
- top-down view
  - data warehouse view
  - data source view
  - business query view
- 16) The type of relationship in star schema is \_\_\_\_\_
- many to many
  - one to one
  - one to many
  - many to one
- 17) The \_\_\_\_\_ allows the selection of the relevant information necessary for the data warehouse.
- top-down view
  - data warehouse view
  - data source view
  - business query view
- 18) Which of the following is not a component of a data warehouse ?
- Metadata
  - Current detail data
  - Lightly summarized data
  - Component key
- 19) Which of the following is not a kind of data warehouse application ?
- Information processing
  - Analytical processing
  - Data mining
  - Transaction processing
- 20) Data scrubbing is which of the following ?
- A process to reject data from the data warehouse and to create the necessary indexes
  - A process to load the data in the data warehouse and to create the necessary indexes
  - A process to upgrade the quality of data after it is moved into a data warehouse
  - A process to upgrade the quality of data before it is moved into a data warehouse



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – I : 4) BUSINESS INTELLIGENCE**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Assume suitable data if necessary.**

SECTION – 1

2. Attempt **all (5 marks each)** : **(4×5=20)**
- a) What is the value of the architecture in the context BI ?
  - b) Write a short note on common features of architecture.
  - c) Write a short note on Basic Dimensional Modeling Techniques.
  - d) Explain Database platform factors involved in infrastructure of BI.
3. Attempt **any two (10 marks each)** : **(2×10=20)**
- a) Write a short note on Front room architecture.
  - b) Explain in detail security vulnerabilities associated with a BI platform.
  - c) Explain in detail “Snowflaking” in context of Enterprise Data Warehouse Bus Architecture. Provide proper example to justify need of “Snowflaking”.

SECTION – 2

4. Attempt **all (5 marks each)** : **(4×5=20)**
- a) Write a short note on types of Business Intelligence Applications.
  - b) Explain the role of Data Mining in BI.
  - c) As a BI application developer what would be your tasks as under Business Intelligence Application Maintenance ?
  - d) Justify the need to test and verify the Applications and Data w.r.t. to BI application.
5. Attempt **any two (10 marks each)** : **(2×10=20)**
- a) Explain in detail the importance of B.I. applications w.r.t. to the market domain they belong to.
  - b) Explain in detail 10 steps involved in ETL process.
  - c) Write a short note on Analytic Cycle for Business Intelligence.







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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – I : 4) BUSINESS INTELLIGENCE**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Assume suitable data if necessary.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : (1 mark each)

(20×1=20)

- 1) The type of relationship in star schema is \_\_\_\_\_  
a) many to many      b) one to one      c) one to many      d) many to one
- 2) The \_\_\_\_\_ allows the selection of the relevant information necessary for the data warehouse.  
a) top-down view      b) data warehouse view      c) data source view      d) business query view
- 3) 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
- 4) Which of the following is not a kind of data warehouse application ?  
a) Information processing      b) Analytical processing  
c) Data mining      d) Transaction processing
- 5) Data scrubbing is which of the following ?  
a) A process to reject data from the data warehouse and to create the necessary indexes  
b) A process to load the data in the data warehouse and to create the necessary indexes  
c) A process to upgrade the quality of data after it is moved into a data warehouse  
d) A process to upgrade the quality of data before it is moved into a data warehouse
- 6) 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
- 7) A goal of data mining includes which of the following ?  
a) To explain some observed event or condition      b) To confirm that data exists  
c) To analyses data for expected relationships      d) To create a new data warehouse
- 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) 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

P.T.O.



- 10) A snowflake schema is which of the following types of tables ?
  - a) Fact
  - b) Dimension
  - c) Helper
  - d) All of the above
- 11) 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) All of the above
- 12) Fact tables are which of the following ?
  - a) Completely denormalized
  - b) Partially denormalized
  - c) Completely normalized
  - d) Partially normalized
- 13) Data transformation includes which of the following ?
  - a) A process to change data from a detailed level to a summary level
  - b) A process to change data from a summary level to a detailed level
  - c) Joining data from one source into various sources of data
  - d) Separating data from one source into various sources of data
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  - a) Data stored in the various operational systems throughout the organization
  - b) Current data intended to be the single source for all decision support systems
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- 16) The extract process is which of the following ?
  - a) Capturing all of the data contained in various operational systems
  - b) Capturing a subset of the data contained in various operational systems
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  - d) Capturing a subset of the data contained in various decision support systems
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  - a) Many-to-many
  - b) One-to-one
  - c) One-to-many
  - d) All of the above
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  - a) Data in which changes to existing records cause the previous version of the records to be eliminated
  - b) Data in which changes to existing records do not cause the previous version of the records to be eliminated
  - c) Data that are never altered or deleted once they have been added
  - d) Data that are never deleted once they have been added
- 19) A multi-field transformation does which of the following ?
  - a) Converts data from one field into multiple fields
  - b) Converts data from multiple fields into one field
  - c) Converts data from multiple fields into multiple fields
  - d) All of the above
- 20) 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



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – I : 4) BUSINESS INTELLIGENCE**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Assume suitable data if necessary.**

SECTION – 1

2. Attempt **all (5 marks each)** : **(4×5=20)**
- a) What is the value of the architecture in the context BI ?
  - b) Write a short note on common features of architecture.
  - c) Write a short note on Basic Dimensional Modeling Techniques.
  - d) Explain Database platform factors involved in infrastructure of BI.
3. Attempt **any two (10 marks each)** : **(2×10=20)**
- a) Write a short note on Front room architecture.
  - b) Explain in detail security vulnerabilities associated with a BI platform.
  - c) Explain in detail “Snowflaking” in context of Enterprise Data Warehouse Bus Architecture. Provide proper example to justify need of “Snowflaking”.

SECTION – 2

4. Attempt **all (5 marks each)** : **(4×5=20)**
- a) Write a short note on types of Business Intelligence Applications.
  - b) Explain the role of Data Mining in BI.
  - c) As a BI application developer what would be your tasks as under Business Intelligence Application Maintenance ?
  - d) Justify the need to test and verify the Applications and Data w.r.t. to BI application.
5. Attempt **any two (10 marks each)** : **(2×10=20)**
- a) Explain in detail the importance of B.I. applications w.r.t. to the market domain they belong to.
  - b) Explain in detail 10 steps involved in ETL process.
  - c) Write a short note on Analytic Cycle for Business Intelligence.





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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017**  
**Elective – I : 4) BUSINESS INTELLIGENCE**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Assume suitable data if necessary.**
  - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : (1 mark each)

(20×1=20)

- 1) The extract process is which of the following ?
  - a) Capturing all of the data contained in various operational systems
  - b) Capturing a subset of the data contained in various operational systems
  - c) Capturing all of the data contained in various decision support systems
  - d) Capturing a subset of the data contained in various decision support systems
- 2) A star schema has what type of relationship between a dimension and fact table ?
  - a) Many-to-many
  - b) One-to-one
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  - d) All of the above
- 3) Transient data is which of the following ?
  - a) Data in which changes to existing records cause the previous version of the records to be eliminated
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  - a) Converts data from one field into multiple fields
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- 5) 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
- 6) The type of relationship in star schema is \_\_\_\_\_.
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  - c) one to many
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  - a) Metadata
  - b) Current detail data
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  - d) Component key
- 9) Which of the following is not a kind of data warehouse application ?
  - a) Information processing
  - b) Analytical processing
  - c) Data mining
  - d) Transaction processing

P.T.O.



- 10) Data scrubbing is which of the following ?
  - a) A process to reject data from the data warehouse and to create the necessary indexes
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  - a) At least one data mart
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  - b) A process to change data from a summary level to a detailed level
  - c) Joining data from one source into various sources of data
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  - d) A process to upgrade the quality of data before it is moved into a data warehouse



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – I : 4) BUSINESS INTELLIGENCE**

Day and Date : Monday, 8-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Assume suitable data if necessary.**

**SECTION – 1**

2. Attempt **all (5 marks each)** : **(4×5=20)**
- a) What is the value of the architecture in the context BI ?
  - b) Write a short note on common features of architecture.
  - c) Write a short note on Basic Dimensional Modeling Techniques.
  - d) Explain Database platform factors involved in infrastructure of BI.
3. Attempt **any two (10 marks each)** : **(2×10=20)**
- a) Write a short note on Front room architecture.
  - b) Explain in detail security vulnerabilities associated with a BI platform.
  - c) Explain in detail “Snowflaking” in context of Enterprise Data Warehouse Bus Architecture. Provide proper example to justify need of “Snowflaking”.

**SECTION – 2**

4. Attempt **all (5 marks each)** : **(4×5=20)**
- a) Write a short note on types of Business Intelligence Applications.
  - b) Explain the role of Data Mining in BI.
  - c) As a BI application developer what would be your tasks as under Business Intelligence Application Maintenance ?
  - d) Justify the need to test and verify the Applications and Data w.r.t. to BI application.
5. Attempt **any two (10 marks each)** : **(2×10=20)**
- a) Explain in detail the importance of B.I. applications w.r.t. to the market domain they belong to.
  - b) Explain in detail 10 steps involved in ETL process.
  - c) Write a short note on Analytic Cycle for Business Intelligence.







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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017**  
**Elective – II : OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) \_\_\_\_\_ serves to help validate your architecture and to verify your system as it evolves during development.  
a) Component      b) Use Cases      c) UML      d) Client
- 2) By encapsulation in object-oriented modelling we mean  
a) encapsulating data and programs  
b) hiding attributes of an object from users  
c) hiding operations on object from users  
d) hiding implementation details of methods from users of objects
- 3) Link is physical connection among  
a) classes      b) entity      c) object      d) packages
- 4) Dynamic models are used to define the \_\_\_\_\_ of the components over time.  
a) Behavior      b) Strategy      c) Condition      d) Constraint
- 5) When a subclass is created using inheritance the resulting class  
a) may have only attributes of parent class  
b) may have only operations of parent class  
c) may have new operations only in addition to those in parent class  
d) may have new attributes and new operations in addition to those of the parent class
- 6) \_\_\_\_\_ is the special attribute that reduces the effective multiplicity of an association.  
a) Role Name      b) Link Attribute      c) Qualifier      d) None of the above
- 7) Which of the following statement is true concerning objects and / or classes ?  
a) An object is an instance of a class  
b) An class is an instance of an object  
c) An object includes encapsulates only data  
d) A class includes encapsulates only data
- 8) Single inheritance, Multiple inheritance and Aggregation comes under  
a) Modularity      b) Typing  
c) Hierarchy      d) None of the mentioned

P.T.O.



- 9) A \_\_\_\_\_ transforms data values in data flow diagram.  
 a) Data store                      b) Actor                      c) Data flow                      d) Processes
- 10) The fact that the same operation may apply to two or more classes is called what ?  
 a) Inheritance                      b) Polymorphism  
 c) Encapsulation                      d) Multiple classification
- 11) \_\_\_\_\_ provide a common solution to a common problem in a given context.  
 a) Collaboration                      b) Deployment                      c) Pattern                      d) Component
- 12) A \_\_\_\_\_ is a diagram that shows the configuration of run time processing nodes and the artifacts that live on them.  
 a) Communication Diagram                      b) Collaboration Diagram  
 c) Artifact Diagram                      d) Deployment Diagram
- 13) Consider the following statements for UML \_\_\_\_\_  
 S1 : Interface cannot have direct instances.  
 S2 : One can also associate signals with an interface.  
 a) Only S1 is true                      b) Only S2 is true  
 c) Both S1 and S2 true                      d) Both S1 and S2 false
- 14) Which one of the following highlights the roles each object plays, in an interaction model ?  
 a) Collaboration Diagram                      b) Sequence Diagram  
 c) Deployment Diagram                      d) Package Diagram
- 15) A \_\_\_\_\_ is a sequence of events that occurs during one particular execution of a system.  
 a) State Transaction                      b) Scenario  
 c) Trigger                      d) Qualifier
- 16) Find out correct match :  
 1. Problem Statement                      i. Implementation  
 2. Architecture                      ii. Object Design  
 3. Design Model                      iii. System Design  
 4. Programming Language                      iv. Analysis  
 a) 1 - ii, 2 - iv, 3 - i, 4 - iii                      b) 1 - i, 2 - iv, 3 - iii, 4 - ii  
 c) 1 - iv, 2 - iii, 3 - ii, 4 - i                      d) 1 - iii, 2 - ii, 3 - i, 4 - iv
- 17) Which of the following drives the data flow graph by producing or consuming values ?  
 a) Event                      b) Processes                      c) Actor                      d) Triggers
- 18) Idioms represents the  
 a) Lowest Level Pattern                      b) Highest Level Pattern  
 c) Middle Level Pattern                      d) Design Pattern
- 19) The specification is a contract between the \_\_\_\_\_ and the \_\_\_\_\_ of the class.  
 i) Producer                      ii) Designer                      iii) Consumer                      iv) Software Tester  
 a) i and ii                      b) i and iii                      c) ii and iv                      d) iii and iv
- 20) \_\_\_\_\_ provides a common solution to a common problem in a given context.  
 a) Collaboration                      b) Deployment                      c) Pattern                      d) Component



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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
Elective – II : OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(5×4=20)**
- 1) Explain with respect to dynamic model
    - a) Entry and exit action
    - b) Internal action
  - 2) Explain the grouping constructs in object model.
  - 3) How operations are specified in functional modelling ?
  - 4) Differentiate between Aggregation, Association, Generalization.
  - 5) Define :
    - i) Object
    - ii) Class
    - iii) Link
    - iv) Association

3. Explain with suitable example modelling as a design technique. **10**

**OR**

Draw sequence diagram to fill Sign Up form an Facebook.com and create account. **10**

4. Explain with suitable example modelling as a design technique. **10**

**SECTION – II**

5. Solve **any four** : **(5×4=20)**
- 1) What are building blocks of UML ?
  - 2) Explain in brief Modelling Flow of control.
  - 3) Explain concept of package. How it is represented graphically ?
  - 4) Write a short note on Client-Server dispatcher.
  - 5) Explain Processes and Threads.

6. Explain different terms and concept of Use Cases, with an example of Use Case Diagram. **10**

**OR**

Draw an activity diagram for Online Order Management System. **10**

7. What is a design pattern and what makes a pattern ? Describe pattern categories and relationships between patterns. **10**

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**Set P**





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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017**  
**Elective – II : OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) Find out correct match :
  1. Problem Statement
  2. Architecture
  3. Design Model
  4. Programming Language
  - i. Implementation
  - ii. Object Design
  - iii. System Design
  - iv. Analysis

a) 1 - ii, 2 - iv, 3 - i, 4 - iii      b) 1 - i, 2 - iv, 3 - iii, 4 - ii  
c) 1 - iv, 2 - iii, 3 - ii, 4 - i      d) 1 - iii, 2 - ii, 3 - i, 4 - iv
- 2) Which of the following drives the data flow graph by producing or consuming values ?

a) Event      b) Processes      c) Actor      d) Triggers
- 3) Idioms represents the  

a) Lowest Level Pattern      b) Highest Level Pattern  
c) Middle Level Pattern      d) Design Pattern
- 4) The specification is a contract between the \_\_\_\_\_ and the \_\_\_\_\_ of the class.

i) Producer      ii) Designer      iii) Consumer      iv) Software Tester  
a) i and ii      b) i and iii      c) ii and iv      d) iii and iv
- 5) \_\_\_\_\_ provides a common solution to a common problem in a given context.

a) Collaboration      b) Deployment      c) Pattern      d) Component
- 6) \_\_\_\_\_ serves to help validate your architecture and to verify your system as it evolves during development.

a) Component      b) Use Cases      c) UML      d) Client
- 7) By encapsulation in object-oriented modelling we mean  

a) encapsulating data and programs  
b) hiding attributes of an object from users  
c) hiding operations on object from users  
d) hiding implementation details of methods from users of objects
- 8) Link is physical connection among  

a) classes      b) entity      c) object      d) packages

P.T.O.



- 9) Dynamic models are used to define the \_\_\_\_\_ of the components over time.  
a) Behavior                      b) Strategy                      c) Condition                      d) Constraint
- 10) When a subclass is created using inheritance the resulting class  
a) may have only attributes of parent class  
b) may have only operations of parent class  
c) may have new operations only in addition to those in parent class  
d) may have new attributes and new operations in addition to those of the parent class
- 11) \_\_\_\_\_ is the special attribute that reduces the effective multiplicity of an association.  
a) Role Name                      b) Link Attribute                      c) Qualifier                      d) None of the above
- 12) Which of the following statement is true concerning objects and / or classes ?  
a) An object is an instance of a class  
b) An class is an instance of an object  
c) An object includes encapsulates only data  
d) A class includes encapsulates only data
- 13) Single inheritance, Multiple inheritance and Aggregation comes under  
a) Modularity                      b) Typing  
c) Hierarchy                      d) None of the mentioned
- 14) A \_\_\_\_\_ transforms data values in data flow diagram.  
a) Data store                      b) Actor                      c) Data flow                      d) Processes
- 15) The fact that the same operation may apply to two or more classes is called what ?  
a) Inheritance                      b) Polymorphism  
c) Encapsulation                      d) Multiple classification
- 16) \_\_\_\_\_ provide a common solution to a common problem in a given context.  
a) Collaboration                      b) Deployment                      c) Pattern                      d) Component
- 17) A \_\_\_\_\_ is a diagram that shows the configuration of run time processing nodes and the artifacts that live on them.  
a) Communication Diagram                      b) Collaboration Diagram  
c) Artifact Diagram                      d) Deployment Diagram
- 18) Consider the following statements for UML \_\_\_\_\_  
S1 : Interface cannot have direct instances.  
S2 : One can also associate signals with an interface.  
a) Only S1 is true                      b) Only S2 is true  
c) Both S1 and S2 true                      d) Both S1 and S2 false
- 19) Which one of the following highlights the roles each object plays, in an interaction model ?  
a) Collaboration Diagram                      b) Sequence Diagram  
c) Deployment Diagram                      d) Package Diagram
- 20) A \_\_\_\_\_ is a sequence of events that occurs during one particular execution of a system.  
a) State Transaction                      b) Scenario  
c) Trigger                      d) Qualifie



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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
Elective – II : OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(5×4=20)**
- 1) Explain with respect to dynamic model
    - a) Entry and exit action
    - b) Internal action
  - 2) Explain the grouping constructs in object model.
  - 3) How operations are specified in functional modelling ?
  - 4) Differentiate between Aggregation, Association, Generalization.
  - 5) Define :
    - i) Object
    - ii) Class
    - iii) Link
    - iv) Association

3. Explain with suitable example modelling as a design technique. **10**

**OR**

Draw sequence diagram to fill Sign Up form an Facebook.com and create account. **10**

4. Explain with suitable example modelling as a design technique. **10**

**SECTION – II**

5. Solve **any four** : **(5×4=20)**
- 1) What are building blocks of UML ?
  - 2) Explain in brief Modelling Flow of control.
  - 3) Explain concept of package. How it is represented graphically ?
  - 4) Write a short note on Client-Server dispatcher.
  - 5) Explain Processes and Threads.

6. Explain different terms and concept of Use Cases, with an example of Use Case Diagram. **10**

**OR**

Draw an activity diagram for Online Order Management System. **10**

7. What is a design pattern and what makes a pattern ? Describe pattern categories and relationships between patterns. **10**

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**Set Q**







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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017**  
**Elective – II : OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) \_\_\_\_\_ provide a common solution to a common problem in a given context.  
a) Collaboration    b) Deployment    c) Pattern    d) Component
- 2) A \_\_\_\_\_ is a diagram that shows the configuration of run time processing nodes and the artifacts that live on them.  
a) Communication Diagram    b) Collaboration Diagram  
c) Artifact Diagram    d) Deployment Diagram
- 3) Consider the following statements for UML \_\_\_\_\_  
S1 : Interface cannot have direct instances.  
S2 : One can also associate signals with an interface.  
a) Only S1 is true    b) Only S2 is true  
c) Both S1 and S2 true    d) Both S1 and S2 false
- 4) Which one of the following highlights the roles each object plays, in an interaction model ?  
a) Collaboration Diagram    b) Sequence Diagram  
c) Deployment Diagram    d) Package Diagram
- 5) A \_\_\_\_\_ is a sequence of events that occurs during one particular execution of a system.  
a) State Transaction    b) Scenario  
c) Trigger    d) Qualifier
- 6) Find out correct match :  
1. Problem Statement    i. Implementation  
2. Architecture    ii. Object Design  
3. Design Model    iii. System Design  
4. Programming Language    iv. Analysis  
a) 1 - ii, 2 - iv, 3 - i, 4 - iii    b) 1 - i, 2 - iv, 3 - iii, 4 - ii  
c) 1 - iv, 2 - iii, 3 - ii, 4 - i    d) 1 - iii, 2 - ii, 3 - i, 4 - iv
- 7) Which of the following drives the data flow graph by producing or consuming values ?  
a) Event    b) Processes    c) Actor    d) Triggers



- 8) Idioms represents the
- a) Lowest Level Pattern
  - b) Highest Level Pattern
  - c) Middle Level Pattern
  - d) Design Pattern
- 9) The specification is a contract between the \_\_\_\_\_ and the \_\_\_\_\_ of the class.
- i) Producer
  - ii) Designer
  - iii) Consumer
  - iv) Software Tester
  - a) i and ii
  - b) i and iii
  - c) ii and iv
  - d) iii and iv
- 10) \_\_\_\_\_ provides a common solution to a common problem in a given context.
- a) Collaboration
  - b) Deployment
  - c) Pattern
  - d) Component
- 11) \_\_\_\_\_ serves to help validate your architecture and to verify your system as it evolves during development.
- a) Component
  - b) Use Cases
  - c) UML
  - d) Client
- 12) By encapsulation in object-oriented modelling we mean
- a) encapsulating data and programs
  - b) hiding attributes of an object from users
  - c) hiding operations on object from users
  - d) hiding implementation details of methods from users of objects
- 13) Link is physical connection among
- a) classes
  - b) entity
  - c) object
  - d) packages
- 14) Dynamic models are used to define the \_\_\_\_\_ of the components over time.
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  - c) Condition
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  - c) may have new operations only in addition to those in parent class
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- 16) \_\_\_\_\_ is the special attribute that reduces the effective multiplicity of an association.
- a) Role Name
  - b) Link Attribute
  - c) Qualifier
  - d) None of the above
- 17) Which of the following statement is true concerning objects and / or classes ?
- a) An object is an instance of a class
  - b) An class is an instance of an object
  - c) An object includes encapsulates only data
  - d) A class includes encapsulates only data
- 18) Single inheritance, Multiple inheritance and Aggregation comes under
- a) Modularity
  - b) Typing
  - c) Hierarchy
  - d) None of the mentioned
- 19) A \_\_\_\_\_ transforms data values in data flow diagram.
- a) Data store
  - b) Actor
  - c) Data flow
  - d) Processes
- 20) The fact that the same operation may apply to two or more classes is called what ?
- a) Inheritance
  - b) Polymorphism
  - c) Encapsulation
  - d) Multiple classification



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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
Elective – II : OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(5×4=20)**
- 1) Explain with respect to dynamic model
    - a) Entry and exit action
    - b) Internal action
  - 2) Explain the grouping constructs in object model.
  - 3) How operations are specified in functional modelling ?
  - 4) Differentiate between Aggregation, Association, Generalization.
  - 5) Define :
    - i) Object
    - ii) Class
    - iii) Link
    - iv) Association

3. Explain with suitable example modelling as a design technique. **10**

**OR**

Draw sequence diagram to fill Sign Up form an Facebook.com and create account. **10**

4. Explain with suitable example modelling as a design technique. **10**

**SECTION – II**

5. Solve **any four** : **(5×4=20)**
- 1) What are building blocks of UML ?
  - 2) Explain in brief Modelling Flow of control.
  - 3) Explain concept of package. How it is represented graphically ?
  - 4) Write a short note on Client-Server dispatcher.
  - 5) Explain Processes and Threads.

6. Explain different terms and concept of Use Cases, with an example of Use Case Diagram. **10**

**OR**

Draw an activity diagram for Online Order Management System. **10**

7. What is a design pattern and what makes a pattern ? Describe pattern categories and relationships between patterns. **10**

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**Set R**





SLR-VB – 234

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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017**  
**Elective – II : OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) \_\_\_\_\_ is the special attribute that reduces the effective multiplicity of an association.  
a) Role Name      b) Link Attribute      c) Qualifier      d) None of the above
- 2) Which of the following statement is true concerning objects and / or classes ?  
a) An object is an instance of a class  
b) An class is an instance of an object  
c) An object includes encapsulates only data  
d) A class includes encapsulates only data
- 3) Single inheritance, Multiple inheritance and Aggregation comes under  
a) Modularity      b) Typing  
c) Hierarchy      d) None of the mentioned
- 4) A \_\_\_\_\_ transforms data values in data flow diagram.  
a) Data store      b) Actor      c) Data flow      d) Processes
- 5) The fact that the same operation may apply to two or more classes is called what ?  
a) Inheritance      b) Polymorphism  
c) Encapsulation      d) Multiple classification
- 6) \_\_\_\_\_ provide a common solution to a common problem in a given context.  
a) Collaboration      b) Deployment      c) Pattern      d) Component
- 7) A \_\_\_\_\_ is a diagram that shows the configuration of run time processing nodes and the artifacts that live on them.  
a) Communication Diagram      b) Collaboration Diagram  
c) Artifact Diagram      d) Deployment Diagram
- 8) Consider the following statements for UML \_\_\_\_\_  
S1 : Interface cannot have direct instances.  
S2 : One can also associate signals with an interface.  
a) Only S1 is true      b) Only S2 is true  
c) Both S1 and S2 true      d) Both S1 and S2 false

P.T.O.





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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
Elective – II : OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(5×4=20)**
- 1) Explain with respect to dynamic model
    - a) Entry and exit action
    - b) Internal action
  - 2) Explain the grouping constructs in object model.
  - 3) How operations are specified in functional modelling ?
  - 4) Differentiate between Aggregation, Association, Generalization.
  - 5) Define :
    - i) Object
    - ii) Class
    - iii) Link
    - iv) Association

3. Explain with suitable example modelling as a design technique. **10**

**OR**

Draw sequence diagram to fill Sign Up form an Facebook.com and create account. **10**

4. Explain with suitable example modelling as a design technique. **10**

**SECTION – II**

5. Solve **any four** : **(5×4=20)**
- 1) What are building blocks of UML ?
  - 2) Explain in brief Modelling Flow of control.
  - 3) Explain concept of package. How it is represented graphically ?
  - 4) Write a short note on Client-Server dispatcher.
  - 5) Explain Processes and Threads.

6. Explain different terms and concept of Use Cases, with an example of Use Case Diagram. **10**

**OR**

Draw an activity diagram for Online Order Management System. **10**

7. What is a design pattern and what makes a pattern ? Describe pattern categories and relationships between patterns. **10**

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**Set S**







SLR-VB – 235

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**B.E. (CSE) (Part – I) Examination, 2017  
WIRELESS ADHOC NETWORKS (Elective – II)**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **20**
- 1) \_\_\_\_\_ unit will change the carrier frequency (hop) 1600 times in second.  
a) Bluetooth                      b) Infrared                      c) Both                      d) None
  - 2) UNII stands for  
a) Unlicensed National Information Infrastructure  
b) Undestined Node In Infrastructure  
c) Unlicensed Node Information Infrastructure  
d) Understanding National Information Infrastructure
  - 3) \_\_\_\_\_ describes the fading affect when signal strength variation is measured on a large scale movement.  
a) Reyleigh fading                      b) Log-normal fading  
c) Time dispersion                      d) None of these
  - 4) The \_\_\_\_\_ protocol header contains logical channel identification bits.  
a) MAC                      b) Reactive  
c) L2CAP                      d) None
  - 5) \_\_\_\_\_ is generally refer to any reduction in the strength of a signal.  
a) Attenuation                      b) AWGN  
c) Fading                      d) None
  - 6) \_\_\_\_\_ routing is energy saving in Wireless routing protocol.  
a) Nearest-Neighbour                      b) Reactive  
c) Proactive                      d) None

P.T.O.



- 7) Distance between \_\_\_\_\_ neighbouring nodes of Regular grid topology is  $d_{link}$ .  
 a) All                      b) Two                      c) Three                      d) None
- 8) Quasi topology of the network or of any portion of it is  
 a) Not regular              b) Always regular      c) Random                      d) None of these
- 9) In Poisson distribution method the  $\lambda$  indicates  
 a) Inter-arrival time of packet                      b) Delay in network  
 c) Throughput                      d) None of these
- 10) A packet is relayed \_\_\_\_\_, through a sequence of nearest neighbouring nodes, until it reaches to destination nodes.  
 a) Hop by Hop              b) Jumping                      c) Both                      d) None
- 11) In \_\_\_\_\_ model, the signal power is higher than noise.  
 a) Physical                      b) Protocol                      c) RBS                      d) None
- 12) In Protocol Model, \_\_\_\_\_ provided if the distance is suitably lower than the distance from the destination node to any other node in network.  
 a) Error free transmission                      b) Error transmission  
 c) Quality of service                      d) None of these
- 13) \_\_\_\_\_ in ideal case is indicated by  $E_{bit}/E_{thermal}$ .  
 a) BER                      b) Fading  
 c) Signal to noise ratio                      d) None
- 14) \_\_\_\_\_ constraints given in terms of maximum acceptable BER at the end of multi-hop route.  
 a) Quality of service                      b) Delay  
 c) Both                      d) None of these
- 15) The use of particular \_\_\_\_\_ techniques could allow retransmission before complete reception.  
 a) Mobility                      b) Coding/Decoding  
 c) Speed                      d) None
- 16) In Direction Non Persistent Model, the speed of node is  
 a) Constant                      b) Non-constant      c) Varies                      d) None
- 17) In \_\_\_\_\_, tentative multi-hop route from source to destination is created.  
 a) RBS                      b) ONRBS                      c) DP                      d) None
- 18) The optimal transmit power is the minimum power sufficient to guarantee network  
 a) Disconnection      b) Traffic                      c) Ability                      d) Connectivity
- 19) It is difficult to find \_\_\_\_\_ expression for the optimal transmit power.  
 a) Largest form              b) Closest form      c) Skipped form              d) None
- 20) The \_\_\_\_\_ bit is declared as an error if it differ from the original bit sent by the transmitter.  
 a) Average                      b) Signal                      c) Both a) and b)      d) Detected



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**B.E. (CSE) (Part – I) Examination, 2017  
WIRELESS ADHOC NETWORKS (Elective – II)**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** questions : **20**
- 1) Explain with neat diagram how the fading will affect on signal.
  - 2) Explain IEEE 802.11 a, 802.11 b and 802.11 g.
  - 3) If Adhoc wireless network contains N nodes and area A then what will be the special density and distance between two neighbour.
  - 4) Explain the problems in Realistic scenario and what will be the solution in terms of MAC protocol.
  - 5) Derive and explain BER for circular network surface.
3. If source node sends data in the form of signal to destination node how the signal gets changed in ideal and realistic scenario. **10**
4. What are the wireless PAN technologies ? Explain any one in detail. **10**

**OR**

Consider a scenario as a network contains N nodes in area A. When we said the network is Quasi regular network.

**SECTION – II**

5. Attempt **any four** questions : **20**
- 1) Draw and explain communication tube with data packets flowing inside the tube with Poisson distribution method.
  - 2) What are the assumptions need to be consider while deriving effective transport capacity ?
  - 3) Write a short note on two-dimensional Poisson topology.
  - 4) What are the consideration of performance matrix ?
  - 5) How mobility will affect on network ? Explain any one mobility model.
6. In Direction-Persistent Mobility Models, Draw and explain how Route evolution happens during a message transmission in case of RBS. **10**
7. Draw and explain in brief Single Route effective transport capacity. **10**

**OR**

Differentiate the Bit Error Rate for Regular and Random topology in brief.

**Set P**





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**B.E. (CSE) (Part – I) Examination, 2017  
WIRELESS ADHOC NETWORKS (Elective – II)**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) In Direction Non Persistent Model, the speed of node is
  - a) Constant
  - b) Non-constant
  - c) Varies
  - d) None
- 2) In \_\_\_\_\_, tentative multi-hop route from source to destination is created.
  - a) RBS
  - b) ONRBS
  - c) DP
  - d) None
- 3) The optimal transmit power is the minimum power sufficient to guarantee network
  - a) Disconnection
  - b) Traffic
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- 4) It is difficult to find \_\_\_\_\_ expression for the optimal transmit power.
  - a) Largest form
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- 5) The \_\_\_\_\_ bit is declared as an error if it differ from the original bit sent by the transmitter.
  - a) Average
  - b) Signal
  - c) Both a) and b)
  - d) Detected
- 6) \_\_\_\_\_ unit will change the carrier frequency (hop) 1600 times in second.
  - a) Bluetooth
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- 7) UNII stands for
  - a) Unlicensed National Information Infrastructure
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- 8) \_\_\_\_\_ describes the fading affect when signal strength variation is measured on a large scale movement.
  - a) Reyleigh fading
  - b) Log-normal fading
  - c) Time dispersion
  - d) None of these

P.T.O.





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**B.E. (CSE) (Part – I) Examination, 2017  
WIRELESS ADHOC NETWORKS (Elective – II)**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

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**SECTION – II**

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- 1) Draw and explain communication tube with data packets flowing inside the tube with Poisson distribution method.
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  - 4) What are the consideration of performance matrix ?
  - 5) How mobility will affect on network ? Explain any one mobility model.
6. In Direction-Persistent Mobility Models, Draw and explain how Route evolution happens during a message transmission in case of RBS. **10**
7. Draw and explain in brief Single Route effective transport capacity. **10**

**OR**

Differentiate the Bit Error Rate for Regular and Random topology in brief.

**Set Q**







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**B.E. (CSE) (Part – I) Examination, 2017  
WIRELESS ADHOC NETWORKS (Elective – II)**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) In \_\_\_\_\_ model, the signal power is higher than noise.  
a) Physical                      b) Protocol                      c) RBS                      d) None
- 2) In Protocol Model, \_\_\_\_\_ provided if the distance is suitably lower than the distance from the destination node to any other node in network.  
a) Error free transmission                      b) Error transmission  
c) Quality of service                      d) None of these
- 3) \_\_\_\_\_ in ideal case is indicated by  $E_{bit}/E_{thermal}$ .  
a) BER                      b) Fading  
c) Signal to noise ratio                      d) None
- 4) \_\_\_\_\_ constraints given in terms of maximum acceptable BER at the end of multi-hop route.  
a) Quality of service                      b) Delay  
c) Both                      d) None of these
- 5) The use of particular \_\_\_\_\_ techniques could allow retransmission before complete reception.  
a) Mobility                      b) Coding/Decoding  
c) Speed                      d) None
- 6) In Direction Non Persistent Model, the speed of node is  
a) Constant                      b) Non-constant                      c) Varies                      d) None
- 7) In \_\_\_\_\_, tentative multi-hop route from source to destination is created.  
a) RBS                      b) ONRBS                      c) DP                      d) None

P.T.O.



- 8) The optimal transmit power is the minimum power sufficient to guarantee network  
a) Disconnection    b) Traffic    c) Ability    d) Connectivity
- 9) It is difficult to find \_\_\_\_\_ expression for the optimal transmit power.  
a) Largest form    b) Closest form    c) Skipped form    d) None
- 10) The \_\_\_\_\_ bit is declared as an error if it differ from the original bit sent by the transmitter.  
a) Average    b) Signal    c) Both a) and b)    d) Detected
- 11) \_\_\_\_\_ unit will change the carrier frequency (hop) 1600 times in second.  
a) Bluetooth    b) Infrared    c) Both    d) None
- 12) UNII stands for  
a) Unlicensed National Information Infrastructure  
b) Undestined Node In Infrastructure  
c) Unlicensed Node Information Infrastructure  
d) Understanding National Information Infrastructure
- 13) \_\_\_\_\_ describes the fading affect when signal strength variation is measured on a large scale movement.  
a) Reyleigh fading    b) Log-normal fading  
c) Time dispersion    d) None of these
- 14) The \_\_\_\_\_ protocol header contains logical channel identification bits.  
a) MAC    b) Reactive  
c) L2CAP    d) None
- 15) \_\_\_\_\_ is generally refer to any reduction in the strength of a signal.  
a) Attenuation    b) AWGN  
c) Fading    d) None
- 16) \_\_\_\_\_ routing is energy saving in Wireless routing protocol.  
a) Nearest-Neighbour    b) Reactive  
c) Proactive    d) None
- 17) Distance between \_\_\_\_\_ neighbouring nodes of Regular grid topology is  $d_{link}$ .  
a) All    b) Two    c) Three    d) None
- 18) Quasi topology of the network or of any portion of it is  
a) Not regular    b) Always regular    c) Random    d) None of these
- 19) In Poisson distribution method the  $\lambda$  indicates  
a) Inter-arrival time of packet    b) Delay in network  
c) Throughput    d) None of these
- 20) A packet is relayed \_\_\_\_\_, through a sequence of nearest neighbouring nodes, until it reaches to destination nodes.  
a) Hop by Hop    b) Jumping    c) Both    d) None
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**B.E. (CSE) (Part – I) Examination, 2017  
WIRELESS ADHOC NETWORKS (Elective – II)**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** questions : **20**
- 1) Explain with neat diagram how the fading will affect on signal.
  - 2) Explain IEEE 802.11 a, 802.11 b and 802.11 g.
  - 3) If Adhoc wireless network contains N nodes and area A then what will be the special density and distance between two neighbour.
  - 4) Explain the problems in Realistic scenario and what will be the solution in terms of MAC protocol.
  - 5) Derive and explain BER for circular network surface.
3. If source node sends data in the form of signal to destination node how the signal gets changed in ideal and realistic scenario. **10**
4. What are the wireless PAN technologies ? Explain any one in detail. **10**

**OR**

Consider a scenario as a network contains N nodes in area A. When we said the network is Quasi regular network.

**SECTION – II**

5. Attempt **any four** questions : **20**
- 1) Draw and explain communication tube with data packets flowing inside the tube with Poisson distribution method.
  - 2) What are the assumptions need to be consider while deriving effective transport capacity ?
  - 3) Write a short note on two-dimensional Poisson topology.
  - 4) What are the consideration of performance matrix ?
  - 5) How mobility will affect on network ? Explain any one mobility model.
6. In Direction-Persistent Mobility Models, Draw and explain how Route evolution happens during a message transmission in case of RBS. **10**
7. Draw and explain in brief Single Route effective transport capacity. **10**

**OR**

Differentiate the Bit Error Rate for Regular and Random topology in brief.

**Set R**





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**B.E. (CSE) (Part – I) Examination, 2017  
WIRELESS ADHOC NETWORKS (Elective – II)**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) \_\_\_\_\_ routing is energy saving in Wireless routing protocol.  
a) Nearest-Neighbour                      b) Reactive  
c) Proactive                                      d) None
- 2) Distance between \_\_\_\_\_ neighbouring nodes of Regular grid topology is  $d_{link}$ .  
a) All                                      b) Two                                      c) Three                                      d) None
- 3) Quasi topology of the network or of any portion of it is  
a) Not regular                      b) Always regular                      c) Random                                      d) None of these
- 4) In Poisson distribution method the  $\lambda$  indicates  
a) Inter-arrival time of packet                      b) Delay in network  
c) Throughput                                      d) None of these
- 5) A packet is relayed \_\_\_\_\_, through a sequence of nearest neighbouring nodes, until it reaches to destination nodes.  
a) Hop by Hop                      b) Jumping                                      c) Both                                      d) None
- 6) In \_\_\_\_\_ model, the signal power is higher than noise.  
a) Physical                                      b) Protocol                                      c) RBS                                      d) None
- 7) In Protocol Model, \_\_\_\_\_ provided if the distance is suitably lower than the distance from the destination node to any other node in network.  
a) Error free transmission                      b) Error transmission  
c) Quality of service                                      d) None of these

P.T.O.





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**B.E. (CSE) (Part – I) Examination, 2017  
WIRELESS ADHOC NETWORKS (Elective – II)**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** questions : **20**
- 1) Explain with neat diagram how the fading will affect on signal.
  - 2) Explain IEEE 802.11 a, 802.11 b and 802.11 g.
  - 3) If Adhoc wireless network contains N nodes and area A then what will be the special density and distance between two neighbour.
  - 4) Explain the problems in Realistic scenario and what will be the solution in terms of MAC protocol.
  - 5) Derive and explain BER for circular network surface.
3. If source node sends data in the form of signal to destination node how the signal gets changed in ideal and realistic scenario. **10**
4. What are the wireless PAN technologies ? Explain any one in detail. **10**

**OR**

Consider a scenario as a network contains N nodes in area A. When we said the network is Quasi regular network.

**SECTION – II**

5. Attempt **any four** questions : **20**
- 1) Draw and explain communication tube with data packets flowing inside the tube with Poisson distribution method.
  - 2) What are the assumptions need to be consider while deriving effective transport capacity ?
  - 3) Write a short note on two-dimensional Poisson topology.
  - 4) What are the consideration of performance matrix ?
  - 5) How mobility will affect on network ? Explain any one mobility model.
6. In Direction-Persistent Mobility Models, Draw and explain how Route evolution happens during a message transmission in case of RBS. **10**
7. Draw and explain in brief Single Route effective transport capacity. **10**

**OR**

Differentiate the Bit Error Rate for Regular and Random topology in brief.

**Set S**







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**B.E. (CSE) (Part – I) Examination, 2017**  
**Elective – II : INTELLIGENT SYSTEMS**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All** questions are **compulsory**.
  - 4) Figures to the **right** indicate **full** marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The decision-making level of an organization that is most concerned with daily operations is the
  - a) Operational level
  - b) Managerial level
  - c) Executive level
  - d) None of the above
- 2) The decision-making level of an organization that is most concerned with long-term strategy is the
  - a) Operational level
  - b) Managerial level
  - c) Executive level
  - d) None of the above
- 3) The decision-making level of an organization that is most concerned with optimizing organizational efficiency is the
  - a) Operational level
  - b) Managerial level
  - c) Executive level
  - d) None of the above
- 4) An information system that captures and records fundamental business events is a(n)
  - a) Transaction processing system
  - b) Executive information system
  - c) Decision support system
  - d) Expert system
- 5) Which of these applications is most likely to be implemented using an online transaction processing system ?
  - a) Payroll processing
  - b) Airline reservations
  - c) Bank check processing
  - d) None of the above
- 6) The use of a scanner in a retail store operation typically represents which type of data entry ?
  - a) Manual
  - b) Semiautomated
  - c) Fully automated
  - d) None of the above
- 7) A report that contains information about unusual situations is a(n)
  - a) Scheduled report
  - b) Key indicator report
  - c) Exception report
  - d) Ad hoc report
- 8) A report that contains information about continuing situations of particular interest is a(n)
  - a) Scheduled report
  - b) Key indicator report
  - c) Exception report
  - d) Ad hoc report

P.T.O.





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**B.E. (CSE) (Part – I) Examination, 2017**  
**Elective – II : INTELLIGENT SYSTEMS**

Day and Date : Tuesday 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

SECTION – I

2. Answer briefly **any four** : **(4×5=20)**
- a) What are Decision Support Systems ? Give examples.
  - b) What are knowledge based Management Systems ?
  - c) How do Expert Systems work ?
  - d) What are Enterprise Information Systems ? How do they work ?
  - e) What are the components of the Intelligent Phase of Decision Making Systems ?
3. Answer **any two** of the following : **(2×5=10)**
- a) With a block diagram present how tools are used to develop Decision Support Systems.
  - b) Compare between computerized and conventional decision support.
  - c) How are DSS modeled ? Elaborate.
4. Answer **any one** of the following : **(1×10=10)**
- a) What are Hybrid Support Systems ? What technologies are embedded in them ?
  - b) State the steps in Decision Making. Elaborate on each step.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is Group Decision Making ? How is it carried out ?
  - b) List the implications in Knowledge Management. Elaborate.
  - c) What are EIS ? What information do they require ?
  - d) What are MIS ? Illustrate.
  - e) What is the future of MIS ?

**Set P**



6. Answer **any two** of the following : **(2×5=10)**

- a) Explain the impact of MIS on Management Jobs.
- b) How does EIS work ? Elaborate how EIS is integrated to DSS.
- c) Compare and contrast between DSS and MIS.

7. Answer **any one** of the following : **(1×10=10)**

- a) Elaborate on how MIS is integrated to the WWW to become more powerful.
- b) Define the following and elaborate :

i) GSS

ii) MSS

iii) DSS

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**B.E. (CSE) (Part – I) Examination, 2017**  
**Elective – II : INTELLIGENT SYSTEMS**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All** questions are **compulsory**.
  - 4) Figures to the **right** indicate **full** marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**

- 1) The MacDonald's fast food chain is experiencing slow growth because of over saturation of MacDonald's outlets across North America. They are looking for ways to increase growth in their organization by diversifying into the hotel industry. This is an example of a decision that is
  - a) Structured
  - b) Semi-structured
  - c) Unstructured
  - d) None of the above
- 2) Susan woke up and went to the bank to take money out of the ATM. She then went Tim Horton's to buy a coffee and paid with her debit card. She finished off her day by going to school and registered online for her computer class. Susan has had multiple contacts with what kind of information systems throughout her day ?
  - a) TPS
  - b) MIS
  - c) EIS
  - d) None of these
- 3) \_\_\_\_\_ are types of boundary-spanning systems.
  - a) DSS and Expert systems
  - b) Office Automation and Collaboration systems
  - c) Functional area and Global Information systems
  - d) All of the above
- 4) Functional area information systems can be a(n)
  - a) TPS
  - b) MIS
  - c) EIS
  - d) All of the above
- 5) Firms such a Nestle can have multiple distinct types of Global information systems. One of these could be called a
  - a) Transnational information systems
  - b) Multinational information systems
  - c) Global information systems
  - d) All of the above
- 6) The decision-making level of an organization that is most concerned with daily operations is the
  - a) Operational level
  - b) Managerial level
  - c) Executive level
  - d) None of the above

P.T.O.



- 7) The decision-making level of an organization that is most concerned with long-term strategy is the
- a) Operational level
  - b) Managerial level
  - c) Executive level
  - d) None of the above
- 8) The decision-making level of an organization that is most concerned with optimizing organizational efficiency is the
- a) Operational level
  - b) Managerial level
  - c) Executive level
  - d) None of the above
- 9) An information system that captures and records fundamental business events is a(n)
- a) Transaction processing system
  - b) Executive information system
  - c) Decision support system
  - d) Expert system
- 10) Which of these applications is most likely to be implemented using an online transaction processing system ?
- a) Payroll processing
  - b) Airline reservations
  - c) Bank check processing
  - d) None of the above
- 11) The use of a scanner in a retail store operation typically represents which type of data entry ?
- a) Manual
  - b) Semiautomated
  - c) Fully automated
  - d) None of the above
- 12) A report that contains information about unusual situations is a(n)
- a) Scheduled report
  - b) Key indicator report
  - c) Exception report
  - d) Ad hoc report
- 13) A report that contains information about continuing situations of particular interest is a(n)
- a) Scheduled report
  - b) Key indicator report
  - c) Exception report
  - d) Ad hoc report
- 14) A report that is produced for an unexpected or unplanned need is a(n)
- a) Scheduled report
  - b) Key indicator report
  - c) Exception report
  - d) Ad hoc report
- 15) A drill-down capability is often included in a(n)
- a) Transaction processing system
  - b) Decision support system
  - c) Executive information system
  - d) All of the above
- 16) The decision-making environment of an executive level manager can be characterized as
- a) Structured
  - b) Semistructured
  - c) Unstructured
  - d) None of the above
- 17) The decision-making environment of an operational level manager can be characterized as
- a) Structured
  - b) Semistructured
  - c) Unstructured
  - d) None of the above
- 18) A decision support system uses \_\_\_\_\_ to manipulate data.
- a) Formulas
  - b) algorithms
  - c) Models
  - d) Heuristics
- 19) In an expert system, the process of matching a question to the information in the knowledge base is called
- a) Deduction
  - b) Inferencing
  - c) Inclusion
  - d) None of the above
- 20) In an expert system, the expertise is contained in a
- a) Database
  - b) Model base
  - c) Knowledge base
  - d) All of the above



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**B.E. (CSE) (Part – I) Examination, 2017**  
**Elective – II : INTELLIGENT SYSTEMS**

Day and Date : Tuesday 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

SECTION – I

2. Answer briefly **any four** : **(4×5=20)**
- a) What are Decision Support Systems ? Give examples.
  - b) What are knowledge based Management Systems ?
  - c) How do Expert Systems work ?
  - d) What are Enterprise Information Systems ? How do they work ?
  - e) What are the components of the Intelligent Phase of Decision Making Systems ?
3. Answer **any two** of the following : **(2×5=10)**
- a) With a block diagram present how tools are used to develop Decision Support Systems.
  - b) Compare between computerized and conventional decision support.
  - c) How are DSS modeled ? Elaborate.
4. Answer **any one** of the following : **(1×10=10)**
- a) What are Hybrid Support Systems ? What technologies are embedded in them ?
  - b) State the steps in Decision Making. Elaborate on each step.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is Group Decision Making ? How is it carried out ?
  - b) List the implications in Knowledge Management. Elaborate.
  - c) What are EIS ? What information do they require ?
  - d) What are MIS ? Illustrate.
  - e) What is the future of MIS ?

**Set Q**





6. Answer **any two** of the following : **(2×5=10)**

- a) Explain the impact of MIS on Management Jobs.
- b) How does EIS work ? Elaborate how EIS is integrated to DSS.
- c) Compare and contrast between DSS and MIS.

7. Answer **any one** of the following : **(1×10=10)**

- a) Elaborate on how MIS is integrated to the WWW to become more powerful.
- b) Define the following and elaborate :

i) GSS

ii) MSS

iii) DSS

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**B.E. (CSE) (Part – I) Examination, 2017**  
**Elective – II : INTELLIGENT SYSTEMS**

Day and Date : Tuesday 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All** questions are **compulsory**.
  - 4) Figures to the **right** indicate **full** marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The decision-making environment of an executive level manager can be characterized as
  - a) Structured
  - b) Semistructured
  - c) Unstructured
  - d) None of the above
- 2) The decision-making environment of an operational level manager can be characterized as
  - a) Structured
  - b) Semistructured
  - c) Unstructured
  - d) None of the above
- 3) A decision support system uses \_\_\_\_\_ to manipulate data.
  - a) Formulas
  - b) algorithms
  - c) Models
  - d) Heuristics
- 4) In an expert system, the process of matching a question to the information in the knowledge base is called
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- 5) In an expert system, the expertise is contained in a
  - a) Database
  - b) Model base
  - c) Knowledge base
  - d) All of the above
- 6) The MacDonald's fast food chain is experiencing slow growth because of over saturation of MacDonald's outlets across North America. They are looking for ways to increase growth in their organization by diversifying into the hotel industry. This is an example of a decision that is
  - a) Structured
  - b) Semi-structured
  - c) Unstructured
  - d) None of the above
- 7) Susan woke up and went to the bank to take money out of the ATM. She then went Tim Horton's to buy a coffee and paid with her debit card. She finished off her day by going to school and registered online for her computer class. Susan has had multiple contacts with what kind of information systems throughout her day ?
  - a) TPS
  - b) MIS
  - c) EIS
  - d) None of these

P.T.O.



- 8) \_\_\_\_\_ are types of boundary-spanning systems.
- DSS and Expert systems
  - Office Automation and Collaboration systems
  - Functional area and Global Information systems
  - All of the above
- 9) Functional area information systems can be a(n)
- TPS
  - MIS
  - EIS
  - All of the above
- 10) Firms such as Nestle can have multiple distinct types of Global information systems. One of these could be called a
- Transnational information systems
  - Multinational information systems
  - Global information systems
  - All of the above
- 11) The decision-making level of an organization that is most concerned with daily operations is the
- Operational level
  - Managerial level
  - Executive level
  - None of the above
- 12) The decision-making level of an organization that is most concerned with long-term strategy is the
- Operational level
  - Managerial level
  - Executive level
  - None of the above
- 13) The decision-making level of an organization that is most concerned with optimizing organizational efficiency is the
- Operational level
  - Managerial level
  - Executive level
  - None of the above
- 14) An information system that captures and records fundamental business events is a(n)
- Transaction processing system
  - Executive information system
  - Decision support system
  - Expert system
- 15) Which of these applications is most likely to be implemented using an online transaction processing system ?
- Payroll processing
  - Airline reservations
  - Bank check processing
  - None of the above
- 16) The use of a scanner in a retail store operation typically represents which type of data entry ?
- Manual
  - Semiautomated
  - Fully automated
  - None of the above
- 17) A report that contains information about unusual situations is a(n)
- Scheduled report
  - Key indicator report
  - Exception report
  - Ad hoc report
- 18) A report that contains information about continuing situations of particular interest is a(n)
- Scheduled report
  - Key indicator report
  - Exception report
  - Ad hoc report
- 19) A report that is produced for an unexpected or unplanned need is a(n)
- Scheduled report
  - Key indicator report
  - Exception report
  - Ad hoc report
- 20) A drill-down capability is often included in a(n)
- Transaction processing system
  - Decision support system
  - Executive information system
  - All of the above



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**B.E. (CSE) (Part – I) Examination, 2017**  
**Elective – II : INTELLIGENT SYSTEMS**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

SECTION – I

2. Answer briefly **any four** : **(4×5=20)**
- a) What are Decision Support Systems ? Give examples.
  - b) What are knowledge based Management Systems ?
  - c) How do Expert Systems work ?
  - d) What are Enterprise Information Systems ? How do they work ?
  - e) What are the components of the Intelligent Phase of Decision Making Systems ?
3. Answer **any two** of the following : **(2×5=10)**
- a) With a block diagram present how tools are used to develop Decision Support Systems.
  - b) Compare between computerized and conventional decision support.
  - c) How are DSS modeled ? Elaborate.
4. Answer **any one** of the following : **(1×10=10)**
- a) What are Hybrid Support Systems ? What technologies are embedded in them ?
  - b) State the steps in Decision Making. Elaborate on each step.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is Group Decision Making ? How is it carried out ?
  - b) List the implications in Knowledge Management. Elaborate.
  - c) What are EIS ? What information do they require ?
  - d) What are MIS ? Illustrate.
  - e) What is the future of MIS ?

**Set R**



6. Answer **any two** of the following : **(2×5=10)**

- a) Explain the impact of MIS on Management Jobs.
- b) How does EIS work ? Elaborate how EIS is integrated to DSS.
- c) Compare and contrast between DSS and MIS.

7. Answer **any one** of the following : **(1×10=10)**

- a) Elaborate on how MIS is integrated to the WWW to become more powerful.
- b) Define the following and elaborate :

i) GSS

ii) MSS

iii) DSS

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SLR-VB – 236

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**B.E. (CSE) (Part – I) Examination, 2017  
Elective – II : INTELLIGENT SYSTEMS**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All** questions are **compulsory**.
  - 4) Figures to the **right** indicate **full** marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**(20×1=20)**

- 1) The use of a scanner in a retail store operation typically represents which type of data entry ?
  - a) Manual
  - b) Semiautomated
  - c) Fully automated
  - d) None of the above
- 2) A report that contains information about unusual situations is a(n)
  - a) Scheduled report
  - b) Key indicator report
  - c) Exception report
  - d) Ad hoc report
- 3) A report that contains information about continuing situations of particular interest is a(n)
  - a) Scheduled report
  - b) Key indicator report
  - c) Exception report
  - d) Ad hoc report
- 4) A report that is produced for an unexpected or unplanned need is a(n)
  - a) Scheduled report
  - b) Key indicator report
  - c) Exception report
  - d) Ad hoc report
- 5) A drill-down capability is often included in a(n)
  - a) Transaction processing system
  - b) Decision support system
  - c) Executive information system
  - d) All of the above
- 6) The decision-making environment of an executive level manager can be characterized as
  - a) Structured
  - b) Semistructured
  - c) Unstructured
  - d) None of the above
- 7) The decision-making environment of an operational level manager can be characterized as
  - a) Structured
  - b) Semistructured
  - c) Unstructured
  - d) None of the above
- 8) A decision support system uses \_\_\_\_\_ to manipulate data.
  - a) Formulas
  - b) algorithms
  - c) Models
  - d) Heuristics

P.T.O.





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**B.E. (CSE) (Part – I) Examination, 2017**  
**Elective – II : INTELLIGENT SYSTEMS**

Day and Date : Tuesday 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

SECTION – I

2. Answer briefly **any four** : **(4×5=20)**
- a) What are Decision Support Systems ? Give examples.
  - b) What are knowledge based Management Systems ?
  - c) How do Expert Systems work ?
  - d) What are Enterprise Information Systems ? How do they work ?
  - e) What are the components of the Intelligent Phase of Decision Making Systems ?
3. Answer **any two** of the following : **(2×5=10)**
- a) With a block diagram present how tools are used to develop Decision Support Systems.
  - b) Compare between computerized and conventional decision support.
  - c) How are DSS modeled ? Elaborate.
4. Answer **any one** of the following : **(1×10=10)**
- a) What are Hybrid Support Systems ? What technologies are embedded in them ?
  - b) State the steps in Decision Making. Elaborate on each step.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is Group Decision Making ? How is it carried out ?
  - b) List the implications in Knowledge Management. Elaborate.
  - c) What are EIS ? What information do they require ?
  - d) What are MIS ? Illustrate.
  - e) What is the future of MIS ?

**Set S**





6. Answer **any two** of the following : **(2×5=10)**

- a) Explain the impact of MIS on Management Jobs.
- b) How does EIS work ? Elaborate how EIS is integrated to DSS.
- c) Compare and contrast between DSS and MIS.

7. Answer **any one** of the following : **(1×10=10)**

- a) Elaborate on how MIS is integrated to the WWW to become more powerful.
- b) Define the following and elaborate :

i) GSS

ii) MSS

iii) DSS

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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- N.B. :** 1) **All questions are compulsory.**  
2) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**  
3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) How to send an SMS in android through code ?  
Eg : If I want to send a message to destination number "974120XXXX", then what is the correct code to do it ?  
A) SmsManager s = SmsManager.getDefault();  
s.sendMessage("974120XXXX", null, "Hi how are you?", null, null);  
B) SmsManager s = SmsManager.getDefault();  
s.sendMessage(null, "974120XXXX", "Hi how are you?", null, null);  
C) SmsManager s = SmsManager.getDefault();  
s.sendMessage("974120XXXX", "974120XXXX", "Hi how are you?", null, null);  
D) SmsManager s = new SMSManager();  
s.sendMessage(null, "974120XXXX", "Hi how are you?", null, null);
- 2) What are the mandatory functions to be implemented in Async Task class ?  
i) doInBackground()                      ii) onPreExecute()  
iii) onPostExecute()                      iv) onProgressUpdate()  
A) i                                      B) i, ii                                      C) i, ii and iii                                      D) i, ii, iii and iv
- 3) Do all components of an android application run in same thread ?  
A) it is based on number of components in that application  
B) option A is true because activity, service, receiver and content provider will create a thread by default internally  
C) each application will have one process and one main thread created by system, by default  
D) process or application by default will not have any thread
- 4) Parent class of activity ?  
A) object                      B) context                      C) activityGroup                      D) contextThemeWrapper
- 5) How many ways to start services ?  
A) started                      B) bound                      C) a) and b)                      D) messenger
- 6) The XML file that contains all the string names that your application uses.  
A) stack.xml                      B) text.xml                      C) strings.xml                      D) string.java

P.T.O.



- 7) If I send a broadcast with implicit intent and there is no matching intent-filter, then what will happen ?
- Compile time error
  - It will throw run time exception – BroadcastReceiverNotFoundException and crashes if it is not handled properly
  - Nothing will happen, somehow it launches target component
  - Nothing will happen, but it will not launch any receiver
- 8) Phone State EXTRA\_STATE Value
- Phone disconnected a) EXTRA\_STATE\_IDLE
  - Phone ringing b) EXTRA\_STATE\_OFFHOOK
  - Phone answered c) EXTRA\_STATE\_RINGING
- Match the pair
- 1-c, 2-a, 3-b
  - 1-a, 2-c, 3-b
  - 1-b, 2-c, 3-a
  - None of these
- 9) As soon as Broadcast Receiver is triggered to respond to an event \_\_\_\_\_ method is executed.
- onCreate
  - onReceive
  - onEvent
  - None
- 10) What is Pending Intent in android ?
- It is a kind of an intent
  - It is used to pass the data between activities
  - It will fire at a future point of time
  - None of the above
- 11) \_\_\_\_\_ is method to get internal storage directory.
- getFilesDir()
  - getFilesDirectory()
  - getInternalFilesDirectory
  - none
- 12) \_\_\_\_\_ widget is useful to produce drawable animation effect.
- ImageView
  - VidioView
  - Both A) and B)
  - None
- 13) Least accuracy is obtained in \_\_\_\_\_ location based mechanism.
- Tower based location identification
  - GPS
  - Wifi
  - All
- 14) \_\_\_\_\_ test internal structure of working of application.
- Black box testing
  - White box testing
  - Regression testing
  - None
- 15) Permission needed to access location using tower based mechanism are
- ACCESS\_FINE\_LOCATION
  - ACCESS\_COARSE\_LOCATION
  - Both A) and B)
  - None
- 16) \_\_\_\_\_ property in xml file can be used to enlarge or compress object in view animation.
- FromXScale, toXScale
  - fromAlpha, toAlpha
  - fromDegrees, toDegrees
  - None
- 17) \_\_\_\_\_ animation can be used to animate any property of object described in View class with numeric values.
- View
  - Property
  - Drawable
  - None
- 18) \_\_\_\_\_, \_\_\_\_\_ functions of Editor need to be invoked to write integer value in SharedPreferences file.
- write, commit
  - writeln, commit
  - write, commitInt
  - writePref, commit
- 19) SQLiteDatabase class can be used to
- Create tables
  - Insert data in tables
  - Update and delete data in tables
  - All
- 20) \_\_\_\_\_ is location provider.
- Network
  - gps
  - Both A) and B)
  - None



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

***N.B. : All questions are compulsory.***

**SECTION – I**

2. Answer **any four** of the following : **(4×5=20)**
- A) Define broadcast receiver. Explain with a sample code.
  - B) Outline the process of Intent resolution.
  - C) List and explain the elements of an action bar.
  - D) Illustrate three approaches to develop a mobile app along with the scenarios where we need to apply these approaches.
  - E) Illustrate Activity life cycle states and respective callback methods.
3. Answer **any one** of the following : **(1×10=10)**
- A) Define the procedure to navigate between activities and exchange data between them. Demonstrate with a sample code.
  - B) With help of code snippet using AsyncTask simulate background operation and simultaneously use ProgressBar to show progress of background operation on UI.
4. Explain Intent and Intent Resolution. **10**

**SECTION – II**

5. Attempt **any four** : **(4×5=20)**
- A) Write a note on SharedPreferences.
  - B) Enlist types of animation. Explain property animation in detail.
  - C) Write a note on monkey talk.
  - D) Explain types of storage. What are advantages of external storage over internal storage.
  - E) Explain file handling mechanism in android.
6. Explain SqliteOpenHelper, SqliteDatabase, Cursor and ContentValues classes in android. **10**
- OR
6. Explain app uploading procedure on API store in detail. **10**
7. What is location based service ? Explain how GPS can be used to track location of device. (explain use of LocationManager, LocationListener, Criteria classes). **10**

**Set P**





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Set **Q**

**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- N.B. :** 1) **All questions are compulsory.**  
2) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**  
3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**(20×1=20)**

- 1) \_\_\_\_\_ property in xml file can be used to enlarge or compress object in view animation.  
A) FromXScale, toXScale                      B) fromAlpha, toAlpha  
C) fromDegrees, toDegrees                      D) None
- 2) \_\_\_\_\_ animation can be used to animate any property of object described in View class with numeric values.  
A) View                      B) Property                      C) Drawable                      D) None
- 3) \_\_\_\_\_, \_\_\_\_\_ functions of Editor need to be invoked to write integer value in SharedPreferences file.  
A) write, commit                      B) writeInt, commit                      C) write, commitInt                      D) writePref, commit
- 4) SQLiteDatabase class can be used to  
A) Create tables                      B) Insert data in tables  
C) Update and delete data in tables                      D) All
- 5) \_\_\_\_\_ is location provider.  
A) Network                      B) gps                      C) Both A) and B)                      D) None
- 6) How to send an SMS in android through code ?  
Eg : If I want to send a message to destination number "974120XXXX", then what is the correct code to do it ?  
A) SmsManager s = SmsManager.getDefault();  
s.sendMessage("974120XXXX", null, "Hi how are you?", null, null);  
B) SmsManager s = SmsManager.getDefault();  
s.sendMessage(null, "974120XXXX", "Hi how are you?", null, null);  
C) SmsManager s = SmsManager.getDefault();  
s.sendMessage("974120XXXX", "974120XXXX", "Hi how are you?", null, null);  
D) SmsManager s = new SMSManager();  
s.sendMessage(null, "974120XXXX", "Hi how are you?", null, null);
- 7) What are the mandatory functions to be implemented in Async Task class ?  
i) doInBackground()                      ii) onPreExecute()  
iii) onPostExecute()                      iv) onProgressUpdate()  
A) i                      B) i, ii                      C) i, ii and iii                      D) i, ii, iii and iv

**P.T.O.**



- 8) Do all components of an android application run in same thread ?  
 A) it is based on number of components in that application  
 B) option A is true because activity, service, receiver and content provider will create a thread by default internally  
 C) each application will have one process and one main thread created by system, by default  
 D) process or application by default will not have any thread
- 9) Parent class of activity ?  
 A) object                      B) context                      C) activityGroup                      D) contextThemeWrapper
- 10) How many ways to start services ?  
 A) started                      B) bound                      C) a) and b)                      D) messenger
- 11) The XML file that contains all the string names that your application uses.  
 A) stack.xml                      B) text.xml                      C) strings.xml                      D) string.java
- 12) If I send a broadcast with implicit intent and there is no matching intent-filter, then what will happen ?  
 A) Compile time error  
 B) It will throw run time exception – BroadcastReceiverNotFoundException and crashes if it is not handled properly  
 C) Nothing will happen, somehow it launches target component  
 D) Nothing will happen, but it will not launch any receiver
- 13) Phone State                      EXTRA\_STATE Value  
 1) Phone disconnected                      a) EXTRA\_STATE\_IDLE  
 2) Phone ringing                      b) EXTRA\_STATE\_OFFHOOK  
 3) Phone answered                      c) EXTRA\_STATE\_RINGING
- Match the pair  
 A) 1-c, 2-a, 3-b                      B) 1-a, 2-c, 3-b                      C) 1-b, 2-c, 3-a                      D) None of these
- 14) As soon as Broadcast Receiver is triggered to respond to an event \_\_\_\_\_ method is executed.  
 A) onCreate                      B) onReceive                      C) onEvent                      D) None
- 15) What is Pending Intent in android ?  
 A) It is a kind of an intent                      B) It is used to pass the data between activities  
 C) It will fire at a future point of time                      D) None of the above
- 16) \_\_\_\_\_ is method to get internal storage directory.  
 A) getFilesDir()                      B) getFilesDirectory()  
 C) getInternalFilesDirectory                      D) none
- 17) \_\_\_\_\_ widget is useful to produce drawable animation effect.  
 A) ImageView                      B) VidioView                      C) Both A) and B)                      D) None
- 18) Least accuracy is obtained in \_\_\_\_\_ location based mechanism.  
 A) Tower based location identification                      B) GPS  
 C) Wifi                      D) All
- 19) \_\_\_\_\_ test internal structure of working of application.  
 A) Black box testing                      B) White box testing                      C) Regression testing                      D) None
- 20) Permission needed to access location using tower based mechanism are  
 A) ACCESS\_FINE\_LOCATION                      B) ACCESS\_COARSE\_LOCATION  
 C) Both A) and B)                      D) None



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

***N.B. : All questions are compulsory.***

**SECTION – I**

2. Answer **any four** of the following : **(4×5=20)**
- A) Define broadcast receiver. Explain with a sample code.
  - B) Outline the process of Intent resolution.
  - C) List and explain the elements of an action bar.
  - D) Illustrate three approaches to develop a mobile app along with the scenarios where we need to apply these approaches.
  - E) Illustrate Activity life cycle states and respective callback methods.
3. Answer **any one** of the following : **(1×10=10)**
- A) Define the procedure to navigate between activities and exchange data between them. Demonstrate with a sample code.
  - B) With help of code snippet using AsyncTask simulate background operation and simultaneously use ProgressBar to show progress of background operation on UI.
4. Explain Intent and Intent Resolution. **10**

**SECTION – II**

5. Attempt **any four** : **(4×5=20)**
- A) Write a note on SharedPreferences.
  - B) Enlist types of animation. Explain property animation in detail.
  - C) Write a note on monkey talk.
  - D) Explain types of storage. What are advantages of external storage over internal storage.
  - E) Explain file handling mechanism in android.
6. Explain SqliteOpenHelper, SQLiteDatabase, Cursor and ContentValues classes in android. **10**
- OR
6. Explain app uploading procedure on API store in detail. **10**
7. What is location based service ? Explain how GPS can be used to track location of device. (explain use of LocationManager, LocationListener, Criteria classes). **10**

**Set Q**









- 11) How to send an SMS in android through code ?  
 Eg : If I want to send a message to destination number "974120XXXX", then what is the correct code to do it ?
- A) SmsManager s = SmsManager.getDefault();  
 s.sendMessage("974120XXXX", null, "Hi how are you?", null, null);
- B) SmsManager s = SmsManager.getDefault();  
 s.sendMessage(null, "974120XXXX", "Hi how are you?", null, null);
- C) SmsManager s = SmsManager.getDefault();  
 s.sendMessage("974120XXXX", "974120XXXX", "Hi how are you?", null, null);
- D) SmsManager s = new SMSManager();  
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- 12) What are the mandatory functions to be implemented in Async Task class ?
- i) doInBackground()                      ii) onPreExecute()  
 iii) onPostExecute()                      iv) onProgressUpdate()
- A) i                                      B) i, ii                                      C) i, ii and iii                                      D) i, ii, iii and iv
- 13) Do all components of an android application run in same thread ?
- A) it is based on number of components in that application  
 B) option A is true because activity, service, receiver and content provider will create a thread by default internally  
 C) each application will have one process and one main thread created by system, by default  
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- 14) Parent class of activity ?
- A) object                                      B) context                                      C) activityGroup                                      D) contextThemeWrapper
- 15) How many ways to start services ?
- A) started                                      B) bound                                      C) a) and b)                                      D) messenger
- 16) The XML file that contains all the string names that your application uses.
- A) stack.xml                                      B) text.xml                                      C) strings.xml                                      D) string.java
- 17) If I send a broadcast with implicit intent and there is no matching intent-filter, then what will happen ?
- A) Compile time error  
 B) It will throw run time exception – BroadcastReceiverNotFoundException and crashes if it is not handled properly  
 C) Nothing will happen, somehow it launches target component  
 D) Nothing will happen, but it will not launch any receiver
- 18) Phone State                                      EXTRA\_STATE Value
- 1) Phone disconnected                                      a) EXTRA\_STATE\_IDLE  
 2) Phone ringing                                      b) EXTRA\_STATE\_OFFHOOK  
 3) Phone answered                                      c) EXTRA\_STATE\_RINGING
- Match the pair
- A) 1-c, 2-a, 3-b                                      B) 1-a, 2-c, 3-b                                      C) 1-b, 2-c, 3-a                                      D) None of these
- 19) As soon as Broadcast Receiver is triggered to respond to an event \_\_\_\_\_ method is executed.
- A) onCreate                                      B) onReceive                                      C) onEvent                                      D) None
- 20) What is Pending Intent in android ?
- A) It is a kind of an intent                                      B) It is used to pass the data between activities  
 C) It will fire at a future point of time                                      D) None of the above



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

***N.B. : All questions are compulsory.***

**SECTION – I**

2. Answer **any four** of the following : **(4×5=20)**
- A) Define broadcast receiver. Explain with a sample code.
  - B) Outline the process of Intent resolution.
  - C) List and explain the elements of an action bar.
  - D) Illustrate three approaches to develop a mobile app along with the scenarios where we need to apply these approaches.
  - E) Illustrate Activity life cycle states and respective callback methods.
3. Answer **any one** of the following : **(1×10=10)**
- A) Define the procedure to navigate between activities and exchange data between them. Demonstrate with a sample code.
  - B) With help of code snippet using AsyncTask simulate background operation and simultaneously use ProgressBar to show progress of background operation on UI.
4. Explain Intent and Intent Resolution. **10**

**SECTION – II**

5. Attempt **any four** : **(4×5=20)**
- A) Write a note on SharedPreferences.
  - B) Enlist types of animation. Explain property animation in detail.
  - C) Write a note on monkey talk.
  - D) Explain types of storage. What are advantages of external storage over internal storage.
  - E) Explain file handling mechanism in android.
6. Explain SqliteOpenHelper, SQLiteDatabase, Cursor and ContentValues classes in android. **10**
- OR
6. Explain app uploading procedure on API store in detail. **10**
7. What is location based service ? Explain how GPS can be used to track location of device. (explain use of LocationManager, LocationListener, Criteria classes). **10**

**Set R**





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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- N.B. :** 1) **All questions are compulsory.**  
2) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**  
3) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The XML file that contains all the string names that your application uses.  
A) stack.xml      B) text.xml      C) strings.xml      D) string.java
- 2) If I send a broadcast with implicit intent and there is no matching intent-filter, then what will happen ?  
A) Compile time error  
B) It will throw run time exception – BroadcastReceiverNotFoundException and crashes if it is not handled properly  
C) Nothing will happen, somehow it launches target component  
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- 3) Phone State      EXTRA\_STATE Value  
1) Phone disconnected      a) EXTRA\_STATE\_IDLE  
2) Phone ringing      b) EXTRA\_STATE\_OFFHOOK  
3) Phone answered      c) EXTRA\_STATE\_RINGING
- Match the pair  
A) 1-c, 2-a, 3-b      B) 1-a, 2-c, 3-b      C) 1-b, 2-c, 3-a      D) None of these
- 4) As soon as Broadcast Receiver is triggered to respond to an event \_\_\_\_\_ method is executed.  
A) onCreate      B) onReceive      C) onEvent      D) None
- 5) What is Pending Intent in android ?  
A) It is a kind of an intent      B) It is used to pass the data between activities  
C) It will fire at a future point of time      D) None of the above
- 6) \_\_\_\_\_ is method to get internal storage directory.  
A) getFilesDir()      B) getFilesDirectory()  
C) getInternalFilesDirectory      D) none
- 7) \_\_\_\_\_ widget is useful to produce drawable animation effect.  
A) ImageView      B) VidioView      C) Both A) and B)      D) None
- 8) Least accuracy is obtained in \_\_\_\_\_ location based mechanism.  
A) Tower based location identification      B) GPS  
C) Wifi      D) All



- 9) \_\_\_\_\_ test internal structure of working of application.  
 A) Black box testing B) White box testing C) Regression testing D) None
- 10) Permission needed to access location using tower based mechanism are  
 A) ACCESS\_FINE\_LOCATION B) ACCESS\_COARSE\_LOCATION  
 C) Both A) and B) D) None
- 11) \_\_\_\_\_ property in xml file can be used to enlarge or compress object in view animation.  
 A) FromXScale, toXScale B) fromAlpha, toAlpha  
 C) fromDegrees, toDegrees D) None
- 12) \_\_\_\_\_ animation can be used to animate any property of object described in View class with numeric values.  
 A) View B) Property C) Drawable D) None
- 13) \_\_\_\_\_, \_\_\_\_\_ functions of Editor need to be invoked to write integer value in SharedPreferences file.  
 A) write, commit B) writeInt, commit C) write, commitInt D) writePref, commit
- 14) SQLiteDatabase class can be used to  
 A) Create tables B) Insert data in tables  
 C) Update and delete data in tables D) All
- 15) \_\_\_\_\_ is location provider.  
 A) Network B) gps C) Both A) and B) D) None
- 16) How to send an SMS in android through code ?  
 Eg : If I want to send a message to destination number "974120XXXX", then what is the correct code to do it ?  
 A) SmsManager s = SmsManager.getDefault();  
 s.sendMessage("974120XXXX", null, "Hi how are you?", null, null);  
 B) SmsManager s = SmsManager.getDefault();  
 s.sendMessage(null, "974120XXXX", "Hi how are you?", null, null);  
 C) SmsManager s = SmsManager.getDefault();  
 s.sendMessage("974120XXXX", "974120XXXX", "Hi how are you?", null, null);  
 D) SmsManager s = new SMSManager();  
 s.sendMessage(null, "974120XXXX", "Hi how are you?", null, null);
- 17) What are the mandatory functions to be implemented in Async Task class ?  
 i) doInBackground() ii) onPreExecute()  
 iii) onPostExecute() iv) onProgressUpdate()  
 A) i B) i, ii C) i, ii and iii D) i, ii, iii and iv
- 18) Do all components of an android application run in same thread ?  
 A) it is based on number of components in that application  
 B) option A is true because activity, service, receiver and content provider will create a thread by default internally  
 C) each application will have one process and one main thread created by system, by default  
 D) process or application by default will not have any thread
- 19) Parent class of activity ?  
 A) object B) context C) activityGroup D) contextThemeWrapper
- 20) How many ways to start services ?  
 A) started B) bound C) a) and b) D) messenger



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**B.E. (Computer Science and Engineering) (Part – I) Examination, 2017  
Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Tuesday, 9-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

***N.B. : All questions are compulsory.***

**SECTION – I**

2. Answer **any four** of the following : **(4×5=20)**
- A) Define broadcast receiver. Explain with a sample code.
  - B) Outline the process of Intent resolution.
  - C) List and explain the elements of an action bar.
  - D) Illustrate three approaches to develop a mobile app along with the scenarios where we need to apply these approaches.
  - E) Illustrate Activity life cycle states and respective callback methods.
3. Answer **any one** of the following : **(1×10=10)**
- A) Define the procedure to navigate between activities and exchange data between them. Demonstrate with a sample code.
  - B) With help of code snippet using AsyncTask simulate background operation and simultaneously use ProgressBar to show progress of background operation on UI.
4. Explain Intent and Intent Resolution. **10**

**SECTION – II**

5. Attempt **any four** : **(4×5=20)**
- A) Write a note on SharedPreferences.
  - B) Enlist types of animation. Explain property animation in detail.
  - C) Write a note on monkey talk.
  - D) Explain types of storage. What are advantages of external storage over internal storage.
  - E) Explain file handling mechanism in android.
6. Explain SqliteOpenHelper, SQLiteDatabase, Cursor and ContentValues classes in android. **10**
- OR
6. Explain app uploading procedure on API store in detail. **10**
7. What is location based service ? Explain how GPS can be used to track location of device. (explain use of LocationManager, LocationListener, Criteria classes). **10**

**Set S**









- 8) \_\_\_\_\_ is function of all bits in a message and does not use key.  
A) MAC                      B) Hashcode              C) DSS                      D) Blinding
- 9) Authentication Technique involves the use of \_\_\_\_\_ to generate MAC.  
A) Public key                      B) Secret key  
C) Public and secret key              D) None of the above
- 10) Direct digital signature refers to a digital signature scheme that involves  
A) Destination and third party              B) Source, destination and third party  
C) Only source and destination              D) Source and third party
- 11) For E-mail compatibility PGP uses \_\_\_\_\_ algorithm.  
A) ZIP                      B) CAST                      C) RSA/SHA                      D) Radix-64
- 12) In PGP service, SHA-1 is used to generate \_\_\_\_\_ bit hash code.  
A) 56                      B) 160                      C) 64                      D) 256
- 13) In Kerberos version 5 for encryption any algorithm may be used.  
A) True                      B) False
- 14) \_\_\_\_\_ mode operation can be used to setup a virtual private network.  
A) Tunnel                      B) Transport  
C) Block cipher                      D) None of the above
- 15) A security association is uniquely identified by \_\_\_\_\_ parameters.  
A) 4                      B) 3                      C) 2                      D) 1
- 16) SSL record protocol provides \_\_\_\_\_ services for SSL connection.  
A) Confidential                      B) Message Integrity  
C) Neither A nor B                      D) Both A and B
- 17) HTTPS refers to the combination of \_\_\_\_\_  
A) HTTP and SMTP                      B) HTTP and SLL  
C) HTTP and SET                      D) HTTP and SNMP
- 18) Honeypots are designed to \_\_\_\_\_  
A) Divert an attacker  
B) Collect information about the attacker's activity  
C) Collect attacker's Login Id  
D) Collect attacker's Password
- 19) Salt value used in  
A) Encryption                      B) Confidentiality  
C) SET                      D) Password management
- 20) A firewall act as a packet filter  
A) True                      B) False  
C) Can't say                      D) None of the above
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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
NETWORK SECURITY**

Day and Date : Monday, 15-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Figures to the **right** indicate **full** marks.  
2) **All** questions are **compulsory**.

SECTION – I

2. Write answer to **any four** questions (**each** carries **5** marks) : **20**
- A) Encrypt plaintext “solapur” and decrypt ciphertext with Caesar cipher for  $k = 3$ .
  - B) What is steganography ?
  - C) Perform encryption and decryption using RSA algorithm for  $P = 3$ ;  $q = 11$ ;  $e = 7$ ;  $M = 5$ .
  - D) Write a short note on Diffie-Hellman key exchange algorithm.
  - E) List the generally accepted requirements for cryptographic hash function H.
3. Write answer to **any one** question : **10**
- A) Explain with diagrams the overall scheme of DES Encryption.
  - B) Explain with diagrams ECB and CBC operational modes of block cipher.
4. Explain in detail with diagrams the different types of security attacks. **10**

**Set P**



## SECTION – II

5. Write answer to **any four** questions (**each** carries **5** marks) : **20**
- A) What is Kerberos ? List the requirements of Kerberos.
  - B) List and explain the functions of S/MIME.
  - C) Explain transport and tunnel mode of IPSec.
  - D) Explain with diagram the dual signing used in Secure Electronic Transaction (SET).
  - E) What is Intrusion Detection ? Explain any one approach to intrusion detection.
6. Write answer to **any one** question : **10**
- A) What is X-509 authentication service ? Explain in detail X-509 certificate.
  - B) Draw the format of ESP header of IPsec and explain.
7. What is a computer virus ? Which are it's three parts ? What are its phases ? How viruses are classified based on the target they attack and based on its concealment strategy ? **10**
-





- 8) In \_\_\_\_\_ the statistical structure of the plain text is dissipated into long-range statistics of the cipher text.  
A) Confusion                      B) Diffusion                      C) Substitution                      D) Permutation
- 9) Avalanche effect a desirable property of any encryption algorithm.  
A) True                                      B) False  
C) Can't say                                      D) None of the above
- 10) An encryption scheme is \_\_\_\_\_ if the ciphertext generated by the scheme does not contain enough information to determine uniquely the corresponding plaintext.  
A) Conditionally secure  
B) Unconditionally secure  
C) One way secure  
D) Two way secure
- 11) If a sender encrypts message with his private key then it achieves the purpose of  
A) Receiver Authentication                      B) Confidentiality and sender authentication  
C) Only confidentiality                      D) None of the above
- 12) \_\_\_\_\_ appears to offer equal security for a smaller key size, thereby reducing processing overhead.  
A) RSA                      B) CAST                      C) Diffie-Hellman                      D) ECC
- 13) \_\_\_\_\_ is function of all bits in a message and does not use key.  
A) MAC                      B) Hashcode                      C) DSS                      D) Blinding
- 14) Authentication Technique involves the use of \_\_\_\_\_ to generate MAC.  
A) Public key                      B) Secret key  
C) Public and secret key                      D) None of the above
- 15) Direct digital signature refers to a digital signature scheme that involves  
A) Destination and third party                      B) Source, destination and third party  
C) Only source and destination                      D) Source and third party
- 16) For E-mail compatibility PGP uses \_\_\_\_\_ algorithm.  
A) ZIP                      B) CAST                      C) RSA/SHA                      D) Radix-64
- 17) In PGP service, SHA-1 is used to generate \_\_\_\_\_ bit hash code.  
A) 56                      B) 160                      C) 64                      D) 256
- 18) In Kerberos version 5 for encryption any algorithm may be used.  
A) True                      B) False
- 19) \_\_\_\_\_ mode operation can be used to setup a virtual private network.  
A) Tunnel                      B) Transport  
C) Block cipher                      D) None of the above
- 20) A security association is uniquely identified by \_\_\_\_\_ parameters.  
A) 4                      B) 3                      C) 2                      D) 1



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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
NETWORK SECURITY**

Day and Date : Monday, 15-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Figures to the **right** indicate **full** marks.  
2) **All** questions are **compulsory**.

SECTION – I

2. Write answer to **any four** questions (**each** carries **5** marks) : **20**
- A) Encrypt plaintext “solapur” and decrypt ciphertext with Caesar cipher for  $k = 3$ .
  - B) What is steganography ?
  - C) Perform encryption and decryption using RSA algorithm for  $P = 3$ ;  $q = 11$ ;  $e = 7$ ;  $M = 5$ .
  - D) Write a short note on Diffie-Hellman key exchange algorithm.
  - E) List the generally accepted requirements for cryptographic hash function H.
3. Write answer to **any one** question : **10**
- A) Explain with diagrams the overall scheme of DES Encryption.
  - B) Explain with diagrams ECB and CBC operational modes of block cipher.
4. Explain in detail with diagrams the different types of security attacks. **10**

**Set Q**





## SECTION – II

5. Write answer to **any four** questions (**each** carries **5** marks) : **20**
- A) What is Kerberos ? List the requirements of Kerberos.
  - B) List and explain the functions of S/MIME.
  - C) Explain transport and tunnel mode of IPSec.
  - D) Explain with diagram the dual signing used in Secure Electronic Transaction (SET).
  - E) What is Intrusion Detection ? Explain any one approach to intrusion detection.
6. Write answer to **any one** question : **10**
- A) What is X-509 authentication service ? Explain in detail X-509 certificate.
  - B) Draw the format of ESP header of IPsec and explain.
7. What is a computer virus ? Which are it's three parts ? What are its phases ? How viruses are classified based on the target they attack and based on its concealment strategy ? **10**
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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
NETWORK SECURITY**

Day and Date : Monday, 15-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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 indicate full marks.**  
4) **All questions are compulsory.**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

(1×20=20)

- 1) For E-mail compatibility PGP uses \_\_\_\_\_ algorithm.  
A) ZIP                      B) CAST                      C) RSA/SHA                      D) Radix-64
- 2) In PGP service, SHA-1 is used to generate \_\_\_\_\_ bit hash code.  
A) 56                      B) 160                      C) 64                      D) 256
- 3) In Kerberos version 5 for encryption any algorithm may be used.  
A) True                      B) False
- 4) \_\_\_\_\_ mode operation can be used to setup a virtual private network.  
A) Tunnel                      B) Transport  
C) Block cipher                      D) None of the above
- 5) A security association is uniquely identified by \_\_\_\_\_ parameters.  
A) 4                      B) 3                      C) 2                      D) 1
- 6) SSL record protocol provides \_\_\_\_\_ services for SSL connection.  
A) Confidential                      B) Message Integrity  
C) Neither A nor B                      D) Both A and B
- 7) HTTPS refers to the combination of \_\_\_\_\_  
A) HTTP and SMTP                      B) HTTP and SLL  
C) HTTP and SET                      D) HTTP and SNMP
- 8) Honeypots are designed to \_\_\_\_\_  
A) Divert an attacker  
B) Collect information about the attacker's activity  
C) Collect attacker's Login Id  
D) Collect attacker's Password



- 9) Salt value used in
- A) Encryption
  - B) Confidentiality
  - C) SET
  - D) Password management
- 10) A firewall act as a packet filter
- A) True
  - B) False
  - C) Can't say
  - D) None of the above
- 11) The \_\_\_\_\_ is the only cryptosystem that exhibits what is referred to as perfect secrecy.
- A) Rotor Machine
  - B) Steganography
  - C) One-time Pad
  - D) Caesar cipher
- 12) Trying every possible key until an intelligible translation of the ciphertext into plaintext is obtained is called
- A) Transposition
  - B) Substitution
  - C) Brute force attack
  - D) Notarization
- 13) In \_\_\_\_\_ the statistical structure of the plain text is dissipated into long-range statistics of the cipher text.
- A) Confusion
  - B) Diffusion
  - C) Substitution
  - D) Permutation
- 14) Avalanche effect a desirable property of any encryption algorithm.
- A) True
  - B) False
  - C) Can't say
  - D) None of the above
- 15) An encryption scheme is \_\_\_\_\_ if the ciphertext generated by the scheme does not contain enough information to determine uniquely the corresponding plaintext.
- A) Conditionally secure
  - B) Unconditionally secure
  - C) One way secure
  - D) Two way secure
- 16) If a sender encrypts message with his private key then it achieves the purpose of
- A) Receiver Authentication
  - B) Confidentiality and sender authentication
  - C) Only confidentiality
  - D) None of the above
- 17) \_\_\_\_\_ appears to offer equal security for a smaller key size, thereby reducing processing overhead.
- A) RSA
  - B) CAST
  - C) Diffie-Hellman
  - D) ECC
- 18) \_\_\_\_\_ is function of all bits in a message and does not use key.
- A) MAC
  - B) Hashcode
  - C) DSS
  - D) Blinding
- 19) Authentication Technique involves the use of \_\_\_\_\_ to generate MAC.
- A) Public key
  - B) Secret key
  - C) Public and secret key
  - D) None of the above
- 20) Direct digital signature refers to a digital signature scheme that involves
- A) Destination and third party
  - B) Source, destination and third party
  - C) Only source and destination
  - D) Source and third party



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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
NETWORK SECURITY**

Day and Date : Monday, 15-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Figures to the **right** indicate **full** marks.  
2) **All** questions are **compulsory**.

SECTION – I

2. Write answer to **any four** questions (**each** carries **5** marks) : **20**
- A) Encrypt plaintext “solapur” and decrypt ciphertext with Caesar cipher for  $k = 3$ .
  - B) What is steganography ?
  - C) Perform encryption and decryption using RSA algorithm for  $P = 3$ ;  $q = 11$ ;  $e = 7$ ;  $M = 5$ .
  - D) Write a short note on Diffie-Hellman key exchange algorithm.
  - E) List the generally accepted requirements for cryptographic hash function H.
3. Write answer to **any one** question : **10**
- A) Explain with diagrams the overall scheme of DES Encryption.
  - B) Explain with diagrams ECB and CBC operational modes of block cipher.
4. Explain in detail with diagrams the different types of security attacks. **10**

**Set R**



## SECTION – II

5. Write answer to **any four** questions (**each** carries **5** marks) : **20**
- A) What is Kerberos ? List the requirements of Kerberos.
  - B) List and explain the functions of S/MIME.
  - C) Explain transport and tunnel mode of IPSec.
  - D) Explain with diagram the dual signing used in Secure Electronic Transaction (SET).
  - E) What is Intrusion Detection ? Explain any one approach to intrusion detection.
6. Write answer to **any one** question : **10**
- A) What is X-509 authentication service ? Explain in detail X-509 certificate.
  - B) Draw the format of ESP header of IPsec and explain.
7. What is a computer virus ? Which are it's three parts ? What are its phases ? How viruses are classified based on the target they attack and based on its concealment strategy ? **10**
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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
NETWORK SECURITY**

Day and Date : Monday, 15-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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 indicate full marks.**

4) **All questions are compulsory.**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

(1×20=20)

- 1) If a sender encrypts message with his private key then it achieves the purpose of
  - A) Receiver Authentication
  - B) Confidentiality and sender authentication
  - C) Only confidentiality
  - D) None of the above
- 2) \_\_\_\_\_ appears to offer equal security for a smaller key size, thereby reducing processing overhead.
  - A) RSA
  - B) CAST
  - C) Diffie-Hellman
  - D) ECC
- 3) \_\_\_\_\_ is function of all bits in a message and does not use key.
  - A) MAC
  - B) Hashcode
  - C) DSS
  - D) Blinding
- 4) Authentication Technique involves the use of \_\_\_\_\_ to generate MAC.
  - A) Public key
  - B) Secret key
  - C) Public and secret key
  - D) None of the above
- 5) Direct digital signature refers to a digital signature scheme that involves
  - A) Destination and third party
  - B) Source, destination and third party
  - C) Only source and destination
  - D) Source and third party
- 6) For E-mail compatibility PGP uses \_\_\_\_\_ algorithm.
  - A) ZIP
  - B) CAST
  - C) RSA/SHA
  - D) Radix-64
- 7) In PGP service, SHA-1 is used to generate \_\_\_\_\_ bit hash code.
  - A) 56
  - B) 160
  - C) 64
  - D) 256
- 8) In Kerberos version 5 for encryption any algorithm may be used.
  - A) True
  - B) False
- 9) \_\_\_\_\_ mode operation can be used to setup a virtual private network.
  - A) Tunnel
  - B) Transport
  - C) Block cipher
  - D) None of the above



- 10) A security association is uniquely identified by \_\_\_\_\_ parameters.  
A) 4                                      B) 3                                      C) 2                                      D) 1
- 11) SSL record protocol provides \_\_\_\_\_ services for SSL connection.  
A) Confidential                                      B) Message Integrity  
C) Neither A nor B                                      D) Both A and B
- 12) HTTPS refers to the combination of \_\_\_\_\_  
A) HTTP and SMTP                                      B) HTTP and SLL  
C) HTTP and SET                                      D) HTTP and SNMP
- 13) Honeypots are designed to \_\_\_\_\_  
A) Divert an attacker  
B) Collect information about the attacker's activity  
C) Collect attacker's Login Id  
D) Collect attacker's Password
- 14) Salt value used in  
A) Encryption                                      B) Confidentiality  
C) SET                                      D) Password management
- 15) A firewall act as a packet filter  
A) True                                      B) False  
C) Can't say                                      D) None of the above
- 16) The \_\_\_\_\_ is the only cryptosystem that exhibits what is referred to as perfect secrecy.  
A) Rotor Machine                                      B) Steganography  
C) One-time Pad                                      D) Caesar cipher
- 17) Trying every possible key until an intelligible translation of the ciphertext into plaintext is obtained is called  
A) Transposition                                      B) Substitution  
C) Brute force attack                                      D) Notarization
- 18) In \_\_\_\_\_ the statistical structure of the plain text is dissipated into long-range statistics of the cipher text.  
A) Confusion                                      B) Diffusion                                      C) Substitution                                      D) Permutation
- 19) Avalanche effect a desirable property of any encryption algorithm.  
A) True                                      B) False  
C) Can't say                                      D) None of the above
- 20) An encryption scheme is \_\_\_\_\_ if the ciphertext generated by the scheme does not contain enough information to determine uniquely the corresponding plaintext.  
A) Conditionally secure  
B) Unconditionally secure  
C) One way secure  
D) Two way secure
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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
NETWORK SECURITY**

Day and Date : Monday, 15-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :** 1) Figures to the **right** indicate **full** marks.  
2) **All** questions are **compulsory**.

SECTION – I

2. Write answer to **any four** questions (**each** carries **5** marks) : **20**
- A) Encrypt plaintext “solapur” and decrypt ciphertext with Caesar cipher for  $k = 3$ .
  - B) What is steganography ?
  - C) Perform encryption and decryption using RSA algorithm for  $P = 3$ ;  $q = 11$ ;  $e = 7$ ;  $M = 5$ .
  - D) Write a short note on Diffie-Hellman key exchange algorithm.
  - E) List the generally accepted requirements for cryptographic hash function H.
3. Write answer to **any one** question : **10**
- A) Explain with diagrams the overall scheme of DES Encryption.
  - B) Explain with diagrams ECB and CBC operational modes of block cipher.
4. Explain in detail with diagrams the different types of security attacks. **10**

**Set S**





## SECTION – II

5. Write answer to **any four** questions (**each** carries **5** marks) : **20**
- A) What is Kerberos ? List the requirements of Kerberos.
  - B) List and explain the functions of S/MIME.
  - C) Explain transport and tunnel mode of IPSec.
  - D) Explain with diagram the dual signing used in Secure Electronic Transaction (SET).
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6. Write answer to **any one** question : **10**
- A) What is X-509 authentication service ? Explain in detail X-509 certificate.
  - B) Draw the format of ESP header of IPsec and explain.
7. What is a computer virus ? Which are its three parts ? What are its phases ? How viruses are classified based on the target they attack and based on its concealment strategy ? **10**
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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017**  
**Elective : OBJECT ORIENTED MODELLING AND DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

- 1) OMT was developed as an approach to \_\_\_\_\_
  - a) Software Testing
  - b) Software Development
  - c) Software Design
  - d) Computer Programming
- 2) A \_\_\_\_\_ is a diagram that shows the configuration of run time processing nodes and the artifacts that live on them.
  - a) Collaboration Diagram
  - b) Communication Diagram
  - c) Deployment Diagram
  - d) Artifact Diagram
- 3) Polymorphism in OOD means \_\_\_\_\_
  - a) Data is quantized into discrete, distinguishable entities
  - b) Ability to behave differently on different classes
  - c) Sharing of attributes and operation based on relationship
  - d) Object with same structure and behavior are grouped together
- 4) A \_\_\_\_\_ is a sequence of events that occurs during one particular execution of a system.
  - a) Scenario
  - b) State Transaction
  - c) Trigger
  - d) Qualifier
- 5) A \_\_\_\_\_ is special attribute that reduces the effective multiplicity of an association.
  - a) Role Name
  - b) Qualifier
  - c) Link Attribute
  - d) None
- 6) Which one is the correct pairing for the following ?

|                     |                              |
|---------------------|------------------------------|
| P) Object Model     | i) Static aspect             |
| Q) Dynamic Model    | ii) Temporal aspect          |
| R) Functional Model | iii) Transformational aspect |

  - a) P – ii, Q – i, R – iii
  - b) P – i, Q – iii, R – ii
  - c) P – iii, Q – i, R – ii
  - d) P – i, Q – ii, R – iii
- 7) Role name indicates \_\_\_\_\_
  - a) One end of association
  - b) Both end of association
  - c) Both
  - d) None
- 8) Which one of the following should be supported by programming language for OMT ?
  - i) Data Structure
  - ii) Dynamic Flow of control
  - iii) Functional Transformation
  - a) Only i)
  - b) Both i) and ii)
  - c) All of the above
  - d) None of the above



- 9) Which of the following statement is true concerning objects and/or classes ?
- An object is an instance of a class
  - A class is an instance of an object
  - An object includes encapsulates only data
  - A class includes encapsulates only data
- 10) Aggregation is a \_\_\_\_\_ relationship between object classes.
- Part-Whole
  - Hierarchical
  - Unqualified
  - Qualified
- 11) An activity is associated with
- Event
  - State
  - Transaction
  - Condition
- 12) Consider the following statements for UML \_\_\_\_\_
- S1 : Interface cannot have direct instances.
- S2 : One can also associate signals with an interface.
- Only S1 is true
  - Only S2 is true
  - Both are false
  - Both are true
- 13) \_\_\_\_\_ is a realization of set of interfaces.
- Class
  - Collaboration
  - Component
  - None
- 14) \_\_\_\_\_ represents structural organization of object along with path for messages among object.
- Collaboration Diagram
  - Use case diagram
  - Component Diagram
  - State chart diagram
- 15) \_\_\_\_\_ is an ongoing nonatomic execution within a state machine.
- Event
  - State
  - Activity
  - Start State
- 16) Consider following statements :
- S1 : In the Dynamic Model, every trigger must map to an operation in the interface of a class.
- S2 : Every arrow incident on an object in an interaction Model represents an operation that must be in the interface of class.
- Only S1 is True
  - Only S2 is True
  - Both are True
  - Both are False
- 17) Single inheritance, Multiple inheritance and Aggregation comes under \_\_\_\_\_
- Hierarchy
  - Typing
  - Modularity
  - None of the mentioned
- 18) For understanding control mechanisms, such as user interfaces and device controllers, which one of the following UML artifacts is most useful ?
- Interaction Diagram
  - State Diagram
  - Package Diagram
  - Activity Diagram
- 19) State true/false :
- External events are those that pass between the system and its actors.
- True
  - False
- 20) A \_\_\_\_\_ diagram shows the organization and dependencies among a set of components.
- Deployment Diagram
  - Activity diagram
  - State Chart Diagram
  - Component Diagram



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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
Elective : OBJECT ORIENTED MODELLING AND DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(5×4=20)**
- 1) Explain in brief concept of Class and Object.
  - 2) List features of object oriented programming language.
  - 3) Compare between three models of OMT.
  - 4) Explain the concept of generalization and association.
  - 5) Explain advance links and association concepts.

3. What are the steps for constructing Functional Model ? **10**

**OR**

Explain with example how operations are specified in state diagram. **10**

4. Write a short note on : **10**
- A) Entry and Exit action
  - B) Role Name and Qualifier.

**SECTION – II**

5. Solve **any four** : **(5×4=20)**
- 1) Explain the concept of Package. How it is represented graphically ?
  - 2) What are building blocks of UML ?
  - 3) Define Node and component with example.
  - 4) Explain stereotypes, tagged values and notes in UML.
  - 5) Write a short note on sequence diagram.

**Set P**



6. Draw detail Use Case Diagram for Online Mobile Recharge System (e.g. Paytm) with all use cases and actor. **10**

OR

Draw and explain Sequence and Collaboration Diagram for ATM System. **10**

7. With an example explain statechart diagram with : **10**  
Initial State, State, Nested State, Composite State, Activity, Action, Event, Transition.

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- 8) Polymorphism in OOD means \_\_\_\_\_  
 a) Data is quantized into discrete, distinguishable entities  
 b) Ability to behave differently on different classes  
 c) Sharing of attributes and operation based on relationship  
 d) Object with same structure and behavior are grouped together
- 9) A \_\_\_\_\_ is a sequence of events that occurs during one particular execution of a system.  
 a) Scenario  
 b) State Transaction  
 c) Trigger  
 d) Qualifier
- 10) A \_\_\_\_\_ is special attribute that reduces the effective multiplicity of an association.  
 a) Role Name  
 b) Qualifier  
 c) Link Attribute  
 d) None
- 11) Which one is the correct pairing for the following ?  
 P) Object Model      i) Static aspect  
 Q) Dynamic Model    ii) Temporal aspect  
 R) Functional Model   iii) Transformational aspect  
 a) P – ii, Q – i, R – iii  
 b) P – i, Q – iii, R – ii  
 c) P – iii, Q – i, R – ii  
 d) P – i, Q – ii, R – iii
- 12) Role name indicates \_\_\_\_\_  
 a) One end of association  
 b) Both end of association  
 c) Both  
 d) None
- 13) Which one of the following should be supported by programming language for OMT ?  
 i) Data Structure  
 ii) Dynamic Flow of control  
 iii) Functional Transformation  
 a) Only i)  
 b) Both i) and ii)  
 c) All of the above  
 d) None of the above
- 14) Which of the following statement is true concerning objects and/or classes ?  
 a) An object is an instance of a class  
 b) A class is an instance of an object  
 c) An object includes encapsulates only data  
 d) A class includes encapsulates only data
- 15) Aggregation is a \_\_\_\_\_ relationship between object classes.  
 a) Part-Whole  
 b) Hierarchical  
 c) Unqualified  
 d) Qualified
- 16) An activity is associated with  
 a) Event  
 b) State  
 c) Transaction  
 d) Condition
- 17) Consider the following statements for UML \_\_\_\_\_  
 S1 : Interface cannot have direct instances.  
 S2 : One can also associate signals with an interface.  
 a) Only S1 is true  
 b) Only S2 is true  
 c) Both are false  
 d) Both are true
- 18) \_\_\_\_\_ is a realization of set of interfaces.  
 a) Class  
 b) Collaboration  
 c) Component  
 d) None
- 19) \_\_\_\_\_ represents structural organization of object along with path for messages among object.  
 a) Collaboration Diagram  
 b) Use case diagram  
 c) Component Diagram  
 d) State chart diagram
- 20) \_\_\_\_\_ is an ongoing nonatomic execution within a state machine.  
 a) Event  
 b) State  
 c) Activity  
 d) Start State



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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
Elective : OBJECT ORIENTED MODELLING AND DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(5×4=20)**

- 1) Explain in brief concept of Class and Object.
- 2) List features of object oriented programming language.
- 3) Compare between three models of OMT.
- 4) Explain the concept of generalization and association.
- 5) Explain advance links and association concepts.

3. What are the steps for constructing Functional Model ? **10**

**OR**

Explain with example how operations are specified in state diagram. **10**

4. Write a short note on : **10**

- A) Entry and Exit action
- B) Role Name and Qualifier.

**SECTION – II**

5. Solve **any four** : **(5×4=20)**

- 1) Explain the concept of Package. How it is represented graphically ?
- 2) What are building blocks of UML ?
- 3) Define Node and component with example.
- 4) Explain stereotypes, tagged values and notes in UML.
- 5) Write a short note on sequence diagram.

**Set Q**





6. Draw detail Use Case Diagram for Online Mobile Recharge System (e.g. Paytm) with all use cases and actor. **10**
- OR
- Draw and explain Sequence and Collaboration Diagram for ATM System. **10**
7. With an example explain statechart diagram with : **10**  
Initial State, State, Nested State, Composite State, Activity, Action, Event, Transition.
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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017**  
**Elective : OBJECT ORIENTED MODELLING AND DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

**Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

- 1) An activity is associated with  
a) Event                      b) State                      c) Transaction              d) Condition
- 2) Consider the following statements for UML \_\_\_\_\_  
S1 : Interface cannot have direct instances.  
S2 : One can also associate signals with an interface.  
a) Only S1 is true                      b) Only S2 is true  
c) Both are false                      d) Both are true
- 3) \_\_\_\_\_ is a realization of set of interfaces.  
a) Class                      b) Collaboration  
c) Component                      d) None
- 4) \_\_\_\_\_ represents structural organization of object along with path for messages among object.  
a) Collaboration Diagram                      b) Use case diagram  
c) Component Diagram                      d) State chart diagram
- 5) \_\_\_\_\_ is an ongoing nonatomic execution within a state machine.  
a) Event                      b) State                      c) Activity                      d) Start State
- 6) Consider following statements :  
S1 : In the Dynamic Model, every trigger must map to an operation in the interface of a class.  
S2 : Every arrow incident on an object in an interaction Model represents an operation that must be in the interface of class.  
a) Only S1 is True                      b) Only S2 is True  
c) Both are True                      d) Both are False
- 7) Single inheritance, Multiple inheritance and Aggregation comes under \_\_\_\_\_  
a) Hierarchy                      b) Typing  
c) Modularity                      d) None of the mentioned
- 8) For understanding control mechanisms, such as user interfaces and device controllers, which one of the following UML artifacts is most useful ?  
a) Interaction Diagram                      b) State Diagram  
c) Package Diagram                      d) Activity Diagram

P.T.O.





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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
Elective : OBJECT ORIENTED MODELLING AND DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(5×4=20)**
- 1) Explain in brief concept of Class and Object.
  - 2) List features of object oriented programming language.
  - 3) Compare between three models of OMT.
  - 4) Explain the concept of generalization and association.
  - 5) Explain advance links and association concepts.

3. What are the steps for constructing Functional Model ? **10**

**OR**

Explain with example how operations are specified in state diagram. **10**

4. Write a short note on : **10**
- A) Entry and Exit action
  - B) Role Name and Qualifier.

**SECTION – II**

5. Solve **any four** : **(5×4=20)**
- 1) Explain the concept of Package. How it is represented graphically ?
  - 2) What are building blocks of UML ?
  - 3) Define Node and component with example.
  - 4) Explain stereotypes, tagged values and notes in UML.
  - 5) Write a short note on sequence diagram.

**Set R**



6. Draw detail Use Case Diagram for Online Mobile Recharge System (e.g. Paytm) with all use cases and actor. **10**

OR

Draw and explain Sequence and Collaboration Diagram for ATM System. **10**

7. With an example explain statechart diagram with : **10**  
Initial State, State, Nested State, Composite State, Activity, Action, Event, Transition.

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**B.E. (Computer Science and Engg.) (Part – I) Examination, 2017  
Elective : OBJECT ORIENTED MODELLING AND DESIGN (Old)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** : **(5×4=20)**
- 1) Explain in brief concept of Class and Object.
  - 2) List features of object oriented programming language.
  - 3) Compare between three models of OMT.
  - 4) Explain the concept of generalization and association.
  - 5) Explain advance links and association concepts.

3. What are the steps for constructing Functional Model ? **10**

**OR**

Explain with example how operations are specified in state diagram. **10**

4. Write a short note on : **10**
- A) Entry and Exit action
  - B) Role Name and Qualifier.

**SECTION – II**

5. Solve **any four** : **(5×4=20)**
- 1) Explain the concept of Package. How it is represented graphically ?
  - 2) What are building blocks of UML ?
  - 3) Define Node and component with example.
  - 4) Explain stereotypes, tagged values and notes in UML.
  - 5) Write a short note on sequence diagram.

**Set S**





6. Draw detail Use Case Diagram for Online Mobile Recharge System (e.g. Paytm) with all use cases and actor. **10**

OR

Draw and explain Sequence and Collaboration Diagram for ATM System. **10**

7. With an example explain statechart diagram with : **10**  
Initial State, State, Nested State, Composite State, Activity, Action, Event, Transition.

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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
INFORMATION RETRIEVAL (Elective)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct option: (1×20=20)
- 1) Use of IR is more concerned with retrieving  
a) information      b) data      c) words      d) sentences
  - 2) Phrase query is sequence of \_\_\_\_\_ quires.  
a) boolean      b) single word      c) proximity      d) context
  - 3) Recall is fraction of relevant and \_\_\_\_\_ documents.  
a) modified      b) deleted  
c) retrieved      d) whole text collection
  - 4) \_\_\_\_\_ is the technique used in allowing error pattern matching.  
a) Distance function      b) LCS  
c) Edit distance      d) None of these
  - 5) In Boolean Model index term weights are \_\_\_\_\_ values.  
a) hexadecimal      b) octal      c) binary      d) decimal
  - 6) Documents have no match in vector model if cosine value is  
a) zero      b) one      c) ninety      d) sixty
  - 7) Precision is the ratio of retrieved and \_\_\_\_\_ documents.  
a) relevant      b) non relevant  
c) all doc. of database      d) modified
  - 8) SGML stands for  
a) Structured Generalized Mark-up Language  
b) Standard Generalized Mark-up Language  
c) Sequential Generalized Mark-up Language  
d) Soft Generalized Mark-up Language

P.T.O.





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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
INFORMATION RETRIEVAL (Elective)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. With typical example describe following quires 10  
a) AND                      b) OR                      c) BUT                      d) NOT
3. Attempt **any one** : 10  
a) Models for Browsing  
b) Explain Suffix trie, Suffix tree and Suffix array with example.
4. Write notes on (**any four**) : (5×4=20)  
a) Boolean Model  
b) Inverted Files  
c) Pattern matching  
d) Recall and Precision  
e) Characterization of IR Model.

SECTION – II

5. Describe MULTOS data model. 10
6. Attempt **any one** : 10  
a) Problems posed by web  
b) Describe Crawler-Indexer Architecture.
7. Write notes on (**any four**) : (5×4=20)  
a) Architectural issues of Digital Library  
b) Searching using Hyperlinks  
c) Harvest Architecture  
d) Distributed Collection in Digital Library  
e) Ranking Technique.





SLR-VB – 240

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| Seat No. |  |
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| Set | Q |
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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
INFORMATION RETRIEVAL (Elective)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct option: (1×20=20)

- 1) Digital Libraries are the part of \_\_\_\_\_ information infrastructure.  
a) whole                      b) global                      c) domestic                      d) none of these
- 2) An important meta data format is  
a) MARC                      b) CARC                      c) FARC                      d) DARC
- 3) Object index is pair of  
a) (BI, IMH)                      b) (MF, IMH)                      c) (BI, MF)                      d) none of these
- 4) GEMINI has also been applied for colour images with the \_\_\_\_\_ project of IBM.  
a) QDIC                      b) QCIC                      c) QBIC                      d) QQIC
- 5) Trying all possible pattern positions in text is \_\_\_\_\_ algorithm.  
a) KMP                      b) Boyer-Moore Family  
c) BF                      d) None of these
- 6) Use of IR is more concerned with retrieving  
a) information                      b) data                      c) words                      d) sentences
- 7) Phrase query is sequence of \_\_\_\_\_ quires.  
a) boolean                      b) single word                      c) proximity                      d) context
- 8) Recall is fraction of relevant and \_\_\_\_\_ documents.  
a) modified                      b) deleted  
c) retrieved                      d) whole text collection
- 9) \_\_\_\_\_ is the technique used in allowing error pattern matching.  
a) Distance function                      b) LCS  
c) Edit distance                      d) None of these

P.T.O.



- 10) In Boolean Model index term weights are \_\_\_\_\_ values.  
a) hexadecimal      b) octal      c) binary      d) decimal
- 11) Documents have no match in vector model if cosine value is  
a) zero      b) one      c) ninety      d) sixty
- 12) Precision is the ratio of retrieved and \_\_\_\_\_ documents.  
a) relevant      b) non relevant  
c) all doc. of database      d) modified
- 13) SGML stands for  
a) Structured Generalized Mark-up Language  
b) Standard Generalized Mark-up Language  
c) Sequential Generalized Mark-up Language  
d) Soft Generalized Mark-up Language
- 14) Structural queries allow querying based on  
a) text      b) structure  
c) text and structure      d) none of these
- 15) An inverted file is \_\_\_\_\_ oriented mechanism.  
a) sentence      b) data      c) word      d) letter
- 16) MULTOS data model is based on \_\_\_\_\_ architecture.  
a) client      b) server      c) client-server      d) two-tier
- 17) Crawler is the \_\_\_\_\_ that sends request to different remote web servers.  
a) process      b) program      c) data      d) information
- 18) TIFF stands for  
a) Tagged Image Frame Format      b) Tagged Image File Format  
c) Tagged Image Form Format      d) Tagged Image File Format
- 19) Harvest uses \_\_\_\_\_ architecture.  
a) client/server      b) centralized      c) distributed      d) none of these
- 20) MULTOS stands for  
a) Multimedia Officer Server      b) Multimedia Offline Server  
c) Multimedia Oriented Server      d) Multimedia Online Server
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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
INFORMATION RETRIEVAL (Elective)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. With typical example describe following quires 10  
a) AND                      b) OR                      c) BUT                      d) NOT
3. Attempt **any one** : 10  
a) Models for Browsing  
b) Explain Suffix trie, Suffix tree and Suffix array with example.
4. Write notes on (**any four**) : (5×4=20)  
a) Boolean Model  
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c) Pattern matching  
d) Recall and Precision  
e) Characterization of IR Model.

SECTION – II

5. Describe MULTOS data model. 10
6. Attempt **any one** : 10  
a) Problems posed by web  
b) Describe Crawler-Indexer Architecture.
7. Write notes on (**any four**) : (5×4=20)  
a) Architectural issues of Digital Library  
b) Searching using Hyperlinks  
c) Harvest Architecture  
d) Distributed Collection in Digital Library  
e) Ranking Technique.







SLR-VB – 240

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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
INFORMATION RETRIEVAL (Elective)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct option:

(1×20=20)

- 1) MULTOS data model is based on \_\_\_\_\_ architecture.  
a) client                      b) server                      c) client-server                      d) two-tier
- 2) Crawler is the \_\_\_\_\_ that sends request to different remote web servers.  
a) process                      b) program                      c) data                      d) information
- 3) TIFF stands for  
a) Tagged Image Frame Format                      b) Tagged Image File Format  
c) Tagged Image Form Format                      d) Tagged Image File Format
- 4) Harvest uses \_\_\_\_\_ architecture.  
a) client/server                      b) centralized                      c) distributed                      d) none of these
- 5) MULTOS stands for  
a) Multimedia Officer Server                      b) Multimedia Offline Server  
c) Multimedia Oriented Server                      d) Multimedia Online Server
- 6) Digital Libraries are the part of \_\_\_\_\_ information infrastructure.  
a) whole                      b) global                      c) domestic                      d) none of these
- 7) An important meta data format is  
a) MARC                      b) CARC                      c) FARC                      d) DARC
- 8) Object index is pair of  
a) (BI, IMH)                      b) (MF, IMH)                      c) (BI, MF)                      d) none of these
- 9) GEMINI has also been applied for colour images with the \_\_\_\_\_ project of IBM.  
a) QDIC                      b) QCIC                      c) QBIC                      d) QQIC

P.T.O.





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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
INFORMATION RETRIEVAL (Elective)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. With typical example describe following quires 10  
a) AND                      b) OR                      c) BUT                      d) NOT
3. Attempt **any one** : 10  
a) Models for Browsing  
b) Explain Suffix trie, Suffix tree and Suffix array with example.
4. Write notes on (**any four**) : (5×4=20)  
a) Boolean Model  
b) Inverted Files  
c) Pattern matching  
d) Recall and Precision  
e) Characterization of IR Model.

SECTION – II

5. Describe MULTOS data model. 10
6. Attempt **any one** : 10  
a) Problems posed by web  
b) Describe Crawler-Indexer Architecture.
7. Write notes on (**any four**) : (5×4=20)  
a) Architectural issues of Digital Library  
b) Searching using Hyperlinks  
c) Harvest Architecture  
d) Distributed Collection in Digital Library  
e) Ranking Technique.





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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
INFORMATION RETRIEVAL (Elective)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct option:

(1×20=20)

- 1) Documents have no match in vector model if cosine value is  
a) zero                      b) one                      c) ninety                      d) sixty
- 2) Precision is the ratio of retrieved and \_\_\_\_\_ documents.  
a) relevant                      b) non relevant  
c) all doc. of database                      d) modified
- 3) SGML stands for  
a) Structured Generalized Mark-up Language  
b) Standard Generalized Mark-up Language  
c) Sequential Generalized Mark-up Language  
d) Soft Generalized Mark-up Language
- 4) Structural queries allow querying based on  
a) text                      b) structure  
c) text and structure                      d) none of these
- 5) An inverted file is \_\_\_\_\_ oriented mechanism.  
a) sentence                      b) data                      c) word                      d) letter
- 6) MULTOS data model is based on \_\_\_\_\_ architecture.  
a) client                      b) server                      c) client-server                      d) two-tier
- 7) Crawler is the \_\_\_\_\_ that sends request to different remote web servers.  
a) process                      b) program                      c) data                      d) information
- 8) TIFF stands for  
a) Tagged Image Frame Format                      b) Tagged Image File Format  
c) Tagged Image Form Format                      d) Tagged Image File Format

P.T.O.



- 9) Harvest uses \_\_\_\_\_ architecture.  
a) client/server      b) centralized      c) distributed      d) none of these
- 10) MULTOS stands for  
a) Multimedia Officer Server      b) Multimedia Offline Server  
c) Multimedia Oriented Server      d) Multimedia Online Server
- 11) Digital Libraries are the part of \_\_\_\_\_ information infrastructure.  
a) whole      b) global      c) domestic      d) none of these
- 12) An important meta data format is  
a) MARC      b) CARC      c) FARC      d) DARC
- 13) Object index is pair of  
a) (BI, IMH)      b) (MF, IMH)      c) (BI, MF)      d) none of these
- 14) GEMINI has also been applied for colour images with the \_\_\_\_\_ project of IBM.  
a) QDIC      b) QCIC      c) QBIC      d) QQIC
- 15) Trying all possible pattern positions in text is \_\_\_\_\_ algorithm.  
a) KMP      b) Boyer-Moore Family  
c) BF      d) None of these
- 16) Use of IR is more concerned with retrieving  
a) information      b) data      c) words      d) sentences
- 17) Phrase query is sequence of \_\_\_\_\_ quires.  
a) boolean      b) single word      c) proximity      d) context
- 18) Recall is fraction of relevant and \_\_\_\_\_ documents.  
a) modified      b) deleted  
c) retrieved      d) whole text collection
- 19) \_\_\_\_\_ is the technique used in allowing error pattern matching.  
a) Distance function      b) LCS  
c) Edit distance      d) None of these
- 20) In Boolean Model index term weights are \_\_\_\_\_ values.  
a) hexadecimal      b) octal      c) binary      d) decimal
-



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**B.E. (CSE) (Part – I) (Old) Examination, 2017  
INFORMATION RETRIEVAL (Elective)**

Day and Date : Wednesday, 17-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. With typical example describe following quires 10  
a) AND                      b) OR                      c) BUT                      d) NOT
3. Attempt **any one** : 10  
a) Models for Browsing  
b) Explain Suffix trie, Suffix tree and Suffix array with example.
4. Write notes on (**any four**) : (5×4=20)  
a) Boolean Model  
b) Inverted Files  
c) Pattern matching  
d) Recall and Precision  
e) Characterization of IR Model.

SECTION – II

5. Describe MULTOS data model. 10
6. Attempt **any one** : 10  
a) Problems posed by web  
b) Describe Crawler-Indexer Architecture.
7. Write notes on (**any four**) : (5×4=20)  
a) Architectural issues of Digital Library  
b) Searching using Hyperlinks  
c) Harvest Architecture  
d) Distributed Collection in Digital Library  
e) Ranking Technique.







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Set **P**

**B.E. (CSE) (Part – II) Examination, 2017  
MANAGEMENT INFORMATION SYSTEM**

Day and Date : Tuesday, 16-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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** indicate full marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) The person who ensures that systems are developed on time, within budget and with acceptable quality is a
  - a) Create and share documents that support day to day office activities
  - b) Process business transactions
  - c) Capture and reproduce the knowledge of an expert problem solver
  - d) Use the transaction data to produce information needed by managers to run the business
- 2) The term used to describe those people whose jobs involve sponsoring and funding the project to develop, operate and maintain the information system is
  - a) Information worker
  - b) Internal system user
  - c) Systems owner
  - d) External system user
- 3) The back bone of any organization is
  - a) Information
  - b) Employee
  - c) Management
  - d) Capital
- 4) Decision makers who are concerned with tactical (short-term) operational problems and decision making are
  - a) Middle managers
  - b) Executive managers
  - c) Supervisor
  - d) Mobile Managers
- 5) The basic component(s) of DSS is(are)
  - a) Database
  - b) Model base
  - c) DSS support system
  - d) All of the above
- 6) GDSS is the short form of
  - a) Group decision support system
  - b) Group discussion support system
  - c) Group decisions service system
  - d) Group decision support source

P.T.O.



- 7) Information refers to
  - a) Process
  - b) Event
  - c) Data
  - d) Task
- 8) System is a group of elements organized with a
  - a) Purpose
  - b) Data
  - c) Instruction
  - d) Procedure
- 9) Assembling a product, identifying customers and hiring employees are
  - a) Transaction
  - b) Phases
  - c) Business Process
  - d) Business Function
- 10) Information systems can facilitate supply chain management by
  - a) Tracking the status of orders
  - b) Knowing the employee history
  - c) Profit and loss predictions
  - d) Stock verification
- 11) Staffing is behaviourally related to
  - a) Organizing
  - b) Controlling
  - c) Managing
  - d) Proceedings
- 12) EDP means
  - a) Electronic Data Process
  - b) Electronic Data Processing
  - c) Electronic Data Projection
  - d) Electronic Data Predict
- 13) Which of the following describes commerce ?
  - a) Doing business electronically
  - b) Doing business
  - c) Sales of goods
  - d) All of the above
- 14) Which of the following is part of the four main types for e-commerce ?
  - a) B2B
  - b) B2C
  - c) C2B
  - d) All of the above
- 15) Which segment do eBay, Amazon.com belong ?
  - a) B2Bs
  - b) B2Cs
  - c) C2Bs
  - d) C2Cs
- 16) HRM stands for
  - a) Human Resource Manager
  - b) Human Resource Management
  - c) Human Re Manager
  - d) Human Re Management
- 17) Which functional area is responsible for taking customer orders ?
  - a) Marketing and Sales
  - b) Production and Materials Management
  - c) Accounting and Finance
  - d) Human Resource
- 18) Which term relates to the technical capabilities that allow systems to connect with one another through standardized interfaces called Web services ?
  - a) Enterprise Resource Planning
  - b) Supply chain Management
  - c) Architecture
  - d) Service-Oriented Architecture
- 19) Information systems that allow data to be shared throughout the organization are called \_\_\_\_\_ systems.
  - a) Unintegrated
  - b) Integrated
  - c) Unrestricted
  - d) Bounded
- 20) If a university sets up a web-based information system that faculty could access to record student grades and to advise students, that would be an example of a/an
  - a) CRM
  - b) Intranet
  - c) ERP
  - d) Extranet



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**B.E. (CSE) (Part – II) Examination, 2017  
MANAGEMENT INFORMATION SYSTEM**

Day and Date : Tuesday, 16-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Answer to two Sections should be written in the same answer book.**

SECTION – I

2. Solve **any four** short notes : **(4×5=20)**
- 1) Discuss the various MIS technologies that could be used to create a virtual organisation.
  - 2) Who are the users of MIS in E-Business environment ? Identify key information needs of each user.
  - 3) Explain Balance Score Card, Score Card and Dash Board.
  - 4) Explain the principal causes of MIS failure.
  - 5) What is Strategy ? Explain different types of strategy.
3. Can MIS be helpful in information organisation ? Discuss. **10**

OR

In what ways do you think organisation structure influence MIS and in turn MIS influence the organizational structure ? Discuss.

4. How can a DSS help to make decision ? How do MIS and DSS differ ? **10**

SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) Explain the concept of M-Commerce.
  - 2) Explain common myths about ERP.
  - 3) What is software audit ? Explain.
  - 4) How to generate revenue in E-Business models ? Explain.
  - 5) How the information needs of MNCs differ from those of domestic firm ?

**Set P**



6. Explain E-Commerce Business Models. **10**

OR

What are the steps involved in the system design and system implementation of computer based information system ?

7. What is ERP ? Explain with suitable example. **10**

OR

How strategy developed in organisations through MIS ? Give suitable example to illustrate your understanding.

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Set **Q**

**B.E. (CSE) (Part – II) Examination, 2017  
MANAGEMENT INFORMATION SYSTEM**

Day and Date : Tuesday, 16-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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** indicate full marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) HRM stands for
  - a) Human Resource Manager
  - b) Human Resource Management
  - c) Human Re Manager
  - d) Human Re Management
- 2) Which functional area is responsible for taking customer orders ?
  - a) Marketing and Sales
  - b) Production and Materials Management
  - c) Accounting and Finance
  - d) Human Resource
- 3) Which term relates to the technical capabilities that allow systems to connect with one another through standardized interfaces called Web services ?
  - a) Enterprise Resource Planning
  - b) Supply chain Management
  - c) Architecture
  - d) Service-Oriented Architecture
- 4) Information systems that allow data to be shared throughout the organization are called \_\_\_\_\_ systems.
  - a) Unintegrated
  - b) Integrated
  - c) Unrestricted
  - d) Bounded
- 5) If a university sets up a web-based information system that faculty could access to record student grades and to advise students, that would be an example of a/an
  - a) CRM
  - b) Intranet
  - c) ERP
  - d) Extranet
- 6) The person who ensures that systems are developed on time, within budget and with acceptable quality is a
  - a) Create and share documents that support day to day office activities
  - b) Process business transactions
  - c) Capture and reproduce the knowledge of an expert problem solver
  - d) Use the transaction data to produce information needed by managers to run the business

P.T.O.



- 7) The term used to describe those people whose jobs involve sponsoring and funding the project to develop, operate and maintain the information system is
  - a) Information worker
  - b) Internal system user
  - c) Systems owner
  - d) External system user
- 8) The back bone of any organization is
  - a) Information
  - b) Employee
  - c) Management
  - d) Capital
- 9) Decision makers who are concerned with tactical (short-term) operational problems and decision making are
  - a) Middle managers
  - b) Executive managers
  - c) Supervisor
  - d) Mobile Managers
- 10) The basic component(s) of DSS is(are)
  - a) Database
  - b) Model base
  - c) DSS support system
  - d) All of the above
- 11) GDSS is the short form of
  - a) Group decision support system
  - b) Group discussion support system
  - c) Group decisions service system
  - d) Group decision support source
- 12) Information refers to
  - a) Process
  - b) Event
  - c) Data
  - d) Task
- 13) System is a group of elements organized with a
  - a) Purpose
  - b) Data
  - c) Instruction
  - d) Procedure
- 14) Assembling a product, identifying customers and hiring employees are
  - a) Transaction
  - b) Phases
  - c) Business Process
  - d) Business Function
- 15) Information systems can facilitate supply chain management by
  - a) Tracking the status of orders
  - b) Knowing the employee history
  - c) Profit and loss predictions
  - d) Stock verification
- 16) Staffing is behaviourally related to
  - a) Organizing
  - b) Controlling
  - c) Managing
  - d) Proceedings
- 17) EDP means
  - a) Electronic Data Process
  - b) Electronic Data Processing
  - c) Electronic Data Projection
  - d) Electronic Data Predict
- 18) Which of the following describes commerce ?
  - a) Doing business electronically
  - b) Doing business
  - c) Sales of goods
  - d) All of the above
- 19) Which of the following is part of the four main types for e-commerce ?
  - a) B2B
  - b) B2C
  - c) C2B
  - d) All of the above
- 20) Which segment do eBay, Amazon.com belong ?
  - a) B2Bs
  - b) B2Cs
  - c) C2Bs
  - d) C2Cs



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**B.E. (CSE) (Part – II) Examination, 2017  
MANAGEMENT INFORMATION SYSTEM**

Day and Date : Tuesday, 16-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Answer to two Sections should be written in the same answer book.**

SECTION – I

2. Solve **any four** short notes : **(4×5=20)**
- 1) Discuss the various MIS technologies that could be used to create a virtual organisation.
  - 2) Who are the users of MIS in E-Business environment ? Identify key information needs of each user.
  - 3) Explain Balance Score Card, Score Card and Dash Board.
  - 4) Explain the principal causes of MIS failure.
  - 5) What is Strategy ? Explain different types of strategy.
3. Can MIS be helpful in information organisation ? Discuss. **10**

OR

In what ways do you think organisation structure influence MIS and in turn MIS influence the organizational structure ? Discuss.

4. How can a DSS help to make decision ? How do MIS and DSS differ ? **10**

SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) Explain the concept of M-Commerce.
  - 2) Explain common myths about ERP.
  - 3) What is software audit ? Explain.
  - 4) How to generate revenue in E-Business models ? Explain.
  - 5) How the information needs of MNCs differ from those of domestic firm ?

**Set Q**





6. Explain E-Commerce Business Models. **10**

OR

What are the steps involved in the system design and system implementation of computer based information system ?

7. What is ERP ? Explain with suitable example. **10**

OR

How strategy developed in organisations through MIS ? Give suitable example to illustrate your understanding.

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Set **R**

**B.E. (CSE) (Part – II) Examination, 2017  
MANAGEMENT INFORMATION SYSTEM**

Day and Date : Tuesday, 16-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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** indicate full marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) Staffing is behaviourally related to
  - a) Organizing
  - b) Controlling
  - c) Managing
  - d) Proceedings
- 2) EDP means
  - a) Electronic Data Process
  - b) Electronic Data Processing
  - c) Electronic Data Projection
  - d) Electronic Data Predict
- 3) Which of the following describes commerce ?
  - a) Doing business electronically
  - b) Doing business
  - c) Sales of goods
  - d) All of the above
- 4) Which of the following is part of the four main types for e-commerce ?
  - a) B2B
  - b) B2C
  - c) C2B
  - d) All of the above
- 5) Which segment do eBay, Amazon.com belong ?
  - a) B2Bs
  - b) B2Cs
  - c) C2Bs
  - d) C2Cs
- 6) HRM stands for
  - a) Human Resource Manager
  - b) Human Resource Management
  - c) Human Re Manager
  - d) Human Re Management
- 7) Which functional area is responsible for taking customer orders ?
  - a) Marketing and Sales
  - b) Production and Materials Management
  - c) Accounting and Finance
  - d) Human Resource
- 8) Which term relates to the technical capabilities that allow systems to connect with one another through standardized interfaces called Web services ?
  - a) Enterprise Resource Planning
  - b) Supply chain Management
  - c) Architecture
  - d) Service-Oriented Architecture

P.T.O.





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**B.E. (CSE) (Part – II) Examination, 2017  
MANAGEMENT INFORMATION SYSTEM**

Day and Date : Tuesday, 16-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Answer to two Sections should be written in the same answer book.**

SECTION – I

2. Solve **any four** short notes : **(4×5=20)**
- 1) Discuss the various MIS technologies that could be used to create a virtual organisation.
  - 2) Who are the users of MIS in E-Business environment ? Identify key information needs of each user.
  - 3) Explain Balance Score Card, Score Card and Dash Board.
  - 4) Explain the principal causes of MIS failure.
  - 5) What is Strategy ? Explain different types of strategy.
3. Can MIS be helpful in information organisation ? Discuss. **10**

OR

In what ways do you think organisation structure influence MIS and in turn MIS influence the organizational structure ? Discuss.

4. How can a DSS help to make decision ? How do MIS and DSS differ ? **10**

SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) Explain the concept of M-Commerce.
  - 2) Explain common myths about ERP.
  - 3) What is software audit ? Explain.
  - 4) How to generate revenue in E-Business models ? Explain.
  - 5) How the information needs of MNCs differ from those of domestic firm ?

**Set R**



6. Explain E-Commerce Business Models. **10**

OR

What are the steps involved in the system design and system implementation of computer based information system ?

7. What is ERP ? Explain with suitable example. **10**

OR

How strategy developed in organisations through MIS ? Give suitable example to illustrate your understanding.

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**B.E. (CSE) (Part – II) Examination, 2017  
MANAGEMENT INFORMATION SYSTEM**

Day and Date : Tuesday, 16-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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** indicate full marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) GDSS is the short form of
  - a) Group decision support system
  - b) Group discussion support system
  - c) Group decisions service system
  - d) Group decision support source
- 2) Information refers to
  - a) Process
  - b) Event
  - c) Data
  - d) Task
- 3) System is a group of elements organized with a
  - a) Purpose
  - b) Data
  - c) Instruction
  - d) Procedure
- 4) Assembling a product, identifying customers and hiring employees are
  - a) Transaction
  - b) Phases
  - c) Business Process
  - d) Business Function
- 5) Information systems can facilitate supply chain management by
  - a) Tracking the status of orders
  - b) Knowing the employee history
  - c) Profit and loss predictions
  - d) Stock verification
- 6) Staffing is behaviourally related to
  - a) Organizing
  - b) Controlling
  - c) Managing
  - d) Proceedings
- 7) EDP means
  - a) Electronic Data Process
  - b) Electronic Data Processing
  - c) Electronic Data Projection
  - d) Electronic Data Predict
- 8) Which of the following describes commerce ?
  - a) Doing business electronically
  - b) Doing business
  - c) Sales of goods
  - d) All of the above
- 9) Which of the following is part of the four main types for e-commerce ?
  - a) B2B
  - b) B2C
  - c) C2B
  - d) All of the above

P.T.O.



- 10) Which segment do eBay, Amazon.com belong ?  
a) B2Bs                      b) B2Cs                      c) C2Bs                      d) C2Cs
- 11) HRM stands for  
a) Human Resource Manager                      b) Human Resource Management  
c) Human Re Manager                      d) Human Re Management
- 12) Which functional area is responsible for taking customer orders ?  
a) Marketing and Sales                      b) Production and Materials Management  
c) Accounting and Finance                      d) Human Resource
- 13) Which term relates to the technical capabilities that allow systems to connect with one another through standardized interfaces called Web services ?  
a) Enterprise Resource Planning                      b) Supply chain Management  
c) Architecture                      d) Service-Oriented Architecture
- 14) Information systems that allow data to be shared throughout the organization are called \_\_\_\_\_ systems.  
a) Unintegrated                      b) Integrated  
c) Unrestricted                      d) Bounded
- 15) If a university sets up a web-based information system that faculty could access to record student grades and to advise students, that would be an example of a/an  
a) CRM                      b) Intranet                      c) ERP                      d) Extranet
- 16) The person who ensures that systems are developed on time, within budget and with acceptable quality is a  
a) Create and share documents that support day to day office activities  
b) Process business transactions  
c) Capture and reproduce the knowledge of an expert problem solver  
d) Use the transaction data to produce information needed by managers to run the business
- 17) The term used to describe those people whose jobs involve sponsoring and funding the project to develop, operate and maintain the information system is  
a) Information worker                      b) Internal system user  
c) Systems owner                      d) External system user
- 18) The back bone of any organization is  
a) Information                      b) Employee                      c) Management                      d) Capital
- 19) Decision makers who are concerned with tactical (short-term) operational problems and decision making are  
a) Middle managers                      b) Executive managers  
c) Supervisor                      d) Mobile Managers
- 20) The basic component(s) of DSS is(are)  
a) Database                      b) Model base  
c) DSS support system                      d) All of the above



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**B.E. (CSE) (Part – II) Examination, 2017  
MANAGEMENT INFORMATION SYSTEM**

Day and Date : Tuesday, 16-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Answer to two Sections should be written in the same answer book.**

SECTION – I

2. Solve **any four** short notes : **(4×5=20)**
- 1) Discuss the various MIS technologies that could be used to create a virtual organisation.
  - 2) Who are the users of MIS in E-Business environment ? Identify key information needs of each user.
  - 3) Explain Balance Score Card, Score Card and Dash Board.
  - 4) Explain the principal causes of MIS failure.
  - 5) What is Strategy ? Explain different types of strategy.
3. Can MIS be helpful in information organisation ? Discuss. **10**

OR

In what ways do you think organisation structure influence MIS and in turn MIS influence the organizational structure ? Discuss.

4. How can a DSS help to make decision ? How do MIS and DSS differ ? **10**

SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) Explain the concept of M-Commerce.
  - 2) Explain common myths about ERP.
  - 3) What is software audit ? Explain.
  - 4) How to generate revenue in E-Business models ? Explain.
  - 5) How the information needs of MNCs differ from those of domestic firm ?

**Set S**





6. Explain E-Commerce Business Models. **10**

OR

What are the steps involved in the system design and system implementation of computer based information system ?

7. What is ERP ? Explain with suitable example. **10**

OR

How strategy developed in organisations through MIS ? Give suitable example to illustrate your understanding.

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SLR-VB – 242

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**B.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
INFORMATION AND CYBER SECURITY**

Day and Date : Thursday, 18-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) In block cipher, the advantage of larger block size is
  - A) Greater Security
  - B) Increase encryption/decryption speed
  - C) Hardware implementation is easy
  - D) None of these
- 2) Which of the following is true ?
  - i) MAC algorithm need not be reversible
  - ii) It is many-to-one function
  - iii) MAC is used to provide authentication but not confidentiality

A) only i                      B) i and ii                      C) only ii                      D) all
- 3) Vigenere Cipher is
  - A) Monoalphabetic Cipher
  - B) Playfair cipher
  - C) Polyalphabetic cipher
  - D) One Time Pad
- 4) \_\_\_\_\_ is a technique for hiding a secret message within a larger one in such a way that others cannot discern the presence or contents of the hidden message.
  - A) Cryptography
  - B) Steganography
  - C) Block cipher
  - D) Stream cipher
- 5) Plaintext is written down as a sequence of diagonals and then read off as a sequence of rows in
  - A) Transposition technique
  - B) Railfence technique
  - C) Substitution technique
  - D) None of these
- 6) Hash functions can be used for
  - A) Intrusion detection
  - B) Virus detection
  - C) Both A and B
  - D) None of these
- 7) SHA-1 has a hash value of
  - A) 160 bits
  - B) 512 bits
  - C) 256 bits
  - D) 161 bits

P.T.O.



- 8) \_\_\_\_\_ is one in which the letters of plaintext are replaced by other letters or by numbers or symbols.  
A) Transposition Technique                      B) Substitution Technique  
C) Both    D) None of these
- 9) Which of the following are used to generate a message digest by the network security protocols ?  
1) RSA            2) SHA-1            3) DES            4) MD5  
A) 1 and 3 only            B) 2 and 3 only            C) 2 and 4 only            D) 3 and 4 only
- 10) \_\_\_\_\_ mode is used to convert DES into a stream cipher.  
A) CFB                      B) OFB                      C) CBC                      D) A or B
- 11) An internet standard approach to e-mail security is provided by  
A) SET                      B) RSA                      C) PGP                      D) S/MIME
- 12) The SSL Record Protocol provides  
A) Confidentiality                                      B) Message Integrity  
C) Neither A nor B                                      D) Both A and B
- 13) The TLS is an Proposed Internet Standard defined in  
A) RFC 2248                      B) RFC 2246                      C) RFC 2244                      D) RFC 2240
- 14) The financial institution that establishes an account with a merchant and processes payments is called  
A) Issuer    B) Acquirer  
C) Payment-Gateway                                      D) Certificate Authority
- 15) \_\_\_\_\_ is a fraud involving another person's identity for an illicit purpose.  
A) E-Mail Spoofing                                      B) Identity Theft  
C) Password Sniffing                                      D) Web Jacking
- 16) \_\_\_\_\_ is a software program that can copy itself and infect the data or information, without the user's knowledge.  
A) Computer Virus                                      B) Computer Worm  
C) Antivirus    D) All of these
- 17) \_\_\_\_\_ is a software program, self-replicating in nature, which spreads through network and also it can send copies through the network with or without user intervention.  
A) Antivirus    B) Computer Worm  
C) Computer Virus    D) All of these
- 18) \_\_\_\_\_ infects the storage media on which OS is stored and which is used to start the computer system.  
A) Program viruses                                      B) Mulpartite viruses  
C) Boot sector viruses                                      D) Polymorphic viruses
- 19) \_\_\_\_\_ acts like a "chameleon" that changes its virus signature every time it spreads through the system.  
A) Mulpartite viruses                                      B) Program viruses  
C) Boot sector viruses                                      D) Polymorphic viruses
- 20) \_\_\_\_\_ is a program in which malicious or harmful code is contained inside apparently harmless programming or data in such a way that it can get control and cause harm.  
A) Trojan Horse                      B) Backdoor                      C) Antivirus                      D) All of these



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**B.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
INFORMATION AND CYBER SECURITY**

Day and Date : Thursday, 18-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain different types of active attacks.
  - b) Explain CFB (Cipher Feedback mode) of operation with diagram.
  - c) Illustrate the working of single round of DES with diagram.
  - d) What is MAC ? State the requirements of uses of MAC.
  - e) Perform encryption and decryption using RSA algorithm for the following  $p = 3, q = 13, e = 5, M = 10$ .
3. Attempt **any one** : **10**
- a) Explain various security services and mechanisms of X.800 OSI security architecture.
  - b) What are the principles of public key cryptography ? Explain Diffie-Hellman Key Exchange with example.
4. Explain matrix construction and rules for encrypting text in playfair cipher. Construct the playfair matrix with the key "occurrence". **10**

SECTION – II

5. Attempt **any four (Each carries 5 marks)** : **20**
- A) Explain Proxy Servers and Anonymizers in detail.
  - B) Explain Strong, Weak and Random Passwords.
  - C) Who are cybercriminals ?
  - D) How to prevent SQL Injection Attacks ?
  - E) Write a note on Steganography.
6. Attempt **any one** : **10**
- A) Explain Types or Levels of DoS Attacks.
  - B) What are the basic requirements, key features and participants in SET transactions ?
7. What is PGP ? Explain PGP message generation and reception with a diagram. **10**

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**Set P**





SLR-VB – 242

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**B.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
INFORMATION AND CYBER SECURITY**

Day and Date : Thursday, 18-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : (20×1=20)

- 1) \_\_\_\_\_ is a software program that can copy itself and infect the data or information, without the user's knowledge.  
A) Computer Virus  
B) Computer Worm  
C) Antivirus  
D) All of these
- 2) \_\_\_\_\_ is a software program, self-replicating in nature, which spreads through network and also it can send copies through the network with or without user intervention.  
A) Antivirus  
B) Computer Worm  
C) Computer Virus  
D) All of these
- 3) \_\_\_\_\_ infects the storage media on which OS is stored and which is used to start the computer system.  
A) Program viruses  
B) Multipartite viruses  
C) Boot sector viruses  
D) Polymorphic viruses
- 4) \_\_\_\_\_ acts like a "chameleon" that changes its virus signature every time it spreads through the system.  
A) Multipartite viruses  
B) Program viruses  
C) Boot sector viruses  
D) Polymorphic viruses
- 5) \_\_\_\_\_ is a program in which malicious or harmful code is contained inside apparently harmless programming or data in such a way that it can get control and cause harm.  
A) Trojan Horse  
B) Backdoor  
C) Antivirus  
D) All of these
- 6) In block cipher, the advantage of larger block size is  
A) Greater Security  
B) Increase encryption/decryption speed  
C) Hardware implementation is easy  
D) None of these
- 7) Which of the following is true ?
  - i) MAC algorithm need not be reversible
  - ii) It is many-to-one function
  - iii) MAC is used to provide authentication but not confidentialityA) only i  
B) i and ii  
C) only ii  
D) all

P.T.O.



- 8) Vigenere Cipher is  
A) Monoalphabetic Cipher                      B) Playfair cipher  
C) Polyalphabetic cipher                      D) One Time Pad
- 9) \_\_\_\_\_ is a technique for hiding a secret message within a larger one in such a way that others cannot discern the presence or contents of the hidden message.  
A) Cryptography                      B) Steganography  
C) Block cipher                      D) Stream cipher
- 10) Plaintext is written down as a sequence of diagonals and then read off as a sequence of rows in  
A) Transposition technique                      B) Railfence technique  
C) Substitution technique                      D) None of these
- 11) Hash functions can be used for  
A) Intrusion detection                      B) Virus detection  
C) Both A and B                      D) None of these
- 12) SHA-1 has a hash value of  
A) 160 bits                      B) 512 bits                      C) 256 bits                      D) 161 bits
- 13) \_\_\_\_\_ is one in which the letters of plaintext are replaced by other letters or by numbers or symbols.  
A) Transposition Technique                      B) Substitution Technique  
C) Both                      D) None of these
- 14) Which of the following are used to generate a message digest by the network security protocols ?  
1) RSA                      2) SHA-1                      3) DES                      4) MD5  
A) 1 and 3 only                      B) 2 and 3 only                      C) 2 and 4 only                      D) 3 and 4 only
- 15) \_\_\_\_\_ mode is used to convert DES into a stream cipher.  
A) CFB                      B) OFB                      C) CBC                      D) A or B
- 16) An internet standard approach to e-mail security is provided by  
A) SET                      B) RSA                      C) PGP                      D) S/MIME
- 17) The SSL Record Protocol provides  
A) Confidentiality                      B) Message Integrity  
C) Neither A nor B                      D) Both A and B
- 18) The TLS is an Proposed Internet Standard defined in  
A) RFC 2248                      B) RFC 2246                      C) RFC 2244                      D) RFC 2240
- 19) The financial institution that establishes an account with a merchant and processes payments is called  
A) Issuer                      B) Acquirer  
C) Payment-Gateway                      D) Certificate Authority
- 20) \_\_\_\_\_ is a fraud involving another person's identity for an illicit purpose.  
A) E-Mail Spoofing                      B) Identity Theft  
C) Password Sniffing                      D) Web Jacking



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**B.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
INFORMATION AND CYBER SECURITY**

Day and Date : Thursday, 18-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain different types of active attacks.
  - b) Explain CFB (Cipher Feedback mode) of operation with diagram.
  - c) Illustrate the working of single round of DES with diagram.
  - d) What is MAC ? State the requirements of uses of MAC.
  - e) Perform encryption and decryption using RSA algorithm for the following  $p = 3$ ,  $q = 13$ ,  $e = 5$ ,  $M = 10$ .
3. Attempt **any one** : **10**
- a) Explain various security services and mechanisms of X.800 OSI security architecture.
  - b) What are the principles of public key cryptography ? Explain Diffie-Hellman Key Exchange with example.
4. Explain matrix construction and rules for encrypting text in playfair cipher. Construct the playfair matrix with the key "occurrence". **10**

SECTION – II

5. Attempt **any four (Each carries 5 marks)** : **20**
- A) Explain Proxy Servers and Anonymizers in detail.
  - B) Explain Strong, Weak and Random Passwords.
  - C) Who are cybercriminals ?
  - D) How to prevent SQL Injection Attacks ?
  - E) Write a note on Steganography.
6. Attempt **any one** : **10**
- A) Explain Types or Levels of DoS Attacks.
  - B) What are the basic requirements, key features and participants in SET transactions ?
7. What is PGP ? Explain PGP message generation and reception with a diagram. **10**

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**Set Q**







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Set **R**

**B.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
INFORMATION AND CYBER SECURITY**

Day and Date : Thursday, 18-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) An internet standard approach to e-mail security is provided by  
A) SET                      B) RSA                      C) PGP                      D) S/MIME
- 2) The SSL Record Protocol provides  
A) Confidentiality                      B) Message Integrity  
C) Neither A nor B                      D) Both A and B
- 3) The TLS is an Proposed Internet Standard defined in  
A) RFC 2248                      B) RFC 2246                      C) RFC 2244                      D) RFC 2240
- 4) The financial institution that establishes an account with a merchant and processes payments is called  
A) Issuer                      B) Acquirer  
C) Payment-Gateway                      D) Certificate Authority
- 5) \_\_\_\_\_ is a fraud involving another person's identity for an illicit purpose.  
A) E-Mail Spoofing                      B) Identity Theft  
C) Password Sniffing                      D) Web Jacking
- 6) \_\_\_\_\_ is a software program that can copy itself and infect the data or information, without the user's knowledge.  
A) Computer Virus                      B) Computer Worm  
C) Antivirus                      D) All of these
- 7) \_\_\_\_\_ is a software program, self-replicating in nature, which spreads through network and also it can send copies through the network with or without user intervention.  
A) Antivirus                      B) Computer Worm  
C) Computer Virus                      D) All of these
- 8) \_\_\_\_\_ infects the storage media on which OS is stored and which is used to start the computer system.  
A) Program viruses                      B) Mulpartite viruses  
C) Boot sector viruses                      D) Polymorphic viruses

P.T.O.





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**B.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
INFORMATION AND CYBER SECURITY**

Day and Date : Thursday, 18-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain different types of active attacks.
  - b) Explain CFB (Cipher Feedback mode) of operation with diagram.
  - c) Illustrate the working of single round of DES with diagram.
  - d) What is MAC ? State the requirements of uses of MAC.
  - e) Perform encryption and decryption using RSA algorithm for the following  $p = 3, q = 13, e = 5, M = 10$ .
3. Attempt **any one** : **10**
- a) Explain various security services and mechanisms of X.800 OSI security architecture.
  - b) What are the principles of public key cryptography ? Explain Diffie-Hellman Key Exchange with example.
4. Explain matrix construction and rules for encrypting text in playfair cipher. Construct the playfair matrix with the key "occurrence". **10**

SECTION – II

5. Attempt **any four (Each carries 5 marks)** : **20**
- A) Explain Proxy Servers and Anonymizers in detail.
  - B) Explain Strong, Weak and Random Passwords.
  - C) Who are cybercriminals ?
  - D) How to prevent SQL Injection Attacks ?
  - E) Write a note on Steganography.
6. Attempt **any one** : **10**
- A) Explain Types or Levels of DoS Attacks.
  - B) What are the basic requirements, key features and participants in SET transactions ?
7. What is PGP ? Explain PGP message generation and reception with a diagram. **10**

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**Set R**





SLR-VB – 242

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**B.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
INFORMATION AND CYBER SECURITY**

Day and Date : Thursday, 18-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Hash functions can be used for
  - A) Intrusion detection
  - B) Virus detection
  - C) Both A and B
  - D) None of these
- 2) SHA-1 has a hash value of
  - A) 160 bits
  - B) 512 bits
  - C) 256 bits
  - D) 161 bits
- 3) \_\_\_\_\_ is one in which the letters of plaintext are replaced by other letters or by numbers or symbols.
  - A) Transposition Technique
  - B) Substitution Technique
  - C) Both
  - D) None of these
- 4) Which of the following are used to generate a message digest by the network security protocols ?
  - 1) RSA
  - 2) SHA-1
  - 3) DES
  - 4) MD5
  - A) 1 and 3 only
  - B) 2 and 3 only
  - C) 2 and 4 only
  - D) 3 and 4 only
- 5) \_\_\_\_\_ mode is used to convert DES into a stream cipher.
  - A) CFB
  - B) OFB
  - C) CBC
  - D) A or B
- 6) An internet standard approach to e-mail security is provided by
  - A) SET
  - B) RSA
  - C) PGP
  - D) S/MIME
- 7) The SSL Record Protocol provides
  - A) Confidentiality
  - B) Message Integrity
  - C) Neither A nor B
  - D) Both A and B
- 8) The TLS is an Proposed Internet Standard defined in
  - A) RFC 2248
  - B) RFC 2246
  - C) RFC 2244
  - D) RFC 2240
- 9) The financial institution that establishes an account with a merchant and processes payments is called
  - A) Issuer
  - B) Acquirer
  - C) Payment-Gateway
  - D) Certificate Authority

P.T.O.





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**B.E. (Computer Science & Engg.) (Part – II) Examination, 2017  
INFORMATION AND CYBER SECURITY**

Day and Date : Thursday, 18-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain different types of active attacks.
  - b) Explain CFB (Cipher Feedback mode) of operation with diagram.
  - c) Illustrate the working of single round of DES with diagram.
  - d) What is MAC ? State the requirements of uses of MAC.
  - e) Perform encryption and decryption using RSA algorithm for the following  $p = 3, q = 13, e = 5, M = 10$ .
3. Attempt **any one** : **10**
- a) Explain various security services and mechanisms of X.800 OSI security architecture.
  - b) What are the principles of public key cryptography ? Explain Diffie-Hellman Key Exchange with example.
4. Explain matrix construction and rules for encrypting text in playfair cipher. Construct the playfair matrix with the key "occurrence". **10**

SECTION – II

5. Attempt **any four (Each carries 5 marks)** : **20**
- A) Explain Proxy Servers and Anonymizers in detail.
  - B) Explain Strong, Weak and Random Passwords.
  - C) Who are cybercriminals ?
  - D) How to prevent SQL Injection Attacks ?
  - E) Write a note on Steganography.
6. Attempt **any one** : **10**
- A) Explain Types or Levels of DoS Attacks.
  - B) What are the basic requirements, key features and participants in SET transactions ?
7. What is PGP ? Explain PGP message generation and reception with a diagram. **10**

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**Set S**







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| Set | P |
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**B.E. (CSE) (Part – II) Examination, 2017  
DATA WAREHOUSING AND MINING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

I. Choose the correct answers :

20

- 1) Which of the following is a predictive model ?
  - a) Clustering
  - b) Association
  - c) Summarization
  - d) Associative rule
- 2) \_\_\_\_\_ is not a approach to handle missing data.
  - a) Ignore the missing value
  - b) Assume a value for missing data
  - c) Both a) and b)
  - d) None
- 3) Data mining application domain are
  - a) Biomedical
  - b) DNA Data analysis
  - c) Financial Data Analysis
  - d) All
- 4) In \_\_\_\_\_ groups are not predefined.
  - a) Clustering
  - b) Classification
  - c) Both a) and b)
  - d) None
- 5) Which among the following is an example of spatial databases ?
  - a) Stock Price Database
  - b) Daily Temperature
  - c) GIS database
  - d) Super Market Transaction
- 6) The data warehouse is \_\_\_\_\_
  - a) read only
  - b) write only
  - c) read write only
  - d) none
- 7) A \_\_\_\_\_ model identifies patterns or relationships.
  - a) Descriptive
  - b) Predictive
  - c) Regression
  - d) Time Series analysis

P.T.O.



- 8) What is ETL stand for ?  
a) Execute Transmit and Load      b) Extract Transform and Load  
c) Excute Transform and Load      d) All
- 9) Which association algorithm uses “Any subset of large item set must be large” property of large item set ?  
a) Partitioning      b) Sampling      c) Apriori      d) None of above
- 10) \_\_\_\_\_ algorithm of clustering large databases handles outlier well.  
a) DBSCAN      b) CURE      c) BIRCH      d) All of above
- 11) \_\_\_\_\_ is a spatial database primitive.  
a) Time      b) Direction      c) Transaction item      d) None
- 12) Trend Analysis can be done on \_\_\_\_\_ data.  
a) Spatial      b) Transaction item sets      c) Time Series      d) None of these
- 13) Converting data from different sources into a common format for processing is called as \_\_\_\_\_  
a) selection      b) preprocessing      c) Transformation      d) Interpretation
- 14) In \_\_\_\_\_ clustering also the minimum distance  $d_{min}(C_i, C_j)$  is used to measure the distance between clusters.  
a) BIRCH      b) DBSCAN      c) Nearest Neighbour      d) None of above
- 15) \_\_\_\_\_ is a height balanced tree that stores the clustering features for a hierarchial clustering.  
a) HB tree      b) B+ Tree      c) NF Tree      d) CF Tree
- 16) The “IF” – part of a rule is known as \_\_\_\_\_  
a) Rule Antecedent      b) Rule Consequent  
c) Action      d) None of these
- 17) The data is stored, retrieved and updated in \_\_\_\_\_  
a) OLAP      b) OLTP      c) SMTP      d) FTP
- 18) ID3 uses \_\_\_\_\_ as its attribute selection measure.  
a) Attribute gain      b) Selection gain      c) Gini Index      d) Information Gain
- 19) Social Network mining can be done by \_\_\_\_\_  
a) Graph Mining      b) Tree Mining      c) Tree Pruning      d) None
- 20) The KDD process consist of \_\_\_\_\_ steps.  
a) Three      b) Four      c) Five      d) Six
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**B.E. (CSE) (Part – II) Examination, 2017  
DATA WAREHOUSING AND MINING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

II. Answer **any four** : **(4×5=20)**

- a) Explain KDD process in detail.
- b) Describe distance based algorithm.
- c) Draw the architecture of warehouse. List out of functions of warehouse.
- d) Explain the difference between relational database and data mining.
- e) Explain linear and non-linear regression.

III. Answer **any one** : **(1×10=10)**

- a) Explain what are major difficulties in data mining.
- b) Explain classification and prediction with an example.

IV. Explain data warehouse schemas. **10**

SECTION – II

V. Answer **any four** : **(4×5=20)**

- a) Explain in brief spatial data mining.
- b) Explain different step involved text mining.
- c) Write BIRCH clustering algorithm.
- d) What is the social impact of data mining ?
- e) Write a short note on graph mining.

VI. Answer **any one** : **(1×10=10)**

- 1) Write K-means and K-medoid algorithm and explain with an example.
- 2) Explain different types of data used in cluster analysis.

VII. Explain web structure mining in detail. **10**

**Set P**





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**B.E. (CSE) (Part – II) Examination, 2017  
DATA WAREHOUSING AND MINING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

I. Choose the correct answers :

**20**

- 1) The "IF" – part of a rule is known as \_\_\_\_\_  
a) Rule Antecedent                      b) Rule Consequent  
c) Action                                      d) None of these
- 2) The data is stored, retrieved and updated in \_\_\_\_\_  
a) OLAP                      b) OLTP                      c) SMTP                      d) FTP
- 3) ID3 uses \_\_\_\_\_ as its attribute selection measure.  
a) Attribute gain    b) Selection gain    c) Gini Index              d) Information Gain
- 4) Social Network mining can be done by \_\_\_\_\_  
a) Graph Mining    b) Tree Mining        c) Tree Pruning        d) None
- 5) The KDD process consist of \_\_\_\_\_ steps.  
a) Three                      b) Four                      c) Five                      d) Six
- 6) Which of the following is a predictive model ?  
a) Clustering                                      b) Association  
c) Summarization                                      d) Associative rule
- 7) \_\_\_\_\_ is not a approach to handle missing data.  
a) Ignore the missing value                      b) Assume a value for missing data  
c) Both a) and b)                                      d) None
- 8) Data mining application domain are  
a) Biomedical                                      b) DNA Data analysis  
c) Financial Data Analysis                      d) All

P.T.O.



- 9) In \_\_\_\_\_ groups are not predefined.  
a) Clustering    b) Classification    c) Both a) and b)    d) None
- 10) Which among the following is an example of spatial databases ?  
a) Stock Price Database    b) Daily Temperature  
c) GIS database    d) Super Market Transaction
- 11) The data warehouse is \_\_\_\_\_  
a) read only    b) write only    c) read write only    d) none
- 12) A \_\_\_\_\_ model identifies patterns or relationships.  
a) Descriptive    b) Predictive  
c) Regression    d) Time Series analysis
- 13) What is ETL stand for ?  
a) Execute Transmit and Load    b) Extract Transform and Load  
c) Excute Transform and Load    d) All
- 14) Which association algorithm uses “Any subset of large item set must be large” property of large item set ?  
a) Partitioning    b) Sampling    c) Apriori    d) None of above
- 15) \_\_\_\_\_ algorithm of clustering large databases handles outlier well.  
a) DBSCAN    b) CURE    c) BIRCH    d) All of above
- 16) \_\_\_\_\_ is a spatial database primitive.  
a) Time    b) Direction    c) Transaction item    d) None
- 17) Trend Analysis can be done on \_\_\_\_\_ data.  
a) Spatial    b) Transaction item sets    c) Time Series    d) None of these
- 18) Converting data from different sources into a common format for processing is called as \_\_\_\_\_  
a) selection    b) preprocessing    c) Transformation    d) Interpretation
- 19) In \_\_\_\_\_ clustering also the minimum distance  $d_{min}(C_i, C_j)$  is used to measure the distance between clusters.  
a) BIRCH    b) DBSCAN    c) Nearest Neighbour    d) None of above
- 20) \_\_\_\_\_ is a height balanced tree that stores the clustering features for a hierarchial clustering.  
a) HB tree    b) B+ Tree    c) NF Tree    d) CF Tree
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**B.E. (CSE) (Part – II) Examination, 2017  
DATA WAREHOUSING AND MINING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

II. Answer **any four** : **(4×5=20)**

- a) Explain KDD process in detail.
- b) Describe distance based algorithm.
- c) Draw the architecture of warehouse. List out of functions of warehouse.
- d) Explain the difference between relational database and data mining.
- e) Explain linear and non-linear regression.

III. Answer **any one** : **(1×10=10)**

- a) Explain what are major difficulties in data mining.
- b) Explain classification and prediction with an example.

IV. Explain data warehouse schemas. **10**

SECTION – II

V. Answer **any four** : **(4×5=20)**

- a) Explain in brief spatial data mining.
- b) Explain different step involved text mining.
- c) Write BIRCH clustering algorithm.
- d) What is the social impact of data mining ?
- e) Write a short note on graph mining.

VI. Answer **any one** : **(1×10=10)**

- 1) Write K-means and K-medoid algorithm and explain with an example.
- 2) Explain different types of data used in cluster analysis.

VII. Explain web structure mining in detail. **10**







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**B.E. (CSE) (Part – II) Examination, 2017**  
**DATA WAREHOUSING AND MINING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*  
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.*

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

I. Choose the correct answers :

**20**

- 1) \_\_\_\_\_ is a spatial database primitive.  
a) Time                      b) Direction                      c) Transaction item                      d) None
- 2) Trend Analysis can be done on \_\_\_\_\_ data.  
a) Spatial                      b) Transaction item sets                      c) Time Series                      d) None of these
- 3) Converting data from different sources into a common format for processing is called as \_\_\_\_\_.  
a) selection                      b) preprocessing                      c) Transformation                      d) Interpretation
- 4) In \_\_\_\_\_ clustering also the minimum distance  $d_{min}(C_i, C_j)$  is used to measure the distance between clusters.  
a) BIRCH                      b) DBSCAN                      c) Nearest Neighbour                      d) None of above
- 5) \_\_\_\_\_ is a height balanced tree that stores the clustering features for a hierarchical clustering.  
a) HB tree                      b) B+ Tree                      c) NF Tree                      d) CF Tree
- 6) The "IF" – part of a rule is known as \_\_\_\_\_.  
a) Rule Antecedent                      b) Rule Consequent  
c) Action                      d) None of these
- 7) The data is stored, retrieved and updated in \_\_\_\_\_.  
a) OLAP                      b) OLTP  
c) SMTP                      d) FTP

P.T.O.



- 8) ID3 uses \_\_\_\_\_ as its attribute selection measure.  
a) Attribute gain   b) Selection gain   c) Gini Index   d) Information Gain
- 9) Social Network mining can be done by \_\_\_\_\_  
a) Graph Mining   b) Tree Mining   c) Tree Pruning   d) None
- 10) The KDD process consist of \_\_\_\_\_ steps.  
a) Three   b) Four   c) Five   d) Six
- 11) Which of the following is a predictive model ?  
a) Clustering   b) Association  
c) Summarization   d) Associative rule
- 12) \_\_\_\_\_ is not a approach to handle missing data.  
a) Ignore the missing value   b) Assume a value for missing data  
c) Both a) and b)   d) None
- 13) Data mining application domain are  
a) Biomedical   b) DNA Data analysis  
c) Financial Data Analysis   d) All
- 14) In \_\_\_\_\_ groups are not predefined.  
a) Clustering   b) Classification   c) Both a) and b)   d) None
- 15) Which among the following is an example of spatial databases ?  
a) Stock Price Database   b) Daily Temperature  
c) GIS database   d) Super Market Transaction
- 16) The data warehouse is \_\_\_\_\_  
a) read only   b) write only   c) read write only   d) none
- 17) A \_\_\_\_\_ model identifies patterns or relationships.  
a) Descriptive   b) Predictive  
c) Regression   d) Time Series analysis
- 18) What is ETL stand for ?  
a) Execute Transmit and Load   b) Extract Transform and Load  
c) Excute Transform and Load   d) All
- 19) Which association algorithm uses “Any subset of large item set must be large” property of large item set ?  
a) Partitioning   b) Sampling   c) Apriori   d) None of above
- 20) \_\_\_\_\_ algorithm of clustering large databases handles outlier well.  
a) DBSCAN   b) CURE   c) BIRCH   d) All of above



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**B.E. (CSE) (Part – II) Examination, 2017  
DATA WAREHOUSING AND MINING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

II. Answer **any four** : **(4×5=20)**

- a) Explain KDD process in detail.
- b) Describe distance based algorithm.
- c) Draw the architecture of warehouse. List out of functions of warehouse.
- d) Explain the difference between relational database and data mining.
- e) Explain linear and non-linear regression.

III. Answer **any one** : **(1×10=10)**

- a) Explain what are major difficulties in data mining.
- b) Explain classification and prediction with an example.

IV. Explain data warehouse schemas. **10**

SECTION – II

V. Answer **any four** : **(4×5=20)**

- a) Explain in brief spatial data mining.
- b) Explain different step involved text mining.
- c) Write BIRCH clustering algorithm.
- d) What is the social impact of data mining ?
- e) Write a short note on graph mining.

VI. Answer **any one** : **(1×10=10)**

- 1) Write K-means and K-medoid algorithm and explain with an example.
- 2) Explain different types of data used in cluster analysis.

VII. Explain web structure mining in detail. **10**

Set R





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**B.E. (CSE) (Part – II) Examination, 2017**  
**DATA WAREHOUSING AND MINING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

I. Choose the correct answers :

**20**

- 1) The data warehouse is \_\_\_\_\_  
a) read only      b) write only      c) read write only      d) none
- 2) A \_\_\_\_\_ model identifies patterns or relationships.  
a) Descriptive      b) Predictive  
c) Regression      d) Time Series analysis
- 3) What is ETL stand for ?  
a) Execute Transmit and Load      b) Extract Transform and Load  
c) Excute Transform and Load      d) All
- 4) Which association algorithm uses "Any subset of large item set must be large" property of large item set ?  
a) Partitioning      b) Sampling      c) Apriori      d) None of above
- 5) \_\_\_\_\_ algorithm of clustering large databases handles outlier well.  
a) DBSCAN      b) CURE      c) BIRCH      d) All of above
- 6) \_\_\_\_\_ is a spatial database primitive.  
a) Time      b) Direction      c) Transaction item      d) None
- 7) Trend Analysis can be done on \_\_\_\_\_ data.  
a) Spatial      b) Transaction item sets  
c) Time Series      d) None of these

P.T.O.



- 8) Converting data from different sources into a common format for processing is called as \_\_\_\_\_  
a) selection      b) preprocessing      c) Transformation      d) Interpretation
- 9) In \_\_\_\_\_ clustering also the minimum distance  $d_{min}(C_i, C_j)$  is used to measure the distance between clusters.  
a) BIRCH      b) DBSCAN      c) Nearest Neighbour      d) None of above
- 10) \_\_\_\_\_ is a height balanced tree that stores the clustering features for a hierarchical clustering.  
a) HB tree      b) B+ Tree      c) NF Tree      d) CF Tree
- 11) The “IF” – part of a rule is known as \_\_\_\_\_  
a) Rule Antecedent      b) Rule Consequent  
c) Action      d) None of these
- 12) The data is stored, retrieved and updated in \_\_\_\_\_  
a) OLAP      b) OLTP      c) SMTP      d) FTP
- 13) ID3 uses \_\_\_\_\_ as its attribute selection measure.  
a) Attribute gain      b) Selection gain      c) Gini Index      d) Information Gain
- 14) Social Network mining can be done by \_\_\_\_\_  
a) Graph Mining      b) Tree Mining      c) Tree Pruning      d) None
- 15) The KDD process consist of \_\_\_\_\_ steps.  
a) Three      b) Four      c) Five      d) Six
- 16) Which of the following is a predictive model ?  
a) Clustering      b) Association  
c) Summarization      d) Associative rule
- 17) \_\_\_\_\_ is not a approach to handle missing data.  
a) Ignore the missing value      b) Assume a value for missing data  
c) Both a) and b)      d) None
- 18) Data mining application domain are  
a) Biomedical      b) DNA Data analysis  
c) Financial Data Analysis      d) All
- 19) In \_\_\_\_\_ groups are not predefined.  
a) Clustering      b) Classification      c) Both a) and b)      d) None
- 20) Which among the following is an example of spatial databases ?  
a) Stock Price Database      b) Daily Temperature  
c) GIS database      d) Super Market Transaction



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**B.E. (CSE) (Part – II) Examination, 2017  
DATA WAREHOUSING AND MINING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

II. Answer **any four** : **(4×5=20)**

- a) Explain KDD process in detail.
- b) Describe distance based algorithm.
- c) Draw the architecture of warehouse. List out of functions of warehouse.
- d) Explain the difference between relational database and data mining.
- e) Explain linear and non-linear regression.

III. Answer **any one** : **(1×10=10)**

- a) Explain what are major difficulties in data mining.
- b) Explain classification and prediction with an example.

IV. Explain data warehouse schemas. **10**

SECTION – II

V. Answer **any four** : **(4×5=20)**

- a) Explain in brief spatial data mining.
- b) Explain different step involved text mining.
- c) Write BIRCH clustering algorithm.
- d) What is the social impact of data mining ?
- e) Write a short note on graph mining.

VI. Answer **any one** : **(1×10=10)**

- 1) Write K-means and K-medoid algorithm and explain with an example.
- 2) Explain different types of data used in cluster analysis.

VII. Explain web structure mining in detail. **10**

**Set S**







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Set **P**

**B.E. (Computer Science and Engineering) (Part – II) Examination, 2017  
IMAGE PROCESSING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**(20×1=20)**

- 1) Mask's response to zero means
  - A) sum to zero
  - B) subtraction to zero
  - C) division to zero
  - D) multiplication to zero
- 2) Image can be blurred using
  - A) low pass filter
  - B) contouring
  - C) erosion
  - D) high pass filter
- 3) Image can be sharpened using
  - A) low pass filter
  - B) contouring
  - C) erosion
  - D) high pass filter
- 4) Gaussian noise is referred to as
  - A) red noise
  - B) black noise
  - C) white noise
  - D) normal noise
- 5) Convolution in spatial domain is multiplication in
  - A) frequency domain
  - B) time domain
  - C) spatial domain
  - D) plane
- 6) Linear functions possesses the property of
  - A) additivity
  - B) homogeneity
  - C) multiplication
  - D) both A and B
- 7) PDF in image processing is called
  - A) Probability Degraded Function
  - B) Probability Density Function
  - C) Probabilistic Degraded Function
  - D) Probabilistic Density Function
- 8) Filter that replaces the pixel value with the medians of intensity levels is
  - A) Arithmetic mean filter
  - B) Geometric mean filter
  - C) Median filter
  - D) Sequence mean filter

P.T.O.



- 9) Compressed image can be recovered back by  
A) image enhancement                      B) image decompression  
C) image contrast                              D) image equalization
- 10) Digital video is sequence of  
A) pixels                      B) matrix                      C) frames                      D) coordinates
- 11) Any region of a binary image can be viewed as a sequence of alternating string of 0s and 1s, \_\_\_\_\_ represent this string followed by its length.  
A) Run-Length Codes                      B) Moment  
C) Chain codes                              D) None of these
- 12) 1D DFT matrices are symmetric  
A) True                      B) False                      C) Cant' Say                      D) None of above
- 13) The type of redundancy used in Data compression  
A) Coding                                      B) Spatial and Temporal  
C) Irrelevant Information                      D) All above
- 14) The cosine transform is a fast transform  
A) True                      B) False                      C) Cant' Say                      D) None of above
- 15) The Handmard Transform is a fast transform  
A) True                      B) False                      C) Cant' Say                      D) None of above
- 16) Moment representation method uses  
A) Moment matching                      B) Orthogonal moment  
C) Moment Invariants                      D) All of above
- 17) One of the most popular method for removing coding redundancy is  
A) Huffman coding                              B) Golomb Coding  
C) Arithmetic Coding                              D) None of above
- 18) A mapping is said to be \_\_\_\_\_ if the pixels of the original 2D intensity array can be reconstructed without error from the transformed data set.  
A) Original                      B) Reversible                      C) Both A and B                      D) None
- 19) The file having extension GIF stands for  
A) Graphical International Format                      B) Graphic Interchange Format  
C) Graphical International Font                      D) None of above
- 20) Which of the following transformation is useful in digital hardware implementation ?  
A) DFT                      B) Cosine                      C) Handmard                      D) All
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**B.E. (Computer Science and Engineering) (Part – II) Examination, 2017  
IMAGE PROCESSING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) Figures to the **right** indicate **full** marks.  
2) Assume data **wherever** necessary.  
3) **Use** legible handwriting, use blue/black **only**.

SECTION – I

2. Attempt **any four**. **(4×5=20)**
- a) What is quad tree ? What are the problems associated with hierarchical image representation ?
  - b) What is Pyramid ? Differentiate M pyramid and T pyramid.
  - c) What are the elements of visual perception ? Explain any two elements.
  - d) Define the following terms pixel adjacency, region, border, hole and edge.
  - e) What is image restoration ?
3. Attempt **any one**. **10**
- a) Write a note on any two edge detection approaches.
  - b) Explain the following operators to detect edge direction.  
Roberts operator, Laplace operator, Prewitt operator, Sobel operator and Robinson operator.
4. Compare edge based segmentation and region based segmentation. **10**

SECTION – II

5. Answer **any four** of the following. **(4×5=20)**
- 1) Describe the Run-Length coding method of Image compression.
  - 2) Explain Wavelet Transform in 1D.

**Set P**



- 3) List and explain applications of Image Transform.
- 4) Write a note on – Convex Hull.
- 5) List and explain internationally sanctioned image compression standards.

6. Attempt **any two**.

**(2×10=20)**

- 1) Explain the method of Handmard Transform in detail.
  - 2) Describe Chain Codes approach of representation.
  - 3) Describe following types of Redundancy
    - a) Coding Redundancy
    - b) Spatial and Temporal Redundancy.
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Set **Q**

**B.E. (Computer Science and Engineering) (Part – II) Examination, 2017  
IMAGE PROCESSING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**(20×1=20)**

- 1) Moment representation method uses
  - A) Moment matching
  - B) Orthogonal moment
  - C) Moment Invariants
  - D) All of above
- 2) One of the most popular method for removing coding redundancy is
  - A) Huffman coding
  - B) Golomb Coding
  - C) Arithmetic Coding
  - D) None of above
- 3) A mapping is said to be \_\_\_\_\_ if the pixels of the original 2D intensity array can be reconstructed without error from the transformed data set.
  - A) Original
  - B) Reversible
  - C) Both A and B
  - D) None
- 4) The file having extension GIF stands for
  - A) Graphical International Format
  - B) Graphic Interchange Format
  - C) Graphical International Font
  - D) None of above
- 5) Which of the following transformation is useful in digital hardware implementation ?
  - A) DFT
  - B) Cosine
  - C) Handmard
  - D) All
- 6) Mask's response to zero means
  - A) sum to zero
  - B) subtraction to zero
  - C) division to zero
  - D) multiplication to zero
- 7) Image can be blurred using
  - A) low pass filter
  - B) contouring
  - C) erosion
  - D) high pass filter

P.T.O.



- 8) Image can be sharpened using  
A) low pass filter    B) contouring    C) erosion    D) high pass filter
- 9) Gaussian noise is referred to as  
A) red noise    B) black noise    C) white noise    D) normal noise
- 10) Convolution in spatial domain is multiplication in  
A) frequency domain    B) time domain  
C) spatial domain    D) plane
- 11) Linear functions possesses the property of  
A) additivity    B) homogeneity  
C) multiplication    D) both A and B
- 12) PDF in image processing is called  
A) Probability Degraded Function    B) Probability Density Function  
C) Probabilistic Degraded Function    D) Probabilistic Density Function
- 13) Filter that replaces the pixel value with the medians of intensity levels is  
A) Arithmetic mean filter    B) Geometric mean filter  
C) Median filter    D) Sequence mean filter
- 14) Compressed image can be recovered back by  
A) image enhancement    B) image decompression  
C) image contrast    D) image equalization
- 15) Digital video is sequence of  
A) pixels    B) matrix    C) frames    D) coordinates
- 16) Any region or a binary image can be viewed as a sequence of alternating string of 0s and 1s, \_\_\_\_\_ represent this string followed by its length.  
A) Run-Length Codes    B) Moment  
C) Chain codes    D) None of these
- 17) 1D DFT matrices are symmetric  
A) True    B) False    C) Cant' Say    D) None of above
- 18) The type of redundancy used in Data compression  
A) Coding    B) Spatial and Temporal  
C) Irrelevant Information    D) All above
- 19) The cosine transform is a fast transform  
A) True    B) False    C) Cant' Say    D) None of above
- 20) The Handmard Transform is a fast transform  
A) True    B) False    C) Cant' Say    D) None of above



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**B.E. (Computer Science and Engineering) (Part – II) Examination, 2017**  
**IMAGE PROCESSING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) Figures to the **right** indicate **full** marks.  
2) Assume data **wherever** necessary.  
3) **Use** legible handwriting, use blue/black **only**.

SECTION – I

2. Attempt **any four**. **(4×5=20)**
- a) What is quad tree ? What are the problems associated with hierarchical image representation ?
  - b) What is Pyramid ? Differentiate M pyramid and T pyramid.
  - c) What are the elements of visual perception ? Explain any two elements.
  - d) Define the following terms pixel adjacency, region, border, hole and edge.
  - e) What is image restoration ?
3. Attempt **any one**. **10**
- a) Write a note on any two edge detection approaches.
  - b) Explain the following operators to detect edge direction.  
Roberts operator, Laplace operator, Prewitt operator, Sobel operator and Robinson operator.
4. Compare edge based segmentation and region based segmentation. **10**

SECTION – II

5. Answer **any four** of the following. **(4×5=20)**
- 1) Describe the Run-Length coding method of Image compression.
  - 2) Explain Wavelet Transform in 1D.

**Set Q**





- 3) List and explain applications of Image Transform.
- 4) Write a note on – Convex Hull.
- 5) List and explain internationally sanctioned image compression standards.

6. Attempt **any two**.

**(2×10=20)**

- 1) Explain the method of Handmard Transform in detail.
  - 2) Describe Chain Codes approach of representation.
  - 3) Describe following types of Redundancy
    - a) Coding Redundancy
    - b) Spatial and Temporal Redundancy.
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**B.E. (Computer Science and Engineering) (Part – II) Examination, 2017  
IMAGE PROCESSING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**

- 1) Any region or a binary image can be viewed as a sequence of alternating string of 0s and 1s, \_\_\_\_\_ represent this string followed by its length.  
A) Run-Length Codes                      B) Moment  
C) Chain codes                              D) None of these
- 2) 1D DFT matrices are symmetric  
A) True                      B) False                      C) Cant' Say                      D) None of above
- 3) The type of redundancy used in Data compression  
A) Coding                      B) Spatial and Temporal  
C) Irrelevant Information                      D) All above
- 4) The cosine transform is a fast transform  
A) True                      B) False                      C) Cant' Say                      D) None of above
- 5) The Handmard Transform is a fast transform  
A) True                      B) False                      C) Cant' Say                      D) None of above
- 6) Moment representation method uses  
A) Moment matching                      B) Orthogonal moment  
C) Moment Invariants                      D) All of above
- 7) One of the most popular method for removing coding redundancy is  
A) Huffman coding                      B) Golomb Coding  
C) Arithmetic Coding                      D) None of above

P.T.O.



- 8) A mapping is said to be \_\_\_\_\_ if the pixels of the original 2D intensity array can be reconstructed without error from the transformed data set.  
A) Original                      B) Reversible                      C) Both A and B                      D) None
- 9) The file having extension GIF stands for  
A) Graphical International Format                      B) Graphic Interchange Format  
C) Graphical International Font                      D) None of above
- 10) Which of the following transformation is useful in digital hardware implementation ?  
A) DFT                      B) Cosine                      C) Handmard                      D) All
- 11) Mask's response to zero means  
A) sum to zero                      B) subtraction to zero  
C) division to zero                      D) multiplication to zero
- 12) Image can be blurred using  
A) low pass filter                      B) contouring                      C) erosion                      D) high pass filter
- 13) Image can be sharpened using  
A) low pass filter                      B) contouring                      C) erosion                      D) high pass filter
- 14) Gaussian noise is referred to as  
A) red noise                      B) black noise                      C) white noise                      D) normal noise
- 15) Convolution in spatial domain is multiplication in  
A) frequency domain                      B) time domain  
C) spatial domain                      D) plane
- 16) Linear functions possesses the property of  
A) additivity                      B) homogeneity  
C) multiplication                      D) both A and B
- 17) PDF in image processing is called  
A) Probability Degraded Function                      B) Probability Density Function  
C) Probabilistic Degraded Function                      D) Probabilistic Density Function
- 18) Filter that replaces the pixel value with the medians of intensity levels is  
A) Arithmetic mean filter                      B) Geometric mean filter  
C) Median filter                      D) Sequence mean filter
- 19) Compressed image can be recovered back by  
A) image enhancement                      B) image decompression  
C) image contrast                      D) image equalization
- 20) Digital video is sequence of  
A) pixels                      B) matrix                      C) frames                      D) coordinates
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**B.E. (Computer Science and Engineering) (Part – II) Examination, 2017  
IMAGE PROCESSING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) Figures to the **right** indicate **full** marks.  
2) Assume data **wherever** necessary.  
3) **Use** legible handwriting, use blue/black **only**.

SECTION – I

2. Attempt **any four**. **(4×5=20)**
- a) What is quad tree ? What are the problems associated with hierarchical image representation ?
  - b) What is Pyramid ? Differentiate M pyramid and T pyramid.
  - c) What are the elements of visual perception ? Explain any two elements.
  - d) Define the following terms pixel adjacency, region, border, hole and edge.
  - e) What is image restoration ?
3. Attempt **any one**. **10**
- a) Write a note on any two edge detection approaches.
  - b) Explain the following operators to detect edge direction.  
Roberts operator, Laplace operator, Prewitt operator, Sobel operator and Robinson operator.
4. Compare edge based segmentation and region based segmentation. **10**

SECTION – II

5. Answer **any four** of the following. **(4×5=20)**
- 1) Describe the Run-Length coding method of Image compression.
  - 2) Explain Wavelet Transform in 1D.

**Set R**



- 3) List and explain applications of Image Transform.
- 4) Write a note on – Convex Hull.
- 5) List and explain internationally sanctioned image compression standards.

6. Attempt **any two**.

**(2×10=20)**

- 1) Explain the method of Handmard Transform in detail.
  - 2) Describe Chain Codes approach of representation.
  - 3) Describe following types of Redundancy
    - a) Coding Redundancy
    - b) Spatial and Temporal Redundancy.
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**B.E. (Computer Science and Engineering) (Part – II) Examination, 2017  
IMAGE PROCESSING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Linear functions possesses the property of
  - A) additivity
  - B) homogeneity
  - C) multiplication
  - D) both A and B
- 2) PDF in image processing is called
  - A) Probability Degraded Function
  - B) Probability Density Function
  - C) Probabilistic Degraded Function
  - D) Probabilistic Density Function
- 3) Filter that replaces the pixel value with the medians of intensity levels is
  - A) Arithmetic mean filter
  - B) Geometric mean filter
  - C) Median filter
  - D) Sequence mean filter
- 4) Compressed image can be recovered back by
  - A) image enhancement
  - B) image decompression
  - C) image contrast
  - D) image equalization
- 5) Digital video is sequence of
  - A) pixels
  - B) matrix
  - C) frames
  - D) coordinates
- 6) Any region or a binary image can be viewed as a sequence of alternating string of 0s and 1s, \_\_\_\_\_ represent this string followed by its length.
  - A) Run-Length Codes
  - B) Moment
  - C) Chain codes
  - D) None of these
- 7) 1D DFT matrices are symmetric
  - A) True
  - B) False
  - C) Cant' Say
  - D) None of above

P.T.O.



- 8) The type of redundancy used in Data compression  
A) Coding  
B) Spatial and Temporal  
C) Irrelevant Information  
D) All above
- 9) The cosine transform is a fast transform  
A) True  
B) False  
C) Cant' Say  
D) None of above
- 10) The Handmard Transform is a fast transform  
A) True  
B) False  
C) Cant' Say  
D) None of above
- 11) Moment representation method uses  
A) Moment matching  
B) Orthogonal moment  
C) Moment Invariants  
D) All of above
- 12) One of the most popular method for removing coding redundancy is  
A) Huffman coding  
B) Golomb Coding  
C) Arithmetic Coding  
D) None of above
- 13) A mapping is said to be \_\_\_\_\_ if the pixels of the original 2D intensity array can be reconstructed without error from the transformed data set.  
A) Original  
B) Reversible  
C) Both A and B  
D) None
- 14) The file having extension GIF stands for  
A) Graphical International Format  
B) Graphic Interchange Format  
C) Graphical International Font  
D) None of above
- 15) Which of the following transformation is useful in digital hardware implementation ?  
A) DFT  
B) Cosine  
C) Handmard  
D) All
- 16) Mask's response to zero means  
A) sum to zero  
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C) division to zero  
D) multiplication to zero
- 17) Image can be blurred using  
A) low pass filter  
B) contouring  
C) erosion  
D) high pass filter
- 18) Image can be sharpened using  
A) low pass filter  
B) contouring  
C) erosion  
D) high pass filter
- 19) Gaussian noise is referred to as  
A) red noise  
B) black noise  
C) white noise  
D) normal noise
- 20) Convolution in spatial domain is multiplication in  
A) frequency domain  
B) time domain  
C) spatial domain  
D) plane
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**B.E. (Computer Science and Engineering) (Part – II) Examination, 2017  
IMAGE PROCESSING (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) *Figures to the right indicate full marks.*  
2) *Assume data wherever necessary.*  
3) **Use legible handwriting, use blue/black only.**

SECTION – I

2. Attempt **any four**. **(4×5=20)**
- a) What is quad tree ? What are the problems associated with hierarchical image representation ?
  - b) What is Pyramid ? Differentiate M pyramid and T pyramid.
  - c) What are the elements of visual perception ? Explain any two elements.
  - d) Define the following terms pixel adjacency, region, border, hole and edge.
  - e) What is image restoration ?
3. Attempt **any one**. **10**
- a) Write a note on any two edge detection approaches.
  - b) Explain the following operators to detect edge direction.  
Roberts operator, Laplace operator, Prewitt operator, Sobel operator and Robinson operator.
4. Compare edge based segmentation and region based segmentation. **10**

SECTION – II

5. Answer **any four** of the following. **(4×5=20)**
- 1) Describe the Run-Length coding method of Image compression.
  - 2) Explain Wavelet Transform in 1D.

**Set S**





- 3) List and explain applications of Image Transform.
- 4) Write a note on – Convex Hull.
- 5) List and explain internationally sanctioned image compression standards.

6. Attempt **any two**.

**(2×10=20)**

- 1) Explain the method of Handmard Transform in detail.
  - 2) Describe Chain Codes approach of representation.
  - 3) Describe following types of Redundancy
    - a) Coding Redundancy
    - b) Spatial and Temporal Redundancy.
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**B.E. (CSE) (Part – II) Examination, 2017  
INFORMATION RETRIEVAL (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(1×20=20)

- 1) The use of IR is more concerned with retrieving \_\_\_\_\_
  - a) Information
  - b) Data
  - c) Words
  - d) None of the above
- 2) An Information Retrieval model is a \_\_\_\_\_ model.
  - a) Single
  - b) Double
  - c) Quadruple
  - d) None of the above
- 3) Boolean model is a simple retrieval model based on \_\_\_\_\_ theory.
  - a) Logic
  - b) Set and binary
  - c) Octal number
  - d) Relational
- 4) Phrase is a sequence of \_\_\_\_\_ queries.
  - a) Double word
  - b) Single word
  - c) Boolean
  - d) Vector
- 5) Boolean query has a syntax composed of \_\_\_\_\_.
  - a) Number
  - b) Alphabets
  - c) Atoms
  - d) Digits
- 6) An important Meta data format is \_\_\_\_\_.
  - a) CORC (Computer Readable Cataloguing Record)
  - b) MARC (Machine Readable Cataloguing Record)
  - c) FARC (Fact Readable Cataloguing Record)
  - d) DARC (Data Readable Cataloguing Record)
- 7) Math ML stands for
  - a) Mathematical Makeup Language
  - b) Mathematical Made Language
  - c) Mathematical Markup Language
  - d) None of the above
- 8) TIFF stands for
  - a) Tagged Image Frame Format
  - b) Tagged Image File Frame
  - c) Tagged Image Form Format
  - d) Tagged Image File Format

P.T.O.



- 9) Recall is the fraction of relevant documents which had been
- Deleted
  - Modified
  - Retrieved
  - Inserted
- 10) Trying all possible pattern positions in the text for retrieval is exhibited by \_\_\_\_\_ algorithm.
- KMP
  - Boyer-Moore family
  - Brute Force
  - None of the above
- 11) MULTOS data model is based on \_\_\_\_\_
- Client architecture
  - Server architecture
  - Client/Server architecture
  - None of the above
- 12) In Vector model, the normalized frequency  $f_{ij}$  of an index term  $K_i$  in a document is given by
- $f_{i,j} = \text{freq}_{i,j} / (\max_l \text{freq}_{l,j})$
  - $f_{i,j} = (\max_l \text{freq}_{l,j}) / \text{freq}_{i,j}$
  - $f_{i,j} = \text{freq}_{i,j} / \text{freq}_{i,l}$
  - None of these
- 13) Index terms are generally \_\_\_\_\_
- Nouns
  - Adverbs
  - Adjectives
  - Connectives
- 14) The Shift-or technique of sequential searching is based on
- Suffix automaton
  - Bit-parallelism
  - Prefix patterns
  - None of the above
- 15) SGML stands for
- Standard Generalized Makeup Language
  - Structural Generalized Made Language
  - Standard Generalized Markup Language
  - None of the above
- 16) CGM stands for
- Component Graphics Metafile
  - Computer Graph Model
  - Computer Gigabyte Metafile
  - Computer Graphics Metafile
- 17) An inverted file is a \_\_\_\_\_ oriented mechanism.
- Sentence
  - Data
  - Word
  - Letter
- 18) Abusive availability of commercial information disguised in the form of informational content is termed as
- Web spam
  - Web crawling
  - Web hosting
  - None of these
- 19) An algorithm for coding the text in which the most frequent symbols are represented by the shortest code is called
- Huffman coding
  - Levenshtein coding
  - Brute force algorithm
  - Vector algorithm
- 20) An empirical rule which describe the vocabulary of size  $O(n^\beta)$  for  $0 < \beta < 1$  for  $n$  words as a function of the text size is known as
- Zips law
  - Cramer's rule
  - Heaps law
  - None of these



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**B.E. (CSE) (Part – II) Examination, 2017**  
**INFORMATION RETRIEVAL (Elective – III)**

Day and Date : Saturday, 20-5-2017

Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate marks.**  
3) **Support your answers with neat sketches wherever necessary.**

SECTION – I

2. Answer **any four** : **(5×4=20)**
- 1) Define and describe the Boolean model for information retrieval.
  - 2) In brief explain the Probabilistic model.
  - 3) In brief explain single word queries and context queries.
  - 4) Explain the concept of recall and precision.
  - 5) Explain the formal characterization of IR models. Give Mathematical Induction.
  - 6) Explain Brute Force algorithm by taking an example sub string containing the text “abracadabra” to match from the central repository.
3. Answer **any one** : **(10×1=10)**
- 1) With a neat block schematic explain the process of retrieving information.
  - 2) With a neat sketch describe suffix trie, suffix tree and suffix array for the following sample text. “*This is a text. A text has many words. Words are made form letters.*”
4. Answer **any one** : **(10×1=10)**
- 1) What is Multimedia ? Briefly explain Multimedia formats.
  - 2) Take two strings “survey” and “surgery”. Draw the Non-Deterministic Finite Automaton (NFA) for pattern matching by using “allowing errors” technique.

**Set P**



## SECTION – II

5. Answer **any four** : **(5×4=20)**
- 1) Explain Attribute Predicates, Structural Predicates and Semantic Predicates.
  - 2) What is MULTOS ? Explain three important features of MULTOS.
  - 3) Explain Spatial Access Methods of Multimedia IR Indexing and Searching.
  - 4) Explain the methods of crawling the web.
  - 5) Explain architectural issues of Digital Libraries.
6. Answer **any one** : **(10×1=10)**
- 1) Explain and draw the Complete Conceptual structure of the type *Generic-Letter* and *Business-Product-Letter* using the MULTOS Data Model.
  - 2) Explain the Generic Multimedia Indexing Approach in detail.
7. Answer **any one** : **(10×1=10)**
- 1) Explain the Centralized Architecture of Search engine.
  - 2) Explain the Distributed Architecture of Search engine.
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**B.E. (CSE) (Part – II) Examination, 2017  
INFORMATION RETRIEVAL (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(1×20=20)

- 1) CGM stands for
  - a) Component Graphics Metafile
  - b) Computer Graph Model
  - c) Computer Gigabyte Metafile
  - d) Computer Graphics Metafile
- 2) An inverted file is a \_\_\_\_\_ oriented mechanism.
  - a) Sentence
  - b) Data
  - c) Word
  - d) Letter
- 3) Abusive availability of commercial information disguised in the form of informational content is termed as
  - a) Web spam
  - b) Web crawling
  - c) Web hosting
  - d) None of these
- 4) An algorithm for coding the text in which the most frequent symbols are represented by the shortest code is called
  - a) Huffman coding
  - b) Levenshtein coding
  - c) Brute force algorithm
  - d) Vector algorithm
- 5) An empirical rule which describe the vocabulary of size  $O(n^\beta)$  for  $0 < \beta < 1$  for n words as a function of the text size is known as
  - a) Zips law
  - b) Cramer's rule
  - c) Heaps law
  - d) None of these
- 6) The use of IR is more concerned with retrieving \_\_\_\_\_
  - a) Information
  - b) Data
  - c) Words
  - d) None of the above
- 7) An Information Retrieval model is a \_\_\_\_\_ model.
  - a) Single
  - b) Double
  - c) Quadruple
  - d) None of the above
- 8) Boolean model is a simple retrieval model based on \_\_\_\_\_ theory.
  - a) Logic
  - b) Set and binary
  - c) Octal number
  - d) Relational

P.T.O.



- 9) Phrase is a sequence of \_\_\_\_\_ queries.  
 a) Double word      b) Single word      c) Boolean      d) Vector
- 10) Boolean query has a syntax composed of \_\_\_\_\_  
 a) Number      b) Alphabets  
 c) Atoms      d) Digits
- 11) An important Meta data format is \_\_\_\_\_  
 a) CORC (Computer Readable Cataloguing Record)  
 b) MARC (Machine Readable Cataloguing Record)  
 c) FARC (Fact Readable Cataloguing Record)  
 d) DARC (Data Readable Cataloguing Record)
- 12) Math ML stands for  
 a) Mathematical Makeup Language      b) Mathematical Made Language  
 c) Mathematical Markup Language      d) None of the above
- 13) TIFF stands for  
 a) Tagged Image Frame Format      b) Tagged Image File Frame  
 c) Tagged Image Form Format      d) Tagged Image File Format
- 14) Recall is the fraction of relevant documents which had been  
 a) Deleted      b) Modified  
 c) Retrieved      d) Inserted
- 15) Trying all possible pattern positions in the text for retrieval is exhibited by \_\_\_\_\_ algorithm.  
 a) KMP      b) Boyer-Moore family  
 c) Brute Force      d) None of the above
- 16) MULTOS data model is based on \_\_\_\_\_  
 a) Client architecture      b) Server architecture  
 c) Client/Server architecture      d) None of the above
- 17) In Vector model, the normalized frequency  $f_{ij}$  of an index term  $K_i$  in a document is given by  
 a)  $f_{i,j} = \text{freq}_{i,j} / (\max_l \text{freq}_{l,j})$       b)  $f_{i,j} = (\max_l \text{freq}_{l,j}) / \text{freq}_{i,j}$   
 c)  $f_{i,j} = \text{freq}_{i,j} / \text{freq}_{i,l}$       d) None of these
- 18) Index terms are generally \_\_\_\_\_  
 a) Nouns      b) Adverbs      c) Adjectives      d) Connectives
- 19) The Shift-or technique of sequential searching is based on  
 a) Suffix automaton      b) Bit-parallelism  
 c) Prefix patterns      d) None of the above
- 20) SGML stands for  
 a) Standard Generalized Makeup Language  
 b) Structural Generalized Made Language  
 c) Standard Generalized Markup Language  
 d) None of the above



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**B.E. (CSE) (Part – II) Examination, 2017**  
**INFORMATION RETRIEVAL (Elective – III)**

Day and Date : Saturday, 20-5-2017

Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

- Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate marks.*  
3) *Support your answers with neat sketches wherever necessary.*

SECTION – I

2. Answer **any four** : **(5×4=20)**
- 1) Define and describe the Boolean model for information retrieval.
  - 2) In brief explain the Probabilistic model.
  - 3) In brief explain single word queries and context queries.
  - 4) Explain the concept of recall and precision.
  - 5) Explain the formal characterization of IR models. Give Mathematical Induction.
  - 6) Explain Brute Force algorithm by taking an example sub string containing the text “abracadabra” to match from the central repository.
3. Answer **any one** : **(10×1=10)**
- 1) With a neat block schematic explain the process of retrieving information.
  - 2) With a neat sketch describe suffix trie, suffix tree and suffix array for the following sample text. “This is a text. A text has many words. Words are made form letters.”
4. Answer **any one** : **(10×1=10)**
- 1) What is Multimedia ? Briefly explain Multimedia formats.
  - 2) Take two strings “survey” and “surgery”. Draw the Non-Deterministic Finite Automaton (NFA) for pattern matching by using “allowing errors” technique.

**Set Q**





## SECTION – II

5. Answer **any four** : **(5×4=20)**
- 1) Explain Attribute Predicates, Structural Predicates and Semantic Predicates.
  - 2) What is MULTOS ? Explain three important features of MULTOS.
  - 3) Explain Spatial Access Methods of Multimedia IR Indexing and Searching.
  - 4) Explain the methods of crawling the web.
  - 5) Explain architectural issues of Digital Libraries.
6. Answer **any one** : **(10×1=10)**
- 1) Explain and draw the Complete Conceptual structure of the type *Generic-Letter* and *Business-Product-Letter* using the MULTOS Data Model.
  - 2) Explain the Generic Multimedia Indexing Approach in detail.
7. Answer **any one** : **(10×1=10)**
- 1) Explain the Centralized Architecture of Search engine.
  - 2) Explain the Distributed Architecture of Search engine.
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**B.E. (CSE) (Part – II) Examination, 2017  
INFORMATION RETRIEVAL (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(1×20=20)

- 1) MULTOS data model is based on \_\_\_\_\_
  - a) Client architecture
  - b) Server architecture
  - c) Client/Server architecture
  - d) None of the above
- 2) In Vector model, the normalized frequency  $f_{ij}$  of an index term  $K_i$  in a document is given by
  - a)  $f_{i,j} = \text{freq}_{i,j} / (\max_l \text{freq}_{l,j})$
  - b)  $f_{i,j} = (\max_l \text{freq}_{l,j}) / \text{freq}_{i,j}$
  - c)  $f_{i,j} = \text{freq}_{i,j} / \text{freq}_{i,l}$
  - d) None of these
- 3) Index terms are generally \_\_\_\_\_
  - a) Nouns
  - b) Adverbs
  - c) Adjectives
  - d) Connectives
- 4) The Shift-or technique of sequential searching is based on
  - a) Suffix automaton
  - b) Bit-parallelism
  - c) Prefix patterns
  - d) None of the above
- 5) SGML stands for
  - a) Standard Generalized Makeup Language
  - b) Structural Generalized Made Language
  - c) Standard Generalized Markup Language
  - d) None of the above
- 6) CGM stands for
  - a) Component Graphics Metafile
  - b) Computer Graph Model
  - c) Computer Gigabyte Metafile
  - d) Computer Graphics Metafile
- 7) An inverted file is a \_\_\_\_\_ oriented mechanism.
  - a) Sentence
  - b) Data
  - c) Word
  - d) Letter
- 8) Abusive availability of commercial information disguised in the form of informational content is termed as
  - a) Web spam
  - b) Web crawling
  - c) Web hosting
  - d) None of these

P.T.O.



- 9) An algorithm for coding the text in which the most frequent symbols are represented by the shortest code is called
- a) Huffman coding
  - b) Levenshtein coding
  - c) Brute force algorithm
  - d) Vector algorithm
- 10) An empirical rule which describe the vocabulary of size  $O(n^\beta)$  for  $0 < \beta < 1$  for n words as a function of the text size is known as
- a) Zips law
  - b) Cramer's rule
  - c) Heaps law
  - d) None of these
- 11) The use of IR is more concerned with retrieving \_\_\_\_\_
- a) Information
  - b) Data
  - c) Words
  - d) None of the above
- 12) An Information Retrieval model is a \_\_\_\_\_ model.
- a) Single
  - b) Double
  - c) Quadruple
  - d) None of the above
- 13) Boolean model is a simple retrieval model based on \_\_\_\_\_ theory.
- a) Logic
  - b) Set and binary
  - c) Octal number
  - d) Relational
- 14) Phrase is a sequence of \_\_\_\_\_ queries.
- a) Double word
  - b) Single word
  - c) Boolean
  - d) Vector
- 15) Boolean query has a syntax composed of \_\_\_\_\_
- a) Number
  - b) Alphabets
  - c) Atoms
  - d) Digits
- 16) An important Meta data format is \_\_\_\_\_
- a) CORC (Computer Readable Cataloguing Record)
  - b) MARC (Machine Readable Cataloguing Record)
  - c) FARC (Fact Readable Cataloguing Record)
  - d) DARC (Data Readable Cataloguing Record)
- 17) Math ML stands for
- a) Mathematical Makeup Language
  - b) Mathematical Made Language
  - c) Mathematical Markup Language
  - d) None of the above
- 18) TIFF stands for
- a) Tagged Image Frame Format
  - b) Tagged Image File Frame
  - c) Tagged Image Form Format
  - d) Tagged Image File Format
- 19) Recall is the fraction of relevant documents which had been
- a) Deleted
  - b) Modified
  - c) Retrieved
  - d) Inserted
- 20) Trying all possible pattern positions in the text for retrieval is exhibited by \_\_\_\_\_ algorithm.
- a) KMP
  - b) Boyer-Moore family
  - c) Brute Force
  - d) None of the above



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**B.E. (CSE) (Part – II) Examination, 2017**  
**INFORMATION RETRIEVAL (Elective – III)**

Day and Date : Saturday, 20-5-2017

Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate marks.**  
3) **Support your answers with neat sketches wherever necessary.**

SECTION – I

2. Answer **any four** : **(5×4=20)**
- 1) Define and describe the Boolean model for information retrieval.
  - 2) In brief explain the Probabilistic model.
  - 3) In brief explain single word queries and context queries.
  - 4) Explain the concept of recall and precision.
  - 5) Explain the formal characterization of IR models. Give Mathematical Induction.
  - 6) Explain Brute Force algorithm by taking an example sub string containing the text “abracadabra” to match from the central repository.
3. Answer **any one** : **(10×1=10)**
- 1) With a neat block schematic explain the process of retrieving information.
  - 2) With a neat sketch describe suffix trie, suffix tree and suffix array for the following sample text. “This is a text. A text has many words. Words are made form letters.”
4. Answer **any one** : **(10×1=10)**
- 1) What is Multimedia ? Briefly explain Multimedia formats.
  - 2) Take two strings “survey” and “surgery”. Draw the Non-Deterministic Finite Automaton (NFA) for pattern matching by using “allowing errors” technique.

**Set R**



## SECTION – II

5. Answer **any four** : **(5×4=20)**
- 1) Explain Attribute Predicates, Structural Predicates and Semantic Predicates.
  - 2) What is MULTOS ? Explain three important features of MULTOS.
  - 3) Explain Spatial Access Methods of Multimedia IR Indexing and Searching.
  - 4) Explain the methods of crawling the web.
  - 5) Explain architectural issues of Digital Libraries.
6. Answer **any one** : **(10×1=10)**
- 1) Explain and draw the Complete Conceptual structure of the type *Generic-Letter* and *Business-Product-Letter* using the MULTOS Data Model.
  - 2) Explain the Generic Multimedia Indexing Approach in detail.
7. Answer **any one** : **(10×1=10)**
- 1) Explain the Centralized Architecture of Search engine.
  - 2) Explain the Distributed Architecture of Search engine.
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**B.E. (CSE) (Part – II) Examination, 2017  
INFORMATION RETRIEVAL (Elective – III)**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(1×20=20)

- 1) An important Meta data format is \_\_\_\_\_
  - a) CORC (Computer Readable Cataloguing Record)
  - b) MARC (Machine Readable Cataloguing Record)
  - c) FARC (Fact Readable Cataloguing Record)
  - d) DARC (Data Readable Cataloguing Record)
- 2) Math ML stands for
  - a) Mathematical Makeup Language
  - b) Mathematical Made Language
  - c) Mathematical Markup Language
  - d) None of the above
- 3) TIFF stands for
  - a) Tagged Image Frame Format
  - b) Tagged Image File Frame
  - c) Tagged Image Form Format
  - d) Tagged Image File Format
- 4) Recall is the fraction of relevant documents which had been
  - a) Deleted
  - b) Modified
  - c) Retrieved
  - d) Inserted
- 5) Trying all possible pattern positions in the text for retrieval is exhibited by \_\_\_\_\_ algorithm.
  - a) KMP
  - b) Boyer-Moore family
  - c) Brute Force
  - d) None of the above
- 6) MULTOS data model is based on \_\_\_\_\_
  - a) Client architecture
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  - d) None of the above
- 7) In Vector model, the normalized frequency  $f_{ij}$  of an index term  $K_i$  in a document is given by
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  - b)  $f_{i,j} = (\max_l \text{freq}_{l,j}) / \text{freq}_{i,j}$
  - c)  $f_{i,j} = \text{freq}_{i,j} / \text{freq}_{i,l}$
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  - b) Adverbs
  - c) Adjectives
  - d) Connectives

P.T.O.



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- a) Suffix automaton
  - b) Bit-parallelism
  - c) Prefix patterns
  - d) None of the above
- 10) SGML stands for
- a) Standard Generalized Makeup Language
  - b) Structural Generalized Made Language
  - c) Standard Generalized Markup Language
  - d) None of the above
- 11) CGM stands for
- a) Component Graphics Metafile
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- a) Sentence
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- a) Web spam
  - b) Web crawling
  - c) Web hosting
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- a) Huffman coding
  - b) Levenshtein coding
  - c) Brute force algorithm
  - d) Vector algorithm
- 15) An empirical rule which describe the vocabulary of size  $O(n^\beta)$  for  $0 < \beta < 1$  for n words as a function of the text size is known as
- a) Zips law
  - b) Cramer's rule
  - c) Heaps law
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- 16) The use of IR is more concerned with retrieving \_\_\_\_\_
- a) Information
  - b) Data
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  - d) None of the above
- 17) An Information Retrieval model is a \_\_\_\_\_ model.
- a) Single
  - b) Double
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- 18) Boolean model is a simple retrieval model based on \_\_\_\_\_ theory.
- a) Logic
  - b) Set and binary
  - c) Octal number
  - d) Relational
- 19) Phrase is a sequence of \_\_\_\_\_ queries.
- a) Double word
  - b) Single word
  - c) Boolean
  - d) Vector
- 20) Boolean query has a syntax composed of \_\_\_\_\_
- a) Number
  - b) Alphabets
  - c) Atoms
  - d) Digits



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**B.E. (CSE) (Part – II) Examination, 2017**  
**INFORMATION RETRIEVAL (Elective – III)**

Day and Date : Saturday, 20-5-2017

Marks : 80

Time : 3.00 p.m. to 6.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate marks.**  
3) **Support your answers with neat sketches wherever necessary.**

SECTION – I

2. Answer **any four** : **(5×4=20)**
- 1) Define and describe the Boolean model for information retrieval.
  - 2) In brief explain the Probabilistic model.
  - 3) In brief explain single word queries and context queries.
  - 4) Explain the concept of recall and precision.
  - 5) Explain the formal characterization of IR models. Give Mathematical Induction.
  - 6) Explain Brute Force algorithm by taking an example sub string containing the text “abracadabra” to match from the central repository.
3. Answer **any one** : **(10×1=10)**
- 1) With a neat block schematic explain the process of retrieving information.
  - 2) With a neat sketch describe suffix trie, suffix tree and suffix array for the following sample text. “This is a text. A text has many words. Words are made form letters.”
4. Answer **any one** : **(10×1=10)**
- 1) What is Multimedia ? Briefly explain Multimedia formats.
  - 2) Take two strings “survey” and “surgery”. Draw the Non-Deterministic Finite Automaton (NFA) for pattern matching by using “allowing errors” technique.

**Set S**





## SECTION – II

5. Answer **any four** : **(5×4=20)**
- 1) Explain Attribute Predicates, Structural Predicates and Semantic Predicates.
  - 2) What is MULTOS ? Explain three important features of MULTOS.
  - 3) Explain Spatial Access Methods of Multimedia IR Indexing and Searching.
  - 4) Explain the methods of crawling the web.
  - 5) Explain architectural issues of Digital Libraries.
6. Answer **any one** : **(10×1=10)**
- 1) Explain and draw the Complete Conceptual structure of the type *Generic-Letter* and *Business-Product-Letter* using the MULTOS Data Model.
  - 2) Explain the Generic Multimedia Indexing Approach in detail.
7. Answer **any one** : **(10×1=10)**
- 1) Explain the Centralized Architecture of Search engine.
  - 2) Explain the Distributed Architecture of Search engine.
-





- 9) Which of the following isn't an advantage of cloud ?
  - a) No worries about running out of storage
  - b) Easier to maintain a cloud network
  - c) Immediate access to computing resources
  - d) Paying only for what you use
- 10) What is the number one concern about cloud computing ?
  - a) Too expensive
  - b) Security concerns
  - c) Too many platforms
  - d) Accessibility
- 11) Which is not a major cloud computing platform ?
  - a) Google 101
  - b) IBM Deep blue
  - c) Microsoft Azure
  - d) Amazon EC2
- 12) Which of these should a company consider before implementing cloud computing technology ?
  - a) Employee satisfaction
  - b) Potential cost reduction
  - c) Information sensitivity
  - d) All of the above
- 13) For which of the following workloads can cloud computing have the greatest benefit ?
  - a) Fixed and predictable workloads
  - b) Unexpectedly varying workloads
  - c) Steadily increasing workloads
  - d) Steadily decreasing workloads
- 14) What does the term public does not mean ?
  - a) Free
  - b) Expensive
  - c) User data not visible
  - d) No security
- 15) In general, which type of cloud service provides the most areas of accountability for the customer ?
  - a) Platform-as-a-Service (PaaS)
  - b) Security-as-a-Service
  - c) Infrastructure-as-a-Service (IaaS)
  - d) Software-as-a-Service (SaaS)
- 16) Which one of the following is not a characteristic of cloud computing ?
  - a) Billing self service based usage model
  - b) Self-service provisioning and automatic de-provisioning
  - c) Standardized interfaces
  - d) Cloud architecture is not capable of scaling the resource on demand
- 17) Web hosting is a service that enables customers to deploy a web site quickly. This is an example of
  - a) IAAS
  - b) PAAS
  - c) SAAS
  - d) None of the above
- 18) Which of the following statements is correct ?
  - I. Security will be better with cloud computing
  - II. Maintenance cost will be lower with cloud computing
  - a) I is correct
  - b) II is correct
  - c) Both are correct
  - d) None of the above
- 19) Which of these is not a major type of cloud computing usage ?
  - a) Hardware as a Service
  - b) Platform as a Service
  - c) Software as a Service
  - d) Infrastructure as a Service
- 20) What is the business reason for IT outsourcing and cloud computing ?
  - a) Improve customer satisfaction
  - b) Solving security problems
  - c) Improve cost structure
  - d) Increasing control over IT



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**B.E. (CSE) (Part – II) Examination, 2017  
Elective – III : CLOUD COMPUTING**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions:**
- 1) **All** questions are **compulsory**.
  - 2) Figures to **right** indicate **full** marks.
  - 3) **Each** Section carries **40** marks.
  - 4) Attempt **all** questions in **each** Section.

SECTION – I

2. Solve **any four** : **(5×4=20)**
- 1) What is public cloud ? Explain with example SaaS in public cloud.
  - 2) Compare between traditional and cloud computing.
  - 3) Explain VM Migration technique.
  - 4) What are security issues of PaaS model in public cloud ?
  - 5) What are the typical security concerns in traditional IT infrastructure ?
  - 6) List and explain characteristics of private cloud.
3. What is virtualization ? Explain reasons to use virtualization. **10**
4. When to opt for Public Cloud ? Give advantages of Public cloud. **10**
- OR
- With neat diagram explain the cloud deployment models. **10**

SECTION – II

5. Solve **any four** : **(5×4=20)**
- 1) What are benefits and challenges of heterogeneous cloud ?
  - 2) Discuss selection criteria for cloud deployment.
  - 3) What is sustainable IT infrastructure ? How it helps in business ?
  - 4) Explain application of cloud in health care.
  - 5) Explain concept of multi-cloud management.
  - 6) Give case study of “Social Networking with cloud”.
6. Explain application and advantages of cloud in retail business. Give example. **10**
7. Explain future technology trends in cloud computing. **10**
- OR
- Write a short note on business intelligence with cloud. How its has motivated cloud migration ? **10**

Set P





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Set **Q**

**B.E. (CSE) (Part – II) Examination, 2017  
Elective – III : CLOUD COMPUTING**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative : **20**
- 1) Which one of the following is not a characteristic of cloud computing ?
    - a) Billing self service based usage model
    - b) Self-service provisioning an automatic de-provisioning
    - c) Standardized interfaces
    - d) Cloud architecture is not capable of scaling the resource on demand
  - 2) Web hosting is a service that enables customers to deploy a web site quickly. This is an example of
    - a) IAAS
    - b) PAAS
    - c) SAAS
    - d) None of the above
  - 3) Which of the following statements is correct ?
    - I. Security will be better with cloud computing
    - II. Maintenance cost will be lower with cloud computing
    - a) I is correct
    - b) II is correct
    - c) Both are correct
    - d) None of the above
  - 4) Which of these is not a major type of cloud computing usage ?
    - a) Hardware as a Service
    - b) Platform as a Service
    - c) Software as a Service
    - d) Infrastructure as a Service
  - 5) What is the business reason for IT outsourcing and cloud computing ?
    - a) Improve customer satisfaction
    - b) Solving security problems
    - c) Improve cost structure
    - d) Increasing control over IT
  - 6) Which of the following type of virtualization is also characteristic of cloud computing ?
    - a) Storage
    - b) Application
    - c) CPU
    - d) All of the mentioned
  - 7) The technology used to distribute service requests to resources is referred to as
    - a) Load performing
    - b) Load scheduling
    - c) Load balancing
    - d) All of the mentioned

P.T.O.



- 8) Custom application development is generally done on which type of cloud service ?  
a) Infrastructure-as-a-Service (IaaS)      b) Software-as-a-Service (SaaS)  
c) Platform-as-a-Service (PaaS)      d) Development-as-a-Service (DaaS)
- 9) In which option below model allows vendor to provide security as part of the Service Level Agreement ?  
a) SaaS                      b) PaaS                      c) IaaS                      d) None
- 10) Cloud Services have a \_\_\_\_\_ relationship with their customers.  
a) Many-to-many      b) One-to-many      c) One-to-one      d) Many to one
- 11) Which of these companies specializes in cloud computing management tools and services ?  
a) RightScale                      b) Google  
c) Salesforce.com                      d) Savis
- 12) What's the most popular use case for public cloud computing today ?  
a) Test and development                      b) Website hosting  
c) Disaster recovery                      d) Business analytics
- 13) Amazon Web Services is which type of cloud computing distribution model ?  
a) Software as a Service                      b) Platform as a Service  
c) Infrastructure as a Service                      d) Not a cloud service
- 14) Which of the following isn't an advantage of cloud ?  
a) No worries about running out of storage  
b) Easier to maintain a cloud network  
c) Immediate access to computing resources  
d) Paying only for what you use
- 15) What is the number one concern about cloud computing ?  
a) Too expensive                      b) Security concerns  
c) Too many platforms                      d) Accessibility
- 16) Which is not a major cloud computing platform ?  
a) Google 101      b) IBM Deep blue      c) Microsoft Azure      d) Amazon EC2
- 17) Which of these should a company consider before implementing cloud computing technology ?  
a) Employee satisfaction                      b) Potential cost reduction  
c) Information sensitivity                      d) All of the above
- 18) For which of the following workloads can cloud computing have the greatest benefit ?  
a) Fixed and predictable workloads                      b) Unexpectedly varying workloads  
c) Steadily increasing workloads                      d) Steadily decreasing workloads
- 19) What does the term public does not mean ?  
a) Free                      b) Expensive  
c) User data not visible                      d) No security
- 20) In general, which type of cloud service provides the most areas of accountability for the customer ?  
a) Platform-as-a-Service (PaaS)                      b) Security-as-s-Service  
c) Infrastructure-as-a-Service (IaaS)                      d) Software-as-a-Service (SaaS)



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**B.E. (CSE) (Part – II) Examination, 2017  
Elective – III : CLOUD COMPUTING**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions:**
- 1) **All** questions are **compulsory**.
  - 2) Figures to **right** indicate **full** marks.
  - 3) **Each** Section carries **40** marks.
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SECTION – I

2. Solve **any four** : **(5×4=20)**
- 1) What is public cloud ? Explain with example SaaS in public cloud.
  - 2) Compare between traditional and cloud computing.
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  - 4) What are security issues of PaaS model in public cloud ?
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  - 6) List and explain characteristics of private cloud.
3. What is virtualization ? Explain reasons to use virtualization. **10**
4. When to opt for Public Cloud ? Give advantages of Public cloud. **10**

OR

With neat diagram explain the cloud deployment models. **10**

SECTION – II

5. Solve **any four** : **(5×4=20)**
- 1) What are benefits and challenges of heterogeneous cloud ?
  - 2) Discuss selection criteria for cloud deployment.
  - 3) What is sustainable IT infrastructure ? How it helps in business ?
  - 4) Explain application of cloud in health care.
  - 5) Explain concept of multi-cloud management.
  - 6) Give case study of “Social Networking with cloud”.
6. Explain application and advantages of cloud in retail business. Give example. **10**
7. Explain future technology trends in cloud computing. **10**

OR

Write a short note on business intelligence with cloud. How its has motivated cloud migration ? **10**

**Set Q**







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Set **R**

**B.E. (CSE) (Part – II) Examination, 2017  
Elective – III : CLOUD COMPUTING**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative : **20**
- 1) Which is not a major cloud computing platform ?  
a) Google 101      b) IBM Deep blue    c) Microsoft Azure    d) Amazon EC2
  - 2) Which of these should a company consider before implementing cloud computing technology ?  
a) Employee satisfaction                      b) Potential cost reduction  
c) Information sensitivity                      d) All of the above
  - 3) For which of the following workloads can cloud computing have the greatest benefit ?  
a) Fixed and predictable workloads      b) Unexpectedly varying workloads  
c) Steadily increasing workloads      d) Steadily decreasing workloads
  - 4) What does the term public does not mean ?  
a) Free    b) Expensive  
c) User data not visible                      d) No security
  - 5) In general, which type of cloud service provides the most areas of accountability for the customer ?  
a) Platform-as-a-Service (PaaS)              b) Security-as-s-Service  
c) Infrastructure-as-a-Service (IaaS)      d) Software-as-a-Service (SaaS)
  - 6) Which one of the following is not a characteristic of cloud computing ?  
a) Billing self service based usage model  
b) Self-service provisioning an automatic de-provisioning  
c) Standardized interfaces  
d) Cloud architecture is not capable of scaling the resource on demand
  - 7) Web hosting is a service that enables customers to deploy a web site quickly. This is an example of  
a) IAAS                      b) PAAS                      c) SAAS                      d) None of the above

P.T.O.



- 8) Which of the following statements is correct ?  
I. Security will be better with cloud computing  
II. Maintenance cost will be lower with cloud computing  
a) I is correct            b) II is correct            c) Both are correct    d) None of the above
- 9) Which of these is not a major type of cloud computing usage ?  
a) Hardware as a Service            b) Platform as a Service  
c) Software as a Service            d) Infrastructure as a Service
- 10) What is the business reason for IT outsourcing and cloud computing ?  
a) Improve customer satisfaction            b) Solving security problems  
c) Improve cost structure            d) Increasing control over IT
- 11) Which of the following type of virtualization is also characteristic of cloud computing ?  
a) Storage            b) Application  
c) CPU            d) All of the mentioned
- 12) The technology used to distribute service requests to resources is referred to as  
a) Load performing            b) Load scheduling  
c) Load balancing            d) All of the mentioned
- 13) Custom application development is generally done on which type of cloud service ?  
a) Infrastructure-as-a-Service (IaaS)            b) Software-as-a-Service (SaaS)  
c) Platform-as-a-Service (PaaS)            d) Development-as-a-Service (DaaS)
- 14) In which option below model allows vendor to provide security as part of the Service Level Agreement ?  
a) SaaS            b) PaaS            c) IaaS            d) None
- 15) Cloud Services have a \_\_\_\_\_ relationship with their customers.  
a) Many-to-many            b) One-to-many            c) One-to-one            d) Many to one
- 16) Which of these companies specializes in cloud computing management tools and services ?  
a) RightScale            b) Google  
c) Salesforce.com            d) Savis
- 17) What's the most popular use case for public cloud computing today ?  
a) Test and development            b) Website hosting  
c) Disaster recovery            d) Business analytics
- 18) Amazon Web Services is which type of cloud computing distribution model ?  
a) Software as a Service            b) Platform as a Service  
c) Infrastructure as a Service            d) Not a cloud service
- 19) Which of the following isn't an advantage of cloud ?  
a) No worries about running out of storage  
b) Easier to maintain a cloud network  
c) Immediate access to computing resources  
d) Paying only for what you use
- 20) What is the number one concern about cloud computing ?  
a) Too expensive            b) Security concerns  
c) Too many platforms            d) Accessibility



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**B.E. (CSE) (Part – II) Examination, 2017  
Elective – III : CLOUD COMPUTING**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions:**
- 1) **All** questions are **compulsory**.
  - 2) Figures to **right** indicate **full** marks.
  - 3) **Each** Section carries **40** marks.
  - 4) Attempt **all** questions in **each** Section.

SECTION – I

2. Solve **any four** : **(5×4=20)**
- 1) What is public cloud ? Explain with example SaaS in public cloud.
  - 2) Compare between traditional and cloud computing.
  - 3) Explain VM Migration technique.
  - 4) What are security issues of PaaS model in public cloud ?
  - 5) What are the typical security concerns in traditional IT infrastructure ?
  - 6) List and explain characteristics of private cloud.
3. What is virtualization ? Explain reasons to use virtualization. **10**
4. When to opt for Public Cloud ? Give advantages of Public cloud. **10**

OR

With neat diagram explain the cloud deployment models. **10**

SECTION – II

5. Solve **any four** : **(5×4=20)**
- 1) What are benefits and challenges of heterogeneous cloud ?
  - 2) Discuss selection criteria for cloud deployment.
  - 3) What is sustainable IT infrastructure ? How it helps in business ?
  - 4) Explain application of cloud in health care.
  - 5) Explain concept of multi-cloud management.
  - 6) Give case study of “Social Networking with cloud”.
6. Explain application and advantages of cloud in retail business. Give example. **10**
7. Explain future technology trends in cloud computing. **10**

OR

Write a short note on business intelligence with cloud. How its has motivated cloud migration ? **10**

**Set R**







- 8) For which of the following workloads can cloud computing have the greatest benefit ?
- a) Fixed and predictable workloads      b) Unexpectedly varying workloads  
c) Steadily increasing workloads      d) Steadily decreasing workloads
- 9) What does the term public does not mean ?
- a) Free      b) Expensive  
c) User data not visible      d) No security
- 10) In general, which type of cloud service provides the most areas of accountability for the customer ?
- a) Platform-as-a-Service (PaaS)      b) Security-as-a-Service  
c) Infrastructure-as-a-Service (IaaS)      d) Software-as-a-Service (SaaS)
- 11) Which one of the following is not a characteristic of cloud computing ?
- a) Billing self service based usage model  
b) Self-service provisioning an automatic de-provisioning  
c) Standardized interfaces  
d) Cloud architecture is not capable of scaling the resource on demand
- 12) Web hosting is a service that enables customers to deploy a web site quickly. This is an example of
- a) IAAS      b) PAAS      c) SAAS      d) None of the above
- 13) Which of the following statements is correct ?
- I. Security will be better with cloud computing  
II. Maintenance cost will be lower with cloud computing
- a) I is correct      b) II is correct      c) Both are correct      d) None of the above
- 14) Which of these is not a major type of cloud computing usage ?
- a) Hardware as a Service      b) Platform as a Service  
c) Software as a Service      d) Infrastructure as a Service
- 15) What is the business reason for IT outsourcing and cloud computing ?
- a) Improve customer satisfaction      b) Solving security problems  
c) Improve cost structure      d) Increasing control over IT
- 16) Which of the following type of virtualization is also characteristic of cloud computing ?
- a) Storage      b) Application  
c) CPU      d) All of the mentioned
- 17) The technology used to distribute service requests to resources is referred to as
- a) Load performing      b) Load scheduling  
c) Load balancing      d) All of the mentioned
- 18) Custom application development is generally done on which type of cloud service ?
- a) Infrastructure-as-a-Service (IaaS)      b) Software-as-a-Service (SaaS)  
c) Platform-as-a-Service (PaaS)      d) Development-as-a-Service (DaaS)
- 19) In which option below model allows vendor to provide security as part of the Service Level Agreement ?
- a) SaaS      b) PaaS      c) IaaS      d) None
- 20) Cloud Services have a \_\_\_\_\_ relationship with their customers.
- a) Many-to-many      b) One-to-many      c) One-to-one      d) Many to one



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**B.E. (CSE) (Part – II) Examination, 2017  
Elective – III : CLOUD COMPUTING**

Day and Date : Saturday, 20-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions:**
- 1) **All questions are compulsory.**
  - 2) **Figures to right indicate full marks.**
  - 3) **Each Section carries 40 marks.**
  - 4) **Attempt all questions in each Section.**

SECTION – I

2. Solve **any four** : **(5×4=20)**
- 1) What is public cloud ? Explain with example SaaS in public cloud.
  - 2) Compare between traditional and cloud computing.
  - 3) Explain VM Migration technique.
  - 4) What are security issues of PaaS model in public cloud ?
  - 5) What are the typical security concerns in traditional IT infrastructure ?
  - 6) List and explain characteristics of private cloud.
3. What is virtualization ? Explain reasons to use virtualization. **10**
4. When to opt for Public Cloud ? Give advantages of Public cloud. **10**

OR

With neat diagram explain the cloud deployment models. **10**

SECTION – II

5. Solve **any four** : **(5×4=20)**
- 1) What are benefits and challenges of heterogeneous cloud ?
  - 2) Discuss selection criteria for cloud deployment.
  - 3) What is sustainable IT infrastructure ? How it helps in business ?
  - 4) Explain application of cloud in health care.
  - 5) Explain concept of multi-cloud management.
  - 6) Give case study of “Social Networking with cloud”.
6. Explain application and advantages of cloud in retail business. Give example. **10**
7. Explain future technology trends in cloud computing. **10**

OR

Write a short note on business intelligence with cloud. How its has motivated cloud migration ? **10**

Set S







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**B.E. (CSE) (Part – II) Examination, 2017  
STORAGE AREA NETWORKS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) What is the most basic level of storage ?  
a) SAN                      b) DAS                      c) NAS                      d) ISCSI
- 2) A NAS solution is most appropriate for what type of data environment.  
a) Secured access                      b) Shared access  
c) Remote access                      d) Parallel access
- 3) Which three statements describe differences between Storage Area Network (SAN) and Network Attached Storage (NAS) solutions ? Choose three.  
a) SAN is generally more expensive but provides higher performance  
b) NAS uses TCP/IP for communication between hosts and the NAS server  
c) NAS requires additional hardware on a host a host bus adapter for connectivity  
d) SAN uses proprietary protocols for communication between hosts and the SAN fabric
- 4) I/O requests to disk storage on a SAN are called  
a) File I/Os                      b) SAN I/Os                      c) Block I/Os                      d) Disk I/Os
- 5) Which two are advantages of hardware RAID controllers ?  
a) Volume management is performed by the server  
b) Volume management is performed by controller card  
c) Dedicated cache memory increases server write performance  
d) Parity calculation by the server and cache memory in the RAID controller increases read and write performance
- 6) Which two RAID types use parity for data protection ?  
a) RAID 1                      b) RAID 4                      c) RAID 1 + 0                      d) RAID 5
- 7) Which one of these is characteristic of RAID 5 ?  
a) Distributed Parity                      b) No Parity  
c) All parity in a single disk                      d) Double Parity
- 8) What is the unique characteristic of RAID 6 (Choose one) ?  
a) Distributed Parity                      b) Striping  
c) Two independent distributed Parity                      d) Mirroring

P.T.O.



- 9) This is a way of storing the data in different places on same/different storage. By doing so I/O operations can overlap in a balanced way, improving performance and providing fault tolerance
- a) RAID
  - b) RAIT
  - c) None of the above
  - d) Both a) and b)
- 10) This is a method of reducing storage needs by eliminating redundant data
- a) Data snapshot
  - b) Data De-duplication
  - c) Data compression
  - d) Data encryption
- 11) This is the pooling of physical storage from multiple network storage devices into what appears to be a single storage device that is managed from a central console.
- a) Server Provisioning
  - b) Data mining
  - c) Disk/Tape virtualization
  - d) None of the above
- 12) This is the assignment of different categories of data to different types of storage media in order to reduce total storage cost. Categories may be based on levels of protection needed, performance requirements, frequency of use and other considerations.
- a) Data mining
  - b) Tiered storage
  - c) Data protection
  - d) Meta-Data management
- 13) The purpose of backup is
- a) To restore a computer to an operational state following a disaster
  - b) To restore small numbers of files after they have been accidentally deleted
  - c) Is to free space in the primary storage
  - d) None of the above
- 14) Backup of the source data can be created
- a) On the same device
  - b) On another device
  - c) At some other location
  - d) All the above
- 15) Which of the following backup technique is most space efficient ?
- a) Full backup
  - b) Incremental backup
  - c) Differential backup
  - d) None of the above
- 16) Which of the following statements are true ?
- a) Data can be recovered fastest in online backup
  - b) Tape library is an example of nearline storage
  - c) Data recovery can take hours for offline backup
  - d) All the above
- 17) Which is the most common cause of soft errors in hardware ?
- a) Thermal issue
  - b) Cosmic rays
  - c) Alpha Particle
  - d) Voltage Fluctuation
- 18) If X is the MTBF of a system and Y is the failure rate of the system then which one is true ?
- a)  $X * Y = 1$
  - b)  $X = Y$
  - c)  $NX = Y$ , where N is the life time
  - d)  $X/Y = N$ , where N is the life time
- 19) Which one of the property is NOT a requirement for fault tolerance ?
- a) Fault containments
  - b) Fault isolation
  - c) Dynamic recovery
  - d) Fail safe
- 20) Which of the operating system architecture is suitable for FT based systems ?
- a) Monolithic Kernel
  - b) Micro Kernel
  - c) Real Time Kernel
  - d) All of the above



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**B.E. (CSE) (Part – II) Examination, 2017  
STORAGE AREA NETWORKS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** of the following : **(4×5=20)**
- 1) Explain sever centric and storage centric IT architecture, with neat diagrams.
  - 2) Explain the benefits of storage networks on business applications.
  - 3) With a neat diagram, explain the architecture of intelligent disk system.
  - 4) Explain RAID 4 and RAID 5.
  - 5) Explain the service classes in fibre channel.
3. Answer **any two** of the following : **(2×10=20)**
- 1) Explain fibre channel with reference to protocol stack, addressing modes and login techniques.
  - 2) Compare NAS and fibre channel SAN.
  - 3) Explain JBOD in detail.

**SECTION – II**

4. Answer **any four** of the following : **(4×5=20)**
- 1) Explain in band interface and out band interface.
  - 2) Explain in band management in fibre channel SAN.
  - 3) Explain CMIP and DMI in Out Band Management.
  - 4) What are different components of Backup Servers.
  - 5) Explain network data management protocol.
5. Answer **any two** of the following : **(2×10=20)**
- 1) Explain LUN masking and remote mirroring.
  - 2) Explain what are next generation backups.  
Server free backup  
LAN-free backup
  - 3) Explain in band management in fibre channel SAN.





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**B.E. (CSE) (Part – II) Examination, 2017  
STORAGE AREA NETWORKS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Which of the following statements are true ?
  - a) Data can be recovered fastest in online backup
  - b) Tape library is an example of nearline storage
  - c) Data recovery can take hours for offline backup
  - d) All the above
- 2) Which is the most common cause of soft errors in hardware ?
  - a) Thermal issue
  - b) Cosmic rays
  - c) Alpha Particle
  - d) Voltage Fluctuation
- 3) If X is the MTBF of a system and Y is the failure rate of the system then which one is true ?
  - a)  $X * Y = 1$
  - b)  $X = Y$
  - c)  $NX = Y$ , where N is the life time
  - d)  $X/Y = N$ , where N is the life time
- 4) Which one of the property is NOT a requirement for fault tolerance ?
  - a) Fault containments
  - b) Fault isolation
  - c) Dynamic recovery
  - d) Fail safe
- 5) Which of the operating system architecture is suitable for FT based systems ?
  - a) Monolithic Kernel
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  - c) Real Time Kernel
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  - c) NAS requires additional hardware on a host a host bus adapter for connectivity
  - d) SAN uses proprietary protocols for communication between hosts and the SAN fabric

P.T.O.



- 9) I/O requests to disk storage on a SAN are called  
a) File I/Os                      b) SAN I/Os                      c) Block I/Os                      d) Disk I/Os
- 10) Which two are advantages of hardware RAID controllers ?  
a) Volume management is performed by the server  
b) Volume management is performed by controller card  
c) Dedicated cache memory increases server write performance  
d) Parity calculation by the server and cache memory in the RAID controller increases read and write performance
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a) RAID 1                      b) RAID 4                      c) RAID 1 + 0                      d) RAID 5
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a) Distributed Parity                      b) Striping  
c) Two independent distributed Parity                      d) Mirroring
- 14) This is a way of storing the data in different places on same/different storage. By doing so I/O operations can overlap in a balanced way, improving performance and providing fault tolerance  
a) RAID                      b) RAIT  
c) None of the above                      d) Both a) and b)
- 15) This is a method of reducing storage needs by eliminating redundant data  
a) Data snapshot                      b) Data De-duplication  
c) Data compression                      d) Data encryption
- 16) This is the pooling of physical storage from multiple network storage devices into what appears to be a single storage device that is managed from a central console.  
a) Server Provisioning                      b) Data mining  
c) Disk/Tape virtualization                      d) None of the above
- 17) This is the assignment of different categories of data to different types of storage media in order to reduce total storage cost. Categories may be based on levels of protection needed, performance requirements, frequency of use and other considerations.  
a) Data mining                      b) Tiered storage  
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a) To restore a computer to an operational state following a disaster  
b) To restore small numbers of files after they have been accidentally deleted  
c) Is to free space in the primary storage  
d) None of the above
- 19) Backup of the source data can be created  
a) On the same device                      b) On another device  
c) At some other location                      d) All the above
- 20) Which of the following backup technique is most space efficient ?  
a) Full backup                      b) Incremental backup  
c) Differential backup                      d) None of the above



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**B.E. (CSE) (Part – II) Examination, 2017  
STORAGE AREA NETWORKS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** of the following : **(4×5=20)**
- 1) Explain sever centric and storage centric IT architecture, with neat diagrams.
  - 2) Explain the benefits of storage networks on business applications.
  - 3) With a neat diagram, explain the architecture of intelligent disk system.
  - 4) Explain RAID 4 and RAID 5.
  - 5) Explain the service classes in fibre channel.
3. Answer **any two** of the following : **(2×10=20)**
- 1) Explain fibre channel with reference to protocol stack, addressing modes and login techniques.
  - 2) Compare NAS and fibre channel SAN.
  - 3) Explain JBOD in detail.

**SECTION – II**

4. Answer **any four** of the following : **(4×5=20)**
- 1) Explain in band interface and out band interface.
  - 2) Explain in band management in fibre channel SAN.
  - 3) Explain CMIP and DMI in Out Band Management.
  - 4) What are different components of Backup Servers.
  - 5) Explain network data management protocol.
5. Answer **any two** of the following : **(2×10=20)**
- 1) Explain LUN masking and remote mirroring.
  - 2) Explain what are next generation backups.  
Server free backup  
LAN-free backup
  - 3) Explain in band management in fibre channel SAN.







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**B.E. (CSE) (Part – II) Examination, 2017  
STORAGE AREA NETWORKS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) This is the pooling of physical storage from multiple network storage devices into what appears to be a single storage device that is managed from a central console.
  - a) Server Provisioning
  - b) Data mining
  - c) Disk/Tape virtualization
  - d) None of the above
- 2) This is the assignment of different categories of data to different types of storage media in order to reduce total storage cost. Categories may be based on levels of protection needed, performance requirements, frequency of use and other considerations.
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  - c) Data protection
  - d) Meta-Data management
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  - a) To restore a computer to an operational state following a disaster
  - b) To restore small numbers of files after they have been accidentally deleted
  - c) Is to free space in the primary storage
  - d) None of the above
- 4) Backup of the source data can be created
  - a) On the same device
  - b) On another device
  - c) At some other location
  - d) All the above
- 5) Which of the following backup technique is most space efficient ?
  - a) Full backup
  - b) Incremental backup
  - c) Differential backup
  - d) None of the above
- 6) Which of the following statements are true ?
  - a) Data can be recovered fastest in online backup
  - b) Tape library is an example of nearline storage
  - c) Data recovery can take hours for offline backup
  - d) All the above
- 7) Which is the most common cause of soft errors in hardware ?
  - a) Thermal issue
  - b) Cosmic rays
  - c) Alpha Particle
  - d) Voltage Fluctuation

P.T.O.





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**B.E. (CSE) (Part – II) Examination, 2017  
STORAGE AREA NETWORKS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** of the following : **(4×5=20)**
- 1) Explain sever centric and storage centric IT architecture, with neat diagrams.
  - 2) Explain the benefits of storage networks on business applications.
  - 3) With a neat diagram, explain the architecture of intelligent disk system.
  - 4) Explain RAID 4 and RAID 5.
  - 5) Explain the service classes in fibre channel.
3. Answer **any two** of the following : **(2×10=20)**
- 1) Explain fibre channel with reference to protocol stack, addressing modes and login techniques.
  - 2) Compare NAS and fibre channel SAN.
  - 3) Explain JBOD in detail.

**SECTION – II**

4. Answer **any four** of the following : **(4×5=20)**
- 1) Explain in band interface and out band interface.
  - 2) Explain in band management in fibre channel SAN.
  - 3) Explain CMIP and DMI in Out Band Management.
  - 4) What are different components of Backup Servers.
  - 5) Explain network data management protocol.
5. Answer **any two** of the following : **(2×10=20)**
- 1) Explain LUN masking and remote mirroring.
  - 2) Explain what are next generation backups.  
Server free backup  
LAN-free backup
  - 3) Explain in band management in fibre channel SAN.





SLR-VB – 247

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**B.E. (CSE) (Part – II) Examination, 2017  
STORAGE AREA NETWORKS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Which two RAID types use parity for data protection ?  
a) RAID 1                      b) RAID 4                      c) RAID 1 + 0                      d) RAID 5
- 2) Which one of these is characteristic of RAID 5 ?  
a) Distributed Parity                      b) No Parity  
c) All parity in a single disk                      d) Double Parity
- 3) What is the unique characteristic of RAID 6 (Choose one) ?  
a) Distributed Parity                      b) Striping  
c) Two independent distributed Parity                      d) Mirroring
- 4) This is a way of storing the data in different places on same/different storage. By doing so I/O operations can overlap in a balanced way, improving performance and providing fault tolerance  
a) RAID                      b) RAIT  
c) None of the above                      d) Both a) and b)
- 5) This is a method of reducing storage needs by eliminating redundant data  
a) Data snapshot                      b) Data De-duplication  
c) Data compression                      d) Data encryption
- 6) This is the pooling of physical storage from multiple network storage devices into what appears to be a single storage device that is managed from a central console.  
a) Server Provisioning                      b) Data mining  
c) Disk/Tape virtualization                      d) None of the above
- 7) This is the assignment of different categories of data to different types of storage media in order to reduce total storage cost. Categories may be based on levels of protection needed, performance requirements, frequency of use and other considerations.  
a) Data mining                      b) Tiered storage  
c) Data protection                      d) Meta-Data management
- 8) The purpose of backup is  
a) To restore a computer to an operational state following a disaster  
b) To restore small numbers of files after they have been accidentally deleted  
c) Is to free space in the primary storage  
d) None of the above

P.T.O.



- 9) Backup of the source data can be created
- a) On the same device
  - b) On another device
  - c) At some other location
  - d) All the above
- 10) Which of the following backup technique is most space efficient ?
- a) Full backup
  - b) Incremental backup
  - c) Differential backup
  - d) None of the above
- 11) Which of the following statements are true ?
- a) Data can be recovered fastest in online backup
  - b) Tape library is an example of nearline storage
  - c) Data recovery can take hours for offline backup
  - d) All the above
- 12) Which is the most common cause of soft errors in hardware ?
- a) Thermal issue
  - b) Cosmic rays
  - c) Alpha Particle
  - d) Voltage Fluctuation
- 13) If X is the MTBF of a system and Y is the failure rate of the system then which one is true ?
- a)  $X * Y = 1$
  - b)  $X = Y$
  - c)  $NX = Y$ , where N is the life time
  - d)  $X/Y = N$ , where N is the life time
- 14) Which one of the property is NOT a requirement for fault tolerance ?
- a) Fault containments
  - b) Fault isolation
  - c) Dynamic recovery
  - d) Fail safe
- 15) Which of the operating system architecture is suitable for FT based systems ?
- a) Monolithic Kernel
  - b) Micro Kernel
  - c) Real Time Kernel
  - d) All of the above
- 16) What is the most basic level of storage ?
- a) SAN
  - b) DAS
  - c) NAS
  - d) ISCSI
- 17) A NAS solution is most appropriate for what type of data environment.
- a) Secured access
  - b) Shared access
  - c) Remote access
  - d) Parallel access
- 18) Which three statements describe differences between Storage Area Network (SAN) and Network Attached Storage (NAS) solutions ? Choose three.
- a) SAN is generally more expensive but provides higher performance
  - b) NAS uses TCP/IP for communication between hosts and the NAS server
  - c) NAS requires additional hardware on a host a host bus adapter for connectivity
  - d) SAN uses proprietary protocols for communication between hosts and the SAN fabric
- 19) I/O requests to disk storage on a SAN are called
- a) File I/Os
  - b) SAN I/Os
  - c) Block I/Os
  - d) Disk I/Os
- 20) Which two are advantages of hardware RAID controllers ?
- a) Volume management is performed by the server
  - b) Volume management is performed by controller card
  - c) Dedicated cache memory increases server write performance
  - d) Parity calculation by the server and cache memory in the RAID controller increases read and write performance



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**B.E. (CSE) (Part – II) Examination, 2017  
STORAGE AREA NETWORKS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Answer **any four** of the following : **(4×5=20)**
- 1) Explain sever centric and storage centric IT architecture, with neat diagrams.
  - 2) Explain the benefits of storage networks on business applications.
  - 3) With a neat diagram, explain the architecture of intelligent disk system.
  - 4) Explain RAID 4 and RAID 5.
  - 5) Explain the service classes in fibre channel.
3. Answer **any two** of the following : **(2×10=20)**
- 1) Explain fibre channel with reference to protocol stack, addressing modes and login techniques.
  - 2) Compare NAS and fibre channel SAN.
  - 3) Explain JBOD in detail.

**SECTION – II**

4. Answer **any four** of the following : **(4×5=20)**
- 1) Explain in band interface and out band interface.
  - 2) Explain in band management in fibre channel SAN.
  - 3) Explain CMIP and DMI in Out Band Management.
  - 4) What are different components of Backup Servers.
  - 5) Explain network data management protocol.
5. Answer **any two** of the following : **(2×10=20)**
- 1) Explain LUN masking and remote mirroring.
  - 2) Explain what are next generation backups.  
Server free backup  
LAN-free backup
  - 3) Explain in band management in fibre channel SAN.







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**B.E. (CSE) (Part – II) Examination, 2017**  
**Elective – IV : WEB 2.0 AND RICH INTERNET APPLICATION**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All** questions are **compulsory**.
  - 4) Figures to **right** indicate **full** marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Which of the following is true about REST ?
  - A) In REST architecture, a REST server simply provides access to resources and REST client accesses and presents the resources
  - B) Each resource is identified by URIs/global IDs
  - C) REST uses various representations to represent a resource like text, JSON and XML
  - D) All of the above
- 2) Which of the following component of HTTP request is used to identify the resource on server ?
  - A) VERB
  - B) URI
  - C) HTTP Version
  - D) Request Header
- 3) Which of the following is a best practice to create a standard URI for a web service ?
  - A) Use plural noun
  - B) Avoid using spaces
  - C) Use lowercase letters
  - D) All of the above
- 4) Which of the following HTTP method should be read only in nature ?
  - A) GET
  - B) DELETE
  - C) POST
  - D) PUT
- 5) Which of the following is a best practice for designing a secure RESTful web service ?
  - A) No sensitive data in URL
  - B) Restriction on method execution
  - C) Both of the above
  - D) None of the above
- 6) Which of the following annotation of JAX RS API is used to annotate a method to get the relative path of the resource class/method ?
  - A) @Path
  - B) @GET
  - C) @PUT
  - D) @POST
- 7) What does XML stand for ?
  - A) eXtra Modern Link
  - B) eXtensible Markup Language
  - C) Example Markup Language
  - D) X-Markup Language

P.T.O.



- 8) What is the correct syntax of the declaration which defines the XML version ?  
A) `<xml version="A.0"/>` B) `<?xml version="A.0"?>`  
C) `<?xml version="A.0"/>` D) None of the above
- 9) Is it easier to process XML than HTML ?  
A) Yes B) No C) Sometimes D) Can't say
- 10) Well formed XML document means  
A) It contains a root element  
B) It contain an element  
C) It contains one or more elements  
D) Must contain one or more elements and root element must contain all other elements
- 11) XML uses the features of  
A) HTML B) XHTML C) VML D) SGML
- 12) AJAX is based on  
A) JavaScript and XML B) VBScript and XML  
C) JavaScript and Java D) JavaScript and HTTP requests
- 13) Which of the following is an advantage of using JavaScript ?  
A) Less server interaction B) Immediate feedback to the visitors  
C) Increased interactivity D) All of the above
- 14) Which of the following function of string object returns a number indicating the unicode value of the character at the given index ?  
A) `charAt()` B) `charCodeAt()` C) `concat()` D) `indexOf()`
- 15) Which of the following jQuery selector selects all elements available in a DOM ?  
A) `$('*')` B) `$('?')`  
C) `$('#')` D) None of the above
- 16) Which of the following jQuery method removes all child nodes from the set of matched elements ?  
A) `empty()` B) `delete()`  
C) `remove(expr)` D) none of the above
- 17) XSLT stands for  
A) eXtra Stylesheet Language Transportations  
B) eXtensible Stylesheet Language Transformations  
C) eXtensible Stylesheet Language Transportations  
D) eXcellant Stylesheet Language Transformations
- 18) XSLT becomes a W3C recommendation since  
A) 16 Nov. 1999 B) 20 Nov. 1999 C) 02 Oct. 1999 D) None of these
- 19) Why we used XSLT language ?  
A) Use to transport XML documents  
B) Use to perform transaction b/w XML documents  
C) Use to transform XML documents  
D) Use to format XML documents
- 20) How HTML forms are subjected to XForms ?  
A) XForms are old generation of HTML forms  
B) XForms are middle generation of HTML forms  
C) XForms are new generation of HTML forms  
D) None of above



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**B.E. (CSE) (Part – II) Examination, 2017**  
**Elective – IV : WEB 2.0 AND RICH INTERNET APPLICATION**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to *right* indicate *full* marks.**

SECTION – I

2. Attempt **any four** (**each** carries **5** marks) : **20**
- 1) What is the difference between Web 1.0 and Web 2.0 ?
  - 2) Explain what is REST and RESTFUL ?
  - 3) Mention what is the difference between AJAX and REST.
  - 4) What are the benefits of XML ?
  - 5) What is a web feed ?
3. Attempt **any one** : **10**
- 1) What are the different JavaScript optimizations techniques ? Explain with examples.
  - 2) Mention what are the HTTP methods supported by REST.
4. Explain JSON in detail. **10**

SECTION – II

5. Attempt **any four** (**each** carries **5** marks) : **20**
- 1) What are the difference between REST and WS services ?
  - 2) What are the business strategies to be incorporated by businesses ?
  - 3) Give a syntax rules for of XQuery.

**Set P**



4) What is Mashups and advantages of mashups in web ?

5) Explain Web Security and its issues.

6. Attempt **any one** :

**10**

1) Define authentication and authorization in Web.

2) List the parameters that define an SSL session connection.

7. Define XQuery with syntax.

**10**

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**B.E. (CSE) (Part – II) Examination, 2017**  
**Elective – IV : WEB 2.0 AND RICH INTERNET APPLICATION**

Day and Date : Tuesday, 23-5-2017  
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SECTION – I

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- 1) What are the different JavaScript optimizations techniques ? Explain with examples.
  - 2) Mention what are the HTTP methods supported by REST.
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SECTION – II

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- 1) What are the difference between REST and WS services ?
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**Set Q**





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2) List the parameters that define an SSL session connection.

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**10**

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**B.E. (CSE) (Part – II) Examination, 2017**  
**Elective – IV : WEB 2.0 AND RICH INTERNET APPLICATION**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
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  - 3) **All** questions are **compulsory**.
  - 4) Figures to **right** indicate **full** marks.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) XML uses the features of  
A) HTML                      B) XHTML                      C) VML                      D) SGML
- 2) AJAX is based on  
A) JavaScript and XML                      B) VBScript and XML  
C) JavaScript and Java                      D) JavaScript and HTTP requests
- 3) Which of the following is an advantage of using JavaScript ?  
A) Less server interaction                      B) Immediate feedback to the visitors  
C) Increased interactivity                      D) All of the above
- 4) Which of the following function of string object returns a number indicating the unicode value of the character at the given index ?  
A) charAt()                      B) charCodeAt()                      C) concat()                      D) indexOf()
- 5) Which of the following jQuery selector selects all elements available in a DOM ?  
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A) Use to transport XML documents  
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C) REST uses various representations to represent a resource like text, JSON and XML  
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- 12) Which of the following component of HTTP request is used to identify the resource on server ?  
A) VERB  
B) URI  
C) HTTP Version  
D) Request Header
- 13) Which of the following is a best practice to create a standard URI for a web service ?  
A) Use plural noun  
B) Avoid using spaces  
C) Use lowercase letters  
D) All of the above
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A) GET  
B) DELETE  
C) POST  
D) PUT
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C) <?xml version="A.0"/>  
D) None of the above
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A) Yes  
B) No  
C) Sometimes  
D) Can't say
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**B.E. (CSE) (Part – II) Examination, 2017**  
**Elective – IV : WEB 2.0 AND RICH INTERNET APPLICATION**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to *right* indicate *full* marks.**

**SECTION – I**

2. Attempt **any four** (**each** carries **5** marks) : **20**
- 1) What is the difference between Web 1.0 and Web 2.0 ?
  - 2) Explain what is REST and RESTFUL ?
  - 3) Mention what is the difference between AJAX and REST.
  - 4) What are the benefits of XML ?
  - 5) What is a web feed ?
3. Attempt **any one** : **10**
- 1) What are the different JavaScript optimizations techniques ? Explain with examples.
  - 2) Mention what are the HTTP methods supported by REST.
4. Explain JSON in detail. **10**

**SECTION – II**

5. Attempt **any four** (**each** carries **5** marks) : **20**
- 1) What are the difference between REST and WS services ?
  - 2) What are the business strategies to be incorporated by businesses ?
  - 3) Give a syntax rules for of XQuery.

**Set R**



4) What is Mashups and advantages of mashups in web ?

5) Explain Web Security and its issues.

6. Attempt **any one** :

**10**

1) Define authentication and authorization in Web.

2) List the parameters that define an SSL session connection.

7. Define XQuery with syntax.

**10**

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**B.E. (CSE) (Part – II) Examination, 2017**  
**Elective – IV : WEB 2.0 AND RICH INTERNET APPLICATION**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. Each question carries one mark.
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  - 3) All questions are **compulsory**.
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**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Which of the following annotation of JAX RS API is used to annotate a method to get the relative path of the resource class/method ?  
A) @Path                      B) @GET                      C) @PUT                      D) @POST
- 2) What does XML stand for ?  
A) eXtra Modern Link                      B) eXtensible Markup Language  
C) Example Markup Language                      D) X-Markup Language
- 3) What is the correct syntax of the declaration which defines the XML version ?  
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C) <?xml version="A.0"/>                      D) None of the above
- 4) Is it easier to process XML than HTML ?  
A) Yes                      B) No                      C) Sometimes                      D) Can't say
- 5) Well formed XML document means  
A) It contains a root element  
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C) It contains one or more elements  
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- 6) XML uses the features of  
A) HTML                      B) XHTML                      C) VML                      D) SGML
- 7) AJAX is based on  
A) JavaScript and XML                      B) VBScript and XML  
C) JavaScript and Java                      D) JavaScript and HTTP requests
- 8) Which of the following is an advantage of using JavaScript ?  
A) Less server interaction                      B) Immediate feedback to the visitors  
C) Increased interactivity                      D) All of the above
- 9) Which of the following function of string object returns a number indicating the unicode value of the character at the given index ?  
A) charAt()                      B) charCodeAt()                      C) concat()                      D) indexOf()

P.T.O.





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**B.E. (CSE) (Part – II) Examination, 2017**  
**Elective – IV : WEB 2.0 AND RICH INTERNET APPLICATION**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :**
- 1) **All questions are compulsory.**
  - 2) **Figures to right indicate full marks.**

**SECTION – I**

2. Attempt **any four** (each carries 5 marks) : **20**
- 1) What is the difference between Web 1.0 and Web 2.0 ?
  - 2) Explain what is REST and RESTFUL ?
  - 3) Mention what is the difference between AJAX and REST.
  - 4) What are the benefits of XML ?
  - 5) What is a web feed ?
3. Attempt **any one** : **10**
- 1) What are the different JavaScript optimizations techniques ? Explain with examples.
  - 2) Mention what are the HTTP methods supported by REST.
4. Explain JSON in detail. **10**

**SECTION – II**

5. Attempt **any four** (each carries 5 marks) : **20**
- 1) What are the difference between REST and WS services ?
  - 2) What are the business strategies to be incorporated by businesses ?
  - 3) Give a syntax rules for of XQuery.

**Set S**





4) What is Mashups and advantages of mashups in web ?

5) Explain Web Security and its issues.

6. Attempt **any one** : **10**

1) Define authentication and authorization in Web.

2) List the parameters that define an SSL session connection.

7. Define XQuery with syntax. **10**

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**B.E. (CSE) (Part – II) Examination, 2017  
ARTIFICIAL NEURAL NETWORK (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**20**

- 1) Weight adjustment is directly proportional to negative gradient of error with respect to the Weight.  
a) True                      b) False                      c) Can't say                      d) None
- 2) According to \_\_\_\_\_, each of the weights gets updated.  
a) Activation function                      b) Learning law  
c) Bias                      d) None
- 3) Neural network stores information in the strengths interconnections.  
a) True                      b) False                      c) Can't say                      d) None
- 4) Neural network using McCulloch-Pitts model does have learning ability.  
a) True                      b) False                      c) Can't say                      d) None
- 5) In adaline model \_\_\_\_\_ activation function is used to calculate output of neuron.  
a) Sigmoid                      b) Hardlimit                      c) Linear                      d) None
- 6) \_\_\_\_\_ network is maximum likelihood classifier for binary inputs.  
a) Adaline                      b) Hamming                      c) Perceptron                      d) None
- 7) \_\_\_\_\_ is information used by neural network to solve a problem.  
a) Learning rate                      b) Threshold                      c) Weight                      d) None
- 8) \_\_\_\_\_ is supervised and \_\_\_\_\_ is unsupervised learning law.  
a) Hebbian, Correlation                      b) Correlation, Hebbian  
c) Delta, Widrow Hoff                      d) None

P.T.O.



- 9) Single layer perceptron is capable of solving linearly separable problems.  
a) True                      b) False                      c) Can't say                      d) None
- 10) \_\_\_\_\_ law is also called as Least Mean Squared (LMS) error learning law.  
a) Delta                      b) Correlation                      c) Perceptron                      d) Widrow Hoff
- 11) Soma or cell body carry signal from one neuron to another neuron.  
a) True                      b) False                      c) Can't say                      d) None
- 12) In \_\_\_\_\_ training for every set of input, desired output is known.  
a) Unsupervised                      b) Supervised                      c) Parallel                      d) None
- 13) \_\_\_\_\_ network is used for pattern classification/association/mapping.  
a) Feedforward                      b) Feedback                      c) Competitive                      d) None
- 14) In \_\_\_\_\_ learning weight values are initialized to small random values around zero.  
a) Delta                      b) Hebbian                      c) Widrow Hoff                      d) Perceptron
- 15) Adaline model is proposed by  
a) Widrow                      b) Rosenblatt                      c) McCulloch                      d) None
- 16) \_\_\_\_\_ algorithm is used to train Multilayer perceptron.  
a) Outstar                      b) Instar  
c) Backpropagation                      d) None
- 17) Perceptron is \_\_\_\_\_ network.  
a) Feedforward                      b) Feedback                      c) Competitive                      d) None
- 18) The process of adjusting the weight is called as  
a) Classification                      b) Training                      c) Clustering                      d) None
- 19) Neural networks are slow in processing information.  
a) True                      b) False                      c) Can't say                      d) None
- 20) \_\_\_\_\_ law is valid only for differentiable activation function.  
a) Hebbian                      b) Perceptron                      c) Delta                      d) None
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**B.E. (CSE) (Part – II) Examination, 2017  
ARTIFICIAL NEURAL NETWORK (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Solve **any four** : **(4×5=20)**
- 1) Compare computer and biological neural networks.
  - 2) What is perceptron ? What are the types of perceptron ? Explain.
  - 3) Describe McCulloch-Pitts model. Also write limitations of this model.
  - 4) Describe the structure of biological neural network.
  - 5) What is linear separability ? Is XOR linearly separable problem ? Explain.
3. Which algorithm is used to train multilayer perceptron ? Explain algorithm used to train multilayer perceptron in detail. **10**
- OR
- Explain Adaline model. **10**
4. Explain following learning law : **10**
- i) Correlation learning law
  - ii) Delta learning law.

**SECTION – II**

5. Solve **any four** : **(4×5=20)**
- 1) What is pattern classification ? Explain with example.
  - 2) Write a note on feedback network.
  - 3) What is pattern association ? Explain with example.
  - 4) What is pattern mapping ? Explain with example.
  - 5) What are the ways of recall of information in neural network ? Explain.
6. Explain application of ANN in recognition of printed characters. **10**
- OR
- Explain application of ANN in Olympic game symbol recognition. **10**
7. Differentiate between feedforward and feedback network. **10**

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**Set P**







- 10) In adaline model \_\_\_\_\_ activation function is used to calculate output of neuron.  
a) Sigmoid            b) Hardlimit            c) Linear            d) None
- 11) \_\_\_\_\_ network is maximum likelihood classifier for binary inputs.  
a) Adaline            b) Hamming            c) Perceptron            d) None
- 12) \_\_\_\_\_ is information used by neural network to solve a problem.  
a) Learning rate    b) Threshold            c) Weight            d) None
- 13) \_\_\_\_\_ is supervised and \_\_\_\_\_ is unsupervised learning law.  
a) Hebbian, Correlation            b) Correlation, Hebbian  
c) Delta, Widrow Hoff            d) None
- 14) Single layer perceptron is capable of solving linearly separable problems.  
a) True            b) False            c) Can't say            d) None
- 15) \_\_\_\_\_ law is also called as Least Mean Squared (LMS) error learning law.  
a) Delta            b) Correlation            c) Perceptron            d) Widrow Hoff
- 16) Soma or cell body carry signal from one neuron to another neuron.  
a) True            b) False            c) Can't say            d) None
- 17) In \_\_\_\_\_ training for every set of input, desired output is known.  
a) Unsupervised    b) Supervised            c) Parallel            d) None
- 18) \_\_\_\_\_ network is used for pattern classification/association/mapping.  
a) Feedforward    b) Feedback            c) Competitive            d) None
- 19) In \_\_\_\_\_ learning weight values are initialized to small random values around zero.  
a) Delta            b) Hebbian            c) Widrow Hoff            d) Perceptron
- 20) Adaline model is proposed by  
a) Widrow            b) Rosenblatt            c) McCulloch            d) None
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**B.E. (CSE) (Part – II) Examination, 2017  
ARTIFICIAL NEURAL NETWORK (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Solve **any four** : **(4×5=20)**
- 1) Compare computer and biological neural networks.
  - 2) What is perceptron ? What are the types of perceptron ? Explain.
  - 3) Describe McCulloch-Pitts model. Also write limitations of this model.
  - 4) Describe the structure of biological neural network.
  - 5) What is linear separability ? Is XOR linearly separable problem ? Explain.
3. Which algorithm is used to train multilayer perceptron ? Explain algorithm used to train multilayer perceptron in detail. **10**
- OR
- Explain Adaline model. **10**
4. Explain following learning law : **10**
- i) Correlation learning law
  - ii) Delta learning law.

**SECTION – II**

5. Solve **any four** : **(4×5=20)**
- 1) What is pattern classification ? Explain with example.
  - 2) Write a note on feedback network.
  - 3) What is pattern association ? Explain with example.
  - 4) What is pattern mapping ? Explain with example.
  - 5) What are the ways of recall of information in neural network ? Explain.
6. Explain application of ANN in recognition of printed characters. **10**
- OR
- Explain application of ANN in Olympic game symbol recognition. **10**
7. Differentiate between feedforward and feedback network. **10**

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**Set Q**







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**B.E. (CSE) (Part – II) Examination, 2017**  
**ARTIFICIAL NEURAL NETWORK (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**20**

- 1) Soma or cell body carry signal from one neuron to another neuron.  
a) True                      b) False                      c) Can't say                      d) None
- 2) In \_\_\_\_\_ training for every set of input, desired output is known.  
a) Unsupervised      b) Supervised      c) Parallel                      d) None
- 3) \_\_\_\_\_ network is used for pattern classification/association/mapping.  
a) Feedforward      b) Feedback                      c) Competitive                      d) None
- 4) In \_\_\_\_\_ learning weight values are initialized to small random values around zero.  
a) Delta                      b) Hebbian                      c) Widrow Hoff                      d) Perceptron
- 5) Adaline model is proposed by  
a) Widrow                      b) Rosenblatt                      c) McCulloch                      d) None
- 6) \_\_\_\_\_ algorithm is used to train Multilayer perceptron.  
a) Outstar                      b) Instar  
c) Backpropagation                      d) None
- 7) Perceptron is \_\_\_\_\_ network.  
a) Feedforward      b) Feedback                      c) Competitive                      d) None
- 8) The process of adjusting the weight is called as  
a) Classification      b) Training                      c) Clustering                      d) None
- 9) Neural networks are slow in processing information.  
a) True                      b) False                      c) Can't say                      d) None

P.T.O.



- 10) \_\_\_\_\_ law is valid only for differentiable activation function.  
a) Hebbian                      b) Perceptron                      c) Delta                      d) None
  - 11) Weight adjustment is directly proportional to negative gradient of error with respect to the Weight.  
a) True                      b) False                      c) Can't say                      d) None
  - 12) According to \_\_\_\_\_, each of the weights gets updated.  
a) Activation function                      b) Learning law  
c) Bias                      d) None
  - 13) Neural network stores information in the strengths interconnections.  
a) True                      b) False                      c) Can't say                      d) None
  - 14) Neural network using McCulloch-Pitts model does have learning ability.  
a) True                      b) False                      c) Can't say                      d) None
  - 15) In adaline model \_\_\_\_\_ activation function is used to calculate output of neuron.  
a) Sigmoid                      b) Hardlimit                      c) Linear                      d) None
  - 16) \_\_\_\_\_ network is maximum likelihood classifier for binary inputs.  
a) Adaline                      b) Hamming                      c) Perceptron                      d) None
  - 17) \_\_\_\_\_ is information used by neural network to solve a problem.  
a) Learning rate                      b) Threshold                      c) Weight                      d) None
  - 18) \_\_\_\_\_ is supervised and \_\_\_\_\_ is unsupervised learning law.  
a) Hebbian, Correlation                      b) Correlation, Hebbian  
c) Delta, Widrow Hoff                      d) None
  - 19) Single layer perceptron is capable of solving linearly separable problems.  
a) True                      b) False                      c) Can't say                      d) None
  - 20) \_\_\_\_\_ law is also called as Least Mean Squared (LMS) error learning law.  
a) Delta                      b) Correlation                      c) Perceptron                      d) Widrow Hoff
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**B.E. (CSE) (Part – II) Examination, 2017  
ARTIFICIAL NEURAL NETWORK (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Solve **any four** : **(4×5=20)**
- 1) Compare computer and biological neural networks.
  - 2) What is perceptron ? What are the types of perceptron ? Explain.
  - 3) Describe McCulloch-Pitts model. Also write limitations of this model.
  - 4) Describe the structure of biological neural network.
  - 5) What is linear separability ? Is XOR linearly separable problem ? Explain.
3. Which algorithm is used to train multilayer perceptron ? Explain algorithm used to train multilayer perceptron in detail. **10**
- OR
- Explain Adaline model. **10**
4. Explain following learning law : **10**
- i) Correlation learning law
  - ii) Delta learning law.

**SECTION – II**

5. Solve **any four** : **(4×5=20)**
- 1) What is pattern classification ? Explain with example.
  - 2) Write a note on feedback network.
  - 3) What is pattern association ? Explain with example.
  - 4) What is pattern mapping ? Explain with example.
  - 5) What are the ways of recall of information in neural network ? Explain.
6. Explain application of ANN in recognition of printed characters. **10**
- OR
- Explain application of ANN in Olympic game symbol recognition. **10**
7. Differentiate between feedforward and feedback network. **10**

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**Set R**





SLR-VB – 249

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**B.E. (CSE) (Part – II) Examination, 2017  
ARTIFICIAL NEURAL NETWORK (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

**Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**20**

- 1) \_\_\_\_\_ network is maximum likelihood classifier for binary inputs.  
a) Adaline                      b) Hamming                      c) Perceptron                      d) None
- 2) \_\_\_\_\_ is information used by neural network to solve a problem.  
a) Learning rate                      b) Threshold                      c) Weight                      d) None
- 3) \_\_\_\_\_ is supervised and \_\_\_\_\_ is unsupervised learning law.  
a) Hebbian, Correlation                      b) Correlation, Hebbian  
c) Delta, Widrow Hoff                      d) None
- 4) Single layer perceptron is capable of solving linearly separable problems.  
a) True                      b) False                      c) Can't say                      d) None
- 5) \_\_\_\_\_ law is also called as Least Mean Squared (LMS) error learning law.  
a) Delta                      b) Correlation                      c) Perceptron                      d) Widrow Hoff
- 6) Soma or cell body carry signal from one neuron to another neuron.  
a) True                      b) False                      c) Can't say                      d) None
- 7) In \_\_\_\_\_ training for every set of input, desired output is known.  
a) Unsupervised                      b) Supervised                      c) Parallel                      d) None
- 8) \_\_\_\_\_ network is used for pattern classification/association/mapping.  
a) Feedforward                      b) Feedback                      c) Competitive                      d) None

P.T.O.



- 9) In \_\_\_\_\_ learning weight values are initialized to small random values around zero.  
a) Delta                      b) Hebbian                      c) Widrow Hoff                      d) Perceptron
- 10) Adaline model is proposed by  
a) Widrow                      b) Rosenblatt                      c) McCulloch                      d) None
- 11) \_\_\_\_\_ algorithm is used to train Multilayer perceptron.  
a) Outstar    b) Instar  
c) Backpropagation    d) None
- 12) Perceptron is \_\_\_\_\_ network.  
a) Feedforward                      b) Feedback                      c) Competitive                      d) None
- 13) The process of adjusting the weight is called as  
a) Classification                      b) Training                      c) Clustering                      d) None
- 14) Neural networks are slow in processing information.  
a) True                      b) False                      c) Can't say                      d) None
- 15) \_\_\_\_\_ law is valid only for differentiable activation function.  
a) Hebbian                      b) Perceptron                      c) Delta                      d) None
- 16) Weight adjustment is directly proportional to negative gradient of error with respect to the Weight.  
a) True                      b) False                      c) Can't say                      d) None
- 17) According to \_\_\_\_\_, each of the weights gets updated.  
a) Activation function    b) Learning law  
c) Bias    d) None
- 18) Neural network stores information in the strengths interconnections.  
a) True                      b) False                      c) Can't say                      d) None
- 19) Neural network using McCulloch-Pitts model does have learning ability.  
a) True                      b) False                      c) Can't say                      d) None
- 20) In adaline model \_\_\_\_\_ activation function is used to calculate output of neuron.  
a) Sigmoid                      b) Hardlimit                      c) Linear                      d) None
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**B.E. (CSE) (Part – II) Examination, 2017  
ARTIFICIAL NEURAL NETWORK (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Solve **any four** : **(4×5=20)**
- 1) Compare computer and biological neural networks.
  - 2) What is perceptron ? What are the types of perceptron ? Explain.
  - 3) Describe McCulloch-Pitts model. Also write limitations of this model.
  - 4) Describe the structure of biological neural network.
  - 5) What is linear separability ? Is XOR linearly separable problem ? Explain.
3. Which algorithm is used to train multilayer perceptron ? Explain algorithm used to train multilayer perceptron in detail. **10**
- OR
- Explain Adaline model. **10**
4. Explain following learning law : **10**
- i) Correlation learning law
  - ii) Delta learning law.

**SECTION – II**

5. Solve **any four** : **(4×5=20)**
- 1) What is pattern classification ? Explain with example.
  - 2) Write a note on feedback network.
  - 3) What is pattern association ? Explain with example.
  - 4) What is pattern mapping ? Explain with example.
  - 5) What are the ways of recall of information in neural network ? Explain.
6. Explain application of ANN in recognition of printed characters. **10**
- OR
- Explain application of ANN in Olympic game symbol recognition. **10**
7. Differentiate between feedforward and feedback network. **10**

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**Set S**









- 8) \_\_\_\_\_ is a robust database that supports ACID properties of transactions and has the scalability of NoSQL.  
a) NoSQL                      b) NewSQL                      c) MySQL                      d) SQL
- 9) Hadoop supports \_\_\_\_\_ data formats.  
a) Structured                      b) Semi-structured  
c) Unstructured                      d) All above
- 10) Mongo DB is \_\_\_\_\_  
a) RDBMS                      b) Document-oriented DBMS  
c) Object oriented DBMS                      d) Key-value store
- 11) Which command in Mongo DB is equivalent to SQL select ?  
a) Find()                      b) Search()                      c) Document()                      d) None of above
- 12) What does the following command do ?  
db.sample.find().limit(10)  
a) Show 10 documents randomly from the collection sample  
b) Show only first 10 documents from the collection sample  
c) Repeats the first document 10 times  
d) None of above
- 13) Cassandra is a column-oriented database designed to supports \_\_\_\_\_ symmetric node architecture.  
a) Peer-to-peer                      b) Master-slave                      c) Both a) and b)                      d) None of above
- 14) The 3 types of collections used in Cassandra are  
a) Array, List, Map                      b) List, Map, Struct  
c) List, Set, Map                      d) Set, Map, Array
- 15) Hive is a \_\_\_\_\_ tool.  
a) Data flow                      b) Data transfer  
c) Column-oriented                      d) Data warehousing
- 16) The metastore in Hive consist of \_\_\_\_\_ and \_\_\_\_\_  
a) Driver, services                      b) Metaservices, database  
c) Driver, database                      d) Metaservices, driver
- 17) Pig is \_\_\_\_\_  
a) Data Flow language                      b) NoSQL database  
c) Import Export tool                      d) Scheduling engine
- 18) In Cassandra, \_\_\_\_\_ is called peer-to-peer communication protocol used for intra-ring communication.  
a) Anti-Entropy                      b) Hinted Handoffs  
c) Gossip Protocol                      d) None of above
- 19) ETL processing in Pig stands for  
a) Extract, Transform and Load                      b) Extend, Transfer and Load  
c) Extract, Transform and Local                      d) None of above
- 20) Core MongoDB operations are  
a) Create, Select, Update, Delete                      b) Create, Read, Update, Delete  
c) Create, Read, Update, Drop                      d) Create, Remove, Update, Drop



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**B.E. (C.S.E.) (Part – II) Examination, 2017  
BIG DATA ANALYTICS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**Instructions :** 1) *Figures to the right indicate full marks.*  
2) **All questions are compulsory.**

SECTION – I

2. Attempt **any four** (each carries 5 marks) : **(4×5=20)**
- a) What is Massively Parallel processing terminology used in Big Data ?
  - b) Explain Sources of Unstructured Data.
  - c) What is Big data ? Explain different characteristics of Big data.
  - d) Explain features of Data Node.
  - e) Explain Hadoop 1.0 and Hadoop 2.0.
3. Attempt **any two** (each carries 10 marks) : **(2×10=20)**
- a) What is Big Data analytics ? Explain classification of Big Data Analytics.
  - b) Describe the anatomy of file write in HDFS.
  - c) How MapReduce works ? Explain with example.

SECTION – II

4. Attempt **any four** (each carries 5 marks) : **(4×5=20)**
- a) Write difference between SQL and MongoDB.
  - b) Explain CRUD operations in Cassandra.
  - c) Explain Map Reduce programming in MongoDB with suitable example.
  - d) Write Word Count example using Pig.
  - e) Explain the process of replication and Sharding in MongoDB.
5. Attempt **any two** (each carries 10 marks) : **(2×10=20)**
- a) Explain Hive architecture with diagram. Also explain Hive file format.
  - b) What is Cassandra ? Explain features of Cassandra.
  - c) Describe Pig philosophy also explain ETL processing in Pig.

Set P





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**B.E. (C.S.E.) (Part – II) Examination, 2017  
BIG DATA ANALYTICS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Figures to the **right** indicate **full** marks.
  - 2) **All** questions are **compulsory**.
  - 3) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The metastore in Hive consist of \_\_\_\_\_ and \_\_\_\_\_
  - a) Driver, services
  - b) Metaservices, database
  - c) Driver, database
  - d) Metaservices, driver
- 2) Pig is \_\_\_\_\_
  - a) Data Flow language
  - b) NoSQL database
  - c) Import Export tool
  - d) Scheduling engine
- 3) In Cassandra, \_\_\_\_\_ is called peer-to-peer communication protocol used for intra-ring communication.
  - a) Anti-Entropy
  - b) Hinted Handoffs
  - c) Gossip Protocol
  - d) None of above
- 4) ETL processing in Pig stands for
  - a) Extract, Transform and Load
  - b) Extend, Transfer and Load
  - c) Extract, Transform and Local
  - d) None of above
- 5) Core MongoDB operations are
  - a) Create, Select, Update, Delete
  - b) Create, Read, Update, Delete
  - c) Create, Read, Update, Drop
  - d) Create, Remove, Update, Drop
- 6) Databases are under the catagory of \_\_\_\_\_ data.
  - a) Structured data
  - b) Semi-structured data
  - c) Unstructured data
  - d) None of above
- 7) \_\_\_\_\_ is used to transmit data between a web server and a web application.
  - a) XML
  - b) JSON
  - c) Both a) and b)
  - d) None

P.T.O.



- 8) Cassandra based on \_\_\_\_\_ and \_\_\_\_\_ properties of CAP theorem.
- Consistency and availability
  - Availability and partition tolerance
  - Consistency and partition tolerance
  - All of the above
- 9) Big volume of data like 1 petabytes is equal to \_\_\_\_\_
- $1024^4$  Bytes
  - $1024^6$  Bytes
  - $1024^5$  Bytes
  - $1024^7$  Bytes
- 10) A coordinated processing of a program by multiple processors, each working on different part of the program and using its own operating system and memory is called \_\_\_\_\_
- In-memory analysis
  - Distributed system
  - Massively parallel processing
  - None of above
- 11) The 3V's terms of Big data was first introduced by \_\_\_\_\_
- Doug Laney
  - Brewer
  - Carlo Strozzi
  - Doug cutting
- 12) Cap theorem is also called as \_\_\_\_\_ theorem.
- Doug Laney
  - Brewer
  - Carlo Strozzi
  - Doug cutting
- 13) \_\_\_\_\_ is a robust database that supports ACID properties of transactions and has the scalability of NoSQL.
- NoSQL
  - NewSQL
  - MySQL
  - SQL
- 14) Hadoop supports \_\_\_\_\_ data formats.
- Structured
  - Semi-structured
  - Unstructured
  - All above
- 15) Mongo DB is \_\_\_\_\_
- RDBMS
  - Document-oriented DBMS
  - Object oriented DBMS
  - Key-value store
- 16) Which command in Mongo DB is equivalent to SQL select ?
- Find()
  - Search()
  - Document()
  - None of above
- 17) What does the following command do ?  
`db.sample.find().limit(10)`
- Show 10 documents randomly from the collection sample
  - Show only first 10 documents from the collection sample
  - Repeats the first document 10 times
  - None of above
- 18) Cassandra is a column-oriented database designed to supports \_\_\_\_\_ symmetric node architecture.
- Peer-to-peer
  - Master-slave
  - Both a) and b)
  - None of above
- 19) The 3 types of collections used in Cassandra are
- Array, List, Map
  - List, Map, Struct
  - List, Set, Map
  - Set, Map, Array
- 20) Hive is a \_\_\_\_\_ tool.
- Data flow
  - Data transfer
  - Column-oriented
  - Data warehousing



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**B.E. (C.S.E.) (Part – II) Examination, 2017  
BIG DATA ANALYTICS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) *Figures to the right indicate full marks.*  
2) **All questions are compulsory.**

SECTION – I

2. Attempt **any four (each carries 5 marks)** : **(4×5=20)**
- a) What is Massively Parallel processing terminology used in Big Data ?
  - b) Explain Sources of Unstructured Data.
  - c) What is Big data ? Explain different characteristics of Big data.
  - d) Explain features of Data Node.
  - e) Explain Hadoop 1.0 and Hadoop 2.0.
3. Attempt **any two (each carries 10 marks)** : **(2×10=20)**
- a) What is Big Data analytics ? Explain classification of Big Data Analytics.
  - b) Describe the anatomy of file write in HDFS.
  - c) How MapReduce works ? Explain with example.

SECTION – II

4. Attempt **any four (each carries 5 marks)** : **(4×5=20)**
- a) Write difference between SQL and MongoDB.
  - b) Explain CRUD operations in Cassandra.
  - c) Explain Map Reduce programming in MongoDB with suitable example.
  - d) Write Word Count example using Pig.
  - e) Explain the process of replication and Sharding in MongoDB.
5. Attempt **any two (each carries 10 marks)** : **(2×10=20)**
- a) Explain Hive architecture with diagram. Also explain Hive file format.
  - b) What is Cassandra ? Explain features of Cassandra.
  - c) Describe Pig philosophy also explain ETL processing in Pig.

**Set Q**







SLR-VB – 250

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**B.E. (C.S.E.) (Part – II) Examination, 2017  
BIG DATA ANALYTICS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Figures to the **right** indicate **full** marks.
  - 2) **All** questions are **compulsory**.
  - 3) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**(20×1=20)**

- 1) Which command in Mongo DB is equivalent to SQL select ?  
a) Find()                      b) Search()                      c) Document()                      d) None of above
- 2) What does the following command do ?  
db.sample.find().limit(10)  
a) Show 10 documents randomly from the collection sample  
b) Show only first 10 documents from the collection sample  
c) Repeats the first document 10 times  
d) None of above
- 3) Cassandra is a column-oriented database designed to supports \_\_\_\_\_ symmetric node architecture.  
a) Peer-to-peer                      b) Master-slave                      c) Both a) and b)                      d) None of above
- 4) The 3 types of collections used in Cassandra are  
a) Array, List, Map                      b) List, Map, Struct  
c) List, Set, Map                      d) Set, Map, Array
- 5) Hive is a \_\_\_\_\_ tool.  
a) Data flow                      b) Data transfer  
c) Column-oriented                      d) Data warehousing
- 6) The metastore in Hive consist of \_\_\_\_\_ and \_\_\_\_\_  
a) Driver, services                      b) Metaservices, database  
c) Driver, database                      d) Metaservices, driver
- 7) Pig is \_\_\_\_\_  
a) Data Flow language                      b) NoSQL database  
c) Import Export tool                      d) Scheduling engine

P.T.O.





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**B.E. (C.S.E.) (Part – II) Examination, 2017  
BIG DATA ANALYTICS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) *Figures to the right indicate full marks.*  
2) **All questions are compulsory.**

**SECTION – I**

2. Attempt **any four (each carries 5 marks)** : **(4×5=20)**
- a) What is Massively Parallel processing terminology used in Big Data ?
  - b) Explain Sources of Unstructured Data.
  - c) What is Big data ? Explain different characteristics of Big data.
  - d) Explain features of Data Node.
  - e) Explain Hadoop 1.0 and Hadoop 2.0.
3. Attempt **any two (each carries 10 marks)** : **(2×10=20)**
- a) What is Big Data analytics ? Explain classification of Big Data Analytics.
  - b) Describe the anatomy of file write in HDFS.
  - c) How MapReduce works ? Explain with example.

**SECTION – II**

4. Attempt **any four (each carries 5 marks)** : **(4×5=20)**
- a) Write difference between SQL and MongoDB.
  - b) Explain CRUD operations in Cassandra.
  - c) Explain Map Reduce programming in MongoDB with suitable example.
  - d) Write Word Count example using Pig.
  - e) Explain the process of replication and Sharding in MongoDB.
5. Attempt **any two (each carries 10 marks)** : **(2×10=20)**
- a) Explain Hive architecture with diagram. Also explain Hive file format.
  - b) What is Cassandra ? Explain features of Cassandra.
  - c) Describe Pig philosophy also explain ETL processing in Pig.





SLR-VB – 250

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**B.E. (C.S.E.) (Part – II) Examination, 2017  
BIG DATA ANALYTICS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Figures to the **right** indicate **full** marks.
  - 2) **All** questions are **compulsory**.
  - 3) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. **3**. **Each** question carries **one** mark.
  - 4) **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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The 3V's terms of Big data was first introduced by \_\_\_\_\_  
a) Doug Laney      b) Brewer      c) Carlo Strozzi      d) Doug cutting
- 2) Cap theorem is also called as \_\_\_\_\_ theorem.  
a) Doug Laney      b) Brewer      c) Carlo Strozzi      d) Doug cutting
- 3) \_\_\_\_\_ is a robust database that supports ACID properties of transactions and has the scalability of NoSQL.  
a) NoSQL      b) NewSQL      c) MySQL      d) SQL
- 4) Hadoop supports \_\_\_\_\_ data formats.  
a) Structured      b) Semi-structured  
c) Unstructured      d) All above
- 5) Mongo DB is \_\_\_\_\_  
a) RDBMS      b) Document-oriented DBMS  
c) Object oriented DBMS      d) Key-value store
- 6) Which command in Mongo DB is equivalent to SQL select ?  
a) Find()      b) Search()      c) Document()      d) None of above
- 7) What does the following command do ?  
db.sample.find().limit(10)  
a) Show 10 documents randomly from the collection sample  
b) Show only first 10 documents from the collection sample  
c) Repeats the first document 10 times  
d) None of above
- 8) Cassandra is a column-oriented database designed to supports \_\_\_\_\_ symmetric node architecture.  
a) Peer-to-peer      b) Master-slave      c) Both a) and b)      d) None of above

P.T.O.





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**B.E. (C.S.E.) (Part – II) Examination, 2017  
BIG DATA ANALYTICS (Elective – IV)**

Day and Date : Tuesday, 23-5-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**Instructions :** 1) *Figures to the right indicate full marks.*  
2) **All questions are compulsory.**

SECTION – I

2. Attempt **any four** (each carries 5 marks) : **(4×5=20)**
- a) What is Massively Parallel processing terminology used in Big Data ?
  - b) Explain Sources of Unstructured Data.
  - c) What is Big data ? Explain different characteristics of Big data.
  - d) Explain features of Data Node.
  - e) Explain Hadoop 1.0 and Hadoop 2.0.
3. Attempt **any two** (each carries 10 marks) : **(2×10=20)**
- a) What is Big Data analytics ? Explain classification of Big Data Analytics.
  - b) Describe the anatomy of file write in HDFS.
  - c) How MapReduce works ? Explain with example.

SECTION – II

4. Attempt **any four** (each carries 5 marks) : **(4×5=20)**
- a) Write difference between SQL and MongoDB.
  - b) Explain CRUD operations in Cassandra.
  - c) Explain Map Reduce programming in MongoDB with suitable example.
  - d) Write Word Count example using Pig.
  - e) Explain the process of replication and Sharding in MongoDB.
5. Attempt **any two** (each carries 10 marks) : **(2×10=20)**
- a) Explain Hive architecture with diagram. Also explain Hive file format.
  - b) What is Cassandra ? Explain features of Cassandra.
  - c) Describe Pig philosophy also explain ETL processing in Pig.

**Set S**







SLR-VB – 251

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**B.E. (CSE) (Part – II) (Old) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) There is no precise classification of mobile and wireless devices by
  - a) Size
  - b) Shape
  - c) Weight or computing power
  - d) All of the options
- 2) Which of the following services depends on location ?
  - a) Location aware services
  - b) Privacy
  - c) Information services
  - d) All of the options
- 3) Conventional analog TV is transmitted in ranges of \_\_\_\_\_ frequency.
  - a) VHF
  - b) UHF
  - c) VHF and UHF
  - d) None of the options
- 4) Which layer of the ISO/OSI basic reference model is responsible for the conversion of data i.e. bits into signals and vice versa ?
  - a) Layer 1
  - b) Layer 2
  - c) Layer 3
  - d) Layer 4
- 5) Which of the following is the signal parameter ?
  - a) Amplitude
  - b) Frequency
  - c) Phase shift
  - d) All of the options
- 6) Antennas couple eletromagnetic energy to \_\_\_\_\_
  - a) To and from space to and from a wire
  - b) Coaxial cable
  - c) Both options a) and b)
  - d) None of the options
- 7) In which of the following multiple access, all terminals are active for short periods of time on the same frequency ?
  - a) TDMA
  - b) SDMA
  - c) FDMA
  - d) CDMA
- 8) Disadvantage of SDMA is
  - a) Inflexible
  - b) Antennas typically fixed
  - c) Both option a) and b)
  - d) None of the options

P.T.O.



- 9) Disadvantage of FDMA is
- a) Complex receivers
  - b) Inflexible, frequencies are a scarce resource
  - c) Guard space needed
  - d) Needs more complicated power control for senders
- 10) Channel coding and decoding is done by
- a) BTS
  - b) BSC
  - c) MSC
  - d) GMSC
- 11) The \_\_\_\_\_ defines the current location of the MN human RP point view.
- a) FA
  - b) HA
  - c) COA
  - d) CN
- 12) Foreign agent and home agent advertise their presence periodically using special \_\_\_\_\_ messages.
- a) Agent discovery
  - b) Agent advertisement
  - c) Agent solitation
  - d) Router discovery
- 13) An agent advertisement, \_\_\_\_\_ levels for each address help a mode to choose the router that is the most eager one to get a new node.
- a) Type
  - b) Address
  - c) Lifetime
  - d) Preference
- 14) An agent shows the number of advertisement sent since initialization in the sequence number
- a) One
  - b) Ten
  - c) Selected
  - d) Total
- 15) Registration can be done in \_\_\_\_\_ different way depending on the location of the COA.
- a) 2
  - b) 3
  - c) 4
  - d) 5
- 16) The Home Agent (HA) sets up a \_\_\_\_\_ containing the mobile nodes home IP address and the current COA.
- a) Date binding
  - b) Mobiling binding
  - c) Information binding
  - d) Binding of network
- 17) A \_\_\_\_\_ which is conversed in a UDP packet, contains a type field set to 3 and a code indicating the result to the registration request.
- a) Registration reply
  - b) Registration accepted
  - c) Registration unsupported
  - d) Registration request
- 18) A \_\_\_\_\_ establishes a virtual pipe for date packets between a inner entry and a inner exit point.
- a) Tunnel
  - b) Header
  - c) Data
  - d) Original ip
- 19) \_\_\_\_\_ is a mechanism as tasking a packet consisting of packet header an date and pushing it into the data part of a new packet.
- a) Decapsulation
  - b) Encapsulation
  - c) Synchronous
  - d) Asynchronous
- 20) How many headers are present in the IP encapsulation structure ?
- a) 4
  - b) 3
  - c) 2
  - d) 1



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**B.E. (CSE) (Part – II) (Old) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Monday, 22-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

**SECTION – I**

2. Attempt **any 4** : **(4×5=20)**

a) Define the following terms :

Sensor, Embedded controllers, Pager, Personal Digital Assistant and Mobile Phones.

b) Draw the frequency spectrum diagram. Write the application of low frequency and super high frequency.

c) Represent the signal in frequency domain and phase domain. Define In-Phase (I), Quadrature (Q) and Isotropic radiator.

d) What is polling ? Explain inhibit sense multiple access.

e) With neat diagram explain bearer and teleservices reference model.

3. Why baseband signal cannot be directly transmitted in a wireless system ? Explain modulation in a transmitter and demodulation and reconstruction in a receiver. **10**

**OR**

Explain hidden and exposed terminals and near and far terminals with diagram.

4. With neat diagram explain the functional architecture of a GSM system. **10**

**Set P**



SECTION – II

5. Solve **any four** : **(4×5=20)**

- 1) Discuss snooping TCP.
- 2) Explain IP packet delivery.
- 3) Explain architecture of IEEE 802.11 adhoc Wireless LANs.
- 4) Explain IP in IP encapsulation.
- 5) Explain reverse tunneling.

6. Explain generic routing encapsulation. **10**

OR

Explain indirect TCP with advantage and disadvantage.

7. Explain registration procedure of MN via foreign agent depending on location of COA. **10**

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**B.E. (CSE) (Part – II) (Old) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Monday, 22-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

**SECTION – I**

2. Attempt **any 4** : **(4×5=20)**

a) Define the following terms :

Sensor, Embedded controllers, Pager, Personal Digital Assistant and Mobile Phones.

b) Draw the frequency spectrum diagram. Write the application of low frequency and super high frequency.

c) Represent the signal in frequency domain and phase domain. Define In-Phase (I), Quadrature (Q) and Isotropic radiator.

d) What is polling ? Explain inhibit sense multiple access.

e) With neat diagram explain bearer and teleservices reference model.

3. Why baseband signal cannot be directly transmitted in a wireless system ? Explain modulation in a transmitter and demodulation and reconstruction in a receiver. **10**

**OR**

Explain hidden and exposed terminals and near and far terminals with diagram.

4. With neat diagram explain the functional architecture of a GSM system. **10**

**Set Q**





SECTION – II

5. Solve **any four** : **(4×5=20)**

- 1) Discuss snooping TCP.
- 2) Explain IP packet delivery.
- 3) Explain architecture of IEEE 802.11 adhoc Wireless LANs.
- 4) Explain IP in IP encapsulation.
- 5) Explain reverse tunneling.

6. Explain generic routing encapsulation. **10**

OR

Explain indirect TCP with advantage and disadvantage.

7. Explain registration procedure of MN via foreign agent depending on location of COA. **10**

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SLR-VB – 251

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**B.E. (CSE) (Part – II) (Old) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.  
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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**(20×1=20)**

- 1) The \_\_\_\_\_ defines the current location of the MN human RP point view.  
a) FA                      b) HA                      c) COA                      d) CN
- 2) Foreign agent and home agent advertise their presence periodically using special \_\_\_\_\_ messages.  
a) Agent discovery                      b) Agent advertisement  
c) Agent solitation                      d) Router discovery
- 3) An agent advertisement, \_\_\_\_\_ levels for each address help a mode to choose the router that is the most eager one to get a new node.  
a) Type                      b) Address                      c) Lifetime                      d) Preference
- 4) An agent shows the number of advertisement sent since initialization in the sequence number  
a) One                      b) Ten                      c) Selected                      d) Total
- 5) Registration can be done in \_\_\_\_\_ different way depending on the location of the COA.  
a) 2                      b) 3                      c) 4                      d) 5
- 6) The Home Agent (HA) sets up a \_\_\_\_\_ containing the mobile nodes home IP address and the current COA.  
a) Date binding                      b) Mobiling binding  
c) Information binding                      d) Binding of network
- 7) A \_\_\_\_\_ which is conversed in a UDP packet, contains a type field set to 3 and a code indicating the result to the registration request.  
a) Registration reply                      b) Registration accepted  
c) Registration unsupported                      d) Registration request

P.T.O.



- 8) A \_\_\_\_\_ establishes a virtual pipe for data packets between an inner entry and an inner exit point.  
a) Tunnel                      b) Header                      c) Data                      d) Original ip
- 9) \_\_\_\_\_ is a mechanism as taking a packet consisting of packet header and data and pushing it into the data part of a new packet.  
a) Decapsulation                      b) Encapsulation  
c) Synchronous                      d) Asynchronous
- 10) How many headers are present in the IP encapsulation structure ?  
a) 4                      b) 3                      c) 2                      d) 1
- 11) There is no precise classification of mobile and wireless devices by  
a) Size                      b) Shape  
c) Weight or computing power                      d) All of the options
- 12) Which of the following services depends on location ?  
a) Location aware services                      b) Privacy  
c) Information services                      d) All of the options
- 13) Conventional analog TV is transmitted in ranges of \_\_\_\_\_ frequency.  
a) VHF                      b) UHF  
c) VHF and UHF                      d) None of the options
- 14) Which layer of the ISO/OSI basic reference model is responsible for the conversion of data i.e. bits into signals and vice versa ?  
a) Layer 1                      b) Layer 2                      c) Layer 3                      d) Layer 4
- 15) Which of the following is the signal parameter ?  
a) Amplitude                      b) Frequency                      c) Phase shift                      d) All of the options
- 16) Antennas couple electromagnetic energy to \_\_\_\_\_  
a) To and from space to and from a wire                      b) Coaxial cable  
c) Both options a) and b)                      d) None of the options
- 17) In which of the following multiple access, all terminals are active for short periods of time on the same frequency ?  
a) TDMA                      b) SDMA                      c) FDMA                      d) CDMA
- 18) Disadvantage of SDMA is  
a) Inflexible                      b) Antennas typically fixed  
c) Both option a) and b)                      d) None of the options
- 19) Disadvantage of FDMA is  
a) Complex receivers  
b) Inflexible, frequencies are a scarce resource  
c) Guard space needed  
d) Needs more complicated power control for senders
- 20) Channel coding and decoding is done by  
a) BTS                      b) BSC                      c) MSC                      d) GMSC



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**B.E. (CSE) (Part – II) (Old) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Monday, 22-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

**SECTION – I**

2. Attempt **any 4** : **(4×5=20)**

a) Define the following terms :

Sensor, Embedded controllers, Pager, Personal Digital Assistant and Mobile Phones.

b) Draw the frequency spectrum diagram. Write the application of low frequency and super high frequency.

c) Represent the signal in frequency domain and phase domain. Define In-Phase (I), Quadrature (Q) and Isotropic radiator.

d) What is polling ? Explain inhibit sense multiple access.

e) With neat diagram explain bearer and teleservices reference model.

3. Why baseband signal cannot be directly transmitted in a wireless system ? Explain modulation in a transmitter and demodulation and reconstruction in a receiver. **10**

**OR**

Explain hidden and exposed terminals and near and far terminals with diagram.

4. With neat diagram explain the functional architecture of a GSM system. **10**

**Set R**



SECTION – II

5. Solve **any four** : **(4×5=20)**

- 1) Discuss snooping TCP.
- 2) Explain IP packet delivery.
- 3) Explain architecture of IEEE 802.11 adhoc Wireless LANs.
- 4) Explain IP in IP encapsulation.
- 5) Explain reverse tunneling.

6. Explain generic routing encapsulation. **10**

OR

Explain indirect TCP with advantage and disadvantage.

7. Explain registration procedure of MN via foreign agent depending on location of COA. **10**

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SLR-VB – 251

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**B.E. (CSE) (Part – II) (Old) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Monday, 22-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Antennas couple electromagnetic energy to \_\_\_\_\_
  - a) To and from space to and from a wire
  - b) Coaxial cable
  - c) Both options a) and b)
  - d) None of the options
- 2) In which of the following multiple access, all terminals are active for short periods of time on the same frequency ?
  - a) TDMA
  - b) SDMA
  - c) FDMA
  - d) CDMA
- 3) Disadvantage of SDMA is
  - a) Inflexible
  - b) Antennas typically fixed
  - c) Both option a) and b)
  - d) None of the options
- 4) Disadvantage of FDMA is
  - a) Complex receivers
  - b) Inflexible, frequencies are a scarce resource
  - c) Guard space needed
  - d) Needs more complicated power control for senders
- 5) Channel coding and decoding is done by
  - a) BTS
  - b) BSC
  - c) MSC
  - d) GMSC
- 6) The \_\_\_\_\_ defines the current location of the MN human RP point view.
  - a) FA
  - b) HA
  - c) COA
  - d) CN
- 7) Foreign agent and home agent advertise their presence periodically using special \_\_\_\_\_ messages.
  - a) Agent discovery
  - b) Agent advertisement
  - c) Agent solitation
  - d) Router discovery
- 8) An agent advertisement, \_\_\_\_\_ levels for each address help a mode to choose the router that is the most eager one to get a new node.
  - a) Type
  - b) Address
  - c) Lifetime
  - d) Preference

P.T.O.



- 9) An agent shows the number of advertisement sent since initialization in the sequence number  
a) One                      b) Ten                      c) Selected              d) Total
- 10) Registration can be done in \_\_\_\_\_ different way depending on the location of the COA.  
a) 2                          b) 3                          c) 4                          d) 5
- 11) The Home Agent (HA) sets up a \_\_\_\_\_ containing the mobile nodes home IP address and the current COA.  
a) Date binding                      b) Mobiling binding  
c) Information binding              d) Binding of network
- 12) A \_\_\_\_\_ which is conversed in a UDP packet, contains a type field set to 3 and a code indicating the result to the registration request.  
a) Registration reply                      b) Registration accepted  
c) Registration unsupported              d) Registration request
- 13) A \_\_\_\_\_ establishes a virtual pipe for date packets between a inner entry and a inner exit point.  
a) Tunnel                      b) Header                      c) Data                      d) Original ip
- 14) \_\_\_\_\_ is a mechanism as tasking a packet consisting of packet header an date and pushing it into the data part of a new packet.  
a) Decapsulation                      b) Encapsulation  
c) Synchronous                      d) Asynchronous
- 15) How many headers are present in the IP encapsulation structure ?  
a) 4                          b) 3                          c) 2                          d) 1
- 16) There is no precise classification of mobile and wireless devices by  
a) Size                          b) Shape  
c) Weight or computing power              d) All of the options
- 17) Which of the following services depends on location ?  
a) Location aware services                      b) Privacy  
c) Information services                      d) All of the options
- 18) Conventional analog TV is transmitted in ranges of \_\_\_\_\_ frequency.  
a) VHF                          b) UHF  
c) VHF and UHF                      d) None of the options
- 19) Which layer of the ISO/OSI basic reference model is responsible for the conversion of data i.e. bits into signals and vice versa ?  
a) Layer 1                      b) Layer 2                      c) Layer 3                      d) Layer 4
- 20) Which of the following is the signal parameter ?  
a) Amplitude                      b) Frequency                      c) Phase shift                      d) All of the options



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**B.E. (CSE) (Part – II) (Old) Examination, 2017  
MOBILE COMPUTING**

Day and Date : Monday, 22-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

**SECTION – I**

2. Attempt **any 4** : **(4×5=20)**

a) Define the following terms :

Sensor, Embedded controllers, Pager, Personal Digital Assistant and Mobile Phones.

b) Draw the frequency spectrum diagram. Write the application of low frequency and super high frequency.

c) Represent the signal in frequency domain and phase domain. Define In-Phase (I), Quadrature (Q) and Isotropic radiator.

d) What is polling ? Explain inhibit sense multiple access.

e) With neat diagram explain bearer and teleservices reference model.

3. Why baseband signal cannot be directly transmitted in a wireless system ? Explain modulation in a transmitter and demodulation and reconstruction in a receiver. **10**

**OR**

Explain hidden and exposed terminals and near and far terminals with diagram.

4. With neat diagram explain the functional architecture of a GSM system. **10**

**Set S**





SECTION – II

5. Solve **any four** : **(4×5=20)**

- 1) Discuss snooping TCP.
- 2) Explain IP packet delivery.
- 3) Explain architecture of IEEE 802.11 adhoc Wireless LANs.
- 4) Explain IP in IP encapsulation.
- 5) Explain reverse tunneling.

6. Explain generic routing encapsulation. **10**

OR

Explain indirect TCP with advantage and disadvantage.

7. Explain registration procedure of MN via foreign agent depending on location of COA. **10**

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SLR-VB – 252

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**B.E. (Computer Science and Engg.) (Part – II) Examination, 2017  
DATA MINING (Elective – II) (Old)**

Day and Date : Wednesday, 24-5-2017

Total Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All questions are compulsory.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) In data mining, output is Fuzzy.  
a) True  
b) False
- 2) \_\_\_\_\_ is an approach to handle missing data.  
a) Ignore the missing value  
b) Assume a value for missing data  
c) Fill missing value manually  
d) All the above
- 3) \_\_\_\_\_ is supervised learning.  
a) Classification  
b) Regression  
c) Clustering  
d) None of above
- 4) Which of the following is a measure task in data preprocessing ?  
a) Data transformation  
b) Classification  
c) Clustering  
d) None of above
- 5) Which among the following is an example of spatial databases ?  
a) Stock Price Database  
b) Daily Temperature  
c) VLSI database  
d) Super Market Transaction
- 6) \_\_\_\_\_ is one of the method to handle noisy data.  
a) Catching  
b) Crawling  
c) Binning  
d) None of the above
- 7) Full form of SPADE is \_\_\_\_\_  
a) Sequential Pattern Discovery using Equivalence Classes  
b) Serial Pattern Discovery using Equal Closure  
c) Sequence Pattern Disclosure using Equal Classes  
d) None
- 8) In classification, class labels of training data are \_\_\_\_\_  
a) Known  
b) Unknown  
c) Predefined  
d) None of above

P.T.O.





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**B.E. (Computer Science and Engg.) (Part – II) Examination, 2017  
DATA MINING (Elective – II) (Old)**

Day and Date : Wednesday, 24-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

**Instruction : All questions are compulsory.**

SECTION – I

2. Solve **any four** : **(4×5=20)**
- a) What are different issues in KDD ?
  - b) Why there is a need of data preprocessing ?
  - c) Define and explain the terms Support and Confidence.
  - d) What is supervised and unsupervised learning ?
  - e) Describe any five data mining applications.
3. With neat diagram, explain KDD process in detail. **10**

OR

Explain in detail classification by decision tree induction method. Write DTBuild algorithm.

4. Explain K-means clustering algorithm with example. **10**

SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) What do you mean by web usage mining ? Explain.
  - b) Write a note on multimedia data mining.
  - c) Explain page rank and clever in detail.
  - d) Write a note on Web Content Mining.
  - e) Explain partitioning algorithm.

6. Explain and write Apriori algorithm for frequent item set mining with suitable example. **10**

OR

Write in detail note on time series analysis. **10**

7. Write short notes on : **10**
- a) Spatial Data Mining Primitives
  - b) Spatial data mining. **Set P**





SLR-VB – 252

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**B.E. (Computer Science and Engg.) (Part – II) Examination, 2017  
DATA MINING (Elective – II) (Old)**

Day and Date : Wednesday, 24-5-2017

Total Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All questions are compulsory.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The "IF"- part of a rule is known as \_\_\_\_\_
  - a) Rule Antecedent
  - b) Rule Consequent
  - c) Action
  - d) None of these
- 2) "Find all houses near Delhi Public School" is a \_\_\_\_\_ type of query.
  - a) Temporal
  - b) Spatial
  - c) Web Content
  - d) None of these
- 3) \_\_\_\_\_ is a basic data structure used to keep track of patterns identified during the web usage mining process.
  - a) Tree
  - b) B+tree
  - c) Graph
  - d) None of these
- 4) BIRCH algorithm is used for \_\_\_\_\_.
  - a) Clustering
  - b) Classification
  - c) Association rule generation
  - d) None of these
- 5) K-means clustering is a \_\_\_\_\_ clustering method.
  - a) Partitional
  - b) Sampling
  - c) Hierarchical
  - d) Categorical
- 6) In data mining, output is Fuzzy.
  - a) True
  - b) False
- 7) \_\_\_\_\_ is an approach to handle missing data.
  - a) Ignore the missing value
  - b) Assume a value for missing data
  - c) Fill missing value manually
  - d) All the above
- 8) \_\_\_\_\_ is supervised learning.
  - a) Classification
  - b) Regression
  - c) Clustering
  - d) None of above

P.T.O.



- 9) Which of the following is a measure task in data preprocessing ?  
a) Data transformation                      b) Classification  
c) Clustering                                      d) None of above
- 10) Which among the following is an example of spatial databases ?  
a) Stock Price Database                      b) Daily Temperature  
c) VLSI database                                      d) Super Market Transaction
- 11) \_\_\_\_\_ is one of the method to handle noisy data.  
a) Catching                                      b) Crawling  
c) Binning                                      d) None of the above
- 12) Full form of SPADE is \_\_\_\_\_  
a) Sequential Pattern Discovery using Equivalence Classes  
b) Serial Pattern Discovery using Equal Closure  
c) Sequence Pattern Disclosure using Equal Classes  
d) None
- 13) In classification, class labels of training data are \_\_\_\_\_  
a) Known                                      b) Unknown  
c) Predefined                                      d) None of above
- 14) In classification by decision tree method, each \_\_\_\_\_ node holds a class label.  
a) Leaf                                      b) Root  
c) Internal                                      d) None of above
- 15) \_\_\_\_\_ are important issues in classification by decision tree method.  
a) Choosing splitting attribute                      b) Pruning  
c) Ordering of splitting attributes                      d) All of above
- 16) \_\_\_\_\_ is a spatial database primitive.  
a) Time                                      b) Distance  
c) Transaction item                                      d) None
- 17) Trend Analysis can be done on \_\_\_\_\_ data.  
a) Spatial                                      b) Transaction item sets  
c) Time Series                                      d) None of above
- 18) Dendrogram is a data structure used to solve \_\_\_\_\_ problems.  
a) Agglomerative clustering                      b) Classification  
c) k-means                                      d) Dendrogram
- 19) \_\_\_\_\_ is an approach to index spatial data represented as MBRs.  
a) Quad Tree                                      b) B-Tree  
c) R-Tree                                      d) None of above
- 20) \_\_\_\_\_ type of data is continuous, ordered, changing, fast and huge amount.  
a) Transaction                                      b) Stream data  
c) Spatial                                      d) Graph



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**B.E. (Computer Science and Engg.) (Part – II) Examination, 2017  
DATA MINING (Elective – II) (Old)**

Day and Date : Wednesday, 24-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

**Instruction : All questions are compulsory.**

SECTION – I

2. Solve **any four** : **(4×5=20)**
- a) What are different issues in KDD ?
  - b) Why there is a need of data preprocessing ?
  - c) Define and explain the terms Support and Confidence.
  - d) What is supervised and unsupervised learning ?
  - e) Describe any five data mining applications.

3. With neat diagram, explain KDD process in detail. **10**

OR

Explain in detail classification by decision tree induction method. Write DTBuild algorithm.

4. Explain K-means clustering algorithm with example. **10**

SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) What do you mean by web usage mining ? Explain.
  - b) Write a note on multimedia data mining.
  - c) Explain page rank and clever in detail.
  - d) Write a note on Web Content Mining.
  - e) Explain partitioning algorithm.

6. Explain and write Apriori algorithm for frequent item set mining with suitable example. **10**

OR

Write in detail note on time series analysis. **10**

7. Write short notes on : **10**

- a) Spatial Data Mining Primitives
- b) Spatial data mining.

**Set Q**







SLR-VB – 252

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**B.E. (Computer Science and Engg.) (Part – II) Examination, 2017  
DATA MINING (Elective – II) (Old)**

Day and Date : Wednesday, 24-5-2017

Total Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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) **All questions are compulsory.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) \_\_\_\_\_ is a spatial database primitive.  
a) Time  
b) Distance  
c) Transaction item  
d) None
- 2) Trend Analysis can be done on \_\_\_\_\_ data.  
a) Spatial  
b) Transaction item sets  
c) Time Series  
d) None of above
- 3) Dendrogram is a data structure used to solve \_\_\_\_\_ problems.  
a) Agglomerative clustering  
b) Classification  
c) k-means  
d) Dendrogram
- 4) \_\_\_\_\_ is an approach to index spatial data represented as MBRs.  
a) Quad Tree  
b) B-Tree  
c) R-Tree  
d) None of above
- 5) \_\_\_\_\_ type of data is continuous, ordered, changing, fast and huge amount.  
a) Transaction  
b) Stream data  
c) Spatial  
d) Graph
- 6) The "IF"- part of a rule is known as \_\_\_\_\_.  
a) Rule Antecedent  
b) Rule Consequent  
c) Action  
d) None of these
- 7) "Find all houses near Delhi Public School" is a \_\_\_\_\_ type of query.  
a) Temporal  
b) Spatial  
c) Web Content  
d) None of these

P.T.O.





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**B.E. (Computer Science and Engg.) (Part – II) Examination, 2017  
DATA MINING (Elective – II) (Old)**

Day and Date : Wednesday, 24-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

***Instruction : All questions are compulsory.***

**SECTION – I**

2. Solve **any four** : **(4×5=20)**
- a) What are different issues in KDD ?
  - b) Why there is a need of data preprocessing ?
  - c) Define and explain the terms Support and Confidence.
  - d) What is supervised and unsupervised learning ?
  - e) Describe any five data mining applications.

3. With neat diagram, explain KDD process in detail. **10**

**OR**

Explain in detail classification by decision tree induction method. Write DTBuild algorithm.

4. Explain K-means clustering algorithm with example. **10**

**SECTION – II**

5. Solve **any four** : **(4×5=20)**
- a) What do you mean by web usage mining ? Explain.
  - b) Write a note on multimedia data mining.
  - c) Explain page rank and clever in detail.
  - d) Write a note on Web Content Mining.
  - e) Explain partitioning algorithm.

6. Explain and write Apriori algorithm for frequent item set mining with suitable example. **10**

**OR**

Write in detail note on time series analysis. **10**

7. Write short notes on : **10**

- a) Spatial Data Mining Primitives
- b) Spatial data mining.

**Set R**







- 8) Dendrogram is a data structure used to solve \_\_\_\_\_ problems.
- a) Agglomerative clustering
  - b) Classification
  - c) k-means
  - d) Dendrogram
- 9) \_\_\_\_\_ is an approach to index spatial data represented as MBRs.
- a) Quad Tree
  - b) B-Tree
  - c) R-Tree
  - d) None of above
- 10) \_\_\_\_\_ type of data is continuous, ordered, changing, fast and huge amount.
- a) Transaction
  - b) Stream data
  - c) Spatial
  - d) Graph
- 11) The “IF”- part of a rule is known as \_\_\_\_\_
- a) Rule Antecedent
  - b) Rule Consequent
  - c) Action
  - d) None of these
- 12) “Find all houses near Delhi Public School” is a \_\_\_\_\_ type of query.
- a) Temporal
  - b) Spatial
  - c) Web Content
  - d) None of these
- 13) \_\_\_\_\_ is a basic data structure used to keep track of patterns identified during the web usage mining process.
- a) Tree
  - b) B+tree
  - c) Graph
  - d) None of these
- 14) BIRCH algorithm is used for \_\_\_\_\_
- a) Clustering
  - b) Classification
  - c) Association rule generation
  - d) None of these
- 15) K-means clustering is a \_\_\_\_\_ clustering method.
- a) Partitional
  - b) Sampling
  - c) Hierarchical
  - d) Categorical
- 16) In data mining, output is Fuzzy.
- a) True
  - b) False
- 17) \_\_\_\_\_ is an approach to handle missing data.
- a) Ignore the missing value
  - b) Assume a value for missing data
  - c) Fill missing value manually
  - d) All the above
- 18) \_\_\_\_\_ is supervised learning.
- a) Classification
  - b) Regression
  - c) Clustering
  - d) None of above
- 19) Which of the following is a measure task in data preprocessing ?
- a) Data transformation
  - b) Classification
  - c) Clustering
  - d) None of above
- 20) Which among the following is an example of spatial databases ?
- a) Stock Price Database
  - b) Daily Temperature
  - c) VLSI database
  - d) Super Market Transaction



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**B.E. (Computer Science and Engg.) (Part – II) Examination, 2017  
DATA MINING (Elective – II) (Old)**

Day and Date : Wednesday, 24-5-2017

Marks : 80

Time : 10.00 a.m. to 1.00 p.m.

***Instruction : All questions are compulsory.***

**SECTION – I**

2. Solve **any four** : **(4×5=20)**
- a) What are different issues in KDD ?
  - b) Why there is a need of data preprocessing ?
  - c) Define and explain the terms Support and Confidence.
  - d) What is supervised and unsupervised learning ?
  - e) Describe any five data mining applications.

3. With neat diagram, explain KDD process in detail. **10**

**OR**

Explain in detail classification by decision tree induction method. Write DTBuild algorithm.

4. Explain K-means clustering algorithm with example. **10**

**SECTION – II**

5. Solve **any four** : **(4×5=20)**
- a) What do you mean by web usage mining ? Explain.
  - b) Write a note on multimedia data mining.
  - c) Explain page rank and clever in detail.
  - d) Write a note on Web Content Mining.
  - e) Explain partitioning algorithm.

6. Explain and write Apriori algorithm for frequent item set mining with suitable example. **10**

**OR**

Write in detail note on time series analysis. **10**

7. Write short notes on : **10**

- a) Spatial Data Mining Primitives
- b) Spatial data mining.

**Set S**







SLR-VB – 253

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Set **P**

**B.E. (CSE) (Part – II) (Old) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – II)**

Day and Date : Wednesday, 24-05-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

**20**

- 1) Algorithm analysis is an example of
  - a) Traditional static analysis
  - b) Static analysis
  - c) Dynamic analysis
  - d) All
- 2) \_\_\_\_\_ is the adjudged cause of an error.
  - a) Error
  - b) Fault
  - c) Failure
  - d) None of these
- 3) TQC means
  - a) Total Quantitative Control
  - b) Total Quality Certification
  - c) Total Quality Control
  - d) None of these
- 4) White box testing is called as \_\_\_\_\_ testing technique.
  - a) Functional
  - b) Logical
  - c) Internal
  - d) Structural
- 5) The code in the unit was reused with fewer than 25% modifications is called as
  - a) Slightly modified
  - b) New reused document
  - c) Extensively modified
  - d) Reused verbatim
- 6) \_\_\_\_\_ is the process of drawing conclusions about the population from observations about sample.
  - a) Dynamic inference
  - b) Statistical inference
  - c) Problem inference
  - d) Hypothetic inference
- 7) \_\_\_\_\_ plots are constructed from three summary statistics the median, the upper quartile and the lower quartile.
  - a) Scatter
  - b) Implicit
  - c) Box
  - d) Control

**P.T.O.**



- 8) \_\_\_\_\_ complexity measures the effort required to understand the software.  
a) Problem                      b) Algorithmic                      c) Structural                      d) Cognitive
- 9) The \_\_\_\_\_ addresses the sequence in which instructions are executed in a program.  
a) Control structure                      b) Data structure  
c) Data flow                      d) None of these
- 10) \_\_\_\_\_ complexity where the resource is computer memory.  
a) Space                      b) Error                      c) Time                      d) Design
- 11) \_\_\_\_\_ data flow testing is performed by analyzing the source code and it does not involve actual execution of source code.  
a) Dynamic                      b) Linear                      c) Static                      d) Compound
- 12) A \_\_\_\_\_ error occurs when an input value causes the program to execute the wrong path.  
a) Internal                      b) Static                      c) System                      d) Domain
- 13) In \_\_\_\_\_ unit testing, code is reviewed by applying techniques commonly known as inspection and walkthroughs.  
a) Statistical                      b) Dynamic                      c) Linear                      d) None of these
- 14) The need to select test input randomly is one of the assumption of \_\_\_\_\_ model.  
a) Usability                      b) Reliability                      c) Functionality                      d) None of these
- 15) Software \_\_\_\_\_ is defined as the probability of failure free operation of a software system for a specified time in a specified environment.  
a) Portability                      b) Maintainability                      c) Reliability                      d) Flexibility
- 16) Tabular representation is one of the \_\_\_\_\_ profile in software reliability.  
a) Structural                      b) Professional                      c) Reliable                      d) Operational
- 17) The \_\_\_\_\_ view concerns the extent to which a product meets user needs and expectations.  
a) User view                      b) Product view  
c) Value based view                      d) Transcendental view
- 18) \_\_\_\_\_ ISO 9126 quality characteristics.  
a) Security                      b) Portability                      c) Suitability                      d) Accuracy
- 19) In \_\_\_\_\_ view a product meets user needs and expectations in software quality.  
a) Transcendental                      b) Product                      c) User                      d) Manufacturing
- 20) A \_\_\_\_\_ is an attribute of a quality factor that is related to software development.  
a) Quality pattern                      b) Reliability criterion  
c) Design criterion                      d) Quality criterion
-



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**B.E. (CSE) (Part – II) (Old) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – II)**

Day and Date : Wednesday, 24-05-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** (each carries 5 marks) : **20**
- 1) Explain quality revolution in detail.
  - 2) Explain design test tools and automation in detail.
  - 3) With an examples describe control flow structure software engineering measurement.
  - 4) Explain simple analysis techniques software measurement.
  - 5) Describe functionality and complexity measure in software engineering measurement.
  - 6) Explain the concept of cohesion and its types in detail.
3. What are the different testing activities and test levels used in testing of software ? Also describe white-box and black-box testing. What is test case ? **10**

**OR**

3. Explain classifying software measures, applying the framework in software measurement. **10**
4. Write short notes on (**any two**) : **10**
- a) Software Quality.
  - b) Overview of statistical test.
  - c) Data structures used in Software Engineering Measurement.

**SECTION – II**

5. Attempt **any four** (each carries 5 marks) : **20**
- 1) Explain control flow testing in detail.
  - 2) What are the different types of acceptance testing ?
  - 3) Explain operational profiles in software reliability.

**Set P**



- 4) What are the six phases of recruiting test engineers ?
  - 5) Explain principles of ISO 9000 : 2000 software quality standard.
  - 6) What are the different McCall's quality factors used in software quality.
6. Explain unit testing in detail. **10**
- OR
6. Explain all characteristics and sub-characteristics of ISO 9126 quality standard. **10**
7. Write short notes on **(any two)** : **10**
- a) Structure of system test plan.
  - b) Definitions of software reliability.
  - c) Five views of software quality.
-





- 9) White box testing is called as \_\_\_\_\_ testing technique.  
a) Functional            b) Logical            c) Internal            d) Structural
- 10) The code in the unit was reused with fewer than 25% modifications is called as  
a) Slightly modified            b) New reused document  
c) Extensively modified            d) Reused verbatim
- 11) \_\_\_\_\_ is the process of drawing conclusions about the population from observations about sample.  
a) Dynamic inference            b) Statistical inference  
c) Problem inference            d) Hypothetic inference
- 12) \_\_\_\_\_ plots are constructed from three summary statistics the median, the upper quartile and the lower quartile.  
a) Scatter            b) Implicit            c) Box            d) Control
- 13) \_\_\_\_\_ complexity measures the effort required to understand the software.  
a) Problem            b) Algorithmic            c) Structural            d) Cognitive
- 14) The \_\_\_\_\_ addresses the sequence in which instructions are executed in a program.  
a) Control structure            b) Data structure  
c) Data flow            d) None of these
- 15) \_\_\_\_\_ complexity where the resource is computer memory.  
a) Space            b) Error            c) Time            d) Design
- 16) \_\_\_\_\_ data flow testing is performed by analyzing the source code and it does not involve actual execution of source code.  
a) Dynamic            b) Linear            c) Static            d) Compound
- 17) A \_\_\_\_\_ error occurs when an input value causes the program to execute the wrong path.  
a) Internal            b) Static            c) System            d) Domain
- 18) In \_\_\_\_\_ unit testing, code is reviewed by applying techniques commonly known as inspection and walkthroughs.  
a) Statistical            b) Dynamic            c) Linear            d) None of these
- 19) The need to select test input randomly is one of the assumption of \_\_\_\_\_ model.  
a) Usability            b) Reliability            c) Functionality            d) None of these
- 20) Software \_\_\_\_\_ is defined as the probability of failure free operation of a software system for a specified time in a specified environment.  
a) Portability            b) Maintainability            c) Reliability            d) Flexibility
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**B.E. (CSE) (Part – II) (Old) Examination, 2017  
SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – II)**

Day and Date : Wednesday, 24-05-2017  
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4. Write short notes on (**any two**) : **10**
- a) Software Quality.
  - b) Overview of statistical test.
  - c) Data structures used in Software Engineering Measurement.

**SECTION – II**

5. Attempt **any four** (each carries 5 marks) : **20**
- 1) Explain control flow testing in detail.
  - 2) What are the different types of acceptance testing ?
  - 3) Explain operational profiles in software reliability.

**Set Q**





- 4) What are the six phases of recruiting test engineers ?
  - 5) Explain principles of ISO 9000 : 2000 software quality standard.
  - 6) What are the different McCall's quality factors used in software quality.
6. Explain unit testing in detail. **10**
- OR
6. Explain all characteristics and sub-characteristics of ISO 9126 quality standard. **10**
7. Write short notes on **(any two)** : **10**
- a) Structure of system test plan.
  - b) Definitions of software reliability.
  - c) Five views of software quality.
-



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Set **R**

**B.E. (CSE) (Part – II) (Old) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – II)**

Day and Date : Wednesday, 24-05-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

**20**

- 1) \_\_\_\_\_ data flow testing is performed by analyzing the source code and it does not involve actual execution of source code.  
a) Dynamic                      b) Linear                      c) Static                      d) Compound
- 2) A \_\_\_\_\_ error occurs when an input value causes the program to execute the wrong path.  
a) Internal                      b) Static                      c) System                      d) Domain
- 3) In \_\_\_\_\_ unit testing, code is reviewed by applying techniques commonly known as inspection and walkthroughs.  
a) Statistical                      b) Dynamic                      c) Linear                      d) None of these
- 4) The need to select test input randomly is one of the assumption of \_\_\_\_\_ model.  
a) Usability                      b) Reliability                      c) Functionality                      d) None of these
- 5) Software \_\_\_\_\_ is defined as the probability of failure free operation of a software system for a specified time in a specified environment.  
a) Portability                      b) Maintainability                      c) Reliability                      d) Flexibility
- 6) Tabular representation is one of the \_\_\_\_\_ profile in software reliability.  
a) Structural                      b) Professional                      c) Reliable                      d) Operational
- 7) The \_\_\_\_\_ view concerns the extent to which a product meets user needs and expectations.  
a) User view                      b) Product view  
c) Value based view                      d) Transcendental view
- 8) \_\_\_\_\_ ISO 9126 quality characteristics.  
a) Security                      b) Portability                      c) Suitability                      d) Accuracy
- 9) In \_\_\_\_\_ view a product meets user needs and expectations in software quality.  
a) Transcendental                      b) Product                      c) User                      d) Manufacturing

**P.T.O.**





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**B.E. (CSE) (Part – II) (Old) Examination, 2017  
SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – II)**

Day and Date : Wednesday, 24-05-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** (each carries 5 marks) : **20**
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  - 2) Explain design test tools and automation in detail.
  - 3) With an examples describe control flow structure software engineering measurement.
  - 4) Explain simple analysis techniques software measurement.
  - 5) Describe functionality and complexity measure in software engineering measurement.
  - 6) Explain the concept of cohesion and its types in detail.
3. What are the different testing activities and test levels used in testing of software ? Also describe white-box and black-box testing. What is test case ? **10**

OR

3. Explain classifying software measures, applying the framework in software measurement. **10**
4. Write short notes on (**any two**) : **10**
- a) Software Quality.
  - b) Overview of statistical test.
  - c) Data structures used in Software Engineering Measurement.

SECTION – II

5. Attempt **any four** (each carries 5 marks) : **20**
- 1) Explain control flow testing in detail.
  - 2) What are the different types of acceptance testing ?
  - 3) Explain operational profiles in software reliability.

**Set R**



- 4) What are the six phases of recruiting test engineers ?
  - 5) Explain principles of ISO 9000 : 2000 software quality standard.
  - 6) What are the different McCall's quality factors used in software quality.
6. Explain unit testing in detail. **10**
- OR
6. Explain all characteristics and sub-characteristics of ISO 9126 quality standard. **10**
7. Write short notes on **(any two)** : **10**
- a) Structure of system test plan.
  - b) Definitions of software reliability.
  - c) Five views of software quality.
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**B.E. (CSE) (Part – II) (Old) Examination, 2017**  
**SOFTWARE TESTING AND QUALITY ASSURANCE (STQA) (Elective – II)**

Day and Date : Wednesday, 24-05-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

**SECTION – I**

2. Attempt **any four** (each carries 5 marks) : **20**
- 1) Explain quality revolution in detail.
  - 2) Explain design test tools and automation in detail.
  - 3) With an examples describe control flow structure software engineering measurement.
  - 4) Explain simple analysis techniques software measurement.
  - 5) Describe functionality and complexity measure in software engineering measurement.
  - 6) Explain the concept of cohesion and its types in detail.
3. What are the different testing activities and test levels used in testing of software ? Also describe white-box and black-box testing. What is test case ? **10**

**OR**

3. Explain classifying software measures, applying the framework in software measurement. **10**
4. Write short notes on (**any two**) : **10**
- a) Software Quality.
  - b) Overview of statistical test.
  - c) Data structures used in Software Engineering Measurement.

**SECTION – II**

5. Attempt **any four** (each carries 5 marks) : **20**
- 1) Explain control flow testing in detail.
  - 2) What are the different types of acceptance testing ?
  - 3) Explain operational profiles in software reliability.

**Set S**





- 4) What are the six phases of recruiting test engineers ?
  - 5) Explain principles of ISO 9000 : 2000 software quality standard.
  - 6) What are the different McCall's quality factors used in software quality.
6. Explain unit testing in detail. **10**
- OR
6. Explain all characteristics and sub-characteristics of ISO 9126 quality standard. **10**
7. Write short notes on **(any two)** : **10**
- a) Structure of system test plan.
  - b) Definitions of software reliability.
  - c) Five views of software quality.
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SLR-VB – 254

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**B.E. (CSE) (Part – II) (Old) Examination, 2017**  
**Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Wednesday, 24-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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** indicate **full** marks.
  - 4) Assume data **wherever** necessary.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

**(20×1=20)**

- 1) What built-in database is Android shipped with ?  
A) SQLite                      B) Apache                      C) MySQL                      D) Oracle
- 2) Creating a UI (User Interface) in Android requires careful use of  
A) Java and SQL                      B) XML and Java  
C) XML and C++                      D) Dreamweaver
- 3) A good example app should demonstrate most of the aspects of the application framework that are unique to Android.  
A) True                      B) False
- 4) Services have any user interface components  
A) True                      B) False
- 5) Which of the following data types is not supported by the Shared Preferences class ?  
A) Int                      B) Float                      C) Long                      D) Date Time
- 6) App Widgets are can be place on the home screen by the user to check for updates are available ?  
A) True                      B) False
- 7) The android OS comes with many useful system services, which include processes you can easily ask for things such as your  
A) Location                      B) Sensor Readings  
C) WiFi ? Hot Spots                      D) All of these
- 8) Which of the following can be used to bind data from an SQL database to a List View in an Android application ?  
A) Simple Cursor                      B) Simple Cursor Adapter  
C) Simple Adapter                      D) SQLite Cursor

P.T.O.



- 9) What is the purpose of the Content Provider class ?  
A) To play rich media content files  
B) To create and publish rich media files  
C) To share data between Android applications  
D) To access the global information about an application environment
- 10) What was the first phone released that ran the Android OS ?  
A) Google gPhone  
B) T-Mobile G1  
C) Motorola Droid  
D) HTC Hero
- 11) From a phone manufacturer's point of view, what makes Android so great ?  
A) Aside from some specific drivers, it provides everything to make a phone work  
B) It makes the hardware work better  
C) It allows them to compete with Apple's iPhone  
D) It allows users to create apps, generating revenue for the companies
- 12) Which of the following fields indicate that the external storage is available but not mounted ?  
A) MEDIA\_NOFS  
B) MEDIA\_SHARED  
C) MEDIA\_MOUNTED\_READ-ONLY  
D) MEDIA\_BAD\_REMOVAL
- 13) What year was the Open Handset Alliance announced ?  
A) 2005  
B) 2006  
C) 2007  
D) 2008
- 14) A device with Android installed is needed to develop apps for Android.  
A) True  
B) False
- 15) Android tries hard to \_\_\_\_\_ low-level components, such as the software stack, with interfaces so that vendor-specific code can be managed easily.  
A) confound  
B) abstract  
C) modularize  
D) compound
- 16) Google licensed some proprietary apps.  
A) True  
B) False
- 17) What part of the Android platform is open source ?  
A) low-level Linux modules  
B) native libraries  
C) application frame work  
D) all of these answers # The entire stack is an open source platform
- 18) Which of the following methods can be used to view the folders in an android applications ?  
A) getDir()  
B) getFiles()  
C) getFolders()  
D) getDirs()
- 19) Which of the following ways defines and instantiates the Drawable class ?  
A) Using an XML file  
B) Using a Java class  
C) Using JUnit test case  
D) Using a text file
- 20) Which one is not a nickname of a version of Android ?  
A) cupcake  
B) gingerbread  
C) honeycomb  
D) muffin
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**B.E. (CSE) (Part – II) (Old) Examination, 2017**  
**Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Wednesday, 24-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

- Instructions :** 1) Attempt **all** questions from Section – I & II.  
2) Figures to the **right** indicate **full** marks.  
3) Assume data **wherever** necessary.

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) What is Android Intent ? What is explicit intent ? What is implicit intent ?
  - 2) What is Android Content Provider ? Give simple example that would help you understand Content Provider.
  - 3) State different features of an Android.
  - 4) What is Layout ? Draw and state different types of layouts in android.
  - 5) What are the components contain in ADT (Android Development Tools) Bundle ?
3. a) Draw and explain the diagram of the development process for an Android App. **5**
- b) Illustrate the benefits of AsyncTask over Threads for implementing long-Running tasks. **5**
4. What are the different roles of the following with respect to application Framework ? **10**
- a) Activities
  - b) Services
  - c) View System
  - d) Resource Manager
  - e) Notification Manager

SECTION – II

5. Attempt **any four** : **(5×4=20)**
- 1) What are the screen densities in Android ?
  - 2) Describe the features of Location Services.
  - 3) Define media container and codec with relevant examples.
  - 4) Why use SQLite in android ?
  - 5) Describe the importance of signing an app before publishing.

**Set P**



6. What is an Android Animation ? Explain the following with related to Animation. **10**
- a) Drawable Animation
  - b) View Animation
  - c) Property Animation
7. Illustrate the states and relevant methods of Media Player API. What Permissions are required to do media playback over a Wi-Fi network ? **10**
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SLR-VB – 254

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| Set | Q |
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**B.E. (CSE) (Part – II) (Old) Examination, 2017**  
**Elective – II : MOBILE APPLICATION DEVELOPMENT**

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  - 4) Assume data **wherever** necessary.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**
- 1) Google licensed some proprietary apps.  
A) True                      B) False
  - 2) What part of the Android platform is open source ?  
A) low-level Linux modules  
B) native libraries  
C) application frame work  
D) all of these answers # The entire stack is an open source platform
  - 3) Which of the following methods can be used to view the folders in an android applications ?  
A) getDir()                      B) getFiles()                      C) getFolders()                      D) getDirs()
  - 4) Which of the following ways defines and instantiates the Drawable class ?  
A) Using an XML file                      B) Using a Java class  
C) Using JUnit test case                      D) Using a text file
  - 5) Which one is not a nickname of a version of Android ?  
A) cupcake                      B) gingerbread                      C) honeycomb                      D) muffin
  - 6) What built-in database is Android shipped with ?  
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  - 7) Creating a UI (User Interface) in Android requires careful use of  
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  - 8) A good example app should demonstrate most of the aspects of the application framework that are unique to Android.  
A) True                      B) False

P.T.O.



- 9) Services have any user interface components  
A) True                      B) False
- 10) Which of the following data types is not supported by the Shared Preferences class ?  
A) Int                      B) Float                      C) Long                      D) Date Time
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- 15) What was the first phone released that ran the Android OS ?  
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C) Motorola Droid                      D) HTC Hero
- 16) From a phone manufacturer's point of view, what makes Android so great ?  
A) Aside from some specific drivers, it provides everything to make a phone work  
B) It makes the hardware work better  
C) It allows them to compete with Apple's iPhone  
D) It allows users to create apps, generating revenue for the companies
- 17) Which of the following fields indicate that the external storage is available but not mounted ?  
A) MEDIA\_NOFS                      B) MEDIA\_SHARED  
C) MEDIA\_MOUNTED\_READ-ONLY                      D) MEDIA\_BAD\_REMOVAL
- 18) What year was the Open Handset Alliance announced ?  
A) 2005                      B) 2006                      C) 2007                      D) 2008
- 19) A device with Android installed is needed to develop apps for Android.  
A) True                      B) False
- 20) Android tries hard to \_\_\_\_\_ low-level components, such as the software stack, with interfaces so that vendor-specific code can be managed easily.  
A) confound                      B) abstract                      C) modularize                      D) compound



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**B.E. (CSE) (Part – II) (Old) Examination, 2017**  
**Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Wednesday, 24-5-2017  
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Marks : 80

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2) Figures to the **right** indicate **full** marks.  
3) Assume data **wherever** necessary.

SECTION – I

2. Attempt **any four** : **(5×4=20)**
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- a) Activities
  - b) Services
  - c) View System
  - d) Resource Manager
  - e) Notification Manager

SECTION – II

5. Attempt **any four** : **(5×4=20)**
- 1) What are the screen densities in Android ?
  - 2) Describe the features of Location Services.
  - 3) Define media container and codec with relevant examples.
  - 4) Why use SQLite in android ?
  - 5) Describe the importance of signing an app before publishing.

**Set Q**





6. What is an Android Animation ? Explain the following with related to Animation. **10**
- a) Drawable Animation
  - b) View Animation
  - c) Property Animation
7. Illustrate the states and relevant methods of Media Player API. What Permissions are required to do media playback over a Wi-Fi network ? **10**
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SLR-VB – 254

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| Set | R |
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**B.E. (CSE) (Part – II) (Old) Examination, 2017**  
**Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Wednesday, 24-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 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** indicate **full** marks.
  - 4) Assume data **wherever** necessary.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**

- 1) From a phone manufacturer's point of view, what makes Android so great ?  
A) Aside from some specific drivers, it provides everything to make a phone work  
B) It makes the hardware work better  
C) It allows them to compete with Apple's iPhone  
D) It allows users to create apps, generating revenue for the companies
- 2) Which of the following fields indicate that the external storage is available but not mounted ?  
A) MEDIA\_NOFS  
B) MEDIA\_SHARED  
C) MEDIA\_MOUNTED\_READ-ONLY  
D) MEDIA\_BAD\_REMOVAL
- 3) What year was the Open Handset Alliance announced ?  
A) 2005  
B) 2006  
C) 2007  
D) 2008
- 4) A device with Android installed is needed to develop apps for Android.  
A) True  
B) False
- 5) Android tries hard to \_\_\_\_\_ low-level components, such as the software stack, with interfaces so that vendor-specific code can be managed easily.  
A) confound  
B) abstract  
C) modularize  
D) compound
- 6) Google licensed some proprietary apps.  
A) True  
B) False
- 7) What part of the Android platform is open source ?  
A) low-level Linux modules  
B) native libraries  
C) application frame work  
D) all of these answers # The entire stack is an open source platform
- 8) Which of the following methods can be used to view the folders in an android applications ?  
A) getDir()  
B) getFiles()  
C) getFolders()  
D) getDirs()

P.T.O.





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**B.E. (CSE) (Part – II) (Old) Examination, 2017**  
**Elective – II : MOBILE APPLICATION DEVELOPMENT**

Day and Date : Wednesday, 24-5-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

- Instructions :** 1) Attempt **all** questions from Section – I & II.  
2) Figures to the **right** indicate **full** marks.  
3) Assume data **wherever** necessary.

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) What is Android Intent ? What is explicit intent ? What is implicit intent ?
  - 2) What is Android Content Provider ? Give simple example that would help you understand Content Provider.
  - 3) State different features of an Android.
  - 4) What is Layout ? Draw and state different types of layouts in android.
  - 5) What are the components contain in ADT (Android Development Tools) Bundle ?
3. a) Draw and explain the diagram of the development process for an Android App. **5**
- b) Illustrate the benefits of AsyncTask over Threads for implementing long-Running tasks. **5**
4. What are the different roles of the following with respect to application Framework ? **10**
- a) Activities
  - b) Services
  - c) View System
  - d) Resource Manager
  - e) Notification Manager

SECTION – II

5. Attempt **any four** : **(5×4=20)**
- 1) What are the screen densities in Android ?
  - 2) Describe the features of Location Services.
  - 3) Define media container and codec with relevant examples.
  - 4) Why use SQLite in android ?
  - 5) Describe the importance of signing an app before publishing.

**Set R**



6. What is an Android Animation ? Explain the following with related to Animation. **10**
- a) Drawable Animation
  - b) View Animation
  - c) Property Animation
7. Illustrate the states and relevant methods of Media Player API. What Permissions are required to do media playback over a Wi-Fi network ? **10**
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