



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

Set	P
-----	----------

S.E. (IT) (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) $-\phi'(s)$



- 5) 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
- 6) 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
- 7) 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) $\frac{a}{Z-a}$
- 8) If $\bar{F} = (x + 3y)i + (y - 2z)j + (x + az)k$ is solenoidal then $a =$
- a) 0 b) 2 c) -2 d) 1
- 9) 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) $\bar{F} \cdot \operatorname{curl}(\bar{F}) = 0$
- 10) The area under the normal curve from $\delta = -\infty$ to $\delta = 0$ is
- a) 1 b) 0 c) $\frac{1}{2}$ d) $\frac{3}{2}$
- 11) A discrete probability distribution is given by
- | | | | | |
|-------|---------------|---------------|---------------|---------------------------------|
| x: | 0 | 1 | 2 | |
| P(x): | $\frac{1}{9}$ | $\frac{2}{9}$ | $\frac{2}{3}$ | then $P(x \leq 1) = \dots\dots$ |
- a) $\frac{1}{9}$ b) $\frac{2}{9}$ c) $\frac{2}{3}$ d) $\frac{1}{3}$
- 12) 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
- 13) Idle time of the queuing system is
- a) $\frac{\lambda}{\mu}$ b) $1 - \frac{\lambda}{\mu}$ c) $\frac{\mu}{\lambda}$ d) $1 - \frac{\mu}{\lambda}$
- 14) If coefficient of correlation $r = \pm 1$ then the regression lines are
- a) coincident b) perpendicular
c) parallel d) inclined at an angle $\frac{\pi}{3}$



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

**S.E. (IT) (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**
- | | | | | | | | | |
|-----------|----|----|----|----|----|----|----|----|
| x: | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| y: | 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 ϕ 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



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

Set **Q**

**S.E. (IT) (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) 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 $P(x \leq 1) = \dots$

 - 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) $1 - \frac{\mu}{\lambda}$



- 7) If coefficient of correlation $r = \pm 1$ then the regression lines are
- coincident
 - perpendicular
 - parallel
 - inclined at an angle $\frac{\pi}{3}$
- 8) $\frac{1}{D^2 + a^2} \cos ax$ is equal to
- $\frac{x}{2a} \cos ax$
 - $\frac{x}{2a^2} \cos ax$
 - $\frac{-x}{2a} \sin ax$
 - none of these
- 9) $(C_1 + C_2x)e^{2x} + (C_3 + C_4x)e^{-2x}$ is general solution of
- $(D^2 - 4)^2y = 0$
 - $(D^2 + 4)^2y = 0$
 - $(D^2 - 2)^2y = 0$
 - $(D^2 + 2)^2y = 0$
- 10) $L\{t \sin t\} =$
- $\frac{-2s}{s^2 + 1}$
 - $\frac{-2s}{(s^2 + 1)^2}$
 - $\frac{2s}{(s^2 + 1)^2}$
 - $\frac{2}{(s^2 + 1)^2}$
- 11) If $L\{f(t)\} = \phi(s)$ then $L\left\{\frac{f(t)}{t}\right\} = \dots$
- $\int_0^{\infty} \phi(s) ds$
 - $\frac{1}{s} \phi'(s)$
 - $\int_s^{\infty} \phi(s) ds$
 - $-\phi'(s)$
- 12) The Fourier series of the function
- $$f(x) = -x + 1, -\pi \leq x \leq 0$$
- $$= x + 1, 0 \leq x \leq \pi$$
- contains
- only sine terms
 - only cosine terms
 - both sine and cosine terms
 - cannot be predicted
- 13) Which of the following function cannot be expanded in Fourier series in $(-\pi, \pi)$?
- $|x|$
 - e^{-x}
 - cosec x
 - x^3
- 14) Since $Z\{1\} = \frac{Z}{Z-1}$, $Z\{a^k\}, k \geq 0 =$
- $\frac{Z}{a(Z-1)}$
 - $\frac{Z}{aZ-1}$
 - $\frac{Z}{(Z-a)}$
 - $\frac{a}{Z-a}$



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

**S.E. (IT) (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**
- | | | | | | | | | |
|-----------|----|----|----|----|----|----|----|----|
| x: | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| y: | 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 ϕ 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



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

Set	R
-----	---

**S.E. (IT) (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) 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 |

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

- | | | | |
|----------|-------------|------------|----------|
| a) $ x $ | b) e^{-x} | c) cosec x | d) x^3 |
|----------|-------------|------------|----------|

3) 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) $\frac{a}{Z-a}$ |
|-----------------------|---------------------|----------------------|--------------------|

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

- | | | | |
|------|------|-------|------|
| a) 0 | b) 2 | c) -2 | d) 1 |
|------|------|-------|------|

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

- | | |
|-------------------------------|---|
| a) $\text{div}(\bar{F}) = 0$ | b) $\text{grad}(\text{div}\bar{F}) = 0$ |
| c) $\text{curl}(\bar{F}) = 0$ | d) $\bar{F} \cdot \text{curl}(\bar{F}) = 0$ |



- 6) The area under the normal curve from $\delta = -\infty$ to $\delta = 0$ is
 a) 1 b) 0 c) $\frac{1}{2}$ d) $\frac{3}{2}$
- 7) A discrete probability distribution is given by
 $x: 0 \quad 1 \quad 2$
 $P(x): \frac{1}{9} \quad \frac{2}{9} \quad \frac{2}{3}$ then $P(x \leq 1) = \dots$
 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
 a) 1 and 3 b) 2 and 3 c) 2 and 5 d) 1 and 2
- 9) Idle time of the queuing system is
 a) $\frac{\lambda}{\mu}$ b) $1 - \frac{\lambda}{\mu}$ c) $\frac{\mu}{\lambda}$ d) $1 - \frac{\mu}{\lambda}$
- 10) If coefficient of correlation $r = \pm 1$ then the regression lines are
 a) coincident b) perpendicular
 c) parallel d) inclined at an angle $\frac{\pi}{3}$
- 11) $\frac{1}{D^2 + a^2} \cos ax$ 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
- 12) $(C_1 + C_2x)e^{2x} + (C_3 + C_4x)e^{-2x}$ is general solution of
 a) $(D^2 - 4)^2y = 0$ b) $(D^2 + 4)^2y = 0$
 c) $(D^2 - 2)^2y = 0$ d) $(D^2 + 2)^2y = 0$
- 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) c) $\int_s^{\infty} \phi(s) ds$ d) $-\phi'(s)$



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

**S.E. (IT) (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**
- | | | | | | | | | |
|-----------|----|----|----|----|----|----|----|----|
| x: | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| y: | 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 ϕ 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



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

Set **S**

**S.E. (IT) (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)

- The area under the normal curve from $\delta = -\infty$ to $\delta = 0$ is
a) 1 b) 0 c) $\frac{1}{2}$ d) $\frac{3}{2}$
- A discrete probability distribution is given by
x: 0 1 2
P(x): $\frac{1}{9}$ $\frac{2}{9}$ $\frac{2}{3}$ then $P(x \leq 1) = \dots$
a) $\frac{1}{9}$ b) $\frac{2}{9}$ c) $\frac{2}{3}$ d) $\frac{1}{3}$
- 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 b) 2 and 3 c) 2 and 5 d) 1 and 2
- Idle time of the queuing system is
a) $\frac{\lambda}{\mu}$ b) $1 - \frac{\lambda}{\mu}$ c) $\frac{\mu}{\lambda}$ d) $1 - \frac{\mu}{\lambda}$
- If coefficient of correlation $r = \pm 1$ then the regression lines are
a) coincident b) perpendicular
c) parallel d) inclined at an angle $\frac{\pi}{3}$
- $\frac{1}{D^2 + a^2} \cos ax$ 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



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

a) $(D^2 - 4)^2y = 0$

b) $(D^2 + 4)^2y = 0$

c) $(D^2 - 2)^2y = 0$

d) $(D^2 + 2)^2y = 0$

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



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

**S.E. (IT) (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**
- | | | | | | | | | |
|-----------|----|----|----|----|----|----|----|----|
| x: | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| y: | 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 ϕ 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



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

Set	P
-----	----------

**S.E. (Information Technology) (CGPA) (Part – I) Examination, 2017
DISCRETE MATHEMATICAL STRUCTURE**

Day and Date : Friday, 5-5-2017
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 from the options given below :

14

1) Which of the following statements is False ?

- a) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $\sim Q \wedge \sim P$
 b) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $Q \vee P$
 c) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $Q \vee (P \wedge \sim Q)$
 d) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $[(P \vee \sim P) \wedge Q] \vee (P \wedge \sim Q)$

2) Power set of empty set has exactly _____ subset.

- a) One b) Two c) Zero d) Three

3) The Cartesian product $B \times A$ is equal to the Cartesian product $A \times B$. Is it True or False ?

- a) True b) False

4) Let m = "Mira like maths", c = "Mira like computer science", g = "Mira's friend like literature"

h = "Mira's friend has read Hamlet" and t = "Mira's friend has read The Tempest". Which of the following expresses the statement "Mira like computer science and math, but her friend like literature who hasn't read both The Tempest and Hamlet" ?

- a) $c \wedge m \wedge (g \vee (\sim h \vee \sim t))$ b) $c \wedge m \wedge g \wedge (\sim h \wedge \sim t)$
 c) $c \wedge m \wedge g \wedge (\sim h \vee \sim t)$ d) $c \wedge m \wedge (g \vee (\sim h \wedge \sim t))$



- 5) Which of the following two sets are equal ?
- a) $A = \{1, 2\}$ and $B = \{1\}$ b) $A = \{1, 2\}$ and $B = \{1, 2, 3\}$
c) $A = \{1, 2, 3\}$ and $B = \{2, 1, 3\}$ d) $A = \{1, 2, 4\}$ and $B = \{1, 2, 3\}$
- 6) A relation R on a set A is called an equivalence relation iff it is
- a) Reflexive and symmetric b) Transitive
c) Both d) None
- 7) Which one is the contrapositive of $q \rightarrow p$?
- a) $p \rightarrow q$ b) $\neg p \rightarrow \neg q$ c) $\neg q \rightarrow \neg p$ d) None of these
- 8) Each of the following defines a relation on the positive integers N : (1) "x is greater than y". (2) $x + y = 10$ (3) "xy is the square of an integer". (4) $x + 4y = 10$. Determine which of the relations are symmetric.
- a) 1 and 2 b) 2 and 3 c) 3 and 4 d) None
- 9) Let R and S be relations on a set A . Assuming A has at least three elements, state which of the following statements is true.
- a) If R and S are symmetric then $R \cap S$ is symmetric
b) If R and S are transitive then $R \cup S$ is transitive
c) If R and S are antisymmetric then $R \cup S$ is antisymmetric
d) None
- 10) The set of all subsets of a set S is called the _____ set of S .
- 11) Consider $f : Z^+ \rightarrow Z^+$ defined by $f(a) = a^2$. f is
- a) One to one b) Onto c) Bijective d) All above
- 12) Each of the following defines a relation on the positive integers N : (1) "x is greater than y". (2) $x + y = 10$ (3) "xy is the square of an integer". (4) $x + 4y = 10$. Determine which of the relations are reflexive.
- a) 1 b) 2 and 3 c) 4 d) None
- 13) Let $A = Z^+$ the set of positive integers. Define the relation R on A by aRb if and only if $a|b$. R is
- a) Transitive b) Asymmetric c) Both d) None
- 14) Integral domain in _____ have property with no zero divisor.
- a) Ring b) Field c) Chain d) None
-



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

**S.E. (Information Technology) (CGPA) (Part – I) Examination, 2017
DISCRETE MATHEMATICAL STRUCTURE**

Day and Date : Friday, 5-5-2017

Marks : 56

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

SECTION – I

2. Answer the following : **(4×5=20)**

- 1) Obtain the CNF of $P \rightarrow (P \wedge (Q \rightarrow P))$.
- 2) Explain prefix and postfix with example $(a + b - c)^*(e/f) - (g - h/i)$.
- 3) Explain PDNF and PCNF with example.
- 4) What are the different set operations ?
- 5) Consider the relation $R = \{(1, 3), (1, 4), (3, 2), (3, 3), (3, 4)\}$ on $A = \{1, 2, 3, 4\}$.
 - a) Find the matrix MR of R.
 - b) Find the domain and range of R.
 - c) Find R^{-1} .
 - d) Draw the directed graph of R.
 - e) Find the composition relation $R \circ R$.
 - f) Find $R \circ R^{-1}$ and $R^{-1} \circ R$.

3. Explain Partition and Covering with example $S = \{a, b, c\}$. **8**

SECTION – II

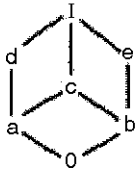
4. Answer the following : **(4×5=20)**

- 1) Define lattice, LUB and GLB and give example.
- 2) Let $A = B = \{a, b, c\}$. Consider the relation $g = \{(a, b), (b, c), (c, c)\}$. Is g one-to-one ? Is g onto ? Why ? With example explain.
- 3) What are the different types of functions ?

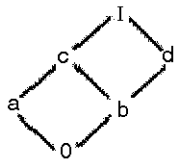
Set P



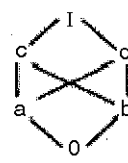
4) Which of the partially ordered sets in figures (a), (b) and (c) are lattices ? Justify your answer.



(a)



(b)



(c)

5) Explain Boolean functions.

5. How the polish expressions are compiled explain with example $a + (b/c)*d$.

8



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

Set	Q
-----	---

**S.E. (Information Technology) (CGPA) (Part – I) Examination, 2017
DISCRETE MATHEMATICAL STRUCTURE**

Day and Date : Friday, 5-5-2017
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 from the options given below :

14

- 1) Each of the following defines a relation on the positive integers N : (1) "x is greater than y". (2) $x + y = 10$ (3) "xy is the square of an integer". (4) $x + 4y = 10$. Determine which of the relations are symmetric.
a) 1 and 2 b) 2 and 3 c) 3 and 4 d) None
- 2) Let R and S be relations on a set A. Assuming A has at least three elements, state which of the following statements is true.
a) If R and S are symmetric then $R \cap S$ is symmetric
b) If R and S are transitive then $R \cup S$ is transitive
c) If R and S are antisymmetric then $R \cup S$ is antisymmetric
d) None
- 3) The set of all subsets of a set S is called the _____ set of S.
- 4) Consider $f : Z^+ \rightarrow Z^+$ defined by $f(a) = a^2$. f is
a) One to one b) Onto c) Bijective d) All above
- 5) Each of the following defines a relation on the positive integers N : (1) "x is greater than y". (2) $x + y = 10$ (3) "xy is the square of an integer". (4) $x + 4y = 10$. Determine which of the relations are reflexive.
a) 1 b) 2 and 3 c) 4 d) None
- 6) Let $A = Z^+$ the set of positive integers. Define the relation R on A by aRb if and only if $a|b$. R is
a) Transitive b) Asymmetric c) Both d) None



- 7) Integral domain in _____ have property with no zero divisor.
 a) Ring b) Field c) Chain d) None
- 8) Which of the following statements is False ?
 a) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $\sim Q \wedge \sim P$
 b) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $Q \vee P$
 c) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $Q \vee (P \wedge \sim Q)$
 d) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $[(P \vee \sim P) \wedge Q] \vee (P \wedge \sim Q)$
- 9) Power set of empty set has exactly _____ subset.
 a) One b) Two c) Zero d) Three
- 10) The Cartesian product $B \times A$ is equal to the Cartesian product $A \times B$. Is it True or False ?
 a) True b) False
- 11) Let $m =$ "Mira like maths", $c =$ "Mira like computer science", $g =$ "Mira's friend like literature"
 $h =$ "Mira's friend has read Hamlet" and $t =$ "Mira's friend has read The Tempest". Which of the following expresses the statement "Mira like computer science and math, but her friend like literature who hasn't read both The Tempest and Hamlet" ?
 a) $c \wedge m \wedge (g \vee (\sim h \vee \sim t))$ b) $c \wedge m \wedge g \wedge (\sim h \wedge \sim t)$
 c) $c \wedge m \wedge g \wedge (\sim h \vee \sim t)$ d) $c \wedge m \wedge (g \vee (\sim h \wedge \sim t))$
- 12) Which of the following two sets are equal ?
 a) $A = \{1, 2\}$ and $B = \{1\}$ b) $A = \{1, 2\}$ and $B = \{1, 2, 3\}$
 c) $A = \{1, 2, 3\}$ and $B = \{2, 1, 3\}$ d) $A = \{1, 2, 4\}$ and $B = \{1, 2, 3\}$
- 13) A relation R on a set A is called an equivalence relation iff it is
 a) Reflexive and symmetric b) Transitive
 c) Both d) None
- 14) Which one is the contrapositive of $q \rightarrow p$?
 a) $p \rightarrow q$ b) $\neg p \rightarrow \neg q$ c) $\neg q \rightarrow \neg p$ d) None of these



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

**S.E. (Information Technology) (CGPA) (Part – I) Examination, 2017
DISCRETE MATHEMATICAL STRUCTURE**

Day and Date : Friday, 5-5-2017

Marks : 56

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

SECTION – I

2. Answer the following : (4×5=20)

- 1) Obtain the CNF of $P \rightarrow (P \wedge (Q \rightarrow P))$.
- 2) Explain prefix and postfix with example $(a + b - c)^*(e/f) - (g - h/i)$.
- 3) Explain PDNF and PCNF with example.
- 4) What are the different set operations ?
- 5) Consider the relation $R = \{(1, 3), (1, 4), (3, 2), (3, 3), (3, 4)\}$ on $A = \{1, 2, 3, 4\}$.
 - a) Find the matrix MR of R.
 - b) Find the domain and range of R.
 - c) Find R^{-1} .
 - d) Draw the directed graph of R.
 - e) Find the composition relation $R \circ R$.
 - f) Find $R \circ R^{-1}$ and $R^{-1} \circ R$.

3. Explain Partition and Covering with example $S = \{a, b, c\}$. 8

SECTION – II

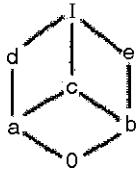
4. Answer the following : (4×5=20)

- 1) Define lattice, LUB and GLB and give example.
- 2) Let $A = B = \{a, b, c\}$. Consider the relation $g = \{(a, b), (b, c), (c, c)\}$. Is g one-to-one ? Is g onto ? Why ? With example explain.
- 3) What are the different types of functions ?

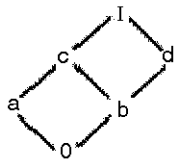
Set Q



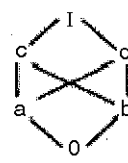
4) Which of the partially ordered sets in figures (a), (b) and (c) are lattices ?
Justify your answer.



(a)



(b)



(c)

5) Explain Boolean functions.

5. How the polish expressions are compiled explain with example $a + (b/c)*d$.

8



SLR-VB – 256

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

Set	R
-----	---

**S.E. (Information Technology) (CGPA) (Part – I) Examination, 2017
DISCRETE MATHEMATICAL STRUCTURE**

Day and Date : Friday, 5-5-2017
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 from the options given below :

14

1) Which of the following two sets are equal ?

- a) $A = \{1, 2\}$ and $B = \{1\}$ b) $A = \{1, 2\}$ and $B = \{1, 2, 3\}$
c) $A = \{1, 2, 3\}$ and $B = \{2, 1, 3\}$ d) $A = \{1, 2, 4\}$ and $B = \{1, 2, 3\}$

2) A relation R on a set A is called an equivalence relation iff it is

- a) Reflexive and symmetric b) Transitive
c) Both d) None

3) Which one is the contrapositive of $q \rightarrow p$?

- a) $p \rightarrow q$ b) $\neg p \rightarrow \neg q$ c) $\neg q \rightarrow \neg p$ d) None of these

4) Each of the following defines a relation on the positive integers N : (1) "x is greater than y". (2) $x + y = 10$ (3) "xy is the square of an integer". (4) $x + 4y = 10$. Determine which of the relations are symmetric.

- a) 1 and 2 b) 2 and 3 c) 3 and 4 d) None

5) Let R and S be relations on a set A. Assuming A has at least three elements, state which of the following statements is true.

- a) If R and S are symmetric then $R \cap S$ is symmetric
b) If R and S are transitive then $R \cup S$ is transitive
c) If R and S are antisymmetric then $R \cup S$ is antisymmetric
d) None

6) The set of all subsets of a set S is called the _____ set of S.

P.T.O.



- 7) Consider $f : Z^+ \rightarrow Z^+$ defined by $f(a) = a^2$. f is
 a) One to one b) Onto c) Bijective d) All above
- 8) Each of the following defines a relation on the positive integers N : (1) “ x is greater than y ”. (2) $x + y = 10$ (3) “ xy is the square of an integer”. (4) $x + 4y = 10$. Determine which of the relations are reflexive.
 a) 1 b) 2 and 3 c) 4 d) None
- 9) Let $A = Z^+$ the set of positive integers. Define the relation R on A by aRb if and only if $a|b$. R is
 a) Transitive b) Asymmetric c) Both d) None
- 10) Integral domain in _____ have property with no zero divisor.
 a) Ring b) Field c) Chain d) None
- 11) Which of the following statements is False ?
 a) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $\sim Q \wedge \sim P$
 b) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $Q \vee P$
 c) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $Q \vee (P \wedge \sim Q)$
 d) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $[(P \vee \sim P) \wedge Q] \vee (P \wedge \sim Q)$
- 12) Power set of empty set has exactly _____ subset.
 a) One b) Two c) Zero d) Three
- 13) The Cartesian product $B \times A$ is equal to the Cartesian product $A \times B$. Is it True or False ?
 a) True b) False
- 14) Let $m =$ “Mira like maths”, $c =$ “Mira like computer science”, $g =$ “Mira’s friend like literature”
 $h =$ “Mira’s friend has read Hamlet” and $t =$ “Mira’s friend has read The Tempest”. Which of the following expresses the statement “Mira like computer science and math, but her friend like literature who hasn’t read both The Tempest and Hamlet” ?
 a) $c \wedge m \wedge (g \vee (\sim h \vee \sim t))$ b) $c \wedge m \wedge g \wedge (\sim h \wedge \sim t)$
 c) $c \wedge m \wedge g \wedge (\sim h \vee \sim t)$ d) $c \wedge m \wedge (g \vee (\sim h \wedge \sim t))$



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

**S.E. (Information Technology) (CGPA) (Part – I) Examination, 2017
DISCRETE MATHEMATICAL STRUCTURE**

Day and Date : Friday, 5-5-2017

Marks : 56

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

SECTION – I

2. Answer the following : **(4×5=20)**

- 1) Obtain the CNF of $P \rightarrow (P \wedge (Q \rightarrow P))$.
- 2) Explain prefix and postfix with example $(a + b - c)^*(e/f) - (g - h/i)$.
- 3) Explain PDNF and PCNF with example.
- 4) What are the different set operations ?
- 5) Consider the relation $R = \{(1, 3), (1, 4), (3, 2), (3, 3), (3, 4)\}$ on $A = \{1, 2, 3, 4\}$.
 - a) Find the matrix MR of R.
 - b) Find the domain and range of R.
 - c) Find R^{-1} .
 - d) Draw the directed graph of R.
 - e) Find the composition relation $R \circ R$.
 - f) Find $R \circ R^{-1}$ and $R^{-1} \circ R$.

3. Explain Partition and Covering with example $S = \{a, b, c\}$. **8**

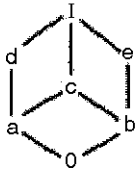
SECTION – II

4. Answer the following : **(4×5=20)**

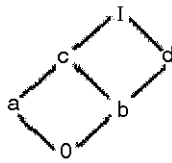
- 1) Define lattice, LUB and GLB and give example.
- 2) Let $A = B = \{a, b, c\}$. Consider the relation $g = \{(a, b), (b, c), (c, c)\}$. Is g one-to-one ? Is g onto ? Why ? With example explain.
- 3) What are the different types of functions ?



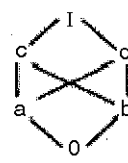
4) Which of the partially ordered sets in figures (a), (b) and (c) are lattices ?
Justify your answer.



(a)



(b)



(c)

5) Explain Boolean functions.

5. How the polish expressions are compiled explain with example $a + (b/c)*d$.

8



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

Set	S
-----	---

**S.E. (Information Technology) (CGPA) (Part – I) Examination, 2017
DISCRETE MATHEMATICAL STRUCTURE**

Day and Date : Friday, 5-5-2017
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 from the options given below :

14

- 1) The set of all subsets of a set S is called the _____ set of S.
- 2) Consider $f : \mathbb{Z}^+ \rightarrow \mathbb{Z}^+$ defined by $f(a) = a^2$. f is
 - a) One to one
 - b) Onto
 - c) Bijective
 - d) All above
- 3) Each of the following defines a relation on the positive integers \mathbb{N} : (1) "x is greater than y". (2) $x + y = 10$ (3) "xy is the square of an integer". (4) $x + 4y = 10$. Determine which of the relations are reflexive.
 - a) 1
 - b) 2 and 3
 - c) 4
 - d) None
- 4) Let $A = \mathbb{Z}^+$ the set of positive integers. Define the relation R on A by aRb if and only if $a|b$. R is
 - a) Transitive
 - b) Asymmetric
 - c) Both
 - d) None
- 5) Integral domain in _____ have property with no zero divisor.
 - a) Ring
 - b) Field
 - c) Chain
 - d) None
- 6) Which of the following statements is False ?
 - a) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $\sim Q \wedge \sim P$
 - b) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $Q \vee P$
 - c) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $Q \vee (P \wedge \sim Q)$
 - d) $(P \wedge Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q)$ is equal to $[(P \vee \sim P) \wedge Q] \vee (P \wedge \sim Q)$
- 7) Power set of empty set has exactly _____ subset.
 - a) One
 - b) Two
 - c) Zero
 - d) Three



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

**S.E. (Information Technology) (CGPA) (Part – I) Examination, 2017
DISCRETE MATHEMATICAL STRUCTURE**

Day and Date : Friday, 5-5-2017

Marks : 56

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

SECTION – I

2. Answer the following : **(4×5=20)**

- 1) Obtain the CNF of $P \rightarrow (P \wedge (Q \rightarrow P))$.
- 2) Explain prefix and postfix with example $(a + b - c)^*(e/f) - (g - h/i)$.
- 3) Explain PDNF and PCNF with example.
- 4) What are the different set operations ?
- 5) Consider the relation $R = \{(1, 3), (1, 4), (3, 2), (3, 3), (3, 4)\}$ on $A = \{1, 2, 3, 4\}$.
 - a) Find the matrix MR of R.
 - b) Find the domain and range of R.
 - c) Find R^{-1} .
 - d) Draw the directed graph of R.
 - e) Find the composition relation $R \circ R$.
 - f) Find $R \circ R^{-1}$ and $R^{-1} \circ R$.

3. Explain Partition and Covering with example $S = \{a, b, c\}$. **8**

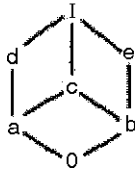
SECTION – II

4. Answer the following : **(4×5=20)**

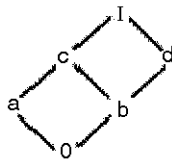
- 1) Define lattice, LUB and GLB and give example.
- 2) Let $A = B = \{a, b, c\}$. Consider the relation $g = \{(a, b), (b, c), (c, c)\}$. Is g one-to-one ? Is g onto ? Why ? With example explain.
- 3) What are the different types of functions ?



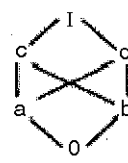
4) Which of the partially ordered sets in figures (a), (b) and (c) are lattices ? Justify your answer.



(a)



(b)



(c)

5) Explain Boolean functions.

5. How the polish expressions are compiled explain with example $a + (b/c)*d$.

8



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

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

Day and Date : Saturday, 6-5-2017
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=14)

- 1) In _____ searching the records must be sorted.
 - a) linear search
 - b) hashing
 - c) binary search
 - d) none of these
- 2) The best case analysis of bubble sort is
 - a) $O(n)$
 - b) $O(n \log n)$
 - c) $O(n^2)$
 - d) $O(\log n)$
- 3) Divide and Conquer is used in
 - a) Merge sort
 - b) Quick sort
 - c) Both a & b
 - d) Neither a nor b
- 4) _____ is used to clear the buffer before writing data to a data file.
 - a) `fscanf()`
 - b) `fflush()`
 - c) `fgets()`
 - d) `fwrite`
- 5) In the Tower of Hanoi if the numbers of disks are 4 the total number of moves is equal to
 - a) 5
 - b) 10
 - c) 20
 - d) 15



- 6) The return type of malloc () is
a) int b) char c) void d) none of these
- 7) ?: is called the _____ type of operator.
a) unary b) binary c) ternary d) none of these
- 8) Complexity of algorithm depends on
a) space b) time
c) program language implemented d) both a & b
- 9) In _____ the address is passed to calling function.
a) Call by reference b) Call by value
c) Call by reference and value d) None of these
- 10) Structure is a collection of
a) Related data item b) Similar data item
c) Heterogeneous data item d) All of these
- 11) The following is a format specifier
a) * b) %f c) ++ d) –
- 12) _____ function is use to read a string from data file.
a) fputc () b) fgetc() c) fgets () d) none
- 13) _____ mode reads a binary file.
a) “r+” b) “rb” c) “rbin” d) “wb”
- 14) EOF stands for
a) End of Function b) End of File
c) Both of These d) None of These
-



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

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

Day and Date : Saturday, 6-5-2017

Marks : 56

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

- Instructions :** 1) **Each** Section carries **28** marks.
2) Attempt **all** questions in **each** Section.
3) Numbers to the **right** indicate marks.

SECTION – I

2. Attempt **any three** :

- a) How many storage classes are there in C ? Explain any two storage classes mentioning their storage, Default Initial Value, Scope and Life Time. **3**
- b) What is recursion ? Write a C-Program to generate Fibonacci sequence up to n using recursion. **3**
- c) Write a program to sort a set of names stored in an array in alphabetical order. **3**
- d) Explain briefly the malloc() and calloc() functions and write a small program to demonstrate malloc() and calloc(). **3**
- e) Explain the concepts of pointers to pointers and pointers to structures. **3**

3. Attempt **any one** :

- a) Solve Towers of Hanoi problem taking 03 numbers of disks. Also write recursive C Program for Tower of Hanoi Problem. **10**

OR

- b) What is dynamic memory allocation ? Explain the following. **10**
 - i) sizeof ()
 - ii) atoi() ()
 - iii) atof() with examples

Set P



4. Attempt **any one**.
- a) Demonstrate a C-Program using “Call by Reference” to find the transpose of a given matrix. **9**
- OR
- b) Write a C program to implement pointer to structure with the help of example. **9**

SECTION – II

5. Attempt **any three** :
- a) Write a C-Program which reads a data file and counts how many characters, spaces, tabs and newlines are present in it. **3**
- b) Explain how Selection Sort algorithm works. Sort the below numbers using Selection sort and show all the passes. The numbers are 52, 23, 32, 41, 27. **3**
- c) Explain Big-O notation and Omega notation clearly. **3**
- d) Write a C-Program to arrange N integer numbers in descending order using any sorting algorithm (Use function). **3**
- e) What is Hash collision ? How do you resolve Hash clashes by open addressing ? Explain. **3**
6. Attempt **any one**.
- a) List and explain any five file opening modes. **10**
- OR
- b) Write a C-Program for Binary search, assuming the numbers are in ascending order. **10**
7. Attempt **any one** :
- a) Explain linear probing and Quadratic probing. **9**
- OR
- b) Explain Heap sort briefly. Construct Heap of the following numbers 35, 56, 33, 79, 20. **9**



SLR-VB – 257

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

Set

Q

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

Day and Date : Saturday, 6-5-2017

Max. 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 :

(14×1=14)

- 1) Complexity of algorithm depends on
 - a) space
 - b) time
 - c) program language implemented
 - d) both a & b
- 2) In _____ the address is passed to calling function.
 - a) Call by reference
 - b) Call by value
 - c) Call by reference and value
 - d) None of these
- 3) Structure is a collection of
 - a) Related data item
 - b) Similar data item
 - c) Heterogeneous data item
 - d) All of these
- 4) The following is a format specifier
 - a) *
 - b) %f
 - c) ++
 - d) –
- 5) _____ function is use to read a string from data file.
 - a) fputc ()
 - b) fgetc()
 - c) fgets ()
 - d) none

P.T.O.



- 6) _____ mode reads a binary file.
a) “r+” b) “rb” c) “rbin” d) “wb”
- 7) EOF stands for
a) End of Function b) End of File
c) Both of These d) None of These
- 8) In _____ searching the records must be sorted.
a) linear search b) hashing
c) binary search d) none of these
- 9) The best case analysis of bubble sort is
a) $O(n)$ b) $O(n \log n)$ c) $O(n^2)$ d) $O(\log n)$
- 10) Divide and Conquer is used in
a) Merge sort b) Quick sort
c) Both a & b d) Neither a nor b
- 11) _____ is used to clear the buffer before writing data to a data file.
a) fscanf() b) fflush() c) fgets() d) fwrite
- 12) In the Tower of Hanoi if the numbers of disks are 4 the total number of moves is equal to
a) 5 b) 10 c) 20 d) 15
- 13) The return type of malloc () is
a) int b) char c) void d) none of these
- 14) ?: is called the _____ type of operator.
a) unary b) binary c) ternary d) none of these
-



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

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

Day and Date : Saturday, 6-5-2017

Marks : 56

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

- Instructions :** 1) **Each** Section carries **28** marks.
2) Attempt **all** questions in **each** Section.
3) Numbers to the **right** indicate marks.

SECTION – I

2. Attempt **any three** :

- a) How many storage classes are there in C ? Explain any two storage classes mentioning their storage, Default Initial Value, Scope and Life Time. **3**
- b) What is recursion ? Write a C-Program to generate Fibonacci sequence up to n using recursion. **3**
- c) Write a program to sort a set of names stored in an array in alphabetical order. **3**
- d) Explain briefly the malloc() and calloc() functions and write a small program to demonstrate malloc() and calloc(). **3**
- e) Explain the concepts of pointers to pointers and pointers to structures. **3**

3. Attempt **any one** :

- a) Solve Towers of Hanoi problem taking 03 numbers of disks. Also write recursive C Program for Tower of Hanoi Problem. **10**

OR

- b) What is dynamic memory allocation ? Explain the following. **10**
 - i) sizeof ()
 - ii) atoi() ()
 - iii) atof() with examples

Set Q



4. Attempt **any one**.
- a) Demonstrate a C-Program using “Call by Reference” to find the transpose of a given matrix. **9**
- OR
- b) Write a C program to implement pointer to structure with the help of example. **9**

SECTION – II

5. Attempt **any three** :
- a) Write a C-Program which reads a data file and counts how many characters, spaces, tabs and newlines are present in it. **3**
- b) Explain how Selection Sort algorithm works. Sort the below numbers using Selection sort and show all the passes. The numbers are 52, 23, 32, 41, 27. **3**
- c) Explain Big-O notation and Omega notation clearly. **3**
- d) Write a C-Program to arrange N integer numbers in descending order using any sorting algorithm (Use function). **3**
- e) What is Hash collision ? How do you resolve Hash clashes by open addressing ? Explain. **3**
6. Attempt **any one**.
- a) List and explain any five file opening modes. **10**
- OR
- b) Write a C-Program for Binary search, assuming the numbers are in ascending order. **10**
7. Attempt **any one** :
- a) Explain linear probing and Quadratic probing. **9**
- OR
- b) Explain Heap sort briefly. Construct Heap of the following numbers 35, 56, 33, 79, 20. **9**



SLR-VB – 257

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

Set

R

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

Day and Date : Saturday, 6-5-2017
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=14)**
- In the Tower of Hanoi if the numbers of disks are 4 the total number of moves is equal to
a) 5 b) 10 c) 20 d) 15
 - The return type of malloc () is
a) int b) char c) void d) none of these
 - ?: is called the _____ type of operator.
a) unary b) binary c) ternary d) none of these
 - Complexity of algorithm depends on
a) space b) time
c) program language implemented d) both a & b
 - In _____ the address is passed to calling function.
a) Call by reference b) Call by value
c) Call by reference and value d) None of these

P.T.O.



- 6) Structure is a collection of
- a) Related data item
 - b) Similar data item
 - c) Heterogeneous data item
 - d) All of these
- 7) The following is a format specifier
- a) *
 - b) %f
 - c) ++
 - d) -
- 8) _____ function is use to read a string from data file.
- a) fputc ()
 - b) fgetc()
 - c) fgets ()
 - d) none
- 9) _____ mode reads a binary file.
- a) "r+"
 - b) "rb"
 - c) "rbin"
 - d) "wb"
- 10) EOF stands for
- a) End of Function
 - b) End of File
 - c) Both of These
 - d) None of These
- 11) In _____ searching the records must be sorted.
- a) linear search
 - b) hashing
 - c) binary search
 - d) none of these
- 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) Divide and Conquer is used in
- a) Merge sort
 - b) Quick sort
 - c) Both a & b
 - d) Neither a nor b
- 14) _____ is used to clear the buffer before writing data to a data file.
- a) fscanf()
 - b) fflush()
 - c) fgets()
 - d) fwrite
-



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

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

Day and Date : Saturday, 6-5-2017

Marks : 56

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

- Instructions :** 1) **Each** Section carries **28** marks.
2) Attempt **all** questions in **each** Section.
3) Numbers to the **right** indicate marks.

SECTION – I

2. Attempt **any three** :

- a) How many storage classes are there in C ? Explain any two storage classes mentioning their storage, Default Initial Value, Scope and Life Time. **3**
- b) What is recursion ? Write a C-Program to generate Fibonacci sequence up to n using recursion. **3**
- c) Write a program to sort a set of names stored in an array in alphabetical order. **3**
- d) Explain briefly the malloc() and calloc() functions and write a small program to demonstrate malloc() and calloc(). **3**
- e) Explain the concepts of pointers to pointers and pointers to structures. **3**

3. Attempt **any one** :

- a) Solve Towers of Hanoi problem taking 03 numbers of disks. Also write recursive C Program for Tower of Hanoi Problem. **10**

OR

- b) What is dynamic memory allocation ? Explain the following. **10**
 - i) sizeof ()
 - ii) atoi() ()
 - iii) atof() with examples

Set R



4. Attempt **any one**.

a) Demonstrate a C-Program using “Call by Reference” to find the transpose of a given matrix. **9**

OR

b) Write a C program to implement pointer to structure with the help of example. **9**

SECTION – II

5. Attempt **any three** :

a) Write a C-Program which reads a data file and counts how many characters, spaces, tabs and newlines are present in it. **3**

b) Explain how Selection Sort algorithm works. Sort the below numbers using Selection sort and show all the passes. The numbers are 52, 23, 32, 41, 27. **3**

c) Explain Big-O notation and Omega notation clearly. **3**

d) Write a C-Program to arrange N integer numbers in descending order using any sorting algorithm (Use function). **3**

e) What is Hash collision ? How do you resolve Hash clashes by open addressing ? Explain. **3**

6. Attempt **any one**.

a) List and explain any five file opening modes. **10**

OR

b) Write a C-Program for Binary search, assuming the numbers are in ascending order. **10**

7. Attempt **any one** :

a) Explain linear probing and Quadratic probing. **9**

OR

b) Explain Heap sort briefly. Construct Heap of the following numbers 35, 56, 33, 79, 20. **9**



SLR-VB – 257

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

Set

S

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

Day and Date : Saturday, 6-5-2017

Max. 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 :

(14×1=14)

1) Structure is a collection of

- a) Related data item b) Similar data item
c) Heterogeneous data item d) All of these

2) The following is a format specifier

- a) * b) %f c) ++ d) –

3) _____ function is use to read a string from data file.

- a) fputc () b) fgetc() c) fgets () d) none

4) _____ mode reads a binary file.

- a) "r+" b) "rb" c) "rbin" d) "wb"

5) EOF stands for

- a) End of Function b) End of File
c) Both of These d) None of These

P.T.O.



- 6) In _____ searching the records must be sorted.
 - a) linear search
 - b) hashing
 - c) binary search
 - d) none of these
- 7) The best case analysis of bubble sort is
 - a) $O(n)$
 - b) $O(n \log n)$
 - c) $O(n^2)$
 - d) $O(\log n)$
- 8) Divide and Conquer is used in
 - a) Merge sort
 - b) Quick sort
 - c) Both a & b
 - d) Neither a nor b
- 9) _____ is used to clear the buffer before writing data to a data file.
 - a) fscanf()
 - b) fflush()
 - c) fgets()
 - d) fwrite
- 10) In the Tower of Hanoi if the numbers of disks are 4 the total number of moves is equal to
 - a) 5
 - b) 10
 - c) 20
 - d) 15
- 11) The return type of malloc () is
 - a) int
 - b) char
 - c) void
 - d) none of these
- 12) ?: is called the _____ type of operator.
 - a) unary
 - b) binary
 - c) ternary
 - d) none of these
- 13) Complexity of algorithm depends on
 - a) space
 - b) time
 - c) program language implemented
 - d) both a & b
- 14) In _____ the address is passed to calling function.
 - a) Call by reference
 - b) Call by value
 - c) Call by reference and value
 - d) None of these



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

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

Day and Date : Saturday, 6-5-2017

Marks : 56

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

- Instructions :** 1) **Each** Section carries **28** marks.
2) Attempt **all** questions in **each** Section.
3) Numbers to the **right** indicate marks.

SECTION – I

2. Attempt **any three** :

- a) How many storage classes are there in C ? Explain any two storage classes mentioning their storage, Default Initial Value, Scope and Life Time. **3**
- b) What is recursion ? Write a C-Program to generate Fibonacci sequence up to n using recursion. **3**
- c) Write a program to sort a set of names stored in an array in alphabetical order. **3**
- d) Explain briefly the malloc() and calloc() functions and write a small program to demonstrate malloc() and calloc(). **3**
- e) Explain the concepts of pointers to pointers and pointers to structures. **3**

3. Attempt **any one** :

- a) Solve Towers of Hanoi problem taking 03 numbers of disks. Also write recursive C Program for Tower of Hanoi Problem. **10**

OR

- b) What is dynamic memory allocation ? Explain the following. **10**
 - i) sizeof ()
 - ii) atoi() ()
 - iii) atof() with examples

Set S



4. Attempt **any one**.
- a) Demonstrate a C-Program using “Call by Reference” to find the transpose of a given matrix. **9**
- OR
- b) Write a C program to implement pointer to structure with the help of example. **9**

SECTION – II

5. Attempt **any three** :
- a) Write a C-Program which reads a data file and counts how many characters, spaces, tabs and newlines are present in it. **3**
- b) Explain how Selection Sort algorithm works. Sort the below numbers using Selection sort and show all the passes. The numbers are 52, 23, 32, 41, 27. **3**
- c) Explain Big-O notation and Omega notation clearly. **3**
- d) Write a C-Program to arrange N integer numbers in descending order using any sorting algorithm (Use function). **3**
- e) What is Hash collision ? How do you resolve Hash clashes by open addressing ? Explain. **3**
6. Attempt **any one**.
- a) List and explain any five file opening modes. **10**
- OR
- b) Write a C-Program for Binary search, assuming the numbers are in ascending order. **10**
7. Attempt **any one** :
- a) Explain linear probing and Quadratic probing. **9**
- OR
- b) Explain Heap sort briefly. Construct Heap of the following numbers 35, 56, 33, 79, 20. **9**



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

Set	P
-----	---

S.E. (Information Technology) (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) 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) Number of select lines required for 32 to 1 multiplexer is
 - a) 2
 - b) 3
 - c) 4
 - d) 5
- 2) How many flip-flops are required for mod-16 counter ?
 - a) 6
 - b) 5
 - c) 4
 - d) 3
- 3) The Boolean expression $\bar{A}B + A\bar{B} + AB$ is equivalent to
 - a) $A + B$
 - b) $\bar{A}B$
 - c) AB
 - d) None of these
- 4) The output of a logic gate is 1 when all its inputs are at logic 0, the gate is either
 - a) NAND or EX-OR
 - b) OR or EX-NOR
 - c) AND or EX-OR
 - d) NOR or EX-NOR
- 5) A ring counter consisting of five flip-flops will have
 - a) 5 states
 - b) 10 states
 - c) 32 states
 - d) Infinite
- 6) Which of the following memory is volatile memory ?
 - a) ROM
 - b) RAM
 - c) PROM
 - d) EEPROM

P.T.O.



- 7) In a JK Flip-Flop, toggle means
- a) $Q = 1, \bar{Q} = 0$
 - b) $Q = 0, \bar{Q} = 1$
 - c) Change the output to opposite state
 - d) No change in output
- 8) 8 to 1 multiplexer integrated circuit is
- a) 74153
 - b) 74193
 - c) 74154
 - d) 74151
- 9) Assigning a value to signals is done by
- a) $> =$
 - b) $: =$
 - c) $< =$
 - d) None of these
- 10) Which of the following requires periodic refreshing ?
- a) DRAM
 - b) SRAM
 - c) ROM
 - d) All of these
- 11) In VHDL, V stands for
- a) Very High Speed IC
 - b) Very High Scale IC
 - c) Verilog High Speed IC
 - d) None of these
- 12) Octal to BCD encoding/priority interrupt handling is done by IC
- a) 7447
 - b) 74148
 - c) 7490
 - d) 75151
- 13) Which of the following has more propagation delay ?
- a) Serial n-bit adder
 - b) Parallel n-bit adder
 - c) Carry look-ahead adder
 - d) None
- 14) Maxterms of $f(A, B, C) = \sum m(0, 1, 4, 5)$ are
- a) $\sum m(2, 3, 6, 7)$
 - b) $\pi M(0, 1, 4, 5)$
 - c) $\pi M(2, 3, 6, 7)$
 - d) None of these
-



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

**S.E. (Information Technology) (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

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(5×3=15)**
- a) Minimize $f(A, B, C, D) = \pi M(0, 1, 2, 4, 5, 6, 10, 15)$.
 - b) Explain JK counter and conversion of JK into D and T flip flops.
 - c) Implement $Y = XY + \bar{X}\bar{Z} + YZ$ using NAND and NOR gates.
 - d) Design and explain 1-bit comparator. Draw diagram of 2-bit comparator.
 - e) Explain Parity generator/checker.

3. Design and explain 4-bit carry look-ahead adder. **6**

OR

Explain 3-bit synchronous counter.

4. Explain any two modes of shift register with waveforms. **7**

SECTION – II

5. Attempt **any three** : **(5×3=15)**
- a) Design and explain full adder using 4 : 1 multiplexer.
 - b) Design 1 to 32 de-multiplexer tree using 1 to 8 de-multiplexer.
 - c) Explain dynamic RAM cell with refreshing circuit.
 - d) Design 20156×8 memory chip using 256×8 memory chip.
 - e) Write a VHDL code for full adder and full subtractor.

Set P



6. Explain the use of IC 74148 with a diagram. **6**

OR

Explain TTL RAM and MOS RAM cell circuit.

7. Explain seven segment decoder driver using IC-7447. **7**

OR

Write VHDL code for 2-line to 4-line decoder/de-multiplexer.



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

Set	Q
-----	---

S.E. (Information Technology) (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) 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) 8 to 1 multiplexer integrated circuit is
 - a) 74153
 - b) 74193
 - c) 74154
 - d) 74151
- 2) Assigning a value to signals is done by
 - a) $> =$
 - b) $: =$
 - c) $< =$
 - d) None of these
- 3) Which of the following requires periodic refreshing ?
 - a) DRAM
 - b) SRAM
 - c) ROM
 - d) All of these
- 4) In VHDL, V stands for
 - a) Very High Speed IC
 - b) Very High Scale IC
 - c) Verilog High Speed IC
 - d) None of these
- 5) Octal to BCD encoding/priority interrupt handling is done by IC
 - a) 7447
 - b) 74148
 - c) 7490
 - d) 75151
- 6) Which of the following has more propagation delay ?
 - a) Serial n-bit adder
 - b) Parallel n-bit adder
 - c) Carry look-ahead adder
 - d) None



- 7) Maxterms of $f(A, B, C) = \sum m(0, 1, 4, 5)$ are
- a) $\sum m(2, 3, 6, 7)$
 - b) $\pi M(0, 1, 4, 5)$
 - c) $\pi M(2, 3, 6, 7)$
 - d) None of these
- 8) Number of select lines required for 32 to 1 multiplexer is
- a) 2
 - b) 3
 - c) 4
 - d) 5
- 9) How many flip-flops are required for mod-16 counter ?
- a) 6
 - b) 5
 - c) 4
 - d) 3
- 10) The Boolean expression $\bar{A}B + A\bar{B} + AB$ is equivalent to
- a) $A + B$
 - b) $\bar{A}B$
 - c) AB
 - d) None of these
- 11) The output of a logic gate is 1 when all its inputs are at logic 0, the gate is either
- a) NAND or EX-OR
 - b) OR or EX-NOR
 - c) AND or EX-OR
 - d) NOR or EX-NOR
- 12) A ring counter consisting of five flip-flops will have
- a) 5 states
 - b) 10 states
 - c) 32 states
 - d) Infinite
- 13) Which of the following memory is volatile memory ?
- a) ROM
 - b) RAM
 - c) PROM
 - d) EEPROM
- 14) In a JK Flip-Flop, toggle means
- a) $Q = 1, \bar{Q} = 0$
 - b) $Q = 0, \bar{Q} = 1$
 - c) Change the output to opposite state
 - d) No change in output
-



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

**S.E. (Information Technology) (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

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(5×3=15)**
- a) Minimize $f(A, B, C, D) = \pi M(0, 1, 2, 4, 5, 6, 10, 15)$.
 - b) Explain JK counter and conversion of JK into D and T flip flops.
 - c) Implement $Y = XY + \bar{X}\bar{Z} + YZ$ using NAND and NOR gates.
 - d) Design and explain 1-bit comparator. Draw diagram of 2-bit comparator.
 - e) Explain Parity generator/checker.

3. Design and explain 4-bit carry look-ahead adder. **6**

OR

Explain 3-bit synchronous counter.

4. Explain any two modes of shift register with waveforms. **7**

SECTION – II

5. Attempt **any three** : **(5×3=15)**
- a) Design and explain full adder using 4 : 1 multiplexer.
 - b) Design 1 to 32 de-multiplexer tree using 1 to 8 de-multiplexer.
 - c) Explain dynamic RAM cell with refreshing circuit.
 - d) Design 20156×8 memory chip using 256×8 memory chip.
 - e) Write a VHDL code for full adder and full subtractor.

Set Q



6. Explain the use of IC 74148 with a diagram. **6**

OR

Explain TTL RAM and MOS RAM cell circuit.

7. Explain seven segment decoder driver using IC-7447. **7**

OR

Write VHDL code for 2-line to 4-line decoder/de-multiplexer.



SLR-VB – 258

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

Set	R
-----	---

**S.E. (Information Technology) (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) 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) A ring counter consisting of five flip-flops will have
 - a) 5 states
 - b) 10 states
 - c) 32 states
 - d) Infinite
- 2) Which of the following memory is volatile memory ?
 - a) ROM
 - b) RAM
 - c) PROM
 - d) EEPROM
- 3) In a JK Flip-Flop, toggle means
 - a) $Q = 1, \bar{Q} = 0$
 - b) $Q = 0, \bar{Q} = 1$
 - c) Change the output to opposite state
 - d) No change in output
- 4) 8 to 1 multiplexer integrated circuit is
 - a) 74153
 - b) 74193
 - c) 74154
 - d) 74151
- 5) Assigning a value to signals is done by
 - a) $> =$
 - b) $:=$
 - c) $< =$
 - d) None of these
- 6) Which of the following requires periodic refreshing ?
 - a) DRAM
 - b) SRAM
 - c) ROM
 - d) All of these

P.T.O.



- 7) In VHDL, V stands for
a) Very High Speed IC b) Very High Scale IC
c) Verilog High Speed IC d) None of these
- 8) Octal to BCD encoding/priority interrupt handling is done by IC
a) 7447 b) 74148 c) 7490 d) 75151
- 9) Which of the following has more propagation delay ?
a) Serial n-bit adder b) Parallel n-bit adder
c) Carry look-ahead adder d) None
- 10) Maxterms of $f(A, B, C) = \sum m(0, 1, 4, 5)$ are
a) $\sum m(2, 3, 6, 7)$ b) $\pi M(0, 1, 4, 5)$
c) $\pi M(2, 3, 6, 7)$ d) None of these
- 11) Number of select lines required for 32 to 1 multiplexer is
a) 2 b) 3 c) 4 d) 5
- 12) How many flip-flops are required for mod-16 counter ?
a) 6 b) 5 c) 4 d) 3
- 13) The Boolean expression $\bar{A}B + A\bar{B} + AB$ is equivalent to
a) $A + B$ b) $\bar{A}B$
c) AB d) None of these
- 14) The output of a logic gate is 1 when all its inputs are at logic 0, the gate is either
a) NAND or EX-OR b) OR or EX-NOR
c) AND or EX-OR d) NOR or EX-NOR
-



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

**S.E. (Information Technology) (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

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(5×3=15)**
- a) Minimize $f(A, B, C, D) = \pi M(0, 1, 2, 4, 5, 6, 10, 15)$.
 - b) Explain JK counter and conversion of JK into D and T flip flops.
 - c) Implement $Y = XY + \bar{X} \bar{Z} + YZ$ using NAND and NOR gates.
 - d) Design and explain 1-bit comparator. Draw diagram of 2-bit comparator.
 - e) Explain Parity generator/checker.

3. Design and explain 4-bit carry look-ahead adder. **6**

OR

Explain 3-bit synchronous counter.

4. Explain any two modes of shift register with waveforms. **7**

SECTION – II

5. Attempt **any three** : **(5×3=15)**
- a) Design and explain full adder using 4 : 1 multiplexer.
 - b) Design 1 to 32 de-multiplexer tree using 1 to 8 de-multiplexer.
 - c) Explain dynamic RAM cell with refreshing circuit.
 - d) Design 20156×8 memory chip using 256×8 memory chip.
 - e) Write a VHDL code for full adder and full subtractor.

Set R



6. Explain the use of IC 74148 with a diagram. **6**

OR

Explain TTL RAM and MOS RAM cell circuit.

7. Explain seven segment decoder driver using IC-7447. **7**

OR

Write VHDL code for 2-line to 4-line decoder/de-multiplexer.



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

Set

S

**S.E. (Information Technology) (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) *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) Which of the following requires periodic refreshing ?

a) DRAM	b) SRAM
c) ROM	d) All of these
- 2) In VHDL, V stands for

a) Very High Speed IC	b) Very High Scale IC
c) Verilog High Speed IC	d) None of these
- 3) Octal to BCD encoding/priority interrupt handling is done by IC

a) 7447	b) 74148	c) 7490	d) 75151
---------	----------	---------	----------
- 4) Which of the following has more propagation delay ?

a) Serial n-bit adder	b) Parallel n-bit adder
c) Carry look-ahead adder	d) None
- 5) Maxterms of $f(A, B, C) = \sum m(0, 1, 4, 5)$ are

a) $\sum m(2, 3, 6, 7)$	b) $\pi M(0, 1, 4, 5)$
c) $\pi M(2, 3, 6, 7)$	d) None of these
- 6) Number of select lines required for 32 to 1 multiplexer is

a) 2	b) 3	c) 4	d) 5
------	------	------	------

P.T.O.



- 7) How many flip-flops are required for mod-16 counter ?
a) 6 b) 5 c) 4 d) 3
- 8) The Boolean expression $\bar{A}B + A\bar{B} + AB$ is equivalent to
a) $A + B$ b) $\bar{A}B$
c) AB d) None of these
- 9) The output of a logic gate is 1 when all its inputs are at logic 0, the gate is either
a) NAND or EX-OR b) OR or EX-NOR
c) AND or EX-OR d) NOR or EX-NOR
- 10) A ring counter consisting of five flip-flops will have
a) 5 states b) 10 states
c) 32 states d) Infinite
- 11) Which of the following memory is volatile memory ?
a) ROM b) RAM c) PROM d) EEPROM
- 12) In a JK Flip-Flop, toggle means
a) $Q = 1, \bar{Q} = 0$
b) $Q = 0, \bar{Q} = 1$
c) Change the output to opposite state
d) No change in output
- 13) 8 to 1 multiplexer integrated circuit is
a) 74153 b) 74193 c) 74154 d) 74151
- 14) Assigning a value to signals is done by
a) $> =$ b) $:=$ c) $< =$ d) None of these
-



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

**S.E. (Information Technology) (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

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(5×3=15)**
- a) Minimize $f(A, B, C, D) = \pi M(0, 1, 2, 4, 5, 6, 10, 15)$.
 - b) Explain JK counter and conversion of JK into D and T flip flops.
 - c) Implement $Y = XY + \bar{X} \bar{Z} + YZ$ using NAND and NOR gates.
 - d) Design and explain 1-bit comparator. Draw diagram of 2-bit comparator.
 - e) Explain Parity generator/checker.

3. Design and explain 4-bit carry look-ahead adder. **6**

OR

Explain 3-bit synchronous counter.

4. Explain any two modes of shift register with waveforms. **7**

SECTION – II

5. Attempt **any three** : **(5×3=15)**
- a) Design and explain full adder using 4 : 1 multiplexer.
 - b) Design 1 to 32 de-multiplexer tree using 1 to 8 de-multiplexer.
 - c) Explain dynamic RAM cell with refreshing circuit.
 - d) Design 20156×8 memory chip using 256×8 memory chip.
 - e) Write a VHDL code for full adder and full subtractor.

Set S



6. Explain the use of IC 74148 with a diagram. **6**

OR

Explain TTL RAM and MOS RAM cell circuit.

7. Explain seven segment decoder driver using IC-7447. **7**

OR

Write VHDL code for 2-line to 4-line decoder/de-multiplexer.



SLR-VB – 259

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

Set **P**

**S.E. (I.T.) (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

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 alternative : **(14×1=14)**

- 1) The process of returning to the left of the screen after refreshing is called as
 - a) Vertical retrace
 - b) Horizontal retrace
 - c) Interlacing
 - d) None of these
- 2) If (2, 4) is a point on a circle that has center at the origin. Which of the following points are also on circle ?
 - a) (2, -4)
 - b) (-2, 4)
 - c) (4, -2)
 - d) All of the above
- 3) In Bresenhan's algorithm error term is initialized to ?
 - a) 0
 - b) 1
 - c) -1/2
 - d) None of the above
- 4) The slope of the line joining the points (0, 0) to (6, 6) is
 - a) 0
 - b) 1
 - c) 2
 - d) 3
- 5) Dragging an object can be described as
 - a) Translation
 - b) Rotation
 - c) Reflection
 - d) None of the above

P.T.O.



- 6) The resolution of an image is
- Number of pixels per unit area
 - Number of pixels per unit length in horizontal
 - Number of pixels per unit length in vertical
 - None of these
- 7) Interactive computer graphics uses various kind of input devices such as
- Mouse
 - Graphic tablet
 - Joystick
 - All of these
- 8) A Bezier curve is a polynomial of degree _____ the no. of control points used.
- One more than
 - One less than
 - Two less than
 - None of these
- 9) A line with endpoints codes as 0000 and 0100 is
- Partially invisible
 - Completely visible
 - Completely invisible
 - Trivially invisible
- 10) The Bezier curve is contained within the _____ hull of defining polygon.
- Concave
 - Convex
 - Both
 - None
- 11) The region against which an object is clipped is called
- Clip window
 - Clip viewport
 - Clip area
 - None of the above
- 12) The Bezier curve generally follows the _____ of the defining polygon.
- Size
 - Curvature
 - Shape
 - None of the above
- 13) The objects space in which the application model is defined
- Screen coordinate system
 - Clipping window or world window
 - World coordinate system
 - None of these
- 14) In Warnock algorithm the tree is generated for the sub window it is called as
- Quad structure
 - Tree structure
 - Quad tree structure
 - Sub window structure
-



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

**S.E. (I.T.) (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

SECTION – I

2. Solve **any four** : 16
- A) Explain applications of computer graphics.
 - B) Explain edge flag algorithm in detail.
 - C) Explain reflection through an arbitrary line.
 - D) Explain DDA line drawing algorithm.
 - E) Explain CRT in detail.
3. Solve **any two** : 12
- A) Explain Bresenham's circle generation algorithm.
 - B) Write and explain Bresenham's line drawing algorithm. Plot the intermediate points for a line from (3, 2) to (-3, -1)
 - C) Explain rotation about axis parallel to coordinate axis.

SECTION – II

4. Solve **any four** : 16
- A) Explain viewing and window transformation.
 - B) Explain back face removal algorithm in detail.
 - C) Explain parametric curve.
 - D) Explain Sutherland Cohen line clipping algorithm.
 - E) Explain texture mapping.
5. Solve **any two** : 12
- A) Explain B spline and Bezier curve.
 - B) Write a short note on image and applications.
 - C) Explain Warnock algorithm in detail.



SLR-VB – 259

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

Set **Q**

**S.E. (I.T.) (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

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 alternative : **(14×1=14)**

- 1) A Bezier curve is a polynomial of degree _____ the no. of control points used.
a) One more than b) One less than c) Two less than d) None of these
- 2) A line with endpoints codes as 0000 and 0100 is
a) Partially invisible b) Completely visible
c) Completely invisible d) Trivially invisible
- 3) The Bezier curve is contained within the _____ hull of defining polygon.
a) Concave b) Convex c) Both d) None
- 4) The region against which an object is clipped is called
a) Clip window b) Clip viewport c) Clip area d) None of the above
- 5) The Bezier curve generally follows the _____ of the defining polygon.
a) Size b) Curvature c) Shape d) None of the above
- 6) The objects space in which the application model is defined
a) Screen coordinate system b) Clipping window or world window
c) World coordinate system d) None of these

P.T.O.



- 7) In Warnock algorithm the tree is generated for the sub window it is called as
- a) Quad structure
 - b) Tree structure
 - c) Quad tree structure
 - d) Sub window structure
- 8) The process of returning to the left of the screen after refreshing is called as
- a) Vertical retrace
 - b) Horizontal retrace
 - c) Interlacing
 - d) None of these
- 9) If (2, 4) is a point on a circle that has center at the origin. Which of the following points are also on circle ?
- a) (2, -4)
 - b) (-2, 4)
 - c) (4, -2)
 - d) All of the above
- 10) In Bresenhan's algorithm error term is initialized to ?
- a) 0
 - b) 1
 - c) -1/2
 - d) None of the above
- 11) The slope of the line joining the points (0, 0) to (6, 6) is
- a) 0
 - b) 1
 - c) 2
 - d) 3
- 12) Dragging an object can be described as
- a) Translation
 - b) Rotation
 - c) Reflection
 - d) None of the above
- 13) The resolution of an image is
- a) Number of pixels per unit area
 - b) Number of pixels per unit length in horizontal
 - c) Number of pixels per unit length in vertical
 - d) None of these
- 14) Interactive computer graphics uses various kind of input devices such as
- a) Mouse
 - b) Graphic tablet
 - c) Joystick
 - d) All of these
-



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

**S.E. (I.T.) (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

SECTION – I

2. Solve **any four** : **16**
- A) Explain applications of computer graphics.
 - B) Explain edge flag algorithm in detail.
 - C) Explain reflection through an arbitrary line.
 - D) Explain DDA line drawing algorithm.
 - E) Explain CRT in detail.
3. Solve **any two** : **12**
- A) Explain Bresenham's circle generation algorithm.
 - B) Write and explain Bresenham's line drawing algorithm. Plot the intermediate points for a line from (3, 2) to (-3, -1)
 - C) Explain rotation about axis parallel to coordinate axis.

SECTION – II

4. Solve **any four** : **16**
- A) Explain viewing and window transformation.
 - B) Explain back face removal algorithm in detail.
 - C) Explain parametric curve.
 - D) Explain Sutherland Cohen line clipping algorithm.
 - E) Explain texture mapping.
5. Solve **any two** : **12**
- A) Explain B spline and Bezier curve.
 - B) Write a short note on image and applications.
 - C) Explain Warnock algorithm in detail.



SLR-VB – 259

Seat
No.

--

Set **R**

**S.E. (I.T.) (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

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 alternative :

(14×1=14)

- 1) Dragging an object can be described as
 - a) Translation
 - b) Rotation
 - c) Reflection
 - d) None of the above
- 2) The resolution of an image is
 - a) Number of pixels per unit area
 - b) Number of pixels per unit length in horizontal
 - c) Number of pixels per unit length in vertical
 - d) None of these
- 3) Interactive computer graphics uses various kind of input devices such as
 - a) Mouse
 - b) Graphic tablet
 - c) Joystick
 - d) All of these
- 4) A Bezier curve is a polynomial of degree _____ the no. of control points used.
 - a) One more than
 - b) One less than
 - c) Two less than
 - d) None of these

P.T.O.



- 5) A line with endpoints codes as 0000 and 0100 is
a) Partially invisible b) Completely visible
c) Completely invisible d) Trivially invisible
- 6) The Bezier curve is contained within the _____ hull of defining polygon.
a) Concave b) Convex c) Both d) None
- 7) The region against which an object is clipped is called
a) Clip window b) Clip viewport c) Clip area d) None of the above
- 8) The Bezier curve generally follows the _____ of the defining polygon.
a) Size b) Curvature c) Shape d) None of the above
- 9) The objects space in which the application model is defined
a) Screen coordinate system b) Clipping window or world window
c) World coordinate system d) None of these
- 10) In Warnock algorithm the tree is generated for the sub window it is called as
a) Quad structure b) Tree structure
c) Quad tree structure d) Sub window structure
- 11) The process of returning to the left of the screen after refreshing is called as
a) Vertical retrace b) Horizontal retrace
c) Interlacing d) None of these
- 12) If (2, 4) is a point on a circle that has center at the origin. Which of the following points are also on circle ?
a) (2, -4) b) (-2, 4)
c) (4, -2) d) All of the above
- 13) In Bresenhan's algorithm error term is initialized to ?
a) 0 b) 1
c) -1/2 d) None of the above
- 14) The slope of the line joining the points (0, 0) to (6, 6) is
a) 0 b) 1 c) 2 d) 3
-



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

**S.E. (I.T.) (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

SECTION – I

2. Solve **any four** : **16**
- A) Explain applications of computer graphics.
 - B) Explain edge flag algorithm in detail.
 - C) Explain reflection through an arbitrary line.
 - D) Explain DDA line drawing algorithm.
 - E) Explain CRT in detail.
3. Solve **any two** : **12**
- A) Explain Bresenham's circle generation algorithm.
 - B) Write and explain Bresenham's line drawing algorithm. Plot the intermediate points for a line from (3, 2) to (-3, -1)
 - C) Explain rotation about axis parallel to coordinate axis.

SECTION – II

4. Solve **any four** : **16**
- A) Explain viewing and window transformation.
 - B) Explain back face removal algorithm in detail.
 - C) Explain parametric curve.
 - D) Explain Sutherland Cohen line clipping algorithm.
 - E) Explain texture mapping.
5. Solve **any two** : **12**
- A) Explain B spline and Bezier curve.
 - B) Write a short note on image and applications.
 - C) Explain Warnock algorithm in detail.



SLR-VB – 259

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

Set

S

**S.E. (I.T.) (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

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 alternative : **(14×1=14)**

- 1) The Bezier curve is contained within the _____ hull of defining polygon.
a) Concave b) Convex c) Both d) None
- 2) The region against which an object is clipped is called
a) Clip window b) Clip viewport c) Clip area d) None of the above
- 3) The Bezier curve generally follows the _____ of the defining polygon.
a) Size b) Curvature c) Shape d) None of the above
- 4) The objects space in which the application model is defined
a) Screen coordinate system b) Clipping window or world window
c) World coordinate system d) None of these
- 5) In Warnock algorithm the tree is generated for the sub window it is called as
a) Quad structure b) Tree structure
c) Quad tree structure d) Sub window structure
- 6) The process of returning to the left of the screen after refreshing is called as
a) Vertical retrace b) Horizontal retrace
c) Interlacing d) None of these

P.T.O.



- 7) If (2, 4) is a point on a circle that has center at the origin. Which of the following points are also on circle ?
- a) (2, -4) b) (-2, 4)
c) (4, -2) d) All of the above
- 8) In Bresenhan's algorithm error term is initialized to ?
- a) 0 b) 1
c) -1/2 d) None of the above
- 9) The slope of the line joining the points (0, 0) to (6, 6) is
- a) 0 b) 1 c) 2 d) 3
- 10) Dragging an object can be described as
- a) Translation b) Rotation
c) Reflection d) None of the above
- 11) The resolution of an image is
- a) Number of pixels per unit area
b) Number of pixels per unit length in horizontal
c) Number of pixels per unit length in vertical
d) None of these
- 12) Interactive computer graphics uses various kind of input devices such as
- a) Mouse b) Graphic tablet
c) Joystick d) All of these
- 13) A Bezier curve is a polynomial of degree _____ the no. of control points used.
- a) One more than b) One less than c) Two less than d) None of these
- 14) A line with endpoints codes as 0000 and 0100 is
- a) Partially invisible b) Completely visible
c) Completely invisible d) Trivially invisible
-



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

**S.E. (I.T.) (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

SECTION – I

2. Solve **any four** : **16**
- A) Explain applications of computer graphics.
 - B) Explain edge flag algorithm in detail.
 - C) Explain reflection through an arbitrary line.
 - D) Explain DDA line drawing algorithm.
 - E) Explain CRT in detail.
3. Solve **any two** : **12**
- A) Explain Bresenham's circle generation algorithm.
 - B) Write and explain Bresenham's line drawing algorithm. Plot the intermediate points for a line from (3, 2) to (-3, -1)
 - C) Explain rotation about axis parallel to coordinate axis.

SECTION – II

4. Solve **any four** : **16**
- A) Explain viewing and window transformation.
 - B) Explain back face removal algorithm in detail.
 - C) Explain parametric curve.
 - D) Explain Sutherland Cohen line clipping algorithm.
 - E) Explain texture mapping.
5. Solve **any two** : **12**
- A) Explain B spline and Bezier curve.
 - B) Write a short note on image and applications.
 - C) Explain Warnock algorithm in detail.



SLR-VB – 260

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

Set	P
-----	---

**S.E. (I.T.) (Part – I) 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) Figures to the **right** indicate **full** marks.
 - 2) Assume 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 option : **20**
- 1) Which data structure is needed to convert infix notation to postfix notation ?
A) Branch B) Queue C) Tree D) Stack
 - 2) A linear collection of data elements where the linear node is given by means of pointer is called as
A) Linked list B) Node list C) Primitive list D) None of these
 - 3) A queue is a
A) FIFO B) LIFO C) Ordered array D) Linear tree
 - 4) Function malloc returns a pointer of type void * to the memory it allocates and if it is unable to allocate memory, it returns a NULL pointer.
A) True B) False
 - 5) Which of the following traversal techniques lists the nodes of a binary search tree in ascending order ?
A) Post-order B) In-order C) Pre-order D) None of the above
 - 6) Which of the following name is related to stacks ?
A) FIFO lists B) LIFO lists C) Pipes D) Push-down lists
 - 7) Finding the location of the element with a given value is
A) Traversal B) Search C) Sort D) None of above
 - 8) The term “push” and “pop” is related to the
A) Array B) Lists C) Stacks D) All of above

P.T.O.



- 9) Binary search algorithm can not be applied to
A) Sorted linked list B) Sorted binary trees
C) Sorted linear array D) Pointer array
- 10) Which of the following data structure store the homogeneous data elements ?
A) Array B) Records C) Pointers D) None of above
- 11) By default, all the files are opened in _____ mode.
A) Binary B) Text C) Both A) and B) D) None of these
- 12) It is not possible to combine two or more file opening mode in open () method.
A) True B) False
- 13) Which of the following function sets first n characters of a string to a given character ?
A) strinit() B) strnset() C) strset() D) strcset()
- 14) If the two strings are identical, then strcmp() function returns
A) - 1 B) 1 C) 0 D) Yes
- 15) How will you print \n on the screen ?
A) printf("\n"); B) echo "\n"; C) printf('\n'); D) printf("\n");
- 16) Which data structure is used to perform recursion ?
A) Queue B) Stack C) Linked list D) Tree
- 17) What's happen if base condition is not defined in recursion ?
A) Stack underflow B) Stack overflow
C) None of these D) Both A) and B)
- 18) It is necessary to declare the type of a function in the calling program if the function
A) Returns an integer B) Returns a non-integer value
C) Is not defined in the same file D) None of these
- 19) Pointer variable is declared using preceding _____ sign.
A) % B) & C) * D) ^
- 20) Address stored in a pointer variable is of _____ type.
A) Integer B) Floating C) Array D) Character
-



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

**S.E. (I.T.) (Part – I) 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

- Instructions :** 1) **All questions from Section – I and II are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume data if necessary.**

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) What is meant by declaring a pointer variable and how will you declare a pointer variable ?
 - 2) Explain the use of void pointer.
 - 3) Define string. Explain three string library function.
 - 4) Explain with the help of an example Towers of Hanoi.
 - 5) Define recursion. How recursion works ?
3. Attempt the following : **(5×2=10)**
- A) Write a program in C to copy file into another file.
 - B) Explain basic file handling operations.
4. With the help of an example explain how read and write operations takes in file. **10**

SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain in detail stack operations.
 - B) Define queue and state it's applications.
 - C) Describe two types of lists.
 - D) Define circular queue. Explain in detail.
 - E) Write a note on priority queue.
6. How to determine when a queue is empty ? How to determine when a queue is full ? Explain in detail. **10**
7. Write short notes on : **10**
- 1) Stack using linked list.
 - 2) Queue using linked list.



SLR-VB – 260

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

Set	Q
-----	---

**S.E. (I.T.) (Part – I) 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) Figures to the **right** indicate **full** marks.
 - 2) Assume 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 option : **20**
- 1) Which data structure is used to perform recursion ?
A) Queue B) Stack C) Linked list D) Tree
 - 2) What's happen if base condition is not defined in recursion ?
A) Stack underflow B) Stack overflow
C) None of these D) Both A) and B)
 - 3) It is necessary to declare the type of a function in the calling program if the function
A) Returns an integer B) Returns a non-integer value
C) Is not defined in the same file D) None of these
 - 4) Pointer variable is declared using preceding _____ sign.
A) % B) & C) * D) ^
 - 5) Address stored in a pointer variable is of _____ type.
A) Integer B) Floating C) Array D) Character
 - 6) Which data structure is needed to convert infix notation to postfix notation ?
A) Branch B) Queue C) Tree D) Stack
 - 7) A linear collection of data elements where the linear node is given by means of pointer is called as
A) Linked list B) Node list C) Primitive list D) None of these

P.T.O.



- 8) A queue is a
A) FIFO B) LIFO C) Ordered array D) Linear tree
- 9) Function malloc returns a pointer of type void * to the memory it allocates and if it is unable to allocate memory, it returns a NULL pointer.
A) True B) False
- 10) Which of the following traversal techniques lists the nodes of a binary search tree in ascending order ?
A) Post-order B) In-order C) Pre-order D) None of the above
- 11) Which of the following name is related to stacks ?
A) FIFO lists B) LIFO lists C) Pipes D) Push-down lists
- 12) Finding the location of the element with a given value is
A) Traversal B) Search C) Sort D) None of above
- 13) The term “push” and “pop” is related to the
A) Array B) Lists C) Stacks D) All of above
- 14) Binary search algorithm can not be applied to
A) Sorted linked list B) Sorted binary trees
C) Sorted linear array D) Pointer array
- 15) Which of the following data structure store the homogeneous data elements ?
A) Array B) Records C) Pointers D) None of above
- 16) By default, all the files are opened in _____ mode.
A) Binary B) Text C) Both A) and B) D) None of these
- 17) It is not possible to combine two or more file opening mode in open () method.
A) True B) False
- 18) Which of the following function sets first n characters of a string to a given character ?
A) strinit() B) strnset() C) strset() D) strcset()
- 19) If the two strings are identical, then strcmp() function returns
A) – 1 B) 1 C) 0 D) Yes
- 20) How will you print \n on the screen ?
A) printf(“\n”); B) echo “\n”; C) printf(‘\n’); D) printf(“\n”);



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

**S.E. (I.T.) (Part – I) 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

- Instructions :** 1) **All questions from Section – I and II are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume data if necessary.**

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) What is meant by declaring a pointer variable and how will you declare a pointer variable ?
 - 2) Explain the use of void pointer.
 - 3) Define string. Explain three string library function.
 - 4) Explain with the help of an example Towers of Hanoi.
 - 5) Define recursion. How recursion works ?
3. Attempt the following : **(5×2=10)**
- A) Write a program in C to copy file into another file.
 - B) Explain basic file handling operations.
4. With the help of an example explain how read and write operations takes in file. **10**

SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain in detail stack operations.
 - B) Define queue and state it's applications.
 - C) Describe two types of lists.
 - D) Define circular queue. Explain in detail.
 - E) Write a note on priority queue.
6. How to determine when a queue is empty ? How to determine when a queue is full ? Explain in detail. **10**
7. Write short notes on : **10**
- 1) Stack using linked list.
 - 2) Queue using linked list.



SLR-VB – 260

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

Set	R
-----	---

**S.E. (I.T.) (Part – I) 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) Figures to the **right** indicate **full** marks.
 - 2) Assume 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 option : **20**
- 1) By default, all the files are opened in _____ mode.
A) Binary B) Text C) Both A) and B) D) None of these
 - 2) It is not possible to combine two or more file opening mode in open () method.
A) True B) False
 - 3) Which of the following function sets first n characters of a string to a given character ?
A) strinit() B) strnset() C) strset() D) strcset()
 - 4) If the two strings are identical, then strcmp() function returns
A) – 1 B) 1 C) 0 D) Yes
 - 5) How will you print \n on the screen ?
A) printf(“\n”); B) echo “\n”; C) printf(“\n”); D) printf(“\n”);
 - 6) Which data structure is used to perform recursion ?
A) Queue B) Stack C) Linked list D) Tree
 - 7) What's happen if base condition is not defined in recursion ?
A) Stack underflow B) Stack overflow
C) None of these D) Both A) and B)

P.T.O.



- 8) It is necessary to declare the type of a function in the calling program if the function
- A) Returns an integer B) Returns a non-integer value
C) Is not defined in the same file D) None of these
- 9) Pointer variable is declared using preceding _____ sign.
A) % B) & C) * D) ^
- 10) Address stored in a pointer variable is of _____ type.
A) Integer B) Floating C) Array D) Character
- 11) Which data structure is needed to convert infix notation to postfix notation ?
A) Branch B) Queue C) Tree D) Stack
- 12) A linear collection of data elements where the linear node is given by means of pointer is called as
A) Linked list B) Node list C) Primitive list D) None of these
- 13) A queue is a
A) FIFO B) LIFO C) Ordered array D) Linear tree
- 14) Function malloc returns a pointer of type void * to the memory it allocates and if it is unable to allocate memory, it returns a NULL pointer.
A) True B) False
- 15) Which of the following traversal techniques lists the nodes of a binary search tree in ascending order ?
A) Post-order B) In-order C) Pre-order D) None of the above
- 16) Which of the following name is related to stacks ?
A) FIFO lists B) LIFO lists C) Pipes D) Push-down lists
- 17) Finding the location of the element with a given value is
A) Traversal B) Search C) Sort D) None of above
- 18) The term “push” and “pop” is related to the
A) Array B) Lists C) Stacks D) All of above
- 19) Binary search algorithm can not be applied to
A) Sorted linked list B) Sorted binary trees
C) Sorted linear array D) Pointer array
- 20) Which of the following data structure store the homogeneous data elements ?
A) Array B) Records C) Pointers D) None of above
-



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

**S.E. (I.T.) (Part – I) 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

- Instructions :** 1) **All questions from Section – I and II are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume data if necessary.**

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) What is meant by declaring a pointer variable and how will you declare a pointer variable ?
 - 2) Explain the use of void pointer.
 - 3) Define string. Explain three string library function.
 - 4) Explain with the help of an example Towers of Hanoi.
 - 5) Define recursion. How recursion works ?
3. Attempt the following : **(5×2=10)**
- A) Write a program in C to copy file into another file.
 - B) Explain basic file handling operations.
4. With the help of an example explain how read and write operations takes in file. **10**

SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain in detail stack operations.
 - B) Define queue and state it's applications.
 - C) Describe two types of lists.
 - D) Define circular queue. Explain in detail.
 - E) Write a note on priority queue.
6. How to determine when a queue is empty ? How to determine when a queue is full ? Explain in detail. **10**
7. Write short notes on : **10**
- 1) Stack using linked list.
 - 2) Queue using linked list.



SLR-VB – 260

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

Set	S
-----	---

**S.E. (I.T.) (Part – I) 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) Figures to the **right** indicate **full** marks.
 - 2) Assume 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 option : **20**
- 1) Which of the following name is related to stacks ?
A) FIFO lists B) LIFO lists C) Pipes D) Push-down lists
 - 2) Finding the location of the element with a given value is
A) Traversal B) Search C) Sort D) None of above
 - 3) The term “push” and “pop” is related to the
A) Array B) Lists C) Stacks D) All of above
 - 4) Binary search algorithm can not be applied to
A) Sorted linked list B) Sorted binary trees
C) Sorted linear array D) Pointer array
 - 5) Which of the following data structure store the homogeneous data elements ?
A) Array B) Records C) Pointers D) None of above
 - 6) By default, all the files are opened in _____ mode.
A) Binary B) Text C) Both A) and B) D) None of these
 - 7) It is not possible to combine two or more file opening mode in open () method.
A) True B) False
 - 8) Which of the following function sets first n characters of a string to a given character ?
A) strinit() B) strnset() C) strset() D) strcset()

P.T.O.



- 9) If the two strings are identical, then strcmp() function returns
A) – 1 B) 1 C) 0 D) Yes
- 10) How will you print \n on the screen ?
A) printf(“\n”); B) echo “\n”; C) printf(‘\n’); D) printf(“\n”);
- 11) Which data structure is used to perform recursion ?
A) Queue B) Stack C) Linked list D) Tree
- 12) What’s happen if base condition is not defined in recursion ?
A) Stack underflow B) Stack overflow
C) None of these D) Both A) and B)
- 13) It is necessary to declare the type of a function in the calling program if the function
A) Returns an integer B) Returns a non-integer value
C) Is not defined in the same file D) None of these
- 14) Pointer variable is declared using preceding _____ sign.
A) % B) & C) * D) ^
- 15) Address stored in a pointer variable is of _____ type.
A) Integer B) Floating C) Array D) Character
- 16) Which data structure is needed to convert infix notation to postfix notation ?
A) Branch B) Queue C) Tree D) Stack
- 17) A linear collection of data elements where the linear node is given by means of pointer is called as
A) Linked list B) Node list C) Primitive list D) None of these
- 18) A queue is a
A) FIFO B) LIFO C) Ordered array D) Linear tree
- 19) Function malloc returns a pointer of type void * to the memory it allocates and if it is unable to allocate memory, it returns a NULL pointer.
A) True B) False
- 20) Which of the following traversal techniques lists the nodes of a binary search tree in ascending order ?
A) Post-order B) In-order C) Pre-order D) None of the above
-



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

**S.E. (I.T.) (Part – I) 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

- Instructions :** 1) **All questions from Section – I and II are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume data if necessary.**

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) What is meant by declaring a pointer variable and how will you declare a pointer variable ?
 - 2) Explain the use of void pointer.
 - 3) Define string. Explain three string library function.
 - 4) Explain with the help of an example Towers of Hanoi.
 - 5) Define recursion. How recursion works ?
3. Attempt the following : **(5×2=10)**
- A) Write a program in C to copy file into another file.
 - B) Explain basic file handling operations.
4. With the help of an example explain how read and write operations takes in file. **10**

SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain in detail stack operations.
 - B) Define queue and state it's applications.
 - C) Describe two types of lists.
 - D) Define circular queue. Explain in detail.
 - E) Write a note on priority queue.
6. How to determine when a queue is empty ? How to determine when a queue is full ? Explain in detail. **10**
7. Write short notes on : **10**
- 1) Stack using linked list.
 - 2) Queue using linked list.



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

Set	P
-----	----------

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

Day and Date : Wednesday, 17-5-2017
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 answer :

(20×1=20)

- 1) In a digital system, there are three inputs A, B and C. The output should be high when at least two inputs are high. The minimized Boolean expression for the output is
 - a) $AB + BC + AC$
 - b) $ABC + \overline{ABC} + \overline{ABC} + \overline{ABC}$
 - c) $\overline{ABC} + \overline{ABC} + \overline{ABC}$
 - d) $\overline{AB} + \overline{BC} + \overline{AC}$
- 2) The minimum number of NAND gates required to implement $A \oplus B \oplus C$ is
 - a) 8
 - b) 10
 - c) 9
 - d) 6
- 3) A graphical display of the fundamental products in a truth-table is known as
 - a) Mapping
 - b) Graphing
 - c) T-map
 - d) Karnaugh-map
- 4) Which of the following respectively represent commutative law, distributive law and associative law ?
 - I. $A.(B+C) = A.B+A.C$
 - II. $A + B = B + A$
 - III. $A.(B.C) = (A.B).C$
 - a) I, III and II
 - b) II, I and III
 - c) II, III and I
 - d) III, I and II
- 5) A three variable K-map has
 - a) 8 min terms
 - b) 12 min terms
 - c) 16 min terms
 - d) 32 min terms
- 6) The minimum time for which the input signal has to be maintained at the input of flip-flop is called _____ of the flip-flop.
 - a) Set-up time
 - b) Hold time
 - c) Pulse Interval time
 - d) Pulse Stability Time (PST)
- 7) In NOR gate based S-R latch if both S and R inputs are set to logic 0, the previous output state is maintained.
 - a) True
 - b) False



- 8) The implementation of simplified sum-of-products expressions may be easily implemented into actual logic circuits using all universal _____ gates with little or no increase in circuit complexity. (Select the response for the blank space that will BEST make the statement true.)
a) AND/OR b) NAND c) NOR d) OR/AND
- 9) A decade counter is _____.
a) Mod-3 counter b) Mod-5 counter c) Mod-8 counter d) Mod-10 counter
- 10) A Full adder can be realized using _____.
a) One half adder, two OR gates b) Two half adders, two OR gates
c) Two half adders, one OR gates d) None of these
- 11) IC 74151 is used as _____.
a) Encoder b) Decoder c) Multiplexer d) Demultiplexer
- 12) Following IC is used for BCD to 7 segment decoder
a) 74148 b) 74157 c) 7447 d) 7474
- 13) IC 74152 is a multiplexer having
a) 1 : 8 lines b) 1 : 32 lines c) 8 : 1 lines d) 16 : 1 lines
- 14) A PLA can be used _____.
a) As a Dynamic memory b) As a Static memory
c) As a Short memory d) None of these
- 15) For register level the information units is
a) Bytes b) Words and Vectors
c) Bubbles d) None of these
- 16) A PAL is comprised of programmable _____ gates.
a) NAND b) NOR c) OR d) None of these
- 17) A Memory whose data need to be refreshed periodically is called _____.
a) Static Memory b) Dynamic memory
c) Content addressable memory d) None of these
- 18) A memory ($2^k \times n$), There are k address lines, which can specify one of 2^k addresses. Each address contains an n-bit word.
a) True b) False
- 19) A multiplexer with a register circuit converts _____.
a) Serial data to parallel b) Parallel data to serial
c) Serial data to serial d) Parallel data to parallel
- 20) The difference between a PLA and a PAL is :
a) The PAL has a programmable OR plane and a programmable AND plane, while the PLA only has a programmable AND plane.
b) The PAL has more possible product terms than the PLA.
c) PALs and PLAs are the same thing.
d) The PLA has a programmable OR plane and a programmable AND plane, while the PAL only has a programmable AND plane.



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

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

Day and Date : Wednesday, 17-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** : (4×5=20)

- a) Simplify the following expression using K-Map $f = ABC + \overline{BCD} + \overline{ABC}$.
- b) Simplify the following three variables Expression and realise using NAND gates.
 $Y = \Pi M (0, 2, 3, 5)$
- c) Design full adder using Basic gates.
- d) Explain Arithmetic Logic Unit using 74181 IC.
- e) What is a flip-flop ? Explain Excitation table for Flip Flops.

3. Solve **any two** : (2×10=20)

- a) Draw and explain Operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.
- b) Design and explain Asynchronous Up-down counter in detail.
- c) Simplify the following expression by considering Don't care conditions and by Ignoring the Don't care conditions.
 $y = \sum m (1, 2, 4, 9, 13, 14) + d(5, 6)$.

SECTION – II

4. Solve **any four** : (4×5=20)

- a) Implement the following combinational circuit using a decoder

$$f_1 = \sum m(8, 10, 13, 15)$$

$$f_2 = \sum m(3, 5, 9, 13)$$

$$f_3 = \sum m(1, 2, 4)$$

Set P



- b) Explain the following 7 segment decoder terms.
- i) LT
 - ii) RBI
 - iii) BI
 - iv) RBO
- c) Explain expansion of word size with example.
- d) Explain the Classification of memories in detail.
- e) Explain programmable logic array in detail with block diagram.

5. Solve **any two** :

(2×10=20)

- a) Design 32 : 1 Multiplexer using two 16 : 1 Multiplexer and One 2 : 1 Multiplexer.
 - b) Design 16 × 8 memory using 16 × 4 memory chips.
 - c) Explain the processor level design with example in detail.
-



SLR-VB – 261

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

Set

Q

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

Day and Date : Wednesday, 17-5-2017
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 answer :

(20×1=20)

- 1) A PAL is comprised of programmable _____ gates.
a) NAND b) NOR c) OR d) None of these
- 2) A Memory whose data need to be refreshed periodically is called _____.
a) Static Memory b) Dynamic memory
c) Content addressable memory d) None of these
- 3) A memory ($2^k \times n$), There are k address lines, which can specify one of 2^k addresses. Each address contains an n-bit word.
a) True b) False
- 4) A multiplexer with a register circuit converts _____.
a) Serial data to parallel b) Parallel data to serial
c) Serial data to serial d) Parallel data to parallel
- 5) The difference between a PLA and a PAL is :
a) The PAL has a programmable OR plane and a programmable AND plane, while the PLA only has a programmable AND plane.
b) The PAL has more possible product terms than the PLA.
c) PALs and PLAs are the same thing.
d) The PLA has a programmable OR plane and a programmable AND plane, while the PAL only has a programmable AND plane.
- 6) In a digital system, there are three inputs A, B and C. The output should be high when at least two inputs are high. The minimized Boolean expression for the output is
a) $AB + BC + AC$ b) $ABC + ABC + ABC + ABC$
c) $ABC + ABC + ABC$ d) $AB + BC + AC$

P.T.O.



- 7) The minimum number of NAND gates required to implement $A \oplus B \oplus C$ is
a) 8 b) 10 c) 9 d) 6
- 8) A graphical display of the fundamental products in a truth-table is known as
a) Mapping b) Graphing c) T-map d) Karnaugh-map
- 9) Which of the following respectively represent commutative law, distributive law and associative law ?
I. $A.(B+C) = A.B+A.C$
II. $A + B = B + A$
III. $A.(B.C) = (A.B).C$
a) I, III and II b) II, I and III c) II, III and I d) III, I and II
- 10) A three variable K-map has
a) 8 min terms b) 12 min terms c) 16 min terms d) 32 min terms
- 11) The minimum time for which the input signal has to be maintained at the input of flip-flop is called _____ of the flip-flop.
a) Set-up time b) Hold time
c) Pulse Interval time d) Pulse Stability Time (PST)
- 12) In NOR gate based S-R latch if both S and R inputs are set to logic 0, the previous output state is maintained.
a) True b) False
- 13) The implementation of simplified sum-of-products expressions may be easily implemented into actual logic circuits using all universal _____ gates with little or no increase in circuit complexity. (Select the response for the blank space that will BEST make the statement true.)
a) AND/OR b) NAND c) NOR d) OR/AND
- 14) A decade counter is _____.
a) Mod-3 counter b) Mod-5 counter c) Mod-8 counter d) Mod-10 counter
- 15) A Full adder can be realized using _____.
a) One half adder, two OR gates b) Two half adders, two OR gates
c) Two half adders, one OR gates d) None of these
- 16) IC 74151 is used as _____.
a) Encoder b) Decoder c) Multiplexer d) Demultiplexer
- 17) Following IC is used for BCD to 7 segment decoder
a) 74148 b) 74157 c) 7447 d) 7474
- 18) IC 74152 is a multiplexer having
a) 1 : 8 lines b) 1 : 32 lines c) 8 : 1 lines d) 16 : 1 lines
- 19) A PLA can be used _____.
a) As a Dynamic memory b) As a Static memory
c) As a Short memory d) None of these
- 20) For register level the information units is
a) Bytes b) Words and Vectors
c) Bubbles d) None of these



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

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

Day and Date : Wednesday, 17-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** : **(4×5=20)**

- a) Simplify the following expression using K-Map $f = ABC + \overline{BCD} + \overline{ABC}$.
- b) Simplify the following three variables Expression and realise using NAND gates.
 $Y = \Pi M (0, 2, 3, 5)$
- c) Design full adder using Basic gates.
- d) Explain Arithmetic Logic Unit using 74181 IC.
- e) What is a flip-flop ? Explain Excitation table for Flip Flops.

3. Solve **any two** : **(2×10=20)**

- a) Draw and explain Operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.
- b) Design and explain Asynchronous Up-down counter in detail.
- c) Simplify the following expression by considering Don't care conditions and by Ignoring the Don't care conditions.
 $y = \sum m (1, 2, 4, 9, 13, 14) + d(5, 6)$.

SECTION – II

4. Solve **any four** : **(4×5=20)**

- a) Implement the following combinational circuit using a decoder

$$f_1 = \sum m(8, 10, 13, 15)$$

$$f_2 = \sum m(3, 5, 9, 13)$$

$$f_3 = \sum m(1, 2, 4)$$

Set Q



- b) Explain the following 7 segment decoder terms.
- i) LT
 - ii) RBI
 - iii) BI
 - iv) RBO
- c) Explain expansion of word size with example.
- d) Explain the Classification of memories in detail.
- e) Explain programmable logic array in detail with block diagram.

5. Solve **any two** :

(2×10=20)

- a) Design 32 : 1 Multiplexer using two 16 : 1 Multiplexer and One 2 : 1 Multiplexer.
 - b) Design 16 × 8 memory using 16 × 4 memory chips.
 - c) Explain the processor level design with example in detail.
-



SLR-VB – 261

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

Set

R

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

Day and Date : Wednesday, 17-5-2017
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 answer :

(20×1=20)

- 1) IC 74151 is used as _____
a) Encoder b) Decoder c) Multiplexer d) Demultiplexer
- 2) Following IC is used for BCD to 7 segment decoder
a) 74148 b) 74157 c) 7447 d) 7474
- 3) IC 74152 is a multiplexer having
a) 1 : 8 lines b) 1 : 32 lines c) 8 : 1 lines d) 16 : 1 lines
- 4) A PLA can be used _____
a) As a Dynamic memory b) As a Static memory
c) As a Short memory d) None of these
- 5) For register level the information units is
a) Bytes b) Words and Vectors
c) Bubbles d) None of these
- 6) A PAL is comprised of programmable _____ gates.
a) NAND b) NOR c) OR d) None of these
- 7) A Memory whose data need to be refreshed periodically is called _____
a) Static Memory b) Dynamic memory
c) Content addressable memory d) None of these
- 8) A memory ($2^k \times n$), There are k address lines, which can specify one of 2^k addresses. Each address contains an n-bit word.
a) True b) False
- 9) A multiplexer with a register circuit converts _____
a) Serial data to parallel b) Parallel data to serial
c) Serial data to serial d) Parallel data to parallel

P.T.O.



- 10) The difference between a PLA and a PAL is :
- The PAL has a programmable OR plane and a programmable AND plane, while the PLA only has a programmable AND plane.
 - The PAL has more possible product terms than the PLA.
 - PALs and PLAs are the same thing.
 - The PLA has a programmable OR plane and a programmable AND plane, while the PAL only has a programmable AND plane.
- 11) In a digital system, there are three inputs A, B and C. The output should be high when at least two inputs are high. The minimized Boolean expression for the output is
- $AB + BC + AC$
 - $ABC + \overline{A}BC + \overline{A}\overline{B}C + \overline{A}\overline{B}\overline{C}$
 - $\overline{A}BC + \overline{A}\overline{B}C + \overline{A}\overline{B}\overline{C}$
 - $\overline{A}B + \overline{B}C + \overline{A}C$
- 12) The minimum number of NAND gates required to implement $A \oplus B \oplus C$ is
- 8
 - 10
 - 9
 - 6
- 13) A graphical display of the fundamental products in a truth-table is known as
- Mapping
 - Graphing
 - T-map
 - Karnaugh-map
- 14) Which of the following respectively represent commutative law, distributive law and associative law ?
- $A.(B+C) = A.B+A.C$
 - $A + B = B + A$
 - $A.(B.C) = (A.B).C$
- I, III and II
 - II, I and III
 - II, III and I
 - III, I and II
- 15) A three variable K-map has
- 8 min terms
 - 12 min terms
 - 16 min terms
 - 32 min terms
- 16) The minimum time for which the input signal has to be maintained at the input of flip-flop is called _____ of the flip-flop.
- Set-up time
 - Hold time
 - Pulse Interval time
 - Pulse Stability Time (PST)
- 17) In NOR gate based S-R latch if both S and R inputs are set to logic 0, the previous output state is maintained.
- True
 - False
- 18) The implementation of simplified sum-of-products expressions may be easily implemented into actual logic circuits using all universal _____ gates with little or no increase in circuit complexity. (Select the response for the blank space that will BEST make the statement true.)
- AND/OR
 - NAND
 - NOR
 - OR/AND
- 19) A decade counter is _____.
- Mod-3 counter
 - Mod-5 counter
 - Mod-8 counter
 - Mod-10 counter
- 20) A Full adder can be realized using _____
- One half adder, two OR gates
 - Two half adders, two OR gates
 - Two half adders, one OR gates
 - None of these



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

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

Day and Date : Wednesday, 17-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** : **(4×5=20)**

- a) Simplify the following expression using K-Map $f = ABC + \overline{BCD} + \overline{ABC}$.
- b) Simplify the following three variables Expression and realise using NAND gates.
 $Y = \Pi M (0, 2, 3, 5)$
- c) Design full adder using Basic gates.
- d) Explain Arithmetic Logic Unit using 74181 IC.
- e) What is a flip-flop ? Explain Excitation table for Flip Flops.

3. Solve **any two** : **(2×10=20)**

- a) Draw and explain Operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.
- b) Design and explain Asynchronous Up-down counter in detail.
- c) Simplify the following expression by considering Don't care conditions and by Ignoring the Don't care conditions.
 $y = \sum m (1, 2, 4, 9, 13, 14) + d(5, 6)$.

SECTION – II

4. Solve **any four** : **(4×5=20)**

- a) Implement the following combinational circuit using a decoder

$$f_1 = \sum m(8, 10, 13, 15)$$

$$f_2 = \sum m(3, 5, 9, 13)$$

$$f_3 = \sum m(1, 2, 4)$$

Set R



- b) Explain the following 7 segment decoder terms.
- i) LT
 - ii) RBI
 - iii) BI
 - iv) RBO
- c) Explain expansion of word size with example.
- d) Explain the Classification of memories in detail.
- e) Explain programmable logic array in detail with block diagram.

5. Solve **any two** :

(2×10=20)

- a) Design 32 : 1 Multiplexer using two 16 : 1 Multiplexer and One 2 : 1 Multiplexer.
 - b) Design 16 × 8 memory using 16 × 4 memory chips.
 - c) Explain the processor level design with example in detail.
-



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

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

Day and Date : Wednesday, 17-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** : **(4×5=20)**

- a) Simplify the following expression using K-Map $f = ABC + \overline{BCD} + \overline{ABC}$.
- b) Simplify the following three variables Expression and realise using NAND gates.
 $Y = \Pi M (0, 2, 3, 5)$
- c) Design full adder using Basic gates.
- d) Explain Arithmetic Logic Unit using 74181 IC.
- e) What is a flip-flop ? Explain Excitation table for Flip Flops.

3. Solve **any two** : **(2×10=20)**

- a) Draw and explain Operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.
- b) Design and explain Asynchronous Up-down counter in detail.
- c) Simplify the following expression by considering Don't care conditions and by Ignoring the Don't care conditions.
 $y = \sum m (1, 2, 4, 9, 13, 14) + d(5, 6)$.

SECTION – II

4. Solve **any four** : **(4×5=20)**

- a) Implement the following combinational circuit using a decoder

$$f_1 = \sum m(8, 10, 13, 15)$$

$$f_2 = \sum m(3, 5, 9, 13)$$

$$f_3 = \sum m(1, 2, 4)$$

Set S



- b) Explain the following 7 segment decoder terms.
- i) LT
 - ii) RBI
 - iii) BI
 - iv) RBO
- c) Explain expansion of word size with example.
- d) Explain the Classification of memories in detail.
- e) Explain programmable logic array in detail with block diagram.

5. Solve **any two** :

(2×10=20)

- a) Design 32 : 1 Multiplexer using two 16 : 1 Multiplexer and One 2 : 1 Multiplexer.
 - b) Design 16 × 8 memory using 16 × 4 memory chips.
 - c) Explain the processor level design with example in detail.
-



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

Set	P
-----	----------

**S.E. (IT) (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
$$\begin{array}{l} \mathbf{x} : 0 \quad 0.5 \quad 1 \quad 1.5 \quad 2 \\ \mathbf{f(x)} : 0 \quad 0.25 \quad 1 \quad 2.25 \quad 4 \end{array}$$
then the value of $\int_0^2 f(x)dx$ by Simpson's $\frac{1}{3}$ rd 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 $\frac{1}{3}$ rd 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) ϕ

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



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

**S.E. (IT) (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 $\frac{1}{3}$ rd 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			



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

Set	Q
-----	----------

**S.E. (IT) (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) ϕ

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 α -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

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 $\frac{1}{3}$ rd 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 $\frac{1}{3}$ rd 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) $\left(x_n + \frac{N}{x_n} \right) = x_{n+1}$



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

**S.E. (IT) (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 $\frac{1}{3}$ rd 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			



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

Set	R
-----	----------

S.E. (IT) (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 $\frac{1}{3}$ rd 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) ϕ
 - 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 α -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 $\frac{1}{3}$ rd rule is approximately

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



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

**S.E. (IT) (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 $\frac{1}{3}$ rd 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			



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

Set	S
-----	----------

**S.E. (IT) (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 α -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

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

then the value of $\int_0^2 f(x)dx$ by Simpson's $\frac{1}{3}$ rd 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 $\frac{1}{3}$ rd 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) ϕ b) X c) A d) \bar{A}



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

**S.E. (IT) (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 $\frac{1}{3}$ rd 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 – 263

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

Set	P
-----	---

**S.E. (IT) (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.

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=14)

- 1) Which of the following statements are correct ?
 - a) An alphabet is a finite sequence of distinct symbols
 - b) A word is a finite sequence of symbols over a given alphabet
 - c) A language is a possibly infinite set of words over a given alphabet
 - d) An infinite language can be regular

- 2) $a^* (ab)^* (abc)^*$ which of the following regular expressions denote the same language as the above regular expression ?
 - a) $(a + ab + abc)^*$
 - b) $a^* (a + b)^* (a + b + c)^*$
 - c) $a^* (\wedge + ab)^* (\wedge + abc)^*$
 - d) None

- 3) Consider the following Context-Free Grammar (CFG)
 $G: S \rightarrow XX \mid YX \rightarrow aXc \mid aY cY \rightarrow Yb \mid q$ which of the following statements about the language $L(G)$ generated by G are correct ?
 - a) $q \in L(G)$
 - b) $aabbbccac \in L(G)$
 - c) Both
 - d) $aabbbccbb \in L(G)$

- 4) Data structure used in a Push Down Automation (PDA) is
 - a) linked list
 - b) queue
 - c) stack
 - d) array

P.T.O.



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

**S.E. (IT) (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** : **(3×4=12)**

- 1) Derive CFG to accept language $L = \{a^i b^j c^k \mid j > i + k\}$.
- 2) Compare between NFA and DFA.
- 3) $L = \{x \mid x \text{ contains substring } 010\}$. Draw a finite automata.
- 4) What is dangling else phenomenon in programming language ?

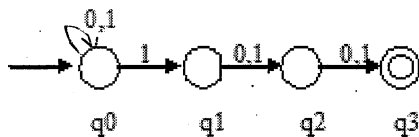
3. Attempt **any two** : **(2×8=16)**

- 1) Explain what it means for a Context-Free Grammar (CFG) to be ambiguous.
Is the following CFG ambiguous ? If yes, show this. If no, explain why.

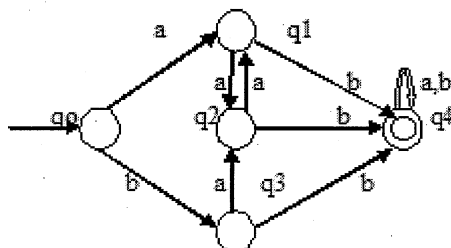
$$A \rightarrow AaA \mid AbA \mid B$$

$$B \rightarrow c$$

- 2) Convert NFA to DFA



- 3) Minimize following DFA





SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) Briefly explain the different types of Turing machines.
 - 2) Design a TM to accept the language $\{a, b\}^* \{ab\}$.
 - 3) What is pumping lemma ?
 - 4) Explain deterministic pushdown automata with example.
5. Answer **any two** : **(2×8=16)**
- 1) Design a PDA to accept the language $L = \{a^n b^n \geq 1\}$. Show an ID for the string 'aaabbb' with tape symbols.
 - 2) Define Turing machine. Explain multitape Turing machine in detail.
 - 3) Prove that the language of palindromes over $\{0, 1\}$ is not regular with pumping lemma.
-



SLR-VB – 263

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

Set	Q
-----	----------

**S.E. (IT) (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.

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=14)

- 1) The following problem(s) are called decidable problem(s)
 - a) the two finite automata's are equivalent
 - b) the two regular expressions define the same language
 - c) both a) and b)
 - d) none of these
- 2) PDA is the machine format of
 - a) Type 0 language
 - b) Type 1 language
 - c) Type 2 language
 - d) Type 3 language
- 3) In multi head turing machine there are
 - a) More than one heads of the turing machine
 - b) More than one input tapes of turing machine
 - c) Similar to the basic model of turing machine
 - d) All of these
- 4) Γ is a finite set of _____, $\Sigma \subseteq \Gamma$.
 - a) tape symbols
 - b) input tape
 - c) set of characters
 - d) none
- 5) Z_0 is the symbol for
 - a) tape symbols
 - b) stack symbol
 - c) initial symbol of stack
 - d) none

P.T.O.



- 6) The difference between finite automata and PDA is in
 a) Reading Head b) Input tape c) Finite control d) Stack
- 7) All strings having equal number of a and b can be recognized by
 a) Turing machine b) DFA c) NDFA d) All above
- 8) Which of the following statements are correct ?
 a) An alphabet is a finite sequence of distinct symbols
 b) A word is a finite sequence of symbols over a given alphabet
 c) A language is a possibly infinite set of words over a given alphabet
 d) An infinite language can be regular
- 9) $a * (ab) * (abc) *$ which of the following regular expressions denote the same language as the above regular expression ?
 a) $(a + ab + abc) *$ b) $a * (a + b) * (a + b + c) *$
 c) $a * (\wedge + ab) * (\wedge + abc) *$ d) None
- 10) Consider the following Context-Free Grammar (CFG)
 $G: S \rightarrow XX \mid YX \rightarrow aXc \mid aY \mid cY \rightarrow Yb \mid \varnothing$ which of the following statements about the language $L(G)$ generated by G are correct ?
 a) $\varnothing \in L(G)$ b) $aabbbccac \in L(G)$
 c) Both d) $aabbbccbb \in L(G)$
- 11) Data structure used in a Push Down Automation (PDA) is
 a) linked list b) queue
 c) stack d) array
- 12) The regular expression with all strings of 0's and 1's with at-least two consecutive 0's, is
 a) $1 + (10) *$ b) $(0 + 1) * 00 (0 + 1) *$
 c) $(0 + 1) * 011$ d) $0 * 1 * 2 *$
- 13) A parse tree for a string in $L(G)$ is a tree where
 a) The root is the start symbol for G
 b) The leaf nodes are the terminal symbols of G
 c) All of these
 d) None
- 14) There are _____ tuples in Turing machine.
 a) 4 b) 5 c) 6 d) 7



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

**S.E. (IT) (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** : **(3×4=12)**

- 1) Derive CFG to accept language $L = \{a^i b^j c^k \mid j > i + k\}$.
- 2) Compare between NFA and DFA.
- 3) $L = \{x \mid x \text{ contains substring } 010\}$. Draw a finite automata.
- 4) What is dangling else phenomenon in programming language ?

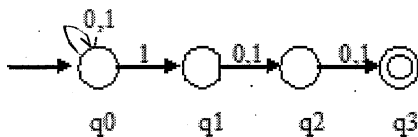
3. Attempt **any two** : **(2×8=16)**

- 1) Explain what it means for a Context-Free Grammar (CFG) to be ambiguous.
Is the following CFG ambiguous ? If yes, show this. If no, explain why.

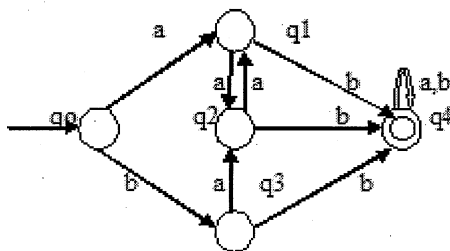
$$A \rightarrow AaA \mid AbA \mid B$$

$$B \rightarrow c$$

- 2) Convert NFA to DFA



- 3) Minimize following DFA





SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) Briefly explain the different types of Turing machines.
 - 2) Design a TM to accept the language $\{a, b\}^* \{ab\}$.
 - 3) What is pumping lemma ?
 - 4) Explain deterministic pushdown automata with example.
5. Answer **any two** : **(2×8=16)**
- 1) Design a PDA to accept the language $L = \{a^n b^n \geq 1\}$. Show an ID for the string 'aaabbb' with tape symbols.
 - 2) Define Turing machine. Explain multitape Turing machine in detail.
 - 3) Prove that the language of palindromes over $\{0, 1\}$ is not regular with pumping lemma.
-



SLR-VB – 263

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

Set	R
-----	---

**S.E. (IT) (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.

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=14)

- 1) The regular expression with all strings of 0's and 1's with at-least two consecutive 0's, is
 - a) $1 + (10)^*$
 - b) $(0 + 1)^* 00 (0 + 1)^*$
 - c) $(0 + 1)^* 011$
 - d) $0^* 1^* 2^*$
- 2) A parse tree for a string in $L(G)$ is a tree where
 - a) The root is the start symbol for G
 - b) The leaf nodes are the terminal symbols of G
 - c) All of these
 - d) None
- 3) There are _____ tuples in Turing machine.
 - a) 4
 - b) 5
 - c) 6
 - d) 7
- 4) The following problem(s) are called decidable problem(s)
 - a) the two finite automata's are equivalent
 - b) the two regular expressions define the same language
 - c) both a) and b)
 - d) none of these
- 5) PDA is the machine format of
 - a) Type 0 language
 - b) Type 1 language
 - c) Type 2 language
 - d) Type 3 language

P.T.O.



- 6) In multi head turing machine there are
- More than one heads of the turing machine
 - More than one input tapes of turing machine
 - Similar to the basic model of turing machine
 - All of these
- 7) Γ is a finite set of _____, $\Sigma \subseteq \Gamma$.
- tape symbols
 - input tape
 - set of characters
 - none
- 8) Z_0 is the symbol for
- tape symbols
 - stack symbol
 - initial symbol of stack
 - none
- 9) The difference between finite automata and PDA is in
- Reading Head
 - Input tape
 - Finite control
 - Stack
- 10) All strings having equal number of a and b can be recognized by
- Turing machine
 - DFA
 - NFA
 - All above
- 11) Which of the following statements are correct ?
- An alphabet is a finite sequence of distinct symbols
 - A word is a finite sequence of symbols over a given alphabet
 - A language is a possibly infinite set of words over a given alphabet
 - An infinite language can be regular
- 12) $a^* (ab)^* (abc)^*$ which of the following regular expressions denote the same language as the above regular expression ?
- $(a + ab + abc)^*$
 - $a^* (a + b)^* (a + b + c)^*$
 - $a^* (\wedge + ab)^* (\wedge + abc)^*$
 - None
- 13) Consider the following Context-Free Grammar (CFG)
- $$G: S \rightarrow XX \mid YX \rightarrow aXc \mid aY \quad cY \rightarrow Yb \mid q$$
- which of the following statements about the language $L(G)$ generated by G are correct ?
- $q \in L(G)$
 - $aabbbccac \in L(G)$
 - Both
 - $aabbbccbb \in L(G)$
- 14) Data structure used in a Push Down Automation (PDA) is
- linked list
 - queue
 - stack
 - array



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

**S.E. (IT) (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** : **(3×4=12)**

- 1) Derive CFG to accept language $L = \{a^i b^j c^k \mid j > i + k\}$.
- 2) Compare between NFA and DFA.
- 3) $L = \{x \mid x \text{ contains substring } 010\}$. Draw a finite automata.
- 4) What is dangling else phenomenon in programming language ?

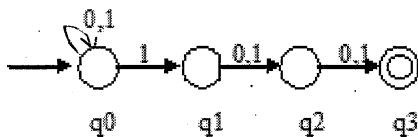
3. Attempt **any two** : **(2×8=16)**

- 1) Explain what it means for a Context-Free Grammar (CFG) to be ambiguous.
Is the following CFG ambiguous ? If yes, show this. If no, explain why.

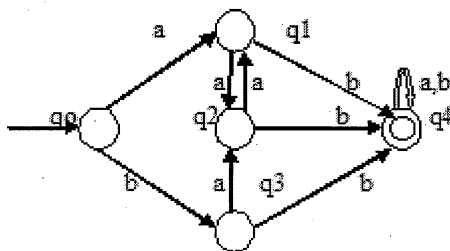
$$A \rightarrow AaA \mid AbA \mid B$$

$$B \rightarrow c$$

- 2) Convert NFA to DFA



- 3) Minimize following DFA





SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) Briefly explain the different types of Turing machines.
 - 2) Design a TM to accept the language $\{a, b\}^* \{ab\}$.
 - 3) What is pumping lemma ?
 - 4) Explain deterministic pushdown automata with example.
5. Answer **any two** : **(2×8=16)**
- 1) Design a PDA to accept the language $L = \{a^n b^n \geq 1\}$. Show an ID for the string 'aaabbb' with tape symbols.
 - 2) Define Turing machine. Explain multitape Turing machine in detail.
 - 3) Prove that the language of palindromes over $\{0, 1\}$ is not regular with pumping lemma.
-



- 7) $a * (ab) * (abc) *$ which of the following regular expressions denote the same language as the above regular expression ?
- a) $(a + ab + abc) *$ b) $a * (a + b) * (a + b + c) *$
c) $a * (\wedge + ab) * (\wedge + abc) *$ d) None
- 8) Consider the following Context-Free Grammar (CFG)
 $G: S \rightarrow XX \mid YX \rightarrow aXc \mid aY cY \rightarrow Yb \mid \phi$ which of the following statements about the language $L(G)$ generated by G are correct ?
- a) $\phi \in L(G)$ b) $aabbbccac \in L(G)$
c) Both d) $aabbbccbb \in L(G)$
- 9) Data structure used in a Push Down Automation (PDA) is
- a) linked list b) queue
c) stack d) array
- 10) The regular expression with all strings of 0's and 1's with at-least two consecutive 0's, is
- a) $1 + (10) *$ b) $(0 + 1) * 00 (0 + 1) *$
c) $(0 + 1) * 011$ d) $0 * 1 * 2 *$
- 11) A parse tree for a string in $L(G)$ is a tree where
- a) The root is the start symbol for g
b) The leaf nodes are the terminal symbols of g
c) All of these
d) None
- 12) There are _____ tuples in Turing machine.
a) 4 b) 5 c) 6 d) 7
- 13) The following problem(s) are called decidable problem(s)
- a) the two finite automata's are equivalent
b) the two regular expressions define the same language
c) both a) and b)
d) none of these
- 14) PDA is the machine format of
- a) Type 0 language b) Type 1 language
c) Type 2 language d) Type 3 language
-



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

**S.E. (IT) (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** : **(3×4=12)**

- 1) Derive CFG to accept language $L = \{a^i b^j c^k \mid j > i + k\}$.
- 2) Compare between NFA and DFA.
- 3) $L = \{x \mid x \text{ contains substring } 010\}$. Draw a finite automata.
- 4) What is dangling else phenomenon in programming language ?

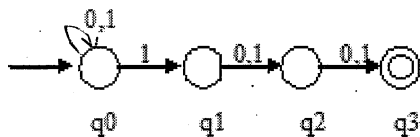
3. Attempt **any two** : **(2×8=16)**

- 1) Explain what it means for a Context-Free Grammar (CFG) to be ambiguous.
Is the following CFG ambiguous ? If yes, show this. If no, explain why.

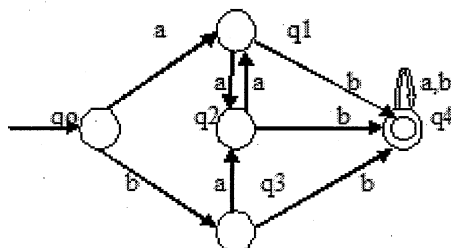
$$A \rightarrow AaA \mid AbA \mid B$$

$$B \rightarrow c$$

- 2) Convert NFA to DFA



- 3) Minimize following DFA





SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) Briefly explain the different types of Turing machines.
 - 2) Design a TM to accept the language $\{a, b\}^* \{ab\}$.
 - 3) What is pumping lemma ?
 - 4) Explain deterministic pushdown automata with example.
5. Answer **any two** : **(2×8=16)**
- 1) Design a PDA to accept the language $L = \{a^n b^n \geq 1\}$. Show an ID for the string 'aaabbb' with tape symbols.
 - 2) Define Turing machine. Explain multitape Turing machine in detail.
 - 3) Prove that the language of palindromes over $\{0, 1\}$ is not regular with pumping lemma.
-



SLR-VB – 264

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

Set	P
-----	---

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

Day and Date : Saturday, 20-5-2017
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) In 8085 address bus is _____
a) Bi-directional b) Uni-directional c) Multi-directional d) None of these
- 2) When $IO/\overline{M} = 1$ $S_0 = 0$ $S_1 = 1$ then operation is _____
a) I/O read b) I/O write c) Opcode fetch d) Memory read
- 3) The bus AD0-AD7 can be demultiplexed by using _____
a) ALE b) \overline{MEMW} c) \overline{RD} d) IOR
- 4) The purpose of READY signal in 8085 are _____
a) To indicate proper working of MP b) To introduce WAIT state
c) Both a and b d) None of these
- 5) The first machine cycle for every instruction is _____
a) Operand fetch b) Memory read c) Memory write d) Opcode fetch
- 6) $A = 37H$, $B = 3FH$ and carry i.e. borrow flag is set and SBB is executed what will be the value of A ?
a) 40 b) 30 c) F7 d) F8
- 7) The term PSW consist of _____
a) Accumulator and flag register b) H&L register
c) Accumulator and instruction register d) B and C register
- 8) Which of the following is hardware interrupts ?
a) RST 5.5, RST 6.5, RST 7.5 b) INTR, TRAP
c) Both a and b d) RST 0

P.T.O.



- 9) _____ IC is designed specifically to work with 8085 as programmable interrupt controller, it contains _____ number of pins.
- a) 8259,28 b) 8269,28 c) 8279,26 d) 8278,26
- 10) TRAP transfers microprocessor control to memory location _____
- a) 0020 H b) 0025 H c) 0024 H d) 003C H
- 11) In Master mode of 8257, DMA is _____ and microprocessor is _____
- a) Slave, Master b) Slave, Slave c) Master, Slave d) Master, Master
- 12) The direct bit set and reset capability is provided by _____ only.
- a) Port Z b) Port B c) Port C d) Port A
- 13) The 8086 contains _____ control flags and _____ conditional flags.
- a) 3, 6 b) 6, 3 c) 6, 6 d) None of these
- 14) What is true about the 80286 microprocessor ?
- a) It is a 16-bit microprocessor
- b) It works in the real and protected modes
- c) It contains MSW register
- d) All the above
-



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

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

Day and Date : Saturday, 20-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- a) Draw and explain flag register of 8085.
- b) Explain the different addressing modes of 8085 MP with suitable example.
- c) Identify the register contents and flags as the following instruction are being executed :
MVI A, 80H
ORA A
RAR
- d) Draw the timing diagram of the instruction LHLD 9005H.
- e) Explain 8085 WAIT state with neat diagram.

3. Attempt **any two** : **(8×2=16)**

- a) Mention features of 8085 MP, with neat diagram explain internal architecture of 8085 MP.
- b) With neat diagram explain Thumbwheel switches interfacing using 8255.
- c) Write Timing Diagram of CALL C200 by considering below example.
C000 LXI SP, C6FF
C003 –
C004 –
C005 CALL C200
C008 MOV A, B

SECTION – II

4. Attempt **any three** : **(4×3=12)**

- a) Describe the interrupt priority structure and timing characteristics of interrupts.
- b) Explain functional block diagram of 8255 programmable peripheral interface.

Set P



- c) Write a set of instructions to perform the following :
 - 1) Initialise Port A as input.
 - 2) Initialise Port B as output.
 - 3) Initialise Port C upper as output and Port C lower as input.
 - 4) Use Mode 0 for group A and Mode 0 for group B.
- d) List the pins related to the interrupts and DMA of the 8085 processor and explain their usage.
- e) List the features of the 8086 microprocessor.

5. Attempt **any two**:

(8×2=16)

- a) Explain 8259 programmable interrupt controller with neat block diagram.
 - b) Explain features and functional block diagram of 8251 USART.
 - c) What is segment ? Explain the segmentation in 8086 and list the advantages of having segmentation.
-



SLR-VB – 264

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

Set	Q
-----	---

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

Day and Date : Saturday, 20-5-2017
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 is hardware interrupts ?
 - a) RST 5.5, RST 6.5, RST 7.5
 - b) INTR, TRAP
 - c) Both a and b
 - d) RST 0
- 2) _____ IC is designed specifically to work with 8085 as programmable interrupt controller, it contains _____ number of pins.
 - a) 8259,28
 - b) 8269,28
 - c) 8279,26
 - d) 8278,26
- 3) TRAP transfers microprocessor control to memory location _____.
 - a) 0020 H
 - b) 0025 H
 - c) 0024 H
 - d) 003C H
- 4) In Master mode of 8257, DMA is _____ and microprocessor is _____.
 - a) Slave, Master
 - b) Slave, Slave
 - c) Master, Slave
 - d) Master, Master
- 5) The direct bit set and reset capability is provided by _____ only.
 - a) Port Z
 - b) Port B
 - c) Port C
 - d) Port A
- 6) The 8086 contains _____ control flags and _____ conditional flags.
 - a) 3, 6
 - b) 6, 3
 - c) 6, 6
 - d) None of these
- 7) What is true about the 80286 microprocessor ?
 - a) It is a 16-bit microprocessor
 - b) It works in the real and protected modes
 - c) It contains MSW register
 - d) All the above

P.T.O.



- 8) In 8085 address bus is _____
a) Bi-directional b) Uni-directional c) Multi-directional d) None of these
- 9) When $IO/\overline{M} = 1$ $S_0 = 0$ $S_1 = 1$ then operation is _____
a) I/O read b) I/O write c) Opcode fetch d) Memory read
- 10) The bus AD0-AD7 can be demultiplexed by using _____
a) ALE b) \overline{MEMW} c) \overline{RD} d) IOR
- 11) The purpose of READY signal in 8085 are _____
a) To indicate proper working of MP b) To introduce WAIT state
c) Both a and b d) None of these
- 12) The first machine cycle for every instruction is _____
a) Operand fetch b) Memory read c) Memory write d) Opcode fetch
- 13) $A = 37H$, $B = 3FH$ and carry i.e. borrow flag is set and SBB is executed what will be the value of A ?
a) 40 b) 30 c) F7 d) F8
- 14) The term PSW consist of _____
a) Accumulator and flag register b) H&L register
c) Accumulator and instruction register d) B and C register
- _____



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

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

Day and Date : Saturday, 20-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- a) Draw and explain flag register of 8085.
- b) Explain the different addressing modes of 8085 MP with suitable example.
- c) Identify the register contents and flags as the following instruction are being executed :
MVI A, 80H
ORA A
RAR
- d) Draw the timing diagram of the instruction LHLD 9005H.
- e) Explain 8085 WAIT state with neat diagram.

3. Attempt **any two** : **(8×2=16)**

- a) Mention features of 8085 MP, with neat diagram explain internal architecture of 8085 MP.
- b) With neat diagram explain Thumbwheel switches interfacing using 8255.
- c) Write Timing Diagram of CALL C200 by considering below example.
C000 LXI SP, C6FF
C003 –
C004 –
C005 CALL C200
C008 MOV A, B

SECTION – II

4. Attempt **any three** : **(4×3=12)**

- a) Describe the interrupt priority structure and timing characteristics of interrupts.
- b) Explain functional block diagram of 8255 programmable peripheral interface.

Set Q



- c) Write a set of instructions to perform the following :
 - 1) Initialise Port A as input.
 - 2) Initialise Port B as output.
 - 3) Initialise Port C upper as output and Port C lower as input.
 - 4) Use Mode 0 for group A and Mode 0 for group B.
- d) List the pins related to the interrupts and DMA of the 8085 processor and explain their usage.
- e) List the features of the 8086 microprocessor.

5. Attempt **any two**:

(8×2=16)

- a) Explain 8259 programmable interrupt controller with neat block diagram.
 - b) Explain features and functional block diagram of 8251 USART.
 - c) What is segment ? Explain the segmentation in 8086 and list the advantages of having segmentation.
-



SLR-VB – 264

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

Set	R
-----	---

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

Day and Date : Saturday, 20-5-2017
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) The first machine cycle for every instruction is _____
a) Operand fetch b) Memory read c) Memory write d) Opcode fetch
- 2) A = 37H, B = 3 FH and carry i.e. borrow flag is set and SBB is executed what will be the value of A ?
a) 40 b) 30 c) F7 d) F8
- 3) The term PSW consist of _____
a) Accumulator and flag register b) H&L register
c) Accumulator and instruction register d) B and C register
- 4) Which of the following is hardware interrupts ?
a) RST 5.5, RST 6.5, RST 7.5 b) INTR, TRAP
c) Both a and b d) RST 0
- 5) _____ IC is designed specifically to work with 8085 as programmable interrupt controller, it contains _____ number of pins.
a) 8259,28 b) 8269,28 c) 8279,26 d) 8278,26
- 6) TRAP transfers microprocessor control to memory location _____
a) 0020 H b) 0025 H c) 0024 H d) 003C H
- 7) In Master mode of 8257, DMA is _____ and microprocessor is _____
a) Slave, Master b) Slave, Slave c) Master, Slave d) Master, Master
- 8) The direct bit set and reset capability is provided by _____ only.
a) Port Z b) Port B c) Port C d) Port A

P.T.O.



- 9) The 8086 contains _____ control flags and _____ conditional flags.
a) 3, 6 b) 6, 3 c) 6, 6 d) None of these
- 10) What is true about the 80286 microprocessor ?
a) It is a 16-bit microprocessor
b) It works in the real and protected modes
c) It contains MSW register
d) All the above
- 11) In 8085 address bus is _____
a) Bi-directional b) Uni-directional c) Multi-directional d) None of these
- 12) When $IO/\overline{M} = 1$ $S_0 = 0$ $S_1 = 1$ then operation is _____
a) I/O read b) I/O write c) Opcode fetch d) Memory read
- 13) The bus AD0-AD7 can be demultiplexed by using _____
a) ALE b) \overline{MEMW} c) \overline{RD} d) IOR
- 14) The purpose of READY signal in 8085 are _____
a) To indicate proper working of MP b) To introduce WAIT state
c) Both a and b d) None of these
- _____



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

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

Day and Date : Saturday, 20-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- a) Draw and explain flag register of 8085.
- b) Explain the different addressing modes of 8085 MP with suitable example.
- c) Identify the register contents and flags as the following instruction are being executed :
MVI A, 80H
ORA A
RAR
- d) Draw the timing diagram of the instruction LHLD 9005H.
- e) Explain 8085 WAIT state with neat diagram.

3. Attempt **any two** : **(8×2=16)**

- a) Mention features of 8085 MP, with neat diagram explain internal architecture of 8085 MP.
- b) With neat diagram explain Thumbwheel switches interfacing using 8255.
- c) Write Timing Diagram of CALL C200 by considering below example.
C000 LXI SP, C6FF
C003 –
C004 –
C005 CALL C200
C008 MOV A, B

SECTION – II

4. Attempt **any three** : **(4×3=12)**

- a) Describe the interrupt priority structure and timing characteristics of interrupts.
- b) Explain functional block diagram of 8255 programmable peripheral interface.

Set R



- c) Write a set of instructions to perform the following :
 - 1) Initialise Port A as input.
 - 2) Initialise Port B as output.
 - 3) Initialise Port C upper as output and Port C lower as input.
 - 4) Use Mode 0 for group A and Mode 0 for group B.
- d) List the pins related to the interrupts and DMA of the 8085 processor and explain their usage.
- e) List the features of the 8086 microprocessor.

5. Attempt **any two**:

(8×2=16)

- a) Explain 8259 programmable interrupt controller with neat block diagram.
 - b) Explain features and functional block diagram of 8251 USART.
 - c) What is segment ? Explain the segmentation in 8086 and list the advantages of having segmentation.
-



SLR-VB – 264

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

Set	S
-----	---

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

Day and Date : Saturday, 20-5-2017
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) TRAP transfers microprocessor control to memory location _____
a) 0020 H b) 0025 H c) 0024 H d) 003C H
- 2) In Master mode of 8257, DMA is _____ and microprocessor is _____
a) Slave, Master b) Slave, Slave c) Master, Slave d) Master, Master
- 3) The direct bit set and reset capability is provided by _____ only.
a) Port Z b) Port B c) Port C d) Port A
- 4) The 8086 contains _____ control flags and _____ conditional flags.
a) 3, 6 b) 6, 3 c) 6, 6 d) None of these
- 5) What is true about the 80286 microprocessor ?
a) It is a 16-bit microprocessor
b) It works in the real and protected modes
c) It contains MSW register
d) All the above
- 6) In 8085 address bus is _____
a) Bi-directional b) Uni-directional c) Multi-directional d) None of these
- 7) When $IO/\bar{M} = 1$ $S_0 = 0$ $S_1 = 1$ then operation is _____
a) I/O read b) I/O write c) Opcode fetch d) Memory read
- 8) The bus AD0-AD7 can be demultiplexed by using _____
a) ALE b) \overline{MEMW} c) \overline{RD} d) IOR

P.T.O.



- 9) The purpose of READY signal in 8085 are _____
- a) To indicate proper working of MP b) To introduce WAIT state
c) Both a and b d) None of these
- 10) The first machine cycle for every instruction is _____
- a) Operand fetch b) Memory read c) Memory write d) Opcode fetch
- 11) A = 37H, B = 3 FH and carry i.e. borrow flag is set and SBB is executed what will be the value of A ?
- a) 40 b) 30 c) F7 d) F8
- 12) The term PSW consist of _____
- a) Accumulator and flag register b) H&L register
c) Accumulator and instruction register d) B and C register
- 13) Which of the following is hardware interrupts ?
- a) RST 5.5, RST 6.5, RST 7.5 b) INTR, TRAP
c) Both a and b d) RST 0
- 14) _____ IC is designed specifically to work with 8085 as programmable interrupt controller, it contains _____ number of pins.
- a) 8259,28 b) 8269,28 c) 8279,26 d) 8278,26
- _____



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

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

Day and Date : Saturday, 20-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- a) Draw and explain flag register of 8085.
- b) Explain the different addressing modes of 8085 MP with suitable example.
- c) Identify the register contents and flags as the following instruction are being executed :
MVI A, 80H
ORA A
RAR
- d) Draw the timing diagram of the instruction LHLD 9005H.
- e) Explain 8085 WAIT state with neat diagram.

3. Attempt **any two** : **(8×2=16)**

- a) Mention features of 8085 MP, with neat diagram explain internal architecture of 8085 MP.
- b) With neat diagram explain Thumbwheel switches interfacing using 8255.
- c) Write Timing Diagram of CALL C200 by considering below example.
C000 LXI SP, C6FF
C003 –
C004 –
C005 CALL C200
C008 MOV A, B

SECTION – II

4. Attempt **any three** : **(4×3=12)**

- a) Describe the interrupt priority structure and timing characteristics of interrupts.
- b) Explain functional block diagram of 8255 programmable peripheral interface.

Set S



- c) Write a set of instructions to perform the following :
 - 1) Initialise Port A as input.
 - 2) Initialise Port B as output.
 - 3) Initialise Port C upper as output and Port C lower as input.
 - 4) Use Mode 0 for group A and Mode 0 for group B.
- d) List the pins related to the interrupts and DMA of the 8085 processor and explain their usage.
- e) List the features of the 8086 microprocessor.

5. Attempt **any two**:

(8×2=16)

- a) Explain 8259 programmable interrupt controller with neat block diagram.
 - b) Explain features and functional block diagram of 8251 USART.
 - c) What is segment ? Explain the segmentation in 8086 and list the advantages of having segmentation.
-



SLR-VB – 265

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

Set

P

**S.E. (I.T.) (Part – II) (CGPA) Examination, 2017
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017
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 from Section – I and II are **compulsory**.
4) Figures to the **right** indicate **full** marks.
5) **Assume data if necessary.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **14**
- 1) Binary search algorithm can not be applied to
 - a) Sorted linked list
 - b) Sorted binary trees
 - c) Sorted linear array
 - d) Pointer array
 - 2) When new data are to be inserted into a data structure, but there is no available space ; this situation is usually called
 - a) Underflow
 - b) Overflow
 - c) Houseful
 - d) Saturated
 - 3) The situation when in a linked list START = NULL is
 - a) Underflow
 - b) Overflow
 - c) Houseful
 - d) Saturated
 - 4) Which of the following is two way list ?
 - a) Grounded header list
 - b) Circular header list
 - c) Linked list with header and trailer nodes
 - d) None of above
 - 5) Which of the following names does not relate to stacks ?
 - a) FIFO lists
 - b) LIFO lists
 - c) Piles
 - d) Push-down lists
 - 6) The term “push” and “pop” is related to the
 - a) Array
 - b) Lists
 - c) Stacks
 - d) All of above
 - 7) A data structure where elements can be added or removed at either end but not in the middle
 - a) Linked lists
 - b) Stacks
 - c) Queues
 - d) Deque

P.T.O.



- 8) When inorder traversing a tree resulted E A C K F H D B G ; the preorder traversal would return
a) FAEKCDBHG b) FAEKCDHGB c) EAFKHDCBG d) FEAKDCHBG
- 9) Linked lists are not suitable data structure of which one of the following problems ?
a) Insertion sort b) Binary search
c) Radix sort d) Polynomial manipulation
- 10) The number of possible ordered trees with three nodes A, B, C is
a) 16 b) 12 c) 6 d) 10
- 11) Which of the following statements is true ?
a) Optimal binary search tree construction can be performed efficiently using dynamic programming
b) Breath first search cannot be used to find converted components of a graph
c) Given the prefix and postfix walks over a binary tree. The binary tree cannot be uniquely constructed
d) Depth first search can be used to find connected components of a graph
- 12) The following sequence of operation is performed on stack :
push(1),push(2),pop,push(1),push(2),pop,pop,pop, push(2),pop.
The sequence of popped out values are
a) 2,2,1,1,2 b) 2, 2,1,2,2 c) 2, 1,2,2,1 d) 2,1,2,2,2
- 13) The postfix expression for $* + ab - cd$ is
a) $ab + cd - *$ b) $ab cd + - *$ c) $ab + cd * -$ d) $ab + - cd *$
- 14) Which of the following data structures is linear data structure ?
a) Trees b) Graphs c) Arrays d) None of above
-



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

S.E. (I.T.) (Part – II) (CGPA) Examination, 2017
DATA STRUCTURES

Day and Date : Tuesday, 23-5-2017

Marks : 56

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

- Instructions :** 1) **All questions from Section – I and II are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume data if necessary.**

SECTION – I

2. Attempt **any five** : **(5×4=20)**
- 1) Define and explain stack operations diagrammatically with the help of an example.
 - 2) Define priority queue. Explain types of priority with example.
 - 3) Explain the concept of inserting a node at particular position in doubly linked list.
 - 4) Write a note on circular linked list.
 - 5) Write a note on Red Black tree with example.
 - 6) Write a C function to insert a node in Binary search tree.
3. Attempt **any one** : **(8×1=8)**
- 1) Write a C program for queue for the following operations :
 - a) Insert
 - b) Delete
 - c) Display
 - 2) Write a C function for following operations :
 - a) Insert a node at beginning of singly linked list.
 - b) Insert a node at end of singly linked list.



SECTION – II

4. Attempt **any five** : **(5×4=20)**
- 1) What is a multiway tree ? What are the features of multiway trees ? Give any two drawbacks of multiway tree.
 - 2) What is B+ tree ? Explain features of B+ trees.
 - 3) What is height balanced tree ? What are the advantages and drawbacks of AVL trees ?
 - 4) Explain BFS algorithm for graph traversal.
 - 5) Define the terms :
 - a) Pendant Node
 - b) Isolated Node
 - c) Cyclic graph
 - d) Regular graph.
 - 6) Write a note on topological sorting.
5. Attempt **any one** : **(8×1=8)**
- 1) Define AVL tree. Explain different rotations in AVL trees. Show stepwise how AVL tree is created for following keys.
BOLD, FAST, INTEND, NARRATOR, LOVELY, POLITE, JEWEL, ABLE, HARVEST, DEBIT.
 - 2) What is graph ? Explain graph representation with example.
-



SLR-VB – 265

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

Set **Q**

**S.E. (I.T.) (Part – II) (CGPA) Examination, 2017
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017
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 from Section – I and II are compulsory.**
 - 4) Figures to the **right** indicate **full** marks.
 - 5) **Assume data if necessary.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **14**
- 1) When inorder traversing a tree resulted E A C K F H D B G ; the preorder traversal would return
a) FAEKCDBHG b) FAEKCDHGB c) EAFKHDCBG d) FEAKDCHBG
 - 2) Linked lists are not suitable data structure of which one of the following problems ?
a) Insertion sort b) Binary search
c) Radix sort d) Polynomial manipulation
 - 3) The number of possible ordered trees with three nodes A, B, C is
a) 16 b) 12 c) 6 d) 10
 - 4) Which of the following statements is true ?
a) Optimal binary search tree construction can be performed efficiently using dynamic programming
b) Breath first search cannot be used to find converted components of a graph
c) Given the prefix and postfix walks over a binary tree. The binary tree cannot be uniquely constructed
d) Depth first search can be used to find connected components of a graph
 - 5) The following sequence of operation is performed on stack :
push(1),push(2),pop,push(1),push(2),pop,pop,pop, push(2),pop.
The sequence of popped out values are
a) 2,2,1,1,2 b) 2, 2,1,2,2 c) 2, 1,2,2,1 d) 2,1,2,2,2

P.T.O.



- 6) The postfix expression for $* + ab - cd$ is
a) $ab + cd - *$ b) $ab cd + - *$ c) $ab + cd * -$ d) $ab + - cd *$
- 7) Which of the following data structures is linear data structure ?
a) Trees b) Graphs c) Arrays d) None of above
- 8) Binary search algorithm can not be applied to
a) Sorted linked list b) Sorted binary trees
c) Sorted linear array d) Pointer array
- 9) When new data are to be inserted into a data structure, but there is no available space ; this situation is usually called
a) Underflow b) Overflow c) Houseful d) Saturated
- 10) The situation when in a linked list $START = NULL$ is
a) Underflow b) Overflow c) Houseful d) Saturated
- 11) Which of the following is two way list ?
a) Grounded header list
b) Circular header list
c) Linked list with header and trailer nodes
d) None of above
- 12) Which of the following names does not relate to stacks ?
a) FIFO lists b) LIFO lists c) Piles d) Push-down lists
- 13) The term “push” and “pop” is related to the
a) Array b) Lists c) Stacks d) All of above
- 14) A data structure where elements can be added or removed at either end but not in the middle
a) Linked lists b) Stacks c) Queues d) Deque
-



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

S.E. (I.T.) (Part – II) (CGPA) Examination, 2017
DATA STRUCTURES

Day and Date : Tuesday, 23-5-2017

Marks : 56

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

- Instructions :** 1) **All questions from Section – I and II are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume data if necessary.**

SECTION – I

2. Attempt **any five** : **(5×4=20)**
- 1) Define and explain stack operations diagrammatically with the help of an example.
 - 2) Define priority queue. Explain types of priority with example.
 - 3) Explain the concept of inserting a node at particular position in doubly linked list.
 - 4) Write a note on circular linked list.
 - 5) Write a note on Red Black tree with example.
 - 6) Write a C function to insert a node in Binary search tree.
3. Attempt **any one** : **(8×1=8)**
- 1) Write a C program for queue for the following operations :
 - a) Insert
 - b) Delete
 - c) Display
 - 2) Write a C function for following operations :
 - a) Insert a node at beginning of singly linked list.
 - b) Insert a node at end of singly linked list.



SECTION – II

4. Attempt **any five** : **(5×4=20)**
- 1) What is a multiway tree ? What are the features of multiway trees ? Give any two drawbacks of multiway tree.
 - 2) What is B+ tree ? Explain features of B+ trees.
 - 3) What is height balanced tree ? What are the advantages and drawbacks of AVL trees ?
 - 4) Explain BFS algorithm for graph traversal.
 - 5) Define the terms :
 - a) Pendant Node
 - b) Isolated Node
 - c) Cyclic graph
 - d) Regular graph.
 - 6) Write a note on topological sorting.
5. Attempt **any one** : **(8×1=8)**
- 1) Define AVL tree. Explain different rotations in AVL trees. Show stepwise how AVL tree is created for following keys.
BOLD, FAST, INTEND, NARRATOR, LOVELY, POLITE, JEWEL, ABLE, HARVEST, DEBIT.
 - 2) What is graph ? Explain graph representation with example.
-



SLR-VB – 265

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

Set

R

**S.E. (I.T.) (Part – II) (CGPA) Examination, 2017
DATA STRUCTURES**

Day and Date : Tuesday, 23-5-2017
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 from Section – I and II are **compulsory**.
4) Figures to the **right** indicate **full** marks.
5) **Assume data if necessary.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **14**
- 1) Which of the following names does not relate to stacks ?
a) FIFO lists b) LIFO lists c) Piles d) Push-down lists
 - 2) The term “push” and “pop” is related to the
a) Array b) Lists c) Stacks d) All of above
 - 3) A data structure where elements can be added or removed at either end but not in the middle
a) Linked lists b) Stacks c) Queues d) Deque
 - 4) When inorder traversing a tree resulted E A C K F H D B G ; the preorder traversal would return
a) FAEKCDBHG b) FAEKCDHGB c) EAFKHDCBG d) FEAKDCHBG
 - 5) Linked lists are not suitable data structure of which one of the following problems ?
a) Insertion sort b) Binary search
c) Radix sort d) Polynomial manipulation
 - 6) The number of possible ordered trees with three nodes A, B, C is
a) 16 b) 12 c) 6 d) 10

P.T.O.



- 7) Which of the following statements is true ?
- a) Optimal binary search tree construction can be performed efficiently using dynamic programming
 - b) Breath first search cannot be used to find converted components of a graph
 - c) Given the prefix and postfix walks over a binary tree. The binary tree cannot be uniquely constructed
 - d) Depth first search can be used to find connected components of a graph
- 8) The following sequence of operation is performed on stack :
push(1),push(2),pop,push(1),push(2),pop,pop,pop, push(2),pop.
The sequence of popped out values are
- a) 2,2,1,1,2
 - b) 2, 2,1,2,2
 - c) 2, 1,2,2,1
 - d) 2,1,2,2,2
- 9) The postfix expression for $* + ab - cd$ is
- a) $ab + cd - *$
 - b) $ab cd + - *$
 - c) $ab + cd * -$
 - d) $ab + - cd *$
- 10) Which of the following data structures is linear data structure ?
- a) Trees
 - b) Graphs
 - c) Arrays
 - d) None of above
- 11) Binary search algorithm can not be applied to
- a) Sorted linked list
 - b) Sorted binary trees
 - c) Sorted linear array
 - d) Pointer array
- 12) When new data are to be inserted into a data structure, but there is no available space ; this situation is usually called
- a) Underflow
 - b) Overflow
 - c) Houseful
 - d) Saturated
- 13) The situation when in a linked list $START = NULL$ is
- a) Underflow
 - b) Overflow
 - c) Houseful
 - d) Saturated
- 14) Which of the following is two way list ?
- a) Grounded header list
 - b) Circular header list
 - c) Linked list with header and trailer nodes
 - d) None of above
-



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

S.E. (I.T.) (Part – II) (CGPA) Examination, 2017
DATA STRUCTURES

Day and Date : Tuesday, 23-5-2017

Marks : 56

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

- Instructions :** 1) **All questions from Section – I and II are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume data if necessary.**

SECTION – I

2. Attempt **any five** : **(5×4=20)**
- 1) Define and explain stack operations diagrammatically with the help of an example.
 - 2) Define priority queue. Explain types of priority with example.
 - 3) Explain the concept of inserting a node at particular position in doubly linked list.
 - 4) Write a note on circular linked list.
 - 5) Write a note on Red Black tree with example.
 - 6) Write a C function to insert a node in Binary search tree.
3. Attempt **any one** : **(8×1=8)**
- 1) Write a C program for queue for the following operations :
 - a) Insert
 - b) Delete
 - c) Display
 - 2) Write a C function for following operations :
 - a) Insert a node at beginning of singly linked list.
 - b) Insert a node at end of singly linked list.



SECTION – II

4. Attempt **any five** : **(5×4=20)**
- 1) What is a multiway tree ? What are the features of multiway trees ? Give any two drawbacks of multiway tree.
 - 2) What is B+ tree ? Explain features of B+ trees.
 - 3) What is height balanced tree ? What are the advantages and drawbacks of AVL trees ?
 - 4) Explain BFS algorithm for graph traversal.
 - 5) Define the terms :
 - a) Pendant Node
 - b) Isolated Node
 - c) Cyclic graph
 - d) Regular graph.
 - 6) Write a note on topological sorting.
5. Attempt **any one** : **(8×1=8)**
- 1) Define AVL tree. Explain different rotations in AVL trees. Show stepwise how AVL tree is created for following keys.
BOLD, FAST, INTEND, NARRATOR, LOVELY, POLITE, JEWEL, ABLE, HARVEST, DEBIT.
 - 2) What is graph ? Explain graph representation with example.
-



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

Set	S
-----	---

S.E. (I.T.) (Part – II) (CGPA) Examination, 2017
DATA STRUCTURES

Day and Date : Tuesday, 23-5-2017
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 from Section – I and II are compulsory.**
 - 4) Figures to the **right** indicate **full** marks.
 - 5) **Assume data if necessary.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **14**
- 1) The number of possible ordered trees with three nodes A, B, C is
a) 16 b) 12 c) 6 d) 10
 - 2) Which of the following statements is true ?
a) Optimal binary search tree construction can be performed efficiently using dynamic programming
b) Breath first search cannot be used to find converted components of a graph
c) Given the prefix and postfix walks over a binary tree. The binary tree cannot be uniquely constructed
d) Depth first search can be used to find connected components of a graph
 - 3) The following sequence of operation is performed on stack :
push(1),push(2),pop,push(1),push(2),pop,pop,pop, push(2),pop.
The sequence of popped out values are
a) 2,2,1,1,2 b) 2, 2,1,2,2 c) 2, 1,2,2,1 d) 2,1,2,2,2
 - 4) The postfix expression for $* + ab - cd$ is
a) $ab + cd - *$ b) $ab cd + - *$ c) $ab + cd * -$ d) $ab + - cd *$
 - 5) Which of the following data structures is linear data structure ?
a) Trees b) Graphs c) Arrays d) None of above

P.T.O.



- 6) Binary search algorithm can not be applied to
- a) Sorted linked list
 - b) Sorted binary trees
 - c) Sorted linear array
 - d) Pointer array
- 7) When new data are to be inserted into a data structure, but there is no available space ; this situation is usually called
- a) Underflow
 - b) Overflow
 - c) Houseful
 - d) Saturated
- 8) The situation when in a linked list START = NULL is
- a) Underflow
 - b) Overflow
 - c) Houseful
 - d) Saturated
- 9) Which of the following is two way list ?
- a) Grounded header list
 - b) Circular header list
 - c) Linked list with header and trailer nodes
 - d) None of above
- 10) Which of the following names does not relate to stacks ?
- a) FIFO lists
 - b) LIFO lists
 - c) Piles
 - d) Push-down lists
- 11) The term “push” and “pop” is related to the
- a) Array
 - b) Lists
 - c) Stacks
 - d) All of above
- 12) A data structure where elements can be added or removed at either end but not in the middle
- a) Linked lists
 - b) Stacks
 - c) Queues
 - d) Deque
- 13) When inorder traversing a tree resulted E A C K F H D B G ; the preorder traversal would return
- a) FAEKCDBHG
 - b) FAEKCDHGB
 - c) EAFKHDCBG
 - d) FEAKDCHBG
- 14) Linked lists are not suitable data structure of which one of the following problems ?
- a) Insertion sort
 - b) Binary search
 - c) Radix sort
 - d) Polynomial manipulation
-



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

S.E. (I.T.) (Part – II) (CGPA) Examination, 2017
DATA STRUCTURES

Day and Date : Tuesday, 23-5-2017

Marks : 56

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

- Instructions :** 1) **All questions from Section – I and II are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume data if necessary.**

SECTION – I

2. Attempt **any five** : **(5×4=20)**
- 1) Define and explain stack operations diagrammatically with the help of an example.
 - 2) Define priority queue. Explain types of priority with example.
 - 3) Explain the concept of inserting a node at particular position in doubly linked list.
 - 4) Write a note on circular linked list.
 - 5) Write a note on Red Black tree with example.
 - 6) Write a C function to insert a node in Binary search tree.
3. Attempt **any one** : **(8×1=8)**
- 1) Write a C program for queue for the following operations :
 - a) Insert
 - b) Delete
 - c) Display
 - 2) Write a C function for following operations :
 - a) Insert a node at beginning of singly linked list.
 - b) Insert a node at end of singly linked list.



SECTION – II

4. Attempt **any five** : **(5×4=20)**
- 1) What is a multiway tree ? What are the features of multiway trees ? Give any two drawbacks of multiway tree.
 - 2) What is B+ tree ? Explain features of B+ trees.
 - 3) What is height balanced tree ? What are the advantages and drawbacks of AVL trees ?
 - 4) Explain BFS algorithm for graph traversal.
 - 5) Define the terms :
 - a) Pendant Node
 - b) Isolated Node
 - c) Cyclic graph
 - d) Regular graph.
 - 6) Write a note on topological sorting.
5. Attempt **any one** : **(8×1=8)**
- 1) Define AVL tree. Explain different rotations in AVL trees. Show stepwise how AVL tree is created for following keys.
BOLD, FAST, INTEND, NARRATOR, LOVELY, POLITE, JEWEL, ABLE, HARVEST, DEBIT.
 - 2) What is graph ? Explain graph representation with example.
-



SLR-VB – 266

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

Set	P
-----	----------

**S.E. (Information Technology) (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.*
3) *All questions are compulsory.*

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternative :

(14×1=14)

- 1) _____ have a single communication channel that is shared by all the machines on the network.
a) Point to Point b) Broadcast c) Unicast d) None of these
- 2) A _____ is an agreement between the communicating parties on how communication is to proceed.
a) Protocol b) Algorithm c) Internet d) None of these
- 3) The _____ layer is concerned with transmitting raw bits over a communication channel.
a) Datalink layer b) Network layer
c) Both a and b d) None of the above
- 4) The _____ layer is split into a SAR sub layer and CS sub layer in Asynchronous Transfer Mode.
a) AAL b) Physical c) ATM d) None of these
- 5) Which of the following is required to communicate between two computers ?
a) Transmission medium b) Protocol
c) Communication hardware d) All of these

P.T.O.



- 6) An error detection code in which, code is remainder resulting from dividing the bits to be checked by a predetermined primary number ?
- a) Cyclic redundancy check b) Checksum
c) Hamming code d) None of these
- 7) Text and character strings are example of _____ data.
- a) Analog b) Digital c) Both a and b d) None of these
- 8) Text and character strings are example of _____ data.
- a) Framing b) Error detection and correction
c) Routing d) None of these
- 9) The _____ is the rate at which the signal repeats.
- a) Phase b) Amplitude c) Frequency d) None of these
- 10) _____ is a loss of energy as the signal propagates outwards.
- a) Attenuation b) Noise c) Distortion d) None of these
- 11) A Bit map protocol is also known as _____
- a) Collision free protocol b) Reservation protocol
c) Limited contention protocol d) None
- 12) How many bytes are reserved for data field of IEEE 802.3 std ?
- a) 32 Bytes b) 1500 Bytes c) 8182 Bytes d) 16 Bytes
- 13) Algorithm in which Route from source to destination is already computed in advanced ?
- a) Adaptive Routing algorithm b) Non-Adaptive Routing algorithm
c) Both a and b d) None of above
- 14) Flooding routing algorithm is _____
- a) Static Routing algorithm b) Dynamic Routing algorithm
c) Both a and b d) None of above
-



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

**S.E. (Information Technology) (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

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any four** (each carries 4 marks) : **16**
- a) Compare OSI and TCP models.
 - b) What are the different transmission impairments occurring in transmission media ?
 - c) Discuss the different Data Link Layer design issues.
 - d) What are the different framing methods ?
 - e) Explain Simplex Stop and Wait Protocol.
3. a) Explain Cyclic Redundancy Check method with a suitable example in detail. **4**

OR

- b) Describe ATM reference model. Draw diagrams and explain functions of each layer.
4. Write a short note on (each carries 4 marks) : **8**
- a) Go-back-N protocol.
 - b) Hamming Code method of error detection.

SECTION – II

5. Attempt **any four** (each carries 4 marks) : **16**
- a) Explain CSMA and its types in detail.
 - b) What is Bridges ? Explain Transparent Bridge.

Set P



- c) Explain Flow-Base Routing algorithm with example.
 - d) Explain Hierarchical routing in brief.
 - e) Explain Network Address Translation in detail.
 - f) Explain Classful Addressing with diagram.
6. Explain IEEE std. 802.3 also explain its Frame Format in detail. **6**
7. Write a short note on (**each** carries **3** marks) : **6**
- a) Firewall
 - b) Congestion Control.
-



- 7) Flooding routing algorithm is _____
- a) Static Routing algorithm b) Dynamic Routing algorithm
c) Both a and b d) None of above
- 8) _____ have a single communication channel that is shared by all the machines on the network.
- a) Point to Point b) Broadcast c) Unicast d) None of these
- 9) A _____ is an agreement between the communicating parties on how communication is to proceed.
- a) Protocol b) Algorithm c) Internet d) None of these
- 10) The _____ layer is concerned with transmitting raw bits over a communication channel.
- a) Datalink layer b) Network layer
c) Both a and b d) None of the above
- 11) The _____ layer is split into a SAR sub layer and CS sub layer in Asynchronous Transfer Mode.
- a) AAL b) Physical c) ATM d) None of these
- 12) Which of the following is required to communicate between two computers ?
- a) Transmission medium b) Protocol
c) Communication hardware d) All of these
- 13) An error detection code in which, code is remainder resulting from dividing the bits to be checked by a predetermined primary number ?
- a) Cyclic redundancy check b) Checksum
c) Hamming code d) None of these
- 14) Text and character strings are example of _____ data.
- a) Analog b) Digital c) Both a and b d) None of these
-



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

**S.E. (Information Technology) (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

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any four** (each carries 4 marks) : **16**
- a) Compare OSI and TCP models.
 - b) What are the different transmission impairments occurring in transmission media ?
 - c) Discuss the different Data Link Layer design issues.
 - d) What are the different framing methods ?
 - e) Explain Simplex Stop and Wait Protocol.
3. a) Explain Cyclic Redundancy Check method with a suitable example in detail. **4**

OR

- b) Describe ATM reference model. Draw diagrams and explain functions of each layer.
4. Write a short note on (each carries 4 marks) : **8**
- a) Go-back-N protocol.
 - b) Hamming Code method of error detection.

SECTION – II

5. Attempt **any four** (each carries 4 marks) : **16**
- a) Explain CSMA and its types in detail.
 - b) What is Bridges ? Explain Transparent Bridge.

Set Q



- c) Explain Flow-Base Routing algorithm with example.
 - d) Explain Hierarchical routing in brief.
 - e) Explain Network Address Translation in detail.
 - f) Explain Classful Addressing with diagram.
6. Explain IEEE std. 802.3 also explain its Frame Format in detail. **6**
7. Write a short note on (**each** carries **3** marks) : **6**
- a) Firewall
 - b) Congestion Control.
-



SLR-VB – 266

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

Set	R
-----	----------

**S.E. (Information Technology) (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.**
3) **All questions are compulsory.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternative :

(14×1=14)

- 1) Which of the following is required to communicate between two computers ?
 - a) Transmission medium
 - b) Protocol
 - c) Communication hardware
 - d) All of these
- 2) An error detection code in which, code is remainder resulting from dividing the bits to be checked by a predetermined primary number ?
 - a) Cyclic redundancy check
 - b) Checksum
 - c) Hamming code
 - d) None of these
- 3) Text and character strings are example of _____ data.
 - a) Analog
 - b) Digital
 - c) Both a and b
 - d) None of these
- 4) Text and character strings are example of _____ data.
 - a) Framing
 - b) Error detection and correction
 - c) Routing
 - d) None of these
- 5) The _____ is the rate at which the signal repeats.
 - a) Phase
 - b) Amplitude
 - c) Frequency
 - d) None of these
- 6) _____ is a loss of energy as the signal propagates outwards.
 - a) Attenuation
 - b) Noise
 - c) Distortion
 - d) None of these

P.T.O.



- 7) A Bit map protocol is also known as _____
- a) Collision free protocol b) Reservation protocol
c) Limited contention protocol d) None
- 8) How many bytes are reserved for data field of IEEE 802.3 std ?
- a) 32 Bytes b) 1500 Bytes c) 8182 Bytes d) 16 Bytes
- 9) Algorithm in which Route from source to destination is already computed in advanced ?
- a) Adaptive Routing algorithm b) Non-Adaptive Routing algorithm
c) Both a and b d) None of above
- 10) Flooding routing algorithm is _____
- a) Static Routing algorithm b) Dynamic Routing algorithm
c) Both a and b d) None of above
- 11) _____ have a single communication channel that is shared by all the machines on the network.
- a) Point to Point b) Broadcast c) Unicast d) None of these
- 12) A _____ is an agreement between the communicating parties on how communication is to proceed.
- a) Protocol b) Algorithm c) Internet d) None of these
- 13) The _____ layer is concerned with transmitting raw bits over a communication channel.
- a) Datalink layer b) Network layer
c) Both a and b d) None of the above
- 14) The _____ layer is split into a SAR sub layer and CS sub layer in Asynchronous Transfer Mode.
- a) AAL b) Physical c) ATM d) None of these
-



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

**S.E. (Information Technology) (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

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any four** (each carries 4 marks) : **16**
- a) Compare OSI and TCP models.
 - b) What are the different transmission impairments occurring in transmission media ?
 - c) Discuss the different Data Link Layer design issues.
 - d) What are the different framing methods ?
 - e) Explain Simplex Stop and Wait Protocol.
3. a) Explain Cyclic Redundancy Check method with a suitable example in detail. **4**

OR

- b) Describe ATM reference model. Draw diagrams and explain functions of each layer.
4. Write a short note on (each carries 4 marks) : **8**
- a) Go-back-N protocol.
 - b) Hamming Code method of error detection.

SECTION – II

5. Attempt **any four** (each carries 4 marks) : **16**
- a) Explain CSMA and its types in detail.
 - b) What is Bridges ? Explain Transparent Bridge.

Set R



- c) Explain Flow-Base Routing algorithm with example.
 - d) Explain Hierarchical routing in brief.
 - e) Explain Network Address Translation in detail.
 - f) Explain Classful Addressing with diagram.
6. Explain IEEE std. 802.3 also explain its Frame Format in detail. **6**
7. Write a short note on (**each** carries **3** marks) : **6**
- a) Firewall
 - b) Congestion Control.
-



SLR-VB – 266

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

Set	S
-----	----------

**S.E. (Information Technology) (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.**
3) **All questions are compulsory.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternative :

(14×1=14)

- 1) _____ is a loss of energy as the signal propagates outwards.
a) Attenuation b) Noise c) Distortion d) None of these
- 2) A Bit map protocol is also known as _____
a) Collision free protocol b) Reservation protocol
c) Limited contention protocol d) None
- 3) How many bytes are reserved for data field of IEEE 802.3 std ?
a) 32 Bytes b) 1500 Bytes c) 8182 Bytes d) 16 Bytes
- 4) Algorithm in which Route from source to destination is already computed in advanced ?
a) Adaptive Routing algorithm b) Non-Adaptive Routing algorithm
c) Both a and b d) None of above
- 5) Flooding routing algorithm is _____
a) Static Routing algorithm b) Dynamic Routing algorithm
c) Both a and b d) None of above
- 6) _____ have a single communication channel that is shared by all the machines on the network.
a) Point to Point b) Broadcast c) Unicast d) None of these

P.T.O.



- 7) A _____ is an agreement between the communicating parties on how communication is to proceed.
a) Protocol b) Algorithm c) Internet d) None of these
- 8) The _____ layer is concerned with transmitting raw bits over a communication channel.
a) Datalink layer b) Network layer
c) Both a and b d) None of the above
- 9) The _____ layer is split into a SAR sub layer and CS sub layer in Asynchronous Transfer Mode.
a) AAL b) Physical c) ATM d) None of these
- 10) Which of the following is required to communicate between two computers ?
a) Transmission medium b) Protocol
c) Communication hardware d) All of these
- 11) An error detection code in which, code is remainder resulting from dividing the bits to be checked by a predetermined primary number ?
a) Cyclic redundancy check b) Checksum
c) Hamming code d) None of these
- 12) Text and character strings are example of _____ data.
a) Analog b) Digital c) Both a and b d) None of these
- 13) Text and character strings are example of _____ data.
a) Framing b) Error detection and correction
c) Routing d) None of these
- 14) The _____ is the rate at which the signal repeats.
a) Phase b) Amplitude c) Frequency d) None of these
-



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

**S.E. (Information Technology) (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

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any four** (each carries 4 marks) : **16**
- a) Compare OSI and TCP models.
 - b) What are the different transmission impairments occurring in transmission media ?
 - c) Discuss the different Data Link Layer design issues.
 - d) What are the different framing methods ?
 - e) Explain Simplex Stop and Wait Protocol.
3. a) Explain Cyclic Redundancy Check method with a suitable example in detail. **4**

OR

- b) Describe ATM reference model. Draw diagrams and explain functions of each layer.
4. Write a short note on (each carries 4 marks) : **8**
- a) Go-back-N protocol.
 - b) Hamming Code method of error detection.

SECTION – II

5. Attempt **any four** (each carries 4 marks) : **16**
- a) Explain CSMA and its types in detail.
 - b) What is Bridges ? Explain Transparent Bridge.

Set S



- c) Explain Flow-Base Routing algorithm with example.
 - d) Explain Hierarchical routing in brief.
 - e) Explain Network Address Translation in detail.
 - f) Explain Classful Addressing with diagram.
6. Explain IEEE std. 802.3 also explain its Frame Format in detail. **6**
7. Write a short note on (**each** carries **3** marks) : **6**
- a) Firewall
 - b) Congestion Control.
-



SLR-VB – 267

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

Set	P
-----	---

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

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

Max. Marks : 100

- Instructions :**
- 1) **All questions from Section – I and II are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Assume 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 : 20

1. Choose the correct option :

20

- 1) Which data structure is needed to convert infix notation to postfix notation ?
A) Branch B) Queue C) Tree D) Stack
- 2) A linear collection of data elements where the linear node is given by means of pointer is called as
A) Linked list B) Node list C) Primitive list D) None of these
- 3) A queue is a
A) FIFO B) LIFO C) Ordered array D) Linear tree
- 4) Function malloc returns a pointer of type void * to the memory it allocates and if it is unable to allocate memory, it returns a NULL pointer.
A) True B) False
- 5) Which of the following traversal techniques lists the nodes of a binary search tree in ascending order ?
A) Post-order B) In-order
C) Pre-order D) None of the above
- 6) Which of the following name is related to stacks ?
A) FIFO lists B) LIFO lists
C) Pipes D) Push-down list
- 7) Finding the location of the element with a given value is
A) Traversal B) Search
C) Sort D) None of the above

P.T.O.



- 8) The term “push” and “pop” is related to the
A) Array B) Lists C) Stacks D) All of the above
- 9) Binary search algorithm can not be applied to
A) Sorted linked list B) Sorted binary trees
C) Sorted linear array D) Pointer array
- 10) Which of the following data structure store the homogeneous data elements ?
A) Array B) Records
C) Pointers D) None of the above
- 11) One of the major drawback of B-Tree is the difficulty of traversing the keys sequentially.
A) True B) False
- 12) Breadth First Search of Graph, which of the following data structure is used ?
A) Stack B) Queue
C) Linked list D) None of the above
- 13) How many nodes in a tree have no ancestors ?
A) 0 B) 1 C) 2 D) n
- 14) In binary search, average number of comparison required for searching an element in a list of n numbers is
A) $\log_2 n$ B) $n/2$ C) n D) $n - 1$
- 15) For an undirected graph G with n vertices and e edges, the sum of the degrees of each vertex is
A) ne B) 2n C) 2e D) e^n
- 16) A full binary tree with $2n + 1$ nodes contain
A) n leaf nodes B) n non-leaf nodes
C) $n - 1$ leaf nodes D) $n - 1$ non-leaf nodes
- 17) If a node in a BST has two children, then its inorder predecessor has
A) no left child B) no right child C) two children D) no child
- 18) A BST is traversed in the following order recursively : Right, root, left. The output sequence will be in
A) Ascending order B) Descending order
C) Bitomic sequence D) No specific order
- 19) A binary tree of depth “d” is an almost complete binary tree if
A) Each leaf in the tree is either at level “d” or at level “d – 1”
B) For any node “n” in the tree with a right descendent at level “d” all the left descendents of “n” that are leaves, are also at level “d”
C) Both (A) and (B)
D) None of the above
- 20) An adjacency matrix representation of a graph cannot contain information of
A) Nodes B) Edges
C) Direction of edges D) Parallel edges



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

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

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

Marks : 80

- Instructions :** 1) **All** questions from Section – I and II are **compulsory**.
2) Figures to the **right** indicate **full** marks.
3) Assume data if **necessary**.

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) Define Queue and explain its operations.
 - 2) Explain Red-Black Tree.
 - 3) Define Binary Tree, Strictly B-Tree, Complete B-Tree and Almost complete B-Tree.
 - 4) Define linked list and explain its representation and operations.
 - 5) Evaluate $(A + B) * (C - D)$ Infix to Postfix with stack values.
3. Attempt the following : **(5×2=10)**
- A) Explain Binary Tree and its traversal methods for ABCDEFGHIJKL.
 - B) Explain Circular Queue and its operations.
4. Define Stack. Explain its representation, operations and implementation. **10**

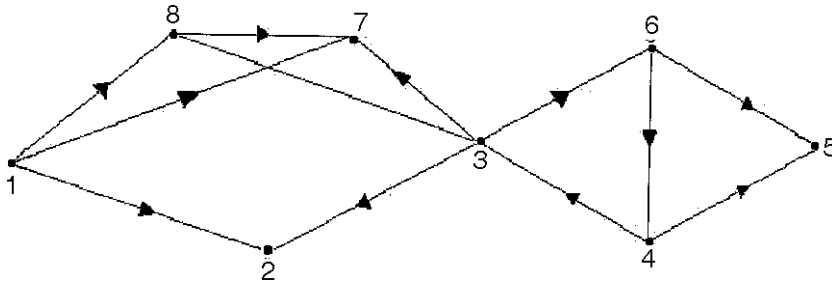
SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain the algorithm to search a node in a binary search tree.
 - B) Define a graph and it's terminologies.
 - C) Describe two methods to represent a graph in the computer.
 - D) Define degree, depth, path, terminal nodes, traversing.
 - E) Draw AVL tree whose elements are inserted in the following order.
Mar, May, Nov, Aug, Apr, Jan, Dec, Jul, Feb, Jun, Oct, Sep.

Set P



6. Show the result of running BFS and DFS on the directed graph given below using vertex 3 as source. Show the status of the data structure used at each stage. **10**



7. Write short notes on :

10

- i) Height of an AVL tree.
 - ii) Balanced Multiway Trees.
 - iii) Single rotation of AVL tree.
 - iv) Breadth First Traversal.
 - v) Depth First Traversal.
-



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

Set	Q
-----	---

S.E. (I.T.) (Part – II) (Old) Examination, 2017
DATA STRUCTURES – II

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

Max. Marks : 100

- Instructions :**
- 1) **All questions from Section – I and II are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Assume 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 : 20

1. Choose the correct option :

20

- 1) A full binary tree with $2n + 1$ nodes contain
 - A) n leaf nodes
 - B) n non-leaf nodes
 - C) $n - 1$ leaf nodes
 - D) $n - 1$ non-leaf nodes
- 2) If a node in a BST has two children, then its inorder predecessor has
 - A) no left child
 - B) no right child
 - C) two children
 - D) no child
- 3) A BST is traversed in the following order recursively : Right, root, left. The output sequence will be in
 - A) Ascending order
 - B) Descending order
 - C) Bitomic sequence
 - D) No specific order
- 4) A binary tree of depth "d" is an almost complete binary tree if
 - A) Each leaf in the tree is either at level "d" or at level "d - 1"
 - B) For any node "n" in the tree with a right descendent at level "d" all the left descendents of "n" that are leaves, are also at level "d"
 - C) Both (A) and (B)
 - D) None of the above
- 5) An adjacency matrix representation of a graph cannot contain information of
 - A) Nodes
 - B) Edges
 - C) Direction of edges
 - D) Parallel edges
- 6) Which data structure is needed to convert infix notation to postfix notation ?
 - A) Branch
 - B) Queue
 - C) Tree
 - D) Stack
- 7) A linear collection of data elements where the linear node is given by means of pointer is called as
 - A) Linked list
 - B) Node list
 - C) Primitive list
 - D) None of these

P.T.O.



- 8) A queue is a
A) FIFO B) LIFO C) Ordered array D) Linear tree
- 9) Function malloc returns a pointer of type void * to the memory it allocates and if it is unable to allocate memory, it returns a NULL pointer.
A) True B) False
- 10) Which of the following traversal techniques lists the nodes of a binary search tree in ascending order ?
A) Post-order B) In-order
C) Pre-order D) None of the above
- 11) Which of the following name is related to stacks ?
A) FIFO lists B) LIFO lists
C) Pipes D) Push-down list
- 12) Finding the location of the element with a given value is
A) Traversal B) Search
C) Sort D) None of the above
- 13) The term “push” and “pop” is related to the
A) Array B) Lists C) Stacks D) All of the above
- 14) Binary search algorithm can not be applied to
A) Sorted linked list B) Sorted binary trees
C) Sorted linear array D) Pointer array
- 15) Which of the following data structure store the homogeneous data elements ?
A) Array B) Records
C) Pointers D) None of the above
- 16) One of the major drawback of B-Tree is the difficulty of traversing the keys sequentially.
A) True B) False
- 17) Breadth First Search of Graph, which of the following data structure is used ?
A) Stack B) Queue
C) Linked list D) None of the above
- 18) How many nodes in a tree have no ancestors ?
A) 0 B) 1 C) 2 D) n
- 19) In binary search, average number of comparison required for searching an element in a list of n numbers is
A) $\log_2 n$ B) $n/2$ C) n D) $n - 1$
- 20) For an undirected graph G with n vertices and e edges, the sum of the degrees of each vertex is
A) ne B) 2n C) 2e D) e^n



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

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

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

Marks : 80

- Instructions :** 1) **All** questions from Section – I and II are **compulsory**.
2) Figures to the **right** indicate **full** marks.
3) Assume data if **necessary**.

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) Define Queue and explain its operations.
 - 2) Explain Red-Black Tree.
 - 3) Define Binary Tree, Strictly B-Tree, Complete B-Tree and Almost complete B-Tree.
 - 4) Define linked list and explain its representation and operations.
 - 5) Evaluate $(A + B) * (C - D)$ Infix to Postfix with stack values.
3. Attempt the following : **(5×2=10)**
- A) Explain Binary Tree and its traversal methods for ABCDEFGHIJKL.
 - B) Explain Circular Queue and its operations.
4. Define Stack. Explain its representation, operations and implementation. **10**

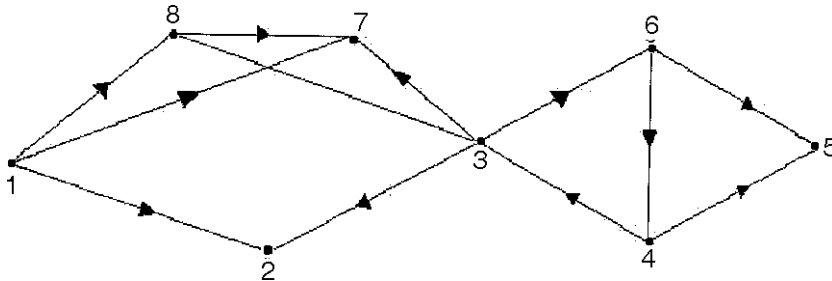
SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain the algorithm to search a node in a binary search tree.
 - B) Define a graph and it's terminologies.
 - C) Describe two methods to represent a graph in the computer.
 - D) Define degree, depth, path, terminal nodes, traversing.
 - E) Draw AVL tree whose elements are inserted in the following order.
Mar, May, Nov, Aug, Apr, Jan, Dec, Jul, Feb, Jun, Oct, Sep.

Set Q



6. Show the result of running BFS and DFS on the directed graph given below using vertex 3 as source. Show the status of the data structure used at each stage. **10**



7. Write short notes on :

10

- i) Height of an AVL tree.
 - ii) Balanced Multiway Trees.
 - iii) Single rotation of AVL tree.
 - iv) Breadth First Traversal.
 - v) Depth First Traversal.
-



- 9) A binary tree of depth “d” is an almost complete binary tree if
- A) Each leaf in the tree is either at level “d” or at level “d – 1”
 - B) For any node “n” in the tree with a right descendent at level “d” all the left descendents of “n” that are leaves, are also at level “d”
 - C) Both (A) and (B)
 - D) None of the above
- 10) An adjacency matrix representation of a graph cannot contain information of
- A) Nodes
 - B) Edges
 - C) Direction of edges
 - D) Parallel edges
- 11) Which data structure is needed to convert infix notation to postfix notation ?
- A) Branch
 - B) Queue
 - C) Tree
 - D) Stack
- 12) A linear collection of data elements where the linear node is given by means of pointer is called as
- A) Linked list
 - B) Node list
 - C) Primitive list
 - D) None of these
- 13) A queue is a
- A) FIFO
 - B) LIFO
 - C) Ordered array
 - D) Linear tree
- 14) Function malloc returns a pointer of type void * to the memory it allocates and if it is unable to allocate memory, it returns a NULL pointer.
- A) True
 - B) False
- 15) Which of the following traversal techniques lists the nodes of a binary search tree in ascending order ?
- A) Post-order
 - B) In-order
 - C) Pre-order
 - D) None of the above
- 16) Which of the following name is related to stacks ?
- A) FIFO lists
 - B) LIFO lists
 - C) Pipes
 - D) Push-down list
- 17) Finding the location of the element with a given value is
- A) Traversal
 - B) Search
 - C) Sort
 - D) None of the above
- 18) The term “push” and “pop” is related to the
- A) Array
 - B) Lists
 - C) Stacks
 - D) All of the above
- 19) Binary search algorithm can not be applied to
- A) Sorted linked list
 - B) Sorted binary trees
 - C) Sorted linear array
 - D) Pointer array
- 20) Which of the following data structure store the homogeneous data elements ?
- A) Array
 - B) Records
 - C) Pointers
 - D) None of the above



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

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

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

Marks : 80

- Instructions :** 1) **All** questions from Section – I and II are **compulsory**.
2) Figures to the **right** indicate **full** marks.
3) Assume data if **necessary**.

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) Define Queue and explain its operations.
 - 2) Explain Red-Black Tree.
 - 3) Define Binary Tree, Strictly B-Tree, Complete B-Tree and Almost complete B-Tree.
 - 4) Define linked list and explain its representation and operations.
 - 5) Evaluate $(A + B) * (C - D)$ Infix to Postfix with stack values.
3. Attempt the following : **(5×2=10)**
- A) Explain Binary Tree and its traversal methods for ABCDEFGHIJKL.
 - B) Explain Circular Queue and its operations.
4. Define Stack. Explain its representation, operations and implementation. **10**

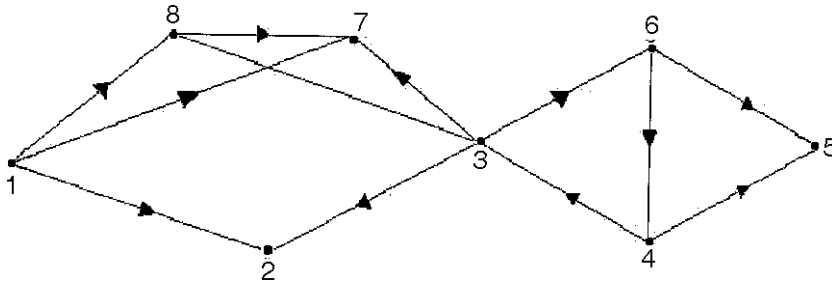
SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain the algorithm to search a node in a binary search tree.
 - B) Define a graph and it's terminologies.
 - C) Describe two methods to represent a graph in the computer.
 - D) Define degree, depth, path, terminal nodes, traversing.
 - E) Draw AVL tree whose elements are inserted in the following order.
Mar, May, Nov, Aug, Apr, Jan, Dec, Jul, Feb, Jun, Oct, Sep.

Set R



6. Show the result of running BFS and DFS on the directed graph given below using vertex 3 as source. Show the status of the data structure used at each stage. **10**



7. Write short notes on :

10

- i) Height of an AVL tree.
 - ii) Balanced Multiway Trees.
 - iii) Single rotation of AVL tree.
 - iv) Breadth First Traversal.
 - v) Depth First Traversal.
-



- 8) How many nodes in a tree have no ancestors ?
A) 0 B) 1 C) 2 D) n
- 9) In binary search, average number of comparison required for searching an element in a list of n numbers is
A) $\log_2 n$ B) $n/2$ C) n D) $n - 1$
- 10) For an undirected graph G with n vertices and e edges, the sum of the degrees of each vertex is
A) ne B) 2n C) 2e D) e^n
- 11) A full binary tree with $2n + 1$ nodes contain
A) n leaf nodes B) n non-leaf nodes
C) $n - 1$ leaf nodes D) $n - 1$ non-leaf nodes
- 12) If a node in a BST has two children, then its inorder predecessor has
A) no left child B) no right child C) two children D) no child
- 13) A BST is traversed in the following order recursively : Right, root, left. The output sequence will be in
A) Ascending order B) Descending order
C) Bitomic sequence D) No specific order
- 14) A binary tree of depth “d” is an almost complete binary tree if
A) Each leaf in the tree is either at level “d” or at level “d – 1”
B) For any node “n” in the tree with a right descendent at level “d” all the left descendents of “n” that are leaves, are also at level “d”
C) Both (A) and (B)
D) None of the above
- 15) An adjacency matrix representation of a graph cannot contain information of
A) Nodes B) Edges
C) Direction of edges D) Parallel edges
- 16) Which data structure is needed to convert infix notation to postfix notation ?
A) Branch B) Queue C) Tree D) Stack
- 17) A linear collection of data elements where the linear node is given by means of pointer is called as
A) Linked list B) Node list C) Primitive list D) None of these
- 18) A queue is a
A) FIFO B) LIFO C) Ordered array D) Linear tree
- 19) Function malloc returns a pointer of type void * to the memory it allocates and if it is unable to allocate memory, it returns a NULL pointer.
A) True B) False
- 20) Which of the following traversal techniques lists the nodes of a binary search tree in ascending order ?
A) Post-order B) In-order
C) Pre-order D) None of the above



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

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

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

Marks : 80

- Instructions :** 1) **All** questions from Section – I and II are **compulsory**.
2) Figures to the **right** indicate **full** marks.
3) Assume data if **necessary**.

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) Define Queue and explain its operations.
 - 2) Explain Red-Black Tree.
 - 3) Define Binary Tree, Strictly B-Tree, Complete B-Tree and Almost complete B-Tree.
 - 4) Define linked list and explain its representation and operations.
 - 5) Evaluate $(A + B) * (C - D)$ Infix to Postfix with stack values.
3. Attempt the following : **(5×2=10)**
- A) Explain Binary Tree and its traversal methods for ABCDEFGHIJKL.
 - B) Explain Circular Queue and its operations.
4. Define Stack. Explain its representation, operations and implementation. **10**

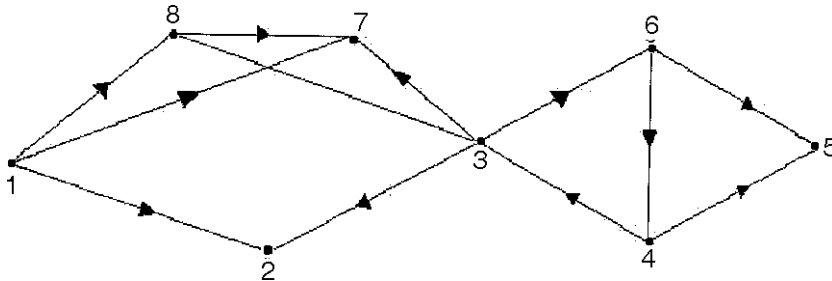
SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain the algorithm to search a node in a binary search tree.
 - B) Define a graph and it's terminologies.
 - C) Describe two methods to represent a graph in the computer.
 - D) Define degree, depth, path, terminal nodes, traversing.
 - E) Draw AVL tree whose elements are inserted in the following order.
Mar, May, Nov, Aug, Apr, Jan, Dec, Jul, Feb, Jun, Oct, Sep.

Set S



6. Show the result of running BFS and DFS on the directed graph given below using vertex 3 as source. Show the status of the data structure used at each stage. **10**



7. Write short notes on :

10

- i) Height of an AVL tree.
 - ii) Balanced Multiway Trees.
 - iii) Single rotation of AVL tree.
 - iv) Breadth First Traversal.
 - v) Depth First Traversal.
-



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

Set	P
-----	---

**S.E. (IT) (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 answers :

20

- 1) Let R1 and R2 be regular sets defined over alphabet Σ then
 - a) R1 Union R2 is regular
 - b) R1 intersection R2 is regular
 - c) Σ Intersection R2 is not regular
 - d) R2* is not regular
- 2) Give a production grammar that specified language $L = \{a^i b^{2i} \mid i \geq 1\}$
 - a) $\{S \rightarrow aSbb, S \rightarrow abb\}$
 - b) $\{S \rightarrow aSb, S \rightarrow b\}$
 - c) $\{S \rightarrow aA, S \rightarrow b, A \rightarrow b\}$
 - d) None of the above
- 3) Which of the following string can be obtained by the language $L = \{a^i b^{2i} \mid i \geq 1\}$?
 - a) aaabbbbbb
 - b) aabbb
 - c) abbabbba
 - d) aaaabbbabb
- 4) The production Grammar is $\{S \rightarrow aSbb, S \rightarrow abb\}$ is
 - a) type-3 grammar
 - b) type-2 grammar
 - c) type-1 grammar
 - d) type-0 grammar
- 5) Regular expression x/y denotes the set
 - a) $\{x, y\}$
 - b) $\{xy\}$
 - c) $\{x\}$
 - d) $\{y\}$
- 6) Regular sets are closed under union, concatenation and kleene closure
 - a) True
 - b) False
- 7) The regular expression denote a language comprising all possible strings of even length over the alphabet (0, 1)
 - a) $1 + 0(1+0)^*$
 - b) $(0+1)(1+0)^*$
 - c) $(1+0)$
 - d) $(00+0111+10)^*$
- 8) Complement of regular sets are _____
 - a) Regular
 - b) CFG
 - c) CFL
 - d) RE
- 9) The regular sets are closed under
 - a) Union
 - b) Concatenation
 - c) Kleen closure
 - d) All of the above
- 10) Shown figure accepts _____ 
 - a) all string
 - b) no string
 - c) Λ/ϵ
 - d) none

P.T.O.



- 11) Which of the following statements in true ?
- If a language is context free it can always be accepted by a deterministic push-down automaton
 - The union of two context free languages is context free
 - The intersection of two context free languages is context free
 - The complement of a context free language is context free
- 12) Which is true for PDA ?
- PDA contains a stack
 - The head reads as well as writes
 - The head moves from left to right
 - Input string is surrounded by infinite number of blank in both side
- 13) The difference between finite automata and PDA is in
- Reading Head
 - Input tape
 - Finite Control
 - Stack
- 14) A PDA chooses the next move based on
- Current state
 - Next input symbol
 - Both a) and b)
 - None of these
- 15) Turing machine can be represented using
- Transition table
 - Transition diagram
 - Instantaneous description
 - All of these
- 16) A CFL whose complement is not a CFL
- True
 - False
- 17) Which is not true for mechanical diagram of Turing Machine ?
- The head moves in both directions
 - The head reads as well as writes
 - Input string is surrounded by infinite number of blank in both side
 - Some symbols are pushed into the stack
- 18) Which type of symbols contain in the stack of PDA
- Variable
 - Terminal
 - Both a) and b)
 - None of these
- 19) In _____ δ is the transition function :
- $$\delta : Q \times (U\{\}) \rightarrow (Q \cup \{h_a, h_r\}) \times (U\{\}) \times \{R, L, S\}.$$
- Turing machine
 - Push down automata
 - CFG
 - None
- 20) Use of Pumping lemma is to prove that language is
- Regular
 - Non-regular
 - Both
 - None



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

**S.E. (IT) (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** : **(4×5=20)**
- 1) Design FA which accepts odd number of 1's and any number of 0's.
 - 2) What is a useless symbol ?
 - 3) Determine whether the grammar G has a useless production.
 $S \rightarrow A \quad A \rightarrow aA/\varepsilon \quad B \rightarrow bA$
 - 4) Differentiate L^* and L^+ .
 - 5) Define :
 - i) Finite Automaton (FA)
 - ii) NFA.
 - 6) Define CNF.
3. Answer **any one** : **10**
- 1) Explain Kleen's theorem.
 - 2) Systematically construct an NFA for the regular expression $(a(a+b))^*(c+d+\wedge)$.
4. Write short notes on Minimization of DFA with example. **10**

SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) Briefly explain the different types of Turing machines.
 - 2) What are the different types of grammars/languages ?
 - 3) What is halting problem ?
 - 4) Explain the application of the pumping lemma.
 - 5) Compare NPDA and DPDA.
6. Answer **any one** : **10**
- 1) Design a TM to accept the language $L = \{0^n 1^n \mid n \geq 1\}$.
 - 2) Write short note on universal Turing machine.
7. Construct a PDA to accept a given language L by empty stack and final state both where $L = (WCW^R \mid W \in (a, b)^*)$ with transition and string "abaaCaaba". **10**



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

S.E. (IT) (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

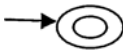
1. Choose the correct answers :

20

- 1) A CFL whose complement is not a CFL
a) True b) False
- 2) Which is not true for mechanical diagram of Turing Machine ?
a) The head moves in both directions
b) The head reads as well as writes
c) Input string is surrounded by infinite number of blank in both side
d) Some symbols are pushed into the stack
- 3) Which type of symbols contain in the stack of PDA
a) Variable b) Terminal c) Both a) and b) d) None of these
- 4) In _____ δ is the transition function :
 $\delta : Q \times (U\{ \}) \rightarrow (Q \cup \{h, hr\}) \times (U\{ \}) \times \{R, L, S\}$.
a) Turing machine b) Push down automata
c) CFG d) None
- 5) Use of Pumping lemma is to prove that language is
a) Regular b) Non-regular c) Both d) None
- 6) Let R1 and R2 be regular sets defined over alphabet Σ then
a) R1 Union R2 is regular b) R1 intersection R2 is regular
c) Σ Intersection R2 is not regular d) R2* is not regular
- 7) Give a production grammar that specified language $L = \{a^i b^{2i} \mid i \geq 1\}$
a) $\{S \rightarrow aSbb, S \rightarrow abb\}$ b) $\{S \rightarrow aSb, S \rightarrow b\}$
c) $\{S \rightarrow aA, S \rightarrow b, A \rightarrow b\}$ d) None of the above
- 8) Which of the following string can be obtained by the language $L = \{a^i b^{2i} \mid i \geq 1\}$?
a) aaabbbbbb b) aabbbb c) abbabbba d) aaaabbbabb

P.T.O.



- 9) The production Grammar is $\{S \rightarrow aSbb, S \rightarrow abb\}$ is
 a) type-3 grammar b) type-2 grammar
 c) type-1 grammar d) type-0 grammar
- 10) Regular expression x/y denotes the set
 a) $\{x, y\}$ b) $\{xy\}$ c) $\{x\}$ d) $\{y\}$
- 11) Regular sets are closed under union, concatenation and kleene closure
 a) True b) False
- 12) The regular expression denote a language comprising all possible strings of even length over the alphabet $(0, 1)$
 a) $1 + 0(1+0)^*$ b) $(0+1)(1+0)^*$ c) $(1+0)$ d) $(00+0111+10)^*$
- 13) Complement of regular sets are _____
 a) Regular b) CFG c) CFL d) RE
- 14) The regular sets are closed under
 a) Union b) Concatenation c) Kleen closure d) All of the above
- 15) Shown figure accepts _____ \rightarrow 
 a) all string b) no string c) \wedge/ϵ d) none
- 16) Which of the following statements in true ?
 a) If a language is context free it can always be accepted by a deterministic push-down automaton
 b) The union of two context free languages is context free
 c) The intersection of two context free languages is context free
 d) The complement of a context free language is context free
- 17) Which is true for PDA ?
 a) PDA contains a stack
 b) The head reads as well as writes
 c) The head moves from left to right
 d) Input string is surrounded by infinite number of blank in both side
- 18) The difference between finite automata and PDA is in
 a) Reading Head b) Input tape c) Finite Control d) Stack
- 19) A PDA chooses the next move based on
 a) Current state b) Next input symbol
 c) Both a) and b) d) None of these
- 20) Turing machine can be represented using
 a) Transition table b) Transition diagram
 c) Instantaneous description d) All of these



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

**S.E. (IT) (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** : **(4×5=20)**
- 1) Design FA which accepts odd number of 1's and any number of 0's.
 - 2) What is a useless symbol ?
 - 3) Determine whether the grammar G has a useless production.
 $S \rightarrow A \quad A \rightarrow aA/\varepsilon \quad B \rightarrow bA$
 - 4) Differentiate L^* and L^+ .
 - 5) Define :
 - i) Finite Automaton (FA)
 - ii) NFA.
 - 6) Define CNF.
3. Answer **any one** : **10**
- 1) Explain Kleen's theorem.
 - 2) Systematically construct an NFA for the regular expression $(a(a+b))^*(c+d+\wedge)$.
4. Write short notes on Minimization of DFA with example. **10**

SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) Briefly explain the different types of Turing machines.
 - 2) What are the different types of grammars/languages ?
 - 3) What is halting problem ?
 - 4) Explain the application of the pumping lemma.
 - 5) Compare NPDA and DPDA.
6. Answer **any one** : **10**
- 1) Design a TM to accept the language $L = \{0^n 1^n \mid n \geq 1\}$.
 - 2) Write short note on universal Turing machine.
7. Construct a PDA to accept a given language L by empty stack and final state both where $L = (WCW^R \mid W \in (a, b)^*)$ with transition and string "abaaCaaba". **10**



SLR-VB – 268

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

Set

R

**S.E. (IT) (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 answers :

20

- 1) Which of the following statements is true ?
 - a) If a language is context free it can always be accepted by a deterministic push-down automaton
 - b) The union of two context free languages is context free
 - c) The intersection of two context free languages is context free
 - d) The complement of a context free language is context free
- 2) Which is true for PDA ?
 - a) PDA contains a stack
 - b) The head reads as well as writes
 - c) The head moves from left to right
 - d) Input string is surrounded by infinite number of blank in both side
- 3) The difference between finite automata and PDA is in
 - a) Reading Head
 - b) Input tape
 - c) Finite Control
 - d) Stack
- 4) A PDA chooses the next move based on
 - a) Current state
 - b) Next input symbol
 - c) Both a) and b)
 - d) None of these
- 5) Turing machine can be represented using
 - a) Transition table
 - b) Transition diagram
 - c) Instantaneous description
 - d) All of these
- 6) A CFL whose complement is not a CFL
 - a) True
 - b) False
- 7) Which is not true for mechanical diagram of Turing Machine ?
 - a) The head moves in both directions
 - b) The head reads as well as writes
 - c) Input string is surrounded by infinite number of blank in both side
 - d) Some symbols are pushed into the stack

P.T.O.



- 8) Which type of symbols contain in the stack of PDA
 a) Variable b) Terminal c) Both a) and b) d) None of these
- 9) In _____ δ is the transition function :
 $\delta : Q \times (U\{\}) \rightarrow (Q \cup \{h, hr\}) \times (U\{\}) \times \{R, L, S\}$.
 a) Turing machine b) Push down automata
 c) CFG d) None
- 10) Use of Pumping lemma is to prove that language is
 a) Regular b) Non-regular c) Both d) None
- 11) Let R_1 and R_2 be regular sets defined over alphabet Σ then
 a) $R_1 \cup R_2$ is regular b) $R_1 \cap R_2$ is regular
 c) $\Sigma \cap R_2$ is not regular d) R_2^* is not regular
- 12) Give a production grammar that specified language $L = \{a^i b^{2i} \mid i \geq 1\}$
 a) $\{S \rightarrow aSbb, S \rightarrow abb\}$ b) $\{S \rightarrow aSb, S \rightarrow b\}$
 c) $\{S \rightarrow aA, S \rightarrow b, A \rightarrow b\}$ d) None of the above
- 13) Which of the following string can be obtained by the language $L = \{a^i b^{2i} \mid i \geq 1\}$?
 a) aaabbbbbb b) aabbb c) abbabbba d) aaaabbbabb
- 14) The production Grammar is $\{S \rightarrow aSbb, S \rightarrow abb\}$ is
 a) type-3 grammar b) type-2 grammar
 c) type-1 grammar d) type-0 grammar
- 15) Regular expression x/y denotes the set
 a) $\{x, y\}$ b) $\{xy\}$ c) $\{x\}$ d) $\{y\}$
- 16) Regular sets are closed under union, concatenation and kleene closure
 a) True b) False
- 17) The regular expression denote a language comprising all possible strings of even length over the alphabet $(0, 1)$
 a) $1 + 0(1+0)^*$ b) $(0+1)(1+0)^*$ c) $(1+0)$ d) $(00+0111+10)^*$
- 18) Complement of regular sets are _____
 a) Regular b) CFG c) CFL d) RE
- 19) The regular sets are closed under
 a) Union b) Concatenation c) Kleen closure d) All of the above
- 20) Shown figure accepts _____ \rightarrow 
 a) all string b) no string c) \wedge/ϵ d) none



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

**S.E. (IT) (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** : **(4×5=20)**
- 1) Design FA which accepts odd number of 1's and any number of 0's.
 - 2) What is a useless symbol ?
 - 3) Determine whether the grammar G has a useless production.
 $S \rightarrow A A \rightarrow aA/\varepsilon B \rightarrow bA$
 - 4) Differentiate L^* and L^+ .
 - 5) Define :
 - i) Finite Automaton (FA)
 - ii) NFA.
 - 6) Define CNF.
3. Answer **any one** : **10**
- 1) Explain Kleen's theorem.
 - 2) Systematically construct an NFA for the regular expression $(a(a + b))^*(c + d + \wedge)$.
4. Write short notes on Minimization of DFA with example. **10**

SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) Briefly explain the different types of Turing machines.
 - 2) What are the different types of grammars/languages ?
 - 3) What is halting problem ?
 - 4) Explain the application of the pumping lemma.
 - 5) Compare NPDA and DPDA.
6. Answer **any one** : **10**
- 1) Design a TM to accept the language $L = \{0^n 1^n \mid n \geq 1\}$.
 - 2) Write short note on universal Turing machine.
7. Construct a PDA to accept a given language L by empty stack and final state both where $L = (WCW^R \mid W \in (a, b)^*)$ with transition and string "abaaCaaba". **10**



SLR-VB – 268

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

Set	S
-----	---

**S.E. (IT) (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 answers :

20

- 1) Regular sets are closed under union, concatenation and kleene closure
a) True b) False
- 2) The regular expression denote a language comprising all possible strings of even length over the alphabet (0, 1)
a) $1 + 0(1+0)^*$ b) $(0+1)(1+0)^*$ c) $(1+0)$ d) $(00+0111+10)^*$
- 3) Complement of regular sets are _____
a) Regular b) CFG c) CFL d) RE
- 4) The regular sets are closed under
a) Union b) Concatenation c) Kleen closure d) All of the above
- 5) Shown figure accepts _____ 
a) all string b) no string c) \wedge/ϵ d) none
- 6) Which of the following statements in true ?
a) If a language is context free it can always be accepted by a deterministic push-down automaton
b) The union of two context free languages is context free
c) The intersection of two context free languages is context free
d) The complement of a context free language is context free
- 7) Which is true for PDA ?
a) PDA contains a stack
b) The head reads as well as writes
c) The head moves from left to right
d) Input string is surrounded by infinite number of blank in both side
- 8) The difference between finite automata and PDA is in
a) Reading Head b) Input tape c) Finite Control d) Stack

P.T.O.



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

**S.E. (IT) (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** : **(4×5=20)**
- 1) Design FA which accepts odd number of 1's and any number of 0's.
 - 2) What is a useless symbol ?
 - 3) Determine whether the grammar G has a useless production.
 $S \rightarrow A \quad A \rightarrow aA/\varepsilon \quad B \rightarrow bA$
 - 4) Differentiate L^* and L^+ .
 - 5) Define :
 - i) Finite Automaton (FA)
 - ii) NFA.
 - 6) Define CNF.
3. Answer **any one** : **10**
- 1) Explain Kleen's theorem.
 - 2) Systematically construct an NFA for the regular expression $(a(a+b))^*(c+d+\wedge)$.
4. Write short notes on Minimization of DFA with example. **10**

SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) Briefly explain the different types of Turing machines.
 - 2) What are the different types of grammars/languages ?
 - 3) What is halting problem ?
 - 4) Explain the application of the pumping lemma.
 - 5) Compare NPDA and DPDA.
6. Answer **any one** : **10**
- 1) Design a TM to accept the language $L = \{0^n 1^n \mid n \geq 1\}$.
 - 2) Write short note on universal Turing machine.
7. Construct a PDA to accept a given language L by empty stack and final state both where $L = (WCW^R \mid W \in (a, b)^*)$ with transition and string "abaaCaaba". **10**



SLR-VB – 269

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

Set	P
-----	----------

**S.E. (Information Technology) (Part – II) (Old) Examination, 2017
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 24-5-2017
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 answer :

(20×1=20)

- I) In networking terminology UTP means
a) Unshielded Twisted Pair b) Ubiquitous Teflon Port
c) Uniformly Terminating Port d) Unshielded T-connector Port
- II) In TCP, a unique sequence number assigned to each
a) Byte b) Word c) Segment d) Message
- III) Different computers are connected to a LAN by a cable and
a) modem b) interface card
c) special wires d) telephone lines
- IV) Which of the following communication modes support two-way traffic but in only one direction at a time ?
a) simplex b) half duplex
c) three-quarters duplex d) all of the above
- V) Which of the following might be used by a company to satisfy its growing communications needs ?
a) front end processor b) multiplexer
c) controller d) all of the above
- VI) CRC can detect all bursts of upto m errors, if generator polynomial G(x) is of degree
a) one b) m – 1 c) m d) m + 1
- VII) Which of the following performs modulation and demodulation ?
a) fiber optics b) satellite c) coaxial cable d) modem

P.T.O.



- VIII) Which model shows how the network functions of a computer ought to be organized ?
a) ITU-T b) OSI c) ISO d) ANSI
- IX) The store and forward mechanism is used in
a) Packet switching b) Message switching
c) Circuit switching d) Data gram switching
- X) Which of the following is a product of LLC sublayer ?
a) 802.3 frame b) 802.5 frame
c) PDU (Protocol Data Unit) d) Preamble
- XI) If N is the maximum sequence number, then the window sizes in selective reject and Go-Back-N protocols are respectively
a) $N/2, N-1$ b) $N, N + 1$ c) $N + 1/2, N$ d) $N - 1, N + 1$
- XII) Which of the following cables can transmit data at high speeds ?
a) Co Axial Cables b) Optical Fibre Cables
c) UTP d) Twisted Pair Cable
- XIII) 802.11n standard running speed is
a) Up to 11 Mbps b) Up to 54 Mbps
c) Up to 450 Mbps d) Up to 2 Mbps
- XIV) Which protocol is used to convert IP addresses to MAC address ?
a) IP b) RARP c) In ARP d) ARP
- XV) Error detecting method that can detect more errors without increasing additional information in each packet is
a) Checksum b) Even parity mechanism
c) CRC d) Odd parity mechanism
- XVI) 802.11b standard running speed is
a) 11 Mbps b) 54 Mbps c) 450 Mbps d) 2 Mbps
- XVII) IEEE 802.11 standard for
a) Wireless LAN (WiFi) b) Broadband Wireless
c) Personal Area Network d) Wireless Regional Area Network
- XVIII) Which of the following is the simplest error detection method ?
a) Parity check b) Longitudinal Redundancy Checking
c) Checksum Checking d) Cyclic Redundancy Checking
- XIX) IEEE 802.4 standard for
a) Overview and Architecture b) Token Bus
c) Token Ring d) Virtual LAN and Security
- XX) Start and stop bits are used in serial communication for
a) Error detection b) Error correction
c) Synchronization d) Slowing down the communication
-



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

**S.E. (Information Technology) (Part – II) (Old) Examination, 2017
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 24-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions : **20**
- A) Explain Nyquist and Shannon channel capacity.
 - B) Differentiate Half Duplex and Full Duplex transmission with example.
 - C) Explain use and significance of Local Area Network.
 - D) Write a note on UDP.
 - E) Write a short note on Transport and Presentation Layer of OSI model.

3. Explain TCP/IP protocol suit. **10**

OR

3. Explain seven layers of OSI reference model in detail.

4. Write short note on (**any two**) : **10**

- A) WAN
- B) Error detection technique
- C) Switch.

SECTION – II

5. Attempt **any four** questions : **20**
- A) Explain Distance vector routing algorithm.
 - B) Write a short note on Hub.
 - C) Explain IPv6.
 - D) Write a note on IEEE standard 802.3.
 - E) Differentiate link state routing algorithms.

Set P



6. Explain RIP routing protocol in detail. **10**

OR

6. Explain different classes of IPv4 address with subnet mask.

7. Write short note on (**any two**) : **10**

A) Router

B) BGP

C) RARP.



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

Set

Q

**S.E. (Information Technology) (Part – II) (Old) Examination, 2017
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 24-5-2017
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 answer :

(20×1=20)

- I) 802.11b standard running speed is
 - a) 11 Mbps
 - b) 54 Mbps
 - c) 450 Mbps
 - d) 2 Mbps
- II) IEEE 802.11 standard for
 - a) Wireless LAN (WiFi)
 - b) Broadband Wireless
 - c) Personal Area Network
 - d) Wireless Regional Area Network
- III) Which of the following is the simplest error detection method ?
 - a) Parity check
 - b) Longitudinal Redundancy Checking
 - c) Checksum Checking
 - d) Cyclic Redundancy Checking
- IV) IEEE 802.4 standard for
 - a) Overview and Architecture
 - b) Token Bus
 - c) Token Ring
 - d) Virtual LAN and Security
- V) Start and stop bits are used in serial communication for
 - a) Error detection
 - b) Error correction
 - c) Synchronization
 - d) Slowing down the communication
- VI) In networking terminology UTP means
 - a) Unshielded Twisted Pair
 - b) Ubiquitous Teflon Port
 - c) Uniformly Terminating Port
 - d) Unshielded T-connector Port
- VII) In TCP, a unique sequence number assigned to each
 - a) Byte
 - b) Word
 - c) Segment
 - d) Message
- VIII) Different computers are connected to a LAN by a cable and
 - a) modem
 - b) interface card
 - c) special wires
 - d) telephone lines



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

**S.E. (Information Technology) (Part – II) (Old) Examination, 2017
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 24-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions : **20**
- A) Explain Nyquist and Shannon channel capacity.
 - B) Differentiate Half Duplex and Full Duplex transmission with example.
 - C) Explain use and significance of Local Area Network.
 - D) Write a note on UDP.
 - E) Write a short note on Transport and Presentation Layer of OSI model.

3. Explain TCP/IP protocol suit. **10**

OR

3. Explain seven layers of OSI reference model in detail.
4. Write short note on (**any two**) : **10**
- A) WAN
 - B) Error detection technique
 - C) Switch.

SECTION – II

5. Attempt **any four** questions : **20**
- A) Explain Distance vector routing algorithm.
 - B) Write a short note on Hub.
 - C) Explain IPv6.
 - D) Write a note on IEEE standard 802.3.
 - E) Differentiate link state routing algorithms.

Set Q



6. Explain RIP routing protocol in detail.

10

OR

6. Explain different classes of IPv4 address with subnet mask.

7. Write short note on (**any two**) :

10

A) Router

B) BGP

C) RARP.



SLR-VB – 269

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

Set	R
-----	---

**S.E. (Information Technology) (Part – II) (Old) Examination, 2017
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 24-5-2017
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 answer :

(20×1=20)

- I) If N is the maximum sequence number, then the window sizes in selective reject and Go-Back-N protocols are respectively
a) $N/2, N-1$ b) $N, N+1$ c) $N+1/2, N$ d) $N-1, N+1$
- II) Which of the following cables can transmit data at high speeds ?
a) Co Axial Cables b) Optical Fibre Cables
c) UTP d) Twisted Pair Cable
- III) 802.11n standard running speed is
a) Up to 11 Mbps b) Up to 54 Mbps
c) Up to 450 Mbps d) Up to 2 Mbps
- IV) Which protocol is used to convert IP addresses to MAC address ?
a) IP b) RARP c) In ARP d) ARP
- V) Error detecting method that can detect more errors without increasing additional information in each packet is
a) Checksum b) Even parity mechanism
c) CRC d) Odd parity mechanism
- VI) 802.11b standard running speed is
a) 11 Mbps b) 54 Mbps c) 450 Mbps d) 2 Mbps
- VII) IEEE 802.11 standard for
a) Wireless LAN (WiFi) b) Broadband Wireless
c) Personal Area Network d) Wireless Regional Area Network
- VIII) Which of the following is the simplest error detection method ?
a) Parity check b) Longitudinal Redundancy Checking
c) Checksum Checking d) Cyclic Redundancy Checking

P.T.O.



- IX) IEEE 802.4 standard for
a) Overview and Architecture b) Token Bus
c) Token Ring d) Virtual LAN and Security
- X) Start and stop bits are used in serial communication for
a) Error detection b) Error correction
c) Synchronization d) Slowing down the communication
- XI) In networking terminology UTP means
a) Unshielded Twisted Pair b) Ubiquitous Teflon Port
c) Uniformly Terminating Port d) Unshielded T-connector Port
- XII) In TCP, a unique sequence number assigned to each
a) Byte b) Word c) Segment d) Message
- XIII) Different computers are connected to a LAN by a cable and
a) modem b) interface card
c) special wires d) telephone lines
- XIV) Which of the following communication modes support two-way traffic but in only one direction at a time ?
a) simplex b) half duplex
c) three-quarters duplex d) all of the above
- XV) Which of the following might be used by a company to satisfy its growing communications needs ?
a) front end processor b) multiplexer
c) controller d) all of the above
- XVI) CRC can detect all bursts of upto m errors, if generator polynomial $G(x)$ is of degree
a) one b) $m - 1$ c) m d) $m + 1$
- XVII) Which of the following performs modulation and demodulation ?
a) fiber optics b) satellite c) coaxial cable d) modem
- XVIII) Which model shows how the network functions of a computer ought to be organized ?
a) ITU-T b) OSI c) ISO d) ANSI
- XIX) The store and forward mechanism is used in
a) Packet switching b) Message switching
c) Circuit switching d) Data gram switching
- XX) Which of the following is a product of LLC sublayer ?
a) 802.3 frame b) 802.5 frame
c) PDU (Protocol Data Unit) d) Preamble



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

**S.E. (Information Technology) (Part – II) (Old) Examination, 2017
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 24-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions : **20**
- A) Explain Nyquist and Shannon channel capacity.
 - B) Differentiate Half Duplex and Full Duplex transmission with example.
 - C) Explain use and significance of Local Area Network.
 - D) Write a note on UDP.
 - E) Write a short note on Transport and Presentation Layer of OSI model.

3. Explain TCP/IP protocol suit. **10**

OR

3. Explain seven layers of OSI reference model in detail.
4. Write short note on (**any two**) : **10**
- A) WAN
 - B) Error detection technique
 - C) Switch.

SECTION – II

5. Attempt **any four** questions : **20**
- A) Explain Distance vector routing algorithm.
 - B) Write a short note on Hub.
 - C) Explain IPv6.
 - D) Write a note on IEEE standard 802.3.
 - E) Differentiate link state routing algorithms.

Set R



6. Explain RIP routing protocol in detail. **10**

OR

6. Explain different classes of IPv4 address with subnet mask.

7. Write short note on (**any two**) : **10**

A) Router

B) BGP

C) RARP.



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

Set

S

**S.E. (Information Technology) (Part – II) (Old) Examination, 2017
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 24-5-2017
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 answer :

(20×1=20)

- I) CRC can detect all bursts of upto m errors, if generator polynomial G(x) is of degree
a) one b) m – 1 c) m d) m + 1
- II) Which of the following performs modulation and demodulation ?
a) fiber optics b) satellite c) coaxial cable d) modem
- III) Which model shows how the network functions of a computer ought to be organized ?
a) ITU-T b) OSI c) ISO d) ANSI
- IV) The store and forward mechanism is used in
a) Packet switching b) Message switching
c) Circuit switching d) Data gram switching
- V) Which of the following is a product of LLC sublayer ?
a) 802.3 frame b) 802.5 frame
c) PDU (Protocol Data Unit) d) Preamble
- VI) If N is the maximum sequence number, then the window sizes in selective reject and Go-Back-N protocols are respectively
a) N/2,N–1 b) N,N + 1 c) N + 1/2,N d) N – 1,N + 1
- VII) Which of the following cables can transmit data at high speeds ?
a) Co Axial Cables b) Optical Fibre Cables
c) UTP d) Twisted Pair Cable
- VIII) 802.11n standard running speed is
a) Up to 11 Mbps b) Up to 54 Mbps
c) Up to 450 Mbps d) Up to 2 Mbps



- IX) Which protocol is used to convert IP addresses to MAC address ?
a) IP b) RARP c) In ARP d) ARP
- X) Error detecting method that can detect more errors without increasing additional information in each packet is
a) Checksum b) Even parity mechanism
c) CRC d) Odd parity mechanism
- XI) 802.11b standard running speed is
a) 11 Mbps b) 54 Mbps c) 450 Mbps d) 2 Mbps
- XII) IEEE 802.11 standard for
a) Wireless LAN (WiFi) b) Broadband Wireless
c) Personal Area Network d) Wireless Regional Area Network
- XIII) Which of the following is the simplest error detection method ?
a) Parity check b) Longitudinal Redundancy Checking
c) Checksum Checking d) Cyclic Redundancy Checking
- XIV) IEEE 802.4 standard for
a) Overview and Architecture b) Token Bus
c) Token Ring d) Virtual LAN and Security
- XV) Start and stop bits are used in serial communication for
a) Error detection b) Error correction
c) Synchronization d) Slowing down the communication
- XVI) In networking terminology UTP means
a) Unshielded Twisted Pair b) Ubiquitous Teflon Port
c) Uniformly Terminating Port d) Unshielded T-connector Port
- XVII) In TCP, a unique sequence number assigned to each
a) Byte b) Word c) Segment d) Message
- XVIII) Different computers are connected to a LAN by a cable and
a) modem b) interface card
c) special wires d) telephone lines
- XIX) Which of the following communication modes support two-way traffic but in only one direction at a time ?
a) simplex b) half duplex
c) three-quarters duplex d) all of the above
- XX) Which of the following might be used by a company to satisfy its growing communications needs ?
a) front end processor b) multiplexer
c) controller d) all of the above
-



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

**S.E. (Information Technology) (Part – II) (Old) Examination, 2017
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 24-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions : **20**
- A) Explain Nyquist and Shannon channel capacity.
 - B) Differentiate Half Duplex and Full Duplex transmission with example.
 - C) Explain use and significance of Local Area Network.
 - D) Write a note on UDP.
 - E) Write a short note on Transport and Presentation Layer of OSI model.

3. Explain TCP/IP protocol suit. **10**

OR

3. Explain seven layers of OSI reference model in detail.
4. Write short note on (**any two**) : **10**
- A) WAN
 - B) Error detection technique
 - C) Switch.

SECTION – II

5. Attempt **any four** questions : **20**
- A) Explain Distance vector routing algorithm.
 - B) Write a short note on Hub.
 - C) Explain IPv6.
 - D) Write a note on IEEE standard 802.3.
 - E) Differentiate link state routing algorithms.

Set S



6. Explain RIP routing protocol in detail.

10

OR

6. Explain different classes of IPv4 address with subnet mask.

7. Write short note on (**any two**) :

10

A) Router

B) BGP

C) RARP.



SLR-VB – 270

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

Set

P

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
NETWORK MANAGEMENT**

Day and Date : Thursday, 04-05-2017
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:** 1) **All questions are compulsory.**
2) **Q. No. 1 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 answer from the options given below : **(14×1=14)**
- 1) Which of the following transport layer protocols is used to support electronic mail ?
A) SMTP B) IP C) TCP D) UDP
 - 2) Which one of the following allows a user at one site to establish a connection to another site and then pass keystrokes from local host to remote host ?
A) HTTP B) FTP
C) telnet D) None of the mentioned
 - 3) An endpoint of an inter-process communication flow across a computer network is called
A) socket B) pipe
C) port D) none of the mentioned
 - 4) TCP checksum used to
A) Communicate destination
B) Protect TCP from mis delivery from IP
C) Calculate remote IP
D) None
 - 5) How can you connect to a server xyz.com over port number 1234 ?
A) telnet 1234 xyz.com B) telnet xyz.com 1234
C) connect xyz.com 1234 D) connect 1234 xyz.com

P.T.O.



- 6) In FTP _____ indicates progress of file transfer space.
A) bin B) Hash C) Both D) None
- 7) FTP uses one port number (21) is used for _____ and another one for _____ direct sequence.
A) data transfer, control connection
B) socket connection, data transfer
C) control connection, data transfer
D) control connection, socket connection
- 8) The _____ field in the SNMP PDU is an offset that points to the variable in error.
A) Community B) Enterprise
C) Error index D) None of these
- 9) SMI defines two structured data types : _____ and _____.
A) sequence;atomic
B) sequence;sequence of
C) a sequence of; array
D) none of these
- 10) An agent is a host or computer that runs the SNMP _____ process.
A) Client B) Server
C) Both (A) and (B) D) None of these
- 11) _____ specifies that each piece of data be encoded in triplet format consisting of t tag, length and value.
A) BER (Basic Encoding Rules)
B) SMI (Structure of Management Information)
C) MIB (Management Information Base)
D) PDU (Protocol Data Unit)
- 12) A manager, usually a host controls and monitors a set of agents which are usually
A) routers B) gateways
C) relays D) amplifies
- 13) Rmon acts as a network
A) Manager B) Agent
C) Both D) None
- 14) Auto discovery can be done by using _____ on each segment and following up with SNMP queries to gather details.
A) Discovery message B) Query message
C) Broadcasting D) Unicasting



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

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
NETWORK MANAGEMENT**

Day and Date : Thursday, 04-05-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**
2) **Figures to right indicate full marks.**
3) **Draw neat and labelled sketches wherever required.**

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- a) What is DHCP ? What are its packet formats ?
 - b) Describe DNS query and DNS response messages.
 - c) Explain three way handshaking in TCP connections.
 - d) Why does ftp use more than one port numbers for communication ?
3. Answer **any two** of the following : **(8×2=16)**
- a) Explain the architecture of Email with neat diagram of all scenarios.
 - b) Describe HTTP protocol.
 - c) Explain TELNET in detail.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) What is the role of NMS in managed network LAN network ? Explain.
 - b) Draw and explain the SNMP organization model.
 - c) Explain the administrative model with SNMP community and SNMP community profile.
 - d) What is lexicographic ordering in NMA ? Explain with example.



5. Attempt **any two** : **(2×8=16)**
- a) What is performance management ? Explain performance metrics and statistics with respect to it.
 - b) What Object Type would you use to identify the address of the neighbouring gateway from your local gateway ?
 - c) Explain the GetNextRequest example with indices.
-



SLR-VB – 270

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

Set

Q

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
NETWORK MANAGEMENT**

Day and Date : Thursday, 04-05-2017
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:** 1) **All questions are compulsory.**
2) **Q. No. 1 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 answer from the options given below : **(14×1=14)**
- 1) The _____ field in the SNMP PDU is an offset that points to the variable in error.
A) Community
B) Enterprise
C) Error index
D) None of these
 - 2) SMI defines two structured data types : _____ and _____.
A) sequence;atomic
B) sequence;sequence of
C) a sequence of; array
D) none of these
 - 3) An agent is a host or computer that runs the SNMP _____ process.
A) Client
B) Server
C) Both (A) and (B)
D) None of these
 - 4) _____ specifies that each piece of data be encoded in triplet format consisting of t tag, length and value.
A) BER (Basic Encoding Rules)
B) SMI (Structure of Management Information)
C) MIB (Management Information Base)
D) PDU (Protocol Data Unit)

P.T.O.



- 5) A manager, usually a host controls and monitors a set of agents which are usually
- A) routers
 - B) gateways
 - C) relays
 - D) amplifiers
- 6) Rmon acts as a network
- A) Manager
 - B) Agent
 - C) Both
 - D) None
- 7) Auto discovery can be done by using _____ on each segment and following up with SNMP queries to gather details.
- A) Discovery message
 - B) Query message
 - C) Broadcasting
 - D) Unicasting
- 8) Which of the following transport layer protocols is used to support electronic mail ?
- A) SMTP
 - B) IP
 - C) TCP
 - D) UDP
- 9) Which one of the following allows a user at one site to establish a connection to another site and then pass keystrokes from local host to remote host ?
- A) HTTP
 - B) FTP
 - C) telnet
 - D) None of the mentioned
- 10) An endpoint of an inter-process communication flow across a computer network is called
- A) socket
 - B) pipe
 - C) port
 - D) none of the mentioned
- 11) TCP checksum used to
- A) Communicate destination
 - B) Protect TCP from mis delivery from IP
 - C) Calculate remote IP
 - D) None
- 12) How can you connect to a server xyz.com over port number 1234 ?
- A) telnet 1234 xyz.com
 - B) telnet xyz.com 1234
 - C) connect xyz.com 1234
 - D) connect 1234 xyz.com
- 13) In FTP _____ indicates progress of file transfer space.
- A) bin
 - B) Hash
 - C) Both
 - D) None
- 14) FTP uses one port number (21) is used for _____ and another one for _____ direct sequence.
- A) data transfer, control connection
 - B) socket connection, data transfer
 - C) control connection, data transfer
 - D) control connection, socket connection



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

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
NETWORK MANAGEMENT**

Day and Date : Thursday, 04-05-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions :** 1) *All questions are compulsory.*
2) *Figures to **right** indicate **full** marks.*
3) *Draw **neat** and labelled sketches **wherever** required.*

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- a) What is DHCP ? What are its packet formats ?
 - b) Describe DNS query and DNS response messages.
 - c) Explain three way handshaking in TCP connections.
 - d) Why does ftp use more than one port numbers for communication ?
3. Answer **any two** of the following : **(8×2=16)**
- a) Explain the architecture of Email with neat diagram of all scenarios.
 - b) Describe HTTP protocol.
 - c) Explain TELNET in detail.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) What is the role of NMS in managed network LAN network ? Explain.
 - b) Draw and explain the SNMP organization model.
 - c) Explain the administrative model with SNMP community and SNMP community profile.
 - d) What is lexicographic ordering in NMA ? Explain with example.



5. Attempt **any two** : **(2×8=16)**
- a) What is performance management ? Explain performance metrics and statistics with respect to it.
 - b) What Object Type would you use to identify the address of the neighbouring gateway from your local gateway ?
 - c) Explain the GetNextRequest example with indices.
-



SLR-VB – 270

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

Set **R**

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
NETWORK MANAGEMENT**

Day and Date : Thursday, 04-05-2017
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:** 1) **All questions are compulsory.**
2) **Q. No. 1 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 answer from the options given below : **(14×1=14)**
- 1) How can you connect to a server xyz.com over port number 1234 ?
A) telnet 1234 xyz.com B) telnet xyz.com 1234
C) connect xyz.com 1234 D) connect 1234 xyz.com
 - 2) In FTP _____ indicates progress of file transfer space.
A) bin B) Hash C) Both D) None
 - 3) FTP uses one port number (21) is used for _____ and another one for _____ direct sequence.
A) data transfer, control connection
B) socket connection, data transfer
C) control connection, data transfer
D) control connection, socket connection
 - 4) The _____ field in the SNMP PDU is an offset that points to the variable in error.
A) Community B) Enterprise
C) Error index D) None of these
 - 5) SMI defines two structured data types : _____ and _____.
A) sequence;atomic
B) sequence;sequence of
C) a sequence of; array
D) none of these

P.T.O.



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

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
NETWORK MANAGEMENT**

Day and Date : Thursday, 04-05-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**
2) **Figures to right indicate full marks.**
3) **Draw neat and labelled sketches wherever required.**

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- a) What is DHCP ? What are its packet formats ?
 - b) Describe DNS query and DNS response messages.
 - c) Explain three way handshaking in TCP connections.
 - d) Why does ftp use more than one port numbers for communication ?
3. Answer **any two** of the following : **(8×2=16)**
- a) Explain the architecture of Email with neat diagram of all scenarios.
 - b) Describe HTTP protocol.
 - c) Explain TELNET in detail.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) What is the role of NMS in managed network LAN network ? Explain.
 - b) Draw and explain the SNMP organization model.
 - c) Explain the administrative model with SNMP community and SNMP community profile.
 - d) What is lexicographic ordering in NMA ? Explain with example.



5. Attempt **any two** : **(2×8=16)**
- a) What is performance management ? Explain performance metrics and statistics with respect to it.
 - b) What Object Type would you use to identify the address of the neighbouring gateway from your local gateway ?
 - c) Explain the GetNextRequest example with indices.
-



- 6) Which of the following transport layer protocols is used to support electronic mail ?
A) SMTP B) IP C) TCP D) UDP
- 7) Which one of the following allows a user at one site to establish a connection to another site and then pass keystrokes from local host to remote host ?
A) HTTP B) FTP
C) telnet D) none of the mentioned
- 8) An endpoint of an inter-process communication flow across a computer network is called
A) socket B) pipe
C) port D) None of the mentioned
- 9) TCP checksum used to
A) Communicate destination
B) Protect TCP from mis delivery from IP
C) Calculate remote IP
D) None
- 10) How can you connect to a server xyz.com over port number 1234 ?
A) telnet 1234 xyz.com B) telnet xyz.com 1234
C) connect xyz.com 1234 D) connect 1234 xyz.com
- 11) In FTP _____ indicates progress of file transfer space.
A) bin B) Hash C) Both D) None
- 12) FTP uses one port number (21) is used for _____ and another one for _____ direct sequence.
A) data transfer, control connection
B) socket connection, data transfer
C) control connection, data transfer
D) control connection, socket connection
- 13) The _____ field in the SNMP PDU is an offset that points to the variable in error.
A) Community B) Enterprise
C) Error index D) None of these
- 14) SMI defines two structured data types : _____ and _____.
A) sequence;atomic
B) sequence;sequence of
C) a sequence of; array
D) none of these
-



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

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
NETWORK MANAGEMENT**

Day and Date : Thursday, 04-05-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**
2) **Figures to right indicate full marks.**
3) **Draw neat and labelled sketches wherever required.**

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- a) What is DHCP ? What are its packet formats ?
 - b) Describe DNS query and DNS response messages.
 - c) Explain three way handshaking in TCP connections.
 - d) Why does ftp use more than one port numbers for communication ?
3. Answer **any two** of the following : **(8×2=16)**
- a) Explain the architecture of Email with neat diagram of all scenarios.
 - b) Describe HTTP protocol.
 - c) Explain TELNET in detail.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) What is the role of NMS in managed network LAN network ? Explain.
 - b) Draw and explain the SNMP organization model.
 - c) Explain the administrative model with SNMP community and SNMP community profile.
 - d) What is lexicographic ordering in NMA ? Explain with example.



5. Attempt **any two** : **(2×8=16)**
- a) What is performance management ? Explain performance metrics and statistics with respect to it.
 - b) What Object Type would you use to identify the address of the neighbouring gateway from your local gateway ?
 - c) Explain the GetNextRequest example with indices.
-



SLR-VB – 271

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

Set

P

**T.E. (IT) (CGPA) (Part – I) Examination, 2017
COMPUTER ORGANIZATION AND ARCHITECTURE**

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.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**
- 1) A group of lines that serves as a connecting path for several devices is called a
A) connector B) bus C) gateway D) bridge
 - 2) The key concept of a stored program was introduced by
A) Blaise Pascal B) Alan Turing
C) John Von Neumann D) Madame Ada
 - 3) The third generation of computers used _____ as active elements.
A) Vacuum Tubes B) Transistors
C) Integrated Circuits D) Tunnel Diodes
 - 4) When the result of an arithmetic operation is outside the representable range then it termed as
A) Arithmetic overflow B) Arithmetic underflow
C) Garbage flow D) None of these
 - 5) _____ memory is placed in between the CPU and the main memory.
A) Magnetic B) ROM
C) Optical Storage D) Cache
 - 6) The term _____ is used to refer to the amount of time it takes to transfer a word of data to or from the memory.
A) Bandwidth B) Seek C) Latency D) None of these

P.T.O.



- 7) A technique that works equally well with both negative and positive multipliers is called
- A) LRU Algorithm B) BOOTH Algorithm
C) Checksum Algorithm D) Parity Check
- 8) _____ arise from the pipelining of branches and other instructions that change the PC.
- A) Data hazards B) Structural hazards
C) Control hazards D) None of these
- 9) Software pipelining
- A) Replicating loop by compiler B) Rearranging loops by compiler
C) Both (A) and (B) D) None of these
- 10) Register renaming can eliminate hazard based on
- A) WAR B) WAW
C) Both (A) and (B) D) None of these
- 11) The sharing status of a block of physical memory is kept in just one location, called the
- A) Snooping based protocol
B) Reservation stations
C) Directory based protocol
D) All of the above
- 12) _____ is a technique for allowing instructions to execute out of order when there are sufficient resources and no data dependences.
- A) Very Long Instruction Word B) Score boarding
C) Branch delays D) None of these
- 13) _____ is static pipeline because they are used to perform fixed functions.
- A) Non-linear pipeline B) Linear pipeline
C) Both (A) and (B) D) None of these
- 14) Directory-Based Cache Coherence Protocols, the states could be the following
- A) Shared B) Uncached
C) Modified D) All of the above
-



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

**T.E. (IT) (CGPA) (Part – I) Examination, 2017
COMPUTER ORGANIZATION AND ARCHITECTURE**

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

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**

- 1) Give the salient features of five generations of computers.
- 2) Describe the IEEE format for floating point numbers.
- 3) Explain instruction format of ARC-A Risc Computer.
- 4) Write a note on Memory Hierarchy.
- 5) Explain the different hardware components of instruction set architectures.

3. Attempt **any two** : **(2×8=16)**

- 1) Multiply + 12 with – 3 and find the product using Booth's Algorithm.
- 2) Perform Division of 97/10 using Non-restoring division Algorithm.
- 3) Design Multiplier control unit using Delay element method.

SECTION – II

4. Attempt **any three** : **(3×4=12)**

- 1) How the performance of a processor is represented and what factors that influence the performance ?
- 2) What is pipelining ? Explain different types of hazards that occur in pipeline.
- 3) Explain correlating branch prediction technique.
- 4) Explain the directory based coherence for a distributed memory multiprocessor system.
- 5) Write a short note on scheduling the branch delay slot techniques of branch hazard.



5. Attempt **any two** : **(2×8=16)**

- 1) With a neat diagram give the basic structure of Tomasulo based MIPS-FP unit and explain the various fields of reservation stations.
 - 2) Explain following protocols under Cache Coherence and Message Passing Mechanisms.
 - a) Snoopy Bus Protocols.
 - b) Directory based protocols.
 - 3) Discuss following under Linear and Non-linear Pipeline Processors.
 - a) Clocking and Timing control.
 - b) Speedup.
 - c) Efficiency and Throughput.
-



SLR-VB – 271

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

Set

Q

T.E. (IT) (CGPA) (Part – I) Examination, 2017
COMPUTER ORGANIZATION AND ARCHITECTURE

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.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**
- _____ arise from the pipelining of branches and other instructions that change the PC.
A) Data hazards
B) Structural hazards
C) Control hazards
D) None of these
 - Software pipelining
A) Replicating loop by compiler
B) Rearranging loops by compiler
C) Both (A) and (B)
D) None of these
 - Register renaming can eliminate hazard based on
A) WAR
B) WAW
C) Both (A) and (B)
D) None of these
 - The sharing status of a block of physical memory is kept in just one location, called the
A) Snooping based protocol
B) Reservation stations
C) Directory based protocol
D) All of the above
 - _____ is a technique for allowing instructions to execute out of order when there are sufficient resources and no data dependences.
A) Very Long Instruction Word
B) Score boarding
C) Branch delays
D) None of these

P.T.O.



- 6) _____ is static pipeline because they are used to perform fixed functions.
- A) Non-linear pipeline B) Linear pipeline
C) Both (A) and (B) D) None of these
- 7) Directory-Based Cache Coherence Protocols, the states could be the following
- A) Shared B) Uncached
C) Modified D) All of the above
- 8) A group of lines that serves as a connecting path for several devices is called a
- A) connector B) bus C) gateway D) bridge
- 9) The key concept of a stored program was introduced by
- A) Blaise Pascal B) Alan Turing
C) John Von Neumann D) Madame Ada
- 10) The third generation of computers used _____ as active elements.
- A) Vacuum Tubes B) Transistors
C) Integrated Circuits D) Tunnel Diodes
- 11) When the result of an arithmetic operation is outside the representable range then it termed as
- A) Arithmetic overflow B) Arithmetic underflow
C) Garbage flow D) None of these
- 12) _____ memory is placed in between the CPU and the main memory.
- A) Magnetic B) ROM
C) Optical Storage D) Cache
- 13) The term _____ is used to refer to the amount of time it takes to transfer a word of data to or from the memory.
- A) Bandwidth B) Seek C) Latency D) None of these
- 14) A technique that works equally well with both negative and positive multipliers is called
- A) LRU Algorithm B) BOOTH Algorithm
C) Checksum Algorithm D) Parity Check
-



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

**T.E. (IT) (CGPA) (Part – I) Examination, 2017
COMPUTER ORGANIZATION AND ARCHITECTURE**

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

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**

- 1) Give the salient features of five generations of computers.
- 2) Describe the IEEE format for floating point numbers.
- 3) Explain instruction format of ARC-A Risc Computer.
- 4) Write a note on Memory Hierarchy.
- 5) Explain the different hardware components of instruction set architectures.

3. Attempt **any two** : **(2×8=16)**

- 1) Multiply + 12 with – 3 and find the product using Booth's Algorithm.
- 2) Perform Division of 97/10 using Non-restoring division Algorithm.
- 3) Design Multiplier control unit using Delay element method.

SECTION – II

4. Attempt **any three** : **(3×4=12)**

- 1) How the performance of a processor is represented and what factors that influence the performance ?
- 2) What is pipelining ? Explain different types of hazards that occur in pipeline.
- 3) Explain correlating branch prediction technique.
- 4) Explain the directory based coherence for a distributed memory multiprocessor system.
- 5) Write a short note on scheduling the branch delay slot techniques of branch hazard.



5. Attempt **any two** : **(2×8=16)**

- 1) With a neat diagram give the basic structure of Tomasulo based MIPS-FP unit and explain the various fields of reservation stations.
 - 2) Explain following protocols under Cache Coherence and Message Passing Mechanisms.
 - a) Snoopy Bus Protocols.
 - b) Directory based protocols.
 - 3) Discuss following under Linear and Non-linear Pipeline Processors.
 - a) Clocking and Timing control.
 - b) Speedup.
 - c) Efficiency and Throughput.
-



- 7) The sharing status of a block of physical memory is kept in just one location, called the
- A) Snooping based protocol
 - B) Reservation stations
 - C) Directory based protocol
 - D) All of the above
- 8) _____ is a technique for allowing instructions to execute out of order when there are sufficient resources and no data dependences.
- A) Very Long Instruction Word
 - B) Score boarding
 - C) Branch delays
 - D) None of these
- 9) _____ is static pipeline because they are used to perform fixed functions.
- A) Non-linear pipeline
 - B) Linear pipeline
 - C) Both (A) and (B)
 - D) None of these
- 10) Directory-Based Cache Coherence Protocols, the states could be the following
- A) Shared
 - B) Uncached
 - C) Modified
 - D) All of the above
- 11) A group of lines that serves as a connecting path for several devices is called a
- A) connector
 - B) bus
 - C) gateway
 - D) bridge
- 12) The key concept of a stored program was introduced by
- A) Blaise Pascal
 - B) Alan Turing
 - C) John Von Neumann
 - D) Madame Ada
- 13) The third generation of computers used _____ as active elements.
- A) Vacuum Tubes
 - B) Transistors
 - C) Integrated Circuits
 - D) Tunnel Diodes
- 14) When the result of an arithmetic operation is outside the representable range then it termed as
- A) Arithmetic overflow
 - B) Arithmetic underflow
 - C) Garbage flow
 - D) None of these
-



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

**T.E. (IT) (CGPA) (Part – I) Examination, 2017
COMPUTER ORGANIZATION AND ARCHITECTURE**

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

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**

- 1) Give the salient features of five generations of computers.
- 2) Describe the IEEE format for floating point numbers.
- 3) Explain instruction format of ARC-A Risc Computer.
- 4) Write a note on Memory Hierarchy.
- 5) Explain the different hardware components of instruction set architectures.

3. Attempt **any two** : **(2×8=16)**

- 1) Multiply + 12 with – 3 and find the product using Booth's Algorithm.
- 2) Perform Division of 97/10 using Non-restoring division Algorithm.
- 3) Design Multiplier control unit using Delay element method.

SECTION – II

4. Attempt **any three** : **(3×4=12)**

- 1) How the performance of a processor is represented and what factors that influence the performance ?
- 2) What is pipelining ? Explain different types of hazards that occur in pipeline.
- 3) Explain correlating branch prediction technique.
- 4) Explain the directory based coherence for a distributed memory multiprocessor system.
- 5) Write a short note on scheduling the branch delay slot techniques of branch hazard.



5. Attempt **any two** : **(2×8=16)**

- 1) With a neat diagram give the basic structure of Tomasulo based MIPS-FP unit and explain the various fields of reservation stations.
 - 2) Explain following protocols under Cache Coherence and Message Passing Mechanisms.
 - a) Snoopy Bus Protocols.
 - b) Directory based protocols.
 - 3) Discuss following under Linear and Non-linear Pipeline Processors.
 - a) Clocking and Timing control.
 - b) Speedup.
 - c) Efficiency and Throughput.
-



SLR-VB – 271

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

Set

S

**T.E. (IT) (CGPA) (Part – I) Examination, 2017
COMPUTER ORGANIZATION AND ARCHITECTURE**

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.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(14×1=14)

- 1) Register renaming can eliminate hazard based o
 - A) WAR
 - B) WAW
 - C) Both (A) and (B)
 - D) None of these
- 2) The sharing status of a block of physical memory is kept in just one location, called the
 - A) Snooping based protocol
 - B) Reservation stations
 - C) Directory based protocol
 - D) All of the above
- 3) _____ is a technique for allowing instructions to execute out of order when there are sufficient resources and no data dependences.
 - A) Very Long Instruction Word
 - B) Score boarding
 - C) Branch delays
 - D) None of these
- 4) _____ is static pipeline because they are used to perform fixed functions.
 - A) Non-linear pipeline
 - B) Linear pipeline
 - C) Both (A) and (B)
 - D) None of these
- 5) Directory-Based Cache Coherence Protocols, the states could be the following
 - A) Shared
 - B) Uncached
 - C) Modified
 - D) All of the above

P.T.O.



- 6) A group of lines that serves as a connecting path for several devices is called a
A) connector B) bus C) gateway D) bridge
- 7) The key concept of a stored program was introduced by
A) Blaise Pascal B) Alan Turing
C) John Von Neumann D) Madame Ada
- 8) The third generation of computers used _____ as active elements.
A) Vacuum Tubes B) Transistors
C) Integrated Circuits D) Tunnel Diodes
- 9) When the result of an arithmetic operation is outside the representable range then it termed as
A) Arithmetic overflow B) Arithmetic underflow
C) Garbage flow D) None of these
- 10) _____ memory is placed in between the CPU and the main memory.
A) Magnetic B) ROM
C) Optical Storage D) Cache
- 11) The term _____ is used to refer to the amount of time it takes to transfer a word of data to or from the memory.
A) Bandwidth B) Seek C) Latency D) None of these
- 12) A technique that works equally well with both negative and positive multipliers is called
A) LRU Algorithm B) BOOTH Algorithm
C) Checksum Algorithm D) Parity Check
- 13) _____ arise from the pipelining of branches and other instructions that change the PC.
A) Data hazards B) Structural hazards
C) Control hazards D) None of these
- 14) Software pipelining
A) Replicating loop by compiler B) Rearranging loops by compiler
C) Both (A) and (B) D) None of these
-



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

**T.E. (IT) (CGPA) (Part – I) Examination, 2017
COMPUTER ORGANIZATION AND ARCHITECTURE**

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

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Give the salient features of five generations of computers.
 - 2) Describe the IEEE format for floating point numbers.
 - 3) Explain instruction format of ARC-A Risc Computer.
 - 4) Write a note on Memory Hierarchy.
 - 5) Explain the different hardware components of instruction set architectures.
3. Attempt **any two** : **(2×8=16)**
- 1) Multiply + 12 with – 3 and find the product using Booth's Algorithm.
 - 2) Perform Division of 97/10 using Non-restoring division Algorithm.
 - 3) Design Multiplier control unit using Delay element method.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) How the performance of a processor is represented and what factors that influence the performance ?
 - 2) What is pipelining ? Explain different types of hazards that occur in pipeline.
 - 3) Explain correlating branch prediction technique.
 - 4) Explain the directory based coherence for a distributed memory multiprocessor system.
 - 5) Write a short note on scheduling the branch delay slot techniques of branch hazard.



5. Attempt **any two** : **(2×8=16)**

- 1) With a neat diagram give the basic structure of Tomasulo based MIPS-FP unit and explain the various fields of reservation stations.
 - 2) Explain following protocols under Cache Coherence and Message Passing Mechanisms.
 - a) Snoopy Bus Protocols.
 - b) Directory based protocols.
 - 3) Discuss following under Linear and Non-linear Pipeline Processors.
 - a) Clocking and Timing control.
 - b) Speedup.
 - c) Efficiency and Throughput.
-



SLR-VB – 272

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

Set	P
-----	---

**T.E. (Information Technology) (Part – I) Examination, 2017
SYSTEM SOFTWARE (CGPA)**

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 answer : **(14×1=14)**

- 1) A macro prototype statement declares
 - a) Name of the macro
 - b) Name and kinds of its parameters
 - c) Both a) and b)
 - d) None of the above
- 2) Which of the following loading method uses various cards for relocation and linking ?
 - a) Relocating loader
 - b) Direct-linking loader
 - c) Dynamic loading
 - d) None of these
- 3) Instruction cost of ADD 4(R0), *12(R1) is
 - a) 2
 - b) 3
 - c) 4
 - d) 5
- 4) Peephole optimization uses which of the following transformations ?
 - a) Redundant instruction elimination
 - b) Algebraic transformations
 - c) Use of machine idioms
 - d) All of these
- 5) Problem oriented language used in language processing affects
 - a) Specification gap
 - b) Execution gap
 - c) Both a) and b)
 - d) Semantic gap
- 6) Which of the following is a Phrase-structure grammar ?
 - a) $A ::= \pi$
 - b) $\alpha ::= \beta$
 - c) $A ::= Bt|t$
 - d) $\alpha A \beta ::= \alpha \pi \beta$

P.T.O.



- 7) Which table is used to process forward references during assembly of a program ?
- a) Symbol Table and CRT b) SRT
c) FRT d) All of these
- 8) Parsing table used for predictive parser can be constructed by using
- a) Subset construction algorithm b) First and follow algorithm
c) Shift-reduce algorithm d) None of these
- 9) Compilers are
- a) Recursive b) Non-reusable c) Re-enterable d) Serially usable
- 10) Number of digits used for Opcode in m/c instruction format are
- a) 1 b) 2 c) 3 d) None
- 11) Regular expressions are used as input for
- a) Assembler b) Syntax analysis
c) LEX d) YACC
- 12) Which of the following is not an advanced assembler directive ?
- a) START b) ORIGIN c) EQU d) LTORG
- 13) Action and Goto tables are part of
- a) Predictive parser b) Shift-reduce parser
c) LR parser d) None of these
- 14) Which of the following is not a part of Object modules
- a) Machine program b) Relocation table
c) Linking table d) None of these
-



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

**T.E. (Information Technology) (Part – I) Examination, 2017
SYSTEM SOFTWARE (CGPA)**

Day and Date : Saturday, 6-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any four** : **(4×2=8)**
- a) What is three address code ? Illustrate.
 - b) State the characteristics of an interpreter.
 - c) What is the output of syntax analysis ?
 - d) What is the input and output of a Macro ?
 - e) What are the advantages of assembly language ?
3. Attempt **any two** : **(2×5=10)**
- a) What are Language Processing Development Tools ? Illustrate.
 - b) What are the programming language grammars ? State their roles in language specification.
 - c) What is the task accomplished by a lexical analyzer ?
4. Attempt **any two** : **(2×5=10)**
- a) What are SLR parsers ? Illustrate the development of an LR parser for an illustrative grammar and parse a string.
 - b) How is IC for imperative statements developed ? State the variants involved.
 - c) Compare between Macro and procedure. Illustrate a macro definition and call.



SECTION – II

5. Attempt **any four** : **(4×2=8)**
- a) List the issues in design of code generator.
 - b) Define basic block and illustrate the same.
 - c) How is code generated from DAGS ? Illustrate.
 - d) What are self relocating programs ?
 - e) Demonstrate the working of a general loader scheme with a block diagram.
6. Attempt **any two** : **(2×5=10)**
- a) What are relocating loaders ? Explain working of a BSS loader.
 - b) Reproduce and explain the basic Linker algorithm.
 - c) What are subroutine linkages ? How are they carried out ?
7. Attempt **any two** : **(2×5=10)**
- a) What concepts are required during the design of a linker ? What is dynamic linking ?
 - b) Elaborate on the function preserving transformations used in code optimization.
 - c) Compare the designs of Absolute Loader and Direct Linking loader schemes.
-



SLR-VB – 272

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

Set	Q
-----	---

**T.E. (Information Technology) (Part – I) Examination, 2017
SYSTEM SOFTWARE (CGPA)**

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 answer : **(14×1=14)**

- 1) Parsing table used for predictive parser can be constructed by using
 - a) Subset construction algorithm
 - b) First and follow algorithm
 - c) Shift-reduce algorithm
 - d) None of these
- 2) Compilers are
 - a) Recursive
 - b) Non-reusable
 - c) Re-enterable
 - d) Serially usable
- 3) Number of digits used for Opcode in m/c instruction format are
 - a) 1
 - b) 2
 - c) 3
 - d) None
- 4) Regular expressions are used as input for
 - a) Assembler
 - b) Syntax analysis
 - c) LEX
 - d) YACC
- 5) Which of the following is not an advanced assembler directive ?
 - a) START
 - b) ORIGIN
 - c) EQU
 - d) LTORG
- 6) Action and Goto tables are part of
 - a) Predictive parser
 - b) Shift-reduce parser
 - c) LR parser
 - d) None of these
- 7) Which of the following is not a part of Object modules
 - a) Machine program
 - b) Relocation table
 - c) Linking table
 - d) None of these

P.T.O.



- 8) A macro prototype statement declares
- a) Name of the macro
 - b) Name and kinds of its parameters
 - c) Both a) and b)
 - d) None of the above
- 9) Which of the following loading method uses various cards for relocation and linking ?
- a) Relocating loader
 - b) Direct-linking loader
 - c) Dynamic loading
 - d) None of these
- 10) Instruction cost of $ADD\ 4(R0),\ *12(R1)$ is
- a) 2
 - b) 3
 - c) 4
 - d) 5
- 11) Peephole optimization uses which of the following transformations ?
- a) Redundant instruction elimination
 - b) Algebraic transformations
 - c) Use of machine idioms
 - d) All of these
- 12) Problem oriented language used in language processing affects
- a) Specification gap
 - b) Execution gap
 - c) Both a) and b)
 - d) Semantic gap
- 13) Which of the following is a Phrase-structure grammar ?
- a) $A ::= \pi$
 - b) $\alpha ::= \beta$
 - c) $A ::= Bt|t$
 - d) $\alpha A \beta ::= \alpha \pi \beta$
- 14) Which table is used to process forward references during assembly of a program ?
- a) Symbol Table and CRT
 - b) SRT
 - c) FRT
 - d) All of these
-



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

**T.E. (Information Technology) (Part – I) Examination, 2017
SYSTEM SOFTWARE (CGPA)**

Day and Date : Saturday, 6-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any four** : **(4×2=8)**
- a) What is three address code ? Illustrate.
 - b) State the characteristics of an interpreter.
 - c) What is the output of syntax analysis ?
 - d) What is the input and output of a Macro ?
 - e) What are the advantages of assembly language ?
3. Attempt **any two** : **(2×5=10)**
- a) What are Language Processing Development Tools ? Illustrate.
 - b) What are the programming language grammars ? State their roles in language specification.
 - c) What is the task accomplished by a lexical analyzer ?
4. Attempt **any two** : **(2×5=10)**
- a) What are SLR parsers ? Illustrate the development of an LR parser for an illustrative grammar and parse a string.
 - b) How is IC for imperative statements developed ? State the variants involved.
 - c) Compare between Macro and procedure. Illustrate a macro definition and call.



SECTION – II

5. Attempt **any four** : **(4×2=8)**
- a) List the issues in design of code generator.
 - b) Define basic block and illustrate the same.
 - c) How is code generated from DAGS ? Illustrate.
 - d) What are self relocating programs ?
 - e) Demonstrate the working of a general loader scheme with a block diagram.
6. Attempt **any two** : **(2×5=10)**
- a) What are relocating loaders ? Explain working of a BSS loader.
 - b) Reproduce and explain the basic Linker algorithm.
 - c) What are subroutine linkages ? How are they carried out ?
7. Attempt **any two** : **(2×5=10)**
- a) What concepts are required during the design of a linker ? What is dynamic linking ?
 - b) Elaborate on the function preserving transformations used in code optimization.
 - c) Compare the designs of Absolute Loader and Direct Linking loader schemes.
-



SLR-VB – 272

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

Set	R
-----	---

**T.E. (Information Technology) (Part – I) Examination, 2017
SYSTEM SOFTWARE (CGPA)**

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 answer :

(14×1=14)

- 1) Problem oriented language used in language processing affects
 - a) Specification gap
 - b) Execution gap
 - c) Both a) and b)
 - d) Semantic gap
- 2) Which of the following is a Phrase-structure grammar ?
 - a) $A ::= \pi$
 - b) $\alpha ::= \beta$
 - c) $A ::= Bt|t$
 - d) $\alpha A \beta ::= \alpha \pi \beta$
- 3) Which table is used to process forward references during assembly of a program ?
 - a) Symbol Table and CRT
 - b) SRT
 - c) FRT
 - d) All of these
- 4) Parsing table used for predictive parser can be constructed by using
 - a) Subset construction algorithm
 - b) First and follow algorithm
 - c) Shift-reduce algorithm
 - d) None of these
- 5) Compilers are
 - a) Recursive
 - b) Non-reusable
 - c) Re-enterable
 - d) Serially usable
- 6) Number of digits used for Opcode in m/c instruction format are
 - a) 1
 - b) 2
 - c) 3
 - d) None
- 7) Regular expressions are used as input for
 - a) Assembler
 - b) Syntax analysis
 - c) LEX
 - d) YACC

P.T.O.



- 8) Which of the following is not an advanced assembler directive ?
a) START b) ORIGIN c) EQU d) LORG
- 9) Action and Goto tables are part of
a) Predictive parser b) Shift-reduce parser
c) LR parser d) None of these
- 10) Which of the following is not a part of Object modules
a) Machine program b) Relocation table
c) Linking table d) None of these
- 11) A macro prototype statement declares
a) Name of the macro b) Name and kinds of its parameters
c) Both a) and b) d) None of the above
- 12) Which of the following loading method uses various cards for relocation and linking ?
a) Relocating loader b) Direct-linking loader
c) Dynamic loading d) None of these
- 13) Instruction cost of ADD 4(R0), *12(R1) is
a) 2 b) 3 c) 4 d) 5
- 14) Peephole optimization uses which of the following transformations ?
a) Redundant instruction elimination
b) Algebraic transformations
c) Use of machine idioms
d) All of these
-



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

**T.E. (Information Technology) (Part – I) Examination, 2017
SYSTEM SOFTWARE (CGPA)**

Day and Date : Saturday, 6-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any four** : **(4×2=8)**
- a) What is three address code ? Illustrate.
 - b) State the characteristics of an interpreter.
 - c) What is the output of syntax analysis ?
 - d) What is the input and output of a Macro ?
 - e) What are the advantages of assembly language ?
3. Attempt **any two** : **(2×5=10)**
- a) What are Language Processing Development Tools ? Illustrate.
 - b) What are the programming language grammars ? State their roles in language specification.
 - c) What is the task accomplished by a lexical analyzer ?
4. Attempt **any two** : **(2×5=10)**
- a) What are SLR parsers ? Illustrate the development of an LR parser for an illustrative grammar and parse a string.
 - b) How is IC for imperative statements developed ? State the variants involved.
 - c) Compare between Macro and procedure. Illustrate a macro definition and call.



SECTION – II

5. Attempt **any four** : **(4×2=8)**
- a) List the issues in design of code generator.
 - b) Define basic block and illustrate the same.
 - c) How is code generated from DAGS ? Illustrate.
 - d) What are self relocating programs ?
 - e) Demonstrate the working of a general loader scheme with a block diagram.
6. Attempt **any two** : **(2×5=10)**
- a) What are relocating loaders ? Explain working of a BSS loader.
 - b) Reproduce and explain the basic Linker algorithm.
 - c) What are subroutine linkages ? How are they carried out ?
7. Attempt **any two** : **(2×5=10)**
- a) What concepts are required during the design of a linker ? What is dynamic linking ?
 - b) Elaborate on the function preserving transformations used in code optimization.
 - c) Compare the designs of Absolute Loader and Direct Linking loader schemes.
-



SLR-VB – 272

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

Set	S
-----	---

**T.E. (Information Technology) (Part – I) Examination, 2017
SYSTEM SOFTWARE (CGPA)**

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 answer :

(14×1=14)

- 1) Number of digits used for Opcode in m/c instruction format are
 - a) 1
 - b) 2
 - c) 3
 - d) None
- 2) Regular expressions are used as input for
 - a) Assembler
 - b) Syntax analysis
 - c) LEX
 - d) YACC
- 3) Which of the following is not an advanced assembler directive ?
 - a) START
 - b) ORIGIN
 - c) EQU
 - d) LORG
- 4) Action and Goto tables are part of
 - a) Predictive parser
 - b) Shift-reduce parser
 - c) LR parser
 - d) None of these
- 5) Which of the following is not a part of Object modules
 - a) Machine program
 - b) Relocation table
 - c) Linking table
 - d) None of these
- 6) A macro prototype statement declares
 - a) Name of the macro
 - b) Name and kinds of its parameters
 - c) Both a) and b)
 - d) None of the above

P.T.O.



- 7) Which of the following loading method uses various cards for relocation and linking ?
- a) Relocating loader
 - b) Direct-linking loader
 - c) Dynamic loading
 - d) None of these
- 8) Instruction cost of $\text{ADD } 4(\text{R0}), *12(\text{R1})$ is
- a) 2
 - b) 3
 - c) 4
 - d) 5
- 9) Peephole optimization uses which of the following transformations ?
- a) Redundant instruction elimination
 - b) Algebraic transformations
 - c) Use of machine idioms
 - d) All of these
- 10) Problem oriented language used in language processing affects
- a) Specification gap
 - b) Execution gap
 - c) Both a) and b)
 - d) Semantic gap
- 11) Which of the following is a Phrase-structure grammar ?
- a) $A ::= \pi$
 - b) $\alpha ::= \beta$
 - c) $A ::= Bt|t$
 - d) $\alpha A \beta ::= \alpha \pi \beta$
- 12) Which table is used to process forward references during assembly of a program ?
- a) Symbol Table and CRT
 - b) SRT
 - c) FRT
 - d) All of these
- 13) Parsing table used for predictive parser can be constructed by using
- a) Subset construction algorithm
 - b) First and follow algorithm
 - c) Shift-reduce algorithm
 - d) None of these
- 14) Compilers are
- a) Recursive
 - b) Non-reusable
 - c) Re-enterable
 - d) Serially usable
-



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

**T.E. (Information Technology) (Part – I) Examination, 2017
SYSTEM SOFTWARE (CGPA)**

Day and Date : Saturday, 6-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any four** : **(4×2=8)**
- a) What is three address code ? Illustrate.
 - b) State the characteristics of an interpreter.
 - c) What is the output of syntax analysis ?
 - d) What is the input and output of a Macro ?
 - e) What are the advantages of assembly language ?
3. Attempt **any two** : **(2×5=10)**
- a) What are Language Processing Development Tools ? Illustrate.
 - b) What are the programming language grammars ? State their roles in language specification.
 - c) What is the task accomplished by a lexical analyzer ?
4. Attempt **any two** : **(2×5=10)**
- a) What are SLR parsers ? Illustrate the development of an LR parser for an illustrative grammar and parse a string.
 - b) How is IC for imperative statements developed ? State the variants involved.
 - c) Compare between Macro and procedure. Illustrate a macro definition and call.



SECTION – II

5. Attempt **any four** : **(4×2=8)**
- a) List the issues in design of code generator.
 - b) Define basic block and illustrate the same.
 - c) How is code generated from DAGS ? Illustrate.
 - d) What are self relocating programs ?
 - e) Demonstrate the working of a general loader scheme with a block diagram.
6. Attempt **any two** : **(2×5=10)**
- a) What are relocating loaders ? Explain working of a BSS loader.
 - b) Reproduce and explain the basic Linker algorithm.
 - c) What are subroutine linkages ? How are they carried out ?
7. Attempt **any two** : **(2×5=10)**
- a) What concepts are required during the design of a linker ? What is dynamic linking ?
 - b) Elaborate on the function preserving transformations used in code optimization.
 - c) Compare the designs of Absolute Loader and Direct Linking loader schemes.
-



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

Set

P

T.E. (I.T.) (Part – I) (CGPA) Examination, 2017
DESIGN AND ANALYSIS OF ALGORITHMS

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.**
 - 3) **Figures drawn by pencil, ruler only indicates full marks.**
 - 4) **Do not use pen to draw and label the diagrams.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) The quick sort algorithm exploits _____ design technique.
 - a) Greedy approach
 - b) Dynamic programming
 - c) Divide and Conquer
 - d) Backtracking
- 2) A full binary tree with n leaves contains
 - a) n nodes
 - b) \log_2^n nodes
 - c) $2n - 1$ nodes
 - d) n^2 nodes
- 3) The optimal merge pattern is based on _____ method.
 - a) Greedy method
 - b) Dynamic programming
 - c) Knapsack method
 - d) Branch and bound
- 4) $T(n) = 2T(n/2) + n^2$ then $T(n) =$
 - a) $O(n^3)$
 - b) $O(n^2)$
 - c) $O(n)$
 - d) $O(n^4)$
- 5) Recursive algorithms are based on
 - a) Divide and conquer approach
 - b) Top-down approach
 - c) Bottom-up approach
 - d) Hierarchical approach
- 6) The notation is θ
 - a) Symmetric
 - b) Reflexive
 - c) Transitive
 - d) All of the above



- 7) Pick the correct statement (s) from the following set of statements.
- I) In the Kruskal’s algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form a forest
 - II) In Prim’s algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form an orchard
 - III) DFS, BFS algorithms always make use of a queue, and stack respectively.
- a) Only (I) b) Only (II)
c) Only (III) d) Both (I) and (III)
- 8) Which of the following technique cannot be used to solve a 0 –1 knapsack problem ?
- a) Greedy b) Dynamic programming
c) Branch and bound d) All of the above
- 9) State generation methods in which E-node remains as E-node until it is dead lead to
- a) Backtracking b) Branch and bound
c) Answer node d) None of the above
- 10) A problem is NP-complete if the problem is
- a) NP-Hard b) P only
c) NP-hard, and in NP d) NP-hard but not in NP
- 11) _____ are those problem states S for which the path from the root to S defines a tuple in the solution space.
- a) Answer state b) Solution state
c) State space d) None of the above
- 12) The minimum integer m to color a particular graph is called as
- a) m+1-colorability b) n-colorability optimization
c) chromatic number d) none
- 13) 0/1 knapsack problem can be solved by
- a) Dynamic programming b) Backtracking
c) Branch and bound d) All of the above
- 14) The tree organization of the solution space is referred to as the _____
- a) Answer tree b) State space tree
c) Dynamic tree d) Dead tree
-



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

**T.E. (I.T.) (Part – I) (CGPA) Examination, 2017
DESIGN AND ANALYSIS OF ALGORITHMS**

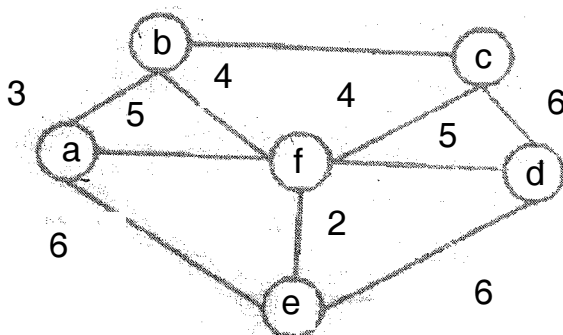
Day and Date : Monday, 8-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**
2) **Figures drawn by pencil, ruler only indicate full marks.**
3) **Do not use pen to draw and label the diagrams.**

SECTION – I

2. Attempt **any three** of the following : 12
- a) Write the algorithm for binary search using divide and conquer.
 - b) Define the terms :
 - i) Algorithm
 - ii) Time complexity
 - iii) Space complexity
 - iv) Performance analysis
 - c) Short note : Optimal merge pattern
 - d) Short note : Single source shortest path
 - e) Algorithm for :
 - i) Straightforward maximum and minimum
 - ii) Iterative binary search.
3. Answer **any one** of the following : 8
- a) Explain Asymptotic Notations with growth function and diagram.
 - b) Assume that $m = 30$ and $n = 3$. While weights are (10, 20, 30) and profit are (12, 20, 24). Then find the optimal solution using knapsack technique.
4. Answer the following : 8
- Apply Prim's algorithm to the following graph. Find the minimum cost.



Set P



SECTION – II

5. Answer **any four** : **(4×3=12)**
- Write a recursive algorithm for backtracking.
 - Explain the terms :
 - Live node
 - Answer state
 - E-node
 - Dead node.
 - Write a note on Reliability Design.
 - Difference between dynamic programming and greedy method.
 - Write a short note on flow shop scheduling.

6. Solve **any one** : **8**
- Find the optimal binary search tree for given data
 $n = 4$
identifier (a1, a2, a3, a4) = (do, if, int, while)
 $p(1 : 4) = (3, 3, 1, 1)$ and $q(0:4) = (2, 3, 1, 1, 1)$
 - Explain in details P, NP, NP- Complete and NP-hard.

7. Solve the following : **8**

Solve Travelling salesperson (*) using Least Cost branch and bound given the cost matrix as

$$\begin{bmatrix} \infty & 7 & 3 & 12 & 8 \\ 3 & \infty & 6 & 14 & 9 \\ 5 & 8 & \infty & 6 & 18 \\ 9 & 3 & 5 & \infty & 11 \\ 18 & 14 & 9 & 8 & \infty \end{bmatrix}$$



SLR-VB – 273

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

Set **Q**

**T.E. (I.T.) (Part – I) (CGPA) Examination, 2017
DESIGN AND ANALYSIS OF ALGORITHMS**

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.**
3) Figures drawn by pencil, ruler only indicates **full** marks.
4) **Do not use pen** to draw and label the diagrams.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- 1) Which of the following technique cannot be used to solve a 0 –1 knapsack problem ?
a) Greedy
b) Dynamic programming
c) Branch and bound
d) All of the above
 - 2) State generation methods in which E-node remains as E-node until it is dead lead to
a) Backtracking
b) Branch and bound
c) Answer node
d) None of the above
 - 3) A problem is NP-complete if the problem is
a) NP-Hard
b) P only
c) NP-hard, and in NP
d) NP-hard but not in NP
 - 4) _____ are those problem states S for which the path from the root to S defines a tuple in the solution space.
a) Answer state
b) Solution state
c) State space
d) None of the above
 - 5) The minimum integer m to color a particular graph is called as
a) m+1-colorability
b) n-colorability optimization
c) chromatic number
d) none

P.T.O.



- 6) 0/1 knapsack problem can be solved by
- a) Dynamic programming
 - b) Backtracking
 - c) Branch and bound
 - d) All of the above
- 7) The tree organization of the solution space is referred to as the _____
- a) Answer tree
 - b) State space tree
 - c) Dynamic tree
 - d) Dead tree
- 8) The quick sort algorithm exploits _____ design technique.
- a) Greedy approach
 - b) Dynamic programming
 - c) Divide and Conquer
 - d) Backtracking
- 9) A full binary tree with n leaves contains
- a) n nodes
 - b) \log_2^n nodes
 - c) $2n - 1$ nodes
 - d) n^2 nodes
- 10) The optimal merge pattern is based on _____ method.
- a) Greedy method
 - b) Dynamic programming
 - c) Knapsack method
 - d) Branch and bound
- 11) $T(n) = 2T(n/2) + n^2$ then $T(n) =$
- a) $O(n^3)$
 - b) $O(n^2)$
 - c) $O(n)$
 - d) $O(n^4)$
- 12) Recursive algorithms are based on
- a) Divide and conquer approach
 - b) Top-down approach
 - c) Bottom-up approach
 - d) Hierarchical approach
- 13) The notation is θ
- a) Symmetric
 - b) Reflexive
 - c) Transitive
 - d) All of the above
- 14) Pick the correct statement (s) from the following set of statements.
- I) In the Kruskal's algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form a forest
 - II) In Prim's algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form an orchard
 - III) DFS, BFS algorithms always make use of a queue, and stack respectively.
- a) Only (I)
 - b) Only (II)
 - c) Only (III)
 - d) Both (I) and (III)
-



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

**T.E. (I.T.) (Part – I) (CGPA) Examination, 2017
DESIGN AND ANALYSIS OF ALGORITHMS**

Day and Date : Monday, 8-5-2017
Time : 10.00 a.m. to 1.00 p.m.

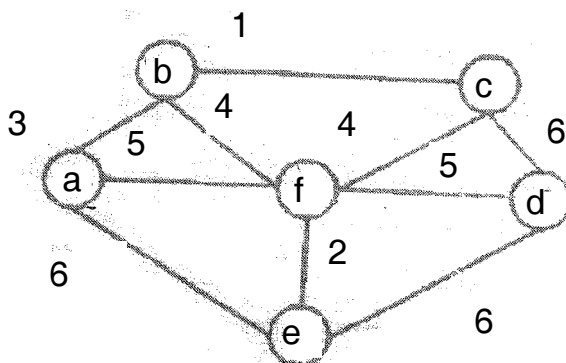
Marks : 56

- Instructions :** 1) **All questions are compulsory.**
2) **Figures drawn by pencil, ruler only indicate full marks.**
3) **Do not use pen to draw and label the diagrams.**

SECTION – I

2. Attempt **any three** of the following : 12
- a) Write the algorithm for binary search using divide and conquer.
 - b) Define the terms :
 - i) Algorithm
 - ii) Time complexity
 - iii) Space complexity
 - iv) Performance analysis
 - c) Short note : Optimal merge pattern
 - d) Short note : Single source shortest path
 - e) Algorithm for :
 - i) Straightforward maximum and minimum
 - ii) Iterative binary search.
3. Answer **any one** of the following : 8
- a) Explain Asymptotic Notations with growth function and diagram.
 - b) Assume that $m = 30$ and $n = 3$. While weights are (10, 20, 30) and profit are (12, 20, 24). Then find the optimal solution using knapsack technique.
4. Answer the following : 8

Apply Prim's algorithm to the following graph. Find the minimum cost.



Set Q



SECTION – II

5. Answer **any four** : **(4×3=12)**
- Write a recursive algorithm for backtracking.
 - Explain the terms :
 - Live node
 - Answer state
 - E-node
 - Dead node.
 - Write a note on Reliability Design.
 - Difference between dynamic programming and greedy method.
 - Write a short note on flow shop scheduling.

6. Solve **any one** : **8**
- Find the optimal binary search tree for given data
 $n = 4$
 identifier (a1, a2, a3, a4) = (do, if, int, while)
 $p(1 : 4) = (3, 3, 1, 1)$ and $q(0:4) = (2, 3, 1, 1, 1)$
 - Explain in details P, NP, NP- Complete and NP-hard.

7. Solve the following : **8**

Solve Travelling salesperson (*) using Least Cost branch and bound given the cost matrix as

$$\begin{bmatrix} \infty & 7 & 3 & 12 & 8 \\ 3 & \infty & 6 & 14 & 9 \\ 5 & 8 & \infty & 6 & 18 \\ 9 & 3 & 5 & \infty & 11 \\ 18 & 14 & 9 & 8 & \infty \end{bmatrix}$$



SLR-VB – 273

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

Set	R
-----	---

**T.E. (I.T.) (Part – I) (CGPA) Examination, 2017
DESIGN AND ANALYSIS OF ALGORITHMS**

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.**
 - 3) Figures drawn by pencil, ruler only indicates **full** marks.
 - 4) **Do not use pen** to draw and label the diagrams.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) Recursive algorithms are based on
 - a) Divide and conquer approach
 - b) Top-down approach
 - c) Bottom-up approach
 - d) Hierarchical approach
- 2) The notation is θ
 - a) Symmetric
 - b) Reflexive
 - c) Transitive
 - d) All of the above
- 3) Pick the correct statement (s) from the following set of statements.
 - I) In the Kruskal's algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form a forest
 - II) In Prim's algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form an orchard
 - III) DFS, BFS algorithms always make use of a queue, and stack respectively.
 - a) Only (I)
 - b) Only (II)
 - c) Only (III)
 - d) Both (I) and (III)
- 4) Which of the following technique cannot be used to solve a 0 –1 knapsack problem ?
 - a) Greedy
 - b) Dynamic programming
 - c) Branch and bound
 - d) All of the above

P.T.O.



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

**T.E. (I.T.) (Part – I) (CGPA) Examination, 2017
DESIGN AND ANALYSIS OF ALGORITHMS**

Day and Date : Monday, 8-5-2017
Time : 10.00 a.m. to 1.00 p.m.

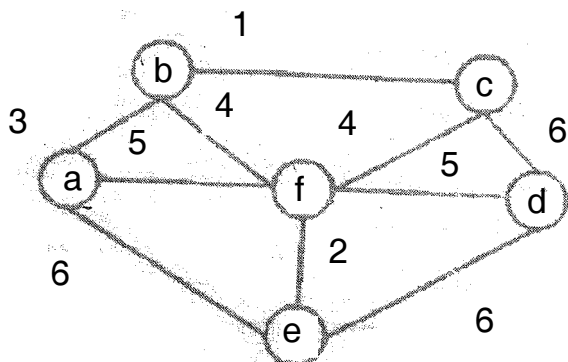
Marks : 56

- Instructions :** 1) **All questions are compulsory.**
2) **Figures drawn by pencil, ruler only indicate full marks.**
3) **Do not use pen to draw and label the diagrams.**

SECTION – I

2. Attempt **any three** of the following : **12**
- a) Write the algorithm for binary search using divide and conquer.
 - b) Define the terms :
 - i) Algorithm
 - ii) Time complexity
 - iii) Space complexity
 - iv) Performance analysis
 - c) Short note : Optimal merge pattern
 - d) Short note : Single source shortest path
 - e) Algorithm for :
 - i) Straightforward maximum and minimum
 - ii) Iterative binary search.
3. Answer **any one** of the following : **8**
- a) Explain Asymptotic Notations with growth function and diagram.
 - b) Assume that $m = 30$ and $n = 3$. While weights are (10, 20, 30) and profit are (12, 20, 24). Then find the optimal solution using knapsack technique.
4. Answer the following : **8**

Apply Prim's algorithm to the following graph. Find the minimum cost.



Set R



SECTION – II

5. Answer **any four** : **(4×3=12)**

- a) Write a recursive algorithm for backtracking.
- b) Explain the terms :
 - i) Live node
 - ii) Answer state
 - iii) E-node
 - iv) Dead node.
- c) Write a note on Reliability Design.
- d) Difference between dynamic programming and greedy method.
- e) Write a short note on flow shop scheduling.

6. Solve **any one** : **8**

- a) Find the optimal binary search tree for given data
 $n = 4$
 identifier (a1, a2, a3, a4) = (do, if, int, while)
 $p(1 : 4) = (3, 3, 1, 1)$ and $q(0:4) = (2, 3, 1, 1, 1)$
- b) Explain in details P, NP, NP- Complete and NP-hard.

7. Solve the following : **8**

Solve Travelling salesperson (*) using Least Cost branch and bound given the cost matrix as

$$\begin{bmatrix} \infty & 7 & 3 & 12 & 8 \\ 3 & \infty & 6 & 14 & 9 \\ 5 & 8 & \infty & 6 & 18 \\ 9 & 3 & 5 & \infty & 11 \\ 18 & 14 & 9 & 8 & \infty \end{bmatrix}$$



SLR-VB – 273

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

Set

S

**T.E. (I.T.) (Part – I) (CGPA) Examination, 2017
DESIGN AND ANALYSIS OF ALGORITHMS**

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.**
 - 3) Figures drawn by pencil, ruler only indicates **full** marks.
 - 4) **Do not use pen** to draw and label the diagrams.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) A problem is NP-complete if the problem is
 - a) NP-Hard
 - b) P only
 - c) NP-hard, and in NP
 - d) NP-hard but not in NP
- 2) _____ are those problem states S for which the path from the root to S defines a tuple in the solution space.
 - a) Answer state
 - b) Solution state
 - c) State space
 - d) None of the above
- 3) The minimum integer m to color a particular graph is called as
 - a) m+1-colorability
 - b) n-colorability optimization
 - c) chromatic number
 - d) none
- 4) 0/1 knapsack problem can be solved by
 - a) Dynamic programming
 - b) Backtracking
 - c) Branch and bound
 - d) All of the above
- 5) The tree organization of the solution space is referred to as the _____
 - a) Answer tree
 - b) State space tree
 - c) Dynamic tree
 - d) Dead tree
- 6) The quick sort algorithm exploits _____ design technique.
 - a) Greedy approach
 - b) Dynamic programming
 - c) Divide and Conquer
 - d) Backtracking

P.T.O.



- 7) A full binary tree with n leaves contains
- a) n nodes
 - b) \log_2^n nodes
 - c) $2n - 1$ nodes
 - d) n^2 nodes
- 8) The optimal merge pattern is based on _____ method.
- a) Greedy method
 - b) Dynamic programming
 - c) Knapsack method
 - d) Branch and bound
- 9) $T(n) = 2T(n/2) + n^2$ then $T(n) =$
- a) $O(n^3)$
 - b) $O(n^2)$
 - c) $O(n)$
 - d) $O(n^4)$
- 10) Recursive algorithms are based on
- a) Divide and conquer approach
 - b) Top-down approach
 - c) Bottom-up approach
 - d) Hierarchical approach
- 11) The notation is θ
- a) Symmetric
 - b) Reflexive
 - c) Transitive
 - d) All of the above
- 12) Pick the correct statement (s) from the following set of statements.
- I) In the Kruskal's algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form a forest
 - II) In Prim's algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form an orchard
 - III) DFS, BFS algorithms always make use of a queue, and stack respectively.
- a) Only (I)
 - b) Only (II)
 - c) Only (III)
 - d) Both (I) and (III)
- 13) Which of the following technique cannot be used to solve a 0 –1 knapsack problem ?
- a) Greedy
 - b) Dynamic programming
 - c) Branch and bound
 - d) All of the above
- 14) State generation methods in which E-node remains as E-node until it is dead lead to
- a) Backtracking
 - b) Branch and bound
 - c) Answer node
 - d) None of the above
-



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

**T.E. (I.T.) (Part – I) (CGPA) Examination, 2017
DESIGN AND ANALYSIS OF ALGORITHMS**

Day and Date : Monday, 8-5-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions :** 1) **All questions are compulsory.**
2) **Figures drawn by pencil, ruler only indicate full marks.**
3) **Do not use pen to draw and label the diagrams.**

SECTION – I

2. Attempt **any three** of the following : 12

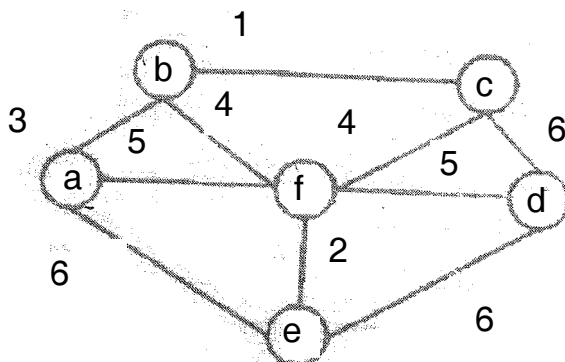
- a) Write the algorithm for binary search using divide and conquer.
- b) Define the terms :
 - i) Algorithm
 - ii) Time complexity
 - iii) Space complexity
 - iv) Performance analysis
- c) Short note : Optimal merge pattern
- d) Short note : Single source shortest path
- e) Algorithm for :
 - i) Straightforward maximum and minimum
 - ii) Iterative binary search.

3. Answer **any one** of the following : 8

- a) Explain Asymptotic Notations with growth function and diagram.
- b) Assume that $m = 30$ and $n = 3$. While weights are (10, 20, 30) and profit are (12, 20, 24). Then find the optimal solution using knapsack technique.

4. Answer the following : 8

Apply Prim's algorithm to the following graph. Find the minimum cost.



Set S



SECTION – II

5. Answer **any four** : **(4×3=12)**
- Write a recursive algorithm for backtracking.
 - Explain the terms :
 - Live node
 - Answer state
 - E-node
 - Dead node.
 - Write a note on Reliability Design.
 - Difference between dynamic programming and greedy method.
 - Write a short note on flow shop scheduling.

6. Solve **any one** : **8**
- Find the optimal binary search tree for given data
 $n = 4$
 identifier (a1, a2, a3, a4) = (do, if, int, while)
 $p(1 : 4) = (3, 3, 1, 1)$ and $q(0:4) = (2, 3, 1, 1, 1)$
 - Explain in details P, NP, NP- Complete and NP-hard.

7. Solve the following : **8**

Solve Travelling salesperson (*) using Least Cost branch and bound given the cost matrix as

$$\begin{bmatrix} \infty & 7 & 3 & 12 & 8 \\ 3 & \infty & 6 & 14 & 9 \\ 5 & 8 & \infty & 6 & 18 \\ 9 & 3 & 5 & \infty & 11 \\ 18 & 14 & 9 & 8 & \infty \end{bmatrix}$$



SLR-VB – 274

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

Set	P
-----	---

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
PRINCIPLES OF OPERATING SYSTEM**

Day and Date : Tuesday, 9-5-2017
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 :

(14×1=14)

- 1) The number of processes completed per unit time is known as _____
A) Output B) Throughput C) Efficiency D) Capacity
- 2) Time quantum is defined in
A) shortest job scheduling algorithm
B) round robin scheduling algorithm
C) priority scheduling algorithm
D) multilevel queue scheduling algorithm
- 3) The register context and stacks of a thread are deallocated when the thread
A) terminates B) blocks C) unlocks D) spawns
- 4) The switching of the CPU from one process or thread to another is called
A) process switch B) task switch
C) context switch D) all of these
- 5) The interval from the time of submission of a process to the time of completion is termed as
A) turnaround time B) waiting time
C) response time D) throughput
- 6) Deadlock prevention is a set of methods
A) to ensure that at least one of the necessary conditions cannot hold
B) to ensure that all of the necessary conditions do not hold
C) to decide if the requested resources for a process have to be given or not
D) to recover from a deadlock

P.T.O.



- 7) The degree of Multiprogramming is controlled by _____
- A) CPU Scheduler B) Context Switching
C) Long-term scheduler D) Medium term scheduler
- 8) A process can be _____
- A) single threaded B) multithreaded
C) A) or B) D) None of above
- 9) The real difficulty with SJF in short term scheduling is
- A) it is too good an algorithm
B) knowing the length of the next CPU request
C) it is too complex to understand
D) none of these
- 10) Which of the following statements are true ?
- i) Shortest remaining time first scheduling may cause starvation
ii) Preemptive scheduling may cause starvation
iii) Round robin is better than FCFS in terms of response time
- A) i only B) i and iii only
C) ii and iii only D) i, ii and iii
- 11) A semaphore is a shared integer variable
- A) that can not drop below zero B) that can not be more than zero
C) that can not drop below one D) that can not be more than one
- 12) A critical region _____
- A) is found only in Windows NT operation system
B) is a region prone to deadlock
C) is a piece of code which only a finite number of processes execute
D) is a piece of code which only one process executes at a time
- 13) Which one of the following is a visual (mathematical) way to determine the deadlock occurrence ?
- A) resource allocation graph B) starvation graph
C) inversion graph D) none of the mentioned
- 14) The wait-for graph is a deadlock detection algorithm that is applicable when
- A) all resources have a single instance
B) all resources have multiple instances
C) both A) and B)
D) none of these
-



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

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
PRINCIPLES OF OPERATING SYSTEM**

Day and Date : Tuesday, 9-5-2017

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Differentiate between Process and Thread.
 - b) Explain IPC in detail.
 - c) Define the following terms : Throughput, Turnaround time, Process, Process State.
 - d) Explain FCFS Scheduling algorithm.
3. Attempt **any one** : **(1×8=8)**
- a) Explain critical section problem and Peterson's solution in detail.
 - b) Explain priority (non-preemptive and preemptive) scheduling algorithm in detail.
4. Attempt **any one** : **(1×8=8)**
- a) Explain the following scheduling algorithms with diagram.
 - i) Multilevel Queue and
 - ii) Multilevel feedback queue.
 - b) What is Thread ? Explain different multithreading models with its disadvantages and example in detail.



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Write short note on Interrupts in I/O.
 - b) Explain logical and physical addresses with example in memory management.
 - c) Explain Deadlock characterization.
 - d) Write short note on, Polling in I/O.
6. Attempt **any one** : **(1×8=8)**
- a) What is Segmentation ? Draw and explain Segmentation Architecture.
 - b) What is page replacement ? Explain any one page replacement algorithm with example.
7. Attempt **any one** : **(1×8=8)**
- a) Explain Inverted Page Table concept and draw Inverted Page Table Architecture.
 - b) What is deadlock avoidance ? Explain safe state and resource allocation graph.
-



SLR-VB – 274

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

Set	Q
-----	---

T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
PRINCIPLES OF OPERATING SYSTEM

Day and Date : Tuesday, 9-5-2017
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 :

(14×1=14)

- 1) A process can be _____
 - A) single threaded
 - B) multithreaded
 - C) A) or B)
 - D) None of above
- 2) The real difficulty with SJF in short term scheduling is
 - A) it is too good an algorithm
 - B) knowing the length of the next CPU request
 - C) it is too complex to understand
 - D) none of these
- 3) Which of the following statements are true ?
 - i) Shortest remaining time first scheduling may cause starvation
 - ii) Preemptive scheduling may cause starvation
 - iii) Round robin is better than FCFS in terms of response time
 - A) i only
 - B) i and iii only
 - C) ii and iii only
 - D) i, ii and iii
- 4) A semaphore is a shared integer variable
 - A) that can not drop below zero
 - B) that can not be more than zero
 - C) that can not drop below one
 - D) that can not be more than one
- 5) A critical region _____
 - A) is found only in Windows NT operation system
 - B) is a region prone to deadlock
 - C) is a piece of code which only a finite number of processes execute
 - D) is a piece of code which only one process executes at a time

P.T.O.



- 6) Which one of the following is a visual (mathematical) way to determine the deadlock occurrence ?
- A) resource allocation graph B) starvation graph
C) inversion graph D) none of the mentioned
- 7) The wait-for graph is a deadlock detection algorithm that is applicable when
- A) all resources have a single instance
B) all resources have multiple instances
C) both A) and B)
D) none of these
- 8) The number of processes completed per unit time is known as _____
- A) Output B) Throughput C) Efficiency D) Capacity
- 9) Time quantum is defined in
- A) shortest job scheduling algorithm
B) round robin scheduling algorithm
C) priority scheduling algorithm
D) multilevel queue scheduling algorithm
- 10) The register context and stacks of a thread are deallocated when the thread
- A) terminates B) blocks C) unlocks D) spawns
- 11) The switching of the CPU from one process or thread to another is called
- A) process switch B) task switch
C) context switch D) all of these
- 12) The interval from the time of submission of a process to the time of completion is termed as
- A) turnaround time B) waiting time
C) response time D) throughput
- 13) Deadlock prevention is a set of methods
- A) to ensure that at least one of the necessary conditions cannot hold
B) to ensure that all of the necessary conditions do not hold
C) to decide if the requested resources for a process have to be given or not
D) to recover from a deadlock
- 14) The degree of Multiprogramming is controlled by _____
- A) CPU Scheduler B) Context Switching
C) Long-term scheduler D) Medium term scheduler
-



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

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
PRINCIPLES OF OPERATING SYSTEM**

Day and Date : Tuesday, 9-5-2017

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Differentiate between Process and Thread.
 - b) Explain IPC in detail.
 - c) Define the following terms : Throughput, Turnaround time, Process, Process State.
 - d) Explain FCFS Scheduling algorithm.
3. Attempt **any one** : **(1×8=8)**
- a) Explain critical section problem and Peterson's solution in detail.
 - b) Explain priority (non-preemptive and preemptive) scheduling algorithm in detail.
4. Attempt **any one** : **(1×8=8)**
- a) Explain the following scheduling algorithms with diagram.
 - i) Multilevel Queue and
 - ii) Multilevel feedback queue.
 - b) What is Thread ? Explain different multithreading models with its disadvantages and example in detail.



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Write short note on Interrupts in I/O.
 - b) Explain logical and physical addresses with example in memory management.
 - c) Explain Deadlock characterization.
 - d) Write short note on, Polling in I/O.
6. Attempt **any one** : **(1×8=8)**
- a) What is Segmentation ? Draw and explain Segmentation Architecture.
 - b) What is page replacement ? Explain any one page replacement algorithm with example.
7. Attempt **any one** : **(1×8=8)**
- a) Explain Inverted Page Table concept and draw Inverted Page Table Architecture.
 - b) What is deadlock avoidance ? Explain safe state and resource allocation graph.
-



SLR-VB – 274

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

Set	R
-----	----------

T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
PRINCIPLES OF OPERATING SYSTEM

Day and Date : Tuesday, 9-5-2017
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 :

(14×1=14)

- 1) The interval from the time of submission of a process to the time of completion is termed as
 - A) turnaround time
 - B) waiting time
 - C) response time
 - D) throughput
- 2) Deadlock prevention is a set of methods
 - A) to ensure that at least one of the necessary conditions cannot hold
 - B) to ensure that all of the necessary conditions do not hold
 - C) to decide if the requested resources for a process have to be given or not
 - D) to recover from a deadlock
- 3) The degree of Multiprogramming is controlled by _____
 - A) CPU Scheduler
 - B) Context Switching
 - C) Long-term scheduler
 - D) Medium term scheduler
- 4) A process can be _____
 - A) single threaded
 - B) multithreaded
 - C) A) or B)
 - D) None of above
- 5) The real difficulty with SJF in short term scheduling is
 - A) it is too good an algorithm
 - B) knowing the length of the next CPU request
 - C) it is too complex to understand
 - D) none of these

P.T.O.



- 6) Which of the following statements are true ?
- i) Shortest remaining time first scheduling may cause starvation
 - ii) Preemptive scheduling may cause starvation
 - iii) Round robin is better than FCFS in terms of response time
- A) i only B) i and iii only
C) ii and iii only D) i, ii and iii
- 7) A semaphore is a shared integer variable
- A) that can not drop below zero B) that can not be more than zero
C) that can not drop below one D) that can not be more than one
- 8) A critical region _____
- A) is found only in Windows NT operation system
B) is a region prone to deadlock
C) is a piece of code which only a finite number of processes execute
D) is a piece of code which only one process executes at a time
- 9) Which one of the following is a visual (mathematical) way to determine the deadlock occurrence ?
- A) resource allocation graph B) starvation graph
C) inversion graph D) none of the mentioned
- 10) The wait-for graph is a deadlock detection algorithm that is applicable when
- A) all resources have a single instance
B) all resources have multiple instances
C) both A) and B)
D) none of these
- 11) The number of processes completed per unit time is known as _____
- A) Output B) Throughput C) Efficiency D) Capacity
- 12) Time quantum is defined in
- A) shortest job scheduling algorithm
B) round robin scheduling algorithm
C) priority scheduling algorithm
D) multilevel queue scheduling algorithm
- 13) The register context and stacks of a thread are deallocated when the thread
- A) terminates B) blocks C) unlocks D) spawns
- 14) The switching of the CPU from one process or thread to another is called
- A) process switch B) task switch
C) context switch D) all of these
-



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

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
PRINCIPLES OF OPERATING SYSTEM**

Day and Date : Tuesday, 9-5-2017

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Differentiate between Process and Thread.
 - b) Explain IPC in detail.
 - c) Define the following terms : Throughput, Turnaround time, Process, Process State.
 - d) Explain FCFS Scheduling algorithm.
3. Attempt **any one** : **(1×8=8)**
- a) Explain critical section problem and Peterson's solution in detail.
 - b) Explain priority (non-preemptive and preemptive) scheduling algorithm in detail.
4. Attempt **any one** : **(1×8=8)**
- a) Explain the following scheduling algorithms with diagram.
 - i) Multilevel Queue and
 - ii) Multilevel feedback queue.
 - b) What is Thread ? Explain different multithreading models with its disadvantages and example in detail.



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Write short note on Interrupts in I/O.
 - b) Explain logical and physical addresses with example in memory management.
 - c) Explain Deadlock characterization.
 - d) Write short note on, Polling in I/O.
6. Attempt **any one** : **(1×8=8)**
- a) What is Segmentation ? Draw and explain Segmentation Architecture.
 - b) What is page replacement ? Explain any one page replacement algorithm with example.
7. Attempt **any one** : **(1×8=8)**
- a) Explain Inverted Page Table concept and draw Inverted Page Table Architecture.
 - b) What is deadlock avoidance ? Explain safe state and resource allocation graph.
-



SLR-VB – 274

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

Set	S
-----	---

T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
PRINCIPLES OF OPERATING SYSTEM

Day and Date : Tuesday, 9-5-2017
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 : **(14×1=14)**
- 1) Which of the following statements are true ?
 - i) Shortest remaining time first scheduling may cause starvation
 - ii) Preemptive scheduling may cause starvation
 - iii) Round robin is better than FCFS in terms of response time

A) i only	B) i and iii only
C) ii and iii only	D) i, ii and iii
 - 2) A semaphore is a shared integer variable

A) that can not drop below zero	B) that can not be more than zero
C) that can not drop below one	D) that can not be more than one
 - 3) A critical region _____
 - A) is found only in Windows NT operation system
 - B) is a region prone to deadlock
 - C) is a piece of code which only a finite number of processes execute
 - D) is a piece of code which only one process executes at a time
 - 4) Which one of the following is a visual (mathematical) way to determine the deadlock occurrence ?

A) resource allocation graph	B) starvation graph
C) inversion graph	D) none of the mentioned
 - 5) The wait-for graph is a deadlock detection algorithm that is applicable when
 - A) all resources have a single instance
 - B) all resources have multiple instances
 - C) both A) and B)
 - D) none of these

P.T.O.



- 6) The number of processes completed per unit time is known as _____
A) Output B) Throughput C) Efficiency D) Capacity
- 7) Time quantum is defined in
A) shortest job scheduling algorithm
B) round robin scheduling algorithm
C) priority scheduling algorithm
D) multilevel queue scheduling algorithm
- 8) The register context and stacks of a thread are deallocated when the thread
A) terminates B) blocks C) unlocks D) spawns
- 9) The switching of the CPU from one process or thread to another is called
A) process switch B) task switch
C) context switch D) all of these
- 10) The interval from the time of submission of a process to the time of completion is termed as
A) turnaround time B) waiting time
C) response time D) throughput
- 11) Deadlock prevention is a set of methods
A) to ensure that at least one of the necessary conditions cannot hold
B) to ensure that all of the necessary conditions do not hold
C) to decide if the requested resources for a process have to be given or not
D) to recover from a deadlock
- 12) The degree of Multiprogramming is controlled by _____
A) CPU Scheduler B) Context Switching
C) Long-term scheduler D) Medium term scheduler
- 13) A process can be _____
A) single threaded B) multithreaded
C) A) or B) D) None of above
- 14) The real difficulty with SJF in short term scheduling is
A) it is too good an algorithm
B) knowing the length of the next CPU request
C) it is too complex to understand
D) none of these
-



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

**T.E. (Information Technology) (Part – I) (CGPA) Examination, 2017
PRINCIPLES OF OPERATING SYSTEM**

Day and Date : Tuesday, 9-5-2017

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Differentiate between Process and Thread.
 - b) Explain IPC in detail.
 - c) Define the following terms : Throughput, Turnaround time, Process, Process State.
 - d) Explain FCFS Scheduling algorithm.
3. Attempt **any one** : **(1×8=8)**
- a) Explain critical section problem and Peterson's solution in detail.
 - b) Explain priority (non-preemptive and preemptive) scheduling algorithm in detail.
4. Attempt **any one** : **(1×8=8)**
- a) Explain the following scheduling algorithms with diagram.
 - i) Multilevel Queue and
 - ii) Multilevel feedback queue.
 - b) What is Thread ? Explain different multithreading models with its disadvantages and example in detail.



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Write short note on Interrupts in I/O.
 - b) Explain logical and physical addresses with example in memory management.
 - c) Explain Deadlock characterization.
 - d) Write short note on, Polling in I/O.
6. Attempt **any one** : **(1×8=8)**
- a) What is Segmentation ? Draw and explain Segmentation Architecture.
 - b) What is page replacement ? Explain any one page replacement algorithm with example.
7. Attempt **any one** : **(1×8=8)**
- a) Explain Inverted Page Table concept and draw Inverted Page Table Architecture.
 - b) What is deadlock avoidance ? Explain safe state and resource allocation graph.
-



- 9) If memory access takes 20 ns with cache and 110 ns without it, then the ratio (cache uses a 10 ns memory) is
a) 93% b) 90% c) 88% d) 87%
- 10) Von Neumann architecture is
a) SISD b) SIMD c) MIMD d) MISD
- 11) The memory which is used to store a copy of data or instructions stored in larger memories, inside the CPU is called
a) Level 1 cache b) MMU c) Registers d) TLB
- 12) Memory management technique in which the OS stores and retrieves data from secondary storage for use in main memory is called
a) Fragmentation b) Paging
c) Mapping d) None of the above
- 13) In LRU, the referenced blocks counter is set to '0' and that of the previous blocks are incremented by one and others remain same, in case of
a) Hit b) Miss
c) Delay d) None of the above
- 14) One possible technique that is used to increase the bandwidth is
a) Memory interleaving b) Direct mapping
c) Associative mapping d) None of these
- 15) Which of the following concurrent processors are further divided into very long instruction word and superscalar processors ?
a) Vector Processor b) Multiple issue processor
c) Uniprocessor d) None of these
- 16) Communication between processors using a common system bus and common memory takes place in
a) Loosely coupled system b) Tightly coupled system
c) Tightly and loosely coupled system d) None of the mentioned
- 17) Software pipelining
a) Replicating loop by compiler b) Rearranging loops by compiler
c) Both a) and b) d) None of these
- 18) Register renaming can eliminate hazard based on
a) WAR b) WAW c) Both a) and b) d) None of these
- 19) Benefits of using a multiprocessor include
a) Enhanced performance b) Multiple applications
c) Multiple users d) All of the above
- 20) Hazards in pipelined stages are of
a) Two types b) Three types c) Four types d) Five types
-



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

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Tuesday, 16-5-2017

Marks : 80

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

SECTION – I

2. Attempt **any four**. **(4×5=20)**
- a) Explain the different generations of computers in with example.
 - b) Write a short note on RISC and CISC Computer architecture.
 - c) Describe IEEE format for floating point numbers.
 - d) Write a short note on Memory Hierarchy with a neat diagram.
 - e) Explain the design methods of hard wired control unit in detail.
3. Attempt **any two**. **(2×10=20)**
- a) Explain the Booth's Algorithm with an example.
 - b) Design Multiplier control unit using sequence counter method.
 - c) Explain concept of Segments and pages with a neat diagram.
 - d) Write a flowchart of non restoring Algorithm and Perform 12/5 Division using non restoring Algorithm.

SECTION – II

4. Attempt **any four**. **(4×5=20)**
- a) What is cache memory ?
 - b) Write a short note on Uniprocessor and Multiprocessor parallelism.
 - c) Explain linear and non linear pipeline.
 - d) Write a short note on Associative Memory with a neat diagram.
 - e) Explain Direct-Cache mapping method with a neat diagram.
5. Attempt **any two**. **(2×10=20)**
- a) Explain the LRU Page Replacement policy in detail.
 - b) Explain tightly coupled Multiprocessor Architecture with a neat diagram.
 - c) What is pipelining ? With help of diagram explain pipeline stall.

Set P



SLR-VB – 276

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

Set **Q**

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

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.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Communication between processors using a common system bus and common memory takes place in
 - a) Loosely coupled system
 - b) Tightly coupled system
 - c) Tightly and loosely coupled system
 - d) None of the mentioned
- 2) Software pipelining
 - a) Replicating loop by compiler
 - b) Rearranging loops by compiler
 - c) Both a) and b)
 - d) None of these
- 3) Register renaming can eliminate hazard based on
 - a) WAR
 - b) WAW
 - c) Both a) and b)
 - d) None of these
- 4) Benefits of using a multiprocessor include
 - a) Enhanced performance
 - b) Multiple applications
 - c) Multiple users
 - d) All of the above
- 5) Hazards in pipelined stages are of
 - a) Two types
 - b) Three types
 - c) Four types
 - d) Five types
- 6) What was the main technology used in third generation computers ?
 - a) Vacuum tubes
 - b) Integrated circuits
 - c) Microprocessors
 - d) Artificial intelligence
- 7) A central processing unit, fabricated on a single chip of semiconductor is called
 - a) Microprocessor
 - b) RAM
 - c) ROM
 - d) None of these
- 8) Which is the architecture of microprocessor ?
 - a) CISC
 - b) RISC
 - c) All of these
 - d) None of these

P.T.O.



- 9) While using the direct mapping technique in a 16 bit system the higher order 5 bit is used for
a) Tag b) Block c) Word d) Id
- 10) Memory unit accessed by content is called
a) Read only memory b) Programmable memory
c) Virtual memory d) Associative memory
- 11) _____ register keeps tracks of the instructions stored in program stored in memory.
a) AR (Address Register) b) XR (Index Register)
c) PC (Program Counter) d) AC (Accumulator)
- 12) Cache memory works on the principle of
a) Locality of data b) Locality of memory
c) Locality of reference d) Locality of reference and memory
- 13) Generally Dynamic RAM is used as main memory in a computer system as it
a) consumes less power b) has higher speed
c) has lower cell density d) needs refreshing circuitry
- 14) If memory access takes 20 ns with cache and 110 ns without it, then the ratio (cache uses a 10 ns memory) is
a) 93% b) 90% c) 88% d) 87%
- 15) Von Neumann architecture is
a) SISD b) SIMD c) MIMD d) MISD
- 16) The memory which is used to store a copy of data or instructions stored in larger memories, inside the CPU is called
a) Level 1 cache b) MMU c) Registers d) TLB
- 17) Memory management technique in which the OS stores and retrieves data from secondary storage for use in main memory is called
a) Fragmentation b) Paging
c) Mapping d) None of the above
- 18) In LRU, the referenced blocks counter is set to '0' and that of the previous blocks are incremented by one and others remain same, in case of
a) Hit b) Miss
c) Delay d) None of the above
- 19) One possible technique that is used to increase the bandwidth is
a) Memory interleaving b) Direct mapping
c) Associative mapping d) None of these
- 20) Which of the following concurrent processors are further divided into very long instruction word and superscalar processors ?
a) Vector Processor b) Multiple issue processor
c) Uniprocessor d) None of these



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

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Tuesday, 16-5-2017

Marks : 80

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

SECTION – I

2. Attempt **any four**. **(4×5=20)**
- a) Explain the different generations of computers in with example.
 - b) Write a short note on RISC and CISC Computer architecture.
 - c) Describe IEEE format for floating point numbers.
 - d) Write a short note on Memory Hierarchy with a neat diagram.
 - e) Explain the design methods of hard wired control unit in detail.
3. Attempt **any two**. **(2×10=20)**
- a) Explain the Booth's Algorithm with an example.
 - b) Design Multiplier control unit using sequence counter method.
 - c) Explain concept of Segments and pages with a neat diagram.
 - d) Write a flowchart of non restoring Algorithm and Perform 12/5 Division using non restoring Algorithm.

SECTION – II

4. Attempt **any four**. **(4×5=20)**
- a) What is cache memory ?
 - b) Write a short note on Uniprocessor and Multiprocessor parallelism.
 - c) Explain linear and non linear pipeline.
 - d) Write a short note on Associative Memory with a neat diagram.
 - e) Explain Direct-Cache mapping method with a neat diagram.
5. Attempt **any two**. **(2×10=20)**
- a) Explain the LRU Page Replacement policy in detail.
 - b) Explain tightly coupled Multiprocessor Architecture with a neat diagram.
 - c) What is pipelining ? With help of diagram explain pipeline stall.



SLR-VB – 276

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

Set

R

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

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.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The memory which is used to store a copy of data or instructions stored in larger memories, inside the CPU is called
 - a) Level 1 cache
 - b) MMU
 - c) Registers
 - d) TLB
- 2) Memory management technique in which the OS stores and retrieves data from secondary storage for use in main memory is called
 - a) Fragmentation
 - b) Paging
 - c) Mapping
 - d) None of the above
- 3) In LRU, the referenced blocks counter is set to '0' and that of the previous blocks are incremented by one and others remain same, in case of
 - a) Hit
 - b) Miss
 - c) Delay
 - d) None of the above
- 4) One possible technique that is used to increase the bandwidth is
 - a) Memory interleaving
 - b) Direct mapping
 - c) Associative mapping
 - d) None of these
- 5) Which of the following concurrent processors are further divided into very long instruction word and superscalar processors ?
 - a) Vector Processor
 - b) Multiple issue processor
 - c) Uniprocessor
 - d) None of these
- 6) Communication between processors using a common system bus and common memory takes place in
 - a) Loosely coupled system
 - b) Tightly coupled system
 - c) Tightly and loosely coupled system
 - d) None of the mentioned

P.T.O.



- 7) Software pipelining
 - a) Replicating loop by compiler
 - b) Rearranging loops by compiler
 - c) Both a) and b)
 - d) None of these
- 8) Register renaming can eliminate hazard based on
 - a) WAR
 - b) WAW
 - c) Both a) and b)
 - d) None of these
- 9) Benefits of using a multiprocessor include
 - a) Enhanced performance
 - b) Multiple applications
 - c) Multiple users
 - d) All of the above
- 10) Hazards in pipelined stages are of
 - a) Two types
 - b) Three types
 - c) Four types
 - d) Five types
- 11) What was the main technology used in third generation computers ?
 - a) Vacuum tubes
 - b) Integrated circuits
 - c) Microprocessors
 - d) Artificial intelligence
- 12) A central processing unit, fabricated on a single chip of semiconductor is called
 - a) Microprocessor
 - b) RAM
 - c) ROM
 - d) None of these
- 13) Which is the architecture of microprocessor ?
 - a) CISC
 - b) RISC
 - c) All of these
 - d) None of these
- 14) While using the direct mapping technique in a 16 bit system the higher order 5 bit is used for
 - a) Tag
 - b) Block
 - c) Word
 - d) Id
- 15) Memory unit accessed by content is called
 - a) Read only memory
 - b) Programmable memory
 - c) Virtual memory
 - d) Associative memory
- 16) _____ register keeps tracks of the instructions stored in program stored in memory.
 - a) AR (Address Register)
 - b) XR (Index Register)
 - c) PC (Program Counter)
 - d) AC (Accumulator)
- 17) Cache memory works on the principle of
 - a) Locality of data
 - b) Locality of memory
 - c) Locality of reference
 - d) Locality of reference and memory
- 18) Generally Dynamic RAM is used as main memory in a computer system as it
 - a) consumes less power
 - b) has higher speed
 - c) has lower cell density
 - d) needs refreshing circuitry
- 19) If memory access takes 20 ns with cache and 110 ns without it, then the ratio (cache uses a 10 ns memory) is
 - a) 93%
 - b) 90%
 - c) 88%
 - d) 87%
- 20) Von Neumann architecture is
 - a) SISD
 - b) SIMD
 - c) MIMD
 - d) MISD



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

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Tuesday, 16-5-2017

Marks : 80

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

SECTION – I

2. Attempt **any four**. **(4×5=20)**
- a) Explain the different generations of computers in with example.
 - b) Write a short note on RISC and CISC Computer architecture.
 - c) Describe IEEE format for floating point numbers.
 - d) Write a short note on Memory Hierarchy with a neat diagram.
 - e) Explain the design methods of hard wired control unit in detail.
3. Attempt **any two**. **(2×10=20)**
- a) Explain the Booth's Algorithm with an example.
 - b) Design Multiplier control unit using sequence counter method.
 - c) Explain concept of Segments and pages with a neat diagram.
 - d) Write a flowchart of non restoring Algorithm and Perform 12/5 Division using non restoring Algorithm.

SECTION – II

4. Attempt **any four**. **(4×5=20)**
- a) What is cache memory ?
 - b) Write a short note on Uniprocessor and Multiprocessor parallelism.
 - c) Explain linear and non linear pipeline.
 - d) Write a short note on Associative Memory with a neat diagram.
 - e) Explain Direct-Cache mapping method with a neat diagram.
5. Attempt **any two**. **(2×10=20)**
- a) Explain the LRU Page Replacement policy in detail.
 - b) Explain tightly coupled Multiprocessor Architecture with a neat diagram.
 - c) What is pipelining ? With help of diagram explain pipeline stall.



SLR-VB – 276

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

Set

S

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

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.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) _____ register keeps tracks of the instructions stored in program stored in memory.
 - a) AR (Address Register)
 - b) XR (Index Register)
 - c) PC (Program Counter)
 - d) AC (Accumulator)
- 2) Cache memory works on the principle of
 - a) Locality of data
 - b) Locality of memory
 - c) Locality of reference
 - d) Locality of reference and memory
- 3) Generally Dynamic RAM is used as main memory in a computer system as it
 - a) consumes less power
 - b) has higher speed
 - c) has lower cell density
 - d) needs refreshing circuitry
- 4) If memory access takes 20 ns with cache and 110 ns without it, then the ratio (cache uses a 10 ns memory) is
 - a) 93%
 - b) 90%
 - c) 88%
 - d) 87%
- 5) Von Neumann architecture is
 - a) SISD
 - b) SIMD
 - c) MIMD
 - d) MISD
- 6) The memory which is used to store a copy of data or instructions stored in larger memories, inside the CPU is called
 - a) Level 1 cache
 - b) MMU
 - c) Registers
 - d) TLB
- 7) Memory management technique in which the OS stores and retrieves data from secondary storage for use in main memory is called
 - a) Fragmentation
 - b) Paging
 - c) Mapping
 - d) None of the above

P.T.O.



- 8) In LRU, the referenced blocks counter is set to '0' and that of the previous blocks are incremented by one and others remain same, in case of
 - a) Hit
 - b) Miss
 - c) Delay
 - d) None of the above
 - 9) One possible technique that is used to increase the bandwidth is
 - a) Memory interleaving
 - b) Direct mapping
 - c) Associative mapping
 - d) None of these
 - 10) Which of the following concurrent processors are further divided into very long instruction word and superscalar processors ?
 - a) Vector Processor
 - b) Multiple issue processor
 - c) Uniprocessor
 - d) None of these
 - 11) Communication between processors using a common system bus and common memory takes place in
 - a) Loosely coupled system
 - b) Tightly coupled system
 - c) Tightly and loosely coupled system
 - d) None of the mentioned
 - 12) Software pipelining
 - a) Replicating loop by compiler
 - b) Rearranging loops by compiler
 - c) Both a) and b)
 - d) None of these
 - 13) Register renaming can eliminate hazard based on
 - a) WAR
 - b) WAW
 - c) Both a) and b)
 - d) None of these
 - 14) Benefits of using a multiprocessor include
 - a) Enhanced performance
 - b) Multiple applications
 - c) Multiple users
 - d) All of the above
 - 15) Hazards in pipelined stages are of
 - a) Two types
 - b) Three types
 - c) Four types
 - d) Five types
 - 16) What was the main technology used in third generation computers ?
 - a) Vacuum tubes
 - b) Integrated circuits
 - c) Microprocessors
 - d) Artificial intelligence
 - 17) A central processing unit, fabricated on a single chip of semiconductor is called
 - a) Microprocessor
 - b) RAM
 - c) ROM
 - d) None of these
 - 18) Which is the architecture of microprocessor ?
 - a) CISC
 - b) RISC
 - c) All of these
 - d) None of these
 - 19) While using the direct mapping technique in a 16 bit system the higher order 5 bit is used for
 - a) Tag
 - b) Block
 - c) Word
 - d) Id
 - 20) Memory unit accessed by content is called
 - a) Read only memory
 - b) Programmable memory
 - c) Virtual memory
 - d) Associative memory
-



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

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Tuesday, 16-5-2017

Marks : 80

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

SECTION – I

2. Attempt **any four**. **(4×5=20)**
- a) Explain the different generations of computers in with example.
 - b) Write a short note on RISC and CISC Computer architecture.
 - c) Describe IEEE format for floating point numbers.
 - d) Write a short note on Memory Hierarchy with a neat diagram.
 - e) Explain the design methods of hard wired control unit in detail.
3. Attempt **any two**. **(2×10=20)**
- a) Explain the Booth's Algorithm with an example.
 - b) Design Multiplier control unit using sequence counter method.
 - c) Explain concept of Segments and pages with a neat diagram.
 - d) Write a flowchart of non restoring Algorithm and Perform 12/5 Division using non restoring Algorithm.

SECTION – II

4. Attempt **any four**. **(4×5=20)**
- a) What is cache memory ?
 - b) Write a short note on Uniprocessor and Multiprocessor parallelism.
 - c) Explain linear and non linear pipeline.
 - d) Write a short note on Associative Memory with a neat diagram.
 - e) Explain Direct-Cache mapping method with a neat diagram.
5. Attempt **any two**. **(2×10=20)**
- a) Explain the LRU Page Replacement policy in detail.
 - b) Explain tightly coupled Multiprocessor Architecture with a neat diagram.
 - c) What is pipelining ? With help of diagram explain pipeline stall.



SLR-VB – 277

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

Set	P
-----	----------

**T.E. (Information Technology) (Part – II) Examination, 2017
DATABASE ENGINEERING (New CGPA)**

Day and Date : Monday, 15-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- 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 : 14

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

- 1) The output of the Data Definition Language (DDL) is placed in the _____
 - a) Relation
 - b) Entity relation diagram
 - c) Data dictionary
 - d) Cache
- 2) Which of the following operation is used in relational algebra if we are interested in only certain columns of a table ?
 - a) PROJECTION
 - b) SELECTION
 - c) UNION
 - d) JOIN
- 3) Which of the following are the properties of bad database design ?
 - i) Repetition of information
 - ii) Database is in 3NF
 - iii) Inability to represent certain information
 - a) i) and ii) only
 - b) i) and iii) only
 - c) iii) only
 - d) None of above
- 4) A _____ is an attribute in a relation that serves as a primary key of another table.
 - a) Composite key
 - b) Foreign key
 - c) Identifier key
 - d) Primary key
- 5) Course (Course_id, sec_id, semester)
Here the course_id, sec_id and semester are _____ and course is a _____
 - a) Relations, Attribute
 - b) Attributes, Relation
 - c) Tuple, Relation
 - d) Tuple, Attributes

P.T.O.



- 6) A transaction is delimited by statements (or function calls) of the form _____
- a) Begin transaction and end transaction
 - b) Start transaction and stop transaction
 - c) Get transaction and post transaction
 - d) Read transaction and write transaction
- 7) The storage structure which do not survive system crashes are _____
- a) Volatile storage
 - b) Non-volatile storage
 - c) Stable storage
 - d) Dynamic storage
- 8) The assumption that hardware errors and bugs in the software bring the system to a halt, but do not corrupt the non-volatile storage contents, is known as the
- a) Stop assumption
 - b) Fail assumption
 - c) Halt assumption
 - d) Fail-stop assumption
- 9) The deadlock state can be changed back to stable state by using _____ statement.
- a) Commit
 - b) Rollback
 - c) Savepoint
 - d) Deadlock
- 10) Isolation of the transactions is ensured by
- a) Transaction management
 - b) Application programmer
 - c) Concurrency control
 - d) Recovery management
- 11) Identify the characteristics of transactions
- a) Atomicity
 - b) Durability
 - c) Isolation
 - d) All of the mentioned
- 12) Which one of the following describes the timestamp-based protocols correctly ?
- a) This protocol requires that each transaction issue lock and unlock requests in two phases
 - b) This protocol employs only exclusive locks
 - c) This protocol selects an ordering among transaction in advance
 - d) None of the above
- 13) In concurrency control policy the lock is obtained on
- a) Entire database
 - b) A particular transaction alone
 - c) All the new elements
 - d) All of the mentioned
- 14) A concurrency-control policy such as this one leads to _____ performance, since it forces transactions to wait for preceding transactions to finish before they can start.
- a) Good
 - b) Average
 - c) Poor
 - d) Unstable



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

**T.E. (Information Technology) (Part – II) Examination, 2017
DATABASE ENGINEERING (New CGPA)**

Day and Date : Monday, 15-5-2017

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- a) What are DML and DDL statements ? Explain example of each.
- b) Explain relational algebra notations for select, project, Cartesian product.
- c) Define super key, candidate key, primary key and foreign key.
- d) What is the purpose of database management system ? Discuss the different levels of abstractions in a database management system.
- e) List 5 key advantages of database systems over file systems.

3. Define Mapping Cardinalities. What are the possible Mapping Cardinalities for a binary relationship ? Explain with examples. **8**

OR

Explain basic structure of SQL queries. Also give example.

4. What is the primary goal of Normalization ? How are the concepts of Functional Dependency and multivalued dependency associated with normalization ?
Give an example for the same. **8**

Set P



SECTION – II

5. Attempt **any four** : **(4×4=16)**
- 1) State advantages of B+ trees and B trees.
 - 2) Explain deadlock detection mechanism.
 - 3) Why we need to do recovery in DBMS ?
 - 4) Give the comparison of ordered indexing and hashing.
 - 5) Define failure. Explain log based recovery.
6. a) Explain the following commands with suitable example. **6**
- a) Committ b) Grant c) RollBack.
- OR
- b) Explain conflict serializability with example. **6**
7. Consider schedule S with transaction T_1 and T_2 . T_1 transfer Rs. 150 from account A to C and T_2 adds Rs. 50 into account A. Prepare concurrent schedule with two phase locking protocol. **6**
-



SLR-VB – 277

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

Set	Q
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
DATABASE ENGINEERING (New CGPA)**

Day and Date : Monday, 15-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- 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 : 14

1. Choose the correct alternative : **(14×1=14)**
- 1) The assumption that hardware errors and bugs in the software bring the system to a halt, but do not corrupt the non-volatile storage contents, is known as the
 - a) Stop assumption
 - b) Fail assumption
 - c) Halt assumption
 - d) Fail-stop assumption
 - 2) The deadlock state can be changed back to stable state by using _____ statement.
 - a) Commit
 - b) Rollback
 - c) Savepoint
 - d) Deadlock
 - 3) Isolation of the transactions is ensured by
 - a) Transaction management
 - b) Application programmer
 - c) Concurrency control
 - d) Recovery management
 - 4) Identify the characteristics of transactions
 - a) Atomicity
 - b) Durability
 - c) Isolation
 - d) All of the mentioned
 - 5) Which one of the following describes the timestamp-based protocols correctly ?
 - a) This protocol requires that each transaction issue lock and unlock requests in two phases
 - b) This protocol employs only exclusive locks
 - c) This protocol selects an ordering among transaction in advance
 - d) None of the above

P.T.O.



- 6) In concurrency control policy the lock is obtained on
- a) Entire database
 - b) A particular transaction alone
 - c) All the new elements
 - d) All of the mentioned
- 7) A concurrency-control policy such as this one leads to _____ performance, since it forces transactions to wait for preceding transactions to finish before they can start.
- a) Good
 - b) Average
 - c) Poor
 - d) Unstable
- 8) The output of the Data Definition Language (DDL) is placed in the _____
- a) Relation
 - b) Entity relation diagram
 - c) Data dictionary
 - d) Cache
- 9) Which of the following operation is used in relational algebra if we are interested in only certain columns of a table ?
- a) PROJECTION
 - b) SELECTION
 - c) UNION
 - d) JOIN
- 10) Which of the following are the properties of bad database design ?
- i) Repetition of information
 - ii) Database is in 3NF
 - iii) Inability to represent certain information
- a) i) and ii) only
 - b) i) and iii) only
 - c) iii) only
 - d) None of above
- 11) A _____ is an attribute in a relation that serves as a primary key of another table.
- a) Composite key
 - b) Foreign key
 - c) Identifier key
 - d) Primary key
- 12) Course (Course_id, sec_id, semester)
- Here the course_id, sec_id and semester are _____ and course is a _____
- a) Relations, Attribute
 - b) Attributes, Relation
 - c) Tuple, Relation
 - d) Tuple, Attributes
- 13) A transaction is delimited by statements (or function calls) of the form _____
- a) Begin transaction and end transaction
 - b) Start transaction and stop transaction
 - c) Get transaction and post transaction
 - d) Read transaction and write transaction
- 14) The storage structure which do not survive system crashes are _____
- a) Volatile storage
 - b) Non-volatile storage
 - c) Stable storage
 - d) Dynamic storage



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

**T.E. (Information Technology) (Part – II) Examination, 2017
DATABASE ENGINEERING (New CGPA)**

Day and Date : Monday, 15-5-2017

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- a) What are DML and DDL statements ? Explain example of each.
- b) Explain relational algebra notations for select, project, Cartesian product.
- c) Define super key, candidate key, primary key and foreign key.
- d) What is the purpose of database management system ? Discuss the different levels of abstractions in a database management system.
- e) List 5 key advantages of database systems over file systems.

3. Define Mapping Cardinalities. What are the possible Mapping Cardinalities for a binary relationship ? Explain with examples. **8**

OR

Explain basic structure of SQL queries. Also give example.

4. What is the primary goal of Normalization ? How are the concepts of Functional Dependency and multivalued dependency associated with normalization ? Give an example for the same. **8**

Set Q



SECTION – II

5. Attempt **any four** : **(4×4=16)**
- 1) State advantages of B+ trees and B trees.
 - 2) Explain deadlock detection mechanism.
 - 3) Why we need to do recovery in DBMS ?
 - 4) Give the comparison of ordered indexing and hashing.
 - 5) Define failure. Explain log based recovery.
6. a) Explain the following commands with suitable example. **6**
- a) Committ b) Grant c) RollBack.
- OR
- b) Explain conflict serializability with example. **6**
7. Consider schedule S with transaction T_1 and T_2 . T_1 transfer Rs. 150 from account A to C and T_2 adds Rs. 50 into account A. Prepare concurrent schedule with two phase locking protocol. **6**
-



SLR-VB – 277

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

Set	R
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
DATABASE ENGINEERING (New CGPA)**

Day and Date : Monday, 15-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- 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 : 14

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

- 1) Course (Course_id, sec_id, semester)
Here the course_id, sec_id and semester are _____ and course is a _____
 - a) Relations, Attribute
 - b) Attributes, Relation
 - c) Tuple, Relation
 - d) Tuple, Attributes
- 2) A transaction is delimited by statements (or function calls) of the form _____
 - a) Begin transaction and end transaction
 - b) Start transaction and stop transaction
 - c) Get transaction and post transaction
 - d) Read transaction and write transaction
- 3) The storage structure which do not survive system crashes are _____
 - a) Volatile storage
 - b) Non-volatile storage
 - c) Stable storage
 - d) Dynamic storage
- 4) The assumption that hardware errors and bugs in the software bring the system to a halt, but do not corrupt the non-volatile storage contents, is known as the
 - a) Stop assumption
 - b) Fail assumption
 - c) Halt assumption
 - d) Fail-stop assumption
- 5) The deadlock state can be changed back to stable state by using _____ statement.
 - a) Commit
 - b) Rollback
 - c) Savepoint
 - d) Deadlock

P.T.O.



- 6) Isolation of the transactions is ensured by
- a) Transaction management
 - b) Application programmer
 - c) Concurrency control
 - d) Recovery management
- 7) Identify the characteristics of transactions
- a) Atomicity
 - b) Durability
 - c) Isolation
 - d) All of the mentioned
- 8) Which one of the following describes the timestamp-based protocols correctly ?
- a) This protocol requires that each transaction issue lock and unlock requests in two phases
 - b) This protocol employs only exclusive locks
 - c) This protocol selects an ordering among transaction in advance
 - d) None of the above
- 9) In concurrency control policy the lock is obtained on
- a) Entire database
 - b) A particular transaction alone
 - c) All the new elements
 - d) All of the mentioned
- 10) A concurrency-control policy such as this one leads to _____ performance, since it forces transactions to wait for preceding transactions to finish before they can start.
- a) Good
 - b) Average
 - c) Poor
 - d) Unstable
- 11) The output of the Data Definition Language (DDL) is placed in the _____
- a) Relation
 - b) Entity relation diagram
 - c) Data dictionary
 - d) Cache
- 12) Which of the following operation is used in relational algebra if we are interested in only certain columns of a table ?
- a) PROJECTION
 - b) SELECTION
 - c) UNION
 - d) JOIN
- 13) Which of the following are the properties of bad database design ?
- i) Repetition of information
 - ii) Database is in 3NF
 - iii) Inability to represent certain information
- a) i) and ii) only
 - b) i) and iii) only
 - c) iii) only
 - d) None of above
- 14) A _____ is an attribute in a relation that serves as a primary key of another table.
- a) Composite key
 - b) Foreign key
 - c) Identifier key
 - d) Primary key



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

**T.E. (Information Technology) (Part – II) Examination, 2017
DATABASE ENGINEERING (New CGPA)**

Day and Date : Monday, 15-5-2017

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- a) What are DML and DDL statements ? Explain example of each.
- b) Explain relational algebra notations for select, project, Cartesian product.
- c) Define super key, candidate key, primary key and foreign key.
- d) What is the purpose of database management system ? Discuss the different levels of abstractions in a database management system.
- e) List 5 key advantages of database systems over file systems.

3. Define Mapping Cardinalities. What are the possible Mapping Cardinalities for a binary relationship ? Explain with examples. **8**

OR

Explain basic structure of SQL queries. Also give example.

4. What is the primary goal of Normalization ? How are the concepts of Functional Dependency and multivalued dependency associated with normalization ?
Give an example for the same. **8**

Set R



SECTION – II

5. Attempt **any four** : **(4×4=16)**
- 1) State advantages of B+ trees and B trees.
 - 2) Explain deadlock detection mechanism.
 - 3) Why we need to do recovery in DBMS ?
 - 4) Give the comparison of ordered indexing and hashing.
 - 5) Define failure. Explain log based recovery.
6. a) Explain the following commands with suitable example. **6**
- a) Committ b) Grant c) RollBack.
- OR
- b) Explain conflict serializability with example. **6**
7. Consider schedule S with transaction T_1 and T_2 . T_1 transfer Rs. 150 from account A to C and T_2 adds Rs. 50 into account A. Prepare concurrent schedule with two phase locking protocol. **6**
-



SLR-VB – 277

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

Set	S
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
DATABASE ENGINEERING (New CGPA)**

Day and Date : Monday, 15-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- 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 : 14

1. Choose the correct alternative :

(14×1=14)

- 1) Isolation of the transactions is ensured by
 - a) Transaction management
 - b) Application programmer
 - c) Concurrency control
 - d) Recovery management
- 2) Identify the characteristics of transactions
 - a) Atomicity
 - b) Durability
 - c) Isolation
 - d) All of the mentioned
- 3) Which one of the following describes the timestamp-based protocols correctly ?
 - a) This protocol requires that each transaction issue lock and unlock requests in two phases
 - b) This protocol employs only exclusive locks
 - c) This protocol selects an ordering among transaction in advance
 - d) None of the above
- 4) In concurrency control policy the lock is obtained on
 - a) Entire database
 - b) A particular transaction alone
 - c) All the new elements
 - d) All of the mentioned
- 5) A concurrency-control policy such as this one leads to _____ performance, since it forces transactions to wait for preceding transactions to finish before they can start.
 - a) Good
 - b) Average
 - c) Poor
 - d) Unstable

P.T.O.



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

**T.E. (Information Technology) (Part – II) Examination, 2017
DATABASE ENGINEERING (New CGPA)**

Day and Date : Monday, 15-5-2017

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(4×3=12)**

- a) What are DML and DDL statements ? Explain example of each.
- b) Explain relational algebra notations for select, project, Cartesian product.
- c) Define super key, candidate key, primary key and foreign key.
- d) What is the purpose of database management system ? Discuss the different levels of abstractions in a database management system.
- e) List 5 key advantages of database systems over file systems.

3. Define Mapping Cardinalities. What are the possible Mapping Cardinalities for a binary relationship ? Explain with examples. **8**

OR

Explain basic structure of SQL queries. Also give example.

4. What is the primary goal of Normalization ? How are the concepts of Functional Dependency and multivalued dependency associated with normalization ? Give an example for the same. **8**

Set S



SECTION – II

5. Attempt **any four** : **(4×4=16)**
- 1) State advantages of B+ trees and B trees.
 - 2) Explain deadlock detection mechanism.
 - 3) Why we need to do recovery in DBMS ?
 - 4) Give the comparison of ordered indexing and hashing.
 - 5) Define failure. Explain log based recovery.
6. a) Explain the following commands with suitable example. **6**
- a) Committ b) Grant c) RollBack.
- OR
- b) Explain conflict serializability with example. **6**
7. Consider schedule S with transaction T_1 and T_2 . T_1 transfer Rs. 150 from account A to C and T_2 adds Rs. 50 into account A. Prepare concurrent schedule with two phase locking protocol. **6**
-



SLR-VB – 278

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

Set

P

**T.E. (Information Technology) (Part – II) (New CGPA)
Examination, 2017**

OBJECT ORIENTED MODELING AND DESIGN

Day and Date : Wednesday, 17-5-2017

Max. Marks : 70

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

- Instructions :** 1) Figures to the *right* indicate **full** marks.
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. a) Choose the correct answer :

8

- 1) What is the programming style of OO conceptual model ?
 - A) Invariant relationship
 - B) Algorithm
 - C) Classes and objects
 - D) Procedural
- 2) UML stands for
 - A) Un-numbered Meta Lists
 - B) Unified Modeling Language
 - C) Standard Libraries
 - D) Un-liked Modeling Lists
- 3) In OMT Rumbaugh has proposed _____ models.
 - A) Object
 - B) Dynamic
 - C) Functional
 - D) All of the above
- 4) _____ describes physical parts of a system.
 - A) Component
 - B) Class
 - C) Nodes
 - D) Collaboration
- 5) In a dynamic model a transition is represented by
 - A) Rounded rectangle
 - B) Arrow
 - C) Diamond
 - D) Ellipse

P.T.O.



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

**T.E. (Information Technology) (Part – II) (New CGPA)
Examination, 2017
OBJECT ORIENTED MODELING AND DESIGN**

Day and Date : Wednesday, 17-5-2017
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 four** : **16**
- a) What are the tasks performed in object design phase in Object Modeling Technique ?
 - b) Define aggregation and illustrate its use.
 - c) What are links ? How are they different from associations ?
 - d) Compare between object model and functional model.
 - e) With an example bring out the exact meaning of the concept 'package and sheet'.
3. Attempt **any two** : **12**
- a) What is OSCAR ? How was it modeled ?
 - b) How is tripod combined in the object design phase and what are the steps conducted in design of a computer animation using OMT ?
 - c) Draw the three models of analysis phase of OMT for a Hotel Management System.

Set P



SECTION – II

4. Attempt **any four** : **16**
- a) What are the methods to model groups of elements in UML ?
 - b) Define concrete instances. How are they modeled in UML ?
 - c) What are classifier and visibility structures ?
 - d) Compare between component and sequence UML diagrams.
 - e) With an example bring out the exact meaning of the concept 'Things in UML'.
5. Attempt **any two** : **12**
- a) Reproduce a use case diagram for a Water Distribution System.
 - b) Draw a sequence diagram for an admission procedure conducted by a university.
 - c) Draw a collaboration diagram for the consultancy work conducted in your college.
-



SLR-VB – 278

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

Set

Q

**T.E. (Information Technology) (Part – II) (New CGPA)
Examination, 2017**

OBJECT ORIENTED MODELING AND DESIGN

Day and Date : Wednesday, 17-5-2017

Max. Marks : 70

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

- Instructions:** 1) Figures to the **right** indicate **full** marks.
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. a) Say **True** or **False** :

6

- 1) Object diagram represents instances of objects.
- 2) Specialization is an is-kind relation.
- 3) An actor instigates components.
- 4) Transitions are shown in class diagram.
- 5) Black diamond is used to indicate aggregations.
- 6) Packages are combinations of all things.

b) Choose the correct answer :

8

- 1) What is the programming style of OO conceptual model ?
 - A) Invariant relationship
 - B) Algorithm
 - C) Classes and objects
 - D) Procedural
- 2) UML stands for
 - A) Un-numbered Meta Lists
 - B) Unified Modeling Language
 - C) Standard Libraries
 - D) Un-liked Modeling Lists
- 3) In OMT Rumbaugh has proposed _____ models.
 - A) Object
 - B) Dynamic
 - C) Functional
 - D) All of the above

P.T.O.



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

**T.E. (Information Technology) (Part – II) (New CGPA)
Examination, 2017
OBJECT ORIENTED MODELING AND DESIGN**

Day and Date : Wednesday, 17-5-2017
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 four** : **16**
- a) What are the tasks performed in object design phase in Object Modeling Technique ?
 - b) Define aggregation and illustrate its use.
 - c) What are links ? How are they different from associations ?
 - d) Compare between object model and functional model.
 - e) With an example bring out the exact meaning of the concept 'package and sheet'.
3. Attempt **any two** : **12**
- a) What is OSCAR ? How was it modeled ?
 - b) How is tripod combined in the object design phase and what are the steps conducted in design of a computer animation using OMT ?
 - c) Draw the three models of analysis phase of OMT for a Hotel Management System.

Set Q



SECTION – II

4. Attempt **any four** : **16**
- a) What are the methods to model groups of elements in UML ?
 - b) Define concrete instances. How are they modeled in UML ?
 - c) What are classifier and visibility structures ?
 - d) Compare between component and sequence UML diagrams.
 - e) With an example bring out the exact meaning of the concept 'Things in UML'.
5. Attempt **any two** : **12**
- a) Reproduce a use case diagram for a Water Distribution System.
 - b) Draw a sequence diagram for an admission procedure conducted by a university.
 - c) Draw a collaboration diagram for the consultancy work conducted in your college.
-



SLR-VB – 278

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

Set **R**

**T.E. (Information Technology) (Part – II) (New CGPA)
Examination, 2017**

OBJECT ORIENTED MODELING AND DESIGN

Day and Date : Wednesday, 17-5-2017

Max. Marks : 70

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

- Instructions :**
- 1) Figures to the **right** indicate **full** marks.
 - 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. a) Choose the correct answer :

8

- 1) In OMT Rumbaugh has proposed _____ models.
A) Object
B) Dynamic
C) Functional
D) All of the above
- 2) _____ describes physical parts of a system.
A) Component
B) Class
C) Nodes
D) Collaboration
- 3) A _____ denotes a process in the functional model.
A) Link
B) Association
C) Ellipse
D) Activity
- 4) Collaboration and deployment diagrams represent _____ diagrams.
A) Use case and deployment
B) Sequence and collaboration
C) Interaction
D) Object and class
- 5) What is the programming style of OO conceptual model ?
A) Invariant relationship
B) Algorithm
C) Classes and objects
D) Procedural

P.T.O.



- 6) UML stands for
- A) Un-numbered Meta Lists B) Unified Modeling Language
C) Standard Libraries D) Un-liked Modeling Lists
- 7) In a dynamic model a transition is represented by
- A) Rounded rectangle B) Arrow
C) Diamond D) Ellipse
- 8) _____ are some occurrences that can trigger state transition of an object or a group of objects.
- A) States B) Links
C) Associations D) Events
- b) Say **True** or **False** :
- 1) An actor instigates components.
 - 2) Object diagram represents instances of objects.
 - 3) Black diamond is used to indicate aggregations.
 - 4) Specialization is an is-kind relation.
 - 5) Transitions are shown in class diagram.
 - 6) Packages are combinations of all things.
-

6



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

**T.E. (Information Technology) (Part – II) (New CGPA)
Examination, 2017
OBJECT ORIENTED MODELING AND DESIGN**

Day and Date : Wednesday, 17-5-2017
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 four** : **16**
- a) What are the tasks performed in object design phase in Object Modeling Technique ?
 - b) Define aggregation and illustrate its use.
 - c) What are links ? How are they different from associations ?
 - d) Compare between object model and functional model.
 - e) With an example bring out the exact meaning of the concept 'package and sheet'.
3. Attempt **any two** : **12**
- a) What is OSCAR ? How was it modeled ?
 - b) How is tripod combined in the object design phase and what are the steps conducted in design of a computer animation using OMT ?
 - c) Draw the three models of analysis phase of OMT for a Hotel Management System.

Set R



SECTION – II

4. Attempt **any four** : **16**
- a) What are the methods to model groups of elements in UML ?
 - b) Define concrete instances. How are they modeled in UML ?
 - c) What are classifier and visibility structures ?
 - d) Compare between component and sequence UML diagrams.
 - e) With an example bring out the exact meaning of the concept 'Things in UML'.
5. Attempt **any two** : **12**
- a) Reproduce a use case diagram for a Water Distribution System.
 - b) Draw a sequence diagram for an admission procedure conducted by a university.
 - c) Draw a collaboration diagram for the consultancy work conducted in your college.
-



- 4) Collaboration and deployment diagrams represent _____ diagrams.
- A) Use case and deployment B) Sequence and collaboration
C) Interaction D) Object and class
- 5) What is the programming style of OO conceptual model ?
- A) Invariant relationship B) Algorithm
C) Classes and objects D) Procedural
- 6) UML stands for
- A) Un-numbered Meta Lists B) Unified Modeling Language
C) Standard Libraries D) Un-liked Modeling Lists
- 7) In a dynamic model a transition is represented by
- A) Rounded rectangle B) Arrow
C) Diamond D) Ellipse
- 8) _____ are some occurrences that can trigger state transition of an object or a group of objects.
- A) States B) Links
C) Associations D) Events
-



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

**T.E. (Information Technology) (Part – II) (New CGPA)
Examination, 2017
OBJECT ORIENTED MODELING AND DESIGN**

Day and Date : Wednesday, 17-5-2017
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 four** : **16**
- a) What are the tasks performed in object design phase in Object Modeling Technique ?
 - b) Define aggregation and illustrate its use.
 - c) What are links ? How are they different from associations ?
 - d) Compare between object model and functional model.
 - e) With an example bring out the exact meaning of the concept 'package and sheet'.
3. Attempt **any two** : **12**
- a) What is OSCAR ? How was it modeled ?
 - b) How is tripod combined in the object design phase and what are the steps conducted in design of a computer animation using OMT ?
 - c) Draw the three models of analysis phase of OMT for a Hotel Management System.

Set S



SECTION – II

4. Attempt **any four** : **16**
- a) What are the methods to model groups of elements in UML ?
 - b) Define concrete instances. How are they modeled in UML ?
 - c) What are classifier and visibility structures ?
 - d) Compare between component and sequence UML diagrams.
 - e) With an example bring out the exact meaning of the concept 'Things in UML'.
5. Attempt **any two** : **12**
- a) Reproduce a use case diagram for a Water Distribution System.
 - b) Draw a sequence diagram for an admission procedure conducted by a university.
 - c) Draw a collaboration diagram for the consultancy work conducted in your college.
-



SLR-VB – 279

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

Set	P
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS (New CGPA)**

Day and Date : Friday, 19-5-2017
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.**
3) **All questions are compulsory.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**
- 1) The _____ control is responsible for handling interrupts and for communicating with the machine
a) software b) hardware c) both d) none
 - 2) Inode, which contains a description of the disk layout of the file data
a) file owner b) access permissions
c) access times d) all of the above
 - 3) When executing read and write system calls, the kernel uses the _____ to access the user file descriptor table.
a) inode b) file descriptor c) both d) none
 - 4) _____ check for available kernel resources, free proc table slot, unique PID number;
a) Exit() b) open() c) Fork() d) read()
 - 5) Output of "grep main a.c b.c c.c |wc – 1"
a) counts the number of lines in the files that contain the string "main"
b) searches the three files a.c, b.c, and e.c for lines containing the string "main"
c) output of wc piped to command grep
d) none

P.T.O.



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

**T.E. (Information Technology) (Part – II) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS (New CGPA)**

Day and Date : Friday, 19-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three** : **(3×4=12)**
- 1) Describe the function of pipe() with example.
 - 2) What are the advantages of buffer cache ?
 - 3) How UNIX systems handle interrupts and exception conditions ?
 - 4) What do you mean by block in UNIX operating system ?
3. Solve **any two** : **(2×8=16)**
- 1) Explain read () and write () system call for copying content of file 1 to file 2.
 - 2) Explain breada algorithm. How it is differs from bread ?
 - 3) Differentiate between open() and creat() system call with example.

SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) List down and briefly explain the functions of Clock interrupt handler.
 - 2) What is terminal driver ? List functions of line discipline.
 - 3) Write short notes on times () system call.
 - 4) Write a short note on C lists.
5. Solve **any two** : **(2×8=16)**
- 1) Explain algorithm for process termination.
 - 2) What is a region ? List fields in region table entry. List operations along with algorithm name which are used to manipulate region. Explain any one operation in detail.
 - 3) What are the signals in UNIX OS ? Write down the algorithm for handling signals.



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

**T.E. (Information Technology) (Part – II) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS (New CGPA)**

Day and Date : Friday, 19-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three** : **(3×4=12)**
- 1) Describe the function of pipe() with example.
 - 2) What are the advantages of buffer cache ?
 - 3) How UNIX systems handle interrupts and exception conditions ?
 - 4) What do you mean by block in UNIX operating system ?
3. Solve **any two** : **(2×8=16)**
- 1) Explain read () and write () system call for copying content of file 1 to file 2.
 - 2) Explain breada algorithm. How it is differs from bread ?
 - 3) Differentiate between open() and creat() system call with example.

SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) List down and briefly explain the functions of Clock interrupt handler.
 - 2) What is terminal driver ? List functions of line discipline.
 - 3) Write short notes on times () system call.
 - 4) Write a short note on C lists.
5. Solve **any two** : **(2×8=16)**
- 1) Explain algorithm for process termination.
 - 2) What is a region ? List fields in region table entry. List operations along with algorithm name which are used to manipulate region. Explain any one operation in detail.
 - 3) What are the signals in UNIX OS ? Write down the algorithm for handling signals.



SLR-VB – 279

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

Set	R
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS (New CGPA)**

Day and Date : Friday, 19-5-2017
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.**
3) **All questions are compulsory.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**
- Output of “grep main a.c b.c c.c |wc – 1”
 - counts the number of lines in the files that contain the string “main”
 - searches the three files a.c, b.c, and e.c for lines containing the string “main”
 - output of wc piped to command grep
 - none
 - In file structure the file table is a global kernel structure, but the _____ table is allocated per process.
 - inode
 - PID
 - user file descriptor
 - none
 - Which of the following features of UNIX may be used for inter process communication ?
 - signals
 - pipes
 - semaphore
 - all of these
 - When a process executes a system call, it leaves a state “user running” and enters a state _____.
 - pre-empted
 - created
 - kernel running
 - none of these

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) When a process assesses a page that is not part of its working set, it incurs a _____
- a) invalidity page fault b) validity page fault
c) deferred page fault d) non deferred page fault
- 7) Algorithm alloc is used to _____.
- a) Allocate text region b) Allocate disk block
c) Allocate data region d) Allocate inode
- 8) _____ gives a measure of how much time the system is executing in user mode versus kernel mode.
- a) Time system call b) Accounting and statistics
c) Profiling d) All
- 9) If a process has executed the exit system call, then it enters in _____ state.
- a) Sleeping b) Pre-empted
c) Zombie d) Ready to run
- 10) _____ is commonly called INIT because it is responsible for initialization of new process.
- a) Process 0 b) Process 1 c) Process 2 d) Process 5
- 11) The _____ control is responsible for handling interrupts and for communicating with the machine
- a) software b) hardware c) both d) none
- 12) Inode, which contains a description of the disk layout of the file data
- a) file owner b) access permissions
c) access times d) all of the above
- 13) When executing read and write system calls, the kernel uses the _____ to access the user file descriptor table.
- a) inode b) file descriptor c) both d) none
- 14) _____ check for available kernel resources, free proc table slot, unique PID number;
- a) Exit() b) open() c) Fork() d) read()
-



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

**T.E. (Information Technology) (Part – II) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS (New CGPA)**

Day and Date : Friday, 19-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three** : **(3×4=12)**
- 1) Describe the function of pipe() with example.
 - 2) What are the advantages of buffer cache ?
 - 3) How UNIX systems handle interrupts and exception conditions ?
 - 4) What do you mean by block in UNIX operating system ?
3. Solve **any two** : **(2×8=16)**
- 1) Explain read () and write () system call for copying content of file 1 to file 2.
 - 2) Explain breada algorithm. How it is differs from bread ?
 - 3) Differentiate between open() and creat() system call with example.

SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) List down and briefly explain the functions of Clock interrupt handler.
 - 2) What is terminal driver ? List functions of line discipline.
 - 3) Write short notes on times () system call.
 - 4) Write a short note on C lists.
5. Solve **any two** : **(2×8=16)**
- 1) Explain algorithm for process termination.
 - 2) What is a region ? List fields in region table entry. List operations along with algorithm name which are used to manipulate region. Explain any one operation in detail.
 - 3) What are the signals in UNIX OS ? Write down the algorithm for handling signals.



SLR-VB – 279

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

Set	S
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS (New CGPA)**

Day and Date : Friday, 19-5-2017
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.**
3) **All questions are compulsory.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**
- 1) When a process assesses a page that is not part of its working set, it incurs a _____
a) invalidity page fault b) validity page fault
c) deferred page fault d) non deferred page fault
 - 2) Algorithm alloc is used to _____.
a) Allocate text region b) Allocate disk block
c) Allocate data region d) Allocate inode
 - 3) _____ gives a measure of how much time the system is executing in user mode versus kernel mode.
a) Time system call b) Accounting and statistics
c) Profiling d) All
 - 4) If a process has executed the exit system call, then it enters in _____ state.
a) Sleeping b) Pre-empted
c) Zombie d) Ready to run
 - 5) _____ is commonly called INIT because it is responsible for initialization of new process.
a) Process 0 b) Process 1 c) Process 2 d) Process 5

P.T.O.



- 6) The _____ control is responsible for handling interrupts and for communicating with the machine
a) software b) hardware c) both d) none
- 7) Inode, which contains a description of the disk layout of the file data
a) file owner b) access permissions
c) access times d) all of the above
- 8) When executing read and write system calls, the kernel uses the _____ to access the user file descriptor table.
a) inode b) file descriptor c) both d) none
- 9) _____ check for available kernel resources, free proc table slot, unique PID number;
a) Exit() b) open() c) Fork() d) read()
- 10) Output of “grep main a.c b.c c.c |wc – 1”
a) counts the number of lines in the files that contain the string “main”
b) searches the three files a.c, b.c, and e.c for lines containing the string “main”
c) output of wc piped to command grep
d) none
- 11) In file structure the file table is a global kernel structure, but the _____ table is allocated per process.
a) inode b) PID
c) user file descriptor d) none
- 12) Which of the following features of UNIX may be used for inter process communication ?
a) signals b) pipes
c) semaphore d) all of these
- 13) When a process executes a system call, it leaves a state “user running” and enters a state _____.
a) pre-empted b) created
c) kernel running d) none of these
- 14) The memory management hardware divides physical memory into set of equal sized blocks called _____.
a) Region b) Pregion c) Pages d) Offset



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

**T.E. (Information Technology) (Part – II) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS (New CGPA)**

Day and Date : Friday, 19-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three** : **(3×4=12)**
- 1) Describe the function of pipe() with example.
 - 2) What are the advantages of buffer cache ?
 - 3) How UNIX systems handle interrupts and exception conditions ?
 - 4) What do you mean by block in UNIX operating system ?
3. Solve **any two** : **(2×8=16)**
- 1) Explain read () and write () system call for copying content of file 1 to file 2.
 - 2) Explain breada algorithm. How it is differs from bread ?
 - 3) Differentiate between open() and creat() system call with example.

SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) List down and briefly explain the functions of Clock interrupt handler.
 - 2) What is terminal driver ? List functions of line discipline.
 - 3) Write short notes on times () system call.
 - 4) Write a short note on C lists.
5. Solve **any two** : **(2×8=16)**
- 1) Explain algorithm for process termination.
 - 2) What is a region ? List fields in region table entry. List operations along with algorithm name which are used to manipulate region. Explain any one operation in detail.
 - 3) What are the signals in UNIX OS ? Write down the algorithm for handling signals.



SLR-VB – 280

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

Set	P
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (New) (CGPA)**

Day and Date : Monday, 22-5-2017
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 : **(1×14=14)**

- 1) _____ metric is used to quantify the resistance of a design to the potential ripple effects that are caused by changes in modules.
a) Network metric b) Stability metric
c) Information flow metric d) None
- 2) Problems with using Lines of Code to measure the size of a product include(s)
a) The creation of source code is only part of the development effort
b) The Lines of Code (LOC) will differ between languages and cannot be measured for some languages
c) Should comments, data definitions etc. (i.e. non-executable LOC) be included as well
d) All of the above
- 3) The software entity is open for _____, but closed for _____.
a) Alteration and Modification b) Modification and Beatification
c) Extension and Modification d) Extension and Accommodation
- 4) _____ objects specify the control mechanism for the proposed system.
a) Interface b) Application c) Utility d) None
- 5) Sub class gets all the features from its super class is called as
a) Single inheritance b) Multiple inheritance
c) Strict inheritance d) Non-strict inheritance
- 6) _____ is used to represent the design in function-oriented.
a) Class diagram b) Sequence diagram
c) Structure charts d) Both a) and b)

P.T.O.



- 7) The aim of software engineering is to produce software that is
 - a) Fault-free, delivered on time
 - b) Delivered within budget
 - c) Satisfies users needs
 - d) All of these are the aims of software engineering
 - 8) What is the first activity in Software Project Planning ?
 - a) Determination of software scope
 - b) Determination of budget
 - c) Find out the team size
 - d) None of the above
 - 9) A COCOMO model is
 - a) Common Cost Estimation Model
 - b) Constructive Cost Estimation Model
 - c) Complete Cost Estimation Model
 - d) Comprehensive Cost Estimation Model
 - 10) In project execution and monitoring, every project is divided into multiple phases. According to that in which phase of SDLC all major tasks are performed ?
 - a) Milestones checklist
 - b) Status reports
 - c) Activity monitoring
 - d) None of the above
 - 11) What is the Agile approach to doing design early in a project ?
 - a) A big design up front is always a good idea
 - b) Just enough design up front gives a good foundation to start from and helps to mitigate risk, without wasting unnecessarily time
 - c) No design up front is the best approach as most of the fun of a project is in discovery of the unexpected
 - d) Design has no place in an Agile project
 - 12) Which of the following best represents the Agile approach to planning ?
 - a) Planning is a waste of time and should not be done
 - b) Planning should be done in detail at the outset and then not revisited
 - c) Planning is an iterative job and involves the whole team
 - d) Planning should all be done by the Project Manager
 - 13) White box testing, a software testing technique is sometimes called
 - a) Basic path
 - b) Graph testing
 - c) Dataflow
 - d) Glass box testing
 - 14) When software is developed using a test-driven approach, the unit test may take the place of _____. Each unit test can be seen as a design element specifying classes, methods and observable behaviour.
 - a) Informal design
 - b) Formal design
 - c) Unique design
 - d) Both a) and b)
-



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

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (New) (CGPA)**

Day and Date : Monday, 22-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain the importance of various software engineering principles in software development.
 - 2) What are the advantages of using agile process model over the classical waterfall model ?
 - 3) Explain concept of function oriented design in software development.
 - 4) What is an SRS ? Explain the desirable characteristics and components of a good SRS document.
 - 5) What is detailed design ? Why design verification is required ?
3. Attempt **any two** : **(2×8=16)**
- 1) Briefly explain the role of software configuration management process in software engineering.
 - 2) What is architectural style ? Explain the different views of architectural styles.
 - 3) Explain the software design methods coupling, cohesion and open closed principle in detail.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on :
 - a) Top-down estimation
 - b) Bottom-up estimation.
 - 2) Explain the terms measurements, project tracking of project monitoring plan.
 - 3) What is Agile Project Management ? Explain the Agile Manifesto Principles.
 - 4) Explain RUP type of Iterative PMLC Model of Agile Project Management.
 - 5) What is software testing ? Explain the difference between unit and system testing.

Set P



5. Attempt **any two** : **(2×8=16)**

- 1) Explain characteristics, strengths and weakness of an Adaptive PMLC Model and also explain any one type of Adaptive PMLC Model.
 - 2) Explain the Risk Management Tasks in detail.
 - 3) Write a short note on :
 - a) Black-Box Testing
 - b) White-Box Testing
 - c) Unit testing.
-



SLR-VB – 280

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

Set	Q
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (New) (CGPA)**

Day and Date : Monday, 22-5-2017
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 :

(1×14=14)

- 1) What is the first activity in Software Project Planning ?
 - a) Determination of software scope
 - b) Determination of budget
 - c) Find out the team size
 - d) None of the above
- 2) A COCOMO model is
 - a) Common Cost Estimation Model
 - b) Constructive Cost Estimation Model
 - c) Complete Cost Estimation Model
 - d) Comprehensive Cost Estimation Model
- 3) In project execution and monitoring, every project is divided into multiple phases. According to that in which phase of SDLC all major tasks are performed ?
 - a) Milestones checklist
 - b) Status reports
 - c) Activity monitoring
 - d) None of the above
- 4) What is the Agile approach to doing design early in a project ?
 - a) A big design up front is always a good idea
 - b) Just enough design up front gives a good foundation to start from and helps to mitigate risk, without wasting unnecessarily time
 - c) No design up front is the best approach as most of the fun of a project is in discovery of the unexpected
 - d) Design has no place in an Agile project

P.T.O.



- 5) Which of the following best represents the Agile approach to planning ?
 - a) Planning is a waste of time and should not be done
 - b) Planning should be done in detail at the outset and then not revisited
 - c) Planning is an iterative job and involves the whole team
 - d) Planning should all be done by the Project Manager
- 6) White box testing, a software testing technique is sometimes called
 - a) Basic path
 - b) Graph testing
 - c) Dataflow
 - d) Glass box testing
- 7) When software is developed using a test-driven approach, the unit test may take the place of _____. Each unit test can be seen as a design element specifying classes, methods and observable behaviour.
 - a) Informal design
 - b) Formal design
 - c) Unique design
 - d) Both a) and b)
- 8) _____ metric is used to quantify the resistance of a design to the potential ripple effects that are caused by changes in modules.
 - a) Network metric
 - b) Stability metric
 - c) Information flow metric
 - d) None
- 9) Problems with using Lines of Code to measure the size of a product include(s)
 - a) The creation of source code is only part of the development effort
 - b) The Lines of Code (LOC) will differ between languages and cannot be measured for some languages
 - c) Should comments, data definitions etc. (i.e. non-executable LOC) be included as well
 - d) All of the above
- 10) The software entity is open for _____, but closed for _____.
 - a) Alteration and Modification
 - b) Modification and Beatification
 - c) Extension and Modification
 - d) Extension and Accommodation
- 11) _____ objects specify the control mechanism for the proposed system.
 - a) Interface
 - b) Application
 - c) Utility
 - d) None
- 12) Sub class gets all the features from its super class is called as
 - a) Single inheritance
 - b) Multiple inheritance
 - c) Strict inheritance
 - d) Non-strict inheritance
- 13) _____ is used to represent the design in function-oriented.
 - a) Class diagram
 - b) Sequence diagram
 - c) Structure charts
 - d) Both a) and b)
- 14) The aim of software engineering is to produce software that is
 - a) Fault-free, delivered on time
 - b) Delivered within budget
 - c) Satisfies users needs
 - d) All of these are the aims of software engineering



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

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (New) (CGPA)**

Day and Date : Monday, 22-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain the importance of various software engineering principles in software development.
 - 2) What are the advantages of using agile process model over the classical waterfall model ?
 - 3) Explain concept of function oriented design in software development.
 - 4) What is an SRS ? Explain the desirable characteristics and components of a good SRS document.
 - 5) What is detailed design ? Why design verification is required ?
3. Attempt **any two** : **(2×8=16)**
- 1) Briefly explain the role of software configuration management process in software engineering.
 - 2) What is architectural style ? Explain the different views of architectural styles.
 - 3) Explain the software design methods coupling, cohesion and open closed principle in detail.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on :
 - a) Top-down estimation
 - b) Bottom-up estimation.
 - 2) Explain the terms measurements, project tracking of project monitoring plan.
 - 3) What is Agile Project Management ? Explain the Agile Manifesto Principles.
 - 4) Explain RUP type of Iterative PMLC Model of Agile Project Management.
 - 5) What is software testing ? Explain the difference between unit and system testing.

Set Q



5. Attempt **any two** : **(2×8=16)**
- 1) Explain characteristics, strengths and weakness of an Adaptive PMLC Model and also explain any one type of Adaptive PMLC Model.
 - 2) Explain the Risk Management Tasks in detail.
 - 3) Write a short note on :
 - a) Black-Box Testing
 - b) White-Box Testing
 - c) Unit testing.
-



SLR-VB – 280

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

Set	R
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (New) (CGPA)**

Day and Date : Monday, 22-5-2017
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 :

(1×14=14)

- 1) Sub class gets all the features from its super class is called as
 - a) Single inheritance
 - b) Multiple inheritance
 - c) Strict inheritance
 - d) Non-strict inheritance
- 2) _____ is used to represent the design in function-oriented.
 - a) Class diagram
 - b) Sequence diagram
 - c) Structure charts
 - d) Both a) and b)
- 3) The aim of software engineering is to produce software that is
 - a) Fault-free, delivered on time
 - b) Delivered within budget
 - c) Satisfies users needs
 - d) All of these are the aims of software engineering
- 4) What is the first activity in Software Project Planning ?
 - a) Determination of software scope
 - b) Determination of budget
 - c) Find out the team size
 - d) None of the above
- 5) A COCOMO model is
 - a) Common Cost Estimation Model
 - b) Constructive Cost Estimation Model
 - c) Complete Cost Estimation Model
 - d) Comprehensive Cost Estimation Model

P.T.O.



- 6) In project execution and monitoring, every project is divided into multiple phases. According to that in which phase of SDLC all major tasks are performed ?
- a) Milestones checklist b) Status reports
c) Activity monitoring d) None of the above
- 7) What is the Agile approach to doing design early in a project ?
- a) A big design up front is always a good idea
b) Just enough design up front gives a good foundation to start from and helps to mitigate risk, without wasting unnecessarily time
c) No design up front is the best approach as most of the fun of a project is in discovery of the unexpected
d) Design has no place in an Agile project
- 8) Which of the following best represents the Agile approach to planning ?
- a) Planning is a waste of time and should not be done
b) Planning should be done in detail at the outset and then not revisited
c) Planning is an iterative job and involves the whole team
d) Planning should all be done by the Project Manager
- 9) White box testing, a software testing technique is sometimes called
- a) Basic path b) Graph testing c) Dataflow d) Glass box testing
- 10) When software is developed using a test-driven approach, the unit test may take the place of _____. Each unit test can be seen as a design element specifying classes, methods and observable behaviour.
- a) Informal design b) Formal design c) Unique design d) Both a) and b)
- 11) _____ metric is used to quantify the resistance of a design to the potential ripple effects that are caused by changes in modules.
- a) Network metric b) Stability metric
c) Information flow metric d) None
- 12) Problems with using Lines of Code to measure the size of a product include(s)
- a) The creation of source code is only part of the development effort
b) The Lines of Code (LOC) will differ between languages and cannot be measured for some languages
c) Should comments, data definitions etc. (i.e. non-executable LOC) be included as well
d) All of the above
- 13) The software entity is open for _____, but closed for _____.
- a) Alteration and Modification b) Modification and Beatification
c) Extension and Modification d) Extension and Accommodation
- 14) _____ objects specify the control mechanism for the proposed system.
- a) Interface b) Application c) Utility d) None



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

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (New) (CGPA)**

Day and Date : Monday, 22-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain the importance of various software engineering principles in software development.
 - 2) What are the advantages of using agile process model over the classical waterfall model ?
 - 3) Explain concept of function oriented design in software development.
 - 4) What is an SRS ? Explain the desirable characteristics and components of a good SRS document.
 - 5) What is detailed design ? Why design verification is required ?
3. Attempt **any two** : **(2×8=16)**
- 1) Briefly explain the role of software configuration management process in software engineering.
 - 2) What is architectural style ? Explain the different views of architectural styles.
 - 3) Explain the software design methods coupling, cohesion and open closed principle in detail.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on :
 - a) Top-down estimation
 - b) Bottom-up estimation.
 - 2) Explain the terms measurements, project tracking of project monitoring plan.
 - 3) What is Agile Project Management ? Explain the Agile Manifesto Principles.
 - 4) Explain RUP type of Iterative PMLC Model of Agile Project Management.
 - 5) What is software testing ? Explain the difference between unit and system testing.

Set R



5. Attempt **any two** :

(2×8=16)

- 1) Explain characteristics, strengths and weakness of an Adaptive PMLC Model and also explain any one type of Adaptive PMLC Model.
 - 2) Explain the Risk Management Tasks in detail.
 - 3) Write a short note on :
 - a) Black-Box Testing
 - b) White-Box Testing
 - c) Unit testing.
-



SLR-VB – 280

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

Set	S
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (New) (CGPA)**

Day and Date : Monday, 22-5-2017
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 :

(1×14=14)

- 1) In project execution and monitoring, every project is divided into multiple phases. According to that in which phase of SDLC all major tasks are performed ?
 - a) Milestones checklist
 - b) Status reports
 - c) Activity monitoring
 - d) None of the above
- 2) What is the Agile approach to doing design early in a project ?
 - a) A big design up front is always a good idea
 - b) Just enough design up front gives a good foundation to start from and helps to mitigate risk, without wasting unnecessarily time
 - c) No design up front is the best approach as most of the fun of a project is in discovery of the unexpected
 - d) Design has no place in an Agile project
- 3) Which of the following best represents the Agile approach to planning ?
 - a) Planning is a waste of time and should not be done
 - b) Planning should be done in detail at the outset and then not revisited
 - c) Planning is an iterative job and involves the whole team
 - d) Planning should all be done by the Project Manager
- 4) White box testing, a software testing technique is sometimes called
 - a) Basic path
 - b) Graph testing
 - c) Dataflow
 - d) Glass box testing
- 5) When software is developed using a test-driven approach, the unit test may take the place of _____. Each unit test can be seen as a design element specifying classes, methods and observable behaviour.
 - a) Informal design
 - b) Formal design
 - c) Unique design
 - d) Both a) and b)

P.T.O.



- 6) _____ metric is used to quantify the resistance of a design to the potential ripple effects that are caused by changes in modules.
- a) Network metric
 - b) Stability metric
 - c) Information flow metric
 - d) None
- 7) Problems with using Lines of Code to measure the size of a product include(s)
- a) The creation of source code is only part of the development effort
 - b) The Lines of Code (LOC) will differ between languages and cannot be measured for some languages
 - c) Should comments, data definitions etc. (i.e. non-executable LOC) be included as well
 - d) All of the above
- 8) The software entity is open for _____, but closed for _____.
- a) Alteration and Modification
 - b) Modification and Beatification
 - c) Extension and Modification
 - d) Extension and Accommodation
- 9) _____ objects specify the control mechanism for the proposed system.
- a) Interface
 - b) Application
 - c) Utility
 - d) None
- 10) Sub class gets all the features from its super class is called as
- a) Single inheritance
 - b) Multiple inheritance
 - c) Strict inheritance
 - d) Non-strict inheritance
- 11) _____ is used to represent the design in function-oriented.
- a) Class diagram
 - b) Sequence diagram
 - c) Structure charts
 - d) Both a) and b)
- 12) The aim of software engineering is to produce software that is
- a) Fault-free, delivered on time
 - b) Delivered within budget
 - c) Satisfies users needs
 - d) All of these are the aims of software engineering
- 13) What is the first activity in Software Project Planning ?
- a) Determination of software scope
 - b) Determination of budget
 - c) Find out the team size
 - d) None of the above
- 14) A COCOMO model is
- a) Common Cost Estimation Model
 - b) Constructive Cost Estimation Model
 - c) Complete Cost Estimation Model
 - d) Comprehensive Cost Estimation Model
-



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

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (New) (CGPA)**

Day and Date : Monday, 22-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain the importance of various software engineering principles in software development.
 - 2) What are the advantages of using agile process model over the classical waterfall model ?
 - 3) Explain concept of function oriented design in software development.
 - 4) What is an SRS ? Explain the desirable characteristics and components of a good SRS document.
 - 5) What is detailed design ? Why design verification is required ?
3. Attempt **any two** : **(2×8=16)**
- 1) Briefly explain the role of software configuration management process in software engineering.
 - 2) What is architectural style ? Explain the different views of architectural styles.
 - 3) Explain the software design methods coupling, cohesion and open closed principle in detail.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on :
 - a) Top-down estimation
 - b) Bottom-up estimation.
 - 2) Explain the terms measurements, project tracking of project monitoring plan.
 - 3) What is Agile Project Management ? Explain the Agile Manifesto Principles.
 - 4) Explain RUP type of Iterative PMLC Model of Agile Project Management.
 - 5) What is software testing ? Explain the difference between unit and system testing.

Set S



5. Attempt **any two** : **(2×8=16)**
- 1) Explain characteristics, strengths and weakness of an Adaptive PMLC Model and also explain any one type of Adaptive PMLC Model.
 - 2) Explain the Risk Management Tasks in detail.
 - 3) Write a short note on :
 - a) Black-Box Testing
 - b) White-Box Testing
 - c) Unit testing.
-



SLR-VB – 281

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

Set

P

**T.E. (Information Technology) (Part – II) Examination, 2017
MOBILE APPLICATION DEVELOPMENT (New CGPA)**

Day and Date : Wednesday, 24-5-2017
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 answer : 14

- 1) AsyncTask class provides two key callback methods: _____ and _____
- a) doInBackground(Params params . . .), onProgressUpdate(Progress . . . progress)
 - b) onStart(), onProgressUpdate(Progress . . . progress)
 - c) doInBatch(Params params . . .), onProcessUpdate (Progress . . . progress)
 - d) doInBackground(), onProgressUpdate(Progress . . . progress)
- 2) _____ is used to run executable files of an app.
- a) Dalvik Virtual Machine
 - b) Java Virtual Machine
 - c) Notification Manager
 - d) Webkit
- 3) The life cycle of a Service begins when a call to the _____ method is made in another component.
- a) start()
 - b) startService()
 - c) onStartCommand()
 - d) onStartService()
- 4) _____ tag needs to be added into AndroidManifest.xml file to register new service in android application.
- a) activity
 - b) intent-filter
 - c) service
 - d) application
- 5) Which among these are NOT a part of Android's native libraries ?
- a) SQLite
 - b) Dalvik
 - c) OpenGL
 - d) Webkit

P.T.O.



- 6) What is contained within the Layout xml file ?
- a) The code which is compiled to run the app.
 - b) The strings used in the app.
 - c) The permissions required by the app.
 - d) Orientations and layouts that specify what the display looks like
- 7) What is ANR responding time in android ?
- a) 10 sec.
 - b) 5 sec.
 - c) 1 min.
 - d) None of the above
- 8) Image to be moved by in quick succession of time are saved in _____ folder.
- a) drawable_hdpi
 - b) drawable_ldpi
 - c) drawable_mdpi
 - d) none
- 9) _____ is location provider.
- a) Network
 - b) GPS
 - c) Both a) and b)
 - d) None
- 10) _____ is characteristic associated with sensor.
- a) Power
 - b) Accuracy
 - c) Vendor
 - d) All
- 11) _____ is state of MediaPlayer.
- a) Prepare
 - b) Pause
 - c) Start
 - d) All
- 12) _____ test internal structure of working of application.
- a) Black box testing
 - b) White box testing
 - c) Regression testing
 - d) None
- 13) _____ , _____ functions of editor need to be invoked to write integer value in Shared Preference file.
- a) write, commit
 - b) writeInt, commit
 - c) write, commitInt
 - d) writePref, commit
- 14) _____ listener is used to notify system when sensor data is changed.
- a) SensorListener
 - b) SensorEventListener
 - c) SensorDataListener
 - d) None



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

**T.E. (Information Technology) (Part – II) Examination, 2017
MOBILE APPLICATION DEVELOPMENT (New CGPA)**

Day and Date : Wednesday, 24-5-2017
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=12)**
- a) List and explain features of Android platform.
 - b) Explain the benefits of AsyncTask over Threads for implementing long running tasks.
 - c) Explain Android App execution flow with diagram.
 - d) Define layouts in android with examples.
3. Attempt **any one** : **(1×8=8)**
- a) Write short note :
 - i) String resources in Android
 - ii) Image resources in Android
 - b) Explain activity component and its life cycle call back methods in detail.
4. Attempt **any one** : **(1×8=8)**
- a) Draw Android platform architecture. Discuss the various layers and their components and functions.
 - b) Write a short note on :
 - i) TelephonyManager
 - ii) SmsManager in Android.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Write a note on Shared Preferences.
 - b) Explain Drawable animation in detail.
 - c) Write a note on black box testing.
 - d) Write a note on JUnit.

Set P



6. Attempt **any one** : **(1×8=8)**
- a) Write a note on external storage api's in android. Write an android program to create file "chathistory.txt" on external storage directory (sdcard) and write a String "chat log record" in the file.
 - b) Describe types of sensors. Explain process to use Accelerometer.
7. Attempt **any one** : **(1×8=8)**
- a) Explain app uploading procedure on API store in detail.
 - b) What is location based service ? Explain how GPS can be used to track location of device. (explain use of LocationManager, LocationListener, Criteria classes).
-



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

Set

Q

**T.E. (Information Technology) (Part – II) Examination, 2017
MOBILE APPLICATION DEVELOPMENT (New CGPA)**

Day and Date : Wednesday, 24-5-2017
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 answer : **14**

- 1) Image to be moved by in quick succession of time are saved in _____ folder.
 - a) drawable_hdpi
 - b) drawable_ldpi
 - c) drawable_mdpi
 - d) none
- 2) _____ is location provider.
 - a) Network
 - b) GPS
 - c) Both a) and b)
 - d) None
- 3) _____ is characteristic associated with sensor.
 - a) Power
 - b) Accuracy
 - c) Vendor
 - d) All
- 4) _____ is state of MediaPlayer.
 - a) Prepare
 - b) Pause
 - c) Start
 - d) All
- 5) _____ test internal structure of working of application.
 - a) Black box testing
 - b) White box testing
 - c) Regression testing
 - d) None
- 6) _____, _____ functions of editor need to be invoked to write integer value in Shared Preference file.
 - a) write, commit
 - b) writeInt, commit
 - c) write, commitInt
 - d) writePref, commit



- 7) _____ listener is used to notify system when sensor data is changed.
- a) SensorListener
 - b) SensorEventListener
 - c) SensorDataListener
 - d) None
- 8) AsyncTask class provides two key callback methods: _____ and _____
- a) doInBackground(Params params . . .), onProgressUpdate(Progress . . . progress)
 - b) onStart(), onProgressUpdate(Progress . . . progress)
 - c) doInBatch(Params params . . .), onProcessUpdate (Progress . . . progress)
 - d) doInBackground(), onProgressUpdate(Progress . . . progress)
- 9) _____ is used to run executable files of an app.
- a) Dalvik Virtual Machine
 - b) Java Virtual Machine
 - c) Notification Manager
 - d) Webkit
- 10) The life cycle of a Service begins when a call to the _____ method is made in another component.
- a) start()
 - b) startService()
 - c) onStartCommand()
 - d) onStartService()
- 11) _____ tag needs to be added into AndroidManifest.xml file to register new service in android application.
- a) activity
 - b) intent-filter
 - c) service
 - d) application
- 12) Which among these are NOT a part of Android's native libraries ?
- a) SQLite
 - b) Dalvik
 - c) OpenGL
 - d) Webkit
- 13) What is contained within the Layout xml file ?
- a) The code which is compiled to run the app.
 - b) The strings used in the app.
 - c) The permissions required by the app.
 - d) Orientations and layouts that specify what the display looks like
- 14) What is ANR responding time in android ?
- a) 10 sec.
 - b) 5 sec.
 - c) 1 min.
 - d) None of the above
-



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

**T.E. (Information Technology) (Part – II) Examination, 2017
MOBILE APPLICATION DEVELOPMENT (New CGPA)**

Day and Date : Wednesday, 24-5-2017
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=12)**
- a) List and explain features of Android platform.
 - b) Explain the benefits of AsyncTask over Threads for implementing long running tasks.
 - c) Explain Android App execution flow with diagram.
 - d) Define layouts in android with examples.
3. Attempt **any one** : **(1×8=8)**
- a) Write short note :
 - i) String resources in Android
 - ii) Image resources in Android
 - b) Explain activity component and its life cycle call back methods in detail.
4. Attempt **any one** : **(1×8=8)**
- a) Draw Android platform architecture. Discuss the various layers and their components and functions.
 - b) Write a short note on :
 - i) TelephonyManager
 - ii) SmsManager in Android.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Write a note on Shared Preferences.
 - b) Explain Drawable animation in detail.
 - c) Write a note on black box testing.
 - d) Write a note on JUnit.

Set Q



6. Attempt **any one** : **(1×8=8)**
- a) Write a note on external storage api's in android. Write an android program to create file "chathistory.txt" on external storage directory (sdcard) and write a String "chat log record" in the file.
 - b) Describe types of sensors. Explain process to use Accelerometer.
7. Attempt **any one** : **(1×8=8)**
- a) Explain app uploading procedure on API store in detail.
 - b) What is location based service ? Explain how GPS can be used to track location of device. (explain use of LocationManager, LocationListener, Criteria classes).
-



- 6) _____ is characteristic associated with sensor.
a) Power b) Accuracy c) Vendor d) All
- 7) _____ is state of MediaPlayer.
a) Prepare b) Pause c) Start d) All
- 8) _____ test internal structure of working of application.
a) Black box testing b) White box testing
c) Regression testing d) None
- 9) _____, _____ functions of editor need to be invoked to write integer value in Shared Preference file.
a) write, commit b) writeInt, commit
c) write, commitInt d) writePref, commit
- 10) _____ listener is used to notify system when sensor data is changed.
a) SensorListener b) SensorEventListener
c) SensorDataListener d) None
- 11) AsyncTask class provides two key callback methods: _____ and _____
a) doInBackground(Params params . . .), onProgressUpdate(Progress . . . progress)
b) onStart(), onProgressUpdate(Progress . . . progress)
c) doInBackground(Params params . . .), onProcessUpdate (Progress . . . progress)
d) doInBackground(), onProgressUpdate(Progress . . . progress)
- 12) _____ is used to run executable files of an app.
a) Dalvik Virtual Machine b) Java Virtual Machine
c) Notification Manager d) Webkit
- 13) The life cycle of a Service begins when a call to the _____ method is made in another component.
a) start() b) startService()
c) onStartCommand() d) onStartService()
- 14) _____ tag needs to be added into AndroidManifest.xml file to register new service in android application.
a) activity b) intent-filter c) service d) application



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

**T.E. (Information Technology) (Part – II) Examination, 2017
MOBILE APPLICATION DEVELOPMENT (New CGPA)**

Day and Date : Wednesday, 24-5-2017
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=12)**
- a) List and explain features of Android platform.
 - b) Explain the benefits of AsyncTask over Threads for implementing long running tasks.
 - c) Explain Android App execution flow with diagram.
 - d) Define layouts in android with examples.
3. Attempt **any one** : **(1×8=8)**
- a) Write short note :
 - i) String resources in Android
 - ii) Image resources in Android
 - b) Explain activity component and its life cycle call back methods in detail.
4. Attempt **any one** : **(1×8=8)**
- a) Draw Android platform architecture. Discuss the various layers and their components and functions.
 - b) Write a short note on :
 - i) TelephonyManager
 - ii) SmsManager in Android.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Write a note on Shared Preferences.
 - b) Explain Drawable animation in detail.
 - c) Write a note on black box testing.
 - d) Write a note on JUnit.

Set R



6. Attempt **any one** : **(1×8=8)**
- a) Write a note on external storage api's in android. Write an android program to create file "chathistory.txt" on external storage directory (sdcard) and write a String "chat log record" in the file.
 - b) Describe types of sensors. Explain process to use Accelerometer.
7. Attempt **any one** : **(1×8=8)**
- a) Explain app uploading procedure on API store in detail.
 - b) What is location based service ? Explain how GPS can be used to track location of device. (explain use of LocationManager, LocationListener, Criteria classes).
-



SLR-VB – 281

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

Set

S

**T.E. (Information Technology) (Part – II) Examination, 2017
MOBILE APPLICATION DEVELOPMENT (New CGPA)**

Day and Date : Wednesday, 24-5-2017
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 answer : 14
- 1) _____ is characteristic associated with sensor.
a) Power b) Accuracy c) Vendor d) All
 - 2) _____ is state of MediaPlayer.
a) Prepare b) Pause c) Start d) All
 - 3) _____ test internal structure of working of application.
a) Black box testing b) White box testing
c) Regression testing d) None
 - 4) _____ , _____ functions of editor need to be invoked to write integer value in Shared Preference file.
a) write, commit b) writeInt, commit
c) write, commitInt d) writePref, commit
 - 5) _____ listener is used to notify system when sensor data is changed.
a) SensorListener b) SensorEventListener
c) SensorDataListener d) None

P.T.O.



- 6) AsyncTask class provides two key callback methods: _____ and _____
- a) doInBackground(Params params . . .), onProgressUpdate(Progress . . . progress)
 - b) onStart(), onProgressUpdate(Progress . . . progress)
 - c) doInBatch(Params params . . .), onProcessUpdate (Progress . . . progress)
 - d) doInBackground(), onProgressUpdate(Progress . . . progress)
- 7) _____ is used to run executable files of an app.
- a) Dalvik Virtual Machine
 - b) Java Virtual Machine
 - c) Notification Manager
 - d) Webkit
- 8) The life cycle of a Service begins when a call to the _____ method is made in another component.
- a) start()
 - b) startService()
 - c) onStartCommand()
 - d) onStartService()
- 9) _____ tag needs to be added into AndroidManifest.xml file to register new service in android application.
- a) activity
 - b) intent-filter
 - c) service
 - d) application
- 10) Which among these are NOT a part of Android's native libraries ?
- a) SQLite
 - b) Dalvik
 - c) OpenGL
 - d) Webkit
- 11) What is contained within the Layout xml file ?
- a) The code which is compiled to run the app.
 - b) The strings used in the app.
 - c) The permissions required by the app.
 - d) Orientations and layouts that specify what the display looks like
- 12) What is ANR responding time in android ?
- a) 10 sec.
 - b) 5 sec.
 - c) 1 min.
 - d) None of the above
- 13) Image to be moved by in quick succession of time are saved in _____ folder.
- a) drawable_hdpi
 - b) drawable_ldpi
 - c) drawable_mdpi
 - d) none
- 14) _____ is location provider.
- a) Network
 - b) GPS
 - c) Both a) and b)
 - d) None



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

**T.E. (Information Technology) (Part – II) Examination, 2017
MOBILE APPLICATION DEVELOPMENT (New CGPA)**

Day and Date : Wednesday, 24-5-2017
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=12)**
- a) List and explain features of Android platform.
 - b) Explain the benefits of AsyncTask over Threads for implementing long running tasks.
 - c) Explain Android App execution flow with diagram.
 - d) Define layouts in android with examples.
3. Attempt **any one** : **(1×8=8)**
- a) Write short note :
 - i) String resources in Android
 - ii) Image resources in Android
 - b) Explain activity component and its life cycle call back methods in detail.
4. Attempt **any one** : **(1×8=8)**
- a) Draw Android platform architecture. Discuss the various layers and their components and functions.
 - b) Write a short note on :
 - i) TelephonyManager
 - ii) SmsManager in Android.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Write a note on Shared Preferences.
 - b) Explain Drawable animation in detail.
 - c) Write a note on black box testing.
 - d) Write a note on JUnit.

Set S



6. Attempt **any one** : **(1×8=8)**
- a) Write a note on external storage api's in android. Write an android program to create file "chathistory.txt" on external storage directory (sdcard) and write a String "chat log record" in the file.
 - b) Describe types of sensors. Explain process to use Accelerometer.
7. Attempt **any one** : **(1×8=8)**
- a) Explain app uploading procedure on API store in detail.
 - b) What is location based service ? Explain how GPS can be used to track location of device. (explain use of LocationManager, LocationListener, Criteria classes).
-



SLR-VB – 282 (a)

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

Set	P
-----	---

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

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 **first 15 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) Draw figures **wherever** is necessary.
4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct answer : **(1×10=10)**
- 1) _____ repeats a signal.
a) A repeater b) A hub c) Both a) and b) d) None of these
 - 2) _____ is the external gateway protocol.
a) RIP b) EIGRP c) OSPF d) BGP
 - 3) _____ works at the layer – 3 of the OSI model.
a) A hub b) A repeater c) A router d) None of these
 - 4) An IPv6 address is _____ bits long.
a) 32 b) 64 c) 128 d) None of these
 - 5) Tunneling is a technique in which the IP datagram is first _____ and then _____.
a) encapsulated in another datagram; encrypted
b) encrypted; encapsulated in another datagram
c) authenticated; encrypted
d) encrypted; authenticated
 - 6) The metric used by _____ is the hop count.
a) OSPF b) RIP c) BGP d) None of these

P.T.O.



- 7) In _____ forwarding, the full IP address of a destination is given in the routing table.
- a) next-hop
 - b) network-specific
 - c) host-specific
 - d) default
- 8) DNS uses service of UDP/TCP on well-known port number
- a) 53
 - b) 67
 - c) 80
 - d) 21
- 9) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
- a) unicast
 - b) multicast
 - c) broadcast
 - d) none of these
- 10) For purposes of routing, the Internet is divided into
- a) wide area networks
 - b) autonomous networks
 - c) autonomous systems
 - d) none of these
-



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

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data if **necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. 8
 3. Explain the steps that you need to think about when planning a chassis-based switch installation. 8
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. 8
 5. List and explain different types of routes in routing table. 8
 6. What is the function of a router ? Explain communication between routers. 8
 7. Explain DMZ network. 8
 8. Explain in detail corporate network. 8
 9. Explain concept of Network Address Translation with suitable diagram. 8
-



SLR-VB – 282 (a)

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

Set	Q
-----	---

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

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 **first 15 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) Draw figures **wherever** is necessary.
4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct answer : **(1×10=10)**
- 1) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
a) unicast b) multicast c) broadcast d) none of these
 - 2) For purposes of routing, the Internet is divided into
a) wide area networks b) autonomous networks
c) autonomous systems d) none of these
 - 3) In _____ forwarding, the full IP address of a destination is given in the routing table.
a) next-hop b) network-specific
c) host-specific d) default
 - 4) DNS uses service of UDP/TCP on well-known port number
a) 53 b) 67 c) 80 d) 21
 - 5) _____ repeats a signal.
a) A repeater b) A hub c) Both a) and b) d) None of these
 - 6) _____ is the external gateway protocol.
a) RIP b) EIGRP c) OSPF d) BGP

P.T.O.



- 7) _____ works at the layer – 3 of the OSI model.
a) A hub b) A repeater c) A router d) None of these
- 8) An IPv6 address is _____ bits long.
a) 32 b) 64 c) 128 d) None of these
- 9) Tunneling is a technique in which the IP datagram is first _____ and then _____
a) encapsulated in another datagram; encrypted
b) encrypted; encapsulated in another datagram
c) authenticated; encrypted
d) encrypted; authenticated
- 10) The metric used by _____ is the hop count.
a) OSPF b) RIP c) BGP d) None of these
-



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

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data if **necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. 8
 3. Explain the steps that you need to think about when planning a chassis-based switch installation. 8
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. 8
 5. List and explain different types of routes in routing table. 8
 6. What is the function of a router ? Explain communication between routers. 8
 7. Explain DMZ network. 8
 8. Explain in detail corporate network. 8
 9. Explain concept of Network Address Translation with suitable diagram. 8
-



SLR-VB – 282 (a)

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

Set	R
-----	---

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

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 **first 15 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) Draw figures **wherever** is necessary.
4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct answer : **(1×10=10)**
- 1) Tunneling is a technique in which the IP datagram is first _____ and then _____
a) encapsulated in another datagram; encrypted
b) encrypted; encapsulated in another datagram
c) authenticated; encrypted
d) encrypted; authenticated
 - 2) The metric used by _____ is the hop count.
a) OSPF b) RIP c) BGP d) None of these
 - 3) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
a) unicast b) multicast c) broadcast d) none of these
 - 4) For purposes of routing, the Internet is divided into
a) wide area networks b) autonomous networks
c) autonomous systems d) none of these
 - 5) _____ works at the layer – 3 of the OSI model.
a) A hub b) A repeater c) A router d) None of these

P.T.O.



- 6) An IPv6 address is _____ bits long.
a) 32 b) 64 c) 128 d) None of these
- 7) _____ repeats a signal.
a) A repeater b) A hub c) Both a) and b) d) None of these
- 8) _____ is the external gateway protocol.
a) RIP b) EIGRP c) OSPF d) BGP
- 9) In _____ forwarding, the full IP address of a destination is given in the routing table.
a) next-hop b) network-specific
c) host-specific d) default
- 10) DNS uses service of UDP/TCP on well-known port number
a) 53 b) 67 c) 80 d) 21
-



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

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data if **necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. **8**
 3. Explain the steps that you need to think about when planning a chassis-based switch installation. **8**
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. **8**
 5. List and explain different types of routes in routing table. **8**
 6. What is the function of a router ? Explain communication between routers. **8**
 7. Explain DMZ network. **8**
 8. Explain in detail corporate network. **8**
 9. Explain concept of Network Address Translation with suitable diagram. **8**
-



SLR-VB – 282 (a)

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

Set	S
-----	---

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

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 **first 15 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) Draw figures **wherever** is necessary.
4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct answer : **(1×10=10)**
- 1) _____ works at the layer – 3 of the OSI model.
a) A hub b) A repeater c) A router d) None of these
 - 2) An IPv6 address is _____ bits long.
a) 32 b) 64 c) 128 d) None of these
 - 3) Tunneling is a technique in which the IP datagram is first _____ and then _____.
a) encapsulated in another datagram; encrypted
b) encrypted; encapsulated in another datagram
c) authenticated; encrypted
d) encrypted; authenticated
 - 4) The metric used by _____ is the hop count.
a) OSPF b) RIP c) BGP d) None of these
 - 5) In _____ forwarding, the full IP address of a destination is given in the routing table.
a) next-hop b) network-specific
c) host-specific d) default

P.T.O.



- 6) DNS uses service of UDP/TCP on well-known port number
 - a) 53
 - b) 67
 - c) 80
 - d) 21
 - 7) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
 - a) unicast
 - b) multicast
 - c) broadcast
 - d) none of these
 - 8) For purposes of routing, the Internet is divided into
 - a) wide area networks
 - b) autonomous networks
 - c) autonomous systems
 - d) none of these
 - 9) _____ repeats a signal.
 - a) A repeater
 - b) A hub
 - c) Both a) and b)
 - d) None of these
 - 10) _____ is the external gateway protocol.
 - a) RIP
 - b) EIGRP
 - c) OSPF
 - d) BGP
-



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

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data if **necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. 8
 3. Explain the steps that you need to think about when planning a chassis-based switch installation. 8
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. 8
 5. List and explain different types of routes in routing table. 8
 6. What is the function of a router ? Explain communication between routers. 8
 7. Explain DMZ network. 8
 8. Explain in detail corporate network. 8
 9. Explain concept of Network Address Translation with suitable diagram. 8
-



SLR-VB – 282 (C)

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

Set

P

T.E. (I.T.) (Part – II) (New – CGPA) Examination, 2017
Self-Learning (HSS/Technical)
COMPILER DEVELOPMENT TOOLS

Day and Date : Friday, 26-05-2017
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

- Instructions :** 1) Figures to the **right** indicate **full** marks.
2) Q. No. 1 is **compulsory**. It should be solved 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

Marks : 10

1. Choose the correct alternatives :

(10×1=10)

- 1) Reduce/reduce is a type of
 - a) Conflict
 - b) Ambiguity
 - c) Command
 - d) Error
- 2) There are two types of bugs. They are _____ and _____.
 - a) Focal and bifocal
 - b) Soft and hard
 - c) Real and unreal
 - d) None of these
- 3) Every version of Yacc has the ability to create log file named y.output under UNIX and y.out under
 - a) Windows
 - b) Apple mackintosh
 - c) DOS
 - d) All of these
- 4) We can include the Yacc library by giving the _____ flag at the end of the cc command line on UNIX systems.
 - a) -ly
 - b) +ly
 - c) *ly
 - d) /ly
- 5) Sometimes we want all occurrences of the token, even if it overlaps with the other tokens. This is done using
 - a) ACCEPT
 - b) REJECT
 - c) GETINTO
 - d) All of these

P.T.O.



- 6) The routine _____ returns the character c to the input stream.
a) input (c) b) get (c) c) read (c) d) unput (c)
- 7) Whenever a scanner matches a token, the text of the token is stored in the null terminated string _____ and its length is in _____ .
a) ytexty, ylengy
b) yylex, yyacc
c) yytext, yyleng
d) both a) and c)
- 8) The scanner created by LEX has the entry point
a) yyaccept () b) yyreject () c) yylexer () d) yylex ()
- 9) MGL stands for
a) Main Generation Language
b) Mainstream Generation Language
c) Menu Generation Language
d) Meta Generation Language
- 10) A grammar is always _____ and has _____ .
a) Ambiguous, Conflicts
b) Unambiguous, Conflicts
c) Clear, Conflicts
d) None of these
-



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

**T.E. (I.T.) (Part – II) (New – CGPA) Examination, 2017
Self-Learning (HSS/Technical)
COMPILER DEVELOPMENT TOOLS**

Day and Date : Friday, 26-05-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Answer **any 4 full** questions.
2) Figures to the **right** indicate **full** marks.

2. Write and explain the structure of Yacc Grammar. **10**
 3. a) Explain the following characters used in regular expressions *, ^, \$, {}, +. **5**
b) With an example explain shift/reduce parsing. **5**
 4. Explain the real and unreal bugs in Yacc. **10**
 5. a) Explain the % union declaration. **5**
b) Write a brief note on recursive parsing. **5**
 6. Write a note on error reporting and error recovery. **10**
 7. Explain the three most common situations that produce shift/reduce conflicts. **10**
-



SLR-VB – 282 (C)

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

Set

Q

T.E. (I.T.) (Part – II) (New – CGPA) Examination, 2017
Self-Learning (HSS/Technical)
COMPILER DEVELOPMENT TOOLS

Day and Date : Friday, 26-05-2017
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

- Instructions :** 1) Figures to the **right** indicate **full** marks.
2) Q. No. 1 is **compulsory**. It should be solved 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

Marks : 10

1. Choose the correct alternatives :

(10×1=10)

- 1) MGL stands for
 - a) Main Generation Language
 - b) Mainstream Generation Language
 - c) Menu Generation Language
 - d) Meta Generation Language
- 2) A grammar is always _____ and has _____ .
 - a) Ambiguous, Conflicts
 - b) Unambiguous, Conflicts
 - c) Clear, Conflicts
 - d) None of these
- 3) Whenever a scanner matches a token, the text of the token is stored in the null terminated string _____ and its length is in _____ .
 - a) ytexty, ylengy
 - b) yylex, yyacc
 - c) yytext, yyleng
 - d) both a) and c)
- 4) The scanner created by LEX has the entry point
 - a) yyaccept ()
 - b) yyreject ()
 - c) yylexer ()
 - d) yylex ()

P.T.O.



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

**T.E. (I.T.) (Part – II) (New – CGPA) Examination, 2017
Self-Learning (HSS/Technical)
COMPILER DEVELOPMENT TOOLS**

Day and Date : Friday, 26-05-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Answer **any 4 full** questions.
2) Figures to the **right** indicate **full** marks.

2. Write and explain the structure of Yacc Grammar. **10**
3. a) Explain the following characters used in regular expressions *, ^, \$, {}, +. **5**
b) With an example explain shift/reduce parsing. **5**
4. Explain the real and unreal bugs in Yacc. **10**
5. a) Explain the % union declaration. **5**
b) Write a brief note on recursive parsing. **5**
6. Write a note on error reporting and error recovery. **10**
7. Explain the three most common situations that produce shift/reduce conflicts. **10**



SLR-VB – 282 (C)

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

Set

R

T.E. (I.T.) (Part – II) (New – CGPA) Examination, 2017
Self-Learning (HSS/Technical)
COMPILER DEVELOPMENT TOOLS

Day and Date : Friday, 26-05-2017
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

- Instructions :** 1) Figures to the **right** indicate **full** marks.
2) Q. No. 1 is **compulsory**. It should be solved 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

Marks : 10

1. Choose the correct alternatives : **(10×1=10)**
- 1) Sometimes we want all occurrences of the token, even if it overlaps with the other tokens. This is done using
a) ACCEPT b) REJECT c) GETINTO d) All of these
 - 2) The routine _____ returns the character c to the input stream.
a) input (c) b) get (c) c) read (c) d) unput (c)
 - 3) MGL stands for
a) Main Generation Language
b) Mainstream Generation Language
c) Menu Generation Language
d) Meta Generation Language
 - 4) A grammar is always _____ and has _____ .
a) Ambiguous, Conflicts b) Unambiguous, Conflicts
c) Clear, Conflicts d) None of these
 - 5) Every version of Yacc has the ability to create log file named y.output under UNIX and y.out under
a) Windows b) Apple mackintosh
c) DOS d) All of these

P.T.O.



- 6) We can include the Yacc library by giving the _____ flag at the end of the cc command line on UNIX systems.
- a) -ly b) +ly c) *ly d) /ly
- 7) Reduce/reduce is a type of
- a) Conflict b) Ambiguity c) Command d) Error
- 8) There are two types of bugs. They are _____ and _____ .
- a) Focal and bifocal
b) Soft and hard
c) Real and unreal
d) None of these
- 9) Whenever a scanner matches a token, the text of the token is stored in the null terminated string _____ and its length is in _____ .
- a) ytexty, ylengy
b) yylex, yyacc
c) yytext, yyleng
d) both a) and c)
- 10) The scanner created by LEX has the entry point
- a) yyaccept () b) yyreject () c) yylexer () d) yylex ()
-



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

**T.E. (I.T.) (Part – II) (New – CGPA) Examination, 2017
Self-Learning (HSS/Technical)
COMPILER DEVELOPMENT TOOLS**

Day and Date : Friday, 26-05-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Answer **any 4 full** questions.
2) Figures to the **right** indicate **full** marks.

2. Write and explain the structure of Yacc Grammar. **10**
 3. a) Explain the following characters used in regular expressions *, ^, \$, {}, +. **5**
b) With an example explain shift/reduce parsing. **5**
 4. Explain the real and unreal bugs in Yacc. **10**
 5. a) Explain the % union declaration. **5**
b) Write a brief note on recursive parsing. **5**
 6. Write a note on error reporting and error recovery. **10**
 7. Explain the three most common situations that produce shift/reduce conflicts. **10**
-



SLR-VB – 282 (C)

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

Set

S

T.E. (I.T.) (Part – II) (New – CGPA) Examination, 2017
Self-Learning (HSS/Technical)
COMPILER DEVELOPMENT TOOLS

Day and Date : Friday, 26-05-2017
Time : 3.00 p.m. to 5.00 p.m.

Max. Marks : 50

- Instructions :** 1) Figures to the **right** indicate **full** marks.
2) Q. No. 1 is **compulsory**. It should be solved 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

Marks : 10

1. Choose the correct alternatives : **(10×1=10)**

- Every version of Yacc has the ability to create log file named y.output under UNIX and y.out under
a) Windows
b) Apple mackintosh
c) DOS
d) All of these
- We can include the Yacc library by giving the _____ flag at the end of the cc command line on UNIX systems.
a) -ly
b) +ly
c) *ly
d) /ly
- Sometimes we want all occurrences of the token, even if it overlaps with the other tokens. This is done using
a) ACCEPT
b) REJECT
c) GETINTO
d) All of these
- The routine _____ returns the character c to the input stream.
a) input (c)
b) get (c)
c) read (c)
d) unput (c)
- Whenever a scanner matches a token, the text of the token is stored in the null terminated string _____ and its length is in _____ .
a) ytexty, ylengy
b) yylex, yyacc
c) yytext, yyleng
d) both a) and c)

P.T.O.



- 6) The scanner created by LEX has the entry point
a) yyaccept () b) yyreject () c) yylexer () d) yylex ()
- 7) MGL stands for
a) Main Generation Language
b) Mainstream Generation Language
c) Menu Generation Language
d) Meta Generation Language
- 8) A grammar is always _____ and has _____ .
a) Ambiguous, Conflicts
b) Unambiguous, Conflicts
c) Clear, Conflicts
d) None of these
- 9) Reduce/reduce is a type of
a) Conflict b) Ambiguity c) Command d) Error
- 10) There are two types of bugs. They are _____ and _____ .
a) Focal and bifocal
b) Soft and hard
c) Real and unreal
d) None of these
-



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

**T.E. (I.T.) (Part – II) (New – CGPA) Examination, 2017
Self-Learning (HSS/Technical)
COMPILER DEVELOPMENT TOOLS**

Day and Date : Friday, 26-05-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Answer **any 4 full** questions.
2) Figures to the **right** indicate **full** marks.

2. Write and explain the structure of Yacc Grammar. **10**
 3. a) Explain the following characters used in regular expressions *, ^, \$, {}, +. **5**
b) With an example explain shift/reduce parsing. **5**
 4. Explain the real and unreal bugs in Yacc. **10**
 5. a) Explain the % union declaration. **5**
b) Write a brief note on recursive parsing. **5**
 6. Write a note on error reporting and error recovery. **10**
 7. Explain the three most common situations that produce shift/reduce conflicts. **10**
-



SLR-VB – 282 (d)

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

Set	P
-----	---

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETUP AND MANAGEMENT
Self Learning (HSS/Technical)**

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 **first 15 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) Draw figures **wherever** is necessary.
4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct answer :

(1×10=10)

- 1) _____ repeats a signal.
a) A repeater b) A hub c) Both a) and b) d) None of these
- 2) _____ is the external gateway protocol.
a) RIP b) EIGRP c) OSPF d) BGP
- 3) _____ works at the layer – 3 of the OSI model.
a) A hub b) A repeater c) A router d) None of these
- 4) An IPv6 address is _____ bits long.
a) 32 b) 64 c) 128 d) None of these
- 5) Tunneling is a technique in which the IP datagram is first _____ and then _____.
a) encapsulated in another datagram; encrypted
b) encrypted; encapsulated in another datagram
c) authenticated; encrypted
d) encrypted; authenticated
- 6) The metric used by _____ is the hop count.
a) OSPF b) RIP c) BGP d) None of these

P.T.O.



- 7) In _____ forwarding, the full IP address of a destination is given in the routing table.
- a) next-hop
 - b) network-specific
 - c) host-specific
 - d) default
- 8) DNS uses service of UDP/TCP on well-known port number
- a) 53
 - b) 67
 - c) 80
 - d) 21
- 9) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
- a) unicast
 - b) multicast
 - c) broadcast
 - d) none of these
- 10) For purposes of routing, the Internet is divided into
- a) wide area networks
 - b) autonomous networks
 - c) autonomous systems
 - d) none of these
-



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

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETUP AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data if **necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. 8
 3. Explain the steps that you need to think about when planning a chassis-based switch installation. 8
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. 8
 5. List and explain different types of routes in routing table. 8
 6. What is the function of a router ? Explain communication between routers. 8
 7. Explain DMZ network. 8
 8. Explain in detail corporate network. 8
 9. Explain concept of Network Address Translation with suitable diagram. 8
-



SLR-VB – 282 (d)

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

Set	Q
-----	---

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETUP AND MANAGEMENT
Self Learning (HSS/Technical)**

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 **first 15 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) Draw figures **wherever** is necessary.
4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct answer : **(1×10=10)**
- 1) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
a) unicast b) multicast c) broadcast d) none of these
 - 2) For purposes of routing, the Internet is divided into
a) wide area networks b) autonomous networks
c) autonomous systems d) none of these
 - 3) In _____ forwarding, the full IP address of a destination is given in the routing table.
a) next-hop b) network-specific
c) host-specific d) default
 - 4) DNS uses service of UDP/TCP on well-known port number
a) 53 b) 67 c) 80 d) 21
 - 5) _____ repeats a signal.
a) A repeater b) A hub c) Both a) and b) d) None of these
 - 6) _____ is the external gateway protocol.
a) RIP b) EIGRP c) OSPF d) BGP

P.T.O.



- 7) _____ works at the layer – 3 of the OSI model.
a) A hub b) A repeater c) A router d) None of these
- 8) An IPv6 address is _____ bits long.
a) 32 b) 64 c) 128 d) None of these
- 9) Tunneling is a technique in which the IP datagram is first _____ and then _____
a) encapsulated in another datagram; encrypted
b) encrypted; encapsulated in another datagram
c) authenticated; encrypted
d) encrypted; authenticated
- 10) The metric used by _____ is the hop count.
a) OSPF b) RIP c) BGP d) None of these
-



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

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETUP AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data if **necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. 8
 3. Explain the steps that you need to think about when planning a chassis-based switch installation. 8
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. 8
 5. List and explain different types of routes in routing table. 8
 6. What is the function of a router ? Explain communication between routers. 8
 7. Explain DMZ network. 8
 8. Explain in detail corporate network. 8
 9. Explain concept of Network Address Translation with suitable diagram. 8
-



SLR-VB – 282 (d)

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

Set	R
-----	---

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETUP AND MANAGEMENT
Self Learning (HSS/Technical)**

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 **first 15 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) Draw figures **wherever** is necessary.
4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct answer : **(1×10=10)**
- 1) Tunneling is a technique in which the IP datagram is first _____ and then _____
a) encapsulated in another datagram; encrypted
b) encrypted; encapsulated in another datagram
c) authenticated; encrypted
d) encrypted; authenticated
 - 2) The metric used by _____ is the hop count.
a) OSPF b) RIP c) BGP d) None of these
 - 3) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
a) unicast b) multicast c) broadcast d) none of these
 - 4) For purposes of routing, the Internet is divided into
a) wide area networks b) autonomous networks
c) autonomous systems d) none of these
 - 5) _____ works at the layer – 3 of the OSI model.
a) A hub b) A repeater c) A router d) None of these

P.T.O.



- 6) An IPv6 address is _____ bits long.
a) 32 b) 64 c) 128 d) None of these
- 7) _____ repeats a signal.
a) A repeater b) A hub c) Both a) and b) d) None of these
- 8) _____ is the external gateway protocol.
a) RIP b) EIGRP c) OSPF d) BGP
- 9) In _____ forwarding, the full IP address of a destination is given in the routing table.
a) next-hop b) network-specific
c) host-specific d) default
- 10) DNS uses service of UDP/TCP on well-known port number
a) 53 b) 67 c) 80 d) 21
-



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

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETUP AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data if **necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. **8**
 3. Explain the steps that you need to think about when planning a chassis-based switch installation. **8**
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. **8**
 5. List and explain different types of routes in routing table. **8**
 6. What is the function of a router ? Explain communication between routers. **8**
 7. Explain DMZ network. **8**
 8. Explain in detail corporate network. **8**
 9. Explain concept of Network Address Translation with suitable diagram. **8**
-



SLR-VB – 282 (d)

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

Set	S
-----	---

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETUP AND MANAGEMENT
Self Learning (HSS/Technical)**

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 **first 15 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) Draw figures **wherever** is necessary.
4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct answer : **(1×10=10)**
- 1) _____ works at the layer – 3 of the OSI model.
a) A hub b) A repeater c) A router d) None of these
 - 2) An IPv6 address is _____ bits long.
a) 32 b) 64 c) 128 d) None of these
 - 3) Tunneling is a technique in which the IP datagram is first _____ and then _____.
a) encapsulated in another datagram; encrypted
b) encrypted; encapsulated in another datagram
c) authenticated; encrypted
d) encrypted; authenticated
 - 4) The metric used by _____ is the hop count.
a) OSPF b) RIP c) BGP d) None of these
 - 5) In _____ forwarding, the full IP address of a destination is given in the routing table.
a) next-hop b) network-specific
c) host-specific d) default

P.T.O.



- 6) DNS uses service of UDP/TCP on well-known port number
 - a) 53
 - b) 67
 - c) 80
 - d) 21
 - 7) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
 - a) unicast
 - b) multicast
 - c) broadcast
 - d) none of these
 - 8) For purposes of routing, the Internet is divided into
 - a) wide area networks
 - b) autonomous networks
 - c) autonomous systems
 - d) none of these
 - 9) _____ repeats a signal.
 - a) A repeater
 - b) A hub
 - c) Both a) and b)
 - d) None of these
 - 10) _____ is the external gateway protocol.
 - a) RIP
 - b) EIGRP
 - c) OSPF
 - d) BGP
-



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

**T.E. (Information Technology) (Part – II) (New – CGPA)
Examination, 2017
NETWORK SETUP AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data if **necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. 8
 3. Explain the steps that you need to think about when planning a chassis-based switch installation. 8
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. 8
 5. List and explain different types of routes in routing table. 8
 6. What is the function of a router ? Explain communication between routers. 8
 7. Explain DMZ network. 8
 8. Explain in detail corporate network. 8
 9. Explain concept of Network Address Translation with suitable diagram. 8
-



SLR-VB – 282(b)

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

Set	P
-----	----------

**T.E. (Information Technology) (Part – II) (New-CGPA) Examination, 2017
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

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 answers : **10**
- 1) What is the meaning of ba Mnemonic ?
 - a) Branch on overflow
 - b) Branch always
 - c) Branch on sign flag
 - d) Branch on shift
 - 2) What is the meaning of sethi Mnemonic ?
 - a) Load the 21 most significant bits of a register
 - b) Load the 22 most significant bits of a register
 - c) Load the 23 most significant bits of a register
 - d) Load the 24 most significant bits of a register
 - 3) ARC assembly language file is saved as _____ in ARCT Tools simulator.
 - a) File.asm
 - b) File.sim
 - c) File.tasm
 - d) File.msm
 - 4) Which of the following are main simulator controls ?
 - a) Exit
 - b) Print
 - c) Run
 - d) All of the above
 - 5) The ARC Tools toolset includes the following features
 - a) A trap mechanism
 - b) A multilevel cache memory simulator
 - c) Ability to specify instruction timings
 - d) All of the above

P.T.O.



- 6) Which of the following are the main simulator controls ?
a) Reload b) Assembler c) Label d) None of the above
- 7) The ARC and SPARC are _____ machines are nearly all general purpose computers.
a) Two's complement b) One's complement
c) Both a) and b) d) None of these
- 8) SPARC Processor that was developed at _____ in the mid – 1980's.
a) Intel b) Sun micro system
c) AT and T Labs d) None of these
- 9) SPARC stands for
a) Scalable programmer architecture
b) Scalable processor architecture
c) Scalable point architecture
d) None of these
- 10) Which of the following are mnemonic of ARC instruction set ?
a) bneg b) be c) bvs d) all of these
-



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

**T.E. (Information Technology) (Part – II) (New-CGPA) Examination, 2017
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instruction : Solve questions 2, 3, 4.

2. Answer **any four** : **(5×4)**
- a) Which are the types of instruction set available in RISC computer ?
 - b) Explain linking and loading.
 - c) What is the use of Cache simulator ? Explain with any example.
 - d) Explain memory and I/O parameters with an example.
 - e) What is the use of time model ? Explain with any example.
 - f) How to measure program performance ? Explain with any example.
3. Write FPGA based VHDL program for Arithmetic and Logic Unit. **10**
- OR
- Explain ARC Processor and its architecture.
4. Write FPGA based VHDL program for Carry-look-ahead Adder. **10**
- OR
- Write a program that flashes the screen every time when the user's position changes.
-



SLR-VB – 282(b)

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

Set	Q
-----	---

**T.E. (Information Technology) (Part – II) (New-CGPA) Examination, 2017
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

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 answers : 10
- 1) SPARC stands for
 - a) Scalable programmer architecture
 - b) Scalable processor architecture
 - c) Scalable point architecture
 - d) None of these
 - 2) Which of the following are mnemonic of ARC instruction set ?
 - a) bneg
 - b) be
 - c) bvs
 - d) all of these
 - 3) The ARC and SPARC are _____ machines are nearly all general purpose computers.
 - a) Two's complement
 - b) One's complement
 - c) Both a) and b)
 - d) None of these
 - 4) SPARC Processor that was developed at _____ in the mid – 1980's.
 - a) Intel
 - b) Sun micro system
 - c) AT and T Labs
 - d) None of these
 - 5) What is the meaning of ba Mnemonic ?
 - a) Branch on overflow
 - b) Branch always
 - c) Branch on sign flag
 - d) Branch on shift

P.T.O.



- 6) What is the meaning of sethi Mnemonic ?
- a) Load the 21 most significant bits of a register
 - b) Load the 22 most significant bits of a register
 - c) Load the 23 most significant bits of a register
 - d) Load the 24 most significant bits of a register
- 7) ARC assembly language file is saved as _____ in ARCT Tools simulator.
- a) File.asm
 - b) File.sim
 - c) File.tasm
 - d) File.msm
- 8) Which of the following are main simulator controls ?
- a) Exit
 - b) Print
 - c) Run
 - d) All of the above
- 9) The ARC Tools toolset includes the following features
- a) A trap mechanism
 - b) A multilevel cache memory simulator
 - c) Ability to specify instruction timings
 - d) All of the above
- 10) Which of the following are the main simulator controls ?
- a) Reload
 - b) Assembler
 - c) Label
 - d) None of the above
-



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

**T.E. (Information Technology) (Part – II) (New-CGPA) Examination, 2017
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instruction : Solve questions 2, 3, 4.

2. Answer **any four** : **(5×4)**
- a) Which are the types of instruction set available in RISC computer ?
 - b) Explain linking and loading.
 - c) What is the use of Cache simulator ? Explain with any example.
 - d) Explain memory and I/O parameters with an example.
 - e) What is the use of time model ? Explain with any example.
 - f) How to measure program performance ? Explain with any example.
3. Write FPGA based VHDL program for Arithmetic and Logic Unit. **10**
- OR
- Explain ARC Processor and its architecture.
4. Write FPGA based VHDL program for Carry-look-ahead Adder. **10**
- OR
- Write a program that flashes the screen every time when the user's position changes.
-



SLR-VB – 282(b)

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

Set	R
-----	---

**T.E. (Information Technology) (Part – II) (New-CGPA) Examination, 2017
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

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 answers : 10
- 1) The ARC Tools toolset includes the following features
 - a) A trap mechanism
 - b) A multilevel cache memory simulator
 - c) Ability to specify instruction timings
 - d) All of the above
 - 2) Which of the following are the main simulator controls ?
 - a) Reload
 - b) Assembler
 - c) Label
 - d) None of the above
 - 3) SPARC stands for
 - a) Scalable programmer architecture
 - b) Scalable processor architecture
 - c) Scalable point architecture
 - d) None of these
 - 4) Which of the following are mnemonic of ARC instruction set ?
 - a) bneg
 - b) be
 - c) bvs
 - d) all of these
 - 5) ARC assembly language file is saved as _____ in ARCT Tools simulator.
 - a) File.asm
 - b) File.sim
 - c) File.tasm
 - d) File.msm

P.T.O.



- 6) Which of the following are main simulator controls ?
a) Exit b) Print c) Run d) All of the above
- 7) What is the meaning of ba Mnemonic ?
a) Branch on overflow b) Branch always
c) Branch on sign flag d) Branch on shift
- 8) What is the meaning of sethi Mnemonic ?
a) Load the 21 most significant bits of a register
b) Load the 22 most significant bits of a register
c) Load the 23 most significant bits of a register
d) Load the 24 most significant bits of a register
- 9) The ARC and SPARC are _____ machines are nearly all general purpose computers.
a) Two's complement b) One's complement
c) Both a) and b) d) None of these
- 10) SPARC Processor that was developed at _____ in the mid – 1980's.
a) Intel b) Sun micro system
c) AT and T Labs d) None of these
-



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

**T.E. (Information Technology) (Part – II) (New-CGPA) Examination, 2017
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instruction : Solve questions 2, 3, 4.

2. Answer **any four** : **(5×4)**
- a) Which are the types of instruction set available in RISC computer ?
 - b) Explain linking and loading.
 - c) What is the use of Cache simulator ? Explain with any example.
 - d) Explain memory and I/O parameters with an example.
 - e) What is the use of time model ? Explain with any example.
 - f) How to measure program performance ? Explain with any example.
3. Write FPGA based VHDL program for Arithmetic and Logic Unit. **10**
- OR
- Explain ARC Processor and its architecture.
4. Write FPGA based VHDL program for Carry-look-ahead Adder. **10**
- OR
- Write a program that flashes the screen every time when the user's position changes.
-



SLR-VB – 282(b)

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

Set	S
-----	----------

**T.E. (Information Technology) (Part – II) (New-CGPA) Examination, 2017
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

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 answers : **10**
- 1) ARC assembly language file is saved as _____ in ARCT Tools simulator.
a) File.asm b) File.sim c) File.tasm d) File.msm
 - 2) Which of the following are main simulator controls ?
a) Exit b) Print c) Run d) All of the above
 - 3) The ARC Tools toolset includes the following features
a) A trap mechanism
b) A multilevel cache memory simulator
c) Ability to specify instruction timings
d) All of the above
 - 4) Which of the following are the main simulator controls ?
a) Reload b) Assembler c) Label d) None of the above
 - 5) The ARC and SPARC are _____ machines are nearly all general purpose computers.
a) Two's complement
b) One's complement
c) Both a) and b)
d) None of these

P.T.O.



- 6) SPARC Processor that was developed at _____ in the mid – 1980's.
- a) Intel
 - b) Sun micro system
 - c) AT and T Labs
 - d) None of these
- 7) SPARC stands for
- a) Scalable programmer architecture
 - b) Scalable processor architecture
 - c) Scalable point architecture
 - d) None of these
- 8) Which of the following are mnemonic of ARC instruction set ?
- a) bneg
 - b) be
 - c) bvs
 - d) all of these
- 9) What is the meaning of ba Mnemonic ?
- a) Branch on overflow
 - b) Branch always
 - c) Branch on sign flag
 - d) Branch on shift
- 10) What is the meaning of sethi Mnemonic ?
- a) Load the 21 most significant bits of a register
 - b) Load the 22 most significant bits of a register
 - c) Load the 23 most significant bits of a register
 - d) Load the 24 most significant bits of a register
-



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

**T.E. (Information Technology) (Part – II) (New-CGPA) Examination, 2017
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Friday, 26-5-2017
Time : 3.00 p.m. to 5.00 p.m.

Marks : 40

Instruction : Solve questions 2, 3, 4.

2. Answer **any four** : **(5×4)**
- a) Which are the types of instruction set available in RISC computer ?
 - b) Explain linking and loading.
 - c) What is the use of Cache simulator ? Explain with any example.
 - d) Explain memory and I/O parameters with an example.
 - e) What is the use of time model ? Explain with any example.
 - f) How to measure program performance ? Explain with any example.
3. Write FPGA based VHDL program for Arithmetic and Logic Unit. **10**
- OR
- Explain ARC Processor and its architecture.
4. Write FPGA based VHDL program for Carry-look-ahead Adder. **10**
- OR
- Write a program that flashes the screen every time when the user's position changes.
-



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

**T.E. (IT) (Part – II) Examination, 2017
ARTIFICIAL INTELLIGENCE (Old)**

Day and Date : Friday, 19-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 20

1. Choose the correct alternative : 20
- 1) What is artificial intelligence ?
 - a) Doing magic
 - b) Programming with your own intelligence
 - c) Making a machine to do regular human activities
 - d) Putting more memory into computer
 - 2) Which is not the commonly used programming language for AI ?
 - a) PROLOG
 - b) Small talk
 - c) LISP
 - d) ASP
 - 3) What is state space ?
 - a) The whole problem
 - b) Your definition to a problem
 - c) Problem you design
 - d) Representing your problem with variable and parameter
 - 4) A production rule consists of
 - a) A set of Rule
 - b) A sequence of steps
 - c) If-then form
 - d) Arbitrary representation to problem
 - 5) Which search method takes less time ?
 - a) Depth-First search
 - b) Breadth-First search
 - c) Best-First search
 - d) Linear search
 - 6) A heuristic is a way of trying
 - a) To discover something or an idea embedded in a program
 - b) To search and measure how far a node in a search tree seems to be from a goal
 - c) To compare two nodes in a search tree to see if one is better than the other
 - d) Only (a) and (b)



- 7) A* algorithm is based on
 - a) Breadth-First-Search
 - b) Depth-First-Search
 - c) Best-First-Search
 - d) Hill climbing
- 8) Which is the best way to go for Game playing problem ?
 - a) Linear approach
 - b) Heuristic approach
 - c) Random approach
 - d) Optimal approach
- 9) How do you represent “All dogs have tails” ?
 - a) $\forall x : \text{dog}(x) \wedge \text{tail}(x)$
 - b) $\forall x : \text{dog}(x) \wedge \text{tail}(y)$
 - c) $\forall x : \text{dog}(y) \wedge \text{tail}(x)$
 - d) None of the above
- 10) Which is not a property of representation of knowledge ?
 - a) Representational verification
 - b) Representational adequacy
 - c) Inferential adequacy
 - d) Acquisitional efficiency
- 11) What are you predicating by the logic $\exists x : \forall y : \text{loyal to}(x, y)$?
 - a) Everyone is loyal to someone
 - b) Everyone is loyal to all
 - c) Everyone is not loyal to someone
 - d) Everyone is loyal
- 12) Which is not Familiar connectives in first order logic ?
 - a) and
 - b) iff
 - c) or
 - d) not
- 13) Which is not a type of First Order Logic (FOL) sentence ?
 - a) Atomic sentences
 - b) Complex sentences
 - c) Quantified sentences
 - d) Quality sentences
- 14) Which is not a Goal-based agent ?
 - a) Inference
 - b) Search
 - c) Planning
 - d) Dynamic search
- 15) A plan that describe how to take actions in levels of increasing refinement and specificity is
 - a) Problem solving
 - b) Planning
 - c) Non-hierarchical plan
 - d) Hierarchical plan
- 16) Partial order planning involves
 - a) Searching over the space of possible plans
 - b) Searching over possible situations
 - c) Searching the whole problem at once
 - d) Searching the best
- 17) Uncertainty arises in the corpus world because the agent’s sensors give only
 - a) Full and global information
 - b) Partial and global information
 - c) Partial and local information
 - d) Full and local information
- 18) A Hybrid Bayesian network contains
 - a) Both discrete and continuous variables
 - b) Only discrete variables
 - c) Both discrete and discontinuous variables
 - d) Continuous variables only
- 19) Which is not a desirable property of a logical rule-based system ?
 - a) Locality
 - b) Attachment
 - c) Detachment
 - d) Truth-functionality
- 20) How is Fuzzy logic different from conventional control methods ?
 - a) Membership approach
 - b) Crisp approach
 - c) Weighted approach
 - d) Absolute approach



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

**T.E. (IT) (Part – II) Examination, 2017
ARTIFICIAL INTELLIGENCE (Old)**

Day and Date : Friday, 19-5-2017
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) Define Heuristics. Give examples.
 - b) State the different approaches involved in knowledge representation.
 - c) State the components of solving an AI Problem.
 - d) What is Generate and test analysis ? Illustrate.
 - e) Compare between A* and AO* Algorithms.
3. Answer **any two** of the following : **(2×5=10)**
- a) List the phases of Resolution. Illustrate each phase.
 - b) State and illustrate the characteristics of AI problems.
 - c) Elaborate on the use of depth first search algorithm in searching.
4. Answer **any one** of the following : **10**
- a) What are the steps involved in AI Techniques ? Elaborate on problem reduction.
 - b) Elaborate on the strong and weak methods of searching.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is a horn clause ? Illustrate.
 - b) How is Global ontology established ?
 - c) How does CYC work ? Give examples.
 - d) What is predicate logic ? Illustrate.
 - e) What role does default reasoning play in problem solving ? Illustrate.

Set P



6. Answer **any two** of the following : **(2×5=10)**
- a) Elaborate on the use of propositional logic for problem solving.
 - b) List the different heuristic techniques and compare them.
 - c) Define the following and elaborate
 - i) natural deduction
 - ii) heuristic search
 - iii) semantic networks.
7. Answer **any one** of the following : **10**
- a) How are conceptual dependency networks built ? Illustrate.
 - b) Elaborate on the methods used for matching. Compare between them.
-



SLR-VB – 283

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

Set **Q**

**T.E. (IT) (Part – II) Examination, 2017
ARTIFICIAL INTELLIGENCE (Old)**

Day and Date : Friday, 19-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 20

1. Choose the correct alternative : 20
- 1) Partial order planning involves
 - a) Searching over the space of possible plans
 - b) Searching over possible situations
 - c) Searching the whole problem at once
 - d) Searching the best
 - 2) Uncertainty arises in the corpus world because the agent's sensors give only
 - a) Full and global information
 - b) Partial and global information
 - c) Partial and local information
 - d) Full and local information
 - 3) A Hybrid Bayesian network contains
 - a) Both discrete and continuous variables
 - b) Only discrete variables
 - c) Both discrete and discontinuous variables
 - d) Continuous variables only
 - 4) Which is not a desirable property of a logical rule-based system ?
 - a) Locality
 - b) Attachment
 - c) Detachment
 - d) Truth-functionality
 - 5) How is Fuzzy logic different from conventional control methods ?
 - a) Membership approach
 - b) Crisp approach
 - c) Weighted approach
 - d) Absolute approach
 - 6) What is artificial intelligence ?
 - a) Doing magic
 - b) Programming with your own intelligence
 - c) Making a machine to do regular human activities
 - d) Putting more memory into computer
 - 7) Which is not the commonly used programming language for AI ?
 - a) PROLOG
 - b) Small talk
 - c) LISP
 - d) ASP

P.T.O.



- 8) What is state space ?
- The whole problem
 - Your definition to a problem
 - Problem you design
 - Representing your problem with variable and parameter
- 9) A production rule consists of
- A set of Rule
 - A sequence of steps
 - If-then form
 - Arbitrary representation to problem
- 10) Which search method takes less time ?
- Depth-First search
 - Breadth-First search
 - Best-First search
 - Linear search
- 11) A heuristic is a way of trying
- To discover something or an idea embedded in a program
 - To search and measure how far a node in a search tree seems to be from a goal
 - To compare two nodes in a search tree to see if one is better than the other
 - Only (a) and (b)
- 12) A* algorithm is based on
- Breadth-First-Search
 - Depth-First-Search
 - Best-First-Search
 - Hill climbing
- 13) Which is the best way to go for Game playing problem ?
- Linear approach
 - Heuristic approach
 - Random approach
 - Optimal approach
- 14) How do you represent “All dogs have tails” ?
- $\forall x : \text{dog}(x) \wedge \text{tail}(x)$
 - $\forall x : \text{dog}(x) \wedge \text{tail}(y)$
 - $\forall x : \text{dog}(y) \wedge \text{tail}(x)$
 - None of the above
- 15) Which is not a property of representation of knowledge ?
- Representational verification
 - Representational adequacy
 - Inferential adequacy
 - Acquisitional efficiency
- 16) What are you predicating by the logic $\exists x : \forall y : \text{loyal to}(x, y)$?
- Everyone is loyal to someone
 - Everyone is loyal to all
 - Everyone is not loyal to someone
 - Everyone is loyal
- 17) Which is not Familiar connectives in first order logic ?
- and
 - iff
 - or
 - not
- 18) Which is not a type of First Order Logic (FOL) sentence ?
- Atomic sentences
 - Complex sentences
 - Quantified sentences
 - Quality sentences
- 19) Which is not a Goal-based agent ?
- Inference
 - Search
 - Planning
 - Dynamic search
- 20) A plan that describe how to take actions in levels of increasing refinement and specificity is
- Problem solving
 - Planning
 - Non-hierarchical plan
 - Hierarchical plan



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

**T.E. (IT) (Part – II) Examination, 2017
ARTIFICIAL INTELLIGENCE (Old)**

Day and Date : Friday, 19-5-2017
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) Define Heuristics. Give examples.
 - b) State the different approaches involved in knowledge representation.
 - c) State the components of solving an AI Problem.
 - d) What is Generate and test analysis ? Illustrate.
 - e) Compare between A* and AO* Algorithms.
3. Answer **any two** of the following : **(2×5=10)**
- a) List the phases of Resolution. Illustrate each phase.
 - b) State and illustrate the characteristics of AI problems.
 - c) Elaborate on the use of depth first search algorithm in searching.
4. Answer **any one** of the following : **10**
- a) What are the steps involved in AI Techniques ? Elaborate on problem reduction.
 - b) Elaborate on the strong and weak methods of searching.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is a horn clause ? Illustrate.
 - b) How is Global ontology established ?
 - c) How does CYC work ? Give examples.
 - d) What is predicate logic ? Illustrate.
 - e) What role does default reasoning play in problem solving ? Illustrate.

Set Q



6. Answer **any two** of the following : **(2×5=10)**
- a) Elaborate on the use of propositional logic for problem solving.
 - b) List the different heuristic techniques and compare them.
 - c) Define the following and elaborate
 - i) natural deduction
 - ii) heuristic search
 - iii) semantic networks.
7. Answer **any one** of the following : **10**
- a) How are conceptual dependency networks built ? Illustrate.
 - b) Elaborate on the methods used for matching. Compare between them.
-



SLR-VB – 283

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

Set **R**

**T.E. (IT) (Part – II) Examination, 2017
ARTIFICIAL INTELLIGENCE (Old)**

Day and Date : Friday, 19-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 20

1. Choose the correct alternative :

20

- 1) What are you predicating by the logic $\forall x : \exists y : \text{loyalto}(x, y)$?
 - a) Everyone is loyal to someone
 - b) Everyone is loyal to all
 - c) Everyone is not loyal to someone
 - d) Everyone is loyal
- 2) Which is not Familiar connectives in first order logic ?
 - a) and
 - b) iff
 - c) or
 - d) not
- 3) Which is not a type of First Order Logic (FOL) sentence ?
 - a) Atomic sentences
 - b) Complex sentences
 - c) Quantified sentences
 - d) Quality sentences
- 4) Which is not a Goal-based agent ?
 - a) Inference
 - b) Search
 - c) Planning
 - d) Dynamic search
- 5) A plan that describe how to take actions in levels of increasing refinement and specificity is
 - a) Problem solving
 - b) Planning
 - c) Non-hierarchical plan
 - d) Hierarchical plan
- 6) Partial order planning involves
 - a) Searching over the space of possible plans
 - b) Searching over possible situations
 - c) Searching the whole problem at once
 - d) Searching the best
- 7) Uncertainty arises in the corpus world because the agent's sensors give only
 - a) Full and global information
 - b) Partial and global information
 - c) Partial and local information
 - d) Full and local information
- 8) A Hybrid Bayesian network contains
 - a) Both discrete and continuous variables
 - b) Only discrete variables
 - c) Both discrete and discontinuous variables
 - d) Continuous variables only

P.T.O.



- 9) Which is not a desirable property of a logical rule-based system ?
a) Locality b) Attachment c) Detachment d) Truth-functionality
- 10) How is Fuzzy logic different from conventional control methods ?
a) Membership approach b) Crisp approach
c) Weighted approach d) Absolute approach
- 11) What is artificial intelligence ?
a) Doing magic
b) Programming with your own intelligence
c) Making a machine to do regular human activities
d) Putting more memory into computer
- 12) Which is not the commonly used programming language for AI ?
a) PROLOG b) Small talk c) LISP d) ASP
- 13) What is state space ?
a) The whole problem
b) Your definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter
- 14) A production rule consists of
a) A set of Rule b) A sequence of steps
c) If-then form d) Arbitrary representation to problem
- 15) Which search method takes less time ?
a) Depth-First search b) Breadth-First search
c) Best-First search d) Linear search
- 16) A heuristic is a way of trying
a) To discover something or an idea embedded in a program
b) To search and measure how far a node in a search tree seems to be from a goal
c) To compare two nodes in a search tree to see if one is better than the other
d) Only (a) and (b)
- 17) A* algorithm is based on
a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing
- 18) Which is the best way to go for Game playing problem ?
a) Linear approach b) Heuristic approach
c) Random approach d) Optimal approach
- 19) How do you represent "All dogs have tails" ?
a) $\forall x : \text{dog}(x) \wedge \text{hastail}(x)$ b) $\forall x : \text{dog}(x) \wedge \text{hastail}(y)$
c) $\forall x : \text{dog}(y) \wedge \text{hastail}(x)$ d) None of the above
- 20) Which is not a property of representation of knowledge ?
a) Representational verification b) Representational adequacy
c) Inferential adequacy d) Acquisitional efficiency
-



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

**T.E. (IT) (Part – II) Examination, 2017
ARTIFICIAL INTELLIGENCE (Old)**

Day and Date : Friday, 19-5-2017
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) Define Heuristics. Give examples.
 - b) State the different approaches involved in knowledge representation.
 - c) State the components of solving an AI Problem.
 - d) What is Generate and test analysis ? Illustrate.
 - e) Compare between A* and AO* Algorithms.
3. Answer **any two** of the following : **(2×5=10)**
- a) List the phases of Resolution. Illustrate each phase.
 - b) State and illustrate the characteristics of AI problems.
 - c) Elaborate on the use of depth first search algorithm in searching.
4. Answer **any one** of the following : **10**
- a) What are the steps involved in AI Techniques ? Elaborate on problem reduction.
 - b) Elaborate on the strong and weak methods of searching.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is a horn clause ? Illustrate.
 - b) How is Global ontology established ?
 - c) How does CYC work ? Give examples.
 - d) What is predicate logic ? Illustrate.
 - e) What role does default reasoning play in problem solving ? Illustrate.

Set R



6. Answer **any two** of the following : **(2×5=10)**
- a) Elaborate on the use of propositional logic for problem solving.
 - b) List the different heuristic techniques and compare them.
 - c) Define the following and elaborate
 - i) natural deduction
 - ii) heuristic search
 - iii) semantic networks.
7. Answer **any one** of the following : **10**
- a) How are conceptual dependency networks built ? Illustrate.
 - b) Elaborate on the methods used for matching. Compare between them.
-

Seat
No.

Set

S

**T.E. (IT) (Part – II) Examination, 2017
ARTIFICIAL INTELLIGENCE (Old)**Day and Date : Friday, 19-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 20

1. Choose the correct alternative :

20

- 1) A heuristic is a way of trying
 - a) To discover something or an idea embedded in a program
 - b) To search and measure how far a node in a search tree seems to be from a goal
 - c) To compare two nodes in a search tree to see if one is better than the other
 - d) Only (a) and (b)
- 2) A* algorithm is based on
 - a) Breadth-First-Search
 - b) Depth-First-Search
 - c) Best-First-Search
 - d) Hill climbing
- 3) Which is the best way to go for Game playing problem ?
 - a) Linear approach
 - b) Heuristic approach
 - c) Random approach
 - d) Optimal approach
- 4) How do you represent "All dogs have tails" ?
 - a) $\forall x : \text{dog}(x) \wedge \text{hastail}(x)$
 - b) $\forall x : \text{dog}(x) \wedge \text{hastail}(y)$
 - c) $\forall x : \text{dog}(y) \wedge \text{hastail}(x)$
 - d) None of the above
- 5) Which is not a property of representation of knowledge ?
 - a) Representational verification
 - b) Representational adequacy
 - c) Inferential adequacy
 - d) Acquisitional efficiency
- 6) What are you predicating by the logic $\forall x : \exists y : \text{loyalto}(x, y)$?
 - a) Everyone is loyal to someone
 - b) Everyone is loyal to all
 - c) Everyone is not loyal to someone
 - d) Everyone is loyal
- 7) Which is not Familiar connectives in first order logic ?
 - a) and
 - b) iff
 - c) or
 - d) not

P.T.O.



- 8) Which is not a type of First Order Logic (FOL) sentence ?
 - a) Atomic sentences
 - b) Complex sentences
 - c) Quantified sentences
 - d) Quality sentences
- 9) Which is not a Goal-based agent ?
 - a) Inference
 - b) Search
 - c) Planning
 - d) Dynamic search
- 10) A plan that describe how to take actions in levels of increasing refinement and specificity is
 - a) Problem solving
 - b) Planning
 - c) Non-hierarchical plan
 - d) Hierarchical plan
- 11) Partial order planning involves
 - a) Searching over the space of possible plans
 - b) Searching over possible situations
 - c) Searching the whole problem at once
 - d) Searching the best
- 12) Uncertainty arises in the corpus world because the agent's sensors give only
 - a) Full and global information
 - b) Partial and global information
 - c) Partial and local information
 - d) Full and local information
- 13) A Hybrid Bayesian network contains
 - a) Both discrete and continuous variables
 - b) Only discrete variables
 - c) Both discrete and discontinuous variables
 - d) Continuous variables only
- 14) Which is not a desirable property of a logical rule-based system ?
 - a) Locality
 - b) Attachment
 - c) Detachment
 - d) Truth-functionality
- 15) How is Fuzzy logic different from conventional control methods ?
 - a) Membership approach
 - b) Crisp approach
 - c) Weighted approach
 - d) Absolute approach
- 16) What is artificial intelligence ?
 - a) Doing magic
 - b) Programming with your own intelligence
 - c) Making a machine to do regular human activities
 - d) Putting more memory into computer
- 17) Which is not the commonly used programming language for AI ?
 - a) PROLOG
 - b) Small talk
 - c) LISP
 - d) ASP
- 18) What is state space ?
 - a) The whole problem
 - b) Your definition to a problem
 - c) Problem you design
 - d) Representing your problem with variable and parameter
- 19) A production rule consists of
 - a) A set of Rule
 - b) A sequence of steps
 - c) If-then form
 - d) Arbitrary representation to problem
- 20) Which search method takes less time ?
 - a) Depth-First search
 - b) Breadth-First search
 - c) Best-First search
 - d) Linear search



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

**T.E. (IT) (Part – II) Examination, 2017
ARTIFICIAL INTELLIGENCE (Old)**

Day and Date : Friday, 19-5-2017
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) Define Heuristics. Give examples.
 - b) State the different approaches involved in knowledge representation.
 - c) State the components of solving an AI Problem.
 - d) What is Generate and test analysis ? Illustrate.
 - e) Compare between A* and AO* Algorithms.
3. Answer **any two** of the following : **(2×5=10)**
- a) List the phases of Resolution. Illustrate each phase.
 - b) State and illustrate the characteristics of AI problems.
 - c) Elaborate on the use of depth first search algorithm in searching.
4. Answer **any one** of the following : **10**
- a) What are the steps involved in AI Techniques ? Elaborate on problem reduction.
 - b) Elaborate on the strong and weak methods of searching.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is a horn clause ? Illustrate.
 - b) How is Global ontology established ?
 - c) How does CYC work ? Give examples.
 - d) What is predicate logic ? Illustrate.
 - e) What role does default reasoning play in problem solving ? Illustrate.

Set S



6. Answer **any two** of the following : **(2×5=10)**
- a) Elaborate on the use of propositional logic for problem solving.
 - b) List the different heuristic techniques and compare them.
 - c) Define the following and elaborate
 - i) natural deduction
 - ii) heuristic search
 - iii) semantic networks.
7. Answer **any one** of the following : **10**
- a) How are conceptual dependency networks built ? Illustrate.
 - b) Elaborate on the methods used for matching. Compare between them.
-



SLR-VB – 284

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

Set	P
-----	---

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 22-5-2017
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=20)

- 1) For the conversion of NFA to DFA which of the following algorithms is used by the lexical analyzer ?
 - a) DFA simulation
 - b) Subset construction
 - c) Lexical analysis algorithm
 - d) NFA simulation
- 2) Lexical analyzer generates
 - a) Tokens
 - b) Patterns
 - c) Lexeme
 - d) Regular expression
- 3) Sentinel is used for
 - a) Input buffering
 - b) Indicating eof for each buffer
 - c) eof of line
 - d) All
- 4) Identify the compiler construction tool.
 - a) Syntax analyzer
 - b) Lexical analyzer
 - c) Scanner
 - d) Dataflow engine
- 5) Which of the following is the left-recursive grammar ?
 - a) $E \rightarrow E + E$
 - b) $E \rightarrow F + E$
 - c) $E \rightarrow F + F$
 - d) All
- 6) Which of the following is not used in machine code generation for the target program ?
 - a) ACTION
 - b) GOTO
 - c) HALT
 - d) RETURN
- 7) An inherited attribute is the
 - a) Attribute at the parent and/or siblings of that node
 - b) Attribute at the children nodes only
 - c) Attributes of the left siblings only
 - d) Attributes of the right siblings only

P.T.O.



- 8) Backtracking is used in
a) Predictive Parser b) LR Parser
c) Recursive-descent Parser d) LALR Parser
- 9) A pictorial representation of the value computed by each statement in the basic block is
a) Tree b) Graph c) DAG d) Syntax tree
- 10) Which of the following is not a loop optimization ?
a) Induction variable elimination b) Loop unrolling
c) Loop jamming d) None
- 11) Quadruple for the statement $t1 = a + b$ is
a) $a, +, b, t1$ b) $+, a, b, t1$ c) $t1, +, a, b$ d) $a, b, +, t1$
- 12) Which of the following phase of the compilation is an optional phase ?
a) Lexical b) Semantic
c) Code optimization d) Code generation
- 13) A synthesized attribute is an attribute whose value at a parse tree node depends on
a) Attributes at siblings only b) Parent node only
c) Attribute at a children node only d) All
- 14) Which of the following is not a Peephole optimization ?
a) Removal of unreachable codes
b) Elimination of multiple jumps
c) Elimination of loop invariant computation
d) All of the above
- 15) Which of the following is not three address code ?
a) $x := op\ y$ b) $x := y$ c) $x[i] := y$ d) $\&a := \&b$
- 16) Which of the following information is not required in code generation ?
a) Flowgraphs b) Next-use info
c) Register descriptor d) Parameter descriptor
- 17) A dangling reference is a pointer pointing to
a) Storage which is freed b) Nothing
- 18) The left recursive grammar can be recognized by predictive parser.
(State true/false).
- 19) LALR makes smaller parse tables than CLR. (State true/false)
- 20) In DFA no state has on ϵ -transition. (State true/false)



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

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 22-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Front end of a compiler.
 - b) Left factoring.
 - c) Compiler construction tools.
 - d) Sentinels.
 - e) LALR parsing.

3. Attempt **any one** : **10**
- What is the role of transition diagram in recognizing tokens ? Explain with the transition diagram relational operators.

OR

What is left recursion ? Describe the algorithm for elimination of left recursion.

4. Explain syntax directed definition in detail with example. **10**

SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Activation tree.
 - b) Heap allocation strategy.
 - c) Types of three address code statements.
 - d) Symbol table organization.
 - e) Loop optimization.

6. Attempt **any one** : **10**
- Elaborate three address statements with quadruples, triples and indirect triples.

OR

Elaborate code generation with its issues.

7. What is optimization ? Explain optimization of basic blocks with example. **10**

Set P



SLR-VB – 284

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

Set	Q
-----	----------

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 22-5-2017
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=20)

- 1) Which of the following information is not required in code generation ?
 - a) Flowgraphs
 - b) Next-use info
 - c) Register descriptor
 - d) Parameter descriptor
- 2) A dangling reference is a pointer pointing to
 - a) Storage which is freed
 - b) Nothing
- 3) The left recursive grammar can be recognized by predictive parser. (State true/false).
- 4) LALR makes smaller parse tables than CLR. (State true/false)
- 5) In DFA no state has on ϵ -transition. (State true/false)
- 6) For the conversion of NFA to DFA which of the following algorithms is used by the lexical analyzer ?
 - a) DFA simulation
 - b) Subset construction
 - c) Lexical analysis algorithm
 - d) NFA simulation
- 7) Lexical analyzer generates
 - a) Tokens
 - b) Patterns
 - c) Lexeme
 - d) Regular expression
- 8) Sentinel is used for
 - a) Input buffering
 - b) Indicating eof for each buffer
 - c) eof of line
 - d) All
- 9) Identify the compiler construction tool.
 - a) Syntax analyzer
 - b) Lexical analyzer
 - c) Scanner
 - d) Dataflow engine

P.T.O.



- 10) Which of the following is the left-recursive grammar ?
a) $E \rightarrow E + E$ b) $E \rightarrow F + E$ c) $E \rightarrow F + F$ d) All
- 11) Which of the following is not used in machine code generation for the target program ?
a) ACTION b) GOTO c) HALT d) RETURN
- 12) An inherited attribute is the
a) Attribute at the parent and/or siblings of that node
b) Attribute at the children nodes only
c) Attributes of the left siblings only
d) Attributes of the right siblings only
- 13) Backtracking is used in
a) Predictive Parser b) LR Parser
c) Recursive-descent Parser d) LALR Parser
- 14) A pictorial representation of the value computed by each statement in the basic block is
a) Tree b) Graph c) DAG d) Syntax tree
- 15) Which of the following is not a loop optimization ?
a) Induction variable elimination b) Loop unrolling
c) Loop jamming d) None
- 16) Quadruple for the statement $t1 = a + b$ is
a) $a, +, b, t1$ b) $+, a, b, t1$ c) $t1, + a, b$ d) $a, b, + t1$
- 17) Which of the following phase of the compilation is an optional phase ?
a) Lexical b) Semantic
c) Code optimization d) Code generation
- 18) A synthesized attribute is an attribute whose value at a parse tree node depends on
a) Attributes at siblings only b) Parent node only
c) Attribute at a children node only d) All
- 19) Which of the following is not a Peephole optimization ?
a) Removal of unreachable codes
b) Elimination of multiple jumps
c) Elimination of loop invariant computation
d) All of the above
- 20) Which of the following is not three address code ?
a) $x := op y$ b) $x := y$ c) $x[i] := y$ d) $\&a := \&b$



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

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 22-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Front end of a compiler.
 - b) Left factoring.
 - c) Compiler construction tools.
 - d) Sentinels.
 - e) LALR parsing.

3. Attempt **any one** : **10**
- What is the role of transition diagram in recognizing tokens ? Explain with the transition diagram relational operators.

OR

What is left recursion ? Describe the algorithm for elimination of left recursion.

4. Explain syntax directed definition in detail with example. **10**

SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Activation tree.
 - b) Heap allocation strategy.
 - c) Types of three address code statements.
 - d) Symbol table organization.
 - e) Loop optimization.

6. Attempt **any one** : **10**
- Elaborate three address statements with quadruples, triples and indirect triples.

OR

Elaborate code generation with its issues.

7. What is optimization ? Explain optimization of basic blocks with example. **10**

Set Q



SLR-VB – 284

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

Set	R
-----	---

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 22-5-2017
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=20)

- 1) Quadruple for the statement $t1 = a + b$ is
a) a, +, b, t1 b) +, a, b, t1 c) t1, + a, b d) a, b, + t1
- 2) Which of the following phase of the compilation is an optional phase ?
a) Lexical b) Semantic
c) Code optimization d) Code generation
- 3) A synthesized attribute is an attribute whose value at a parse tree node depends on
a) Attributes at siblings only b) Parent node only
c) Attribute at a children node only d) All
- 4) Which of the following is not a Peephole optimization ?
a) Removal of unreachable codes
b) Elimination of multiple jumps
c) Elimination of loop invariant computation
d) All of the above
- 5) Which of the following is not three address code ?
a) $x := op y$ b) $x := y$ c) $x[i] := y$ d) $\&a := \&b$
- 6) Which of the following information is not required in code generation ?
a) Flowgraphs b) Next-use info
c) Register descriptor d) Parameter descriptor
- 7) A dangling reference is a pointer pointing to
a) Storage which is freed b) Nothing

P.T.O.



- 8) The left recursive grammar can be recognized by predictive parser. (State true/false).
- 9) LALR makes smaller parse tables than CLR. (State true/false)
- 10) In DFA no state has on ϵ -transition. (State true/false)
- 11) For the conversion of NFA to DFA which of the following algorithms is used by the lexical analyzer ?
- | | |
|-------------------------------|------------------------|
| a) DFA simulation | b) Subset construction |
| c) Lexical analysis algorithm | d) NFA simulation |
- 12) Lexical analyzer generates
- | | |
|-----------|-----------------------|
| a) Tokens | b) Patterns |
| c) Lexeme | d) Regular expression |
- 13) Sentinel is used for
- | | |
|--------------------|-----------------------------------|
| a) Input buffering | b) Indicating eof for each buffer |
| c) eof of line | d) All |
- 14) Identify the compiler construction tool.
- | | |
|--------------------|---------------------|
| a) Syntax analyzer | b) Lexical analyzer |
| c) Scanner | d) Dataflow engine |
- 15) Which of the following is the left-recursive grammar ?
- | | | | |
|--------------------------|--------------------------|--------------------------|--------|
| a) $E \rightarrow E + E$ | b) $E \rightarrow F + E$ | c) $E \rightarrow F + F$ | d) All |
|--------------------------|--------------------------|--------------------------|--------|
- 16) Which of the following is not used in machine code generation for the target program ?
- | | | | |
|-----------|---------|---------|-----------|
| a) ACTION | b) GOTO | c) HALT | d) RETURN |
|-----------|---------|---------|-----------|
- 17) An inherited attribute is the
- | |
|---|
| a) Attribute at the parent and/or siblings of that node |
| b) Attribute at the children nodes only |
| c) Attributes of the left siblings only |
| d) Attributes of the right siblings only |
- 18) Backtracking is used in
- | | |
|-----------------------------|----------------|
| a) Predictive Parser | b) LR Parser |
| c) Recursive-descent Parser | d) LALR Parser |
- 19) A pictorial representation of the value computed by each statement in the basic block is
- | | | | |
|---------|----------|--------|----------------|
| a) Tree | b) Graph | c) DAG | d) Syntax tree |
|---------|----------|--------|----------------|
- 20) Which of the following is not a loop optimization ?
- | | |
|-----------------------------------|-------------------|
| a) Induction variable elimination | b) Loop unrolling |
| c) Loop jamming | d) None |



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

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 22-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Front end of a compiler.
 - b) Left factoring.
 - c) Compiler construction tools.
 - d) Sentinels.
 - e) LALR parsing.

3. Attempt **any one** : **10**
- What is the role of transition diagram in recognizing tokens ? Explain with the transition diagram relational operators.

OR

What is left recursion ? Describe the algorithm for elimination of left recursion.

4. Explain syntax directed definition in detail with example. **10**

SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Activation tree.
 - b) Heap allocation strategy.
 - c) Types of three address code statements.
 - d) Symbol table organization.
 - e) Loop optimization.

6. Attempt **any one** : **10**
- Elaborate three address statements with quadruples, triples and indirect triples.

OR

Elaborate code generation with its issues.

7. What is optimization ? Explain optimization of basic blocks with example. **10**

Set R



SLR-VB – 284

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

Set	S
-----	---

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 22-5-2017
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=20)

- 1) Which of the following is not used in machine code generation for the target program ?
a) ACTION b) GOTO c) HALT d) RETURN
- 2) An inherited attribute is the
a) Attribute at the parent and/or siblings of that node
b) Attribute at the children nodes only
c) Attributes of the left siblings only
d) Attributes of the right siblings only
- 3) Backtracking is used in
a) Predictive Parser b) LR Parser
c) Recursive-descent Parser d) LALR Parser
- 4) A pictorial representation of the value computed by each statement in the basic block is
a) Tree b) Graph c) DAG d) Syntax tree
- 5) Which of the following is not a loop optimization ?
a) Induction variable elimination b) Loop unrolling
c) Loop jamming d) None
- 6) Quadruple for the statement $t1 = a + b$ is
a) a, +, b, t1 b) +, a, b, t1 c) t1, + a, b d) a, b, + t1
- 7) Which of the following phase of the compilation is an optional phase ?
a) Lexical b) Semantic
c) Code optimization d) Code generation

P.T.O.



- 8) A synthesized attribute is an attribute whose value at a parse tree node depends on
- a) Attributes at siblings only
 - b) Parent node only
 - c) Attribute at a children node only
 - d) All
- 9) Which of the following is not a Peephole optimization ?
- a) Removal of unreachable codes
 - b) Elimination of multiple jumps
 - c) Elimination of loop invariant computation
 - d) All of the above
- 10) Which of the following is not three address code ?
- a) $x := op\ y$
 - b) $x := y$
 - c) $x[i] := y$
 - d) $\&a := \&b$
- 11) Which of the following information is not required in code generation ?
- a) Flowgraphs
 - b) Next-use info
 - c) Register descriptor
 - d) Parameter descriptor
- 12) A dangling reference is a pointer pointing to
- a) Storage which is freed
 - b) Nothing
- 13) The left recursive grammar can be recognized by predictive parser. (State true/false).
- 14) LALR makes smaller parse tables than CLR. (State true/false)
- 15) In DFA no state has on ϵ -transition. (State true/false)
- 16) For the conversion of NFA to DFA which of the following algorithms is used by the lexical analyzer ?
- a) DFA simulation
 - b) Subset construction
 - c) Lexical analysis algorithm
 - d) NFA simulation
- 17) Lexical analyzer generates
- a) Tokens
 - b) Patterns
 - c) Lexeme
 - d) Regular expression
- 18) Sentinel is used for
- a) Input buffering
 - b) Indicating eof for each buffer
 - c) eof of line
 - d) All
- 19) Identify the compiler construction tool.
- a) Syntax analyzer
 - b) Lexical analyzer
 - c) Scanner
 - d) Dataflow engine
- 20) Which of the following is the left-recursive grammar ?
- a) $E \rightarrow E + E$
 - b) $E \rightarrow F + E$
 - c) $E \rightarrow F + F$
 - d) All



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

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 22-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Front end of a compiler.
 - b) Left factoring.
 - c) Compiler construction tools.
 - d) Sentinels.
 - e) LALR parsing.

3. Attempt **any one** : **10**
- What is the role of transition diagram in recognizing tokens ? Explain with the transition diagram relational operators.

OR

What is left recursion ? Describe the algorithm for elimination of left recursion.

4. Explain syntax directed definition in detail with example. **10**

SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Activation tree.
 - b) Heap allocation strategy.
 - c) Types of three address code statements.
 - d) Symbol table organization.
 - e) Loop optimization.

6. Attempt **any one** : **10**
- Elaborate three address statements with quadruples, triples and indirect triples.

OR

Elaborate code generation with its issues.

7. What is optimization ? Explain optimization of basic blocks with example. **10**

Set S



SLR-VB – 285

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

Set	P
-----	----------

**B.E. (I.T.) (Part – I) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Thursday, 4-5-2017
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 :

- 1) In virtual reality which of the senses cannot currently be portrayed ?
a) Touch b) Hearing c) Sight d) Smell
- 2) What is design ?
a) Achieving goods within constraints b) Achieving goals within constraints
c) Arriving goals within constraints d) Arriving goals within common
- 3) Scenarios are _____ for design.
a) Samples b) Prototype c) Stories d) Models
- 4) Which of the following is programming paradigm ?
a) Read evaluation loop b) Notification based programming paradigm
c) Both a) and b) d) None of above
- 5) The most abstract design rule are general
a) Guidelines b) Standards c) Principles d) Rules
- 6) Which of the following is example of paradigm shift ?
a) Channel processing b) Data processing
c) Time sharing d) Micro controller processing
- 7) Which one of these is a good reason to include sounds in an HCI ?
a) User react more quickly to sound than to visual signals
b) User react more slowly to sound than visual signals
c) There is no preference people just like sound
d) The computer reacts to sound in the same way as human

P.T.O.



- 8) People build their own theories to understand the casual behavior of system, these have been termed _____
a) Dental models b) Pent model c) Rental model d) Mental model
- 9) There are two types of long term memory
a) Episodic memory and semantic memory
b) Episodic memory and programmatic memory
c) Segmented memory and semantic memory
d) Episodic memory and segmented memory
- 10) _____ evolution is method for structuring the critique of system using a set of sample guidelines.
a) Heuristic b) General c) Structural d) Computational
- 11) Which of the following fields is not an influence on HCI ?
a) Ergonomics b) Cognitive psychology
c) Computer science d) All of above
- 12) Conventional wisdom says that _____ tell the user when he has made some mistake.
a) Program crash b) System stuck c) Error messages d) Metadata
- 13) We perform speech acts when we offer an
a) Apology b) Greeting c) Request d) All of above
- 14) _____ is usually numeric and can be easily analyzed using statistical techniques and _____ is non-numeric and is more difficult to analyze.
a) Subjective, Objective
b) Laboratory, Field studies
c) Quantitative measurement, Qualitative measurements
d) Design, Implementation
- 15) Feedback can come in the form of
a) Non verbal communication only b) Verbal and non verbal listener responses
c) Verbal communication only d) Environmental noise
- 16) An example of communication channels is _____
a) Face to face conversation b) Noise
c) Context d) Feedback
- 17) _____ technique can be useful in eliciting detail of user's view of a system.
a) Asking b) Query c) General d) Scalar
- 18) Which of the following are styles of evaluation ?
a) Laboratory studies and field studies b) Self studies and analysis studies
c) Experimental studies d) Formal studies and informal studies
- 19) _____ is the primary consideration in designing knowledge-based AI systems.
a) Analogy b) Efficiency c) Efficacy d) Acquisition
- 20) Which one of these is NOT normally associated with qualitative data ?
a) Words b) Narrative c) Pie charts d) Images



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

**B.E. (I.T.) (Part – I) Examination, 2017
HUMAN COMPUTER INTERACTION**

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

Marks : 80

N. B. : All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain interactive system design life cycle.
 - b) Explain human input output channels in detail.
 - c) Explain design rationale and it's type with explain.
 - d) Explain the role of usability testing in user interface design.
 - e) Explain different types of human memory in detail.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Specify UI for any two home appliances in detail.
 - b) Explain different types of windows.
 - c) Explain :
 - 1) Language verses action
 - 2) Hypertext.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What is evolution through user participation ?
 - b) Explain query techniques.
 - c) Explain soft system methodology.
 - d) Write short note on petri nets and JSD diagrams.
 - e) Explain ethnographic methods.
5. Attempt **any two** of the following : **(8×2=16)**
- a) Explain various organizational issues that affect the acceptance and relevance of information and communication system.
 - b) What is dialog ? List and explain any diagrammatic notations.
 - c) Which are the different sources of information and data collection ?
What are uses of task analysis ?



SLR-VB – 285

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

Set	Q
-----	---

**B.E. (I.T.) (Part – I) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Thursday, 4-5-2017
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 :

- 1) An example of communication channels is _____
a) Face to face conversation b) Noise
c) Context d) Feedback
- 2) _____ technique can be useful in eliciting detail of user's view of a system.
a) Asking b) Query c) General d) Scalar
- 3) Which of the following are styles of evaluation ?
a) Laboratory studies and field studies b) Self studies and analysis studies
c) Experimental studies d) Formal studies and informal studies
- 4) _____ is the primary consideration in designing knowledge-based AI systems.
a) Analogy b) Efficiency c) Efficacy d) Acquisition
- 5) Which one of these is NOT normally associated with qualitative data ?
a) Words b) Narrative c) Pie charts d) Images
- 6) In virtual reality which of the senses cannot currently be portrayed ?
a) Touch b) Hearing c) Sight d) Smell
- 7) What is design ?
a) Achieving goods within constraints b) Achieving goals within constraints
c) Arriving goals within constraints d) Arriving goals within common
- 8) Scenarios are _____ for design.
a) Samples b) Prototype c) Stories d) Models
- 9) Which of the following is programming paradigm ?
a) Read evaluation loop b) Notification based programming paradigm
c) Both a) and b) d) None of above

P.T.O.



- 10) The most abstract design rule are general
 - a) Guidelines
 - b) Standards
 - c) Principles
 - d) Rules
- 11) Which of the following is example of paradigm shift ?
 - a) Channel processing
 - b) Data processing
 - c) Time sharing
 - d) Micro controller processing
- 12) Which one of these is a good reason to include sounds in an HCI ?
 - a) User react more quickly to sound than to visual signals
 - b) User react more slowly to sound than visual signals
 - c) There is no preference people just like sound
 - d) The computer reacts to sound in the same way as human
- 13) People build their own theories to understand the casual behavior of system, these have been termed _____
 - a) Dental models
 - b) Pent model
 - c) Rental model
 - d) Mental model
- 14) There are two types of long term memory
 - a) Episodic memory and semantic memory
 - b) Episodic memory and programmatic memory
 - c) Segmented memory and semantic memory
 - d) Episodic memory and segmented memory
- 15) _____ evolution is method for structuring the critique of system using a set of sample guidelines.
 - a) Heuristic
 - b) General
 - c) Structural
 - d) Computational
- 16) Which of the following fields is not an influence on HCI ?
 - a) Ergonomics
 - b) Cognitive psychology
 - c) Computer science
 - d) All of above
- 17) Conventional wisdom says that _____ tell the user when he has made some mistake.
 - a) Program crash
 - b) System stuck
 - c) Error messages
 - d) Metadata
- 18) We perform speech acts when we offer an
 - a) Apology
 - b) Greeting
 - c) Request
 - d) All of above
- 19) _____ is usually numeric and can be easily analyzed using statistical techniques and _____ is non-numeric and is more difficult to analyze.
 - a) Subjective, Objective
 - b) Laboratory, Field studies
 - c) Quantitative measurement, Qualitative measurements
 - d) Design, Implementation
- 20) Feedback can come in the form of
 - a) Non verbal communication only
 - b) Verbal and non verbal listener responses
 - c) Verbal communication only
 - d) Environmental noise



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

**B.E. (I.T.) (Part – I) Examination, 2017
HUMAN COMPUTER INTERACTION**

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

Marks : 80

N. B. : All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain interactive system design life cycle.
 - b) Explain human input output channels in detail.
 - c) Explain design rationale and it's type with explain.
 - d) Explain the role of usability testing in user interface design.
 - e) Explain different types of human memory in detail.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Specify UI for any two home appliances in detail.
 - b) Explain different types of windows.
 - c) Explain :
 - 1) Language verses action
 - 2) Hypertext.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What is evolution through user participation ?
 - b) Explain query techniques.
 - c) Explain soft system methodology.
 - d) Write short note on petri nets and JSD diagrams.
 - e) Explain ethnographic methods.
5. Attempt **any two** of the following : **(8×2=16)**
- a) Explain various organizational issues that affect the acceptance and relevance of information and communication system.
 - b) What is dialog ? List and explain any diagrammatic notations.
 - c) Which are the different sources of information and data collection ?
What are uses of task analysis ?



- 8) Which of the following are styles of evaluation ?
a) Laboratory studies and field studies b) Self studies and analysis studies
c) Experimental studies d) Formal studies and informal studies
- 9) _____ is the primary consideration in designing knowledge-based AI systems.
a) Analogy b) Efficiency c) Efficacy d) Acquisition
- 10) Which one of these is NOT normally associated with qualitative data ?
a) Words b) Narrative c) Pie charts d) Images
- 11) In virtual reality which of the senses cannot currently be portrayed ?
a) Touch b) Hearing c) Sight d) Smell
- 12) What is design ?
a) Achieving goods within constraints b) Achieving goals within constraints
c) Arriving goals within constraints d) Arriving goals within common
- 13) Scenarios are _____ for design.
a) Samples b) Prototype c) Stories d) Models
- 14) Which of the following is programming paradigm ?
a) Read evaluation loop b) Notification based programming paradigm
c) Both a) and b) d) None of above
- 15) The most abstract design rule are general
a) Guidelines b) Standards c) Principles d) Rules
- 16) Which of the following is example of paradigm shift ?
a) Channel processing b) Data processing
c) Time sharing d) Micro controller processing
- 17) Which one of these is a good reason to include sounds in an HCI ?
a) User react more quickly to sound than to visual signals
b) User react more slowly to sound than visual signals
c) There is no preference people just like sound
d) The computer reacts to sound in the same way as human
- 18) People build their own theories to understand the casual behavior of system, these have been termed _____
a) Dental models b) Pent model c) Rental model d) Mental model
- 19) There are two types of long term memory
a) Episodic memory and semantic memory
b) Episodic memory and programmatic memory
c) Segmented memory and semantic memory
d) Episodic memory and segmented memory
- 20) _____ evolution is method for structuring the critique of system using a set of sample guidelines.
a) Heuristic b) General c) Structural d) Computational



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

**B.E. (I.T.) (Part – I) Examination, 2017
HUMAN COMPUTER INTERACTION**

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

Marks : 80

N. B. : All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain interactive system design life cycle.
 - b) Explain human input output channels in detail.
 - c) Explain design rationale and it's type with explain.
 - d) Explain the role of usability testing in user interface design.
 - e) Explain different types of human memory in detail.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Specify UI for any two home appliances in detail.
 - b) Explain different types of windows.
 - c) Explain :
 - 1) Language verses action
 - 2) Hypertext.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What is evolution through user participation ?
 - b) Explain query techniques.
 - c) Explain soft system methodology.
 - d) Write short note on petri nets and JSD diagrams.
 - e) Explain ethnographic methods.
5. Attempt **any two** of the following : **(8×2=16)**
- a) Explain various organizational issues that affect the acceptance and relevance of information and communication system.
 - b) What is dialog ? List and explain any diagrammatic notations.
 - c) Which are the different sources of information and data collection ?
What are uses of task analysis ?



SLR-VB – 285

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

Set	S
-----	---

**B.E. (I.T.) (Part – I) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Thursday, 4-5-2017
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 :

- 1) Which of the following is example of paradigm shift ?
 - a) Channel processing
 - b) Data processing
 - c) Time sharing
 - d) Micro controller processing
- 2) Which one of these is a good reason to include sounds in an HCI ?
 - a) User react more quickly to sound than to visual signals
 - b) User react more slowly to sound than visual signals
 - c) There is no preference people just like sound
 - d) The computer reacts to sound in the same way as human
- 3) People build their own theories to understand the casual behavior of system, these have been termed _____
 - a) Dental models
 - b) Pent model
 - c) Rental model
 - d) Mental model
- 4) There are two types of long term memory
 - a) Episodic memory and semantic memory
 - b) Episodic memory and programmatic memory
 - c) Segmented memory and semantic memory
 - d) Episodic memory and segmented memory
- 5) _____ evolution is method for structuring the critique of system using a set of sample guidelines.
 - a) Heuristic
 - b) General
 - c) Structural
 - d) Computational
- 6) Which of the following fields is not an influence on HCI ?
 - a) Ergonomics
 - b) Cognitive psychology
 - c) Computer science
 - d) All of above

P.T.O.



- 7) Conventional wisdom says that _____ tell the user when he has made some mistake.
a) Program crash b) System stuck c) Error messages d) Metadata
- 8) We perform speech acts when we offer an
a) Apology b) Greeting c) Request d) All of above
- 9) _____ is usually numeric and can be easily analyzed using statistical techniques and _____ is non-numeric and is more difficult to analyze.
a) Subjective, Objective
b) Laboratory, Field studies
c) Quantitative measurement, Qualitative measurements
d) Design, Implementation
- 10) Feedback can come in the form of
a) Non verbal communication only b) Verbal and non verbal listener responses
c) Verbal communication only d) Environmental noise
- 11) An example of communication channels is _____
a) Face to face conversation b) Noise
c) Context d) Feedback
- 12) _____ technique can be useful in eliciting detail of user's view of a system.
a) Asking b) Query c) General d) Scalar
- 13) Which of the following are styles of evaluation ?
a) Laboratory studies and field studies b) Self studies and analysis studies
c) Experimental studies d) Formal studies and informal studies
- 14) _____ is the primary consideration in designing knowledge-based AI systems.
a) Analogy b) Efficiency c) Efficacy d) Acquisition
- 15) Which one of these is NOT normally associated with qualitative data ?
a) Words b) Narrative c) Pie charts d) Images
- 16) In virtual reality which of the senses cannot currently be portrayed ?
a) Touch b) Hearing c) Sight d) Smell
- 17) What is design ?
a) Achieving goods within constraints b) Achieving goals within constraints
c) Arriving goals within constraints d) Arriving goals within common
- 18) Scenarios are _____ for design.
a) Samples b) Prototype c) Stories d) Models
- 19) Which of the following is programming paradigm ?
a) Read evaluation loop b) Notification based programming paradigm
c) Both a) and b) d) None of above
- 20) The most abstract design rule are general
a) Guidelines b) Standards c) Principles d) Rules



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

**B.E. (I.T.) (Part – I) Examination, 2017
HUMAN COMPUTER INTERACTION**

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

Marks : 80

N. B. : All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain interactive system design life cycle.
 - b) Explain human input output channels in detail.
 - c) Explain design rationale and it's type with explain.
 - d) Explain the role of usability testing in user interface design.
 - e) Explain different types of human memory in detail.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Specify UI for any two home appliances in detail.
 - b) Explain different types of windows.
 - c) Explain :
 - 1) Language verses action
 - 2) Hypertext.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What is evolution through user participation ?
 - b) Explain query techniques.
 - c) Explain soft system methodology.
 - d) Write short note on petri nets and JSD diagrams.
 - e) Explain ethnographic methods.
5. Attempt **any two** of the following : **(8×2=16)**
- a) Explain various organizational issues that affect the acceptance and relevance of information and communication system.
 - b) What is dialog ? List and explain any diagrammatic notations.
 - c) Which are the different sources of information and data collection ?
What are uses of task analysis ?



- 9) _____ installs itself secretly on an internet users computer by piggy backing on larger applications.
A) Software B) Spyware C) Adware D) Middleware
- 10) _____ involves connecting geographically remote computers into a single network to create a virtual super computer
A) Grid Computing B) Utility Computing
C) Geo Computing D) Autonomic Computing
- 11) _____ consists of a set of physical devices and software applications that are required to operate the enterprise
A) IT infrastructure B) IT business
C) Information Technology D) All of these
- 12) _____ is a software that connects two otherwise separate applications, enabling them to communicate with each other.
A) Firmware B) Multiware C) Middleware D) ERP
- 13) A _____ is a database that stores current and historical data of potential interest to decision makers throughout the company.
A) DBMS B) Data mine
C) Data Warehouse D) Data mart
- 14) _____ refers to firms off-loading peak demand for computing power to remote, large scale data processing center.
A) On-demand computing B) Grid Computing
C) Cloud computing D) Edge computing
- 15) An/A _____ is a box consisting of a radio receiver/transmitter and antennas that links to a wired network, routes or hub.
A) Ariel B) Access Point
C) Backbone D) Hotspot
- 16) _____ involves setting up fake websites on sending e-mails that look like those of legitimate business to ask user for confidential personal data.
A) Phishing B) Spoofing C) Sniffing D) Identify theft
- 17) A software vendor created small pieces of software called _____ to repair the flows without disturbing the proper operation of the software.
A) Virus B) Worm
C) Operating system D) Patches
- 18) A _____ is one that is stored in more than one physical location.
A) Distributed database B) Parallel database
C) Data mart D) None of these
- 19) _____ involves retailing products and services to individual shopper.
A) B2B B) B2C C) C2C D) All of these
- 20) _____ uses online analytical processing and data mining to analyze large pools of data.
A) DSS B) ESS C) OSS D) FSS



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

**B.E. (Information Technology) (Part – I) Examination, 2017
MANAGEMENT INFORMATION SYSTEM**

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

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain the globalization challenges and opportunities.
 - b) What are the contemporary approaches to information systems ?
 - c) Explain the organizational and behavioural impacts.
 - d) Explain the model for thinking about ethical, social and political issues.
 - e) Write a short note on data mining.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Discuss the porter's competitive forces model.
 - b) Explain the quality of life in terms of equity, access and boundaries.
 - c) Write a short note on wireless computer networks and internet access.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What are Enterprise Systems ? Explain the business value of enterprise systems.
 - b) Explain the Supply Chain Management systems with neat diagram.
 - c) Explain the requirement of the decision-making process in the organization.
 - d) Explain the systems development and organizational change.
 - e) What are the challenges and obstacles to global business systems ?
5. Attempt **any two** of the following : **(8×2=16)**
- a) Explain the M-commerce services and applications.
 - b) Explain the types of knowledge management systems.
 - c) Explain the importance of project management.



SLR-VB – 286

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

Set	Q
-----	---

**B.E. (Information Technology) (Part – I) Examination, 2017
MANAGEMENT INFORMATION SYSTEM**

Day and Date : Friday, 5-5-2017
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.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(20×1=20)

- 1) _____ involves setting up fake websites or sending e-mails that look like those of legitimate business to ask user for confidential personal data.
A) Phishing B) Spoofing C) Sniffing D) Identify theft
- 2) A software vendor created small pieces of software called _____ to repair the flows without disturbing the proper operation of the software.
A) Virus B) Worm
C) Operating system D) Patches
- 3) A _____ is one that is stored in more than one physical location.
A) Distributed database B) Parallel database
C) Data mart D) None of these
- 4) _____ involves retailing products and services to individual shopper.
A) B2B B) B2C C) C2C D) All of these
- 5) _____ uses online analytical processing and data mining to analyze large pools of data.
A) DSS B) ESS C) OSS D) FSS
- 6) A _____ is one in which nearly all the organizations significant business relationships with customers, suppliers and employees are digitally enabled.
A) Digital Firm B) Digitization
C) Digital organization D) None of these
- 7) _____ supports non-routine decision making for middle management.
A) DSS B) ESS C) OSS D) None of these
- 8) _____ can be defined technically as a set of interrelated components that collect, process, store and distribute information.
A) Information System B) DBMS
C) Data base D) Digital data

P.T.O.



- 9) BPR stands for _____
A) Business Product Restructure B) Business Process Reengineering
C) Business Process Revaluation D) None of these
- 10) According to _____, the firm is viewed as a ‘nexus of contracts’ among self-interested individuals rather than as a unified, profit-maximizing entity.
A) Transaction Cost theory B) Agency Theory
C) Collaboration D) None of these
- 11) A/An _____ is a stable, formal social structure that takes resources from the environment and processes them to produce outputs.
A) Organization B) Institute C) Business D) Infrastructure
- 12) _____ involves comparing the efficiency and effectiveness of your business against standards and measuring performance against those standards.
A) Benchmarking B) Reengineering C) Quality control D) Quality Measure
- 13) A _____ grants the owner an exclusive monopoly on the ideas behind an invention for 20 years.
A) Patent B) Copyright C) Both A and B D) None of these
- 14) _____ installs itself secretly on an internet users computer by piggy backing on larger applications.
A) Software B) Spyware C) Adware D) Middleware
- 15) _____ involves connecting geographically remote computers into a single network to create a virtual super computer
A) Grid Computing B) Utility Computing
C) Geo Computing D) Autonomic Computing
- 16) _____ consists of a set of physical devices and software applications that are required to operate the enterprise
A) IT infrastructure B) IT business
C) Information Technology D) All of these
- 17) _____ is a software that connects two otherwise separate applications, enabling them to communicate with each other.
A) Firmware B) Multiware C) Middleware D) ERP
- 18) A _____ is a database that stores current and historical data of potential interest to decision makers throughout the company.
A) DBMS B) Data mine
C) Data Warehouse D) Data mart
- 19) _____ refers to firms off-loading peak demand for computing power to remote, large scale data processing center.
A) On-demand computing B) Grid Computing
C) Cloud computing D) Edge computing
- 20) An/A _____ is a box consisting of a radio receiver/transmitter and antennas that links to a wired network, routes or hub.
A) Ariel B) Access Point
C) Backbone D) Hotspot



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

**B.E. (Information Technology) (Part – I) Examination, 2017
MANAGEMENT INFORMATION SYSTEM**

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

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain the globalization challenges and opportunities.
 - b) What are the contemporary approaches to information systems ?
 - c) Explain the organizational and behavioural impacts.
 - d) Explain the model for thinking about ethical, social and political issues.
 - e) Write a short note on data mining.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Discuss the porter's competitive forces model.
 - b) Explain the quality of life in terms of equity, access and boundaries.
 - c) Write a short note on wireless computer networks and internet access.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What are Enterprise Systems ? Explain the business value of enterprise systems.
 - b) Explain the Supply Chain Management systems with neat diagram.
 - c) Explain the requirement of the decision-making process in the organization.
 - d) Explain the systems development and organizational change.
 - e) What are the challenges and obstacles to global business systems ?
5. Attempt **any two** of the following : **(8×2=16)**
- a) Explain the M-commerce services and applications.
 - b) Explain the types of knowledge management systems.
 - c) Explain the importance of project management.



- 8) A _____ is one that is stored in more than one physical location.
A) Distributed database B) Parallel database
C) Data mart D) None of these
- 9) _____ involves retailing products and services to individual shopper.
A) B2B B) B2C C) C2C D) All of these
- 10) _____ uses online analytical processing and data mining to analyze large pools of data.
A) DSS B) ESS C) OSS D) FSS
- 11) A _____ is one in which nearly all the organizations significant business relationships with customers, suppliers and employees are digitally enabled.
A) Digital Firm B) Digitization
C) Digital organization D) None of these
- 12) _____ supports non-routine decision making for middle management.
A) DSS B) ESS C) OSS D) None of these
- 13) _____ can be defined technically as a set of interrelated components that collect, process, store and distribute information.
A) Information System B) DBMS
C) Data base D) Digital data
- 14) BPR stands for _____
A) Business Product Restructure B) Business Process Reengineering
C) Business Process Revaluation D) None of these
- 15) According to _____, the firm is viewed as a ‘nexus of contracts’ among self-interested individuals rather than as a unified, profit-maximizing entity.
A) Transaction Cost theory B) Agency Theory
C) Collaboration D) None of these
- 16) A/An _____ is a stable, formal social structure that takes resources from the environment and processes them to produce outputs.
A) Organization B) Institute C) Business D) Infrastructure
- 17) _____ involves comparing the efficiency and effectiveness of your business against standards and measuring performance against those standards.
A) Benchmarking B) Reengineering C) Quality control D) Quality Measure
- 18) A _____ grants the owner an exclusive monopoly on the ideas behind an invention for 20 years.
A) Patent B) Copyright C) Both A and B D) None of these
- 19) _____ installs itself secretly on an internet users computer by piggy backing on larger applications.
A) Software B) Spyware C) Adware D) Middleware
- 20) _____ involves connecting geographically remote computers into a single network to create a virtual super computer
A) Grid Computing B) Utility Computing
C) Geo Computing D) Autonomic Computing



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

**B.E. (Information Technology) (Part – I) Examination, 2017
MANAGEMENT INFORMATION SYSTEM**

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

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain the globalization challenges and opportunities.
 - b) What are the contemporary approaches to information systems ?
 - c) Explain the organizational and behavioural impacts.
 - d) Explain the model for thinking about ethical, social and political issues.
 - e) Write a short note on data mining.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Discuss the porter's competitive forces model.
 - b) Explain the quality of life in terms of equity, access and boundaries.
 - c) Write a short note on wireless computer networks and internet access.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What are Enterprise Systems ? Explain the business value of enterprise systems.
 - b) Explain the Supply Chain Management systems with neat diagram.
 - c) Explain the requirement of the decision-making process in the organization.
 - d) Explain the systems development and organizational change.
 - e) What are the challenges and obstacles to global business systems ?
5. Attempt **any two** of the following : **(8×2=16)**
- a) Explain the M-commerce services and applications.
 - b) Explain the types of knowledge management systems.
 - c) Explain the importance of project management.



SLR-VB – 286

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

Set	S
-----	---

**B.E. (Information Technology) (Part – I) Examination, 2017
MANAGEMENT INFORMATION SYSTEM**

Day and Date : Friday, 5-5-2017
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.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(20×1=20)

- 1) A/An _____ is a stable, formal social structure that takes resources from the environment and processes them to produce outputs.
A) Organization B) Institute C) Business D) Infrastructure
- 2) _____ involves comparing the efficiency and effectiveness of your business against standards and measuring performance against those standards.
A) Benchmarking B) Reengineering C) Quality control D) Quality Measure
- 3) A _____ grants the owner an exclusive monopoly on the ideas behind an invention for 20 years.
A) Patent B) Copyright C) Both A and B D) None of these
- 4) _____ installs itself secretly on an internet users computer by piggy backing on larger applications.
A) Software B) Spyware C) Adware D) Middleware
- 5) _____ involves connecting geographically remote computers into a single network to create a virtual super computer
A) Grid Computing B) Utility Computing
C) Geo Computing D) Autonomic Computing
- 6) _____ consists of a set of physical devices and software applications that are required to operate the enterprise
A) IT infrastructure B) IT business
C) Information Technology D) All of these
- 7) _____ is a software that connects two otherwise separate applications, enabling them to communicate with each other.
A) Firmware B) Multiware C) Middleware D) ERP
- 8) A _____ is a database that stores current and historical data of potential interest to decision makers throughout the company.
A) DBMS B) Data mine
C) Data Warehouse D) Data mart

P.T.O.



- 9) _____ refers to firms off-loading peak demand for computing power to remote, large scale data processing center.
- A) On-demand computing B) Grid Computing
C) Cloud computing D) Edge computing
- 10) An/A _____ is a box consisting of a radio receiver/transmitter and antennas that links to a wired network, routes or hub.
- A) Ariel B) Access Point
C) Backbone D) Hotspot
- 11) _____ involves setting up fake websites on sending e-mails that look like those of legitimate business to ask user for confidential personal data.
- A) Phishing B) Spoofing C) Sniffing D) Identify theft
- 12) A software vendor created small pieces of software called _____ to repair the flows without disturbing the proper operation of the software.
- A) Virus B) Worm
C) Operating system D) Patches
- 13) A _____ is one that is stored in more than one physical location.
- A) Distributed database B) Parallel database
C) Data mart D) None of these
- 14) _____ involves retailing products and services to individual shopper.
- A) B2B B) B2C C) C2C D) All of these
- 15) _____ uses online analytical processing and data mining to analyze large pools of data.
- A) DSS B) ESS C) OSS D) FSS
- 16) A _____ is one in which nearly all the organizations significant business relationships with customers, suppliers and employees are digitally enabled.
- A) Digital Firm B) Digitization
C) Digital organization D) None of these
- 17) _____ supports non-routine decision making for middle management.
- A) DSS B) ESS C) OSS D) None of these
- 18) _____ can be defined technically as a set of interrelated components that collect, process, store and distribute information.
- A) Information System B) DBMS
C) Data base D) Digital data
- 19) BPR stands for _____
- A) Business Product Restructure B) Business Process Reengineering
C) Business Process Revaluation D) None of these
- 20) According to _____, the firm is viewed as a ‘nexus of contracts’ among self-interested individuals rather than as a unified, profit-maximizing entity.
- A) Transaction Cost theory B) Agency Theory
C) Collaboration D) None of these



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

**B.E. (Information Technology) (Part – I) Examination, 2017
MANAGEMENT INFORMATION SYSTEM**

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

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain the globalization challenges and opportunities.
 - b) What are the contemporary approaches to information systems ?
 - c) Explain the organizational and behavioural impacts.
 - d) Explain the model for thinking about ethical, social and political issues.
 - e) Write a short note on data mining.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Discuss the porter's competitive forces model.
 - b) Explain the quality of life in terms of equity, access and boundaries.
 - c) Write a short note on wireless computer networks and internet access.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What are Enterprise Systems ? Explain the business value of enterprise systems.
 - b) Explain the Supply Chain Management systems with neat diagram.
 - c) Explain the requirement of the decision-making process in the organization.
 - d) Explain the systems development and organizational change.
 - e) What are the challenges and obstacles to global business systems ?
5. Attempt **any two** of the following : **(8×2=16)**
- a) Explain the M-commerce services and applications.
 - b) Explain the types of knowledge management systems.
 - c) Explain the importance of project management.



SLR-VB – 287

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

Set	P
-----	---

**B.E. (Information Technology) (Part – I) Examination, 2017
ADVANCED DATABASE SYSTEM**

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

Total Marks : 100

- 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 : 20

1. Choose the correct alternative :

(20×1=20)

- 1) A homogeneous distributed database is which of the following ?
 - a) The same DBMS is used at each location and data are not distributed across all nodes
 - b) The same DBMS is used at each location and data are distributed across all nodes
 - c) A different DBMS is used at each location and data are not distributed across all nodes
 - d) A different DBMS is used at each location and data are distributed across all nodes
- 2) _____ partitioning is best suited for point queries based on partitioning attribute.
 - a) Round Robin
 - b) Hash
 - c) Range
 - d) None of the above
- 3) Execution of single query in parallel on multiple processor and disks is
 - a) Interoperation parallelism
 - b) Intraoperation parallelism
 - c) Interquery parallelism
 - d) Intraquery parallelism
- 4) The operation from finer granularity data to a coarser granularity is called
 - a) rollup
 - b) drilldown
 - c) slicing
 - d) dicing
- 5) Some of the columns of a relation are at different sites is which of the following ?
 - a) Data replication
 - b) Horizontal partitioning
 - c) Vertical partitioning
 - d) Horizontal and vertical partitioning
- 6) With n relations, there are _____ different join orderings.
 - a) n
 - b) n^2
 - c) $2^*(n - 1)!/n!$
 - d) $2^*(n - 1)!/(n - 1)!$
- 7) Which of the following is true equivalence ?
 - a) $\sigma_{\theta_1} \wedge \theta_2 (E) = \sigma_{\theta_1}(\sigma_{\theta_2}(E))$
 - b) $\sigma_{\theta_1}(\sigma_{\theta_2}(E)) = \sigma_{\theta_2}(\sigma_{\theta_1}(E))$
 - c) $E_1 \mid X \mid_{\theta} E_2 = E_2 \mid X \mid_{\theta} E_1$
 - d) All of the above

P.T.O.



- 8) In OLAP, MOLAP is
- a) Multivalued OLAP
 - b) Multiattribute OLAP
 - c) Multidimensional OLAP
 - d) Multiple OLAP
- 9) The process of selecting most efficient query evaluation plan from many strategies is called
- a) Query processing
 - b) Query transformation
 - c) Query translation
 - d) Query optimization
- 10) Transactions that are executed under the multi database system control are called as
- a) Local transactions
 - b) Global transactions
 - c) Client server transactions
 - d) Server transactions
- 11) Using object based database you will be able to define
- a) Attribute
 - b) Structure
 - c) Operation
 - d) All of the above
- 12) 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
- 13) What was Hadoop named after ?
- a) Creator Doug Cutting's favourite circus act
 - b) Cutting's high school rock band
 - c) The toy elephant of Cutting's son
 - d) A sound Cutting's laptop made during Hadoop's development
- 14) MapReduce can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of unstructured data. State True or False.
- a) True
 - b) False
- 15) Nesting is the
- a) Inverse process of 1 NF relation into a nested relation
 - b) Process of 4 NF to 1 NF
 - c) Process of 1 NF to 4 NF
 - d) Process creating nested relations
- 16) In a cube operation instead of null if it is replaced by all then _____ function is used.
- a) decode
 - b) percent
 - c) rollup
 - d) groupby
- 17) No SQL is
- a) schema free
 - b) easy to scale
 - c) uses sharding
 - d) all
- 18) Duplication elimination, projection, set operations can be done by
- a) sorting
 - b) hashing
 - c) both
 - d) none
- 19) Which of the following message is not generated in phase 2 of a 2PC protocol ?
- a) <ready T>
 - b) <abort T>
 - c) <commit T>
 - d) all
- 20) In OODB, *final and not final* indicates the
- a) Structure type creation
 - b) Subtype creation
 - c) Object creation
 - d) Complex type creation



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

**B.E. (Information Technology) (Part – I) Examination, 2017
ADVANCED DATABASE SYSTEM**

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

Marks : 80

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

SECTION – I

2. Attempt **any four** : **20**
- 1) Differentiate in centralised database, parallel database and distributed database.
 - 2) Explain two types of skews. How the effect of skews is minimized ?
 - 3) Explain Range partition sort.
 - 4) If a relation accounts is at site S1, depositors at site S2 and Branch at site S3, then how to calculate join of these three relations.
 - 5) Explain working of BIRCH algorithm.
 - 6) How data warehouse are created and maintained ?
3. Attempt **any one** : **10**
- 1) Explain transaction server and different types of processes with neat diagram.
 - 2) How 2PC protocol responds to various types of failures ?
4. Explain how following operations can be parallelized **10**
- 1) Selection
 - 2) Duplicate elimination
 - 3) Projection
 - 4) Aggregation.



SECTION – II

5. Attempt **any four** : **20**
- 1) Explain nested loop join.
 - 2) For the given expression find initial expression tree and transformed expression tree.
$$\pi_{\text{name, title}} (\sigma_{\text{dept-name} = \text{"M"}} (\text{inst } |X| (\text{teach } |X| \pi_{\text{cid, title}} (\text{course}))))$$
 - 3) What do you mean by structured data types ? What kind of operations should be provided for structured data types ?
 - 4) How inheritance is handled in object database systems ? Explain with example.
 - 5) Write a short note on Bigdata components.
 - 6) What is Namenode and datanode ?
6. Attempt **any one** : **10**
- 1) What are the design issues in object database management systems ?
 - 2) Differentiate between SQL, NoSQL and New SQL with example and their use.
7. List equivalence rules on relational algebra expressions. **10**
-



SLR-VB – 287

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

Set	Q
-----	---

**B.E. (Information Technology) (Part – I) Examination, 2017
ADVANCED DATABASE SYSTEM**

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

Total Marks : 100

- 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 : 20

1. Choose the correct alternative :

(20×1=20)

- 1) In a cube operation instead of null if it is replaced by all then _____ function is used.
a) decode b) percent c) rollup d) groupby
- 2) No SQL is
a) schema free b) easy to scale c) uses sharding d) all
- 3) Duplication elimination, projection, set operations can be done by
a) sorting b) hashing c) both d) none
- 4) Which of the following message is not generated in phase 2 of a 2PC protocol ?
a) <ready T> b) <abort T> c) <commit T> d) all
- 5) In OODB, *final and not final* indicates the
a) Structure type creation b) Subtype creation
c) Object creation d) Complex type creation
- 6) A homogeneous distributed database is which of the following ?
a) The same DBMS is used at each location and data are not distributed across all nodes
b) The same DBMS is used at each location and data are distributed across all nodes
c) A different DBMS is used at each location and data are not distributed across all nodes
d) A different DBMS is used at each location and data are distributed across all nodes
- 7) _____ partitioning is best suited for point queries based on partitioning attribute.
a) Round Robin b) Hash c) Range d) None of the above
- 8) Execution of single query in parallel on multiple processor and disks is
a) Interoperation parallelism b) Intraoperation parallelism
c) Interquery parallelism d) Intraquery parallelism

P.T.O.



- 9) The operation from finer granularity data to a coarser granularity is called
 a) rollup b) drilldown c) slicing d) dicing
- 10) Some of the columns of a relation are at different sites is which of the following ?
 a) Data replication b) Horizontal partitioning
 c) Vertical partitioning d) Horizontal and vertical partitioning
- 11) With n relations, there are _____ different join orderings.
 a) n b) n^2
 c) $2^{*(n-1)}/n!$ d) $2^{*(n-1)}/(n-1)!$
- 12) Which of the following is true equivalence ?
 a) $\sigma_{\theta_1 \wedge \theta_2}(E) = \sigma_{\theta_1}(\sigma_{\theta_2}(E))$ b) $\sigma_{\theta_1}(\sigma_{\theta_2}(E)) = \sigma_{\theta_2}(\sigma_{\theta_1}(E))$
 c) $E_1 \mid X \mid_{\theta} E_2 = E_2 \mid X \mid_{\theta} E_1$ d) All of the above
- 13) In OLAP, MOLAP is
 a) Multivalued OLAP b) Multiattribute OLAP
 c) Multidimensional OLAP d) Multiple OLAP
- 14) The process of selecting most efficient query evaluation plan from many strategies is called
 a) Query processing b) Query transformation
 c) Query translation d) Query optimization
- 15) Transactions that are executed under the multi database system control are called as
 a) Local transactions b) Global transactions
 c) Client server transactions d) Server transactions
- 16) Using object based database you will be able to define
 a) Attribute b) Structure c) Operation d) All of the above
- 17) 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
- 18) What was Hadoop named after ?
 a) Creator Doug Cutting's favourite circus act
 b) Cutting's high school rock band
 c) The toy elephant of Cutting's son
 d) A sound Cutting's laptop made during Hadoop's development
- 19) MapReduce can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of unstructured data. State True or False.
 a) True b) False
- 20) Nesting is the
 a) Inverse process of 1 NF relation into a nested relation
 b) Process of 4 NF to 1 NF
 c) Process of 1 NF to 4 NF
 d) Process creating nested relations



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

**B.E. (Information Technology) (Part – I) Examination, 2017
ADVANCED DATABASE SYSTEM**

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

Marks : 80

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

SECTION – I

2. Attempt **any four** : **20**
- 1) Differentiate in centralised database, parallel database and distributed database.
 - 2) Explain two types of skews. How the effect of skews is minimized ?
 - 3) Explain Range partition sort.
 - 4) If a relation accounts is at site S1, depositors at site S2 and Branch at site S3, then how to calculate join of these three relations.
 - 5) Explain working of BIRCH algorithm.
 - 6) How data warehouse are created and maintained ?
3. Attempt **any one** : **10**
- 1) Explain transaction server and different types of processes with neat diagram.
 - 2) How 2PC protocol responds to various types of failures ?
4. Explain how following operations can be parallelized **10**
- 1) Selection
 - 2) Duplicate elimination
 - 3) Projection
 - 4) Aggregation.



SECTION – II

5. Attempt **any four** : **20**
- 1) Explain nested loop join.
 - 2) For the given expression find initial expression tree and transformed expression tree.
$$\pi_{\text{name, title}} (\sigma_{\text{dept-name} = \text{"M"}} (\text{inst } |X| (\text{teach } |X| \pi_{\text{cid, title}} (\text{course}))))$$
 - 3) What do you mean by structured data types ? What kind of operations should be provided for structured data types ?
 - 4) How inheritance is handled in object database systems ? Explain with example.
 - 5) Write a short note on Bigdata components.
 - 6) What is Namenode and datanode ?
6. Attempt **any one** : **10**
- 1) What are the design issues in object database management systems ?
 - 2) Differentiate between SQL, NoSQL and New SQL with example and their use.
7. List equivalence rules on relational algebra expressions. **10**
-



SLR-VB – 287

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

Set	R
-----	---

**B.E. (Information Technology) (Part – I) Examination, 2017
ADVANCED DATABASE SYSTEM**

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

Total Marks : 100

- 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 : 20

1. Choose the correct alternative :

(20×1=20)

- 1) Using object based database you will be able to define
 - a) Attribute
 - b) Structure
 - c) Operation
 - d) All of the above
- 2) 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
- 3) What was Hadoop named after ?
 - a) Creator Doug Cutting's favourite circus act
 - b) Cutting's high school rock band
 - c) The toy elephant of Cutting's son
 - d) A sound Cutting's laptop made during Hadoop's development
- 4) MapReduce can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of unstructured data. State True or False.
 - a) True
 - b) False
- 5) Nesting is the
 - a) Inverse process of 1 NF relation into a nested relation
 - b) Process of 4 NF to 1 NF
 - c) Process of 1 NF to 4 NF
 - d) Process creating nested relations
- 6) In a cube operation instead of null if it is replaced by all then _____ function is used.
 - a) decode
 - b) percent
 - c) rollup
 - d) groupby
- 7) No SQL is
 - a) schema free
 - b) easy to scale
 - c) uses sharding
 - d) all

P.T.O.



- 8) Duplication elimination, projection, set operations can be done by
 a) sorting b) hashing c) both d) none
- 9) Which of the following message is not generated in phase 2 of a 2PC protocol ?
 a) <ready T> b) <abort T> c) <commit T> d) all
- 10) In OODB, *final and not final* indicates the
 a) Structure type creation b) Subtype creation
 c) Object creation d) Complex type creation
- 11) A homogeneous distributed database is which of the following ?
 a) The same DBMS is used at each location and data are not distributed across all nodes
 b) The same DBMS is used at each location and data are distributed across all nodes
 c) A different DBMS is used at each location and data are not distributed across all nodes
 d) A different DBMS is used at each location and data are distributed across all nodes
- 12) _____ partitioning is best suited for point queries based on partitioning attribute.
 a) Round Robin b) Hash c) Range d) None of the above
- 13) Execution of single query in parallel on multiple processor and disks is
 a) Interoperation parallelism b) Intraoperation parallelism
 c) Interquery parallelism d) Intraquery parallelism
- 14) The operation from finer granularity data to a coarser granularity is called
 a) rollup b) drilldown c) slicing d) dicing
- 15) Some of the columns of a relation are at different sites is which of the following ?
 a) Data replication b) Horizontal partitioning
 c) Vertical partitioning d) Horizontal and vertical partitioning
- 16) With n relations, there are _____ different join orderings.
 a) n b) n^2
 c) $2*(n - 1)!/n!$ d) $2*(n - 1)!/(n - 1)!$
- 17) Which of the following is true equivalence ?
 a) $\sigma_{\theta_1} \wedge \theta_2 (E) = \sigma_{\theta_1}(\sigma_{\theta_2}(E))$ b) $\sigma_{\theta_1}(\sigma_{\theta_2}(E)) = \sigma_{\theta_2}(\sigma_{\theta_1}(E))$
 c) $E_1 | X |_{\theta} E_2 = E_2 | X |_{\theta} E_1$ d) All of the above
- 18) In OLAP, MOLAP is
 a) Multivalued OLAP b) Multiattribute OLAP
 c) Multidimensional OLAP d) Multiple OLAP
- 19) The process of selecting most efficient query evaluation plan from many strategies is called
 a) Query processing b) Query transformation
 c) Query translation d) Query optimization
- 20) Transactions that are executed under the multi database system control are called as
 a) Local transactions b) Global transactions
 c) Client server transactions d) Server transactions



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

**B.E. (Information Technology) (Part – I) Examination, 2017
ADVANCED DATABASE SYSTEM**

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

Marks : 80

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

SECTION – I

2. Attempt **any four** : **20**
- 1) Differentiate in centralised database, parallel database and distributed database.
 - 2) Explain two types of skews. How the effect of skews is minimized ?
 - 3) Explain Range partition sort.
 - 4) If a relation accounts is at site S1, depositors at site S2 and Branch at site S3, then how to calculate join of these three relations.
 - 5) Explain working of BIRCH algorithm.
 - 6) How data warehouse are created and maintained ?
3. Attempt **any one** : **10**
- 1) Explain transaction server and different types of processes with neat diagram.
 - 2) How 2PC protocol responds to various types of failures ?
4. Explain how following operations can be parallelized **10**
- 1) Selection
 - 2) Duplicate elimination
 - 3) Projection
 - 4) Aggregation.



SECTION – II

5. Attempt **any four** : **20**
- 1) Explain nested loop join.
 - 2) For the given expression find initial expression tree and transformed expression tree.
$$\pi_{\text{name, title}} (\sigma_{\text{dept-name} = \text{"M"}} (\text{inst } |X| (\text{teach } |X| \pi_{\text{cid, title}} (\text{course}))))$$
 - 3) What do you mean by structured data types ? What kind of operations should be provided for structured data types ?
 - 4) How inheritance is handled in object database systems ? Explain with example.
 - 5) Write a short note on Bigdata components.
 - 6) What is Namenode and datanode ?
6. Attempt **any one** : **10**
- 1) What are the design issues in object database management systems ?
 - 2) Differentiate between SQL, NoSQL and New SQL with example and their use.
7. List equivalence rules on relational algebra expressions. **10**
-



- 8) What was Hadoop named after ?
- Creator Doug Cutting's favourite circus act
 - Cutting's high school rock band
 - The toy elephant of Cutting's son
 - A sound Cutting's laptop made during Hadoop's development
- 9) MapReduce can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of unstructured data. State True or False.
- True
 - False
- 10) Nesting is the
- Inverse process of 1 NF relation into a nested relation
 - Process of 4 NF to 1 NF
 - Process of 1 NF to 4 NF
 - Process creating nested relations
- 11) In a cube operation instead of null if it is replaced by all then _____ function is used.
- decode
 - percent
 - rollup
 - groupby
- 12) No SQL is
- schema free
 - easy to scale
 - uses sharding
 - all
- 13) Duplication elimination, projection, set operations can be done by
- sorting
 - hashing
 - both
 - none
- 14) Which of the following message is not generated in phase 2 of a 2PC protocol ?
- <ready T>
 - <abort T>
 - <commit T>
 - all
- 15) In OODB, *final and not final* indicates the
- Structure type creation
 - Subtype creation
 - Object creation
 - Complex type creation
- 16) A homogeneous distributed database is which of the following ?
- The same DBMS is used at each location and data are not distributed across all nodes
 - The same DBMS is used at each location and data are distributed across all nodes
 - A different DBMS is used at each location and data are not distributed across all nodes
 - A different DBMS is used at each location and data are distributed across all nodes
- 17) _____ partitioning is best suited for point queries based on partitioning attribute.
- Round Robin
 - Hash
 - Range
 - None of the above
- 18) Execution of single query in parallel on multiple processor and disks is
- Interoperation parallelism
 - Intraoperation parallelism
 - Interquery parallelism
 - Intraquery parallelism
- 19) The operation from finer granularity data to a coarser granularity is called
- rollup
 - drilldown
 - slicing
 - dicing
- 20) Some of the columns of a relation are at different sites is which of the following ?
- Data replication
 - Horizontal partitioning
 - Vertical partitioning
 - Horizontal and vertical partitioning



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

**B.E. (Information Technology) (Part – I) Examination, 2017
ADVANCED DATABASE SYSTEM**

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

Marks : 80

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

SECTION – I

2. Attempt **any four** : **20**
- 1) Differentiate in centralised database, parallel database and distributed database.
 - 2) Explain two types of skews. How the effect of skews is minimized ?
 - 3) Explain Range partition sort.
 - 4) If a relation accounts is at site S1, depositors at site S2 and Branch at site S3, then how to calculate join of these three relations.
 - 5) Explain working of BIRCH algorithm.
 - 6) How data warehouse are created and maintained ?
3. Attempt **any one** : **10**
- 1) Explain transaction server and different types of processes with neat diagram.
 - 2) How 2PC protocol responds to various types of failures ?
4. Explain how following operations can be parallelized **10**
- 1) Selection
 - 2) Duplicate elimination
 - 3) Projection
 - 4) Aggregation.



SECTION – II

5. Attempt **any four** : **20**
- 1) Explain nested loop join.
 - 2) For the given expression find initial expression tree and transformed expression tree.
$$\pi_{\text{name, title}} (\sigma_{\text{dept-name} = \text{"M"}} (\text{inst } |X| (\text{teach } |X| \pi_{\text{cid, title}} (\text{course}))))$$
 - 3) What do you mean by structured data types ? What kind of operations should be provided for structured data types ?
 - 4) How inheritance is handled in object database systems ? Explain with example.
 - 5) Write a short note on Bigdata components.
 - 6) What is Namenode and datanode ?
6. Attempt **any one** : **10**
- 1) What are the design issues in object database management systems ?
 - 2) Differentiate between SQL, NoSQL and New SQL with example and their use.
7. List equivalence rules on relational algebra expressions. **10**
-



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

Set	P
-----	----------

**B.E. (Information Technology) (Part – I) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

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) The Life Cycle Requirements Specification, Planning, Test Case Design, Execution, Bug Reporting and Maintenance comes under
 - a) SDLC
 - b) STLC
 - c) SQLC
 - d) BLC
- 2) Variance from product specifications is called
 - a) Report
 - b) Requirement
 - c) Defect
 - d) None of these
- 3) Earlier a defect is found the cheaper it is to fix it. Is the above statement correct ?
 - a) True
 - b) False
- 4) Which of the following should NOT normally be an objective for a test ?
 - a) To find faults in the software
 - b) To assess whether the software is ready for release
 - c) To demonstrate that the software doesn't work
 - d) To prove that the software is correct
- 5) White Box techniques are also classified as
 - a) Design based testing
 - b) Structural testing
 - c) Error guessing technique
 - d) None of these
- 6) What are the various testing levels in software testing ?
 - a) Unit testing, System testing
 - b) Integration testing, Smoke testing
 - c) Fire testing
 - d) Only a) and b)
- 7) _____ technique can be used to achieve input and output coverage.
 - a) Boundary value analysis
 - b) Equivalence partitioning
 - c) Decision table testing
 - d) State transition testing
- 8) A Non-Functional Software testing done to check if the user interface is easy to use and understand
 - a) Usability testing
 - b) Security testing
 - c) Unit testing
 - d) Black Box testing
- 9) The testing which is done by going through the code is known as
 - a) Unit testing
 - b) White box testing
 - c) Black-box testing
 - d) Regression testing



- 10) Retesting the entire application after a change has been made called as
- a) Full Regression testing
 - b) Unit regression testing
 - c) Regional regression
 - d) Retesting
- 11) Which of the following statements is true about a software verification and validation program ?
- I) It strives to ensure that quality is built into software
 - II) It provides management with insights into the state of a software project
 - III) It ensures that alpha, beta and system tests are performed
 - IV) It is executed in parallel with software development activities
- a) I, II and III b) II, III and IV c) I, II and IV d) I, III and IV
- 12) The review and approved document (i.e. Test Plan, System Requirement Specification's) is called as
- a) Delivery Document
 - b) Baseline Document
 - c) Checklist
 - d) None of these
- 13) A Test Plan Outline contains which of the following ?
- I) Test Items
 - II) Test Scripts
 - III) Test Deliverables
 - IV) Responsibilities
- a) I, II, III are true and IV is false b) I, III, IV are true and II is false
- c) II, III are true and I and IV are false d) I, II are false and III, IV are true
- 14) Use cases can be performed to test
- a) Performance testing
 - b) Unit testing
 - c) Business scenarios
 - d) Static testing
- 15) Which of the following is not a major task of Exit criteria ?
- a) Checking test logs against the exit criteria specified in test planning
 - b) Logging the outcome of test execution
 - c) Assessing if more tests are needed
 - d) Writing a test summary report for stakeholders
- 16) It measures the quality of a product, it is a specific part of the QA procedure, it is a corrective process, it applies for particular product and deals with the product.
- a) Validation
 - b) Verification
 - c) Quality assurance
 - d) Quality control
- 17) Standards and procedures for managing changes in an evolving software product is called ?
- a) Confirmation Management
 - b) Confederation Management
 - c) Configuration Management
 - d) Compartability Management
- 18) A test manager wants to use the resources available for the automated testing of a web application. The best choice is
- a) Test automater, web specialist, DBA, test lead
 - b) Tester, test automater, web specialist, DBA
 - c) Tester, test lead, test automater, DBA
 - d) Tester, web specialist, test lead, test automater
- 19) Proper plans should be prepared and then progress against these plans should be monitored is one of the salient features of ISO _____ certification.
- a) 9051
 - b) 1926
 - c) 9001
 - d) 9000
- 20) The software engineer's role in tool selection is
- a) To identify, evaluate and rank tools and recommend tools to management
 - b) To determine what kind of tool is needed, then find it and buy it
 - c) To initiate the tool search and present a case to management
 - d) To identify, evaluate and select the tools



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

**B.E. (Information Technology) (Part – I) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

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 to the right indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- 1) Explain the following terms :
I) verification II) validation III) error IV) fault V) defect
- 2) What are the challenges faced by testers and skills expected in a good tester ?
- 3) Explain boundary value analysis with the help of example.
- 4) Explain the difference between integration testing and interface testing.
- 5) Explain tool quality management approach of software testing.

3. Attempt **any two** : **(2×10=20)**

- 1) Describe the difference between black box and white box testing with the help of example.
- 2) What are the objectives of acceptance testing ? Explain different types of acceptance testing.
- 3) Discuss the importance of regression testing when developing a new software release. What test cases from test suite would be more useful in performing a regression test ?

SECTION – II

4. Attempt **any four** : **(4×5=20)**

- 1) What is the purpose of a test plan ?
- 2) Describe entrance and exit criteria in software testing.
- 3) Explain ISO 9000 quality characteristics.
- 4) What is the difference between a tool and automation ?
- 5) Why should Selenium be selected as a test tool ?

5. Attempt **any two** : **(2×10=20)**

- 1) What basic principles can you apply to your bug reports to give them the best chance of getting the bug fixed ?
- 2) What is software quality ? Explain the following terms :
I) Quality control II) Quality assurance III) Cost of quality
- 3) What are the difference between CMM and ISO 9001 ? Why is it suggested that CMM is better choice than ISO 9001.



SLR-VB – 288

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

Set	Q
-----	---

**B.E. (Information Technology) (Part – I) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

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) It measures the quality of a product, it is a specific part of the QA procedure, it is a corrective process, it applies for particular product and deals with the product.
a) Validation b) Verification c) Quality assurance d) Quality control
- 2) Standards and procedures for managing changes in an evolving software product is called ?
a) Confirmation Management b) Confederation Management
c) Configuration Management d) Compartability Management
- 3) A test manager wants to use the resources available for the automated testing of a web application. The best choice is
a) Test automater, web specialist, DBA, test lead
b) Tester, test automater, web specialist, DBA
c) Tester, test lead, test automater, DBA
d) Tester, web specialist, test lead, test automater
- 4) Proper plans should be prepared and then progress against these plans should be monitored is one of the salient features of ISO _____ certification.
a) 9051 b) 1926 c) 9001 d) 9000
- 5) The software engineer's role in tool selection is
a) To identify, evaluate and rank tools and recommend tools to management
b) To determine what kind of tool is needed, then find it and buy it
c) To initiate the tool search and present a case to management
d) To identify, evaluate and select the tools
- 6) The Life Cycle Requirements Specification, Planning, Test Case Design, Execution, Bug Reporting and Maintenance comes under
a) SDLC b) STLC c) SQLC d) BLC
- 7) Variance from product specifications is called
a) Report b) Requirement c) Defect d) None of these
- 8) Earlier a defect is found the cheaper it is to fix it. Is the above statement correct ?
a) True b) False

P.T.O.



- 9) Which of the following should NOT normally be an objective for a test ?
- To find faults in the software
 - To assess whether the software is ready for release
 - To demonstrate that the software doesn't work
 - To prove that the software is correct
- 10) White Box techniques are also classified as
- Design based testing
 - Structural testing
 - Error guessing technique
 - None of these
- 11) What are the various testing levels in software testing ?
- Unit testing, System testing
 - Integration testing, Smoke testing
 - Fire testing
 - Only a) and b)
- 12) _____ technique can be used to achieve input and output coverage.
- Boundary value analysis
 - Equivalence partitioning
 - Decision table testing
 - State transition testing
- 13) A Non-Functional Software testing done to check if the user interface is easy to use and understand
- Usability testing
 - Security testing
 - Unit testing
 - Black Box testing
- 14) The testing which is done by going through the code is known as
- Unit testing
 - White box testing
 - Black-box testing
 - Regression testing
- 15) Retesting the entire application after a change has been made called as
- Full Regression testing
 - Unit regression testing
 - Regional regression
 - Retesting
- 16) Which of the following statements is true about a software verification and validation program ?
- It strives to ensure that quality is built into software
 - It provides management with insights into the state of a software project
 - It ensures that alpha, beta and system tests are performed
 - It is executed in parallel with software development activities
- a) I, II and III b) II, III and IV c) I, II and IV d) I, III and IV
- 17) The review and approved document (i.e. Test Plan, System Requirement Specification's) is called as
- Delivery Document
 - Baseline Document
 - Checklist
 - None of these
- 18) A Test Plan Outline contains which of the following ?
- Test Items
 - Test Scripts
 - Test Deliverables
 - Responsibilities
- a) I, II, III are true and IV is false b) I, III, IV are true and II is false
c) II, III are true and I and IV are false d) I, II are false and III, IV are true
- 19) Use cases can be performed to test
- Performance testing
 - Unit testing
 - Business scenarios
 - Static testing
- 20) Which of the following is not a major task of Exit criteria ?
- Checking test logs against the exit criteria specified in test planning
 - Logging the outcome of test execution
 - Assessing if more tests are needed
 - Writing a test summary report for stakeholders



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

**B.E. (Information Technology) (Part – I) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

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 to the right indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- 1) Explain the following terms :
I) verification II) validation III) error IV) fault V) defect
- 2) What are the challenges faced by testers and skills expected in a good tester ?
- 3) Explain boundary value analysis with the help of example.
- 4) Explain the difference between integration testing and interface testing.
- 5) Explain tool quality management approach of software testing.

3. Attempt **any two** : **(2×10=20)**

- 1) Describe the difference between black box and white box testing with the help of example.
- 2) What are the objectives of acceptance testing ? Explain different types of acceptance testing.
- 3) Discuss the importance of regression testing when developing a new software release.
What test cases from test suite would be more useful in performing a regression test ?

SECTION – II

4. Attempt **any four** : **(4×5=20)**

- 1) What is the purpose of a test plan ?
- 2) Describe entrance and exit criteria in software testing.
- 3) Explain ISO 9000 quality characteristics.
- 4) What is the difference between a tool and automation ?
- 5) Why should Selenium be selected as a test tool ?

5. Attempt **any two** : **(2×10=20)**

- 1) What basic principles can you apply to your bug reports to give them the best chance of getting the bug fixed ?
- 2) What is software quality ? Explain the following terms :
I) Quality control II) Quality assurance III) Cost of quality
- 3) What are the difference between CMM and ISO 9001 ? Why is it suggested that CMM is better choice than ISO 9001.



SLR-VB – 288

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

Set	R
-----	---

**B.E. (Information Technology) (Part – I) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

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) Which of the following statements is true about a software verification and validation program ?
 - I) It strives to ensure that quality is built into software
 - II) It provides management with insights into the state of a software project
 - III) It ensures that alpha, beta and system tests are performed
 - IV) It is executed in parallel with software development activities

a) I, II and III b) II, III and IV c) I, II and IV d) I, III and IV
- 2) The review and approved document (i.e. Test Plan, System Requirement Specification's) is called as
 - a) Delivery Document
 - b) Baseline Document
 - c) Checklist
 - d) None of these
- 3) A Test Plan Outline contains which of the following ?
 - I) Test Items
 - II) Test Scripts
 - III) Test Deliverables
 - IV) Responsibilities

a) I, II, III are true and IV is false b) I, III, IV are true and II is false
c) II, III are true and I and IV are false d) I, II are false and III, IV are true
- 4) Use cases can be performed to test
 - a) Performance testing
 - b) Unit testing
 - c) Business scenarios
 - d) Static testing
- 5) Which of the following is not a major task of Exit criteria ?
 - a) Checking test logs against the exit criteria specified in test planning
 - b) Logging the outcome of test execution
 - c) Assessing if more tests are needed
 - d) Writing a test summary report for stakeholders
- 6) It measures the quality of a product, it is a specific part of the QA procedure, it is a corrective process, it applies for particular product and deals with the product.
 - a) Validation
 - b) Verification
 - c) Quality assurance
 - d) Quality control
- 7) Standards and procedures for managing changes in an evolving software product is called ?
 - a) Confirmation Management
 - b) Confederation Management
 - c) Configuration Management
 - d) Compatability Management

P.T.O.



- 8) A test manager wants to use the resources available for the automated testing of a web application. The best choice is
- Test automater, web specialist, DBA, test lead
 - Tester, test automater, web specialist, DBA
 - Tester, test lead, test automater, DBA
 - Tester, web specialist, test lead, test automater
- 9) Proper plans should be prepared and then progress against these plans should be monitored is one of the salient features of ISO _____ certification.
- 9051
 - 1926
 - 9001
 - 9000
- 10) The software engineer's role in tool selection is
- To identify, evaluate and rank tools and recommend tools to management
 - To determine what kind of tool is needed, then find it and buy it
 - To initiate the tool search and present a case to management
 - To identify, evaluate and select the tools
- 11) The Life Cycle Requirements Specification, Planning, Test Case Design, Execution, Bug Reporting and Maintenance comes under
- SDLC
 - STLC
 - SQLC
 - BLC
- 12) Variance from product specifications is called
- Report
 - Requirement
 - Defect
 - None of these
- 13) Earlier a defect is found the cheaper it is to fix it. Is the above statement correct ?
- True
 - False
- 14) Which of the following should NOT normally be an objective for a test ?
- To find faults in the software
 - To assess whether the software is ready for release
 - To demonstrate that the software doesn't work
 - To prove that the software is correct
- 15) White Box techniques are also classified as
- Design based testing
 - Structural testing
 - Error guessing technique
 - None of these
- 16) What are the various testing levels in software testing ?
- Unit testing, System testing
 - Integration testing, Smoke testing
 - Fire testing
 - Only a) and b)
- 17) _____ technique can be used to achieve input and output coverage.
- Boundary value analysis
 - Equivalence partitioning
 - Decision table testing
 - State transition testing
- 18) A Non-Functional Software testing done to check if the user interface is easy to use and understand
- Usability testing
 - Security testing
 - Unit testing
 - Black Box testing
- 19) The testing which is done by going through the code is known as
- Unit testing
 - White box testing
 - Black-box testing
 - Regression testing
- 20) Retesting the entire application after a change has been made called as
- Full Regression testing
 - Unit regression testing
 - Regional regression
 - Retesting



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

**B.E. (Information Technology) (Part – I) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

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 to the right indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- 1) Explain the following terms :
I) verification II) validation III) error IV) fault V) defect
- 2) What are the challenges faced by testers and skills expected in a good tester ?
- 3) Explain boundary value analysis with the help of example.
- 4) Explain the difference between integration testing and interface testing.
- 5) Explain tool quality management approach of software testing.

3. Attempt **any two** : **(2×10=20)**

- 1) Describe the difference between black box and white box testing with the help of example.
- 2) What are the objectives of acceptance testing ? Explain different types of acceptance testing.
- 3) Discuss the importance of regression testing when developing a new software release. What test cases from test suite would be more useful in performing a regression test ?

SECTION – II

4. Attempt **any four** : **(4×5=20)**

- 1) What is the purpose of a test plan ?
- 2) Describe entrance and exit criteria in software testing.
- 3) Explain ISO 9000 quality characteristics.
- 4) What is the difference between a tool and automation ?
- 5) Why should Selenium be selected as a test tool ?

5. Attempt **any two** : **(2×10=20)**

- 1) What basic principles can you apply to your bug reports to give them the best chance of getting the bug fixed ?
- 2) What is software quality ? Explain the following terms :
I) Quality control II) Quality assurance III) Cost of quality
- 3) What are the difference between CMM and ISO 9001 ? Why is it suggested that CMM is better choice than ISO 9001.



SLR-VB – 288

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

Set	S
-----	---

**B.E. (Information Technology) (Part – I) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

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) What are the various testing levels in software testing ?
 - a) Unit testing, System testing
 - b) Integration testing, Smoke testing
 - c) Fire testing
 - d) Only a) and b)
- 2) _____ technique can be used to achieve input and output coverage.
 - a) Boundary value analysis
 - b) Equivalence partitioning
 - c) Decision table testing
 - d) State transition testing
- 3) A Non-Functional Software testing done to check if the user interface is easy to use and understand
 - a) Usability testing
 - b) Security testing
 - c) Unit testing
 - d) Black Box testing
- 4) The testing which is done by going through the code is known as
 - a) Unit testing
 - b) White box testing
 - c) Black-box testing
 - d) Regression testing
- 5) Retesting the entire application after a change has been made called as
 - a) Full Regression testing
 - b) Unit regression testing
 - c) Regional regression
 - d) Retesting
- 6) Which of the following statements is true about a software verification and validation program ?
 - I) It strives to ensure that quality is built into software
 - II) It provides management with insights into the state of a software project
 - III) It ensures that alpha, beta and system tests are performed
 - IV) It is executed in parallel with software development activities
 - a) I, II and III
 - b) II, III and IV
 - c) I, II and IV
 - d) I, III and IV
- 7) The review and approved document (i.e. Test Plan, System Requirement Specification's) is called as
 - a) Delivery Document
 - b) Baseline Document
 - c) Checklist
 - d) None of these
- 8) A Test Plan Outline contains which of the following ?
 - I) Test Items
 - II) Test Scripts
 - III) Test Deliverables
 - IV) Responsibilities
 - a) I, II, III are true and IV is false
 - b) I, III, IV are true and II is false
 - c) II, III are true and I and IV are false
 - d) I, II are false and III, IV are true

P.T.O.



- 9) Use cases can be performed to test
- a) Performance testing
 - b) Unit testing
 - c) Business scenarios
 - d) Static testing
- 15) Which of the following is not a major task of Exit criteria ?
- a) Checking test logs against the exit criteria specified in test planning
 - b) Logging the outcome of test execution
 - c) Assessing if more tests are needed
 - d) Writing a test summary report for stakeholders
- 11) It measures the quality of a product, it is a specific part of the QA procedure, it is a corrective process, it applies for particular product and deals with the product.
- a) Validation
 - b) Verification
 - c) Quality assurance
 - d) Quality control
- 12) Standards and procedures for managing changes in an evolving software product is called ?
- a) Confirmation Management
 - b) Confederation Management
 - c) Configuration Management
 - d) Compartability Management
- 13) A test manager wants to use the resources available for the automated testing of a web application. The best choice is
- a) Test automater, web specialist, DBA, test lead
 - b) Tester, test automater, web specialist, DBA
 - c) Tester, test lead, test automater, DBA
 - d) Tester, web specialist, test lead, test automater
- 14) Proper plans should be prepared and then progress against these plans should be monitored is one of the salient features of ISO _____ certification.
- a) 9051
 - b) 1926
 - c) 9001
 - d) 9000
- 15) The software engineer's role in tool selection is
- a) To identify, evaluate and rank tools and recommend tools to management
 - b) To determine what kind of tool is needed, then find it and buy it
 - c) To initiate the tool search and present a case to management
 - d) To identify, evaluate and select the tools
- 16) The Life Cycle Requirements Specification, Planning, Test Case Design, Execution, Bug Reporting and Maintenance comes under
- a) SDLC
 - b) STLC
 - c) SQLC
 - d) BLC
- 17) Variance from product specifications is called
- a) Report
 - b) Requirement
 - c) Defect
 - d) None of these
- 18) Earlier a defect is found the cheaper it is to fix it. Is the above statement correct ?
- a) True
 - b) False
- 19) Which of the following should NOT normally be an objective for a test ?
- a) To find faults in the software
 - b) To assess whether the software is ready for release
 - c) To demonstrate that the software doesn't work
 - d) To prove that the software is correct
- 20) White Box techniques are also classified as
- a) Design based testing
 - b) Structural testing
 - c) Error guessing technique
 - d) None of these
-



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

**B.E. (Information Technology) (Part – I) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

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 to the right indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- 1) Explain the following terms :
I) verification II) validation III) error IV) fault V) defect
- 2) What are the challenges faced by testers and skills expected in a good tester ?
- 3) Explain boundary value analysis with the help of example.
- 4) Explain the difference between integration testing and interface testing.
- 5) Explain tool quality management approach of software testing.

3. Attempt **any two** : **(2×10=20)**

- 1) Describe the difference between black box and white box testing with the help of example.
- 2) What are the objectives of acceptance testing ? Explain different types of acceptance testing.
- 3) Discuss the importance of regression testing when developing a new software release.
What test cases from test suite would be more useful in performing a regression test ?

SECTION – II

4. Attempt **any four** : **(4×5=20)**

- 1) What is the purpose of a test plan ?
- 2) Describe entrance and exit criteria in software testing.
- 3) Explain ISO 9000 quality characteristics.
- 4) What is the difference between a tool and automation ?
- 5) Why should Selenium be selected as a test tool ?

5. Attempt **any two** : **(2×10=20)**

- 1) What basic principles can you apply to your bug reports to give them the best chance of getting the bug fixed ?
- 2) What is software quality ? Explain the following terms :
I) Quality control II) Quality assurance III) Cost of quality
- 3) What are the difference between CMM and ISO 9001 ? Why is it suggested that CMM is better choice than ISO 9001.



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

Set	P
-----	----------

B.E. (Information Technology) (Part – I) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING

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) Draw figure **wherever** is necessary.
5) Assume suitable data **if necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

(20×1=20)

- 1) The aim of _____ is to ensure that the movement of object is handled automatically by the system in user transparent manner.
A) Concurrency transparency B) Migration transparency
C) Performance transparency D) Scaling transparency
- 2) _____ is the ability of a system to continue function in the event of partial failure.
A) Fault avoidance B) Fault tolerance
C) Replication transparency D) None of these
- 3) Steps necessary for secure communication include
A) Authentication of the receivers of message by the senders
B) Authentication of the senders of a message by its receivers
C) Encryption of message before sending it over the network
D) All of these
- 4) _____ is the method to test primitives provide to allow the receiver to check the buffer status.
A) Polling B) Interrupt C) Timeout D) None of these
- 5) The amount of _____ to be allocated in the bounded buffer strategy is a matter of implementation.
A) Buffer Space B) Synchronization C) Null buffer D) None of these
- 6) An _____ value loses its meaning when transferred from one process address to another.
A) Absolute pointer B) Encoding of message
C) Storage space D) None of these
- 7) An _____ operation produces the same results without any side effects no matter how many times it is performed with same arguments.
A) Semantic B) Abounded C) Idempotent D) None of these

P.T.O.



- 8) For all packets of a multidatagram message, when this approach is used, a node crash or a communication link failure may lead to
- A) One or more packets of the multidatagram message are lost in communication
 - B) The packets are received out of sequence by the receiver
 - C) Both A) and B)
 - D) None of these
- 9) In one to one communication, the degree of reliability is normally expressed in
- A) The 0-reliable
 - B) The 1-reliable
 - C) The m-out-of-n reliable
 - D) All of these
- 10) In case of RPC, the caller and callee process have _____, the remote procedure has no access to data and variables of the callers environment.
- A) Disjoint address space
 - B) Uniform address space
 - C) Both A) and B)
 - D) None of these
- 11) The _____ handles transmission of messages across the network between client and server machines.
- A) Client stub
 - B) Server stub
 - C) RPC Runtime
 - D) None of these
- 12) A call message normally have the field like
- A) Sequence Number
 - B) Message type field
 - C) Client identification field
 - D) All of these
- 13) The RR protocol in its basic form not possesses _____ capabilities.
- A) Failure handling
 - B) Server management
 - C) One call semantic
 - D) None of these
- 14) The process by which a client becomes associated with a server so that call can take place known as
- A) Server naming
 - B) Binding
 - C) Server locating
 - D) None of these
- 15) In this method the client and server modules are programmed as they were intended to be linked together
- A) Binding at compile time
 - B) Binding at link time
 - C) Binding at call time
 - D) None of these
- 16) When a process wants to enter a critical section it send message to all other process, the message contain the information
- A) Process Identifier
 - B) Name of critical section
 - C) Unique timestamp
 - D) All of these
- 17) A good process migration mechanism must possess
- A) Minimal Interference
 - B) Minimal residue dependencies
 - C) Robustness
 - D) All of these
- 18) In this method a process execution is stopped while its address space is being transferred
- A) Transfer on reference
 - B) Total freezing
 - C) Pre-transferring
 - D) None of these
- 19) _____ scheduling scheme used for better performance on a multiprocessor system.
- A) Affinity
 - B) Handoff
 - C) Flexibility
 - D) None of these
- 20) The _____ attempts to reduce the amount of network traffic by taking of the locality feature found in file accesses.
- A) Data cache model
 - B) Remote service model
 - C) Unit data transfer
 - D) None of these



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

**B.E. (Information Technology) (Part – I) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING**

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) **Draw figure wherever is necessary.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain with figure the different communication protocols for RPC.
 - b) State and explain the desirable features of a good message passing system.
 - c) Explain with example Idempotency and handling of duplicate request message.
 - d) What is DOS ? Explain the features of its popularity.
 - e) Explain the Marshalling arguments and results.
3. Explain in detail all the system models of distributed computing. **10**

OR

Explain with figure, failure handling w.r.t. message passing.

4. Write note on (**any two**) : **(2×5=10)**
- a) Message buffering strategy
 - b) Exception handling
 - c) Client server binding.

SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) Explain the clock synchronization issues and algorithm.
 - b) Explain with example the centralized approach for deadlock detection.
 - c) Explain the desirable features of a good process migration mechanism.
 - d) Explain the support and services of distributed file system.
 - e) Explain the effect of service paradigm on fault tolerance.

Set P



6. Explain in detail file replication.

10

OR

Explain the thread synchronization and scheduling with example.

7. Write note on **(Any two)** :

(2×5=10)

- a) Drifting of clocks
 - b) File models
 - c) Mutual exclusion.
-



SLR-VB – 290

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

Set	Q
-----	---

B.E. (Information Technology) (Part – I) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING

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) Draw figure **wherever** is necessary.
5) Assume suitable data **if necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

(20×1=20)

- 1) When a process wants to enter a critical section it send message to all other process, the message contain the information
A) Process Identifier
B) Name of critical section
C) Unique timestamp
D) All of these
- 2) A good process migration mechanism must possess
A) Minimal Interference
B) Minimal residue dependencies
C) Robustness
D) All of these
- 3) In this method a process execution is stopped while its address space is being transferred
A) Transfer on reference
B) Total freezing
C) Pre-transferring
D) None of these
- 4) _____ scheduling scheme used for better performance on a multiprocessor system.
A) Affinity
B) Handoff
C) Flexibility
D) None of these
- 5) The _____ attempts to reduce the amount of network traffic by taking of the locality feature found in file accesses.
A) Data cache model
B) Remote service model
C) Unit data transfer
D) None of these
- 6) The aim of _____ is to ensure that the movement of object is handled automatically by the system in user transparent manner.
A) Concurrency transparency
B) Migration transparency
C) Performance transparency
D) Scaling transparency
- 7) _____ is the ability of a system to continue function in the event of partial failure.
A) Fault avoidance
B) Fault tolerance
C) Replication transparency
D) None of these

P.T.O.



- 8) Steps necessary for secure communication include
- A) Authentication of the receivers of message by the senders
 - B) Authentication of the senders of a message by its receivers
 - C) Encryption of message before sending it over the network
 - D) All of these
- 9) _____ is the method to test primitives provide to allow the receiver to check the buffer status.
- A) Polling
 - B) Interrupt
 - C) Timeout
 - D) None of these
- 10) The amount of _____ to be allocated in the bounded buffer strategy is a matter of implementation.
- A) Buffer Space
 - B) Synchronization
 - C) Null buffer
 - D) None of these
- 11) An _____ value loses its meaning when transferred from one process address to another.
- A) Absolute pointer
 - B) Encoding of message
 - C) Storage space
 - D) None of these
- 12) An _____ operation produces the same results without any side effects no matter how many times it is performed with same arguments.
- A) Semantic
 - B) Abounded
 - C) Idempotent
 - D) None of these
- 13) For all packets of a multidatagram message, when this approach is used, a node crash or a communication link failure may lead to
- A) One or more packets of the multidatagram message are lost in communication
 - B) The packets are received out of sequence by the receiver
 - C) Both A) and B)
 - D) None of these
- 14) In one to one communication, the degree of reliability is normally expressed in
- A) The 0-reliable
 - B) The 1-reliable
 - C) The m-out-of-n reliable
 - D) All of these
- 15) In case of RPC, the caller and callee process have _____, the remote procedure has no access to data and variables of the callers environment.
- A) Disjoint address space
 - B) Uniform address space
 - C) Both A) and B)
 - D) None of these
- 16) The _____ handles transmission of messages across the network between client and server machines.
- A) Client stub
 - B) Server stub
 - C) RPC Runtime
 - D) None of these
- 17) A call message normally have the field like
- A) Sequence Number
 - B) Message type field
 - C) Client identification field
 - D) All of these
- 18) The RR protocol in its basic form not possesses _____ capabilities.
- A) Failure handling
 - B) Server management
 - C) One call semantic
 - D) None of these
- 19) The process by which a client becomes associated with a server so that call can take place known as
- A) Server naming
 - B) Binding
 - C) Server locating
 - D) None of these
- 20) In this method the client and server modules are programmed as they were intended to be linked together
- A) Binding at compile time
 - B) Binding at link time
 - C) Binding at call time
 - D) None of these



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

B.E. (Information Technology) (Part – I) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING

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) **Draw figure wherever is necessary.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain with figure the different communication protocols for RPC.
 - b) State and explain the desirable features of a good message passing system.
 - c) Explain with example Idempotency and handling of duplicate request message.
 - d) What is DOS ? Explain the features of its popularity.
 - e) Explain the Marshalling arguments and results.
3. Explain in detail all the system models of distributed computing. **10**

OR

Explain with figure, failure handling w.r.t. message passing.

4. Write note on (**any two**) : **(2×5=10)**
- a) Message buffering strategy
 - b) Exception handling
 - c) Client server binding.

SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) Explain the clock synchronization issues and algorithm.
 - b) Explain with example the centralized approach for deadlock detection.
 - c) Explain the desirable features of a good process migration mechanism.
 - d) Explain the support and services of distributed file system.
 - e) Explain the effect of service paradigm on fault tolerance.

Set Q



6. Explain in detail file replication.

10

OR

Explain the thread synchronization and scheduling with example.

7. Write note on (**Any two**) :

(2×5=10)

- a) Drifting of clocks
 - b) File models
 - c) Mutual exclusion.
-



SLR-VB – 290

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

Set	R
-----	---

B.E. (Information Technology) (Part – I) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING

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) Draw figure **wherever** is necessary.
 - 5) Assume suitable data **if necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

(20×1=20)

- 1) The _____ handles transmission of messages across the network between client and server machines.
A) Client stub B) Server stub C) RPC Runtime D) None of these
- 2) A call message normally have the field like
A) Sequence Number B) Message type field
C) Client identification field D) All of these
- 3) The RR protocol in its basic form not possesses _____ capabilities.
A) Failure handling B) Server management
C) One call semantic D) None of these
- 4) The process by which a client becomes associated with a server so that call can take place known as
A) Server naming B) Binding C) Server locating D) None of these
- 5) In this method the client and server modules are programmed as they were intended to be linked together
A) Binding at compile time B) Binding at link time
C) Binding at call time D) None of these
- 6) When a process wants to enter a critical section it send message to all other process, the message contain the information
A) Process Identifier B) Name of critical section
C) Unique timestamp D) All of these
- 7) A good process migration mechanism must possess
A) Minimal Interference B) Minimal residue dependencies
C) Robustness D) All of these
- 8) In this method a process execution is stopped while its address space is being transferred
A) Transfer on reference B) Total freezing
C) Pre-transferring D) None of these

P.T.O.



- 9) _____ scheduling scheme used for better performance on a multiprocessor system.
A) Affinity B) Handoff C) Flexibility D) None of these
- 10) The _____ attempts to reduce the amount of network traffic by taking of the locality feature found in file accesses.
A) Data cache model B) Remote service model
C) Unit data transfer D) None of these
- 11) The aim of _____ is to ensure that the movement of object is handled automatically by the system in user transparent manner.
A) Concurrency transparency B) Migration transparency
C) Performance transparency D) Scaling transparency
- 12) _____ is the ability of a system to continue function in the event of partial failure.
A) Fault avoidance B) Fault tolerance
C) Replication transparency D) None of these
- 13) Steps necessary for secure communication include
A) Authentication of the receivers of message by the senders
B) Authentication of the senders of a message by its receivers
C) Encryption of message before sending it over the network
D) All of these
- 14) _____ is the method to test primitives provide to allow the receiver to check the buffer status.
A) Polling B) Interrupt C) Timeout D) None of these
- 15) The amount of _____ to be allocated in the bounded buffer strategy is a matter of implementation.
A) Buffer Space B) Synchronization C) Null buffer D) None of these
- 16) An _____ value loses its meaning when transferred from one process address to another.
A) Absolute pointer B) Encoding of message
C) Storage space D) None of these
- 17) An _____ operation produces the same results without any side effects no matter how many times it is performed with same arguments.
A) Semantic B) Abounded C) Idempotent D) None of these
- 18) For all packets of a mult Datagram message, when this approach is used, a node crash or a communication link failure may lead to
A) One or more packets of the mult Datagram message are lost in communication
B) The packets are received out of sequence by the receiver
C) Both A) and B)
D) None of these
- 19) In one to one communication, the degree of reliability is normally expressed in
A) The 0-reliable B) The 1-reliable
C) The m-out-of-n reliable D) All of these
- 20) In case of RPC, the caller and callee process have _____, the remote procedure has no access to data and variables of the callers environment.
A) Disjoint address space B) Uniform address space
C) Both A) and B) D) None of these



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

B.E. (Information Technology) (Part – I) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING

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) **Draw figure wherever is necessary.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain with figure the different communication protocols for RPC.
 - b) State and explain the desirable features of a good message passing system.
 - c) Explain with example Idempotency and handling of duplicate request message.
 - d) What is DOS ? Explain the features of its popularity.
 - e) Explain the Marshalling arguments and results.
3. Explain in detail all the system models of distributed computing. **10**

OR

Explain with figure, failure handling w.r.t. message passing.

4. Write note on (**any two**) : **(2×5=10)**
- a) Message buffering strategy
 - b) Exception handling
 - c) Client server binding.

SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) Explain the clock synchronization issues and algorithm.
 - b) Explain with example the centralized approach for deadlock detection.
 - c) Explain the desirable features of a good process migration mechanism.
 - d) Explain the support and services of distributed file system.
 - e) Explain the effect of service paradigm on fault tolerance.

Set R



6. Explain in detail file replication.

10

OR

Explain the thread synchronization and scheduling with example.

7. Write note on (**Any two**) :

(2×5=10)

- a) Drifting of clocks
 - b) File models
 - c) Mutual exclusion.
-



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

**B.E. (Information Technology) (Part – I) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING**

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) **Draw figure wherever is necessary.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain with figure the different communication protocols for RPC.
 - b) State and explain the desirable features of a good message passing system.
 - c) Explain with example Idempotency and handling of duplicate request message.
 - d) What is DOS ? Explain the features of its popularity.
 - e) Explain the Marshalling arguments and results.
3. Explain in detail all the system models of distributed computing. **10**

OR

Explain with figure, failure handling w.r.t. message passing.

4. Write note on (**any two**) : **(2×5=10)**
- a) Message buffering strategy
 - b) Exception handling
 - c) Client server binding.

SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) Explain the clock synchronization issues and algorithm.
 - b) Explain with example the centralized approach for deadlock detection.
 - c) Explain the desirable features of a good process migration mechanism.
 - d) Explain the support and services of distributed file system.
 - e) Explain the effect of service paradigm on fault tolerance.

Set S



6. Explain in detail file replication.

10

OR

Explain the thread synchronization and scheduling with example.

7. Write note on **(Any two)** :

(2×5=10)

- a) Drifting of clocks
 - b) File models
 - c) Mutual exclusion.
-



SLR-VB – 293

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

Set	P
-----	---

**B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE**

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

Max. Marks : 100

- 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 : 20

1. Choose the correct answer : 20
- 1) The function of array processor is to
 - a) Execute scalar instructions
 - b) Initiate vector instruction execution
 - c) Perform I/O operations
 - d) All above
 - 2) Multiprocessors operations are
 - a) Synchronous
 - b) Asynchronous
 - c) Can be a) or b)
 - d) None of the above
 - 3) Bubble in pipeline
 - a) Stalls the pipeline
 - b) Slows down the pipeline
 - c) Increase the efficiency of pipeline
 - d) Decreases the hardware
 - 4) Write back policy is preferred to write through policy because
 - a) It require simple hardware
 - b) It require simple software
 - c) It is cheap
 - d) It avoids network congestion
 - 5) Snooping protocol for cache coherence in multiprocessor systems is used for
 - a) Small system
 - b) Medium system
 - c) Large system
 - d) None of these
 - 6) In centralized shared memory architecture data communication between processors is performed by
 - a) Shared main memory
 - b) Shared secondary memory
 - c) Cache
 - d) Message transfer
 - 7) RISC architecture is known as
 - a) Load-store
 - b) Arithmetic
 - c) Logical
 - d) All of these
 - 8) True dependence means
 - a) WAR
 - b) WAW
 - c) RAW
 - d) RAR

P.T.O.



- 9) Branch Target Buffer stores
- a) Instruction address
 - b) Target address
 - c) Branch prediction
 - d) All above
- 10) Data forwarding technique resolves
- a) RAW
 - b) WAR
 - c) WAW
 - d) ALL
- 11) Vector is independent of the computation of the other results in the same vector and so hardware does not have to check for _____ within a vector instruction.
- a) Data hazard
 - b) Control hazard
 - c) Infrastructure hazard
 - d) All above
- 12) An entire loop is replaced by a vector instruction whose behavior is predetermined, _____ that would normally arise from the loop branch are nonexistent.
- a) Control hazard
 - b) Data hazard
 - c) Both
 - d) None
- 13) The primary component of the instruction set architecture of VMIPS are
- a) Vector functional unit
 - b) Vector registers
 - c) A set of scalar registers
 - d) All above
- 14) Tomasulos algorithm eliminates
- a) WAR hazard
 - b) WAW hazards
 - c) WAR and WAW hazard
 - d) None of these
- 15) To minimizing RAW stalls method used
- a) Forwarding
 - b) High pass
 - c) Both
 - d) None
- 16) Dynamic scheduling is when the hardware rearranges the order of _____ execution to reduce stall.
- a) Data
 - b) Instructions
 - c) Memory
 - d) None
- 17) Register renaming resolution method for artificial dependence is used in
- a) Scoreboarding
 - b) Tomasulos algorithm
 - c) Both a) and b)
 - d) None
- 18) CPI of pipeline increases with
- a) Data hazards
 - b) Control hazards
 - c) Structural hazards
 - d) All of these
- 19) In tightly coupled architecture multiprocessor architecture PMIN stands for
- a) Program Memory Interconnection Network
 - b) Processor Memory Interconnection Network
 - c) Program Memory Interrupt Network
 - d) None of these
- 20) Ring data flow architecture is
- a) Static
 - b) Dynamic
 - c) Both
 - d) None



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

**B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE**

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

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Attempt **any four** : **20**
- 1) What is instruction level parallelism ? Explain the possible data hazards.
 - 2) What is name dependences ? Explain antidependence and output dependence.
 - 3) Write a short note on loop unrolling.
 - 4) Write a note on basic VLIW approach.
 - 5) Explain the following terms – vector length and vector stride.
3. Attempt **any one** : **10**
- 1) Draw and explain basic vector architecture.
 - 2) Explain the basic structure of FP unit using Tomasulo's algorithm and extended to handle speculation.
4. Write a note on effectiveness of compiler vectorization. **10**

SECTION – II

5. Attempt **any four** : **20**
- 1) Explain with neat diagram about how communication between processes in a multiprocessor environment takes place ?
 - 2) Write a note on Processor Memory Interconnection Network (PMIN) and IO/P Interconnection Network (IOPIN).
 - 3) Write a note on static data flow computer architecture with neat diagram.
 - 4) Mention any five important technical problems that remain to be solved in case of data flow computer.
 - 5) Draw and briefly explain distributed memory architecture.

Set P



6. Attempt **any one** : **10**
- 1) Explain the different steps in an intercluster memory access with neat diagram.
 - 2) List the useful properties of data flow language and draw a data flow graph for the computation of
$$U = f(A, B) = (A \times (A + B) - (A + B) \div B) \div (A \times (A + B) \times (A + B)).$$
7. With neat diagram explain the components of the Kmap in C_m^* . **10**
-



SLR-VB – 293

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

Set	Q
-----	---

**B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE**

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

Max. Marks : 100

- 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 : 20

1. Choose the correct answer : 20
- 1) Dynamic scheduling is when the hardware rearranges the order of _____ execution to reduce stall.
a) Data b) Instructions c) Memory d) None
 - 2) Register renaming resolution method for artificial dependence is used in
a) Scoreboarding b) Tomasulos algorithm
c) Both a) and b) d) None
 - 3) CPI of pipeline increases with
a) Data hazards b) Control hazards
c) Structural hazards d) All of these
 - 4) In tightly coupled architecture multiprocessor architecture PMIN stands for
a) Program Memory Interconnection Network
b) Processor Memory Interconnection Network
c) Program Memory Interrupt Network
d) None of these
 - 5) Ring data flow architecture is
a) Static b) Dynamic c) Both d) None
 - 6) The function of array processor is to
a) Execute scalar instructions b) Initiate vector instruction execution
c) Perform I/O operations d) All above
 - 7) Multiprocessors operations are
a) Synchronous b) Asynchronous c) Can be a) or b) d) None of the above

P.T.O.



- 8) Bubble in pipeline
a) Stalls the pipeline b) Slows down the pipeline
c) Increase the efficiency of pipeline d) Decreases the hardware
- 9) Write back policy is preferred to write through policy because
a) It require simple hardware b) It require simple software
c) It is cheap d) It avoids network congestion
- 10) Snooping protocol for cache coherence in multiprocessor systems is used for
a) Small system b) Medium system
c) Large system d) None of these
- 11) In centralized shared memory architecture data communication between processors is performed by
a) Shared main memory b) Shared secondary memory
c) Cache d) Message transfer
- 12) RISC architecture is known as
a) Load-store b) Arithmetic c) Logical d) All of these
- 13) True dependence means
a) WAR b) WAW c) RAW d) RAR
- 14) Branch Target Buffer stores
a) Instruction address b) Target address
c) Branch prediction d) All above
- 15) Data forwarding technique resolves
a) RAW b) WAR c) WAW d) ALL
- 16) Vector is independent of the computation of the other results in the same vector and so hardware does not have to check for _____ within a vector instruction.
a) Data hazard b) Control hazard
c) Infrastructure hazard d) All above
- 17) An entire loop is replaced by a vector instruction whose behavior is predetermined, _____ that would normally arise form the loop branch are nonexistent.
a) Control hazard b) Data hazard c) Both d) None
- 18) The primary component of the instruction set architecture of VMIPS are
a) Vector functional unit b) Vector registers
c) A set of scalar registers d) All above
- 19) Tomasulos algorithm eliminates
a) WAR hazard b) WAW hazards
c) WAR and WAW hazard d) None of these
- 20) To minimizing RAW stalls method used
a) Forwarding b) High pass c) Both d) None



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

**B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE**

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

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Attempt **any four** : **20**
- 1) What is instruction level parallelism ? Explain the possible data hazards.
 - 2) What is name dependences ? Explain antidependence and output dependence.
 - 3) Write a short note on loop unrolling.
 - 4) Write a note on basic VLIW approach.
 - 5) Explain the following terms – vector length and vector stride.
3. Attempt **any one** : **10**
- 1) Draw and explain basic vector architecture.
 - 2) Explain the basic structure of FP unit using Tomasulo's algorithm and extended to handle speculation.
4. Write a note on effectiveness of compiler vectorization. **10**

SECTION – II

5. Attempt **any four** : **20**
- 1) Explain with neat diagram about how communication between processes in a multiprocessor environment takes place ?
 - 2) Write a note on Processor Memory Interconnection Network (PMIN) and IO/P Interconnection Network (IOPIN).
 - 3) Write a note on static data flow computer architecture with neat diagram.
 - 4) Mention any five important technical problems that remain to be solved in case of data flow computer.
 - 5) Draw and briefly explain distributed memory architecture.

Set Q



6. Attempt **any one** : **10**
- 1) Explain the different steps in an intercluster memory access with neat diagram.
 - 2) List the useful properties of data flow language and draw a data flow graph for the computation of
$$U = f(A, B) = (A \times (A + B) - (A + B) \div B) \div (A \times (A + B) \times (A + B)).$$
7. With neat diagram explain the components of the Kmap in C_m^* . **10**
-



- 8) CPI of pipeline increases with
- a) Data hazards
 - b) Control hazards
 - c) Structural hazards
 - d) All of these
- 9) In tightly coupled architecture multiprocessor architecture PMIN stands for
- a) Program Memory Interconnection Network
 - b) Processor Memory Interconnection Network
 - c) Program Memory Interrupt Network
 - d) None of these
- 10) Ring data flow architecture is
- a) Static
 - b) Dynamic
 - c) Both
 - d) None
- 11) The function of array processor is to
- a) Execute scalar instructions
 - b) Initiate vector instruction execution
 - c) Perform I/O operations
 - d) All above
- 12) Multiprocessors operations are
- a) Synchronous
 - b) Asynchronous
 - c) Can be a) or b)
 - d) None of the above
- 13) Bubble in pipeline
- a) Stalls the pipeline
 - b) Slows down the pipeline
 - c) Increase the efficiency of pipeline
 - d) Decreases the hardware
- 14) Write back policy is preferred to write through policy because
- a) It require simple hardware
 - b) It require simple software
 - c) It is cheap
 - d) It avoids network congestion
- 15) Snooping protocol for cache coherence in multiprocessor systems is used for
- a) Small system
 - b) Medium system
 - c) Large system
 - d) None of these
- 16) In centralized shared memory architecture data communication between processors is performed by
- a) Shared main memory
 - b) Shared secondary memory
 - c) Cache
 - d) Message transfer
- 17) RISC architecture is known as
- a) Load-store
 - b) Arithmetic
 - c) Logical
 - d) All of these
- 18) True dependence means
- a) WAR
 - b) WAW
 - c) RAW
 - d) RAR
- 19) Branch Target Buffer stores
- a) Instruction address
 - b) Target address
 - c) Branch prediction
 - d) All above
- 20) Data forwarding technique resolves
- a) RAW
 - b) WAR
 - c) WAW
 - d) ALL



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

**B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE**

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

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Attempt **any four** : **20**
- 1) What is instruction level parallelism ? Explain the possible data hazards.
 - 2) What is name dependences ? Explain antidependence and output dependence.
 - 3) Write a short note on loop unrolling.
 - 4) Write a note on basic VLIW approach.
 - 5) Explain the following terms – vector length and vector stride.
3. Attempt **any one** : **10**
- 1) Draw and explain basic vector architecture.
 - 2) Explain the basic structure of FP unit using Tomasulo's algorithm and extended to handle speculation.
4. Write a note on effectiveness of compiler vectorization. **10**

SECTION – II

5. Attempt **any four** : **20**
- 1) Explain with neat diagram about how communication between processes in a multiprocessor environment takes place ?
 - 2) Write a note on Processor Memory Interconnection Network (PMIN) and IO/P Interconnection Network (IOPIN).
 - 3) Write a note on static data flow computer architecture with neat diagram.
 - 4) Mention any five important technical problems that remain to be solved in case of data flow computer.
 - 5) Draw and briefly explain distributed memory architecture.



6. Attempt **any one** : **10**
- 1) Explain the different steps in an intercluster memory access with neat diagram.
 - 2) List the useful properties of data flow language and draw a data flow graph for the computation of
$$U = f(A, B) = (A \times (A + B) - (A + B) \div B) \div (A \times (A + B) \times (A + B)).$$
7. With neat diagram explain the components of the Kmap in C_m^* . **10**
-



SLR-VB – 293

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

Set	S
-----	---

**B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE**

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

Max. Marks : 100

- 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 : 20

1. Choose the correct answer : **20**
- 1) In centralized shared memory architecture data communication between processors is performed by
 - a) Shared main memory
 - b) Shared secondary memory
 - c) Cache
 - d) Message transfer
 - 2) RISC architecture is known as
 - a) Load-store
 - b) Arithmetic
 - c) Logical
 - d) All of these
 - 3) True dependence means
 - a) WAR
 - b) WAW
 - c) RAW
 - d) RAR
 - 4) Branch Target Buffer stores
 - a) Instruction address
 - b) Target address
 - c) Branch prediction
 - d) All above
 - 5) Data forwarding technique resolves
 - a) RAW
 - b) WAR
 - c) WAW
 - d) ALL
 - 6) Vector is independent of the computation of the other results in the same vector and so hardware does not have to check for _____ within a vector instruction.
 - a) Data hazard
 - b) Control hazard
 - c) Infrastructure hazard
 - d) All above
 - 7) An entire loop is replaced by a vector instruction whose behavior is predetermined, _____ that would normally arise from the loop branch are nonexistent.
 - a) Control hazard
 - b) Data hazard
 - c) Both
 - d) None

P.T.O.



- 8) The primary component of the instruction set architecture of VMIPS are
 - a) Vector functional unit
 - b) Vector registers
 - c) A set of scalar registers
 - d) All above
- 9) Tomasulos algorithm eliminates
 - a) WAR hazard
 - b) WAW hazards
 - c) WAR and WAW hazard
 - d) None of these
- 10) To minimizing RAW stalls method used
 - a) Forwarding
 - b) High pass
 - c) Both
 - d) None
- 11) Dynamic scheduling is when the hardware rearranges the order of _____ execution to reduce stall.
 - a) Data
 - b) Instructions
 - c) Memory
 - d) None
- 12) Register renaming resolution method for artificial dependence is used in
 - a) Scoreboarding
 - b) Tomasulos algorithm
 - c) Both a) and b)
 - d) None
- 13) CPI of pipeline increases with
 - a) Data hazards
 - b) Control hazards
 - c) Structural hazards
 - d) All of these
- 14) In tightly coupled architecture multiprocessor architecture PMIN stands for
 - a) Program Memory Interconnection Network
 - b) Processor Memory Interconnection Network
 - c) Program Memory Interrupt Network
 - d) None of these
- 15) Ring data flow architecture is
 - a) Static
 - b) Dynamic
 - c) Both
 - d) None
- 16) The function of array processor is to
 - a) Execute scalar instructions
 - b) Initiate vector instruction execution
 - c) Perform I/O operations
 - d) All above
- 17) Multiprocessors operations are
 - a) Synchronous
 - b) Asynchronous
 - c) Can be a) or b)
 - d) None of the above
- 18) Bubble in pipeline
 - a) Stalls the pipeline
 - b) Slows down the pipeline
 - c) Increase the efficiency of pipeline
 - d) Decreases the hardware
- 19) Write back policy is preferred to write through policy because
 - a) It require simple hardware
 - b) It require simple software
 - c) It is cheap
 - d) It avoids network congestion
- 20) Snooping protocol for cache coherence in multiprocessor systems is used for
 - a) Small system
 - b) Medium system
 - c) Large system
 - d) None of these



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

**B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE**

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

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Attempt **any four** : **20**
- 1) What is instruction level parallelism ? Explain the possible data hazards.
 - 2) What is name dependences ? Explain antidependence and output dependence.
 - 3) Write a short note on loop unrolling.
 - 4) Write a note on basic VLIW approach.
 - 5) Explain the following terms – vector length and vector stride.
3. Attempt **any one** : **10**
- 1) Draw and explain basic vector architecture.
 - 2) Explain the basic structure of FP unit using Tomasulo's algorithm and extended to handle speculation.
4. Write a note on effectiveness of compiler vectorization. **10**

SECTION – II

5. Attempt **any four** : **20**
- 1) Explain with neat diagram about how communication between processes in a multiprocessor environment takes place ?
 - 2) Write a note on Processor Memory Interconnection Network (PMIN) and IO/P Interconnection Network (IOPIN).
 - 3) Write a note on static data flow computer architecture with neat diagram.
 - 4) Mention any five important technical problems that remain to be solved in case of data flow computer.
 - 5) Draw and briefly explain distributed memory architecture.

Set S



6. Attempt **any one** : **10**
- 1) Explain the different steps in an intercluster memory access with neat diagram.
 - 2) List the useful properties of data flow language and draw a data flow graph for the computation of
$$U = f(A, B) = (A \times (A + B) - (A + B) \div B) \div (A \times (A + B) \times (A + B)).$$
7. With neat diagram explain the components of the Kmap in C_m^* . **10**
-

Seat
No.

Set

P

**B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL**

Day and Date : Tuesday, 16-5-2017

Total 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.**
3) **All** questions are **compulsory**.
4) Figures to the **right** indicate marks to a question.
5) Assume appropriate data **if necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. A) Choose correct alternatives :

10

Consider keyword set = {information, retrieval, Boolean, vector, model}

Weight vectors for 3 documents are as follows :

$$D_1 = \{2, 2, 0, 1, 1\}$$

$$D_2 = \{0, 1, 1, 0, 1\}$$

$$D_3 = \{2, 2, 1, 1, 1\}$$

Find following values

1) $f_{3,4} =$

a) 0.5

b) 1

c) 2

d) 7

2) $idf_1 =$

a) 0.5

b) 1.5

c) 0.69

d) 0.405

3) $W_{1,4} =$

a) 0.405

b) 0.20

c) 1

d) 0

4) Pattern $\text{inte}(\text{ger|grity})(\text{s}|\epsilon|1)^*$ will match word

a) integers 1

b) integers 11

c) integrity

d) all of them

- 5) If relevant set of documents with respect to query q has 100 documents and if there are four relevant documents in first hundred documents in ranking. Then R-precision value is

a) 0.04

b) 0.4

c) 0.1

d) can't say

P.T.O.



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

**B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL**

Day and Date : Tuesday, 16-5-2017
Time : 3.00 p.m. to 6.00 p.m.

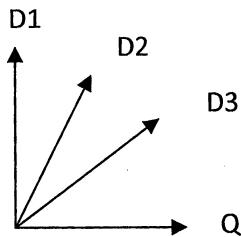
Marks : 80

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

SECTION – I

2. Attempt **any four** : **20**

- 1) Define recall, precision, harmonic mean, E-Measure and user oriented measures.
- 2) Explain how to construct signature files and search using signature files.
- 3) Arrange following documents in the decreasing order of degree of similarity and justify your answer.



- 4) Consider scenario
Query : Information Retrieval
Documents retrieved after search contains either word 'Information' or 'Retrieval'. Is this example of information retrieval or data retrieval ? Justify your answer.
- 5) Write a short note on context queries.
- 6) Explain working of shift-or algorithm.

3. Attempt **any one** : **10**

- 1) Which words will be retrieved from the given set allowing edit distance of 3 ? Justify the answer.
 - a) Words = {Monday, Tuesday, Wednesday, Thursday, Friday, Saturday}
 - b) Entered word = Sunday
- 2) Explain how BM algorithm works. Find the occurrences of pattern in the text using BM algorithm. Show stepwise result.
Text : aabababacba Pattern : abbab

4. Explain in detail models for browsing. **10**



SECTION – II

5. Attempt **any four** : **20**
- 1) Explain how multimedia data is represented inside the system.
 - 2) Define crawler. Explain different techniques used in crawling.
 - 3) Define digital library concept.
 - 4) Explain cross-talk problem and how it is solved.
 - 5) Explain steps of multimedia data retrieval.
 - 6) What is Ranking ? Explain any one ranking algorithm.
6. Attempt **any one** : **10**
- 1) Explain MULTOS model in detail with example. How image data is dealt in MULTOS model ?
 - 2) What is predicate ? Explain different types of predicates used in multimedia IR system with example.
7. State disadvantages of centralized architecture. How they are handled in distributed architecture ? **10**
-

Seat
No.

--

Set

Q

B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL

Day and Date : Tuesday, 16-5-2017

Total 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.**
3) **All** questions are **compulsory**.
4) Figures to the **right** indicate marks to a question.
5) Assume appropriate data **if necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. A) State whether the following statement is **true** or **false** : **5**
- 1) Find image of size 600×400 is an example of attribute predicate.
 - 2) In skewed energy spectrum $O(F^{-b})$, brown noise represents successfully stock movements and exchange rates.
 - 3) A word which is appearing every document in the collection of thousand documents can be considered as index term.
 - 4) Suffix array requires less space as compared to suffix trees.
 - 5) Online searching is appropriate when text is large.

- B) Choose correct alternatives : **10**

Consider keyword set = {information, retrieval, Boolean, vector, model}

Weight vectors for 3 documents are as follows :

$$D_1 = \{2, 2, 0, 1, 1\}$$

$$D_2 = \{0, 1, 1, 0, 1\}$$

$$D_3 = \{2, 2, 1, 1, 1\}$$

Find following values

1) $f_{3,4} =$

a) 0.5

b) 1

c) 2

d) 7



- 2) $idf_1 =$
 a) 0.5 b) 1.5 c) 0.69 d) 0.405
- 3) $W_{1,4} =$
 a) 0.405 b) 0.20 c) 1 d) 0
- 4) Pattern $inte(ger|grity)(s|\epsilon|1)^*$ will match word
 a) integers 1 b) integers 11 c) integrity d) all of them
- 5) If relevant set of documents with respect to query q has 100 documents and if there are four relevant documents in first hundred documents in ranking. Then R-precision value is
 a) 0.04 b) 0.4 c) 0.1 d) can't say
- 6) Binary search requires _____ time in suffix arrays.
 a) $O(n)$ b) $O(\log n)$ c) $O(n \log n)$ d) $O(n^2)$
- 7) _____ provides indexing mechanism and query interface to the data.
 a) Gatherer b) Broker
 c) Object Cache d) Replication Manager
- 8) Distance between two series is found by
 a) $(S[i] - Q[i])^2$ b) $(\sum (S[i] - Q[i]))^2$
 c) $(\sum (S[i] - Q[i])^{1/2})^2$ d) $(\sum (S[i] - Q[i])^2)^{1/2}$
- 9) Google uses _____ ranking algorithm.
 a) Boolean spread b) Pagerank
 c) Vector spread d) None of the above
- 10) In shift-OR algorithm, state of search is kept in a machine word $D = d_m \dots d_1$. A match is reported whenever
 a) d_m bit is set to 1 b) d_m bit is set to 0
 c) d_1 bit is set to 1 d) d_1 bit is set to 0

C) Match correctly :

5

- | | |
|---------------------------------|--|
| 1) KMP algorithm | a) Bit parallelism |
| 2) BM algorithm | b) Approximate matching |
| 3) BDM algorithm | c) Use of prefix function |
| 4) Shift-OR | d) Match and occurrence heuristic combined |
| 5) Non-deterministic automation | e) Recognizes all suffixes of pattern |



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

**B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL**

Day and Date : Tuesday, 16-5-2017
Time : 3.00 p.m. to 6.00 p.m.

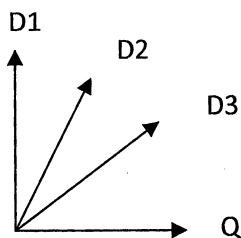
Marks : 80

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

SECTION – I

2. Attempt **any four** : **20**

- 1) Define recall, precision, harmonic mean, E-Measure and user oriented measures.
- 2) Explain how to construct signature files and search using signature files.
- 3) Arrange following documents in the decreasing order of degree of similarity and justify your answer.



- 4) Consider scenario
Query : Information Retrieval
Documents retrieved after search contains either word 'Information' or 'Retrieval'. Is this example of information retrieval or data retrieval ? Justify your answer.
- 5) Write a short note on context queries.
- 6) Explain working of shift-or algorithm.

3. Attempt **any one** : **10**

- 1) Which words will be retrieved from the given set allowing edit distance of 3 ? Justify the answer.
 - a) Words = {Monday, Tuesday, Wednesday, Thursday, Friday, Saturday}
 - b) Entered word = Sunday
- 2) Explain how BM algorithm works. Find the occurrences of pattern in the text using BM algorithm. Show stepwise result.
Text : aabababacba Pattern : abbab

4. Explain in detail models for browsing. **10**



SECTION – II

5. Attempt **any four** : **20**
- 1) Explain how multimedia data is represented inside the system.
 - 2) Define crawler. Explain different techniques used in crawling.
 - 3) Define digital library concept.
 - 4) Explain cross-talk problem and how it is solved.
 - 5) Explain steps of multimedia data retrieval.
 - 6) What is Ranking ? Explain any one ranking algorithm.
6. Attempt **any one** : **10**
- 1) Explain MULTOS model in detail with example. How image data is dealt in MULTOS model ?
 - 2) What is predicate ? Explain different types of predicates used in multimedia IR system with example.
7. State disadvantages of centralized architecture. How they are handled in distributed architecture ? **10**
-

Seat
No.Set **R****B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL**

Day and Date : Tuesday, 16-5-2017

Total 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.**
3) **All** questions are **compulsory**.
4) Figures to the **right** indicate marks to a question.
5) Assume appropriate data **if necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. A) Match correctly :

5

- | | |
|---------------------------------|--|
| 1) KMP algorithm | a) Bit parallelism |
| 2) BM algorithm | b) Approximate matching |
| 3) BDM algorithm | c) Use of prefix function |
| 4) Shift-OR | d) Match and occurrence heuristic combined |
| 5) Non-deterministic automation | e) Recognizes all suffixes of pattern |

B) Choose correct alternatives :

10

Consider keyword set = {information, retrieval, Boolean, vector, model}

Weight vectors for 3 documents are as follows :

$$D_1 = \{2, 2, 0, 1, 1\}$$

$$D_2 = \{0, 1, 1, 0, 1\}$$

$$D_3 = \{2, 2, 1, 1, 1\}$$

Find following values

- 1) Binary search requires _____ time in suffix arrays.
a) $O(n)$ b) $O(\log n)$ c) $O(n \log n)$ d) $O(n^2)$
- 2) _____ provides indexing mechanism and query interface to the data.
a) Gatherer b) Broker
c) Object Cache d) Replication Manager

P.T.O.



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

**B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL**

Day and Date : Tuesday, 16-5-2017
Time : 3.00 p.m. to 6.00 p.m.

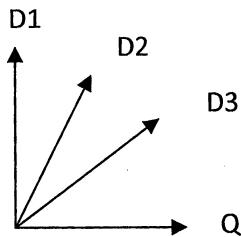
Marks : 80

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

SECTION – I

2. Attempt **any four** : **20**

- 1) Define recall, precision, harmonic mean, E-Measure and user oriented measures.
- 2) Explain how to construct signature files and search using signature files.
- 3) Arrange following documents in the decreasing order of degree of similarity and justify your answer.



- 4) Consider scenario
Query : Information Retrieval
Documents retrieved after search contains either word 'Information' or 'Retrieval'. Is this example of information retrieval or data retrieval ? Justify your answer.
- 5) Write a short note on context queries.
- 6) Explain working of shift-or algorithm.

3. Attempt **any one** : **10**

- 1) Which words will be retrieved from the given set allowing edit distance of 3 ? Justify the answer.
 - a) Words = {Monday, Tuesday, Wednesday, Thursday, Friday, Saturday}
 - b) Entered word = Sunday
- 2) Explain how BM algorithm works. Find the occurrences of pattern in the text using BM algorithm. Show stepwise result.
Text : aabababacba Pattern : abbab

4. Explain in detail models for browsing. **10**



SECTION – II

5. Attempt **any four** : **20**
- 1) Explain how multimedia data is represented inside the system.
 - 2) Define crawler. Explain different techniques used in crawling.
 - 3) Define digital library concept.
 - 4) Explain cross-talk problem and how it is solved.
 - 5) Explain steps of multimedia data retrieval.
 - 6) What is Ranking ? Explain any one ranking algorithm.
6. Attempt **any one** : **10**
- 1) Explain MULTOS model in detail with example. How image data is dealt in MULTOS model ?
 - 2) What is predicate ? Explain different types of predicates used in multimedia IR system with example.
7. State disadvantages of centralized architecture. How they are handled in distributed architecture ? **10**
-



SLR-VB – 294

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

Set	S
-----	---

**B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL**

Day and Date : Tuesday, 16-5-2017
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.**
 - 3) **All** questions are **compulsory**.
 - 4) Figures to the **right** indicate marks to a question.
 - 5) Assume appropriate data **if necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. A) Choose correct alternatives :

10

Consider keyword set = {information, retrieval, Boolean, vector, model}

Weight vectors for 3 documents are as follows :

$$D_1 = \{2, 2, 0, 1, 1\}$$

$$D_2 = \{0, 1, 1, 0, 1\}$$

$$D_3 = \{2, 2, 1, 1, 1\}$$

Find following values

- 1) Binary search requires _____ time in suffix arrays.
a) $O(n)$ b) $O(\log n)$ c) $O(n \log n)$ d) $O(n^2)$
- 2) _____ provides indexing mechanism and query interface to the data.
a) Gatherer b) Broker
c) Object Cache d) Replication Manager
- 3) Distance between two series is found by
a) $(S[i] - Q[i])^2$ b) $(\sum (S[i] - Q[i]))^2$
c) $(\sum (S[i] - Q[i])^{1/2})^2$ d) $(\sum (S[i] - Q[i])^2)^{1/2}$
- 4) Google uses _____ ranking algorithm.
a) Boolean spread b) Pagerank
c) Vector spread d) None of the above

P.T.O.



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

**B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL**

Day and Date : Tuesday, 16-5-2017
Time : 3.00 p.m. to 6.00 p.m.

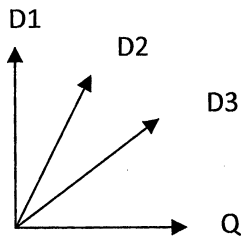
Marks : 80

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

SECTION – I

2. Attempt **any four** : **20**

- 1) Define recall, precision, harmonic mean, E-Measure and user oriented measures.
- 2) Explain how to construct signature files and search using signature files.
- 3) Arrange following documents in the decreasing order of degree of similarity and justify your answer.



- 4) Consider scenario
Query : Information Retrieval
Documents retrieved after search contains either word 'Information' or 'Retrieval'. Is this example of information retrieval or data retrieval ? Justify your answer.
- 5) Write a short note on context queries.
- 6) Explain working of shift-or algorithm.

3. Attempt **any one** : **10**

- 1) Which words will be retrieved from the given set allowing edit distance of 3 ? Justify the answer.
 - a) Words = {Monday, Tuesday, Wednesday, Thursday, Friday, Saturday}
 - b) Entered word = Sunday
- 2) Explain how BM algorithm works. Find the occurrences of pattern in the text using BM algorithm. Show stepwise result.
Text : aabababacba Pattern : abbab

4. Explain in detail models for browsing. **10**



SECTION – II

5. Attempt **any four** : **20**
- 1) Explain how multimedia data is represented inside the system.
 - 2) Define crawler. Explain different techniques used in crawling.
 - 3) Define digital library concept.
 - 4) Explain cross-talk problem and how it is solved.
 - 5) Explain steps of multimedia data retrieval.
 - 6) What is Ranking ? Explain any one ranking algorithm.
6. Attempt **any one** : **10**
- 1) Explain MULTOS model in detail with example. How image data is dealt in MULTOS model ?
 - 2) What is predicate ? Explain different types of predicates used in multimedia IR system with example.
7. State disadvantages of centralized architecture. How they are handled in distributed architecture ? **10**
-



SLR-VB – 295

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

Set

P

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

Day and Date : Thursday, 18-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) Draw figure **wherever** is necessary.
 - 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 : 20

1. Choose the correct answer :

20

- 1) The simplest and most straightforward form of telephone service is called
 - A) Public switch telephone network
 - B) Mobile telephone switching office
 - C) Plain and old telephone service
 - D) Central office service
- 2) _____ are local telephone switches equipped with SS7-compatible software and terminating signal links.
 - A) Switching points
 - B) Service points
 - C) Point codes
 - D) Service switching points
- 3) It is comprised of two or more facilities, interconnected in tandem, to provide a transmission path between a source and a destination
 - A) Telephone line
 - B) Telephone set
 - C) Telephone circuit
 - D) Telephone trunk
- 4) It is characterized by high-amplitude peaks of short duration having an approximately flat frequency response
 - A) Crosstalk
 - B) Interference
 - C) Impulse noise
 - D) Drop out
- 5) It is the presence of one or more continuous, unwanted tones within the message channels, the tones are often caused by crosstalk cross modulation between adjacent channels in a transmission system due to system nonlinearities.
 - A) Multiple-frequency interference
 - B) Single-frequency interference
 - C) Co-channel interference
 - D) Desensitizing
- 6) That portion of the local loop that is strung between the poles
 - A) Aerial
 - B) Distribution cable
 - C) Feeder cable
 - D) Twisted-pair

P.T.O.



- 7) It is the primary cause of attenuation and phase distortion on a telephone circuit.
A) Local line B) Local loop C) Subscriber loop D) All of these
- 8) The time delay measured in angular units, such as degrees or radians is called
A) Propagation time B) Phase delay C) Holding time D) System delay time
- 9) It is a communications term that indicates the presence of a signal power comparable to the power of an actual message transmission.
A) Dynamic range B) Loaded C) Node D) Reference
- 10) It is any device used to originate and terminate calls and to transmit and receive signals into and out of the telephone network.
A) Instrument B) Station equipment
C) Station D) All of these
- 11) It is a distortion formed if SSB is used where the information bandwidth is greater than half of the carrier frequency.
A) Near-far effect B) Hauffman effect
C) Kendall effect D) Herringbone effect
- 12) The difference between the absolute delays of all frequencies.
A) Relative phase delay B) Phase delay distortion
C) Absolute phase delay D) Phase distortion
- 13) The operator of the telephone instrument
A) Subscriber B) Destination C) Source D) Terminal
- 14) Polarisation used in satellite communication is
A) Horizontal polarisation B) Vertical polarisation
C) Circular polarisation D) None of the above
- 15) The device which can convert wire-propagated waves into space propagated waves
A) Antenna B) Reflector C) Feeder cable D) None of the above
- 16) For mobile communications generally which polarization is used ?
A) Vertical B) Horizontal C) Circular D) None of the above
- 17) Different frequencies are used for send and receive paths and hence there will be a forward band and reverse band, what is this called ?
A) FDD B) Frequency multiplexing
C) Fading D) None of the above
- 18) The beam width of high way BTS is less than the City BTS.
A) True B) False C) Equal D) None of the above
- 19) The direction of the electric field is parallel to the plane of the ground, then the polarisation is said to be
A) Horizontal polarisation B) Vertical polarisation
C) Circular polarisation D) None of the above
- 20) Mobile cellular transmitter have a maximum output power of
A) 1 mW B) 10 W C) 3 W D) 500 mW



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

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

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) **Draw figure wherever is necessary.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- a) Explain the different frequencies for radio transmissions, also explain signals with different domains.
- b) Explain the problem of hidden and exposed, near and far terminals.
- c) Explain the term localization and calling with MTC and MOC.
- d) Explain the registration of mobile node via FA and directly with HA, with registration request and reply.
- e) Explain in detail CDMA.

3. A) Explain with figures all the reservation schemes of TDMA. **10**

OR

B) What is modulation ? Explain with figure radio transmitter and all shift keying in detail.

4. Write short note on **(any two)** : **(2×5=10)**

- a) Radio Interface
- b) IPv4 and IPv6
- c) GPRS.



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain with figure indirect TCP.
 - b) Explain the fundamental difference between wired networks and ad-hoc wireless networks related to routing.
 - c) State and explain the several requirements for location management.
 - d) Explain the term group mobility and random way w.r.t. MANET.
 - e) Explain with figure wireless media access technique using CSMA/CA.
6. A) Explain the following w.r.t. Bluetooth **10**
- a) User scenario
 - b) Piconet and Scatternet
 - c) Protocol stack
- OR
- B) Explain in detail mobile TCP.
7. Write note on **(any two)** : **(2×5=10)**
- a) 802.11b
 - b) Network simulator
 - c) Security in wireless LANs.
-



SLR-VB – 295

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

Set **Q**

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

Day and Date : Thursday, 18-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) Draw figure **wherever** is necessary.
 - 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 : 20

1. Choose the correct answer :

20

- 1) For mobile communications generally which polarization is used ?
A) Vertical B) Horizontal C) Circular D) None of the above
- 2) Different frequencies are used for send and receive paths and hence there will be a forward band and reverse band, what is this called ?
A) FDD B) Frequency multiplexing
C) Fading D) None of the above
- 3) The beam width of high way BTS is less than the City BTS.
A) True B) False C) Equal D) None of the above
- 4) The direction of the electric field is parallel to the plane of the ground, then the polarisation is said to be
A) Horizontal polarisation B) Vertical polarisation
C) Circular polarisation D) None of the above
- 5) Mobile cellular transmitter have a maximum output power of
A) 1 mW B) 10 W C) 3 W D) 500 mW
- 6) The simplest and most straightforward form of telephone service is called
A) Public switch telephone network B) Mobile telephone switching office
C) Plain and old telephone service D) Central office service
- 7) _____ are local telephone switches equipped with SS7-compatible software and terminating signal links.
A) Switching points B) Service points
C) Point codes D) Service switching points

P.T.O.



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

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

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) **Draw figure wherever is necessary.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- a) Explain the different frequencies for radio transmissions, also explain signals with different domains.
- b) Explain the problem of hidden and exposed, near and far terminals.
- c) Explain the term localization and calling with MTC and MOC.
- d) Explain the registration of mobile node via FA and directly with HA, with registration request and reply.
- e) Explain in detail CDMA.

3. A) Explain with figures all the reservation schemes of TDMA. **10**

OR

B) What is modulation ? Explain with figure radio transmitter and all shift keying in detail.

4. Write short note on **(any two)** : **(2×5=10)**

- a) Radio Interface
- b) IPv4 and IPv6
- c) GPRS.

Set Q



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain with figure indirect TCP.
 - b) Explain the fundamental difference between wired networks and ad-hoc wireless networks related to routing.
 - c) State and explain the several requirements for location management.
 - d) Explain the term group mobility and random way w.r.t. MANET.
 - e) Explain with figure wireless media access technique using CSMA/CA.
6. A) Explain the following w.r.t. Bluetooth **10**
- a) User scenario
 - b) Piconet and Scatternet
 - c) Protocol stack
- OR
- B) Explain in detail mobile TCP.
7. Write note on **(any two)** : **(2×5=10)**
- a) 802.11b
 - b) Network simulator
 - c) Security in wireless LANs.
-



SLR-VB – 295

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

Set **R**

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

Day and Date : Thursday, 18-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) Draw figure **wherever** is necessary.
 - 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 : 20

1. Choose the correct answer :

20

- 1) It is a distortion formed if SSB is used where the information bandwidth is greater than half of the carrier frequency.
A) Near-far effect
B) Hauffman effect
C) Kendall effect
D) Herringbone effect
- 2) The difference between the absolute delays of all frequencies.
A) Relative phase delay
B) Phase delay distortion
C) Absolute phase delay
D) Phase distortion
- 3) The operator of the telephone instrument
A) Subscriber
B) Destination
C) Source
D) Terminal
- 4) Polarisation used in satellite communication is
A) Horizontal polarisation
B) Vertical polarisation
C) Circular polarisation
D) None of the above
- 5) The device which can convert wire-propagated waves into space propagated waves
A) Antenna
B) Reflector
C) Feeder cable
D) None of the above
- 6) For mobile communications generally which polarization is used ?
A) Vertical
B) Horizontal
C) Circular
D) None of the above
- 7) Different frequencies are used for send and receive paths and hence there will be a forward band and reverse band, what is this called ?
A) FDD
B) Frequency multiplexing
C) Fading
D) None of the above

P.T.O.



- 8) The beam width of high way BTS is less than the City BTS.
A) True B) False C) Equal D) None of the above
- 9) The direction of the electric field is parallel to the plane of the ground, then the polarisation is said to be
A) Horizontal polarisation B) Vertical polarisation
C) Circular polarisation D) None of the above
- 10) Mobile cellular transmitter have a maximum output power of
A) 1 mW B) 10 W C) 3 W D) 500 mW
- 11) The simplest and most straightforward form of telephone service is called
A) Public switch telephone network B) Mobile telephone switching office
C) Plain and old telephone service D) Central office service
- 12) _____ are local telephone switches equipped with SS7-compatible software and terminating signal links.
A) Switching points B) Service points
C) Point codes D) Service switching points
- 13) It is comprised of two or more facilities, interconnected in tandem, to provide a transmission path between a source and a destination
A) Telephone line B) Telephone set
C) Telephone circuit D) Telephone trunk
- 14) It is characterized by high-amplitude peaks of short duration having an approximately flat frequency response
A) Crosstalk B) Interference C) Impulse noise D) Drop out
- 15) It is the presence of one or more continuous, unwanted tones within the message channels, the tones are often caused by crosstalk cross modulation between adjacent channels in a transmission system due to system nonlinearities.
A) Multiple-frequency interference B) Single-frequency interference
C) Co-channel interference D) Desensitizing
- 16) That portion of the local loop that is strung between the poles
A) Aerial B) Distribution cable
C) Feeder cable D) Twisted-pair
- 17) It is the primary cause of attenuation and phase distortion on a telephone circuit.
A) Local line B) Local loop C) Subscriber loop D) All of these
- 18) The time delay measured in angular units, such as degrees or radians is called
A) Propagation time B) Phase delay C) Holding time D) System delay time
- 19) It is a communications term that indicates the presence of a signal power comparable to the power of an actual message transmission.
A) Dynamic range B) Loaded C) Node D) Reference
- 20) It is any device used to originate and terminate calls and to transmit and receive signals into and out of the telephone network.
A) Instrument B) Station equipment
C) Station D) All of these



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

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

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) **Draw figure wherever is necessary.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- a) Explain the different frequencies for radio transmissions, also explain signals with different domains.
- b) Explain the problem of hidden and exposed, near and far terminals.
- c) Explain the term localization and calling with MTC and MOC.
- d) Explain the registration of mobile node via FA and directly with HA, with registration request and reply.
- e) Explain in detail CDMA.

3. A) Explain with figures all the reservation schemes of TDMA. **10**

OR

B) What is modulation ? Explain with figure radio transmitter and all shift keying in detail.

4. Write short note on **(any two)** : **(2×5=10)**

- a) Radio Interface
- b) IPv4 and IPv6
- c) GPRS.



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain with figure indirect TCP.
 - b) Explain the fundamental difference between wired networks and ad-hoc wireless networks related to routing.
 - c) State and explain the several requirements for location management.
 - d) Explain the term group mobility and random way w.r.t. MANET.
 - e) Explain with figure wireless media access technique using CSMA/CA.
6. A) Explain the following w.r.t. Bluetooth **10**
- a) User scenario
 - b) Piconet and Scatternet
 - c) Protocol stack
- OR
- B) Explain in detail mobile TCP.
7. Write note on **(any two)** : **(2×5=10)**
- a) 802.11b
 - b) Network simulator
 - c) Security in wireless LANs.
-



SLR-VB – 295

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

Set

S

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

Day and Date : Thursday, 18-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) Draw figure **wherever** is necessary.
 - 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 : 20

1. Choose the correct answer :

20

- 1) That portion of the local loop that is strung between the poles
A) Aerial
B) Distribution cable
C) Feeder cable
D) Twisted-pair
- 2) It is the primary cause of attenuation and phase distortion on a telephone circuit.
A) Local line
B) Local loop
C) Subscriber loop
D) All of these
- 3) The time delay measured in angular units, such as degrees or radians is called
A) Propagation time
B) Phase delay
C) Holding time
D) System delay time
- 4) It is a communications term that indicates the presence of a signal power comparable to the power of an actual message transmission.
A) Dynamic range
B) Loaded
C) Node
D) Reference
- 5) It is any device used to originate and terminate calls and to transmit and receive signals into and out of the telephone network.
A) Instrument
B) Station equipment
C) Station
D) All of these
- 6) It is a distortion formed if SSB is used where the information bandwidth is greater than half of the carrier frequency.
A) Near-far effect
B) Hauffman effect
C) Kendall effect
D) Herringbone effect
- 7) The difference between the absolute delays of all frequencies.
A) Relative phase delay
B) Phase delay distortion
C) Absolute phase delay
D) Phase distortion

P.T.O.



- 8) The operator of the telephone instrument
A) Subscriber B) Destination C) Source D) Terminal
- 9) Polarisation used in satellite communication is
A) Horizontal polarisation B) Vertical polarisation
C) Circular polarisation D) None of the above
- 10) The device which can convert wire-propagated waves into space propagated waves
A) Antenna B) Reflector C) Feeder cable D) None of the above
- 11) For mobile communications generally which polarization is used ?
A) Vertical B) Horizontal C) Circular D) None of the above
- 12) Different frequencies are used for send and receive paths and hence there will be a forward band and reverse band, what is this called ?
A) FDD B) Frequency multiplexing
C) Fading D) None of the above
- 13) The beam width of high way BTS is less than the City BTS.
A) True B) False C) Equal D) None of the above
- 14) The direction of the electric field is parallel to the plane of the ground, then the polarisation is said to be
A) Horizontal polarisation B) Vertical polarisation
C) Circular polarisation D) None of the above
- 15) Mobile cellular transmitter have a maximum output power of
A) 1 mW B) 10 W C) 3 W D) 500 mW
- 16) The simplest and most straightforward form of telephone service is called
A) Public switch telephone network B) Mobile telephone switching office
C) Plain and old telephone service D) Central office service
- 17) _____ are local telephone switches equipped with SS7-compatible software and terminating signal links.
A) Switching points B) Service points
C) Point codes D) Service switching points
- 18) It is comprised of two or more facilities, interconnected in tandem, to provide a transmission path between a source and a destination
A) Telephone line B) Telephone set
C) Telephone circuit D) Telephone trunk
- 19) It is characterized by high-amplitude peaks of short duration having an approximately flat frequency response
A) Crosstalk B) Interference C) Impulse noise D) Drop out
- 20) It is the presence of one or more continuous, unwanted tones within the message channels, the tones are often caused by crosstalk cross modulation between adjacent channels in a transmission system due to system nonlinearities.
A) Multiple-frequency interference B) Single-frequency interference
C) Co-channel interference D) Desensitizing



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

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

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) **Draw figure wherever is necessary.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- a) Explain the different frequencies for radio transmissions, also explain signals with different domains.
- b) Explain the problem of hidden and exposed, near and far terminals.
- c) Explain the term localization and calling with MTC and MOC.
- d) Explain the registration of mobile node via FA and directly with HA, with registration request and reply.
- e) Explain in detail CDMA.

3. A) Explain with figures all the reservation schemes of TDMA. **10**

OR

B) What is modulation ? Explain with figure radio transmitter and all shift keying in detail.

4. Write short note on **(any two)** : **(2×5=10)**

- a) Radio Interface
- b) IPv4 and IPv6
- c) GPRS.



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain with figure indirect TCP.
 - b) Explain the fundamental difference between wired networks and ad-hoc wireless networks related to routing.
 - c) State and explain the several requirements for location management.
 - d) Explain the term group mobility and random way w.r.t. MANET.
 - e) Explain with figure wireless media access technique using CSMA/CA.
6. A) Explain the following w.r.t. Bluetooth **10**
- a) User scenario
 - b) Piconet and Scatternet
 - c) Protocol stack
- OR
- B) Explain in detail mobile TCP.
7. Write note on **(any two)** : **(2×5=10)**
- a) 802.11b
 - b) Network simulator
 - c) Security in wireless LANs.
-



SLR-VB – 296

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

Set	P
-----	---

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

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 :

- 1) IPSec is designed to withstand replay attacks through the use of
 - a) Sequence numbers
 - b) Nonces
 - c) Nonces + Sequence numbers
 - d) Timestamps
- 2) The original Diffie-Hellman key exchange protocol is vulnerable to a man-in-the-middle attack because
 - a) Key exchange takes place in the clear (unencrypted)
 - b) The Prime numbers chosen are not safe
 - c) The computational Diffie-Hellman problem is not infeasible
 - d) The two communicating parties do not authenticate themselves to each other
- 3) Early viruses used the following technique to evade detection
 - a) They were encrypted and decrypted only during execution
 - b) They updated themselves by downloading code from an FTP site
 - c) They were hidden in the payload of TCP packets carrying regular traffic
 - d) They used compression so that the length of the infected and original files matched
- 4) _____ is the specification for an information security management system.
 - a) ISO 27000
 - b) ISO 27004
 - c) ISO 27001
 - d) ISO 27002
- 5) Which of the following is mandatory in SSL ?
 - a) Server authentication
 - b) Client authentication
 - c) Message confidentiality
 - d) Non-repudiation
- 6) During the initial stages of an attack by a new Internet scanning worm, the number of infected machines increases
 - a) Exponentially with time
 - b) Logarithmically with time
 - c) Polynomially with time
 - d) At a constant rate
- 7) A Substitution Box provides
 - a) Diffusion only
 - b) Confusion only
 - c) Both diffusion and confusion
 - d) Neither confusion nor diffusion

P.T.O.



- 8) Which of the following is a necessary task of a Certification Authority ?
- Generating the public key/private key pair of its client
 - Performing back-up of the private key of its client
 - Verification of the private key of its client
 - Verification of the identity of its client
- 9) The Kerberos protocol protects against which of the following attack
- Dictionary attack
 - Man-in-the-middle attack
 - Denial of service attack
 - None of these
- 10) In asymmetric key cryptography, the private key is kept by
- Sender
 - Receiver
 - Sender and receiver
 - All the connected devices to the network
- 11) In computer security, _____ means the protection of data from unauthorized disclosure.
- Confidentiality
 - Integrity
 - Availability
 - Authenticity
- 12) The difficulty of attacking RSA is based on the difficulty of finding the prime factors of a composite number.
- True
 - False
- 13) A MAC provides
- Message integrity and authentication
 - Message confidentiality
 - Message non-repudiation
 - Masquerade
- 14) A receiving node determines the SA an IPSec packet belongs to based on
- The sequence number in the IPSec header
 - the SPI in the IPSec header and source IP address
 - a combination of source IP address and source port
 - Source port number
- 15) Which of the following statement is false ?
- An anomaly-based IDS uses OS-based audit trails to detect intrusion
 - A signature based IDS identifies patterns of behavior that accompany an attack
 - A network-based IDS identifies whether the behavior of the network is a statistically significant departure from normal
 - A host-based IDS alerts the administrator if it sees a disproportionate number of malformed TCP packets entering the organization
- 16) Which of the following is true about firewalls ?
- Follows a set of rules
 - Can be either a hardware or software device
 - Filters network traffic
 - All the above
- 17) _____ 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.
- Worm
 - Trojan Horse
 - Virus
 - Micro Virus
- 18) _____ is the deliberate use of someone else's identity, usually as a method to gain a financial advantage.
- Fraud
 - Identity theft
 - Monitory transgression
 - Scamming
- 19) _____ is a method that attempts to hide the existence of a message or communication.
- Masquerade
 - Steganography
 - Spoof
 - eye-in-hand system
- 20) This is a trial and error method used to decode encrypted data through exhaustive effort rather than employing intellectual strategies.
- Chaffing and winnowing
 - Cryptanalysis
 - Serendipity
 - Brute forces cracking



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

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Saturday, 20-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Write short notes on **(any four)** : **20**
- a) The OSI Security Architecture.
 - b) Cipher Feedback Mode.
 - c) Functions of a PKI (Public Key Infrastructure)
 - d) IPSec Security Associations.
 - e) Symmetric Cipher Model.

3. A) What is SSL Handshake Protocol ? How does it work ? **10**

OR

- B) Give the concept of Hill Cipher and Elaborate its details. Find a cipher text for a plain text "h i" with a numerical value (a =0, b=1, ..., z=25) and an encryption

key K. $K = \begin{pmatrix} 3 & 7 \\ 15 & 12 \end{pmatrix}$ and recover the plain text from cipher text. **10**

4. Reproduce the Diffie-Hellman key exchange algorithm and give its details with an example. **10**

SECTION – II

5. Answer the following **(any four)** : **20**
- a) Describe different functions of Firewall.
 - b) Compare Anomaly with Signature-Based Intrusion Detection System.
 - c) What is Hacking ? Illustrate.
 - d) What are Spywares ? Elaborate.
 - e) What are the Positive Aspects of ITA 2000 ?

Set P



6. A) What is Cyber crime ? How is Cyber Crime Classified ? Explain with examples. **10**
- OR
- B) What is Firewall ? Explain different types of Firewall with diagram. **10**
7. Illustrate viruses with their structure, types and nature in detail. **10**
-



SLR-VB – 296

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

Set	Q
-----	---

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

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 :

- 1) Which of the following is true about firewalls ?
 - a) Follows a set of rules
 - b) Can be either a hardware or software device
 - c) Filters network traffic
 - d) All the above
- 2) _____ 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) Worm
 - b) Trojan Horse
 - c) Virus
 - d) Micro Virus
- 3) _____ is the deliberate use of someone else's identity, usually as a method to gain a financial advantage.
 - a) Fraud
 - b) Identity theft
 - c) Monetary transgression
 - d) Scamming
- 4) _____ is a method that attempts to hide the existence of a message or communication.
 - a) Masquerade
 - b) Steganography
 - c) Spoof
 - d) eye-in-hand system
- 5) This is a trial and error method used to decode encrypted data through exhaustive effort rather than employing intellectual strategies.
 - a) Chaffing and winnowing
 - b) Cryptanalysis
 - c) Serendipity
 - d) Brute forces cracking
- 6) IPSec is designed to withstand replay attacks through the use of
 - a) Sequence numbers
 - b) Nonces
 - c) Nonces + Sequence numbers
 - d) Timestamps
- 7) The original Diffie-Hellman key exchange protocol is vulnerable to a man-in-the-middle attack because
 - a) Key exchange takes place in the clear (unencrypted)
 - b) The Prime numbers chosen are not safe
 - c) The computational Diffie-Hellman problem is not infeasible
 - d) The two communicating parties do not authenticate themselves to each other
- 8) Early viruses used the following technique to evade detection
 - a) They were encrypted and decrypted only during execution
 - b) They updated themselves by downloading code from an FTP site
 - c) They were hidden in the payload of TCP packets carrying regular traffic
 - d) They used compression so that the length of the infected and original files matched

P.T.O.



- 9) _____ is the specification for an information security management system.
a) ISO 27000 b) ISO 27004 c) ISO 27001 d) ISO 27002
- 10) Which of the following is mandatory in SSL ?
a) Server authentication b) Client authentication
c) Message confidentiality d) Non-repudiation
- 11) During the initial stages of an attack by a new Internet scanning worm, the number of infected machines increases
a) Exponentially with time b) Logarithmically with time
c) Polynomially with time d) At a constant rate
- 12) A Substitution Box provides
a) Diffusion only b) Confusion only
c) Both diffusion and confusion d) Neither confusion nor diffusion
- 13) Which of the following is a necessary task of a Certification Authority ?
a) Generating the public key/private key pair of its client
b) Performing back-up of the private key of its client
c) Verification of the private key of its client
d) Verification of the identity of its client
- 14) The Kerberos protocol protects against which of the following attack
a) Dictionary attack b) Man-in-the-middle attack c) Denial of service attack
- 15) In asymmetric key cryptography, the private key is kept by
a) Sender b) Receiver
c) Sender and receiver d) All the connected devices to the network
- 16) In computer security, _____ means the protection of data from unauthorized disclosure.
a) Confidentiality b) Integrity c) Availability d) Authenticity
- 17) The difficulty of attacking RSA is based on the difficulty of finding the prime factors of a composite number.
a) True b) False
- 18) A MAC provides
a) Message integrity and authentication b) Message confidentiality
c) Message non-repudiation d) Masquerade
- 19) A receiving node determines the SA an IPSec packet belongs to based on
a) The sequence number in the IPSec header
b) the SPI in the IPSec header and source IP address
c) a combination of source IP address and source port
d) Source port number
- 20) Which of the following statement is false ?
a) An anomaly-based IDS uses OS-based audit trails to detect intrusion
b) A signature based IDS identifies patterns of behavior that accompany an attack
c) A network-based IDS identifies whether the behavior of the network is a statistically significant departure from normal
d) A host-based IDS alerts the administrator if it sees a disproportionate number of malformed TCP packets entering the organization



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

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Saturday, 20-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Write short notes on **(any four)** : **20**
- a) The OSI Security Architecture.
 - b) Cipher Feedback Mode.
 - c) Functions of a PKI (Public Key Infrastructure)
 - d) IPSec Security Associations.
 - e) Symmetric Cipher Model.

3. A) What is SSL Handshake Protocol ? How does it work ? **10**

OR

- B) Give the concept of Hill Cipher and Elaborate its details. Find a cipher text for a plain text "h i" with a numerical value (a =0, b=1, ..., z=25) and an encryption

key K. $K = \begin{pmatrix} 3 & 7 \\ 15 & 12 \end{pmatrix}$ and recover the plain text from cipher text. **10**

4. Reproduce the Diffie-Hellman key exchange algorithm and give its details with an example. **10**

SECTION – II

5. Answer the following **(any four)** : **20**
- a) Describe different functions of Firewall.
 - b) Compare Anomaly with Signature-Based Intrusion Detection System.
 - c) What is Hacking ? Illustrate.
 - d) What are Spywares ? Elaborate.
 - e) What are the Positive Aspects of ITA 2000 ?

Set Q



6. A) What is Cyber crime ? How is Cyber Crime Classified ? Explain with examples. **10**
- OR
- B) What is Firewall ? Explain different types of Firewall with diagram. **10**
7. Illustrate viruses with their structure, types and nature in detail. **10**
-



SLR-VB – 296

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

Set	R
-----	---

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

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 :

- 1) In computer security, _____ means the protection of data from unauthorized disclosure.
a) Confidentiality b) Integrity c) Availability d) Authenticity
- 2) The difficulty of attacking RSA is based on the difficulty of finding the prime factors of a composite number.
a) True b) False
- 3) A MAC provides
a) Message integrity and authentication b) Message confidentiality
c) Message non-repudiation d) Masquerade
- 4) A receiving node determines the SA an IPSec packet belongs to based on
a) The sequence number in the IPSec header
b) the SPI in the IPSec header and source IP address
c) a combination of source IP address and source port
d) Source port number
- 5) Which of the following statement is false ?
a) An anomaly-based IDS uses OS-based audit trails to detect intrusion
b) A signature based IDS identifies patterns of behavior that accompany an attack
c) A network-based IDS identifies whether the behavior of the network is a statistically significant departure from normal
d) A host-based IDS alerts the administrator if it sees a disproportionate number of malformed TCP packets entering the organization
- 6) Which of the following is true about firewalls ?
a) Follows a set of rules b) Can be either a hardware or software device
c) Filters network traffic d) All the above
- 7) _____ 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) Worm b) Trojan Horse c) Virus d) Micro Virus

P.T.O.



- 8) _____ is the deliberate use of someone else's identity, usually as a method to gain a financial advantage.
a) Fraud b) Identity theft c) Monitory transgression d) Scamming
- 9) _____ is a method that attempts to hide the existence of a message or communication.
a) Masquerade b) Steganography c) Spoof d) eye-in-hand system
- 10) This is a trial and error method used to decode encrypted data through exhaustive effort rather than employing intellectual strategies.
a) Chaffing and winnowing b) Cryptanalysis
c) Serendipity d) Brute forces cracking
- 11) IPSec is designed to withstand replay attacks through the use of
a) Sequence numbers b) Nonces
c) Nonces + Sequence numbers d) Tiestamps
- 12) The original Diffie-Hellman key exchange protocol is vulnerable to a man-in-the-middle attack because
a) Key exchange takes place in the clear (unencrypted)
b) The Prime numbers chosen are not safe
c) The computational Diffie-Hellman problem is not infeasible
d) The two communicating parties do not authenticate themselves to each other
- 13) Early viruses used the following technique to evade detection
a) They were encrypted and decrypted only during execution
b) They updated themselves by downloading code from an FTP site
c) They were hidden in the payload of TCP packets carrying regular traffic
d) They used compression so that the length of the infected and original files matched
- 14) _____ is the specification for an information security management system.
a) ISO 27000 b) ISO 27004 c) ISO 27001 d) ISO 27002
- 15) Which of the following is mandatory in SSL ?
a) Server authentication b) Client authentication
c) Message confidentiality d) Non-repudiation
- 16) During the initial stages of an attack by a new Internet scanning worm, the number of infected machines increases
a) Exponentially with time b) Logarithmically with time
c) Polynomially with time d) At a constant rate
- 17) A Substitution Box provides
a) Diffusion only b) Confusion only
c) Both diffusion and confusion d) Neither confusion nor diffusion
- 18) Which of the following is a necessary task of a Certification Authority ?
a) Generating the public key/private key pair of its client
b) Performing back-up of the private key of its client
c) Verification of the private key of its client
d) Verification of the identity of its client
- 19) The Kerberos protocol protects against which of the following attack
a) Dictionary attack b) Man-in-the-middle attack
c) Denial of service attack d) None of these
- 20) In asymmetric key cryptography, the private key is kept by
a) Sender b) Receiver
c) Sender and receiver d) All the connected devices to the network



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

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Saturday, 20-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Write short notes on **(any four)** : **20**
- a) The OSI Security Architecture.
 - b) Cipher Feedback Mode.
 - c) Functions of a PKI (Public Key Infrastructure)
 - d) IPSec Security Associations.
 - e) Symmetric Cipher Model.

3. A) What is SSL Handshake Protocol ? How does it work ? **10**

OR

- B) Give the concept of Hill Cipher and Elaborate its details. Find a cipher text for a plain text "h i" with a numerical value (a =0, b=1, ..., z=25) and an encryption

key K. $K = \begin{pmatrix} 3 & 7 \\ 15 & 12 \end{pmatrix}$ and recover the plain text from cipher text. **10**

4. Reproduce the Diffie-Hellman key exchange algorithm and give its details with an example. **10**

SECTION – II

5. Answer the following **(any four)** : **20**
- a) Describe different functions of Firewall.
 - b) Compare Anomaly with Signature-Based Intrusion Detection System.
 - c) What is Hacking ? Illustrate.
 - d) What are Spywares ? Elaborate.
 - e) What are the Positive Aspects of ITA 2000 ?

Set R



6. A) What is Cyber crime ? How is Cyber Crime Classified ? Explain with examples. **10**
- OR
- B) What is Firewall ? Explain different types of Firewall with diagram. **10**
7. Illustrate viruses with their structure, types and nature in detail. **10**
-



SLR-VB – 296

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

Set	S
-----	---

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

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 :

- 1) During the initial stages of an attack by a new Internet scanning worm, the number of infected machines increases
 - a) Exponentially with time
 - b) Logarithmically with time
 - c) Polynomially with time
 - d) At a constant rate
- 2) A Substitution Box provides
 - a) Diffusion only
 - b) Confusion only
 - c) Both diffusion and confusion
 - d) Neither confusion nor diffusion
- 3) Which of the following is a necessary task of a Certification Authority ?
 - a) Generating the public key/private key pair of its client
 - b) Performing back-up of the private key of its client
 - c) Verification of the private key of its client
 - d) Verification of the identity of its client
- 4) The Kerberos protocol protects against which of the following attack
 - a) Dictionary attack
 - b) Man-in-the-middle attack
 - c) Denial of service attack
 - d) None of these
- 5) In asymmetric key cryptography, the private key is kept by
 - a) Sender
 - b) Receiver
 - c) Sender and receiver
 - d) All the connected devices to the network
- 6) In computer security, _____ means the protection of data from unauthorized disclosure.
 - a) Confidentiality
 - b) Integrity
 - c) Availability
 - d) Authenticity
- 7) The difficulty of attacking RSA is based on the difficulty of finding the prime factors of a composite number.
 - a) True
 - b) False
- 8) A MAC provides
 - a) Message integrity and authentication
 - b) Message confidentiality
 - c) Message non-repudiation
 - d) Masquerade

P.T.O.



- 9) A receiving node determines the SA an IPSec packet belongs to based on
- The sequence number in the IPSec header
 - the SPI in the IPSec header and source IP address
 - a combination of source IP address and source port
 - Source port number
- 10) Which of the following statement is false ?
- An anomaly-based IDS uses OS-based audit trails to detect intrusion
 - A signature based IDS identifies patterns of behavior that accompany an attack
 - A network-based IDS identifies whether the behavior of the network is a statistically significant departure from normal
 - A host-based IDS alerts the administrator if it sees a disproportionate number of malformed TCP packets entering the organization
- 11) Which of the following is true about firewalls ?
- Follows a set of rules
 - Can be either a hardware or software device
 - Filters network traffic
 - All the above
- 12) _____ 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.
- Worm
 - Trojan Horse
 - Virus
 - Micro Virus
- 13) _____ is the deliberate use of someone else's identity, usually as a method to gain a financial advantage.
- Fraud
 - Identity theft
 - Monitory transgression
 - Scamming
- 14) _____ is a method that attempts to hide the existence of a message or communication.
- Masquerade
 - Steganography
 - Spoof
 - eye-in-hand system
- 15) This is a trial and error method used to decode encrypted data through exhaustive effort rather than employing intellectual strategies.
- Chaffing and winnowing
 - Cryptanalysis
 - Serendipity
 - Brute forces cracking
- 16) IPSec is designed to withstand replay attacks through the use of
- Sequence numbers
 - Nonces
 - Nonces + Sequence numbers
 - Tiestamps
- 17) The original Diffie-Hellman key exchange protocol is vulnerable to a man-in-the-middle attack because
- Key exchange takes place in the clear (unencrypted)
 - The Prime numbers chosen are not safe
 - The computational Diffie-Hellman problem is not infeasible
 - The two communicating parties do not authenticate themselves to each other
- 18) Early viruses used the following technique to evade detection
- They were encrypted and decrypted only during execution
 - They updated themselves by downloading code from an FTP site
 - They were hidden in the payload of TCP packets carrying regular traffic
 - They used compression so that the length of the infected and original files matched
- 19) _____ is the specification for an information security management system.
- ISO 27000
 - ISO 27004
 - ISO 27001
 - ISO 27002
- 20) Which of the following is mandatory in SSL ?
- Server authentication
 - Client authentication
 - Message confidentiality
 - Non-repudiation



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

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Saturday, 20-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Write short notes on **(any four)** : **20**
- a) The OSI Security Architecture.
 - b) Cipher Feedback Mode.
 - c) Functions of a PKI (Public Key Infrastructure)
 - d) IPSec Security Associations.
 - e) Symmetric Cipher Model.
3. A) What is SSL Handshake Protocol ? How does it work ? **10**

OR

B) Give the concept of Hill Cipher and Elaborate its details. Find a cipher text for a plain text "h i" with a numerical value (a =0, b=1, ..., z=25) and an encryption

key K. $K = \begin{pmatrix} 3 & 7 \\ 15 & 12 \end{pmatrix}$ and recover the plain text from cipher text. **10**

4. Reproduce the Diffie-Hellman key exchange algorithm and give its details with an example. **10**

SECTION – II

5. Answer the following **(any four)** : **20**
- a) Describe different functions of Firewall.
 - b) Compare Anomaly with Signature-Based Intrusion Detection System.
 - c) What is Hacking ? Illustrate.
 - d) What are Spywares ? Elaborate.
 - e) What are the Positive Aspects of ITA 2000 ?

Set S



6. A) What is Cyber crime ? How is Cyber Crime Classified ? Explain with examples. **10**
- OR
- B) What is Firewall ? Explain different types of Firewall with diagram. **10**
7. Illustrate viruses with their structure, types and nature in detail. **10**
-



SLR-VB – 297

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

Set	P
-----	----------

B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING

Day and Date : Tuesday, 23-5-2017
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 :

(20×1=20)

- 1) The full form of OLAP is
A) Online Analytical Processing B) Online Advanced Processing
C) Online Advanced Preparation D) Online Analytical Performance
- 2) _____ is a subject-oriented, integrated, time-variant, nonvolatile collection or data in support of management decisions.
A) Data mining B) Data warehousing C) Document mining D) Text mining
- 3) The data is stored, retrieved and updated in _____
A) OLAP B) OLTP C) SMTP D) FTP
- 4) An _____ system is market-oriented and is used for data analysis by knowledge workers, including managers, executives and analysts.
A) OLAP B) OLTP C) Both of the above D) None of the above
- 5) _____ is a good alternative to the star schema.
A) Star schema B) Snowflake schema C) Fact constellation D) Star-snowflake schema
- 6) 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
- 7) The type of relationship in star schema is _____
A) many to many B) one to one C) one to many D) many to one
- 8) The _____ allows the selection of the relevant information necessary for the data warehouse.
A) Top-down view B) Data warehouse view
C) Data source view D) Business query view
- 9) Which of the following is not a component of a data warehouse ?
A) Meta data B) Current detail data
C) Lightly summarized data D) Component key
- 10) Which of the following is not a kind of data warehouse application ?
A) Information processing B) Analytical processing
C) Data mining D) Transaction processing
- 11) A data warehouse is which of the following ?
A) Can be updated by end users
B) Contains numerous naming conventions and formats
C) Organized around important subject areas
D) Contains only current data

P.T.O.



- 12) An operational system is which of the following ?
 - A) A system that is used to run the business in real time and is based on historical data
 - B) A system that is used to run the business in real time and is based on current data
 - C) A system that is used to support decision making and is based on current data
 - D) A system that is used to support decision making and is based on historical data
- 13) The generic two-level data warehouse architecture includes which of the following ?
 - A) At least one data mart
 - B) Data that can extracted from numerous internal and external sources
 - C) Near real-time updates
 - D) None of the above
- 14) The active data warehouse architecture includes which of the following ?
 - A) At least one data mart
 - B) Data that can extracted from numerous internal and external sources
 - C) Near real-time updates
 - D) All of the above
- 15) 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
- 16) 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
- 17) 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
- 18) 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
- 19) 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
- 20) 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



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING**

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 the right indicate full marks.**

SECTION – I

2. Attempt **any four** : (4×5=20)
- a) What is a business model ?
 - b) List the basic elements of Data Mining.
 - c) What is Visualisation ?
 - d) Compare between classification and clustering.
 - e) List the steps in KDD Process.
3. Attempt **any two** : (2×5=10)
- a) What is Association Rule Mining ? How is it carried out ?
 - b) How is tree based classification carried out ?
 - c) How is extraction done using Neural Networks ?
4. Answer **any one** : 10
- a) State and compare the technologies used for data warehousing.
 - b) List and compare the various techniques used for Data Mining.

SECTION – II

5. Attempt **any four** : (4×5=20)
- a) What are types of Web Mining ?
 - b) What is a Query language ? How is it's GUI developed ?
 - c) List the applications of Data Mining.
 - d) What is spatial Mining ?
 - e) Define Temporal Mining and illustrate the same.
6. Answer **any two** : (2×5=10)
- a) How are Web pages classified ?
 - b) Elaborate on the architectures of Data Mining.
 - c) How is indexing of Multimedia material performed ?
7. Answer **any one** : 10
- a) How is knowledge extracted from the web ?
 - b) List and explain the Data Mining primitives.



SLR-VB – 297

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

Set	Q
-----	----------

B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING

Day and Date : Tuesday, 23-5-2017
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 :

(20×1=20)

- 1) 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
- 2) 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
- 3) 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
- 4) 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
- 5) 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
- 6) The full form of OLAP is
 - A) Online Analytical Processing
 - B) Online Advanced Processing
 - C) Online Advanced Preparation
 - D) Online Analytical Performance
- 7) _____ is a subject-oriented, integrated, time-variant, nonvolatile collection or data in support of management decisions.
 - A) Data mining
 - B) Data warehousing
 - C) Document mining
 - D) Text mining

P.T.O.



- 8) The data is stored, retrieved and updated in _____
A) OLAP B) OLTP C) SMTP D) FTP
- 9) An _____ system is market-oriented and is used for data analysis by knowledge workers, including managers, executives and analysts.
A) OLAP B) OLTP C) Both of the above D) None of the above
- 10) _____ is a good alternative to the star schema.
A) Star schema B) Snowflake schema C) Fact constellation D) Star-snowflake schema
- 11) 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
- 12) The type of relationship in star schema is _____
A) many to many B) one to one C) one to many D) many to one
- 13) 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
- 14) Which of the following is not a component of a data warehouse ?
A) Meta data B) Current detail data
C) Lightly summarized data D) Component key
- 15) Which of the following is not a kind of data warehouse application ?
A) Information processing B) Analytical processing
C) Data mining D) Transaction processing
- 16) 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
- 17) 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
- 18) The generic two-level data warehouse architecture includes which of the following ?
A) At least one data mart
B) Data that can extracted from numerous internal and external sources
C) Near real-time updates
D) None of the above
- 19) 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
- 20) 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



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING**

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 the right indicate full marks.**

SECTION – I

2. Attempt **any four** : **(4x5=20)**
- a) What is a business model ?
 - b) List the basic elements of Data Mining.
 - c) What is Visualisation ?
 - d) Compare between classification and clustering.
 - e) List the steps in KDD Process.
3. Attempt **any two** : **(2x5=10)**
- a) What is Association Rule Mining ? How is it carried out ?
 - b) How is tree based classification carried out ?
 - c) How is extraction done using Neural Networks ?
4. Answer **any one** : **10**
- a) State and compare the technologies used for data warehousing.
 - b) List and compare the various techniques used for Data Mining.

SECTION – II

5. Attempt **any four** : **(4x5=20)**
- a) What are types of Web Mining ?
 - b) What is a Query language ? How is it's GUI developed ?
 - c) List the applications of Data Mining.
 - d) What is spatial Mining ?
 - e) Define Temporal Mining and illustrate the same.
6. Answer **any two** : **(2x5=10)**
- a) How are Web pages classified ?
 - b) Elaborate on the architectures of Data Mining.
 - c) How is indexing of Multimedia material performed ?
7. Answer **any one** : **10**
- a) How is knowledge extracted from the web ?
 - b) List and explain the Data Mining primitives.



SLR-VB – 297

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

Set	R
-----	----------

B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING

Day and Date : Tuesday, 23-5-2017
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 :

(20×1=20)

- 1) 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
- 2) 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
- 3) The generic two-level data warehouse architecture includes which of the following ?
 - A) At least one data mart
 - B) Data that can extracted from numerous internal and external sources
 - C) Near real-time updates
 - D) None of the above
- 4) 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
- 5) 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
- 6) 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

P.T.O.



- 7) 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
- 8) 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
- 9) 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
- 10) 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
- 11) The full form of OLAP is
A) Online Analytical Processing
B) Online Advanced Processing
C) Online Advanced Preparation
D) Online Analytical Performance
- 12) _____ is a subject-oriented, integrated, time-variant, nonvolatile collection or data in support of management decisions.
A) Data mining
B) Data warehousing
C) Document mining
D) Text mining
- 13) The data is stored, retrieved and updated in _____
A) OLAP
B) OLTP
C) SMTP
D) FTP
- 14) An _____ system is market-oriented and is used for data analysis by knowledge workers, including managers, executives and analysts.
A) OLAP
B) OLTP
C) Both of the above
D) None of the above
- 15) _____ is a good alternative to the star schema.
A) Star schema
B) Snowflake schema
C) Fact constellation
D) Star-snowflake schema
- 16) 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
- 17) The type of relationship in star schema is _____
A) many to many
B) one to one
C) one to many
D) many to one
- 18) 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
- 19) Which of the following is not a component of a data warehouse ?
A) Meta data
B) Current detail data
C) Lightly summarized data
D) Component key
- 20) Which of the following is not a kind of data warehouse application ?
A) Information processing
B) Analytical processing
C) Data mining
D) Transaction processing



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING**

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 the right indicate full marks.**

SECTION – I

2. Attempt **any four** : (4×5=20)
- a) What is a business model ?
 - b) List the basic elements of Data Mining.
 - c) What is Visualisation ?
 - d) Compare between classification and clustering.
 - e) List the steps in KDD Process.
3. Attempt **any two** : (2×5=10)
- a) What is Association Rule Mining ? How is it carried out ?
 - b) How is tree based classification carried out ?
 - c) How is extraction done using Neural Networks ?
4. Answer **any one** : 10
- a) State and compare the technologies used for data warehousing.
 - b) List and compare the various techniques used for Data Mining.

SECTION – II

5. Attempt **any four** : (4×5=20)
- a) What are types of Web Mining ?
 - b) What is a Query language ? How is it's GUI developed ?
 - c) List the applications of Data Mining.
 - d) What is spatial Mining ?
 - e) Define Temporal Mining and illustrate the same.
6. Answer **any two** : (2×5=10)
- a) How are Web pages classified ?
 - b) Elaborate on the architectures of Data Mining.
 - c) How is indexing of Multimedia material performed ?
7. Answer **any one** : 10
- a) How is knowledge extracted from the web ?
 - b) List and explain the Data Mining primitives.



- 10) 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
- 11) 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
- 12) 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
- 13) 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
- 14) 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
- 15) 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
- 16) The full form of OLAP is
- A) Online Analytical Processing
 - B) Online Advanced Processing
 - C) Online Advanced Preparation
 - D) Online Analytical Performance
- 17) _____ is a subject-oriented, integrated, time-variant, nonvolatile collection or data in support of management decisions.
- A) Data mining
 - B) Data warehousing
 - C) Document mining
 - D) Text mining
- 18) The data is stored, retrieved and updated in _____
- A) OLAP
 - B) OLTP
 - C) SMTP
 - D) FTP
- 19) An _____ system is market-oriented and is used for data analysis by knowledge workers, including managers, executives and analysts.
- A) OLAP
 - B) OLTP
 - C) Both of the above
 - D) None of the above
- 20) _____ is a good alternative to the star schema.
- A) Star schema
 - B) Snowflake schema
 - C) Fact constellation
 - D) Star-snowflake schema
-



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING**

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 the right indicate full marks.**

SECTION – I

2. Attempt **any four** : (4×5=20)
- a) What is a business model ?
 - b) List the basic elements of Data Mining.
 - c) What is Visualisation ?
 - d) Compare between classification and clustering.
 - e) List the steps in KDD Process.
3. Attempt **any two** : (2×5=10)
- a) What is Association Rule Mining ? How is it carried out ?
 - b) How is tree based classification carried out ?
 - c) How is extraction done using Neural Networks ?
4. Answer **any one** : 10
- a) State and compare the technologies used for data warehousing.
 - b) List and compare the various techniques used for Data Mining.

SECTION – II

5. Attempt **any four** : (4×5=20)
- a) What are types of Web Mining ?
 - b) What is a Query language ? How is it's GUI developed ?
 - c) List the applications of Data Mining.
 - d) What is spatial Mining ?
 - e) Define Temporal Mining and illustrate the same.
6. Answer **any two** : (2×5=10)
- a) How are Web pages classified ?
 - b) Elaborate on the architectures of Data Mining.
 - c) How is indexing of Multimedia material performed ?
7. Answer **any one** : 10
- a) How is knowledge extracted from the web ?
 - b) List and explain the Data Mining primitives.



SLR-VB – 298

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

Set **P**

B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : PATTERN RECOGNITION

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) 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) What is the relation between the distance between clusters and the corresponding class discriminability ?
 - a) Proportional
 - b) Inversely-proportional
 - c) No-relation
 - d) All
 - 2) To measure the density at a point, consider
 - a) Sphere of any size
 - b) Sphere of unit volume
 - c) Hyper-cube of unit volume
 - d) Both b) and c)
 - 3) Agglomerative clustering falls under which type of clustering method ?
 - a) Partition
 - b) Hierarchical
 - c) Both
 - d) None of the above
 - 4) Indicate which is/are a method of clustering
 - a) Linkage method
 - b) Split and merge
 - c) Both a) and b)
 - d) Neither a) nor b)
 - 5) K means and K-medoids are example of which type of clustering method ?
 - a) Hierarchical
 - b) Partition
 - c) Probabilistic
 - d) None of the above
 - 6) Unsupervised classification can be termed as
 - a) Distance measurement
 - b) Dimensionality reduction
 - c) Clustering
 - d) None of the above
 - 7) Indicate which one is a method of density estimation ?
 - a) Histogram based
 - b) Branch and bound procedure
 - c) Neighbourhood distance
 - d) All of the above

P.T.O.



- 8) Three components of Bayes decision rule are class prior, likelihood and
a) Evidence b) Instance c) Confidence d) Saliency
- 9) Gaussian function is also called _____ function.
a) Bell b) Signum c) Fixed point d) Quintic
- 10) The span of the Gaussian curve is determined by the _____ of the distribution.
a) Mean b) Mode c) Median d) Variance
- 11) When the value of the data is equal to the mean of the distribution in which it belongs to, the Gaussian function attains _____ value.
a) Minimum b) Maximum c) Zero d) None of the above
- 12) The full width of the Gaussian function at half the maximum is
a) 2.35σ b) 1.5σ c) 0.5σ d) 0.355σ
- 13) Property of correlation co-efficient is
a) $-1 \leq p_{xy} \leq 1$ b) $-0.5 \leq p_{xy} \leq 1$ c) $-1 \leq p_{xy} \leq 1.5$ d) $-0.5 \leq p_{xy} \leq 0.5$
- 14) The correlation co-efficient can be viewed as _____ angle between two vectors in R^D .
a) sin b) cos c) tan d) sec
- 15) For a n-dimensional data, number of correlation co-efficient is equal to
a) ${}^n C_2$ b) $n - 1$ c) n^2 d) $\log(n)$
- 16) Iso-contour lines of smaller radius depicts _____ value of the density function.
a) Higher b) Lower c) Equal d) None of the above
- 17) A method to estimate the parameters of a distribution is
a) Maximum Likelihood b) Linear Programming
c) Dynamic Programming d) Convex Optimization
- 18) Gaussian mixtures are also known as
a) Gaussian multiplication b) Non-linear super-position of Gaussians
c) Linear super-position of Gaussians d) None of the above
- 19) The mixture co-efficients of the GMM add upto
a) 1 b) 0
c) Any value greater than 0 d) Any value less than 0
- 20) The mixture co-efficients are
a) Strictly positive b) Positive
c) Strictly negative d) Negative



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : PATTERN RECOGNITION**

Day and Date : Tuesday, 23-5-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**
- a) What is weight space and pattern space ?
 - b) Define probability density function. Illustrate.
 - c) What is a linear decision function ?
 - d) What is cluster seeking ? How is it used ?
 - e) How is Baye's classifier for normal patterns classified ?
3. Attempt **any two** : **10**
- a) What is unsupervised Pattern recognition ? Illustrate.
 - b) How are decision functions implemented ? Give steps.
 - c) List the fundamental problems in Pattern recognition system design.
4. Attempt **any one** : **10**
- a) Develop a simple automatic Pattern recognition model.
 - b) What are decision functions ? How are they implemented ?



SECTION – II

5. Attempt **any four** : **20**
- a) What are recognition grammars ?
 - b) Illustrate binary feature selection concept.
 - c) What is multi-category classification ?
 - d) What is training ? How is it different from testing ?
 - e) Compare between Classification and Clustering.
6. Attempt **any two** : **10**
- a) What is syntactic pattern ? How is it formulized ?
 - b) List and explain classification algorithms.
 - c) How is feature selection carried out ? Explain the methods involved.
7. Attempt **any one** : **10**
- a) What is the deterministic training pattern classifier approach ? Illustrate.
 - b) Compare between the deterministic and statistical approach to train pattern classifiers.
-



SLR-VB – 298

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

Set **Q**

B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : PATTERN RECOGNITION

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) 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) Iso-contour lines of smaller radius depicts _____ value of the density function.
a) Higher b) Lower c) Equal d) None of the above
 - 2) A method to estimate the parameters of a distribution is
a) Maximum Likelihood b) Linear Programming
c) Dynamic Programming d) Convex Optimization
 - 3) Gaussian mixtures are also known as
a) Gaussian multiplication b) Non-linear super-position of Gaussians
c) Linear super-position of Gaussians d) None of the above
 - 4) The mixture co-efficients of the GMM add upto
a) 1 b) 0
c) Any value greater than 0 d) Any value less than 0
 - 5) The mixture co-efficients are
a) Strictly positive b) Positive
c) Strictly negative d) Negative
 - 6) What is the relation between the distance between clusters and the corresponding class discriminability ?
a) Proportional b) Inversely-proportional
c) No-relation d) All

P.T.O.



- 7) To measure the density at a point, consider
- Sphere of any size
 - Sphere of unit volume
 - Hyper-cube of unit volume
 - Both b) and c)
- 8) Agglomerative clustering falls under which type of clustering method ?
- Partition
 - Hierarchical
 - Both
 - None of the above
- 9) Indicate which is/are a method of clustering
- Linkage method
 - Split and merge
 - Both a) and b)
 - Neither a) nor b)
- 10) K means and K-medoids are example of which type of clustering method ?
- Hierarchical
 - Partition
 - Probabilistic
 - None of the above
- 11) Unsupervised classification can be termed as
- Distance measurement
 - Dimensionality reduction
 - Clustering
 - None of the above
- 12) Indicate which one is a method of density estimation ?
- Histogram based
 - Branch and bound procedure
 - Neighbourhood distance
 - All of the above
- 13) Three components of Bayes decision rule are class prior, likelihood and
- Evidence
 - Instance
 - Confidence
 - Saliency
- 14) Gaussian function is also called _____ function.
- Bell
 - Signum
 - Fixed point
 - Quintic
- 15) The span of the Gaussian curve is determined by the _____ of the distribution.
- Mean
 - Mode
 - Median
 - Variance
- 16) When the value of the data is equal to the mean of the distribution in which it belongs to, the Gaussian function attains _____ value.
- Minimum
 - Maximum
 - Zero
 - None of the above
- 17) The full width of the Gaussian function at half the maximum is
- 2.35σ
 - 1.5σ
 - 0.5σ
 - 0.355σ
- 18) Property of correlation co-efficient is
- $-1 \leq \rho_{xy} \leq 1$
 - $-0.5 \leq \rho_{xy} \leq 1$
 - $-1 \leq \rho_{xy} \leq 1.5$
 - $-0.5 \leq \rho_{xy} \leq 0.5$
- 19) The correlation co-efficient can be viewed as _____ angle between two vectors in R^D .
- sin
 - cos
 - tan
 - sec
- 20) For a n-dimensional data, number of correlation co-efficient is equal to
- ${}^n C_2$
 - $n - 1$
 - n^2
 - $\log(n)$



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : PATTERN RECOGNITION**

Day and Date : Tuesday, 23-5-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**
- a) What is weight space and pattern space ?
 - b) Define probability density function. Illustrate.
 - c) What is a linear decision function ?
 - d) What is cluster seeking ? How is it used ?
 - e) How is Baye's classifier for normal patterns classified ?
3. Attempt **any two** : **10**
- a) What is unsupervised Pattern recognition ? Illustrate.
 - b) How are decision functions implemented ? Give steps.
 - c) List the fundamental problems in Pattern recognition system design.
4. Attempt **any one** : **10**
- a) Develop a simple automatic Pattern recognition model.
 - b) What are decision functions ? How are they implemented ?

Set Q



SECTION – II

5. Attempt **any four** : **20**
- a) What are recognition grammars ?
 - b) Illustrate binary feature selection concept.
 - c) What is multi-category classification ?
 - d) What is training ? How is it different from testing ?
 - e) Compare between Classification and Clustering.
6. Attempt **any two** : **10**
- a) What is syntactic pattern ? How is it formulized ?
 - b) List and explain classification algorithms.
 - c) How is feature selection carried out ? Explain the methods involved.
7. Attempt **any one** : **10**
- a) What is the deterministic training pattern classifier approach ? Illustrate.
 - b) Compare between the deterministic and statistical approach to train pattern classifiers.
-

Seat
No.Set **R****B.E. (Information Technology) (Part – II) Examination, 2017**
Elective – II : PATTERN RECOGNITIONDay 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) 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) When the value of the data is equal to the mean of the distribution in which it belongs to, the Gaussian function attains _____ value.
a) Minimum b) Maximum c) Zero d) None of the above
 - 2) The full width of the Gaussian function at half the maximum is
a) 2.35σ b) 1.5σ c) 0.5σ d) 0.355σ
 - 3) Property of correlation co-efficient is
a) $-1 \leq p_{xy} \leq 1$ b) $-0.5 \leq p_{xy} \leq 1$ c) $-1 \leq p_{xy} \leq 1.5$ d) $-0.5 \leq p_{xy} \leq 0.5$
 - 4) The correlation co-efficient can be viewed as _____ angle between two vectors in R^D .
a) sin b) cos c) tan d) sec
 - 5) For a n-dimensional data, number of correlation co-efficient is equal to
a) ${}^n C_2$ b) $n - 1$ c) n^2 d) $\log(n)$
 - 6) Iso-contour lines of smaller radius depicts _____ value of the density function.
a) Higher b) Lower c) Equal d) None of the above
 - 7) A method to estimate the parameters of a distribution is
a) Maximum Likelihood b) Linear Programming
c) Dynamic Programming d) Convex Optimization
 - 8) Gaussian mixtures are also known as
a) Gaussian multiplication b) Non-linear super-position of Gaussians
c) Linear super-position of Gaussians d) None of the above

P.T.O.



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : PATTERN RECOGNITION**

Day and Date : Tuesday, 23-5-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**
- a) What is weight space and pattern space ?
 - b) Define probability density function. Illustrate.
 - c) What is a linear decision function ?
 - d) What is cluster seeking ? How is it used ?
 - e) How is Baye's classifier for normal patterns classified ?
3. Attempt **any two** : **10**
- a) What is unsupervised Pattern recognition ? Illustrate.
 - b) How are decision functions implemented ? Give steps.
 - c) List the fundamental problems in Pattern recognition system design.
4. Attempt **any one** : **10**
- a) Develop a simple automatic Pattern recognition model.
 - b) What are decision functions ? How are they implemented ?



SECTION – II

5. Attempt **any four** : **20**
- a) What are recognition grammars ?
 - b) Illustrate binary feature selection concept.
 - c) What is multi-category classification ?
 - d) What is training ? How is it different from testing ?
 - e) Compare between Classification and Clustering.
6. Attempt **any two** : **10**
- a) What is syntactic pattern ? How is it formulized ?
 - b) List and explain classification algorithms.
 - c) How is feature selection carried out ? Explain the methods involved.
7. Attempt **any one** : **10**
- a) What is the deterministic training pattern classifier approach ? Illustrate.
 - b) Compare between the deterministic and statistical approach to train pattern classifiers.
-



SLR-VB – 298

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

Set **S**

B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : PATTERN RECOGNITION

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) 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) Unsupervised classification can be termed as
 - a) Distance measurement
 - b) Dimensionality reduction
 - c) Clustering
 - d) None of the above
 - 2) Indicate which one is a method of density estimation ?
 - a) Histogram based
 - b) Branch and bound procedure
 - c) Neighbourhood distance
 - d) All of the above
 - 3) Three components of Bayes decision rule are class prior, likelihood and
 - a) Evidence
 - b) Instance
 - c) Confidence
 - d) Saliency
 - 4) Gaussian function is also called _____ function.
 - a) Bell
 - b) Signum
 - c) Fixed point
 - d) Quintic
 - 5) The span of the Gaussian curve is determined by the _____ of the distribution.
 - a) Mean
 - b) Mode
 - c) Median
 - d) Variance
 - 6) When the value of the data is equal to the mean of the distribution in which it belongs to, the Gaussian function attains _____ value.
 - a) Minimum
 - b) Maximum
 - c) Zero
 - d) None of the above
 - 7) The full width of the Gaussian function at half the maximum is
 - a) 2.35σ
 - b) 1.5σ
 - c) 0.5σ
 - d) 0.355σ
 - 8) Property of correlation co-efficient is
 - a) $-1 \leq p_{xy} \leq 1$
 - b) $-0.5 \leq p_{xy} \leq 1$
 - c) $-1 \leq p_{xy} \leq 1.5$
 - d) $-0.5 \leq p_{xy} \leq 0.5$

P.T.O.



- 9) The correlation co-efficient can be viewed as _____ angle between two vectors in R^D .
- a) sin b) cos c) tan d) sec
- 10) For a n-dimensional data, number of correlation co-efficient is equal to
- a) ${}^n C_2$ b) $n - 1$ c) n^2 d) $\log(n)$
- 11) Iso-contour lines of smaller radius depicts _____ value of the density function.
- a) Higher b) Lower c) Equal d) None of the above
- 12) A method to estimate the parameters of a distribution is
- a) Maximum Likelihood b) Linear Programming
c) Dynamic Programming d) Convex Optimization
- 13) Gaussian mixtures are also known as
- a) Gaussian multiplication b) Non-linear super-position of Gaussians
c) Linear super-position of Gaussians d) None of the above
- 14) The mixture co-efficients of the GMM add upto
- a) 1 b) 0
c) Any value greater than 0 d) Any value less than 0
- 15) The mixture co-efficients are
- a) Strictly positive b) Positive
c) Strictly negative d) Negative
- 16) What is the relation between the distance between clusters and the corresponding class discriminability ?
- a) Proportional b) Inversely-proportional
c) No-relation d) All
- 17) To measure the density at a point, consider
- a) Sphere of any size b) Sphere of unit volume
c) Hyper-cube of unit volume d) Both b) and c)
- 18) Agglomerative clustering falls under which type of clustering method ?
- a) Partition b) Hierarchical c) Both d) None of the above
- 19) Indicate which is/are a method of clustering
- a) Linkage method b) Split and merge
c) Both a) and b) d) Neither a) nor b)
- 20) K means and K-medioids are example of which type of clustering method ?
- a) Hierarchical b) Partition c) Probabilistic d) None of the above



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : PATTERN RECOGNITION**

Day and Date : Tuesday, 23-5-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**
- a) What is weight space and pattern space ?
 - b) Define probability density function. Illustrate.
 - c) What is a linear decision function ?
 - d) What is cluster seeking ? How is it used ?
 - e) How is Baye's classifier for normal patterns classified ?
3. Attempt **any two** : **10**
- a) What is unsupervised Pattern recognition ? Illustrate.
 - b) How are decision functions implemented ? Give steps.
 - c) List the fundamental problems in Pattern recognition system design.
4. Attempt **any one** : **10**
- a) Develop a simple automatic Pattern recognition model.
 - b) What are decision functions ? How are they implemented ?



SECTION – II

5. Attempt **any four** : **20**
- a) What are recognition grammars ?
 - b) Illustrate binary feature selection concept.
 - c) What is multi-category classification ?
 - d) What is training ? How is it different from testing ?
 - e) Compare between Classification and Clustering.
6. Attempt **any two** : **10**
- a) What is syntactic pattern ? How is it formulized ?
 - b) List and explain classification algorithms.
 - c) How is feature selection carried out ? Explain the methods involved.
7. Attempt **any one** : **10**
- a) What is the deterministic training pattern classifier approach ? Illustrate.
 - b) Compare between the deterministic and statistical approach to train pattern classifiers.
-



SLR-VB – 299

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

Set	P
-----	---

B.E. (IT) (Part – II) Examination, 2017
Elective – II : BUSINESS INTELLIGENCE

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) BI contains _____
 - a) Mathematical models
 - b) Analysis methodologies
 - c) Complex decision making process
 - d) All
- 2) _____ represent a structured codification of single primary entities.
 - a) Data
 - b) Information
 - c) Knowledge
 - d) Analysis
- 3) Information is transformed in to _____ when it is used to make decisions.
 - a) data
 - b) knowledge
 - c) mathematical models
 - d) algorithm
- 4) Which factor enables the BI projects ?
 - a) Technologies
 - b) Analysis
 - c) Human resources
 - d) All
- 5) _____ tools are used to transform data from sources to warehouse.
 - a) Analysis tools
 - b) Mathematical tools
 - c) ETL tools
 - d) OLAP tools
- 6) Select the types of decision
 - a) strategic
 - b) tactical
 - c) operational
 - d) all
- 7) In semi-structured decisions most decisions are faced by knowledge workers (State true/false)
 - a) True
 - b) False

P.T.O.



- 8) DSS combines data and mathematical models to solve complex problems :
(State true or false)
a) True b) False
- 9) Which of the foll type of decision is not categorized by their scope ?
a) Strategic b) Structured c) Tactical d) Operational
- 10) Datamining extracts
a) Mathematical model b) Information and knowledge
c) ETL tools d) Data model
- 11) Extraction of details and aggregate totals from data is called
a) OLAP b) Statistics c) Datamining d) Database
- 12) Identification of patterns and recurrences in data is called
a) Analysis b) Statistics c) Datamining d) Data extraction
- 13) Which of the following are the categories of attributes ?
a) Categorical b) Numerical c) Both d) None
- 14) The behavior of each attribute is analysed by data exploration in
a) Univariate analysis b) Bivariate analysis
c) Multivariate analysis d) None
- 15) Mean, median, mode, midrange and geometric mean are the measures of
a) Central Tendency b) Dispersion
c) Relative location d) None
- 16) _____ plots are used to compare the distributions of the same attribute
for two different characteristics.
a) Scatter plots b) Loess plots
c) Level curves d) Quantile-quantile plots
- 17) Regression models deals with past observations and _____ attributes.
a) Categorical b) Numerical c) Explanatory d) All
- 18) The Hat matrix H has the properties of
a) Symmetric b) Idempotent
c) Symmetric and idempotent d) Asymmetric
- 19) What are the measures of evaluation of Time Series models ?
a) Dispersion measures b) Tracking signals
c) Distortion measures d) All
- 20) In classification problems the target attribute is called
a) Predictive variable b) Class
c) Examples d) Instances
-



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

**B.E. (IT) (Part – II) Examination, 2017
Elective – II : BUSINESS INTELLIGENCE**

Day and Date : Tuesday, 23-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Data, Information and Knowledge.
 - b) Definition of data ware house.
 - c) Abstract representation of DSS.
 - d) BI architecture.
 - e) Differentiation between OLAP, Statistics and Datamining.

3. Attempt **any one** : **10**
- What is the importance of data reduction in data mining process ? Explain how data reduction takes place in detail.

OR

What is DSS ? Explain its extended structure with a diagram.

4. How decisions are categorized by their nature and scope ? Explain taxonomy of decisions with example. **10**

SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Structure of regression models.
 - b) Neural networks.
 - c) Classification trees.
 - d) Market basket analysis and Web mining.
 - e) Relational marketing analysis.

Set P



6. Attempt **any one** : **10**

What is relational marketing in BI applications ? Discuss its motivation, objective and components.

OR

Elaborate multiple linear regressions with its coefficients and examples.

7. How the regression models are validated ? Explain any two evaluations in detail. **10**



SLR-VB – 299

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

Set	Q
-----	---

B.E. (IT) (Part – II) Examination, 2017
Elective – II : BUSINESS INTELLIGENCE

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) _____ plots are used to compare the distributions of the same attribute for two different characteristics.
 - a) Scatter plots
 - b) Loess plots
 - c) Level curves
 - d) Quantile-quantile plots
- 2) Regression models deals with past observations and _____ attributes.
 - a) Categorical
 - b) Numerical
 - c) Explanatory
 - d) All
- 3) The Hat matrix H has the properties of
 - a) Symmetric
 - b) Idempotent
 - c) Symmetric and idempotent
 - d) Asymmetric
- 4) What are the measures of evaluation of Time Series models ?
 - a) Dispersion measures
 - b) Tracking signals
 - c) Distortion measures
 - d) All
- 5) In classification problems the target attribute is called
 - a) Predictive variable
 - b) Class
 - c) Examples
 - d) Instances
- 6) BI contains _____
 - a) Mathematical models
 - b) Analysis methodologies
 - c) Complex decision making process
 - d) All
- 7) _____ represent a structured codification of single primary entities.
 - a) Data
 - b) Information
 - c) Knowledge
 - d) Analysis

P.T.O.



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

**B.E. (IT) (Part – II) Examination, 2017
Elective – II : BUSINESS INTELLIGENCE**

Day and Date : Tuesday, 23-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Data, Information and Knowledge.
 - b) Definition of data ware house.
 - c) Abstract representation of DSS.
 - d) BI architecture.
 - e) Differentiation between OLAP, Statistics and Datamining.

3. Attempt **any one** : **10**
- What is the importance of data reduction in data mining process ? Explain how data reduction takes place in detail.

OR

What is DSS ? Explain its extended structure with a diagram.

4. How decisions are categorized by their nature and scope ? Explain taxonomy of decisions with example. **10**

SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Structure of regression models.
 - b) Neural networks.
 - c) Classification trees.
 - d) Market basket analysis and Web mining.
 - e) Relational marketing analysis.

Set Q



6. Attempt **any one** : **10**

What is relational marketing in BI applications ? Discuss its motivation, objective and components.

OR

Elaborate multiple linear regressions with its coefficients and examples.

7. How the regression models are validated ? Explain any two evaluations in detail. **10**



SLR-VB – 299

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

Set	R
-----	---

B.E. (IT) (Part – II) Examination, 2017
Elective – II : BUSINESS INTELLIGENCE

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) Extraction of details and aggregate totals from data is called
a) OLAP b) Statistics c) Datamining d) Database
- 2) Identification of patterns and recurrences in data is called
a) Analysis b) Statistics c) Datamining d) Data extraction
- 3) Which of the following are the categories of attributes ?
a) Categorical b) Numerical c) Both d) None
- 4) The behavior of each attribute is analysed by data exploration in
a) Univariate analysis b) Bivariate analysis
c) Multivariate analysis d) None
- 5) Mean, median, mode, midrange and geometric mean are the measures of
a) Central Tendency b) Dispersion
c) Relative location d) None
- 6) _____ plots are used to compare the distributions of the same attribute for two different characteristics.
a) Scatter plots b) Loess plots
c) Level curves d) Quantile-quantile plots
- 7) Regression models deals with past observations and _____ attributes.
a) Categorical b) Numerical c) Explanatory d) All
- 8) The Hat matrix H has the properties of
a) Symmetric b) Idempotent
c) Symmetric and idempotent d) Asymmetric

P.T.O.



- 9) What are the measures of evaluation of Time Series models ?
a) Dispersion measures b) Tracking signals
c) Distortion measures d) All
- 10) In classification problems the target attribute is called
a) Predictive variable b) Class
c) Examples d) Instances
- 11) BI contains _____
a) Mathematical models
b) Analysis methodologies
c) Complex decision making process
d) All
- 12) _____ represent a structured codification of single primary entities.
a) Data b) Information
c) Knowledge d) Analysis
- 13) Information is transformed in to _____ when it is used to make decisions.
a) data b) knowledge
c) mathematical models d) algorithm
- 14) Which factor enables the BI projects ?
a) Technologies b) Analysis
c) Human resources d) All
- 15) _____ tools are used to transform data from sources to warehouse.
a) Analysis tools b) Mathematical tools
c) ETL tools d) OLAP tools
- 16) Select the types of decision
a) strategic b) tactical c) operational d) all
- 17) In semi-structured decisions most decisions are faced by knowledge workers
(State true/false)
a) True b) False
- 18) DSS combines data and mathematical models to solve complex problems :
(State true or false)
a) True b) False
- 19) Which of the foll type of decision is not categorized by their scope ?
a) Strategic b) Structured c) Tactical d) Operational
- 20) Datamining extracts
a) Mathematical model b) Information and knowledge
c) ETL tools d) Data model



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

**B.E. (IT) (Part – II) Examination, 2017
Elective – II : BUSINESS INTELLIGENCE**

Day and Date : Tuesday, 23-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Data, Information and Knowledge.
 - b) Definition of data ware house.
 - c) Abstract representation of DSS.
 - d) BI architecture.
 - e) Differentiation between OLAP, Statistics and Datamining.

3. Attempt **any one** : **10**
- What is the importance of data reduction in data mining process ? Explain how data reduction takes place in detail.

OR

What is DSS ? Explain its extended structure with a diagram.

4. How decisions are categorized by their nature and scope ? Explain taxonomy of decisions with example. **10**

SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Structure of regression models.
 - b) Neural networks.
 - c) Classification trees.
 - d) Market basket analysis and Web mining.
 - e) Relational marketing analysis.

Set R



6. Attempt **any one** : **10**

What is relational marketing in BI applications ? Discuss its motivation, objective and components.

OR

Elaborate multiple linear regressions with its coefficients and examples.

7. How the regression models are validated ? Explain any two evaluations in detail. **10**



SLR-VB – 299

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

Set	S
-----	---

B.E. (IT) (Part – II) Examination, 2017
Elective – II : BUSINESS INTELLIGENCE

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) Select the types of decision
a) strategic b) tactical c) operational d) all
 - 2) In semi-structured decisions most decisions are faced by knowledge workers (State true/false)
a) True b) False
 - 3) DSS combines data and mathematical models to solve complex problems : (State true or false)
a) True b) False
 - 4) Which of the foll type of decision is not categorized by their scope ?
a) Strategic b) Structured c) Tactical d) Operational
 - 5) Datamining extracts
a) Mathematical model b) Information and knowledge
c) ETL tools d) Data model
 - 6) Extraction of details and aggregate totals from data is called
a) OLAP b) Statistics c) Datamining d) Database
 - 7) Identification of patterns and recurrences in data is called
a) Analysis b) Statistics c) Datamining d) Data extraction
 - 8) Which of the following are the categories of attributes ?
a) Categorical b) Numerical c) Both d) None
 - 9) The behavior of each attribute is analysed by data exploration in
a) Univariate analysis b) Bivariate analysis
c) Multivariate analysis d) None

P.T.O.



- 10) Mean, median, mode, midrange and geometric mean are the measures of
- a) Central Tendency
 - b) Dispersion
 - c) Relative location
 - d) None
- 11) _____ plots are used to compare the distributions of the same attribute for two different characteristics.
- a) Scatter plots
 - b) Loess plots
 - c) Level curves
 - d) Quantile-quantile plots
- 12) Regression models deals with past observations and _____ attributes.
- a) Categorical
 - b) Numerical
 - c) Explanatory
 - d) All
- 13) The Hat matrix H has the properties of
- a) Symmetric
 - b) Idempotent
 - c) Symmetric and idempotent
 - d) Asymmetric
- 14) What are the measures of evaluation of Time Series models ?
- a) Dispersion measures
 - b) Tracking signals
 - c) Distortion measures
 - d) All
- 15) In classification problems the target attribute is called
- a) Predictive variable
 - b) Class
 - c) Examples
 - d) Instances
- 16) BI contains _____
- a) Mathematical models
 - b) Analysis methodologies
 - c) Complex decision making process
 - d) All
- 17) _____ represent a structured codification of single primary entities.
- a) Data
 - b) Information
 - c) Knowledge
 - d) Analysis
- 18) Information is transformed in to _____ when it is used to make decisions.
- a) data
 - b) knowledge
 - c) mathematical models
 - d) algorithm
- 19) Which factor enables the BI projects ?
- a) Technologies
 - b) Analysis
 - c) Human resources
 - d) All
- 20) _____ tools are used to transform data from sources to warehouse.
- a) Analysis tools
 - b) Mathematical tools
 - c) ETL tools
 - d) OLAP tools
-



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

**B.E. (IT) (Part – II) Examination, 2017
Elective – II : BUSINESS INTELLIGENCE**

Day and Date : Tuesday, 23-5-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Data, Information and Knowledge.
 - b) Definition of data ware house.
 - c) Abstract representation of DSS.
 - d) BI architecture.
 - e) Differentiation between OLAP, Statistics and Datamining.

3. Attempt **any one** : **10**
- What is the importance of data reduction in data mining process ? Explain how data reduction takes place in detail.

OR

What is DSS ? Explain its extended structure with a diagram.

4. How decisions are categorized by their nature and scope ? Explain taxonomy of decisions with example. **10**

SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Structure of regression models.
 - b) Neural networks.
 - c) Classification trees.
 - d) Market basket analysis and Web mining.
 - e) Relational marketing analysis.

Set S



6. Attempt **any one** : **10**

What is relational marketing in BI applications ? Discuss its motivation, objective and components.

OR

Elaborate multiple linear regressions with its coefficients and examples.

7. How the regression models are validated ? Explain any two evaluations in detail. **10**



SLR-VB – 300

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

Set	P
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
CLOUD COMPUTING (Elective – II)

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 answers :

20

- 1) _____ is the feature of cloud computing that allows the service to change in size or volume in order to meet a user's needs.
A) Scalability B) Virtualization C) Security D) Cost-savings
- 2) A cloud environment can be accessed from anywhere in the world as long as the user has access to the Internet
A) True B) False C) None of these
- 3) 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
- 4) What widely used service is built on cloud-computing technology ?
A) Twitter B) Skype C) Gmail D) You Tube E) All of these
- 5) _____ provides virtual machines, virtual storage, virtual infrastructure and other hardware assets.
A) IaaS B) SaaS C) PaaS D) All of these
- 6) IAM stands for _____
A) Identity and Access Management B) Identity and Authentication Management
C) Identity and Auditing Management D) None of these
- 7) Which of the following is most complete cloud computing service model ?
A) PaaS B) IaaS C) CaaS D) SaaS
- 8) Which of the following is cloud deployment model ?
A) Public B) Private C) Hybrid D) All of these
- 9) _____ is the process of verifying the identity of a user or system.
A) Authorization B) Auditing C) Authentication D) All

P.T.O.



- 10) An internet connection is necessary for cloud computing interaction.
A) True B) False
- 11) Which of the following is provided by ownership dimension of Cloud Cube Model ?
A) Proprietary B) Owner C) P D) All of the mentioned
- 12) Point out the wrong statement :
A) Public cloud may be managed by the constituent organization(s) or by a third party.
B) A community cloud may be managed by the constituent organization(s) or by a third party.
C) Private clouds may be either on or off-premises.
D) None of the mentioned.
- 13) The role of CSP in cloud computing is _____
A) As a Cloud Security Provider B) As a Cloud Server Provider
C) As a Cloud Service Provider D) None of these
- 14) Point out the wrong statement :
A) Google App Engine allows a developer to scale an application immediately.
B) The customer relationship management provider Salesforce.com has a development platform called Force.com that is a IaaS offering.
C) A cloud computing provider can become a hub master at the center of many ISV's offerings.
D) None of the mentioned
- 15) ASP stands for _____
A) Application Server Provider B) Application Service Provider
C) Application Security Provider D) Both A) and B)
- 16) Which of the following services that need to be negotiated in Service Level Agreements ?
A) Logging B) Auditing
C) Regulatory compliance D) All of the mentioned
- 17) Point out the wrong statement :
A) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage.
B) Any distributed application has a much greater attack surface than an application that is closely held on a Local Area Network.
C) Cloud computing don't have vulnerabilities associated with Internet applications.
D) All of the mentioned.
- 18) Which of the following is not a OASIS standard for SOA Security ?
A) Synchronized Multimedia Integration Language
B) Security Assertion Markup Language
C) WS-Secure Conversation
D) All of the mentioned
- 19) How many types of security boundary values exist in Cloud Cube model ?
A) 1 B) 2 C) 3 D) None of the mentioned
- 20) Which of the following service provider provides the least amount of built in security ?
A) SaaS B) PaaS C) IaaS D) All of the mentioned



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

**B.E. (Information Technology) (Part – II) Examination, 2017
CLOUD COMPUTING (Elective – II)**

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 the right indicates full marks.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- 1) What is cloud computing define it with its attributes ?
- 2) Explain IaaS with its application.
- 3) Explain cloud deployment models with diagram.
- 4) Explain the Infrastructure security at application level.
- 5) Explain the SPI framework for cloud computing with neat diagram.
- 6) Explain the infrastructure security at network level with its risk factors.

3. Explain the cloud service delivery model in detail with neat diagram. **10**

OR

Explain the impact of cloud computing on different types of user's with suitable examples.

4. Explain application level security threats in detail. **10**

OR

Explain IAM Architecture with neat diagram.

SECTION – II

5. Attempt **any four** : **(4×5=20)**

- 1) What is identity management ? Explain issues in implementing identity management.
- 2) Why Cloud Computing brings new threats ? Any 3 reasons.

Set P



- 3) Explain Quality of Service (QoS) monitoring in cloud computing environment.
- 4) What is privacy ? Explain KPMG data life cycle.
- 5) Define trusted cloud computing.
- 6) Explain various security threats in cloud computing.
6. Why cloud computing brings new threats ? Explain security issue from virtualization, vulnerability in virtualization and risk prevention in VMM. **10**

OR

Enlist and explain the Quality of Service (QoS) issues that are to be addressed while designing a real time application over cloud platform.

7. How much does it cost to deploy cloud based e-mail service at Google ? **10**

OR

Explain CSP life cycle approach and stages in CSP life cycle with neat diagram.



- 8) 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
- 9) What widely used service is built on cloud-computing technology ?
A) Twitter B) Skype C) Gmail D) You Tube E) All of these
- 10) _____ provides virtual machines, virtual storage, virtual infrastructure and other hardware assets.
A) IaaS B) SaaS C) PaaS D) All of these
- 11) IAM stands for _____
A) Identity and Access Management B) Identity and Authentication Management
C) Identity and Auditing Management D) None of these
- 12) Which of the following is most complete cloud computing service model ?
A) PaaS B) IaaS C) CaaS D) SaaS
- 13) Which of the following is cloud deployment model ?
A) Public B) Private C) Hybrid D) All of these
- 14) _____ is the process of verifying the identity of a user or system.
A) Authorization B) Auditing C) Authentication D) All
- 15) An internet connection is necessary for cloud computing interaction.
A) True B) False
- 16) Which of the following is provided by ownership dimension of Cloud Cube Model ?
A) Proprietary B) Owner C) P D) All of the mentioned
- 17) Point out the wrong statement :
A) Public cloud may be managed by the constituent organization(s) or by a third party.
B) A community cloud may be managed by the constituent organization(s) or by a third party.
C) Private clouds may be either on or off-premises.
D) None of the mentioned.
- 18) The role of CSP in cloud computing is _____
A) As a Cloud Security Provider B) As a Cloud Server Provider
C) As a Cloud Service Provider D) None of these
- 19) Point out the wrong statement :
A) Google App Engine allows a developer to scale an application immediately.
B) The customer relationship management provider Salesforce.com has a development platform called Force.com that is a IaaS offering.
C) A cloud computing provider can become a hub master at the center of many ISV's offerings.
D) None of the mentioned
- 20) ASP stands for _____
A) Application Server Provider B) Application Service Provider
C) Application Security Provider D) Both A) and B)



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

**B.E. (Information Technology) (Part – II) Examination, 2017
CLOUD COMPUTING (Elective – II)**

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 the right indicates full marks.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- 1) What is cloud computing define it with its attributes ?
- 2) Explain IaaS with its application.
- 3) Explain cloud deployment models with diagram.
- 4) Explain the Infrastructure security at application level.
- 5) Explain the SPI framework for cloud computing with neat diagram.
- 6) Explain the infrastructure security at network level with its risk factors.

3. Explain the cloud service delivery model in detail with neat diagram. **10**

OR

Explain the impact of cloud computing on different types of user's with suitable examples.

4. Explain application level security threats in detail. **10**

OR

Explain IAM Architecture with neat diagram.

SECTION – II

5. Attempt **any four** : **(4×5=20)**

- 1) What is identity management ? Explain issues in implementing identity management.
- 2) Why Cloud Computing brings new threats ? Any 3 reasons.

Set Q



- 3) Explain Quality of Service (QoS) monitoring in cloud computing environment.
- 4) What is privacy ? Explain KPMG data life cycle.
- 5) Define trusted cloud computing.
- 6) Explain various security threats in cloud computing.
6. Why cloud computing brings new threats ? Explain security issue from virtualization, vulnerability in virtualization and risk prevention in VMM. **10**

OR

Enlist and explain the Quality of Service (QoS) issues that are to be addressed while designing a real time application over cloud platform.

7. How much does it cost to deploy cloud based e-mail service at Google ? **10**

OR

Explain CSP life cycle approach and stages in CSP life cycle with neat diagram.



SLR-VB – 300

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

Set	R
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
CLOUD COMPUTING (Elective – II)

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 answers : **20**
- 1) Which of the following is provided by ownership dimension of Cloud Cube Model ?
A) Proprietary B) Owner C) P D) All of the mentioned
 - 2) Point out the wrong statement :
A) Public cloud may be managed by the constituent organization(s) or by a third party.
B) A community cloud may be managed by the constituent organization(s) or by a third party.
C) Private clouds may be either on or off-premises.
D) None of the mentioned.
 - 3) The role of CSP in cloud computing is _____
A) As a Cloud Security Provider B) As a Cloud Server Provider
C) As a Cloud Service Provider D) None of these
 - 4) Point out the wrong statement :
A) Google App Engine allows a developer to scale an application immediately.
B) The customer relationship management provider Salesforce.com has a development platform called Force.com that is a IaaS offering.
C) A cloud computing provider can become a hub master at the center of many ISV's offerings.
D) None of the mentioned
 - 5) ASP stands for _____
A) Application Server Provider B) Application Service Provider
C) Application Security Provider D) Both A) and B)
 - 6) Which of the following services that need to be negotiated in Service Level Agreements ?
A) Logging B) Auditing
C) Regulatory compliance D) All of the mentioned

P.T.O.



- 7) Point out the wrong statement :
- A) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage.
 - B) Any distributed application has a much greater attack surface than an application that is closely held on a Local Area Network.
 - C) Cloud computing don't have vulnerabilities associated with Internet applications.
 - D) All of the mentioned.
- 8) Which of the following is not a OASIS standard for SOA Security ?
- A) Synchronized Multimedia Integration Language
 - B) Security Assertion Markup Language
 - C) WS-Secure Conversation
 - D) All of the mentioned
- 9) How many types of security boundary values exist in Cloud Cube model ?
- A) 1
 - B) 2
 - C) 3
 - D) None of the mentioned
- 10) Which of the following service provider provides the least amount of built in security ?
- A) SaaS
 - B) PaaS
 - C) IaaS
 - D) All of the mentioned
- 11) _____ is the feature of cloud computing that allows the service to change in size or volume in order to meet a user's needs.
- A) Scalability
 - B) Virtualization
 - C) Security
 - D) Cost-savings
- 12) A cloud environment can be accessed from anywhere in the world as long as the user has access to the Internet
- A) True
 - B) False
 - C) None of these
- 13) 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
- 14) What widely used service is built on cloud-computing technology ?
- A) Twitter
 - B) Skype
 - C) Gmail
 - D) You Tube
 - E) All of these
- 15) _____ provides virtual machines, virtual storage, virtual infrastructure and other hardware assets.
- A) IaaS
 - B) SaaS
 - C) PaaS
 - D) All of these
- 16) IAM stands for _____
- A) Identity and Access Management
 - B) Identity and Authentication Management
 - C) Identity and Auditing Management
 - D) None of these
- 17) Which of the following is most complete cloud computing service model ?
- A) PaaS
 - B) IaaS
 - C) CaaS
 - D) SaaS
- 18) Which of the following is cloud deployment model ?
- A) Public
 - B) Private
 - C) Hybrid
 - D) All of these
- 19) _____ is the process of verifying the identity of a user or system.
- A) Authorization
 - B) Auditing
 - C) Authentication
 - D) All
- 20) An internet connection is necessary for cloud computing interaction.
- A) True
 - B) False



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

**B.E. (Information Technology) (Part – II) Examination, 2017
CLOUD COMPUTING (Elective – II)**

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 the right indicates full marks.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- 1) What is cloud computing define it with its attributes ?
- 2) Explain IaaS with its application.
- 3) Explain cloud deployment models with diagram.
- 4) Explain the Infrastructure security at application level.
- 5) Explain the SPI framework for cloud computing with neat diagram.
- 6) Explain the infrastructure security at network level with its risk factors.

3. Explain the cloud service delivery model in detail with neat diagram. **10**

OR

Explain the impact of cloud computing on different types of user's with suitable examples.

4. Explain application level security threats in detail. **10**

OR

Explain IAM Architecture with neat diagram.

SECTION – II

5. Attempt **any four** : **(4×5=20)**

- 1) What is identity management ? Explain issues in implementing identity management.
- 2) Why Cloud Computing brings new threats ? Any 3 reasons.

Set R



- 3) Explain Quality of Service (QoS) monitoring in cloud computing environment.
- 4) What is privacy ? Explain KPMG data life cycle.
- 5) Define trusted cloud computing.
- 6) Explain various security threats in cloud computing.
6. Why cloud computing brings new threats ? Explain security issue from virtualization, vulnerability in virtualization and risk prevention in VMM. **10**

OR

Enlist and explain the Quality of Service (QoS) issues that are to be addressed while designing a real time application over cloud platform.

7. How much does it cost to deploy cloud based e-mail service at Google ? **10**

OR

Explain CSP life cycle approach and stages in CSP life cycle with neat diagram.



SLR-VB – 300

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

Set	S
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
CLOUD COMPUTING (Elective – II)

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 answers :

20

- 1) IAM stands for _____
A) Identity and Access Management B) Identity and Authentication Management
C) Identity and Auditing Management D) None of these
- 2) Which of the following is most complete cloud computing service model ?
A) PaaS B) IaaS C) SaaS D) SaaS
- 3) Which of the following is cloud deployment model ?
A) Public B) Private C) Hybrid D) All of these
- 4) _____ is the process of verifying the identity of a user or system.
A) Authorization B) Auditing C) Authentication D) All
- 5) An internet connection is necessary for cloud computing interaction.
A) True B) False
- 6) Which of the following is provided by ownership dimension of Cloud Cube Model ?
A) Proprietary B) Owner C) P D) All of the mentioned
- 7) Point out the wrong statement :
A) Public cloud may be managed by the constituent organization(s) or by a third party.
B) A community cloud may be managed by the constituent organization(s) or by a third party.
C) Private clouds may be either on or off-premises.
D) None of the mentioned.
- 8) The role of CSP in cloud computing is _____
A) As a Cloud Security Provider B) As a Cloud Server Provider
C) As a Cloud Service Provider D) None of these
- 9) Point out the wrong statement :
A) Google App Engine allows a developer to scale an application immediately.
B) The customer relationship management provider Salesforce.com has a development platform called Force.com that is a IaaS offering.
C) A cloud computing provider can become a hub master at the center of many ISV's offerings.
D) None of the mentioned

P.T.O.



- 10) ASP stands for _____
A) Application Server Provider B) Application Service Provider
C) Application Security Provider D) Both A) and B)
- 11) Which of the following services that need to be negotiated in Service Level Agreements ?
A) Logging B) Auditing
C) Regulatory compliance D) All of the mentioned
- 12) Point out the wrong statement :
A) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage.
B) Any distributed application has a much greater attack surface than an application that is closely held on a Local Area Network.
C) Cloud computing don't have vulnerabilities associated with Internet applications.
D) All of the mentioned.
- 13) Which of the following is not a OASIS standard for SOA Security ?
A) Synchronized Multimedia Integration Language
B) Security Assertion Markup Language
C) WS-Secure Conversion
D) All of the mentioned
- 14) How many types of security boundary values exist in Cloud Cube model ?
A) 1 B) 2 C) 3 D) None of the mentioned
- 15) Which of the following service provider provides the least amount of built in security ?
A) SaaS B) PaaS C) IaaS D) All of the mentioned
- 16) _____ is the feature of cloud computing that allows the service to change in size or volume in order to meet a user's needs.
A) Scalability B) Virtualization C) Security D) Cost-savings
- 17) A cloud environment can be accessed from anywhere in the world as long as the user has access to the Internet
A) True B) False C) None of these
- 18) 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
- 19) What widely used service is built on cloud-computing technology ?
A) Twitter B) Skype C) Gmail D) You Tube E) All of these
- 20) _____ provides virtual machines, virtual storage, virtual infrastructure and other hardware assets.
A) IaaS B) SaaS C) PaaS D) All of these
-



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

**B.E. (Information Technology) (Part – II) Examination, 2017
CLOUD COMPUTING (Elective – II)**

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 the right indicates full marks.**
3) **Assume suitable data if necessary.**

SECTION – I

2. Attempt **any four** : **(4×5=20)**

- 1) What is cloud computing define it with its attributes ?
- 2) Explain IaaS with its application.
- 3) Explain cloud deployment models with diagram.
- 4) Explain the Infrastructure security at application level.
- 5) Explain the SPI framework for cloud computing with neat diagram.
- 6) Explain the infrastructure security at network level with its risk factors.

3. Explain the cloud service delivery model in detail with neat diagram. **10**

OR

Explain the impact of cloud computing on different types of user's with suitable examples.

4. Explain application level security threats in detail. **10**

OR

Explain IAM Architecture with neat diagram.

SECTION – II

5. Attempt **any four** : **(4×5=20)**

- 1) What is identity management ? Explain issues in implementing identity management.
- 2) Why Cloud Computing brings new threats ? Any 3 reasons.

Set S



- 3) Explain Quality of Service (QoS) monitoring in cloud computing environment.
- 4) What is privacy ? Explain KPMG data life cycle.
- 5) Define trusted cloud computing.
- 6) Explain various security threats in cloud computing.
6. Why cloud computing brings new threats ? Explain security issue from virtualization, vulnerability in virtualization and risk prevention in VMM. **10**

OR

Enlist and explain the Quality of Service (QoS) issues that are to be addressed while designing a real time application over cloud platform.

7. How much does it cost to deploy cloud based e-mail service at Google ? **10**

OR

Explain CSP life cycle approach and stages in CSP life cycle with neat diagram.
