



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

Set **P**

S.E. (IT) Part – I (CBCS) Examination, 2017
APPLIED MATHEMATICS – I (New) (Semester – I)

Day and Date : Tuesday, 12-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) Figures to the **right** indicate **full** marks.
 - 3) **Use of non-programmable calculator is allowed.**
 - 4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. **3**. **Each** question carries **one** mark.
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose correct answer :

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) $\frac{x}{2a^2} \sin ax$

2) $\frac{1}{D - a} X$ is equal to

- a) $\int X e^{ax} dx$ b) $\int X e^{-ax} dx$ c) $e^{ax} \int X e^{-ax} dx$ d) $e^{-ax} \int X e^{ax} dx$

3) The Laplace transform of $t \sin t$ is

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

4) The value of the integral $\int_0^{\infty} e^{-t} t^5 dt$ is

- a) 1 b) 6 c) 24 d) 120

5) $L^{-1} \left\{ \frac{s + s^2}{s^3} \right\} =$

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

6) $z\{1\} =$

- a) $\frac{1}{z - 1}$ b) $\frac{1}{z + 1}$ c) $\frac{z}{z - 1}$ d) $\frac{z}{z + 1}$

P.T.O.



- 7) If $z\{f(k)\} = F(z)$, then $z\{Kf(k)\} =$
- a) $-z \frac{dF(z)}{dz}$ b) $z \frac{dF(z)}{dz}$ c) $\frac{dF(z)}{dz}$ d) $-\frac{dF(z)}{dz}$
- 8) Fourier expansion of an odd function has only
- a) Sine terms b) Cosine terms
c) Both sine and cosine terms d) None of these
- 9) If $f(x) = \sqrt{1 - \cos x}$ then the constant term in Fourier expansion in $(0, 2\pi)$
- a) $\frac{2}{\pi}$ b) $\frac{\sqrt{2}}{\pi}$ c) $\frac{2\sqrt{2}}{\pi}$ d) $\frac{4}{\pi}$
- 10) If the probability of defective bulbs is 0.2, then the mean of the distribution of defective bulbs in a lot of 1000 bulbs is
- a) 200 b) 160 c) 320 d) 440
- 11) A continuous random variable has the following probability density function $f(x) = kx^2$, $0 \leq x \leq 2$ then $k =$
- a) $8/3$ b) $3/2$ c) $2/3$ d) $3/8$
- 12) If $\bar{x} = 70$, $\bar{y} = 149$ and $b_1 = 0.7$ then the line of regression of y on x is
- a) $y = 0.8x + 120$ b) $y = 0.6x + 80$ c) $y = 0.5x + 60$ d) $y = 0.7x + 100$
- 13) The fraction of time the system is busy is
- a) $\frac{\lambda}{\mu}$ b) $\frac{\mu}{\lambda}$ c) $\frac{\lambda}{\mu^2}$ d) $\frac{\mu}{\lambda^2}$
- 14) In a $M/M/1/\infty$ system with $\lambda = 12$ hours and $\mu = 16$ hours the average number of customers in the system is
- a) 5 b) 4 c) 3 d) 2
-



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

**S.E. (IT) Part – I (CBCS) Examination, 2017
APPLIED MATHEMATICS – I (New) (Semester – I)**

Day and Date : Tuesday, 12-12-2017

Marks : 56

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

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Use of non-programmable calculator is allowed.**

SECTION – I

2. Solve **any three** of the following : 9
- a) Solve $(D^2 + 2D + 1)y = 2x + x^2$.
 - b) Solve $(D^2 - 2D + 4)y = e^x \cos x$.
 - c) Find $L \left\{ \frac{2 \sin t \sin 5t}{t} \right\}$.
 - d) Find the inverse Laplace transform of $\frac{s}{(s-1)(s^2+4)}$.
 - e) Find $z\{Ke^{-ak}\}$, $k \geq 0$.
3. Solve **any three** of the following : 9
- a) Solve $(D^4 - 18D^2 + 81)y = 36 e^{3x}$.
 - b) Evaluate $\int_0^{\infty} t e^{-2t} \sin 4t dt$, using Laplace transform.
 - c) Find inverse Laplace transform of $\frac{(s+2)e^{-s}}{(s+1)^4}$
 - d) Find $z\{2^k \cos(3k+2)\}$, $k \geq 0$.
 - e) Find inverse Z-transform of $\frac{1}{(Z-5)^2}$, $|Z| < 5$.
4. Solve **any two** of the following : 10
- a) Solve $(D^2 + 3D + 2)y = \cos(e^x) - x^2$.
 - b) Find inverse z-transform of $\frac{1}{(z-3)(z-2)}$, where i) $2 < |z| < 3$, ii) $|z| > 3$.
 - c) Solve $y'' + 2y' + 2y = 5 \sin t$, subject to the conditions $y(0) = 0$ and $y'(0) = 0$, by using Laplace transform method.

Set P



SECTION – II

5. Attempt **any three** of the following :
- a) Find the Fourier series of $f(x)$ in $(0, 2\pi)$ where $f(x) = x^2$. 3
- b) Find the Fourier sine series of $f(x) = x(\pi - x)$ in $(0, \pi)$. 3
- c) Seven coins are tossed and the number of heads obtained is noted. The experiment is repeated 128 times and the following distribution is obtained.
- | | | | | | | | | | | |
|---------------------|---|---|---|----|----|----|----|---|---|---|
| No. of heads | : | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Frequency | : | 7 | 6 | 19 | 35 | 30 | 23 | 7 | 1 | 3 |
- Fit a binomial distribution if the nature of the coins is not known.
- d) The equations to the two lines of regressions are $6y = 5x + 90$ and $15x = 8y + 130$ find the means of x and y and the coefficient of correlation. 3
- e) There are two typists in a type-writing shop. Each typist can type on an average 5 letters per hour. The rate of arrivals of letters is 8 per hour.
- i) What is the probability that both the typist are busy ?
- ii) What is the average idle time for which both typist are idle ? 3
6. Attempt **any three** of the following :
- a) If the probability that a spade will be drawn from a pack of well shuffled cards at least one in 104 consecutive draws. 3
- b) In an examination given by 500 candidates the average and standard deviation of marks obtained are 40 and 10 respectively. Assuming the distribution of marks to be normal find approximately how many will pass if 50 is fixed as a minimum. 3
- (Given : For S.N.V. z area from $z = 0$ to $z = 1$ is 0.3413)
- c) Compute the coefficient of correlation between x and y from the following data
- | | | | | | | | | |
|----------|---|----|----|----|---|---|----|---|
| x | : | 2 | 4 | 5 | 6 | 8 | 11 | |
| y | : | 18 | 12 | 10 | 8 | 7 | 5 | 3 |
- d) Find the average waiting time per customer in the queue and in the system for M/M/1/ ∞ model, if $\lambda = 9$ and $\mu = 15$ hours. 3
- e) Obtain Fourier series for $f(x) = |x|$, $-\pi \leq x < \pi$ 3
7. Attempt **any two** of the following :
- a) Expand $f(x) = \pi x$, $0 < x < 1$
 $= 0$, $1 < x < 2$
 Period '2' into a Fourier series. 5
- b) Customers arrive at a clinic according to a Poisson process with mean interval of 25 min. The physician needs on an average 20 min. for a patient to examine.
- i) Find the expected number of patients at the clinic and in the queue.
- ii) Find percentage of patients who are not required to wait.
- iii) On an average how much time is spent by a patient in the clinic. 5
- c) The following results were obtained from marks in applied mechanics and Engg. Mathematics in a examination.
- | | Marks in
App. Maths (x) | Marks in
Engg. Maths (y) |
|---------------------------|----------------------------|-----------------------------|
| Mean | 47.5 | 39.5 |
| Standard deviation | 16.8 | 10.8 |
- and $r = 0.95$.
- Find both regression equations and also estimate the value of y for $x = 30$. 5



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

Set

Q

S.E. (IT) Part – I (CBCS) Examination, 2017
APPLIED MATHEMATICS – I (New) (Semester – I)

Day and Date : Tuesday, 12-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Use of non-programmable calculator is allowed.**
 - 4) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose correct answer :

14

- 1) Fourier expansion of an odd function has only
 - a) Sine terms
 - b) Cosine terms
 - c) Both sine and cosine terms
 - d) None of these
- 2) If $f(x) = \sqrt{1 - \cos x}$ then the constant term in Fourier expansion in $(0, 2\pi)$
 - a) $\frac{2}{\pi}$
 - b) $\frac{\sqrt{2}}{\pi}$
 - c) $\frac{2\sqrt{2}}{\pi}$
 - d) $\frac{4}{\pi}$
- 3) If the probability of defective bulbs is 0.2, then the mean of the distribution of defective bulbs in a lot of 1000 bulbs is
 - a) 200
 - b) 160
 - c) 320
 - d) 440
- 4) A continuous random variable has the following probability density function $f(x) = kx^2, 0 \leq x \leq 2$ then $k =$
 - a) $\frac{8}{3}$
 - b) $\frac{3}{2}$
 - c) $\frac{2}{3}$
 - d) $\frac{3}{8}$
- 5) If $\bar{x} = 70, \bar{y} = 149$ and by $x = 0.7$ then the line of regression of y on x is
 - a) $y = 0.8x + 120$
 - b) $y = 0.6x + 80$
 - c) $y = 0.5x + 60$
 - d) $y = 0.7x + 100$
- 6) The fraction of time the system is busy is
 - a) $\frac{\lambda}{\mu}$
 - b) $\frac{\mu}{\lambda}$
 - c) $\frac{\lambda}{\mu^2}$
 - d) $\frac{\mu}{\lambda^2}$
- 7) In a $M/M/1/\infty$ system with $\lambda = 12$ hours and $\mu = 16$ hours the average number of customers in the system is
 - a) 5
 - b) 4
 - c) 3
 - d) 2



- 8) $\frac{1}{D^2 + a^2} \cos ax$ is equal to
- a) $\frac{x}{2a} \cos ax$ b) $\frac{x}{2a^2} \cos ax$ c) $\frac{x}{2a} \sin ax$ d) $\frac{x}{2a^2} \sin ax$
- 9) $\frac{1}{D - a} X$ is equal to
- a) $\int X e^{ax} dx$ b) $\int X e^{-ax} dx$ c) $e^{ax} \int X e^{-ax} dx$ d) $e^{-ax} \int X e^{ax} dx$
- 10) The Laplace transform of $t \sin t$ is
- a) $\frac{2s}{(s^2 + 1)^2}$ b) $\frac{-2s}{(s^2 + 1)^2}$ c) $\frac{-2s}{s^2 + 1}$ d) $\frac{2s}{s^2 + 1}$
- 11) The value of the integral $\int_0^{\infty} e^{-t} t^5 dt$ is
- a) 1 b) 6 c) 24 d) 120
- 12) $L^{-1} \left\{ \frac{s + s^2}{s^3} \right\} =$
- a) $t + t^2$ b) $t + 1$ c) $t^2 + 1$ d) $t - 1$
- 13) $z\{1\} =$
- a) $\frac{1}{z - 1}$ b) $\frac{1}{z + 1}$ c) $\frac{z}{z - 1}$ d) $\frac{z}{z + 1}$
- 14) If $z\{f(k)\} = F(z)$, then $z\{Kf(k)\} =$
- a) $-z \frac{dF(z)}{dz}$ b) $z \frac{dF(z)}{dz}$ c) $\frac{dF(z)}{dz}$ d) $-\frac{dF(z)}{dz}$
-



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

**S.E. (IT) Part – I (CBCS) Examination, 2017
APPLIED MATHEMATICS – I (New) (Semester – I)**

Day and Date : Tuesday, 12-12-2017

Marks : 56

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

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Use of non-programmable calculator is allowed.**

SECTION – I

2. Solve **any three** of the following : 9
- a) Solve $(D^2 + 2D + 1)y = 2x + x^2$.
 - b) Solve $(D^2 - 2D + 4)y = e^x \cos x$.
 - c) Find $L \left\{ \frac{2 \sin t \sin 5t}{t} \right\}$.
 - d) Find the inverse Laplace transform of $\frac{s}{(s-1)(s^2+4)}$.
 - e) Find $z\{Ke^{-ak}\}$, $k \geq 0$.
3. Solve **any three** of the following : 9
- a) Solve $(D^4 - 18D^2 + 81)y = 36 e^{3x}$.
 - b) Evaluate $\int_0^{\infty} t e^{-2t} \sin 4t dt$, using Laplace transform.
 - c) Find inverse Laplace transform of $\frac{(s+2)e^{-s}}{(s+1)^4}$.
 - d) Find $z\{2^k \cos(3k+2)\}$, $k \geq 0$.
 - e) Find inverse Z-transform of $\frac{1}{(Z-5)^2}$, $|Z| < 5$.
4. Solve **any two** of the following : 10
- a) Solve $(D^2 + 3D + 2)y = \cos(e^x) - x^2$.
 - b) Find inverse z-transform of $\frac{1}{(z-3)(z-2)}$, where i) $2 < |z| < 3$, ii) $|z| > 3$.
 - c) Solve $y'' + 2y' + 2y = 5 \sin t$, subject to the conditions $y(0) = 0$ and $y'(0) = 0$, by using Laplace transform method.

Set Q



SECTION – II

5. Attempt **any three** of the following :
- a) Find the Fourier series of $f(x)$ in $(0, 2\pi)$ where $f(x) = x^2$. 3
- b) Find the Fourier sine series of $f(x) = x(\pi - x)$ in $(0, \pi)$. 3
- c) Seven coins are tossed and the number of heads obtained is noted. The experiment is repeated 128 times and the following distribution is obtained.
- | | | | | | | | | | | |
|---------------------|---|---|---|----|----|----|----|---|---|---|
| No. of heads | : | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Frequency | : | 7 | 6 | 19 | 35 | 30 | 23 | 7 | 1 | 3 |
- Fit a binomial distribution if the nature of the coins is not known.
- d) The equations to the two lines of regressions are $6y = 5x + 90$ and $15x = 8y + 130$ find the means of x and y and the coefficient of correlation. 3
- e) There are two typists in a type-writing shop. Each typist can type on an average 5 letters per hour. The rate of arrivals of letters is 8 per hour.
- i) What is the probability that both the typist are busy ?
- ii) What is the average idle time for which both typist are idle ? 3
6. Attempt **any three** of the following :
- a) If the probability that are of spade will be drawn from a pack of well shuffled cards at least one in 104 consecutive draws. 3
- b) In an examination given by 500 candidates the average and standard deviation of marks obtained are 40 and 10 respectively. Assuming the distribution of marks to be normal find approximately how many will pass if 50 is fixed as a minimum. 3
- (Given : For S.N.V. z area from $z = 0$ to $z = 1$ is 0.3413)
- c) Compute the coefficient of correlation between x and y from the following data
- | | | | | | | | | |
|----------|---|----|----|----|---|---|----|---|
| x | : | 2 | 4 | 5 | 6 | 8 | 11 | |
| y | : | 18 | 12 | 10 | 8 | 7 | 5 | 3 |
- d) Find the average waiting time per customer in the queue and in the system for M/M/1/ ∞ model, if $\lambda = 9$ and $\mu = 15$ hours. 3
- e) Obtain Fourier series for $f(x) = |x|$, $-\pi \leq x < \pi$ 3
7. Attempt **any two** of the following :
- a) Expand $f(x) = \pi x$, $0 < x < 1$
 $= 0$, $1 < x < 2$
 Period '2' into a Fourier series. 5
- b) Customers arrive at a clinic according to a Poisson process with mean interval of 25 min. The physician needs on an average 20 min. for a patient to examine.
- i) Find the expected number of patients at the clinic and in the queue.
- ii) Find percentage of patients who are not required to wait.
- iii) On an average how much time is spent by a patient in the clinic. 5
- c) The following results were obtained from marks in applied mechanics and Engg. Mathematics in a examination.
- | | Marks in
App. Maths (x) | Marks in
Engg. Maths (y) |
|---------------------------|----------------------------|-----------------------------|
| Mean | 47.5 | 39.5 |
| Standard deviation | 16.8 | 10.8 |
- and $r = 0.95$.
- Find both regression equations and also estimate the value of y for $x = 30$. 5

Seat
No.

Set

R

S.E. (IT) Part – I (CBCS) Examination, 2017
APPLIED MATHEMATICS – I (New) (Semester – I)

Day and Date : Tuesday, 12-12-2017
 Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Use of non-programmable calculator is allowed.**
 - 4) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose correct answer :

14

1) $L^{-1} \left\{ \frac{s + s^2}{s^3} \right\} =$

a) $t + t^2$

b) $t + 1$

c) $t^2 + 1$

d) $t - 1$

2) $z\{1\} =$

a) $\frac{1}{z-1}$

b) $\frac{1}{z+1}$

c) $\frac{z}{z-1}$

d) $\frac{z}{z+1}$

3) If $z\{f(k)\} = F(z)$, then $z\{kf(k)\} =$

a) $-z \frac{dF(z)}{dz}$

b) $z \frac{dF(z)}{dz}$

c) $\frac{dF(z)}{dz}$

d) $-\frac{dF(z)}{dz}$

4) Fourier expansion of an odd function has only

a) Sine terms

b) Cosine terms

c) Both sine and cosine terms

d) None of these

5) If $f(x) = \sqrt{1 - \cos x}$ then the constant term in Fourier expansion in $(0, 2\pi)$

a) $\frac{2}{\pi}$

b) $\frac{\sqrt{2}}{\pi}$

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

d) $\frac{4}{\pi}$

6) If the probability of defective bulbs is 0.2, then the mean of the distribution of defective bulbs in a lot of 1000 bulbs is

a) 200

b) 160

c) 320

d) 440

7) A continuous random variable has the following probability density function $f(x) = kx^2$, $0 \leq x \leq 2$ then $k =$ a) $8/3$ b) $3/2$ c) $2/3$ d) $3/8$ 8) If $\bar{x} = 70$, $\bar{y} = 149$ and by $x = 0.7$ then the line of regression of y on x is

a) $y = 0.8x + 120$

b) $y = 0.6x + 80$

c) $y = 0.5x + 60$

d) $y = 0.7x + 100$

P.T.O.



- 9) The fraction of time the system is busy is
- a) $\frac{\lambda}{\mu}$ b) $\frac{\mu}{\lambda}$ c) $\frac{\lambda}{\mu^2}$ d) $\frac{\mu}{\lambda^2}$
- 10) In a $M/M/1/\infty$ system with $\lambda = 12$ hours and $\mu = 16$ hours the average number of customers in the system is
- a) 5 b) 4 c) 3 d) 2
- 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) $\frac{x}{2a^2} \sin ax$
- 12) $\frac{1}{D - a} X$ is equal to
- a) $\int X e^{ax} dx$ b) $\int X e^{-ax} dx$ c) $e^{ax} \int X e^{-ax} dx$ d) $e^{-ax} \int X e^{ax} dx$
- 13) The Laplace transform of $t \sin t$ is
- a) $\frac{2s}{(s^2 + 1)^2}$ b) $\frac{-2s}{(s^2 + 1)^2}$ c) $\frac{-2s}{s^2 + 1}$ d) $\frac{2s}{s^2 + 1}$
- 14) The value of the integral $\int_0^{\infty} e^{-t} t^5 dt$ is
- a) 1 b) 6 c) 24 d) 120
-



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

S.E. (IT) Part – I (CBCS) Examination, 2017
APPLIED MATHEMATICS – I (New) (Semester – I)

Day and Date : Tuesday, 12-12-2017

Marks : 56

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

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Use of non-programmable calculator is allowed.**

SECTION – I

2. Solve **any three** of the following : 9

- a) Solve $(D^2 + 2D + 1)y = 2x + x^2$.
- b) Solve $(D^2 - 2D + 4)y = e^x \cos x$.
- c) Find $L \left\{ \frac{2 \sin t \sin 5t}{t} \right\}$.
- d) Find the inverse Laplace transform of $\frac{s}{(s-1)(s^2+4)}$.
- e) Find $z\{Ke^{-ak}\}$, $k \geq 0$.

3. Solve **any three** of the following : 9

- a) Solve $(D^4 - 18D^2 + 81)y = 36 e^{3x}$.
- b) Evaluate $\int_0^{\infty} t e^{-2t} \sin 4t dt$, using Laplace transform.
- c) Find inverse Laplace transform of $\frac{(s+2)e^{-s}}{(s+1)^4}$
- d) Find $z\{2^k \cos(3k+2)\}$, $k \geq 0$.
- e) Find inverse Z-transform of $\frac{1}{(Z-5)^2}$, $|Z| < 5$.

4. Solve **any two** of the following : 10

- a) Solve $(D^2 + 3D + 2)y = \cos(e^x) - x^2$.
- b) Find inverse z-transform of $\frac{1}{(z-3)(z-2)}$, where i) $2 < |z| < 3$, ii) $|z| > 3$.
- c) Solve $y'' + 2y' + 2y = 5 \sin t$, subject to the conditions $y(0) = 0$ and $y'(0) = 0$, by using Laplace transform method.

Set R



SECTION – II

5. Attempt **any three** of the following :
- a) Find the Fourier series of $f(x)$ in $(0, 2\pi)$ where $f(x) = x^2$. 3
- b) Find the Fourier sine series of $f(x) = x(\pi - x)$ in $(0, \pi)$. 3
- c) Seven coins are tossed and the number of heads obtained is noted. The experiment is repeated 128 times and the following distribution is obtained.
- | | | | | | | | | | | |
|---------------------|---|---|---|----|----|----|----|---|---|---|
| No. of heads | : | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Frequency | : | 7 | 6 | 19 | 35 | 30 | 23 | 7 | 1 | 3 |
- Fit a binomial distribution if the nature of the coins is not known.
- d) The equations to the two lines of regressions are $6y = 5x + 90$ and $15x = 8y + 130$ find the means of x and y and the coefficient of correlation. 3
- e) There are two typists in a type-writing shop. Each typist can type on an average 5 letters per hour. The rate of arrivals of letters is 8 per hour.
- i) What is the probability that both the typist are busy ?
- ii) What is the average idle time for which both typist are idle ? 3
6. Attempt **any three** of the following :
- a) If the probability that a spade will be drawn from a pack of well shuffled cards at least one in 104 consecutive draws. 3
- b) In an examination given by 500 candidates the average and standard deviation of marks obtained are 40 and 10 respectively. Assuming the distribution of marks to be normal find approximately how many will pass if 50 is fixed as a minimum. 3
- (Given : For S.N.V. z area from $z = 0$ to $z = 1$ is 0.3413)
- c) Compute the coefficient of correlation between x and y from the following data
- | | | | | | | | | |
|----------|---|----|----|----|---|---|----|---|
| x | : | 2 | 4 | 5 | 6 | 8 | 11 | |
| y | : | 18 | 12 | 10 | 8 | 7 | 5 | 3 |
- d) Find the average waiting time per customer in the queue and in the system for M/M/1/ ∞ model, if $\lambda = 9$ and $\mu = 15$ hours. 3
- e) Obtain Fourier series for $f(x) = |x|$, $-\pi \leq x < \pi$ 3
7. Attempt **any two** of the following :
- a) Expand $f(x) = \pi x$, $0 < x < 1$
 $= 0$, $1 < x < 2$
 Period '2' into a Fourier series. 5
- b) Customers arrive at a clinic according to a Poisson process with mean interval of 25 min. The physician needs on an average 20 min. for a patient to examine.
- i) Find the expected number of patients at the clinic and in the queue.
- ii) Find percentage of patients who are not required to wait.
- iii) On an average how much time is spent by a patient in the clinic. 5
- c) The following results were obtained from marks in applied mechanics and Engg. Mathematics in a examination.
- | | Marks in
App. Maths (x) | Marks in
Engg. Maths (y) |
|---------------------------|----------------------------|-----------------------------|
| Mean | 47.5 | 39.5 |
| Standard deviation | 16.8 | 10.8 |
- and $r = 0.95$.
- Find both regression equations and also estimate the value of y for $x = 30$. 5



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

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

**S.E. (IT) Part – I (CBCS) Examination, 2017
APPLIED MATHEMATICS – I (New) (Semester – I)**

Day and Date : Tuesday, 12-12-2017

Max. Marks : 70

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

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) Figures to the **right** indicate **full** marks.
 - 3) **Use** of non-programmable calculator is allowed.
 - 4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose correct answer :

14

- 1) If the probability of defective bulbs is 0.2, then the mean of the distribution of defective bulbs in a lot of 1000 bulbs is
 - a) 200
 - b) 160
 - c) 320
 - d) 440
- 2) A continuous random variable has the following probability density function $f(x) = kx^2, 0 \leq x \leq 2$ then $k =$
 - a) $8/3$
 - b) $3/2$
 - c) $2/3$
 - d) $3/8$
- 3) If $\bar{x} = 70, \bar{y} = 149$ and $b_1 = 0.7$ then the line of regression of y on x is
 - a) $y = 0.8x + 120$
 - b) $y = 0.6x + 80$
 - c) $y = 0.5x + 60$
 - d) $y = 0.7x + 100$
- 4) The fraction of time the system is busy is
 - a) $\frac{\lambda}{\mu}$
 - b) $\frac{\mu}{\lambda}$
 - c) $\frac{\lambda}{\mu^2}$
 - d) $\frac{\mu}{\lambda^2}$
- 5) In a $M/M/1/\infty$ system with $\lambda = 12$ hours and $\mu = 16$ hours the average number of customers in the system is
 - a) 5
 - b) 4
 - c) 3
 - d) 2
- 6) $\frac{1}{D^2 + a^2} \cos ax$ is equal to
 - a) $\frac{x}{2a} \cos ax$
 - b) $\frac{x}{2a^2} \cos ax$
 - c) $\frac{x}{2a} \sin ax$
 - d) $\frac{x}{2a^2} \sin ax$
- 7) $\frac{1}{D - a} X$ is equal to
 - a) $\int X e^{ax} dx$
 - b) $\int X e^{-ax} dx$
 - c) $e^{ax} \int X e^{-ax} dx$
 - d) $e^{-ax} \int X e^{ax} dx$

P.T.O.



8) The Laplace transform of $t \sin t$ is

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

9) The value of the integral $\int_0^{\infty} e^{-t} t^5 dt$ is

- a) 1 b) 6 c) 24 d) 120

10) $L^{-1} \left\{ \frac{s + s^2}{s^3} \right\} =$

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

11) $z\{1\} =$

- a) $\frac{1}{z-1}$ b) $\frac{1}{z+1}$ c) $\frac{z}{z-1}$ d) $\frac{z}{z+1}$

12) If $z\{f(k)\} = F(z)$, then $z\{kf(k)\} =$

- a) $-z \frac{dF(z)}{dz}$ b) $z \frac{dF(z)}{dz}$ c) $\frac{dF(z)}{dz}$ d) $-\frac{dF(z)}{dz}$

13) Fourier expansion of an odd function has only

- a) Sine terms b) Cosine terms
c) Both sine and cosine terms d) None of these

14) If $f(x) = \sqrt{1 - \cos x}$ then the constant term in Fourier expansion in $(0, 2\pi)$

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



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

**S.E. (IT) Part – I (CBCS) Examination, 2017
APPLIED MATHEMATICS – I (New) (Semester – I)**

Day and Date : Tuesday, 12-12-2017

Marks : 56

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

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Use of non-programmable calculator is allowed.**

SECTION – I

2. Solve **any three** of the following : 9
- a) Solve $(D^2 + 2D + 1)y = 2x + x^2$.
 - b) Solve $(D^2 - 2D + 4)y = e^x \cos x$.
 - c) Find $L \left\{ \frac{2 \sin t \sin 5t}{t} \right\}$.
 - d) Find the inverse Laplace transform of $\frac{s}{(s-1)(s^2+4)}$.
 - e) Find $z\{Ke^{-ak}\}$, $k \geq 0$.
3. Solve **any three** of the following : 9
- a) Solve $(D^4 - 18D^2 + 81)y = 36 e^{3x}$.
 - b) Evaluate $\int_0^{\infty} t e^{-2t} \sin 4t dt$, using Laplace transform.
 - c) Find inverse Laplace transform of $\frac{(s+2)e^{-s}}{(s+1)^4}$
 - d) Find $z\{2^k \cos(3k+2)\}$, $k \geq 0$.
 - e) Find inverse Z-transform of $\frac{1}{(Z-5)^2}$, $|Z| < 5$.
4. Solve **any two** of the following : 10
- a) Solve $(D^2 + 3D + 2)y = \cos(e^x) - x^2$.
 - b) Find inverse z-transform of $\frac{1}{(z-3)(z-2)}$, where i) $2 < |z| < 3$, ii) $|z| > 3$.
 - c) Solve $y'' + 2y' + 2y = 5 \sin t$, subject to the conditions $y(0) = 0$ and $y'(0) = 0$, by using Laplace transform method.



SECTION – II

5. Attempt **any three** of the following :
- a) Find the Fourier series of $f(x)$ in $(0, 2\pi)$ where $f(x) = x^2$. 3
- b) Find the Fourier sine series of $f(x) = x(\pi - x)$ in $(0, \pi)$. 3
- c) Seven coins are tossed and the number of heads obtained is noted. The experiment is repeated 128 times and the following distribution is obtained.
- | | | | | | | | | | | |
|---------------------|---|---|---|----|----|----|----|---|---|---|
| No. of heads | : | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Frequency | : | 7 | 6 | 19 | 35 | 30 | 23 | 7 | 1 | 3 |
- Fit a binomial distribution if the nature of the coins is not known.
- d) The equations to the two lines of regressions are $6y = 5x + 90$ and $15x = 8y + 130$ find the means of x and y and the coefficient of correlation. 3
- e) There are two typists in a type-writing shop. Each typist can type on an average 5 letters per hour. The rate of arrivals of letters is 8 per hour.
- i) What is the probability that both the typist are busy ?
- ii) What is the average idle time for which both typist are idle ? 3
6. Attempt **any three** of the following :
- a) If the probability that a spade will be drawn from a pack of well shuffled cards at least one in 104 consecutive draws. 3
- b) In an examination given by 500 candidates the average and standard deviation of marks obtained are 40 and 10 respectively. Assuming the distribution of marks to be normal find approximately how many will pass if 50 is fixed as a minimum. 3
- (Given : For S.N.V. z area from $z = 0$ to $z = 1$ is 0.3413)
- c) Compute the coefficient of correlation between x and y from the following data
- | | | | | | | | | |
|----------|---|----|----|----|---|---|----|---|
| x | : | 2 | 4 | 5 | 6 | 8 | 11 | |
| y | : | 18 | 12 | 10 | 8 | 7 | 5 | 3 |
- d) Find the average waiting time per customer in the queue and in the system for M/M/1/ ∞ model, if $\lambda = 9$ and $\mu = 15$ hours. 3
- e) Obtain Fourier series for $f(x) = |x|$, $-\pi \leq x < \pi$ 3
7. Attempt **any two** of the following :
- a) Expand $f(x) = \pi x$, $0 < x < 1$
 $= 0$, $1 < x < 2$
 Period '2' into a Fourier series. 5
- b) Customers arrive at a clinic according to a Poisson process with mean interval of 25 min. The physician needs on an average 20 min. for a patient to examine.
- i) Find the expected number of patients at the clinic and in the queue.
- ii) Find percentage of patients who are not required to wait.
- iii) On an average how much time is spent by a patient in the clinic. 5
- c) The following results were obtained from marks in applied mechanics and Engg. Mathematics in a examination.
- | | Marks in
App. Maths (x) | Marks in
Engg. Maths (y) |
|---------------------------|----------------------------|-----------------------------|
| Mean | 47.5 | 39.5 |
| Standard deviation | 16.8 | 10.8 |
- and $r = 0.95$.
- Find both regression equations and also estimate the value of y for $x = 30$. 5



SLR-TJ – 291

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

Set

P

**S.E. (Information Technology) (Part – I) Examination, 2017
(New CBCS)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
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) Complement of function $(A + B + C)'$ using theorem and laws is

- A) $(A') + B + C$ B) $(A + B)' + C$ C) $A + B + C$ D) $A'B'C'$

2) Boolean algebra is defined as a set of

- A) three values B) two values C) four values D) five values

3) $(x * y) * z = x * (y * z)$ is the

- A) commutative property B) inverse property
C) identity element D) associative property

4) Let $A = \{a, b, c\}$. Then, $P(A) =$

- A) $\{\{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}\}$
B) $\{a, b, c, \{b, c\}, \{\{b\}, \{c\}\}\}$
C) $\{\{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}\}$
D) None

5) Which one of the following is a well formed formula ?

- A) $(P \vee \wedge Q)$ B) $(P \vee Q) \wedge Q$
C) $(P - >)$ D) $(P \vee Q) \wedge (R \leftrightarrow Q)$

6) 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

P.T.O.



- 7) If a normal form contains all min terms, then it is
A) a tautology
B) a contradiction
C) neither tautology nor contradiction
D) both tautology and contradiction
- 8) Let $A = \mathbb{Z} +$ the set of positive integers. Define the relation R on A by aRb if and only if $a \mid b$. R is
A) transitive B) asymmetric C) both D) none
- 9) Let $R = \{(a, b), (c, d), (b, b)\}$, $S = \{(d, b), (c, b), (a, d)\}$ then $R \circ S =$
A) $\{(a, e), (c, b), (b, e)\}$ B) $\{(d, b), (c, b), (a, d)\}$
C) $\{(a, b), (b, b)\}$ D) $\{(c, b)\}$
- 10) 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
- 11) A boolean algebra is a complemented and distributive
A) group B) sub group C) set D) lattice
- 12) The 'Subset' relation on a set of sets is
A) a partial ordering B) an equivalence relation
C) transitive and symmetric only D) transitive and anti-symmetric only
- 13) Abelian group satisfies additional _____ property than group.
A) transitive B) inverse C) identity D) commutative
- 14) Integral domain in _____ have property with no zero deviser.
A) ring B) field C) chain D) none
-



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

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

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three**. **(3×4=12)**

- I) Define properties of binary relations in a set.
- II) Explain equality of set and proper set.
- III) Obtain the CNF of $(P \wedge (P \rightarrow Q)) \rightarrow Q$.
- IV) What is well formed formula ? Give example.

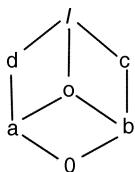
3. Solve **any two**. **(8×2=16)**

- I) Write about Theory of inference for statement calculus.
- II) Explain with example an Equivalence Relation how it is reflexive, symmetric and transitive.
- III) Show with example completely parenthesized infix and polish notations.

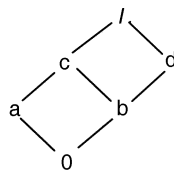
SECTION – II

4. Solve **any three**. **(3×4=12)**

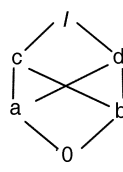
I) Which of the partially ordered sets in figures (a), (b) and (c) are lattices ? Justify your answer.



a)



b)



c)



- II) What are the algebraic system properties ?
- III) Explain Inverse functions.
- IV) Define group and group codes.

5. Solve **any two**.

(8×2=16)

- I) Define Lattice as POSET. Define greatest lower bound and least upper bound with examples.
 - II) Define the following :
 - i) Group code
 - ii) Sub-boolean algebra
 - iii) Complemented Lattice.
 - III) $P_1 = 1\ 2\ 3$ $P_2 = 1\ 2\ 3$ $P_3 = 1\ 2\ 3$ $P_4 = 1\ 2\ 3$ $P_5 = 1\ 2\ 3$ $P_6 = 1\ 2\ 3$
 1 2 3 2 1 3 3 2 1 1 3 2 2 3 1 3 1 2
- Draw permutation and prepare table for $(P, *)$.
-



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

Set	Q
-----	---

**S.E. (Information Technology) (Part – I) Examination, 2017
(New CBCS)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
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) Let $A = \mathbb{Z} +$ the set of positive integers. Define the relation R on A by aRb if and only if $a \mid b$. R is

A) transitive B) asymmetric C) both D) none

2) Let $R = \{(a, b), (c, d), (b, b)\}$, $S = \{(d, b), (c, b), (a, d)\}$ then $R \circ S =$

A) $\{(a, e), (c, b), (b, e)\}$ B) $\{(d, b), (c, b), (a, d)\}$
C) $\{(a, b), (b, b)\}$ D) $\{(c, b)\}$

3) 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

4) A boolean algebra is a complemented and distributive

A) group B) sub group C) set D) lattice

5) The 'Subset' relation on a set of sets is

A) a partial ordering B) an equivalence relation
C) transitive and symmetric only D) transitive and anti-symmetric only

6) Abelian group satisfies additional _____ property than group.

A) transitive B) inverse C) identity D) commutative

P.T.O.



- 7) Integral domain in _____ have property with no zero divisor.
A) ring B) field C) chain D) none
- 8) Complement of function $(A + B + C)'$ using theorem and laws is
A) $(A') + B + C$ B) $(A + B)' + C$ C) $A + B + C$ D) $A'B'C'$
- 9) Boolean algebra is defined as a set of
A) three values B) two values C) four values D) five values
- 10) $(x * y) * z = x * (y * z)$ is the
A) commutative property B) inverse property
C) identity element D) associative property
- 11) Let $A = \{a, b, c\}$. Then, $P(A) =$
A) $\{\{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}\}$
B) $\{a, b, c, \{b, c\}, \{\{b\}, \{c\}\}\}$
C) $\{\{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}\}$
D) None
- 12) Which one of the following is a well formed formula ?
A) $(P \vee Q)$ B) $(P \vee Q) \wedge Q$
C) $(P - >)$ D) $(P \vee Q) \wedge (R \leftrightarrow Q)$
- 13) 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
- 14) If a normal form contains all min terms, then it is
A) a tautology
B) a contradiction
C) neither tautology nor contradiction
D) both tautology and contradiction
-



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

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

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three**. **(3×4=12)**

- I) Define properties of binary relations in a set.
- II) Explain equality of set and proper set.
- III) Obtain the CNF of $(P \wedge (P \rightarrow Q)) \rightarrow Q$.
- IV) What is well formed formula ? Give example.

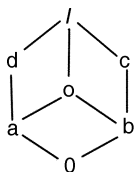
3. Solve **any two**. **(8×2=16)**

- I) Write about Theory of inference for statement calculus.
- II) Explain with example an Equivalence Relation how it is reflexive, symmetric and transitive.
- III) Show with example completely parenthesized infix and polish notations.

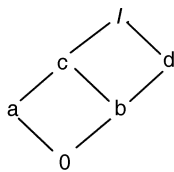
SECTION – II

4. Solve **any three**. **(3×4=12)**

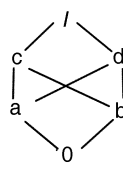
I) Which of the partially ordered sets in figures (a), (b) and (c) are lattices ? Justify your answer.



a)



b)



c)



- II) What are the algebraic system properties ?
- III) Explain Inverse functions.
- IV) Define group and group codes.

5. Solve **any two**.

(8×2=16)

- I) Define Lattice as POSET. Define greatest lower bound and least upper bound with examples.
- II) Define the following :
 - i) Group code
 - ii) Sub-boolean algebra
 - iii) Complemented Lattice.

III) $P_1 = 1\ 2\ 3$ $P_2 = 1\ 2\ 3$ $P_3 = 1\ 2\ 3$ $P_4 = 1\ 2\ 3$ $P_5 = 1\ 2\ 3$ $P_6 = 1\ 2\ 3$
 1 2 3 2 1 3 3 2 1 1 3 2 2 3 1 3 1 2

Draw permutation and prepare table for $(P, *)$.



SLR-TJ – 291

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

Set

R

**S.E. (Information Technology) (Part – I) Examination, 2017
(New CBCS)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
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) Which one of the following is a well formed formula ?

A) $(P \vee Q)$

B) $(P \vee Q) \wedge Q$

C) $(P \rightarrow)$

D) $(P \vee Q) \wedge (R \leftrightarrow Q)$

2) 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

3) If a normal form contains all min terms, then it is

A) a tautology

B) a contradiction

C) neither tautology nor contradiction

D) both tautology and contradiction

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) Let $R = \{(a, b), (c, d), (b, b)\}$, $S = \{(d, b), (c, b), (a, d)\}$ then $R \circ S =$

A) $\{(a, e), (c, b), (b, e)\}$

B) $\{(d, b), (c, b), (a, d)\}$

C) $\{(a, b), (b, b)\}$

D) $\{(c, b)\}$

P.T.O.



- 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) A boolean algebra is a complemented and distributive
A) group B) sub group C) set D) lattice
- 8) The 'Subset' relation on a set of sets is
A) a partial ordering B) an equivalence relation
C) transitive and symmetric only D) transitive and anti-symmetric only
- 9) Abelian group satisfies additional _____ property than group.
A) transitive B) inverse C) identity D) commutative
- 10) Integral domain in _____ have property with no zero divisor.
A) ring B) field C) chain D) none
- 11) Complement of function $(A + B + C)'$ using theorem and laws is
A) $(A') + B + C$ B) $(A + B)' + C$ C) $A + B + C$ D) $A'B'C'$
- 12) Boolean algebra is defined as a set of
A) three values B) two values C) four values D) five values
- 13) $(x * y) * z = x * (y * z)$ is the
A) commutative property B) inverse property
C) identity element D) associative property
- 14) Let $A = \{a, b, c\}$. Then, $P(A) =$
A) $\{\{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}\}$
B) $\{a, b, c, \{b, c\}, \{\{b\}, \{c\}\}\}$
C) $\{\{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}\}$
D) None
-



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

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

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three**. **(3×4=12)**

- I) Define properties of binary relations in a set.
- II) Explain equality of set and proper set.
- III) Obtain the CNF of $(P \wedge (P \rightarrow Q)) \rightarrow Q$.
- IV) What is well formed formula ? Give example.

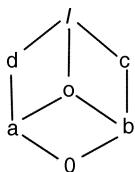
3. Solve **any two**. **(8×2=16)**

- I) Write about Theory of inference for statement calculus.
- II) Explain with example an Equivalence Relation how it is reflexive, symmetric and transitive.
- III) Show with example completely parenthesized infix and polish notations.

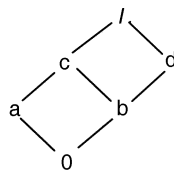
SECTION – II

4. Solve **any three**. **(3×4=12)**

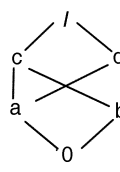
I) Which of the partially ordered sets in figures (a), (b) and (c) are lattices ? Justify your answer.



a)



b)



c)



- II) What are the algebraic system properties ?
- III) Explain Inverse functions.
- IV) Define group and group codes.

5. Solve **any two**.

(8×2=16)

- I) Define Lattice as POSET. Define greatest lower bound and least upper bound with examples.
 - II) Define the following :
 - i) Group code
 - ii) Sub-boolean algebra
 - iii) Complemented Lattice.
 - III) $P_1 = 1\ 2\ 3$ $P_2 = 1\ 2\ 3$ $P_3 = 1\ 2\ 3$ $P_4 = 1\ 2\ 3$ $P_5 = 1\ 2\ 3$ $P_6 = 1\ 2\ 3$
 1 2 3 2 1 3 3 2 1 1 3 2 2 3 1 3 1 2
- Draw permutation and prepare table for $(P, *)$.
-



SLR-TJ – 291

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

Set

S

**S.E. (Information Technology) (Part – I) Examination, 2017
(New CBCS)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
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) 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
- 2) A boolean algebra is a complemented and distributive
 - A) group
 - B) sub group
 - C) set
 - D) lattice
- 3) The 'Subset' relation on a set of sets is
 - A) a partial ordering
 - B) an equivalence relation
 - C) transitive and symmetric only
 - D) transitive and anti-symmetric only
- 4) Abelian group satisfies additional _____ property than group.
 - A) transitive
 - B) inverse
 - C) identity
 - D) commutative
- 5) Integral domain in _____ have property with no zero divisor.
 - A) ring
 - B) field
 - C) chain
 - D) none
- 6) Complement of function $(A + B + C)'$ using theorem and laws is
 - A) $(A') + B + C$
 - B) $(A + B)' + C$
 - C) $A + B + C$
 - D) $A'B'C'$
- 7) Boolean algebra is defined as a set of
 - A) three values
 - B) two values
 - C) four values
 - D) five values

P.T.O.



- 8) $(x * y) * z = x * (y * z)$ is the
 A) commutative property
 B) inverse property
 C) identity element
 D) associative property
- 9) Let $A = \{a, b, c\}$. Then, $P(A) =$
 A) $\{\{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}\}$
 B) $\{a, b, c, \{b, c\}, \{\{b\}, \{c\}\}\}$
 C) $\{\{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}\}$
 D) None
- 10) Which one of the following is a well formed formula ?
 A) $(P \vee Q)$
 B) $(P \vee Q) \wedge Q$
 C) $(P - >)$
 D) $(P \vee Q) \wedge (R \leftrightarrow Q)$
- 11) 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
- 12) If a normal form contains all min terms, then it is
 A) a tautology
 B) a contradiction
 C) neither tautology nor contradiction
 D) both tautology and contradiction
- 13) Let $A = \mathbb{Z} +$ the set of positive integers. Define the relation R on A by aRb if and only if $a \mid b$. R is
 A) transitive
 B) asymmetric
 C) both
 D) none
- 14) Let $R = \{(a, b), (c, d), (b, b)\}$, $S = \{(d, b), (c, b), (a, d)\}$ then $R \circ S =$
 A) $\{(a, e), (c, b), (b, e)\}$
 B) $\{(d, b), (c, b), (a, d)\}$
 C) $\{(a, b), (b, b)\}$
 D) $\{(c, b)\}$
-



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

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

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three**. **(3×4=12)**

- I) Define properties of binary relations in a set.
- II) Explain equality of set and proper set.
- III) Obtain the CNF of $(P \wedge (P \rightarrow Q)) \rightarrow Q$.
- IV) What is well formed formula ? Give example.

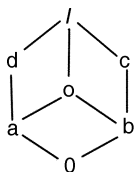
3. Solve **any two**. **(8×2=16)**

- I) Write about Theory of inference for statement calculus.
- II) Explain with example an Equivalence Relation how it is reflexive, symmetric and transitive.
- III) Show with example completely parenthesized infix and polish notations.

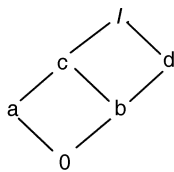
SECTION – II

4. Solve **any three**. **(3×4=12)**

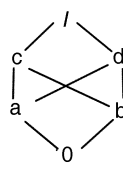
I) Which of the partially ordered sets in figures (a), (b) and (c) are lattices ? Justify your answer.



a)



b)



c)



- II) What are the algebraic system properties ?
- III) Explain Inverse functions.
- IV) Define group and group codes.

5. Solve **any two**.

(8×2=16)

- I) Define Lattice as POSET. Define greatest lower bound and least upper bound with examples.
- II) Define the following :
 - i) Group code
 - ii) Sub-boolean algebra
 - iii) Complemented Lattice.
- III) $P_1 = 1\ 2\ 3$ $P_2 = 1\ 2\ 3$ $P_3 = 1\ 2\ 3$ $P_4 = 1\ 2\ 3$ $P_5 = 1\ 2\ 3$ $P_6 = 1\ 2\ 3$
 1 2 3 2 1 3 3 2 1 1 3 2 2 3 1 3 1 2

Draw permutation and prepare table for $(P, *)$.



SLR-TJ – 292

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

Set	P
-----	---

**S.E. (Information Technology) (Part – I) (New) (CBCS) Examination, 2017
DATA COMMUNICATION**

Day and Date : Saturday, 16-12-2017

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 alternatives :

(1×14=14)

- 1) An older type of data communications channel, using multiple copper wires, is called _____ technology.
 - a) Microwave
 - b) Fiber-optic cable
 - c) Coaxial cable
 - d) Twisted pair
- 2) Which physical connection is the fastest ?
 - a) Twisted pair
 - b) Coaxial cable
 - c) Fiber-optics
 - d) Microwaves
- 3) The telephone is an example of a(n) _____ signal.
 - a) Analog
 - b) Digital
 - c) Modulated
 - d) Demodulated
- 4) The rules for exchanging data between computers are called
 - a) Interconnections
 - b) Synchronous packages
 - c) Protocols
 - d) Data transmission synchronization
- 5) Any device that is connected to a network is called a
 - a) Client
 - b) Node
 - c) Server
 - d) Manager
- 6) A network configuration in which each computer is attached to a central unit is called a(n) _____ network.
 - a) Star
 - b) Bus
 - c) Hybrid
 - d) Hierarchical

P.T.O.



- 7) ATM networks offer _____ network-layer service.
- a) Connection-less b) Connection-oriented
c) Both d) None
- 8) _____ allow packets to contain circuit numbers instead of full destination addresses.
- a) Virtual circuit b) Datagram c) Router d) None
- 9) Protocol that is used to transmit data without any schedule time is
- a) Random access b) Controlled access
c) Channelization d) None of above
- 10) Carrier Sense Multiple Access (CSMA) is based on medium called
- a) Listen before talk b) Listen before sending
c) Sense before transmit d) Sense before Collision
- 11) Which one of the following is the multiple access protocol for channel access control ?
- a) CSMA/CD b) CSMA/CA
c) Both a) and b) d) None of the mentioned
- 12) Each node uses shortest path tree protocol to construct its
- a) Connections b) Routing table c) Graphs d) Network
- 13) Class D used for _____
- a) Multicast services b) Reserved for future use
c) Large organizations d) Mid size organizations
- 14) When a router needs to send a packet destined for another network, it must know the
- a) Datagram b) Medium c) Path Flow d) IP Address
-



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

**S.E. (Information Technology) (Part – I) (New) (CBCS) Examination, 2017
DATA COMMUNICATION**

Day and Date : Saturday, 16-12-2017

Marks : 56

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

SECTION – I

2. Solve any three : **(3×4=12)**

I) Define :

- i) Physical layer
- ii) Data link layer
- iii) Network layer.

II) How a Tree topology is a variation of star ? Explain ?

III) Explain how ATM protocol works.

IV) With neat diagram explain data link layer design issues.

3. Solve any two : **(8×2=16)**

I) Define Random Access and list three protocols in this category.

II) What is framing and explain different framing algorithms ?

III) Send data 110011 using generator 111, use CRC to check data accuracy.



SECTION – II

4. Solve **any three** : **(3×4=12)**

I) Define :

- i) Bridge
- ii) Switch
- iii) Router.

II) What are collision free protocol used in MAC layer ?

III) Explain broadcasting algorithm.

IV) With neat diagram explain Aloha and slotted Aloha.

5. Solve **any two** : **(8×2=16)**

I) Explain CSMA/CD.

II) How Hierarchical routing works ?

III) What is Datagram ? How Datagram subnet works ?



SLR-TJ – 292

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

Set	Q
-----	---

**S.E. (Information Technology) (Part – I) (New) (CBCS) Examination, 2017
DATA COMMUNICATION**

Day and Date : Saturday, 16-12-2017

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 alternatives :

(1×14=14)

- 1) _____ allow packets to contain circuit numbers instead of full destination addresses.
a) Virtual circuit b) Datagram c) Router d) None
- 2) Protocol that is used to transmit data without any schedule time is
a) Random access b) Controlled access
c) Channelization d) None of above
- 3) Carrier Sense Multiple Access (CSMA) is based on medium called
a) Listen before talk b) Listen before sending
c) Sense before transmit d) Sense before Collision
- 4) Which one of the following is the multiple access protocol for channel access control ?
a) CSMA/CD b) CSMA/CA
c) Both a) and b) d) None of the mentioned
- 5) Each node uses shortest path tree protocol to construct its
a) Connections b) Routing table c) Graphs d) Network

P.T.O.



- 6) Class D used for _____
- a) Multicast services
 - b) Reserved for future use
 - c) Large organizations
 - d) Mid size organizations
- 7) When a router needs to send a packet destined for another network, it must know the
- a) Datagram
 - b) Medium
 - c) Path Flow
 - d) IP Address
- 8) An older type of data communications channel, using multiple copper wires, is called _____ technology.
- a) Microwave
 - b) Fiber-optic cable
 - c) Coaxial cable
 - d) Twisted pair
- 9) Which physical connection is the fastest ?
- a) Twisted pair
 - b) Coaxial cable
 - c) Fiber-optics
 - d) Microwaves
- 10) The telephone is an example of a(n) _____ signal.
- a) Analog
 - b) Digital
 - c) Modulated
 - d) Demodulated
- 11) The rules for exchanging data between computers are called
- a) Interconnections
 - b) Synchronous packages
 - c) Protocols
 - d) Data transmission synchronization
- 12) Any device that is connected to a network is called a
- a) Client
 - b) Node
 - c) Server
 - d) Manager
- 13) A network configuration in which each computer is attached to a central unit is called a(n) _____ network.
- a) Star
 - b) Bus
 - c) Hybrid
 - d) Hierarchical
- 14) ATM networks offer _____ network-layer service.
- a) Connection-less
 - b) Connection-oriented
 - c) Both
 - d) None
-



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

**S.E. (Information Technology) (Part – I) (New) (CBCS) Examination, 2017
DATA COMMUNICATION**

Day and Date : Saturday, 16-12-2017

Marks : 56

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

SECTION – I

2. Solve any three : **(3×4=12)**

I) Define :

- i) Physical layer
- ii) Data link layer
- iii) Network layer.

II) How a Tree topology is a variation of star ? Explain ?

III) Explain how ATM protocol works.

IV) With neat diagram explain data link layer design issues.

3. Solve any two : **(8×2=16)**

I) Define Random Access and list three protocols in this category.

II) What is framing and explain different framing algorithms ?

III) Send data 110011 using generator 111, use CRC to check data accuracy.



SECTION – II

4. Solve **any three** : **(3×4=12)**
- I) Define :
 - i) Bridge
 - ii) Switch
 - iii) Router.
 - II) What are collision free protocol used in MAC layer ?
 - III) Explain broadcasting algorithm.
 - IV) With neat diagram explain Aloha and slotted Aloha.
5. Solve **any two** : **(8×2=16)**
- I) Explain CSMA/CD.
 - II) How Hierarchical routing works ?
 - III) What is Datagram ? How Datagram subnet works ?
-



SLR-TJ – 292

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

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

**S.E. (Information Technology) (Part – I) (New) (CBCS) Examination, 2017
DATA COMMUNICATION**

Day and Date : Saturday, 16-12-2017

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 alternatives :

(1×14=14)

- 1) Any device that is connected to a network is called a
a) Client b) Node c) Server d) Manager
- 2) A network configuration in which each computer is attached to a central unit is called a(n) _____ network.
a) Star b) Bus c) Hybrid d) Hierarchical
- 3) ATM networks offer _____ network-layer service.
a) Connection-less b) Connection-oriented
c) Both d) None
- 4) _____ allow packets to contain circuit numbers instead of full destination addresses.
a) Virtual circuit b) Datagram c) Router d) None
- 5) Protocol that is used to transmit data without any schedule time is
a) Random access b) Controlled access
c) Channelization d) None of above
- 6) Carrier Sense Multiple Access (CSMA) is based on medium called
a) Listen before talk b) Listen before sending
c) Sense before transmit d) Sense before Collision

P.T.O.



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

S.E. (Information Technology) (Part – I) (New) (CBCS) Examination, 2017
DATA COMMUNICATION

Day and Date : Saturday, 16-12-2017

Marks : 56

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

SECTION – I

2. Solve any three : **(3×4=12)**

I) Define :

- i) Physical layer
- ii) Data link layer
- iii) Network layer.

II) How a Tree topology is a variation of star ? Explain ?

III) Explain how ATM protocol works.

IV) With neat diagram explain data link layer design issues.

3. Solve any two : **(8×2=16)**

I) Define Random Access and list three protocols in this category.

II) What is framing and explain different framing algorithms ?

III) Send data 110011 using generator 111, use CRC to check data accuracy.



SECTION – II

4. Solve **any three** : **(3×4=12)**
- I) Define :
 - i) Bridge
 - ii) Switch
 - iii) Router.
 - II) What are collision free protocol used in MAC layer ?
 - III) Explain broadcasting algorithm.
 - IV) With neat diagram explain Aloha and slotted Aloha.
5. Solve **any two** : **(8×2=16)**
- I) Explain CSMA/CD.
 - II) How Hierarchical routing works ?
 - III) What is Datagram ? How Datagram subnet works ?
-



SLR-TJ – 292

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

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

**S.E. (Information Technology) (Part – I) (New) (CBCS) Examination, 2017
DATA COMMUNICATION**

Day and Date : Saturday, 16-12-2017

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 alternatives :

(1×14=14)

- 1) Carrier Sense Multiple Access (CSMA) is based on medium called
 - a) Listen before talk
 - b) Listen before sending
 - c) Sense before transmit
 - d) Sense before Collision
- 2) Which one of the following is the multiple access protocol for channel access control ?
 - a) CSMA/CD
 - b) CSMA/CA
 - c) Both a) and b)
 - d) None of the mentioned
- 3) Each node uses shortest path tree protocol to construct its
 - a) Connections
 - b) Routing table
 - c) Graphs
 - d) Network
- 4) Class D used for _____
 - a) Multicast services
 - b) Reserved for future use
 - c) Large organizations
 - d) Mid size organizations
- 5) When a router needs to send a packet destined for another network, it must know the
 - a) Datagram
 - b) Medium
 - c) Path Flow
 - d) IP Address

P.T.O.



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

**S.E. (Information Technology) (Part – I) (New) (CBCS) Examination, 2017
DATA COMMUNICATION**

Day and Date : Saturday, 16-12-2017

Marks : 56

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

SECTION – I

2. Solve any three : **(3×4=12)**

I) Define :

- i) Physical layer
- ii) Data link layer
- iii) Network layer.

II) How a Tree topology is a variation of star ? Explain ?

III) Explain how ATM protocol works.

IV) With neat diagram explain data link layer design issues.

3. Solve any two : **(8×2=16)**

I) Define Random Access and list three protocols in this category.

II) What is framing and explain different framing algorithms ?

III) Send data 110011 using generator 111, use CRC to check data accuracy.



SECTION – II

4. Solve **any three** : **(3×4=12)**
- I) Define :
 - i) Bridge
 - ii) Switch
 - iii) Router.
 - II) What are collision free protocol used in MAC layer ?
 - III) Explain broadcasting algorithm.
 - IV) With neat diagram explain Aloha and slotted Aloha.
5. Solve **any two** : **(8×2=16)**
- I) Explain CSMA/CD.
 - II) How Hierarchical routing works ?
 - III) What is Datagram ? How Datagram subnet works ?
-



SLR-TJ – 293

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

Set	P
-----	---

S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL LOGIC DESIGN
(New CBCS)

Day and Date : Tuesday, 19-12-2017
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

(14x1=14)

1. Choose the correct answer :

- 1) To perform product of maxterms Boolean function must be brought into
 - a) AND terms
 - b) OR terms
 - c) NOT terms
 - d) NAND terms
- 2) Convert $x = 0.640625$ decimal number to its octal equivalent and its value is
 - a) 0.54
 - b) 0.41
 - c) 0.61
 - d) 0.51
- 3) Which of the following respectively represent commutative law, associative law and distributive law ?
 - I) $A.(B C) = (A.B).C$
 - II) $A.(B+C) = A.B+A.C$
 - III) $A+B = B+A$
 - a) I, III and II
 - b) II, I and III
 - c) III, II and I
 - d) III, I and II
- 4) A graphical display of the fundamental products in a truth-table is known as
 - a) Mapping
 - b) Graphing
 - c) T-map
 - d) Karnaugh-map
- 5) If A, B and C are the inputs of a full adder then the sum is given by
 - a) A AND B AND C
 - b) A OR B AND C
 - c) A OR B OR C
 - d) A XOR B XOR C
- 6) Which of the following circuit can be used as parallel to serial converter ?
 - a) Multiplexer
 - b) Demultiplexer
 - c) Decoder
 - d) Digital counter

P.T.O.



- 7) Comparators are used in
 - a) Memory
 - b) CPU
 - c) Motherboard
 - d) Hard drive
 - 8) Which of the following is correct for a gated D- type flip-flop ?
 - a) The Q output is either SET or RESET as soon as the D input goes HIGH or LOW
 - b) The output complement follows the input when enabled
 - c) Only one of the inputs can be HIGH at a time
 - d) The output toggles if one of the inputs is held HIGH
 - 9) In a positive edge triggered JK flip-flop, a low J and low K produces
 - a) No change
 - b) Low state
 - c) High state
 - d) None of these
 - 10) How many different states does a 3-bit asynchronous counter have ?
 - a) 2
 - b) 4
 - c) 8
 - d) 16
 - 11) Which of the following are keywords for Verilog ?
 - a) module
 - b) endmodule
 - c) both a and b
 - d) testckt
 - 12) What are the predefined gate level primitives supports Verilog ?
 - a) nand
 - b) nor
 - c) xor
 - d) all of these
 - 13) Which is the keyword along with a set of operators to describe a circuit through its behavior or function in a Verilog ?
 - a) assign
 - b) unassign
 - c) wire
 - d) all of these
 - 14) _____ a synchronous or asynchronous, that is capable of counting in either an upward or a downward direction.
 - a) Basic counter
 - b) Sequence generator
 - c) Up-down counter
 - d) None of these
-



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

S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL LOGIC DESIGN
(New CBCS)

Day and Date : Tuesday, 19-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

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

1) Convert the following expression into Canonical SOP form.

i) $y = AB + A\bar{C} + BC$

ii) $y = A\bar{B}C + B\bar{D}$.

2) Prove that, $A(A' + C)(A'B + C)(A'BC + C') = 0$.

3) Suppose a three-valuable truth table has a high output for these input conditions: 000, 010, 100 and 110. What is the sum-of-products circuit ?

4) Give the simplest logic circuit for following logic equation where 'd' represents don't-care condition for following locations.

$$F(A, B, C, D) = \sum m (7) + d(10, 11, 12, 13, 14, 15).$$

5) Express the equation in standard POS form : $F(A, B, C) = \sum m (0, 2, 5, 7)$.

3. Attempt **any one** : **(1×8=8)**

1) What is Multiplexer tree ? Construct 32:1 multiplexer using 8:1 multiplexers only.

2) Design full Adder using NAND gates.

4. Attempt the following question : **(1×8=8)**

1) i) Convert decimal number 199.375 into binary, octal, hexadecimal system.

ii) Perform hexadecimal arithmetic operation : DADA + BABA.

Set P



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- 1) Name the four basic types of shift registers and draw a block diagram for each.
 - 2) Write a List of Verilog Operator.
 - 3) Explain input/output definition, writing module body in Verilog HDL.
 - 4) Write a Verilog code for 4-bit ripple carry adder.
 - 5) Explain with a neat diagram SR – Flip Flop, D Flip Flop.
6. Attempt **any one** : **(1×8=8)**
- 1) Draw and explain a circuit diagram for 3 bit asynchronous binary counter.
 - 2) Write a Verilog code for full adder along with waveform.
7. Attempt the following question : **(1×8=8)**
- Explain the BUS representation in HDL description through design of a 1 to 4 demultiplexer.
-



SLR-TJ – 293

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

Set	Q
-----	---

S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL LOGIC DESIGN
(New CBCS)

Day and Date : Tuesday, 19-12-2017
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

(14x1=14)

1. Choose the correct answer :

- 1) Which of the following is correct for a gated D- type flip-flop ?
 - a) The Q output is either SET or RESET as soon as the D input goes HIGH or LOW
 - b) The output complement follows the input when enabled
 - c) Only one of the inputs can be HIGH at a time
 - d) The output toggles if one of the inputs is held HIGH
- 2) In a positive edge triggered JK flip-flop, a low J and low K produces
 - a) No change
 - b) Low state
 - c) High state
 - d) None of these
- 3) How many different states does a 3-bit asynchronous counter have ?
 - a) 2
 - b) 4
 - c) 8
 - d) 16
- 4) Which of the following are keywords for Verilog ?
 - a) module
 - b) endmodule
 - c) both a and b
 - d) testckt
- 5) What are the predefined gate level primitives supports Verilog ?
 - a) nand
 - b) nor
 - c) xor
 - d) all of these
- 6) Which is the keyword along with a set of operators to describe a circuit through its behavior or function in a Verilog ?
 - a) assign
 - b) unassign
 - c) wire
 - d) all of these

P.T.O.



- 7) _____ a synchronous or asynchronous, that is capable of counting in either an upward or a downward direction.
- a) Basic counter
b) Sequence generator
c) Up-down counter
d) None of these
- 8) To perform product of maxterms Boolean function must be brought into
- a) AND terms
b) OR terms
c) NOT terms
d) NAND terms
- 9) Convert $x = 0.640625$ decimal number to its octal equivalent and its value is
- a) 0.54
b) 0.41
c) 0.61
d) 0.51
- 10) Which of the following respectively represent commutative law, associative law and distributive law ?
- I) $A.(B C) = (A.B).C$
II) $A.(B+C) = A.B+A.C$
III) $A+B = B+A$
- a) I, III and II
b) II, I and III
c) III, II and I
d) III, I and II
- 11) A graphical display of the fundamental products in a truth-table is known as
- a) Mapping
b) Graphing
c) T-map
d) Karnaugh-map
- 12) If A, B and C are the inputs of a full adder then the sum is given by
- a) A AND B AND C
b) A OR B AND C
c) A OR B OR C
d) A XOR B XOR C
- 13) Which of the following circuit can be used as parallel to serial converter ?
- a) Multiplexer
b) Demultiplexer
c) Decoder
d) Digital counter
- 14) Comparators are used in
- a) Memory
b) CPU
c) Motherboard
d) Hard drive



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

S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL LOGIC DESIGN
(New CBCS)

Day and Date : Tuesday, 19-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

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

1) Convert the following expression into Canonical SOP form.

i) $y = AB + A\bar{C} + BC$

ii) $y = A\bar{B}C + B\bar{D}$.

2) Prove that, $A(A' + C)(A'B + C)(A'BC + C') = 0$.

3) Suppose a three-valuable truth table has a high output for these input conditions: 000, 010, 100 and 110. What is the sum-of-products circuit ?

4) Give the simplest logic circuit for following logic equation where 'd' represents don't-care condition for following locations.

$$F(A, B, C, D) = \sum m (7) + d(10, 11, 12, 13, 14, 15).$$

5) Express the equation in standard POS form : $F(A, B, C) = \sum m (0, 2, 5, 7)$.

3. Attempt **any one** : **(1×8=8)**

1) What is Multiplexer tree ? Construct 32:1 multiplexer using 8:1 multiplexers only.

2) Design full Adder using NAND gates.

4. Attempt the following question : **(1×8=8)**

1) i) Convert decimal number 199.375 into binary, octal, hexadecimal system.

ii) Perform hexadecimal arithmetic operation : DADA + BABA.

Set Q



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- 1) Name the four basic types of shift registers and draw a block diagram for each.
 - 2) Write a List of Verilog Operator.
 - 3) Explain input/output definition, writing module body in Verilog HDL.
 - 4) Write a Verilog code for 4-bit ripple carry adder.
 - 5) Explain with a neat diagram SR – Flip Flop, D Flip Flop.
6. Attempt **any one** : **(1×8=8)**
- 1) Draw and explain a circuit diagram for 3 bit asynchronous binary counter.
 - 2) Write a Verilog code for full adder along with waveform.
7. Attempt the following question : **(1×8=8)**
- Explain the BUS representation in HDL description through design of a 1 to 4 demultiplexer.
-



SLR-TJ – 293

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

Set	R
-----	---

S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL LOGIC DESIGN
(New CBCS)

Day and Date : Tuesday, 19-12-2017
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

(14x1=14)

1. Choose the correct answer :

- 1) If A, B and C are the inputs of a full adder then the sum is given by
 - a) A AND B AND C
 - b) A OR B AND C
 - c) A OR B OR C
 - d) A XOR B XOR C
- 2) Which of the following circuit can be used as parallel to serial converter ?
 - a) Multiplexer
 - b) Demultiplexer
 - c) Decoder
 - d) Digital counter
- 3) Comparators are used in
 - a) Memory
 - b) CPU
 - c) Motherboard
 - d) Hard drive
- 4) Which of the following is correct for a gated D- type flip-flop ?
 - a) The Q output is either SET or RESET as soon as the D input goes HIGH or LOW
 - b) The output complement follows the input when enabled
 - c) Only one of the inputs can be HIGH at a time
 - d) The output toggles if one of the inputs is held HIGH
- 5) In a positive edge triggered JK flip-flop, a low J and low K produces
 - a) No change
 - b) Low state
 - c) High state
 - d) None of these
- 6) How many different states does a 3-bit asynchronous counter have ?
 - a) 2
 - b) 4
 - c) 8
 - d) 16

P.T.O.



- 7) Which of the following are keywords for Verilog ?
a) module b) endmodule c) both a and b d) testckt
- 8) What are the predefined gate level primitives supports Verilog ?
a) nand b) nor c) xor d) all of these
- 9) Which is the keyword along with a set of operators to describe a circuit through its behavior or function in a Verilog ?
a) assign b) unassign
c) wire d) all of these
- 10) _____ a synchronous or asynchronous, that is capable of counting in either an upward or a downward direction.
a) Basic counter b) Sequence generator
c) Up-down counter d) None of these
- 11) To perform product of maxterms Boolean function must be brought into
a) AND terms b) OR terms
c) NOT terms d) NAND terms
- 12) Convert $x = 0.640625$ decimal number to its octal equivalent and its value is
a) 0.54 b) 0.41 c) 0.61 d) 0.51
- 13) Which of the following respectively represent commutative law, associative law and distributive law ?
I) $A.(B C) = (A.B).C$
II) $A.(B+C) = A.B+A.C$
III) $A+B = B+A$
a) I, III and II b) II, I and III c) III, II and I d) III, I and II
- 14) A graphical display of the fundamental products in a truth-table is known as
a) Mapping b) Graphing
c) T-map d) Karnaugh-map
-



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

S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL LOGIC DESIGN
(New CBCS)

Day and Date : Tuesday, 19-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

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

1) Convert the following expression into Canonical SOP form.

i) $y = AB + A\bar{C} + BC$

ii) $y = A\bar{B}C + B\bar{D}$.

2) Prove that, $A(A' + C)(A'B + C)(A'BC + C') = 0$.

3) Suppose a three-valuable truth table has a high output for these input conditions: 000, 010, 100 and 110. What is the sum-of-products circuit ?

4) Give the simplest logic circuit for following logic equation where 'd' represents don't-care condition for following locations.

$$F(A, B, C, D) = \sum m (7) + d(10, 11, 12, 13, 14, 15).$$

5) Express the equation in standard POS form : $F(A, B, C) = \sum m (0, 2, 5, 7)$.

3. Attempt **any one** : **(1×8=8)**

1) What is Multiplexer tree ? Construct 32:1 multiplexer using 8:1 multiplexers only.

2) Design full Adder using NAND gates.

4. Attempt the following question : **(1×8=8)**

1) i) Convert decimal number 199.375 into binary, octal, hexadecimal system.

ii) Perform hexadecimal arithmetic operation : DADA + BABA.

Set R



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- 1) Name the four basic types of shift registers and draw a block diagram for each.
 - 2) Write a List of Verilog Operator.
 - 3) Explain input/output definition, writing module body in Verilog HDL.
 - 4) Write a Verilog code for 4-bit ripple carry adder.
 - 5) Explain with a neat diagram SR – Flip Flop, D Flip Flop.
6. Attempt **any one** : **(1×8=8)**
- 1) Draw and explain a circuit diagram for 3 bit asynchronous binary counter.
 - 2) Write a Verilog code for full adder along with waveform.
7. Attempt the following question : **(1×8=8)**
- Explain the BUS representation in HDL description through design of a 1 to 4 demultiplexer.
-



SLR-TJ – 293

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

Set	S
-----	---

S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL LOGIC DESIGN
(New CBCS)

Day and Date : Tuesday, 19-12-2017
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

(14x1=14)

1. Choose the correct answer :

- 1) How many different states does a 3-bit asynchronous counter have ?
a) 2 b) 4 c) 8 d) 16
- 2) Which of the following are keywords for Verilog ?
a) module b) endmodule c) both a and b d) testckt
- 3) What are the predefined gate level primitives supports Verilog ?
a) nand b) nor c) xor d) all of these
- 4) Which is the keyword along with a set of operators to describe a circuit through its behavior or function in a Verilog ?
a) assign b) unassign
c) wire d) all of these
- 5) _____ a synchronous or asynchronous, that is capable of counting in either an upward or a downward direction.
a) Basic counter b) Sequence generator
c) Up-down counter d) None of these
- 6) To perform product of maxterms Boolean function must be brought into
a) AND terms b) OR terms
c) NOT terms d) NAND terms
- 7) Convert $x = 0.640625$ decimal number to its octal equivalent and its value is
a) 0.54 b) 0.41 c) 0.61 d) 0.51

P.T.O.



- 8) Which of the following respectively represent commutative law, associative law and distributive law ?
- I) $A.(B C) = (A.B).C$
 - II) $A.(B+C) = A.B+A.C$
 - III) $A+B = B+A$
- a) I, III and II b) II, I and III c) III, II and I d) III, I and II
- 9) A graphical display of the fundamental products in a truth-table is known as
- a) Mapping
 - b) Graphing
 - c) T-map
 - d) Karnaugh-map
- 10) If A, B and C are the inputs of a full adder then the sum is given by
- a) A AND B AND C
 - b) A OR B AND C
 - c) A OR B OR C
 - d) A XOR B XOR C
- 11) Which of the following circuit can be used as parallel to serial converter ?
- a) Multiplexer
 - b) Demultiplexer
 - c) Decoder
 - d) Digital counter
- 12) Comparators are used in
- a) Memory
 - b) CPU
 - c) Motherboard
 - d) Hard drive
- 13) Which of the following is correct for a gated D- type flip-flop ?
- a) The Q output is either SET or RESET as soon as the D input goes HIGH or LOW
 - b) The output complement follows the input when enabled
 - c) Only one of the inputs can be HIGH at a time
 - d) The output toggles if one of the inputs is held HIGH
- 14) In a positive edge triggered JK flip-flop, a low J and low K produces
- a) No change
 - b) Low state
 - c) High state
 - d) None of these
-



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

S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL LOGIC DESIGN
(New CBCS)

Day and Date : Tuesday, 19-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

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

1) Convert the following expression into Canonical SOP form.

i) $y = AB + A\bar{C} + BC$

ii) $y = A\bar{B}C + B\bar{D}$.

2) Prove that, $A(A' + C)(A'B + C)(A'BC + C') = 0$.

3) Suppose a three-valuable truth table has a high output for these input conditions: 000, 010, 100 and 110. What is the sum-of-products circuit ?

4) Give the simplest logic circuit for following logic equation where 'd' represents don't-care condition for following locations.

$$F(A, B, C, D) = \sum m (7) + d(10, 11, 12, 13, 14, 15).$$

5) Express the equation in standard POS form : $F(A, B, C) = \sum m (0, 2, 5, 7)$.

3. Attempt **any one** : **(1×8=8)**

1) What is Multiplexer tree ? Construct 32:1 multiplexer using 8:1 multiplexers only.

2) Design full Adder using NAND gates.

4. Attempt the following question : **(1×8=8)**

1) i) Convert decimal number 199.375 into binary, octal, hexadecimal system.

ii) Perform hexadecimal arithmetic operation : DADA + BABA.



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- 1) Name the four basic types of shift registers and draw a block diagram for each.
 - 2) Write a List of Verilog Operator.
 - 3) Explain input/output definition, writing module body in Verilog HDL.
 - 4) Write a Verilog code for 4-bit ripple carry adder.
 - 5) Explain with a neat diagram SR – Flip Flop, D Flip Flop.
6. Attempt **any one** : **(1×8=8)**
- 1) Draw and explain a circuit diagram for 3 bit asynchronous binary counter.
 - 2) Write a Verilog code for full adder along with waveform.
7. Attempt the following question : **(1×8=8)**
- Explain the BUS representation in HDL description through design of a 1 to 4 demultiplexer.
-



SLR-TJ – 294

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

Set

P

**S.E. (IT) (Part – I) (New) (CBCS) Examination, 2017
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017
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.**
 - 4) Figures to the **right** indicate **full** marks.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- 1) The maximum number of points that can be displayed without overlap on a CRT
a) Aspect Ratio b) Resolution c) Brightness d) Pixel
 - 2) Brightness of a display is controlled by varying the voltage on the
a) Focusing anode b) Connection pins
c) Control grid d) Power supply
 - 3) Which of the following is not a rigid body transformation ?
a) Translation b) Rotation c) Shearing d) Reflection
 - 4) In seed fill algorithm filling of polygon starts from _____ in polygon.
a) Seed pixel b) Root pixels c) Both a) and b) d) None
 - 5) The transformation in which an object is moved from one position to another in circular path around a specified pivot point is called
a) Rotation b) Shearing c) Translation d) Scaling
 - 6) The purpose of flood gun in DVST is
a) To store the picture pattern b) To slow down the flood electrons
c) To enable color pixels d) To focus the electron beam

P.T.O.



- 7) If an object is rotated through an angle A in clockwise direction, the rotation matrix $R =$
- a) $\cos A \sin A - \sin A \cos A$ b) $\cos A - \sin A \sin A \cos A$
c) $\sin A \cos A \cos A \sin A$ d) none
- 8) Which of the following technique is used in Mid-Point subdivision algorithm ?
- a) Linear search b) Binary search
c) Heap sort d) Bubble sort
- 9) Which of the following clipping algorithm follows the divide and conquer strategy ?
- a) 4-bit algorithm b) Midpoint algorithm
c) Cyrus break algorithm d) Cohen Sutherland algorithm
- 10) The anti-aliasing technique which allows shift of $1/4$, $1/2$ and $3/4$ of a pixel diameter enabling closer path of a line is
- a) pixel phasing b) filtering
c) intensity compensation d) sampling technique
- 11) All the hidden surface algorithm employ image space approach except
- a) back face removal b) depth buffer method
c) scan line method d) depth sort method
- 12) The major components of CRT are
- a) electric gun b) phosphorous coated screen
c) control electrodes d) all of above
- 13) The technique used to summarize the financial, statistical, mathematical, scientific and economic data is
- a) Computer art b) Image processing
c) Presentation graphics d) None of the above
- 14) Graphics and image processing technique used to produce a transformations of one object into another is called
- a) Animation b) Morphine
c) Half-toning d) None of the above
-



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

**S.E. (IT) (Part – I) (New) (CBCS) Examination, 2017
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017
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

Marks : 28

2. Solve **any three** : **(3×4=12)**
- 1) What is RLE ? Explain in detail with advantages.
 - 2) Describe the 2D shearing with example.
 - 3) Explain 3D rotation with example.
 - 4) Explain Bresenham's line generation algorithm.
3. Solve **any two** : **(2×8=16)**
- 1) Explain Bresenham's Circle Generation algo. With the help of example.
 - 2) What is meant by polygon filling ? Explain seed fill algorithm in detail.
 - 3) Describe 3D translation and 3D reflection.

SECTION – II

Marks : 28

4. Attempt **any three** : **(3×4=12)**
- a) Explain the concept of Antialiasing.
 - b) What is Windowing transformation ? Explain with diagram.
 - c) Explain half toning.
 - d) Explain B-Spline curves.
5. Attempt **any two** : **(2×8=16)**
- a) Explain Z-buffer algorithm with diagram.
 - b) Explain Midpoint subdivision algorithm with diagram.
 - c) Explain Cohen Sutherland algorithm with diagram.



SLR-TJ – 294

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

Set

Q

**S.E. (IT) (Part – I) (New) (CBCS) Examination, 2017
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017
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.**
 - 4) Figures to the **right** indicate **full** marks.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- 1) Which of the following technique is used in Mid-Point subdivision algorithm ?
 - a) Linear search
 - b) Binary search
 - c) Heap sort
 - d) Bubble sort
 - 2) Which of the following clipping algorithm follows the divide and conquer strategy ?
 - a) 4-bit algorithm
 - b) Midpoint algorithm
 - c) Cyrus break algorithm
 - d) Cohen Sutherland algorithm
 - 3) The anti-aliasing technique which allows shift of $1/4$, $1/2$ and $3/4$ of a pixel diameter enabling closer path of a line is
 - a) pixel phasing
 - b) filtering
 - c) intensity compensation
 - d) sampling technique
 - 4) All the hidden surface algorithm employe image space approach except
 - a) back face removal
 - b) depth buffer method
 - c) scan line method
 - d) depth sort method
 - 5) The major components of CRT are
 - a) electric gun
 - b) phosphorous coated screen
 - c) control electrodes
 - d) all of above

P.T.O.



- 6) The technique used to summarize the financial, statistical, mathematical, scientific and economic data is
- a) Computer art
 - b) Image processing
 - c) Presentation graphics
 - d) None of the above
- 7) Graphics and image processing technique used to produce a transformations of one object into another is called
- a) Animation
 - b) Morphine
 - c) Half-toning
 - d) None of the above
- 8) The maximum number of points that can be displayed without overlap on a CRT
- a) Aspect Ratio
 - b) Resolution
 - c) Brightness
 - d) Pixel
- 9) Brightness of a display is controlled by varying the voltage on the
- a) Focusing anode
 - b) Connection pins
 - c) Control grid
 - d) Power supply
- 10) Which of the following is not a rigid body transformation ?
- a) Translation
 - b) Rotation
 - c) Shearing
 - d) Reflection
- 11) In seed fill algorithm filling of polygon starts from _____ in polygon.
- a) Seed pixel
 - b) Root pixels
 - c) Both a) and b)
 - d) None
- 12) The transformation in which an object is moved from one position to another in circular path around a specified pivot point is called
- a) Rotation
 - b) Shearing
 - c) Translation
 - d) Scaling
- 13) The purpose of flood gun in DVST is
- a) To store the picture pattern
 - b) To slow down the flood electrons
 - c) To enable color pixels
 - d) To focus the electron beam
- 14) If an object is rotated through an angle A in clockwise direction, the rotation matrix R =
- a) $\begin{pmatrix} \cos A & \sin A \\ -\sin A & \cos A \end{pmatrix}$
 - b) $\begin{pmatrix} \cos A & -\sin A \\ \sin A & \cos A \end{pmatrix}$
 - c) $\begin{pmatrix} \sin A & \cos A \\ \cos A & \sin A \end{pmatrix}$
 - d) none
-



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

**S.E. (IT) (Part – I) (New) (CBCS) Examination, 2017
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017
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

Marks : 28

2. Solve **any three** : **(3×4=12)**
- 1) What is RLE ? Explain in detail with advantages.
 - 2) Describe the 2D shearing with example.
 - 3) Explain 3D rotation with example.
 - 4) Explain Bresenham's line generation algorithm.
3. Solve **any two** : **(2×8=16)**
- 1) Explain Bresenham's Circle Generation algo. With the help of example.
 - 2) What is meant by polygon filling ? Explain seed fill algorithm in detail.
 - 3) Describe 3D translation and 3D reflection.

SECTION – II

Marks : 28

4. Attempt **any three** : **(3×4=12)**
- a) Explain the concept of Antialiasing.
 - b) What is Windowing transformation ? Explain with diagram.
 - c) Explain half toning.
 - d) Explain B-Spline curves.
5. Attempt **any two** : **(2×8=16)**
- a) Explain Z-buffer algorithm with diagram.
 - b) Explain Midpoint subdivision algorithm with diagram.
 - c) Explain Cohen Sutherland algorithm with diagram.



SLR-TJ – 294

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

Set **R**

**S.E. (IT) (Part – I) (New) (CBCS) Examination, 2017
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017
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.**
 - 4) Figures to the **right** indicate **full** marks.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- 1) The transformation in which an object is moved from one position to another in circular path around a specified pivot point is called
a) Rotation b) Shearing c) Translation d) Scaling
 - 2) The purpose of flood gun in DVST is
a) To store the picture pattern b) To slow down the flood electrons
c) To enable color pixels d) To focus the electron beam
 - 3) If an object is rotated through an angle A in clockwise direction, the rotation matrix R =
a) $\cos A \sin A - \sin A \cos A$ b) $\cos A - \sin A \sin A \cos A$
c) $\sin A \cos A \cos A \sin A$ d) none
 - 4) Which of the following technique is used in Mid-Point subdivision algorithm ?
a) Linear search b) Binary search
c) Heap sort d) Bubble sort
 - 5) Which of the following clipping algorithm follows the divide and conquer strategy ?
a) 4-bit algorithm b) Midpoint algorithm
c) Cyrus break algorithm d) Cohen Sutherland algorithm

P.T.O.



- 6) The anti-aliasing technique which allows shift of $1/4$, $1/2$ and $3/4$ of a pixel diameter enabling closer path of a line is
- a) pixel phasing
 - b) filtering
 - c) intensity compensation
 - d) sampling technique
- 7) All the hidden surface algorithm employe image space approach except
- a) back face removal
 - b) depth buffer method
 - c) scan line method
 - d) depth sort method
- 8) The major components of CRT are
- a) electric gun
 - b) phosphorous coated screen
 - c) control electrodes
 - d) all of above
- 9) The technique used to summarize the financial, statistical, mathematical, scientific and economic data is
- a) Computer art
 - b) Image processing
 - c) Presentation graphics
 - d) None of the above
- 10) Graphics and image processing technique used to produce a transformations of one object into another is called
- a) Animation
 - b) Morphine
 - c) Half-toning
 - d) None of the above
- 11) The maximum number of points that can be displayed without overlap on a CRT
- a) Aspect Ratio
 - b) Resolution
 - c) Brightness
 - d) Pixel
- 12) Brightness of a display is controlled by varying the voltage on the
- a) Focusing anode
 - b) Connection pins
 - c) Control grid
 - d) Power supply
- 13) Which of the following is not a rigid body transformation ?
- a) Translation
 - b) Rotation
 - c) Shearing
 - d) Reflection
- 14) In seed fill algorithm filling of polygon starts from _____ in polygon.
- a) Seed pixel
 - b) Root pixels
 - c) Both a) and b)
 - d) None
-



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

**S.E. (IT) (Part – I) (New) (CBCS) Examination, 2017
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017
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

Marks : 28

2. Solve **any three** : **(3×4=12)**
- 1) What is RLE ? Explain in detail with advantages.
 - 2) Describe the 2D shearing with example.
 - 3) Explain 3D rotation with example.
 - 4) Explain Bresenham's line generation algorithm.
3. Solve **any two** : **(2×8=16)**
- 1) Explain Bresenham's Circle Generation algo. With the help of example.
 - 2) What is meant by polygon filling ? Explain seed fill algorithm in detail.
 - 3) Describe 3D translation and 3D reflection.

SECTION – II

Marks : 28

4. Attempt **any three** : **(3×4=12)**
- a) Explain the concept of Antialiasing.
 - b) What is Windowing transformation ? Explain with diagram.
 - c) Explain half toning.
 - d) Explain B-Spline curves.
5. Attempt **any two** : **(2×8=16)**
- a) Explain Z-buffer algorithm with diagram.
 - b) Explain Midpoint subdivision algorithm with diagram.
 - c) Explain Cohen Sutherland algorithm with diagram.



SLR-TJ – 294

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

Set **S**

**S.E. (IT) (Part – I) (New) (CBCS) Examination, 2017
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017
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.*
 - 4) *Figures to the right indicate full marks.*

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) The anti-aliasing technique which allows shift of $1/4$, $1/2$ and $3/4$ of a pixel diameter enabling closer path of a line is
 - a) pixel phasing
 - b) filtering
 - c) intensity compensation
 - d) sampling technique
- 2) All the hidden surface algorithm employe image space approach except
 - a) back face removal
 - b) depth buffer method
 - c) scan line method
 - d) depth sort method
- 3) The major components of CRT are
 - a) electric gun
 - b) phosphorous coated screen
 - c) control electrodes
 - d) all of above
- 4) The technique used to summarize the financial, statistical, mathematical, scientific and economic data is
 - a) Computer art
 - b) Image processing
 - c) Presentation graphics
 - d) None of the above
- 5) Graphics and image processing technique used to produce a transformations of one object into another is called
 - a) Animation
 - b) Morphine
 - c) Half-toning
 - d) None of the above

P.T.O.



- 6) The maximum number of points that can be displayed without overlap on a CRT
a) Aspect Ratio b) Resolution c) Brightness d) Pixel
- 7) Brightness of a display is controlled by varying the voltage on the
a) Focusing anode b) Connection pins
c) Control grid d) Power supply
- 8) Which of the following is not a rigid body transformation ?
a) Translation b) Rotation c) Shearing d) Reflection
- 9) In seed fill algorithm filling of polygon starts from _____ in polygon.
a) Seed pixel b) Root pixels c) Both a) and b) d) None
- 10) The transformation in which an object is moved from one position to another in circular path around a specified pivot point is called
a) Rotation b) Shearing c) Translation d) Scaling
- 11) The purpose of flood gun in DVST is
a) To store the picture pattern b) To slow down the flood electrons
c) To enable color pixels d) To focus the electron beam
- 12) If an object is rotated through an angle A in clockwise direction, the rotation matrix R =
a) $\cos A \sin A - \sin A \cos A$ b) $\cos A - \sin A \sin A \cos A$
c) $\sin A \cos A \cos A \sin A$ d) none
- 13) Which of the following technique is used in Mid-Point subdivision algorithm ?
a) Linear search b) Binary search
c) Heap sort d) Bubble sort
- 14) Which of the following clipping algorithm follows the divide and conquer strategy ?
a) 4-bit algorithm b) Midpoint algorithm
c) Cyrus break algorithm d) Cohen Sutherland algorithm
-



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

**S.E. (IT) (Part – I) (New) (CBCS) Examination, 2017
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017
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

Marks : 28

2. Solve **any three** : **(3×4=12)**
- 1) What is RLE ? Explain in detail with advantages.
 - 2) Describe the 2D shearing with example.
 - 3) Explain 3D rotation with example.
 - 4) Explain Bresenham's line generation algorithm.
3. Solve **any two** : **(2×8=16)**
- 1) Explain Bresenham's Circle Generation algo. With the help of example.
 - 2) What is meant by polygon filling ? Explain seed fill algorithm in detail.
 - 3) Describe 3D translation and 3D reflection.

SECTION – II

Marks : 28

4. Attempt **any three** : **(3×4=12)**
- a) Explain the concept of Antialiasing.
 - b) What is Windowing transformation ? Explain with diagram.
 - c) Explain half toning.
 - d) Explain B-Spline curves.
5. Attempt **any two** : **(2×8=16)**
- a) Explain Z-buffer algorithm with diagram.
 - b) Explain Midpoint subdivision algorithm with diagram.
 - c) Explain Cohen Sutherland algorithm with diagram.



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

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

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

Day and Date : Tuesday, 12-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- N. B. :**
- 1) Figures to the **right** indicate **full** marks.
 - 2) **Use of calculator is allowed.**
 - 3) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. **3**. **Each** question carries **one** mark.
 - 4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

(14×1=14)

- 1) The general solution of the diff. equation $(D^4 - 2D^3 + D^2) y = 0$ is

a) $(c_1 + c_2x)e^{-x} + (c_3 + c_4x)e^x$	b) $(c_1 + c_2x) + (c_3 + c_4x)e^{-x}$
c) $c_1 + (c_2 + c_3x)e^x$	d) $(c_1 + c_2x) + (c_3 + c_4x)e^x$
- 2) $\frac{1}{D^2 + 9} \cos 3x$ is equal to

a) $\frac{x}{6} \cos 3x$	b) $\frac{x}{6} \sin 3x$	c) $\frac{x}{18} \cos 3x$	d) $\frac{x}{18} \sin 3x$
--------------------------	--------------------------	---------------------------	---------------------------
- 3) $L \{te^{-t}\} =$

a) $\frac{1}{(s+1)^2}$	b) $\frac{s}{(s+1)^2}$	c) $\frac{-1}{(s+1)^2}$	d) $\frac{-s}{(s+1)^2}$
------------------------	------------------------	-------------------------	-------------------------
- 4) $L \{f'(t)\} =$

a) $f(0) + s\bar{f}(s)$	b) $-f(0) + \bar{f}(s)$	c) $-f(0) + s\bar{f}(s)$	d) $s\bar{f}(s)$
-------------------------	-------------------------	--------------------------	------------------
- 5) Since $z\{1\} = \frac{z}{z-1}$, $z\{a^k\}, (k \geq 0) =$

a) $\frac{z}{a(z-1)}$	b) $\frac{z}{z-a}$	c) $\frac{z}{az-1}$	d) $\frac{a}{z-a}$
-----------------------	--------------------	---------------------	--------------------



6) In the cosine series expansion of

$$F(x) = 1, 0 < x < \frac{a}{2}$$

$$= -1, \frac{a}{2} < x < a$$

the constant term is _____

- a) $\frac{2}{\pi}$ b) π c) -1 d) 0

7) Fourier expansion of $f(x) = \begin{cases} -x, & -2 \leq x \leq 0 \\ x, & 0 \leq x \leq 2 \end{cases}$ in the interval $[-2, 2]$ has

- a) No sine term b) No cosine term
c) Both sine and cosine terms d) None of these

8) A Poisson distribution is given by $p(x) = \frac{e^{-2.5}(2.5)^x}{x!}$. The mean and variance of the distribution are

- a) 1.5, 2.5 b) 1.5, 3.5 c) 2.5, 2.5 d) 1.5, 1.5

9) A random variable has the following probability density function

x :	1	2	3	4	5	6	7
p(x) :	k	2k	3k	k^2	$k^2 + k$	$2k^2$	$4k^2$

then $k =$

- a) $\frac{1}{5}$ b) $\frac{1}{6}$ c) $\frac{1}{7}$ d) $\frac{1}{8}$

10) From a box containing 100 transistors out of which 20 are defective, if 10 transistors are chosen at random then the probability that no transistor was defective is

- a) 0.07 b) 0.11 c) 0.17 d) 0.99

11) If $u = x + y + z$ and $v = x + y$ then $\nabla_u \cdot \nabla_v =$

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

12) If $\bar{r} = ae^{3t} + be^{2t}$, then at $t = 0$, $\frac{d\bar{r}}{dt} - 2\bar{r} =$

- a) a b) b c) $a - b$ d) $a + b$

13) The lines of regression are given by $10y = x + 17$ and $x = 5y - 7$. Then \bar{x} and \bar{y} are

- a) 1 and 10 b) 1 and 5 c) 2 and 3 d) 3 and 2

14) In a $M/M/1 : \infty$ IFCFS queue, the probability of the queue size being greater than N is given by $\lambda =$ mean arrival rate and $\mu =$ mean service rate is

- a) $\left(\frac{\lambda}{\mu}\right)^N$ b) $\left(\frac{\mu}{\lambda}\right)^N$ c) $(\lambda\mu)^N$ d) $\lambda\mu^N$



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

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

Day and Date : Tuesday, 12-12-2017
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 : $(D^2 + 3D + 2)y = x^3 + x^2$. **3**
b) Solve : $(D^2 + 5D - 6)y = \sin 4x \cdot \sin x$. **3**
c) Solve : $(D^3 - 7D - 6)y = (1 + x)e^{2x}$. **4**

OR

- c) $(D^3 + 8)y = x^4 + 2x + 1 + \cosh 2x$.
3. Solve the following **any three** : **9**

a) Find $L \left\{ \frac{\sin^2 2t}{t} \right\}$.

b) Find $L^{-1} \left\{ \frac{2s^2 - 4}{(s + 1)(s - 2)(s - 3)} \right\}$.

c) Evaluate $\int_0^{\infty} e^{-3t} t^2 \sinh 2t dt$, by using Laplace transform.

d) Find $L^{-1} \left\{ \cot^{-1} \left(\frac{a}{s + b} \right) \right\}$.



4. a) Find $Z\{f(k)\}$, where $f(k) = 3^k, k < 0$ **3**
 $= 2^k, k \geq 0$
- b) Find $Z \{e^{-3k}\cos 4k\}, k \geq 0.$ **3**
- c) Find $Z^{-1} \left\{ \frac{1}{(z-5)^2} \right\}, |z| < 5.$ **3**
5. a) Find the Fourier series of $f(x) = e^{-x}$, in the interval $(0, 2\pi).$ **5**
- b) Find the half-range cosine series of
 $f(x) = 1, 0 \leq x \leq 1$
 $= x, 1 \leq x \leq 2.$ **4**

SECTION – II

6. Attempt the following :

a) Fit a Poisson distribution to the following data :

x :	0	1	2	3	4	Total	
F :	192	100	24	3	1	320	3

b) In a room there are three lamp sockets. A bag contains '6' working and '4' non-working bulbs. Three bulbs are selected at random and fitted in the sockets. Find the probability that there will be some light in room. **3**

c) Fit a straight line to the following data : **4**

Year (x) :	1951	1961	1971	1981	1991
Production (y) :	10	12	8	10	13

Also estimate the production in 1987.

7. Attempt the following :

a) Find the tangential and normal component of acceleration of a particle moving on a curve $x = a(t + \sin t), y = a(1 - \cos t).$ **3**

b) Prove that $\nabla \cdot (r^n \bar{r}) = (n+3)r^n.$ **3**

c) Find the directional derivative of $\phi = e^{2x} \cdot \cos yz$ at $(0, 0, 0)$ in the direction of the tangent to the curve $x = a \sin t, y = a \cos t, z = a.t$ at $t = \pi/4.$ **3**

Set P



8. Attempt the following :

- a) In normal distribution 31% items are under 45 and 8% are over 64. Find its mean and standard deviation.

(Given : For a normal distribution the area between $z = 0$ and $z = 0.5$ is 0.19 and that between $z = 0$ to $z = 1.4$ is 0.42).

3

- b) The equations of two lines of regression are $6y = 5x + 90$ and $15x = 8y + 130$. Find the mean of x and y and the coefficient of correlation.

3

- c) If the given data is

3

Year :	1974	1975	1976	1977	1978	1979	1980	1981
Prod. :	12	14	26	42	40	50	52	53

Fit a second degree curve.

9. Attempt the following :

- a) Customers arrive at a box office window, being manned by a single individuals according to Poisson input process with a mean rate of 20 per hr. Time required to serve a customer has an exponential distribution with mean of '90' seconds. Find average waiting time of customer. Also determine the average number of customers in the system and average queue length.

5

- b) In a bank there is only one window, a solitary employee performs all the service required and window remains open continuously open from 7.00 a.m. to 10.00 pm. It has been discovered that the average number of clients is 54 during the day and that the average service time is of five minutes per person. Calculate :

- i) Average number of clients in the system (including the one being served)
ii) The average waiting time.

4



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

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

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

Day and Date : Tuesday, 12-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- N. B. :**
- 1) Figures to the **right** indicate **full** marks.
 - 2) **Use of calculator is allowed.**
 - 3) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. **3**. **Each** question carries **one** mark.
 - 4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

(14×1=14)

- 1) A Poisson distribution is given by $p(x) = \frac{e^{-2.5}(2.5)^x}{x!}$. The mean and variance of the distribution are
 a) 1.5, 2.5 b) 1.5, 3.5 c) 2.5, 2.5 d) 1.5, 1.5
- 2) A random variable has the following probability density function

x :	1	2	3	4	5	6	7
p(x) :	k	2k	3k	k^2	$k^2 + k$	$2k^2$	$4k^2$

 then k =
 a) $\frac{1}{5}$ b) $\frac{1}{6}$ c) $\frac{1}{7}$ d) $\frac{1}{8}$
- 3) From a box containing 100 transistors out of which 20 are defective, if 10 transistors are chosen at random then the probability that no transistor was defective is
 a) 0.07 b) 0.11 c) 0.17 d) 0.99
- 4) If $u = x + y + z$ and $v = x + y$ then $\nabla_u \cdot \nabla_v =$
 a) 1 b) 0 c) 2 d) -1
- 5) If $\vec{r} = ae^{3t} + be^{2t}$, then at $t = 0$, $\frac{d\vec{r}}{dt} - 2\vec{r} =$
 a) a b) b c) a - b d) a + b



- 6) The lines of regression are given by $10y = x + 17$ and $x = 5y - 7$. Then \bar{x} and \bar{y} are
 a) 1 and 10 b) 1 and 5 c) 2 and 3 d) 3 and 2
- 7) In a M/M/1 : ∞ IFCFS queue, the probability of the queue size being greater than N is given by $\lambda =$ mean arrival rate and $\mu =$ mean service rate is
 a) $\left(\frac{\lambda}{\mu}\right)^N$ b) $\left(\frac{\mu}{\lambda}\right)^N$ c) $(\lambda\mu)^N$ d) $\lambda\mu^N$
- 8) The general solution of the diff. equation $(D^4 - 2D^3 + D^2)y = 0$ is
 a) $(c_1 + c_2x)e^{-x} + (c_3 + c_4x)e^x$ b) $(c_1 + c_2x) + (c_3 + c_4x)e^{-x}$
 c) $c_1 + (c_2 + c_3x)e^x$ d) $(c_1 + c_2x) + (c_3 + c_4x)e^x$
- 9) $\frac{1}{D^2 + 9} \cos 3x$ is equal to
 a) $\frac{x}{6} \cos 3x$ b) $\frac{x}{6} \sin 3x$ c) $\frac{x}{18} \cos 3x$ d) $\frac{x}{18} \sin 3x$
- 10) $L\{te^{-t}\} =$
 a) $\frac{1}{(s+1)^2}$ b) $\frac{s}{(s+1)^2}$ c) $\frac{-1}{(s+1)^2}$ d) $\frac{-s}{(s+1)^2}$
- 11) $L\{f'(t)\} =$
 a) $f(0) + s\bar{f}(s)$ b) $-f(0) + \bar{f}(s)$ c) $-f(0) + s\bar{f}(s)$ d) $s\bar{f}(s)$
- 12) Since $z\{1\} = \frac{z}{z-1}$, $z\{a^k\}, (k \geq 0) =$
 a) $\frac{z}{a(z-1)}$ b) $\frac{z}{z-a}$ c) $\frac{z}{az-1}$ d) $\frac{a}{z-a}$
- 13) In the cosine series expansion of
 $F(x) = 1, 0 < x < \frac{a}{2}$
 $= -1, \frac{a}{2} < x < a$
 the constant term is _____
 a) $\frac{2}{\pi}$ b) π c) -1 d) 0
- 14) Fourier expansion of $f(x) = \begin{cases} -x, & -2 \leq x \leq 0 \\ x, & 0 \leq x \leq 2 \end{cases}$ in the interval $[-2, 2]$ has
 a) No sine term b) No cosine term
 c) Both sine and cosine terms d) None of these



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

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

Day and Date : Tuesday, 12-12-2017
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 : $(D^2 + 3D + 2)y = x^3 + x^2$. **3**
b) Solve : $(D^2 + 5D - 6)y = \sin 4x \cdot \sin x$. **3**
c) Solve : $(D^3 - 7D - 6)y = (1 + x)e^{2x}$. **4**

OR

- c) $(D^3 + 8)y = x^4 + 2x + 1 + \cosh 2x$.
3. Solve the following **any three** : **9**

a) Find $L \left\{ \frac{\sin^2 2t}{t} \right\}$.

b) Find $L^{-1} \left\{ \frac{2s^2 - 4}{(s + 1)(s - 2)(s - 3)} \right\}$.

c) Evaluate $\int_0^{\infty} e^{-3t} t^2 \sinh 2t dt$, by using Laplace transform.

d) Find $L^{-1} \left\{ \cot^{-1} \left(\frac{a}{s + b} \right) \right\}$.



4. a) Find $Z\{f(k)\}$, where $f(k) = 3^k, k < 0$ **3**
 $= 2^k, k \geq 0$
- b) Find $Z \{e^{-3k}\cos 4k\}, k \geq 0.$ **3**
- c) Find $Z^{-1} \left\{ \frac{1}{(z-5)^2} \right\}, |z| < 5.$ **3**
5. a) Find the Fourier series of $f(x) = e^{-x}$, in the interval $(0, 2\pi).$ **5**
- b) Find the half-range cosine series of
 $f(x) = 1, 0 \leq x \leq 1$
 $= x, 1 \leq x \leq 2.$ **4**

SECTION – II

6. Attempt the following :
- a) Fit a Poisson distribution to the following data :
- | | | | | | | | |
|------------|-----|-----|----|---|---|--------------|----------|
| x : | 0 | 1 | 2 | 3 | 4 | Total | |
| F : | 192 | 100 | 24 | 3 | 1 | 320 | 3 |
- b) In a room there are three lamp sockets. A bag contains '6' working and '4' non-working bulbs. Three bulbs are selected at random and fitted in the sockets. Find the probability that there will be some light in room. **3**
- c) Fit a straight line to the following data : **4**
- | | | | | | |
|-------------------------|------|------|------|------|------|
| Year (x) : | 1951 | 1961 | 1971 | 1981 | 1991 |
| Production (y) : | 10 | 12 | 8 | 10 | 13 |
- Also estimate the production in 1987.
7. Attempt the following :
- a) Find the tangential and normal component of acceleration of a particle moving on a curve $x = a(t + \sin t), y = a(1 - \cos t).$ **3**
- b) Prove that $\nabla \cdot (r^n \bar{r}) = (n+3)r^n.$ **3**
- c) Find the directional derivative of $\phi = e^{2x} \cdot \cos yz$ at $(0, 0, 0)$ in the direction of the tangent to the curve $x = a \sin t, y = a \cos t, z = a.t$ at $t = \pi/4.$ **3**



8. Attempt the following :

- a) In normal distribution 31% items are under 45 and 8% are over 64. Find its mean and standard deviation.

(Given : For a normal distribution the area between $z = 0$ and $z = 0.5$ is 0.19 and that between $z = 0$ to $z = 1.4$ is 0.42).

3

- b) The equations of two lines of regression are $6y = 5x + 90$ and $15x = 8y + 130$. Find the mean of x and y and the coefficient of correlation.

3

- c) If the given data is

3

Year :	1974	1975	1976	1977	1978	1979	1980	1981
Prod. :	12	14	26	42	40	50	52	53

Fit a second degree curve.

9. Attempt the following :

- a) Customers arrive at a box office window, being manned by a single individuals according to Poisson input process with a mean rate of 20 per hr. Time required to serve a customer has an exponential distribution with mean of '90' seconds. Find average waiting time of customer. Also determine the average number of customers in the system and average queue length.

5

- b) In a bank there is only one window, a solitary employee performs all the service required and window remains open continuously open from 7.00 a.m. to 10.00 pm. It has been discovered that the average number of clients is 54 during the day and that the average service time is of five minutes per person. Calculate :

- i) Average number of clients in the system (including the one being served)
ii) The average waiting time.

4



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

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

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

Day and Date : Tuesday, 12-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- N. B. :**
- 1) Figures to the **right** indicate **full** marks.
 - 2) **Use of calculator is allowed.**
 - 3) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. **3**. **Each** question carries **one** mark.
 - 4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

(14×1=14)

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

- a) $\frac{z}{a(z-1)}$ b) $\frac{z}{z-a}$ c) $\frac{z}{az-1}$ d) $\frac{a}{z-a}$

2) In the cosine series expansion of

$$F(x) = 1, 0 < x < \frac{a}{2}$$

$$= -1, \frac{a}{2} < x < a$$

the constant term is _____

- a) $\frac{2}{\pi}$ b) π c) -1 d) 0

3) Fourier expansion of $f(x) = \begin{cases} -x, & -2 \leq x \leq 0 \\ x, & 0 \leq x \leq 2 \end{cases}$ in the interval $[-2, 2]$ has

- a) No sine term b) No cosine term
c) Both sine and cosine terms d) None of these

4) A Poisson distribution is given by $p(x) = \frac{e^{-2.5}(2.5)^x}{x!}$. The mean and variance of the distribution are

- a) 1.5, 2.5 b) 1.5, 3.5 c) 2.5, 2.5 d) 1.5, 1.5

P.T.O.



5) A random variable has the following probability density function

x :	1	2	3	4	5	6	7
p(x) :	k	2k	3k	k^2	$k^2 + k$	$2k^2$	$4k^2$

then $k =$

- a) $\frac{1}{5}$ b) $\frac{1}{6}$ c) $\frac{1}{7}$ d) $\frac{1}{8}$

6) From a box containing 100 transistors out of which 20 are defective, if 10 transistors are chosen at random then the probability that no transistor was defective is

- a) 0.07 b) 0.11 c) 0.17 d) 0.99

7) If $u = x + y + z$ and $v = x + y$ then $\nabla_u \cdot \nabla_v =$

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

8) If $\bar{r} = ae^{3t} + be^{2t}$, then at $t = 0$, $\frac{d\bar{r}}{dt} - 2\bar{r} =$

- a) a b) b c) $a - b$ d) $a + b$

9) The lines of regression are given by $10y = x + 17$ and $x = 5y - 7$. Then \bar{x} and \bar{y} are

- a) 1 and 10 b) 1 and 5 c) 2 and 3 d) 3 and 2

10) In a $M/M/1 : \infty$ IFCFS queue, the probability of the queue size being greater than N is given by $\lambda =$ mean arrival rate and $\mu =$ mean service rate is

- a) $\left(\frac{\lambda}{\mu}\right)^N$ b) $\left(\frac{\mu}{\lambda}\right)^N$ c) $(\lambda\mu)^N$ d) $\lambda\mu^N$

11) The general solution of the diff. equation $(D^4 - 2D^3 + D^2)y = 0$ is

- a) $(c_1 + c_2x)e^{-x} + (c_3 + c_4x)e^x$ b) $(c_1 + c_2x) + (c_3 + c_4x)e^{-x}$
 c) $c_1 + (c_2 + c_3x)e^x$ d) $(c_1 + c_2x) + (c_3 + c_4x)e^x$

12) $\frac{1}{D^2 + 9} \cos 3x$ is equal to

- a) $\frac{x}{6} \cos 3x$ b) $\frac{x}{6} \sin 3x$ c) $\frac{x}{18} \cos 3x$ d) $\frac{x}{18} \sin 3x$

13) $L \{te^{-t}\} =$

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

14) $L \{f'(t)\} =$

- a) $f(0) + s\bar{f}(s)$ b) $-f(0) + \bar{f}(s)$ c) $-f(0) + s\bar{f}(s)$ d) $s\bar{f}(s)$



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

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

Day and Date : Tuesday, 12-12-2017
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 : $(D^2 + 3D + 2)y = x^3 + x^2$. **3**
b) Solve : $(D^2 + 5D - 6)y = \sin 4x \cdot \sin x$. **3**
c) Solve : $(D^3 - 7D - 6)y = (1 + x)e^{2x}$. **4**

OR

- c) $(D^3 + 8)y = x^4 + 2x + 1 + \cosh 2x$.
3. Solve the following **any three** : **9**

a) Find $L \left\{ \frac{\sin^2 2t}{t} \right\}$.

b) Find $L^{-1} \left\{ \frac{2s^2 - 4}{(s + 1)(s - 2)(s - 3)} \right\}$.

c) Evaluate $\int_0^{\infty} e^{-3t} t^2 \sinh 2t dt$, by using Laplace transform.

d) Find $L^{-1} \left\{ \cot^{-1} \left(\frac{a}{s + b} \right) \right\}$.



4. a) Find $Z\{f(k)\}$, where $f(k) = 3^k, k < 0$ **3**
 $= 2^k, k \geq 0$
- b) Find $Z\{e^{-3k}\cos 4k\}, k \geq 0.$ **3**
- c) Find $Z^{-1}\left\{\frac{1}{(z-5)^2}\right\}, |z| < 5.$ **3**
5. a) Find the Fourier series of $f(x) = e^{-x}$, in the interval $(0, 2\pi).$ **5**
 b) Find the half-range cosine series of
 $f(x) = 1, 0 \leq x \leq 1$
 $= x, 1 \leq x \leq 2.$ **4**

SECTION – II

6. Attempt the following :

a) Fit a Poisson distribution to the following data :

x :	0	1	2	3	4	Total	
F :	192	100	24	3	1	320	3

b) In a room there are three lamp sockets. A bag contains '6' working and '4' non-working bulbs. Three bulbs are selected at random and fitted in the sockets. Find the probability that there will be some light in room. **3**

c) Fit a straight line to the following data : **4**

Year (x) :	1951	1961	1971	1981	1991
Production (y) :	10	12	8	10	13

Also estimate the production in 1987.

7. Attempt the following :

a) Find the tangential and normal component of acceleration of a particle moving on a curve $x = a(t + \sin t), y = a(1 - \cos t).$ **3**

b) Prove that $\nabla \cdot (r^n \bar{r}) = (n+3)r^n.$ **3**

c) Find the directional derivative of $\phi = e^{2x} \cdot \cos yz$ at $(0, 0, 0)$ in the direction of the tangent to the curve $x = a \sin t, y = a \cos t, z = a.t$ at $t = \pi/4.$ **3**

Set R



8. Attempt the following :

- a) In normal distribution 31% items are under 45 and 8% are over 64. Find its mean and standard deviation.

(Given : For a normal distribution the area between $z = 0$ and $z = 0.5$ is 0.19 and that between $z = 0$ to $z = 1.4$ is 0.42).

3

- b) The equations of two lines of regression are $6y = 5x + 90$ and $15x = 8y + 130$. Find the mean of x and y and the coefficient of correlation.

3

- c) If the given data is

3

Year :	1974	1975	1976	1977	1978	1979	1980	1981
Prod. :	12	14	26	42	40	50	52	53

Fit a second degree curve.

9. Attempt the following :

- a) Customers arrive at a box office window, being manned by a single individuals according to Poisson input process with a mean rate of 20 per hr. Time required to serve a customer has an exponential distribution with mean of '90' seconds. Find average waiting time of customer. Also determine the average number of customers in the system and average queue length.

5

- b) In a bank there is only one window, a solitary employee performs all the service required and window remains open continuously open from 7.00 a.m. to 10.00 pm. It has been discovered that the average number of clients is 54 during the day and that the average service time is of five minutes per person. Calculate :

- i) Average number of clients in the system (including the one being served)
ii) The average waiting time.

4



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

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

S.E. (IT) (Part – I) (Old CGPA) Examination, 2017
APPLIED MATHEMATICS – I

Day and Date : Tuesday, 12-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- N. B. :**
- 1) Figures to the **right** indicate **full** marks.
 - 2) **Use** of calculator is **allowed**.
 - 3) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. **3**. **Each** question carries **one** mark.
 - 4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

(14×1=14)

- 1) From a box containing 100 transistors out of which 20 are defective, if 10 transistors are chosen at random then the probability that no transistor was defective is
a) 0.07 b) 0.11 c) 0.17 d) 0.99
- 2) If $u = x + y + z$ and $v = x + y$ then $\nabla_u \cdot \nabla_v =$
a) 1 b) 0 c) 2 d) -1
- 3) If $\bar{r} = ae^{3t} + be^{2t}$, then at $t = 0$, $\frac{d\bar{r}}{dt} - 2\bar{r} =$
a) a b) b c) a - b d) a + b
- 4) The lines of regression are given by $10y = x + 17$ and $x = 5y - 7$. Then \bar{x} and \bar{y} are
a) 1 and 10 b) 1 and 5 c) 2 and 3 d) 3 and 2
- 5) In a M/M/1 : ∞ IFCFS queue, the probability of the queue size being greater than N is given by $\lambda =$ mean arrival rate and $\mu =$ mean service rate is
a) $\left(\frac{\lambda}{\mu}\right)^N$ b) $\left(\frac{\mu}{\lambda}\right)^N$ c) $(\lambda\mu)^N$ d) $\lambda\mu^N$
- 6) The general solution of the diff. equation $(D^4 - 2D^3 + D^2)y = 0$ is
a) $(c_1 + c_2x)e^{-x} + (c_3 + c_4x)e^x$ b) $(c_1 + c_2x) + (c_3 + c_4x)e^{-x}$
c) $c_1 + (c_2 + c_3x)e^x$ d) $(c_1 + c_2x) + (c_3 + c_4x)e^x$

P.T.O.



7) $\frac{1}{D^2 + 9} \cos 3x$ is equal to

- a) $\frac{x}{6} \cos 3x$ b) $\frac{x}{6} \sin 3x$ c) $\frac{x}{18} \cos 3x$ d) $\frac{x}{18} \sin 3x$

8) $L \{te^{-t}\} =$

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

9) $L \{f'(t)\} =$

- a) $f(0) + s\bar{f}(s)$ b) $-f(0) + \bar{f}(s)$ c) $-f(0) + s\bar{f}(s)$ d) $s\bar{f}(s)$

10) Since $z\{1\} = \frac{z}{z-1}$, $z\{a^k\}$, $(k \geq 0) =$

- a) $\frac{z}{a(z-1)}$ b) $\frac{z}{z-a}$ c) $\frac{z}{az-1}$ d) $\frac{a}{z-a}$

11) In the cosine series expansion of

$$F(x) = 1, 0 < x < \frac{a}{2}$$

$$= -1, \frac{a}{2} < x < a$$

the constant term is _____

- a) $\frac{2}{\pi}$ b) π c) -1 d) 0

12) Fourier expansion of $f(x) = \begin{cases} -x, & -2 \leq x \leq 0 \\ x, & 0 \leq x \leq 2 \end{cases}$ in the interval $[-2, 2]$ has

- a) No sine term b) No cosine term
c) Both sine and cosine terms d) None of these

13) A Poisson distribution is given by $p(x) = \frac{e^{-2.5}(2.5)^x}{x!}$. The mean and variance

of the distribution are

- a) 1.5, 2.5 b) 1.5, 3.5 c) 2.5, 2.5 d) 1.5, 1.5

14) A random variable has the following probability density function

x :	1	2	3	4	5	6	7
p(x) :	k	2k	3k	k ²	k ² + k	2k ²	4k ²

then k =

- a) $\frac{1}{5}$ b) $\frac{1}{6}$ c) $\frac{1}{7}$ d) $\frac{1}{8}$



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

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

Day and Date : Tuesday, 12-12-2017
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 : $(D^2 + 3D + 2)y = x^3 + x^2$. **3**
b) Solve : $(D^2 + 5D - 6)y = \sin 4x \cdot \sin x$. **3**
c) Solve : $(D^3 - 7D - 6)y = (1 + x)e^{2x}$. **4**

OR

- c) $(D^3 + 8)y = x^4 + 2x + 1 + \cosh 2x$.
3. Solve the following **any three** : **9**

a) Find $L \left\{ \frac{\sin^2 2t}{t} \right\}$.

b) Find $L^{-1} \left\{ \frac{2s^2 - 4}{(s + 1)(s - 2)(s - 3)} \right\}$.

c) Evaluate $\int_0^{\infty} e^{-3t} t^2 \sinh 2t dt$, by using Laplace transform.

d) Find $L^{-1} \left\{ \cot^{-1} \left(\frac{a}{s + b} \right) \right\}$.



4. a) Find $Z\{f(k)\}$, where $f(k) = 3^k, k < 0$ **3**
 $= 2^k, k \geq 0$
- b) Find $Z\{e^{-3k}\cos 4k\}, k \geq 0.$ **3**
- c) Find $Z^{-1}\left\{\frac{1}{(z-5)^2}\right\}, |z| < 5.$ **3**
5. a) Find the Fourier series of $f(x) = e^{-x}$, in the interval $(0, 2\pi).$ **5**
- b) Find the half-range cosine series of
 $f(x) = 1, 0 \leq x \leq 1$
 $= x, 1 \leq x \leq 2.$ **4**

SECTION – II

6. Attempt the following :
- a) Fit a Poisson distribution to the following data :
- | | | | | | | | |
|------------|-----|-----|----|---|---|--------------|----------|
| x : | 0 | 1 | 2 | 3 | 4 | Total | |
| F : | 192 | 100 | 24 | 3 | 1 | 320 | 3 |
- b) In a room there are three lamp sockets. A bag contains '6' working and '4' non-working bulbs. Three bulbs are selected at random and fitted in the sockets. Find the probability that there will be some light in room. **3**
- c) Fit a straight line to the following data : **4**
- | | | | | | |
|-------------------------|------|------|------|------|------|
| Year (x) : | 1951 | 1961 | 1971 | 1981 | 1991 |
| Production (y) : | 10 | 12 | 8 | 10 | 13 |
- Also estimate the production in 1987.
7. Attempt the following :
- a) Find the tangential and normal component of acceleration of a particle moving on a curve $x = a(t + \sin t), y = a(1 - \cos t).$ **3**
- b) Prove that $\nabla \cdot (r^n \bar{r}) = (n+3)r^n.$ **3**
- c) Find the directional derivative of $\phi = e^{2x} \cdot \cos yz$ at $(0, 0, 0)$ in the direction of the tangent to the curve $x = a \sin t, y = a \cos t, z = a.t$ at $t = \pi/4.$ **3**



8. Attempt the following :

- a) In normal distribution 31% items are under 45 and 8% are over 64. Find its mean and standard deviation.

(Given : For a normal distribution the area between $z = 0$ and $z = 0.5$ is 0.19 and that between $z = 0$ to $z = 1.4$ is 0.42).

3

- b) The equations of two lines of regression are $6y = 5x + 90$ and $15x = 8y + 130$. Find the mean of x and y and the coefficient of correlation.

3

- c) If the given data is

3

Year :	1974	1975	1976	1977	1978	1979	1980	1981
Prod. :	12	14	26	42	40	50	52	53

Fit a second degree curve.

9. Attempt the following :

- a) Customers arrive at a box office window, being manned by a single individuals according to Poisson input process with a mean rate of 20 per hr. Time required to serve a customer has an exponential distribution with mean of '90' seconds. Find average waiting time of customer. Also determine the average number of customers in the system and average queue length.

5

- b) In a bank there is only one window, a solitary employee performs all the service required and window remains open continuously open from 7.00 a.m. to 10.00 pm. It has been discovered that the average number of clients is 54 during the day and that the average service time is of five minutes per person. Calculate :

- i) Average number of clients in the system (including the one being served)
ii) The average waiting time.

4



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

Set

P

**S.E. (Part – I) (Information Technology) Examination, 2017
(Old CGPA)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*
2) *Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.*

MCQ/Objective Type Questions

Duration : 30 Minutes

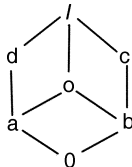
Marks : 14

1. Choose the correct answer :

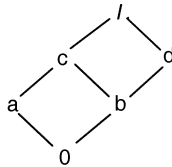
- 1) The relation $\{(1, 2), (1, 3), (3, 1), (1, 1), (3, 3), (3, 2), (1, 4), (4, 2), (3, 4)\}$ is
a) reflexive b) transitive c) symmetric d) asymmetric
- 2) Which of the following sets are equal ? $A = \{x \mid x^2 - 4x + 3 = 0\}$, $C = \{x \mid x \in \mathbb{N}, x < 3\}$, $E = \{1, 2\}$, $G = \{3, 1\}$, $B = \{x \mid x^2 - 3x + 2 = 0\}$, $D = \{x \mid x \in \mathbb{N}, x \text{ is odd}, x < 5\}$, $F = \{1, 2, 1\}$, $H = \{1, 1, 3\}$.
a) A, B, C, D b) B, C, E, F c) B, C, D, E d) None
- 3) What is the Cartesian product of $A = \{1, 2\}$ and $B = \{a, b\}$?
a) $\{(1, a), (1, b), (2, a), (b, b)\}$ b) $\{(1, 1), (2, 2), (a, a), (b, b)\}$
c) $\{(1, a), (2, a), (1, b), (2, b)\}$ d) $\{(1, 1), (a, a), (2, a), (1, b)\}$
- 4) A partial order relation is reflexive, antisymmetric and
a) transitive b) symmetric c) bisymmetric d) asymmetric
- 5) Which of the following statement is the negation of the statement, "2 is even and -3 is negative" ?
a) 2 is even and -3 is not negative b) 2 is odd and -3 is not negative
c) 2 is even or -3 is not negative d) 2 is odd or -3 is not negative



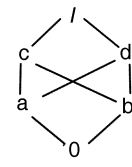
- 6) Which of the following are partitions of $\{1, 2, \dots, 8\}$?
- a) $\{1, 3, 5\}, \{1, 2, 6\}, \{4, 7, 8\}$ b) $\{1, 3, 5\}, \{2, 6, 7\}, \{4, 8\}$
 c) $\{1, 3, 5\}, \{2, 6\}, \{2, 6\}, \{4, 7, 8\}$ d) $\{1, 5\}, \{2, 6\}, \{4, 8\}$
- 7) Duality of $\sim(P \wedge Q) \vee P$ is
- a) $\sim(P \wedge Q) \vee P$ b) $\sim(P \wedge Q) \wedge P$ c) $\sim(P \vee Q) \wedge P$ d) none
- 8) Each of the following defines a relation on the positive integers N : (1) "x is greater than y." (2) "xy is the square of an integer." (3) $x + y = 10$ (4) $x + 4y = 10$. Determine which of the relations are not transitive.
- a) 1 b) 2 c) 3 d) 4
- 9) Which of the following statement is the negation of the statement "4 is even or -5 is negative" ?
- a) 4 is odd and -5 is not negative b) 4 is even or -5 is not negative
 c) 4 is odd or -5 is not negative d) 4 is even and -5 is not negative
- 10) Abelian group satisfies additional _____ property than group.
- a) transitive b) inverse c) identity d) commutative
- 11) Integral domain in _____ have property with no zero divisor.
- a) ring b) field c) chain d) none
- 12) Which is not lattice ?



a)



b)



c)

- 13) If B is a Boolean Algebra, then which of the following is true ?
- a) B is a finite, but not complemented lattice
 b) B is a finite, complemented and distributive lattice
 c) B is a finite, distributive but not complemented lattice
 d) B is not distributive lattice
- 14) Let L be a lattice. Then for every a and b in L which one of the following is correct ?
- a) $a \vee b = a \wedge b$ b) $a \vee (b \vee c) = (a \vee b) \vee c$
 c) $a \vee (b \wedge c) = a$ d) $a \vee (b \vee c) = b$



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

**S.E. (Part – I) (Information Technology) Examination, 2017
(Old CGPA)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any 5** questions. **(4×5=20)**

- 1) Explain well formed formula and tautology.
- 2) Obtain the DNF of $(\sim P \wedge Q) \wedge (P \rightarrow Q)$.
- 3) If $A = \{a, b, c, d, e\}$ And $R = \{(a,a), (a,b), (b,c), (c,e), (c,d), (d,e)\}$. Then compute R^2 . Also obtain the digraph of R^2 .
- 4) Explain the following types of relations with suitable examples.
 - i) transitive
 - ii) equivalence.

Is the relation $R = \{(x,y) : (x,y) \in A \times A, \text{ and } x \text{ is a sister of } y\}$ symmetric ?

- 5) Define power set $S_6 = \{a_1, a_2 \dots a_6\}$ find B_7 and B_{12} .
- 6) Let $A = \{1, 2, 3, 4\}$, $B = \{a, b, c\}$, $C = \{x, y, z\}$. Consider the relations R from A to B and S from B to C as follows : $R = \{(1, b), (3, a), (3, b), (4, c)\}$ and $S = \{(a, y), (c, x), (a, z)\}$
 - a) Draw the diagrams of R and S.
 - b) Find the matrix of each relation R, S (composition) $R \circ S$.
 - c) Write R^{-1} and the composition $R \circ S$ as sets of ordered Pairs.

3. Define partition and Covering of set with example of $\{a, b, c\}$. **8**

Set P



SECTION – II

4. Attempt **any 5** questions. **(4×5=20)**
- 1) Write short note on Functions.
 - 2) Draw the Hasse diagram for the lattice D_{18} consisting of the divisors of 18 with the partial order of divisibility.
 - 3) Define and explain Boolean functions for $(B, *, +, ', 0, 1)$.
 - 4) Explain Lattices properties.
 - 5) Define Group, Semi group and moniod with example.
 - 6) Consider $f : Z + \rightarrow Z +$ defined by $f(a) = a^2$. Is f one-to-one ? Is f onto ? Why ?
5. What is Partially Ordered Set ? Let $S = \{c, b, a\}$ and $A = P(S)$. Draw the Hasse diagram of the poset A with the partial order \subseteq (set inclusion). **8**
-



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

**S.E. (Part – I) (Information Technology) Examination, 2017
(Old CGPA)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

Instructions : 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*
2) *Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.*

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

1) 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 not transitive.

- a) 1 b) 2 c) 3 d) 4

2) Which of the following statement is the negation of the statement "4 is even or -5 is negative" ?

- a) 4 is odd and -5 is not negative b) 4 is even or -5 is not negative
c) 4 is odd or -5 is not negative d) 4 is even and -5 is not negative

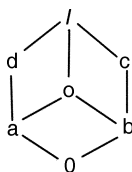
3) Abelian group satisfies additional _____ property than group.

- a) transitive b) inverse c) identity d) commutative

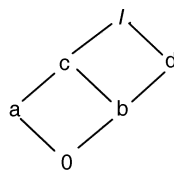
4) Integral domain in _____ have property with no zero divisor.

- a) ring b) field c) chain d) none

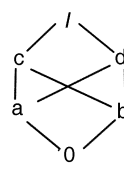
5) Which is not lattice ?



a)



b)



c)



- 6) If B is a Boolean Algebra, then which of the following is true ?
- B is a finite, but not complemented lattice
 - B is a finite, complemented and distributive lattice
 - B is a finite, distributive but not complemented lattice
 - B is not distributive lattice
- 7) Let L be a lattice. Then for every a and b in L which one of the following is correct ?
- $a \vee b = a \wedge b$
 - $a \vee (b \vee c) = (a \vee b) \vee c$
 - $a \vee (b \wedge c) = a$
 - $a \vee (b \vee c) = b$
- 8) The relation $\{(1, 2), (1, 3), (3, 1), (1, 1), (3, 3), (3, 2), (1, 4), (4, 2), (3, 4)\}$ is
- reflexive
 - transitive
 - symmetric
 - asymmetric
- 9) Which of the following sets are equal ? $A = \{x \mid x^2 - 4x + 3 = 0\}$, $C = \{x \mid x \in \mathbb{N}, x < 3\}$, $E = \{1, 2\}$, $G = \{3, 1\}$, $B = \{x \mid x^2 - 3x + 2 = 0\}$, $D = \{x \mid x \in \mathbb{N}, x \text{ is odd}, x < 5\}$, $F = \{1, 2, 1\}$, $H = \{1, 1, 3\}$.
- A, B, C, D
 - B, C, E, F
 - B, C, D, E
 - None
- 10) What is the Cartesian product of $A = \{1, 2\}$ and $B = \{a, b\}$?
- $\{(1, a), (1, b), (2, a), (2, b)\}$
 - $\{(1, 1), (2, 2), (a, a), (b, b)\}$
 - $\{(1, a), (2, a), (1, b), (2, b)\}$
 - $\{(1, 1), (a, a), (2, a), (1, b)\}$
- 11) A partial order relation is reflexive, antisymmetric and
- transitive
 - symmetric
 - bisymmetric
 - asymmetric
- 12) Which of the following statement is the negation of the statement, “2 is even and –3 is negative” ?
- 2 is even and –3 is not negative
 - 2 is odd and –3 is not negative
 - 2 is even or –3 is not negative
 - 2 is odd or –3 is not negative
- 13) Which of the following are partitions of $\{1, 2, \dots, 8\}$?
- $\{1, 3, 5\}, \{1, 2, 6\}, \{4, 7, 8\}$
 - $\{1, 3, 5\}, \{2, 6, 7\}, \{4, 8\}$
 - $\{1, 3, 5\}, \{2, 6\}, \{2, 6\}, \{4, 7, 8\}$
 - $\{1, 5\}, \{2, 6\}, \{4, 8\}$
- 14) Duality of $\sim(P \wedge Q) \vee P$ is
- $\sim(P \wedge Q) \vee P$
 - $\sim(P \wedge Q) \wedge P$
 - $\sim(P \vee Q) \wedge P$
 - none



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

**S.E. (Part – I) (Information Technology) Examination, 2017
(Old CGPA)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any 5** questions. **(4×5=20)**

- 1) Explain well formed formula and tautology.
- 2) Obtain the DNF of $(\sim P \wedge Q) \wedge (P \rightarrow Q)$.
- 3) If $A = \{a, b, c, d, e\}$ And $R = \{(a,a), (a,b), (b,c), (c,e), (c,d), (d,e)\}$. Then compute R^2 . Also obtain the digraph of R^2 .
- 4) Explain the following types of relations with suitable examples.
 - i) transitive
 - ii) equivalence.

Is the relation $R = \{(x,y) : (x,y) \in A \times A, \text{ and } x \text{ is a sister of } y\}$ symmetric ?

- 5) Define power set $S_6 = \{a_1, a_2 \dots a_6\}$ find B_7 and B_{12} .
- 6) Let $A = \{1, 2, 3, 4\}$, $B = \{a, b, c\}$, $C = \{x, y, z\}$. Consider the relations R from A to B and S from B to C as follows : $R = \{(1, b), (3, a), (3, b), (4, c)\}$ and $S = \{(a, y), (c, x), (a, z)\}$
 - a) Draw the diagrams of R and S.
 - b) Find the matrix of each relation R, S (composition) $R \circ S$.
 - c) Write R^{-1} and the composition $R \circ S$ as sets of ordered Pairs.

3. Define partition and Covering of set with example of $\{a, b, c\}$. **8**

Set Q



SECTION – II

4. Attempt **any 5** questions. **(4×5=20)**
- 1) Write short note on Functions.
 - 2) Draw the Hasse diagram for the lattice D_{18} consisting of the divisors of 18 with the partial order of divisibility.
 - 3) Define and explain Boolean functions for $(B, *, +, ', 0, 1)$.
 - 4) Explain Lattices properties.
 - 5) Define Group, Semi group and moniod with example.
 - 6) Consider $f : Z + \rightarrow Z +$ defined by $f(a) = a^2$. Is f one-to-one ? Is f onto ? Why ?
5. What is Partially Ordered Set ? Let $S = \{c, b, a\}$ and $A = P(S)$. Draw the Hasse diagram of the poset A with the partial order \subseteq (set inclusion). **8**
-



SLR-TJ – 296

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

Set

R

**S.E. (Part – I) (Information Technology) Examination, 2017
(Old CGPA)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*
2) *Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.*

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

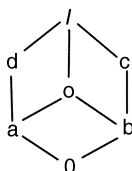
1. Choose the correct answer :

- 1) Which of the following statement is the negation of the statement, “2 is even and -3 is negative” ?
 - a) 2 is even and -3 is not negative
 - b) 2 is odd and -3 is not negative
 - c) 2 is even or -3 is not negative
 - d) 2 is odd or -3 is not negative
- 2) Which of the following are partitions of $\{1, 2, \dots, 8\}$?
 - a) $\{1, 3, 5\}, \{1, 2, 6\}, \{4, 7, 8\}$
 - b) $\{1, 3, 5\}, \{2, 6, 7\}, \{4, 8\}$
 - c) $\{1, 3, 5\}, \{2, 6\}, \{2, 6\}, \{4, 7, 8\}$
 - d) $\{1, 5\}, \{2, 6\}, \{4, 8\}$
- 3) Duality of $\sim(P \wedge Q) \vee P$ is
 - a) $\sim(P \wedge Q) \vee P$
 - b) $\sim(P \wedge Q) \wedge P$
 - c) $\sim(P \vee Q) \wedge P$
 - d) none
- 4) Each of the following defines a relation on the positive integers N : (1) “ x is greater than y .” (2) “ xy is the square of an integer.” (3) $x + y = 10$ (4) $x + 4y = 10$. Determine which of the relations are not transitive.
 - a) 1
 - b) 2
 - c) 3
 - d) 4
- 5) Which of the following statement is the negation of the statement “4 is even or -5 is negative” ?
 - a) 4 is odd and -5 is not negative
 - b) 4 is even or -5 is not negative
 - c) 4 is odd or -5 is not negative
 - d) 4 is even and -5 is not negative

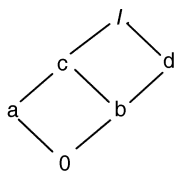
P.T.O.



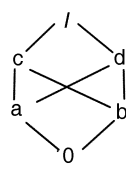
- 6) Abelian group satisfies additional _____ property than group.
 a) transitive b) inverse c) identity d) commutative
- 7) Integral domain in _____ have property with no zero divisor.
 a) ring b) field c) chain d) none
- 8) Which is not lattice ?



a)



b)



c)

- 9) If B is a Boolean Algebra, then which of the following is true ?
 a) B is a finite, but not complemented lattice
 b) B is a finite, complemented and distributive lattice
 c) B is a finite, distributive but not complemented lattice
 d) B is not distributive lattice
- 10) Let L be a lattice. Then for every a and b in L which one of the following is correct ?
 a) $a \vee b = a \wedge b$ b) $a \vee (b \vee c) = (a \vee b) \vee c$
 c) $a \vee (b \wedge c) = a$ d) $a \vee (b \vee c) = b$
- 11) The relation $\{(1, 2), (1, 3), (3, 1), (1, 1), (3, 3), (3, 2), (1, 4), (4, 2), (3, 4)\}$ is
 a) reflexive b) transitive c) symmetric d) asymmetric
- 12) Which of the following sets are equal ? $A = \{x \mid x^2 - 4x + 3 = 0\}$, $C = \{x \mid x \in \mathbb{N}, x < 3\}$, $E = \{1, 2\}$, $G = \{3, 1\}$, $B = \{x \mid x^2 - 3x + 2 = 0\}$, $D = \{x \mid x \in \mathbb{N}, x \text{ is odd}, x < 5\}$, $F = \{1, 2, 1\}$, $H = \{1, 1, 3\}$.
 a) A, B, C, D b) B, C, E, F c) B, C, D, E d) None
- 13) What is the Cartesian product of $A = \{1, 2\}$ and $B = \{a, b\}$?
 a) $\{(1, a), (1, b), (2, a), (2, b)\}$ b) $\{(1, 1), (2, 2), (a, a), (b, b)\}$
 c) $\{(1, a), (2, a), (1, b), (2, b)\}$ d) $\{(1, 1), (a, a), (2, a), (1, b)\}$
- 14) A partial order relation is reflexive, antisymmetric and
 a) transitive b) symmetric c) bisymmetric d) asymmetric



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

**S.E. (Part – I) (Information Technology) Examination, 2017
(Old CGPA)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any 5** questions. **(4×5=20)**

- 1) Explain well formed formula and tautology.
- 2) Obtain the DNF of $(\sim P \wedge Q) \wedge (P \rightarrow Q)$.
- 3) If $A = \{a, b, c, d, e\}$ And $R = \{(a,a), (a,b), (b,c), (c,e), (c,d), (d,e)\}$. Then compute R^2 . Also obtain the digraph of R^2 .
- 4) Explain the following types of relations with suitable examples.
 - i) transitive
 - ii) equivalence.

Is the relation $R = \{(x,y) : (x,y) \in A \times A, \text{ and } x \text{ is a sister of } y\}$ symmetric ?

- 5) Define power set $S_6 = \{a_1, a_2 \dots a_6\}$ find B_7 and B_{12} .
- 6) Let $A = \{1, 2, 3, 4\}$, $B = \{a, b, c\}$, $C = \{x, y, z\}$. Consider the relations R from A to B and S from B to C as follows : $R = \{(1, b), (3, a), (3, b), (4, c)\}$ and $S = \{(a, y), (c, x), (a, z)\}$
 - a) Draw the diagrams of R and S.
 - b) Find the matrix of each relation R, S (composition) $R \circ S$.
 - c) Write R^{-1} and the composition $R \circ S$ as sets of ordered Pairs.

3. Define partition and Covering of set with example of $\{a, b, c\}$. **8**

Set R



SECTION – II

4. Attempt **any 5** questions. **(4×5=20)**
- 1) Write short note on Functions.
 - 2) Draw the Hasse diagram for the lattice D_{18} consisting of the divisors of 18 with the partial order of divisibility.
 - 3) Define and explain Boolean functions for $(B, *, +, ', 0, 1)$.
 - 4) Explain Lattices properties.
 - 5) Define Group, Semi group and moniod with example.
 - 6) Consider $f : Z + \rightarrow Z +$ defined by $f(a) = a^2$. Is f one-to-one ? Is f onto ? Why ?
5. What is Partially Ordered Set ? Let $S = \{c, b, a\}$ and $A = P(S)$. Draw the Hasse diagram of the poset A with the partial order \subseteq (set inclusion). **8**
-



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

Set	S
-----	---

**S.E. (Part – I) (Information Technology) Examination, 2017
(Old CGPA)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*
2) *Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.*

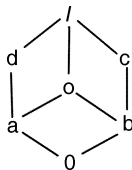
MCQ/Objective Type Questions

Duration : 30 Minutes

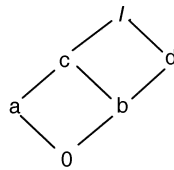
Marks : 14

1. Choose the correct answer :

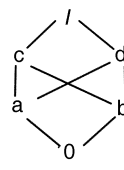
- 1) Abelian group satisfies additional _____ property than group.
a) transitive b) inverse c) identity d) commutative
- 2) Integral domain in _____ have property with no zero divisor.
a) ring b) field c) chain d) none
- 3) Which is not lattice ?



a)



b)



c)

- 4) If B is a Boolean Algebra, then which of the following is true ?
a) B is a finite, but not complemented lattice
b) B is a finite, complemented and distributive lattice
c) B is a finite, distributive but not complemented lattice
d) B is not distributive lattice
- 5) Let L be a lattice. Then for every a and b in L which one of the following is correct ?
a) $a \vee b = a \wedge b$ b) $a \vee (b \vee c) = (a \vee b) \vee c$
c) $a \vee (b \wedge c) = a$ d) $a \vee (b \vee c) = b$

P.T.O.



- 6) The relation $\{(1, 2), (1, 3), (3, 1), (1, 1), (3, 3), (3, 2), (1, 4), (4, 2), (3, 4)\}$ is
a) reflexive b) transitive c) symmetric d) asymmetric
- 7) Which of the following sets are equal ? $A = \{x \mid x^2 - 4x + 3 = 0\}$, $C = \{x \mid x \in \mathbb{N}, x < 3\}$, $E = \{1, 2\}$, $G = \{3, 1\}$, $B = \{x \mid x^2 - 3x + 2 = 0\}$, $D = \{x \mid x \in \mathbb{N}, x \text{ is odd}, x < 5\}$, $F = \{1, 2, 1\}$, $H = \{1, 1, 3\}$.
a) A, B, C, D b) B, C, E, F c) B, C, D, E d) None
- 8) What is the Cartesian product of $A = \{1, 2\}$ and $B = \{a, b\}$?
a) $\{(1, a), (1, b), (2, a), (b, b)\}$ b) $\{(1, 1), (2, 2), (a, a), (b, b)\}$
c) $\{(1, a), (2, a), (1, b), (2, b)\}$ d) $\{(1, 1), (a, a), (2, a), (1, b)\}$
- 9) A partial order relation is reflexive, antisymmetric and
a) transitive b) symmetric c) bisymmetric d) asymmetric
- 10) Which of the following statement is the negation of the statement, “2 is even and -3 is negative” ?
a) 2 is even and -3 is not negative b) 2 is odd and -3 is not negative
c) 2 is even or -3 is not negative d) 2 is odd or -3 is not negative
- 11) Which of the following are partitions of $\{1, 2, \dots, 8\}$?
a) $\{1, 3, 5\}, \{1, 2, 6\}, \{4, 7, 8\}$ b) $\{1, 3, 5\}, \{2, 6, 7\}, \{4, 8\}$
c) $\{1, 3, 5\}, \{2, 6\}, \{2, 6\}, \{4, 7, 8\}$ d) $\{1, 5\}, \{2, 6\}, \{4, 8\}$
- 12) Duality of $\sim(P \wedge Q) \vee P$ is
a) $\sim(P \wedge Q) \vee P$ b) $\sim(P \wedge Q) \wedge P$ c) $\sim(P \vee Q) \wedge P$ d) none
- 13) Each of the following defines a relation on the positive integers \mathbb{N} : (1) “ x is greater than y .” (2) “ xy is the square of an integer.” (3) $x + y = 10$ (4) $x + 4y = 10$. Determine which of the relations are not transitive.
a) 1 b) 2 c) 3 d) 4
- 14) Which of the following statement is the negation of the statement “4 is even or -5 is negative” ?
a) 4 is odd and -5 is not negative b) 4 is even or -5 is not negative
c) 4 is odd or -5 is not negative d) 4 is even and -5 is not negative



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

**S.E. (Part – I) (Information Technology) Examination, 2017
(Old CGPA)**

DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Thursday, 14-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any 5** questions. **(4×5=20)**

- 1) Explain well formed formula and tautology.
- 2) Obtain the DNF of $(\sim P \wedge Q) \wedge (P \rightarrow Q)$.
- 3) If $A = \{a, b, c, d, e\}$ And $R = \{(a,a), (a,b), (b,c), (c,e), (c,d), (d,e)\}$. Then compute R^2 . Also obtain the digraph of R^2 .
- 4) Explain the following types of relations with suitable examples.
 - i) transitive
 - ii) equivalence.

Is the relation $R = \{(x,y) : (x,y) \in A \times A, \text{ and } x \text{ is a sister of } y\}$ symmetric ?

- 5) Define power set $S_6 = \{a_1, a_2 \dots a_6\}$ find B_7 and B_{12} .
- 6) Let $A = \{1, 2, 3, 4\}$, $B = \{a, b, c\}$, $C = \{x, y, z\}$. Consider the relations R from A to B and S from B to C as follows : $R = \{(1, b), (3, a), (3, b), (4, c)\}$ and $S = \{(a, y), (c, x), (a, z)\}$
 - a) Draw the diagrams of R and S.
 - b) Find the matrix of each relation R, S (composition) $R \circ S$.
 - c) Write R^{-1} and the composition $R \circ S$ as sets of ordered Pairs.

3. Define partition and Covering of set with example of $\{a, b, c\}$. **8**

Set S



SECTION – II

4. Attempt **any 5** questions. **(4×5=20)**
- 1) Write short note on Functions.
 - 2) Draw the Hasse diagram for the lattice D_{18} consisting of the divisors of 18 with the partial order of divisibility.
 - 3) Define and explain Boolean functions for $(B, *, +, ', 0, 1)$.
 - 4) Explain Lattices properties.
 - 5) Define Group, Semi group and monoid with example.
 - 6) Consider $f : Z^+ \rightarrow Z^+$ defined by $f(a) = a^2$. Is f one-to-one ? Is f onto ? Why ?
5. What is Partially Ordered Set ? Let $S = \{c, b, a\}$ and $A = P(S)$. Draw the Hasse diagram of the poset A with the partial order \subseteq (set inclusion). **8**
-



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

Set

P

**S.E. (Information Technology) (Part – I) (Old CGPA Pattern)
Examination, 2017
ADVANCED C CONCEPTS**

Day and Date : Saturday, 16-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Attempt **all** questions from Section I and II.
 - 2) Figures to the **right** indicates **full** marks.
 - 3) Assume data **wherever** necessary.
 - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Chose correct options :

14

1) Comment on the output of following code :

```
#include <stdio.h>
main ()
{
    char *p = 0;
    *p = 'a';
    printf ("value in pointer p is %c\n", *p);
}
```

- a) It will print a b) It will print 0 c) Compile time error d) Run time error

2) What is the output of this C code ?

```
# include <stdio.h>
main ()
{
    if (sizeof (int) > -1)
        printf ("True");
    else
        printf ("False");
}
```

- a) True b) False

3) What is the output of this C code ?

```
# include <stdio.h>
main ()
{
    char *p = "Sanfoundry C-Test";
    p[0] = 'a';
    p[1] = 'b';
    printf ("%s", p);
}
```

- a) abnfoundry C-Test b) sanfoundry C-Test
c) compile time error d) run time error

P.T.O.



- 4) Which among the following is odd one out ?
a) printf b) fprintf c) putchar d) scanf
- 5) For a typical program, the input is taken using
a) scanf b) files
c) command-line d) none of the mentioned
- 6) What is the default return-type of getchar() ?
a) char
b) int
c) char*
d) reading character doesn't require a return-type
- 7) The value of EOF is
a) -1 b) 0 c) 1 d) 10
- 8) What is the use of getchar() ?
a) The next input character each time it is called
b) EOF when it encounters end of file
c) Both a) and b)
d) None of the mentioned
- 9) What is the use of putchar () ?
a) The character written b) EOF is an error occurs
c) Nothing d) Both a) and b)
- 10) What is the output of this C code ?
include <stdio.h>
int x = 5;
void main ()
{
 int x = 3;
 printf(“%d”, x);
 {
 x = 4;
 }
 printf(“%d”, x);
}
- a) Run time error b) 3 3 c) 3 5 d) 3 4
- 11) Functions in C are always
a) Internal
b) External
c) Both Internal and External
d) External and Internal are not valid terms for functions
- 12) The complexity of merge sort algorithm is
a) $O(n)$ b) $O(\log n)$ c) $O(n^2)$ d) $O(n \log n)$
- 13) _____ sorting algorithm is frequently used when n is small where n is total number of elements.
a) Heap b) Insertion c) Bubble d) Quick
- 14) Which of the following is not possible in C ?
a) Array of function pointer b) Returning a function pointer
c) Comparison of function pointer d) None of the mentioned



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

**S.E. (Information Technology) (Part – I) (Old CGPA Pattern)
Examination, 2017
ADVANCED C CONCEPTS**

Day and Date : Saturday, 16-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :**
- 1) Attempt **all** questions from Section I and II.
 - 2) Figures to the **right** indicates **full** marks.
 - 3) Assume data **wherever** necessary.

SECTION – I

2. Solve **any four** of the following : **(3×4=12)**
- a) Explain library string functions.
 - b) Define the functions : (i) fwrite() (ii) fread(). Write their syntax.
 - c) Write an algorithm to generate Fibonacci series.
 - d) Explain the following statements :
 - i) getchar()
 - ii) putchar()
 - e) When passing parameters to functions, explain the difference between pass-by-value and pass-by-reference.
3. Solve **any one** : **8**
- a) Write a program to copy the contents of one string to another string using a pointer method.
 - b) Write a program to read a set of values from the keyboard using a pointer structure operator and to display the contents of the structure onto the screen.
4. Solve **any one** : **8**
- a) Write a recursive function in C to compute the value of X^n where n is a positive integer and X has a real value.
 - b) Write a C function for searching an element in an array of size N. Assume that elements in array are stored in ascending order.

Set P



SECTION – II

5. Solve **any four** of the following : **(3×4=12)**
- a) What is file ? Explain any three file operations.
 - b) What is big-O notation ? Explain it's significance.
 - c) Describe the concept of binary search technique. Is it efficient than sequential search.
 - d) What is the time complexity of the quick sort algorithm to sort a list of n equal elements ?
 - e) What is the difference between internal sorting and external sorting ?
6. Solve **any one** : **8**
- a) Sort the following elements in ascending order using insertion sort. Show the step by step process.
65, 76, 10, 87, 98, 21, 32, 43, 54, 76, 2, 3, 4.
 - b) Write a C program to create file called emprec.c and store information about a person, in terms of his name, age, salary and display the same information appropriately.
7. Write a C program to sort a list of elements using bubble sort and find out its time complexity. **8**
-



SLR-TJ – 297

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

Set **Q**

**S.E. (Information Technology) (Part – I) (Old CGPA Pattern)
Examination, 2017
ADVANCED C CONCEPTS**

Day and Date : Saturday, 16-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Attempt **all** questions from Section I and II.
 - 2) Figures to the **right** indicates **full** marks.
 - 3) Assume data **wherever** necessary.
 - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Chose correct options :

14

- 1) What is the use of getchar() ?
 - a) The next input character each time it is called
 - b) EOF when it encounters end of file
 - c) Both a) and b)
 - d) None of the mentioned
- 2) What is the use of putchar () ?
 - a) The character written
 - b) EOF is an error occurs
 - c) Nothing
 - d) Both a) and b)
- 3) What is the output of this C code ?

```
# include <stdio.h>
int x = 5;
void main ()
{
    int x = 3;
    printf(“%d”, x);
    {
        x = 4;
    }
    printf(“%d”, x);
}
```

 - a) Run time error
 - b) 3 3
 - c) 3 5
 - d) 3 4
- 4) Functions in C are always
 - a) Internal
 - b) External
 - c) Both Internal and External
 - d) External and Internal are not valid terms for functions
- 5) The complexity of merge sort algorithm is
 - a) O(n)
 - b) O(log n)
 - c) O(n²)
 - d) O (n log n)

P.T.O.



- 6) _____ sorting algorithm is frequently used when n is small where n is total number of elements.
a) Heap b) Insertion c) Bubble d) Quick
- 7) Which of the following is not possible in C ?
a) Array of function pointer b) Returning a function pointer
c) Comparison of function pointer d) None of the mentioned
- 8) Comment on the output of following code :
#include <stdio.h>
main ()
{
 char *p = 0;
 *p = 'a';
 printf ("value in pointer p is %c\n", *p);
}
- a) It will print a b) It will print 0 c) Compile time error d) Run time error
- 9) What is the output of this C code ?
include <stdio.h>
main ()
{
 if (sizeof (int) > -1)
 printf ("True");
 else
 printf ("False");
}
- a) True b) False
- 10) What is the output of this C code ?
include <stdio.h>
main ()
{
 char *p = "Sanfoundry C-Test";
 p[0] = 'a';
 p[1] = 'b';
 printf ("%s", p);
}
- a) abnfoundry C-Test b) sanfoundry C-Test
c) compile time error d) run time error
- 11) Which among the following is odd one out ?
a) printf b) fprintf c) putchar d) scanf
- 12) For a typical program, the input is taken using
a) scanf b) files
c) command-line d) none of the mentioned
- 13) What is the default return-type of getchar() ?
a) char
b) int
c) char*
d) reading character doesn't require a return-type
- 14) The value of EOF is
a) - 1 b) 0 c) 1 d) 10
-



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

**S.E. (Information Technology) (Part – I) (Old CGPA Pattern)
Examination, 2017
ADVANCED C CONCEPTS**

Day and Date : Saturday, 16-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :**
- 1) Attempt **all** questions from Section I and II.
 - 2) Figures to the **right** indicates **full** marks.
 - 3) Assume data **wherever** necessary.

SECTION – I

2. Solve **any four** of the following : **(3×4=12)**
- a) Explain library string functions.
 - b) Define the functions : (i) fwrite() (ii) fread(). Write their syntax.
 - c) Write an algorithm to generate Fibonacci series.
 - d) Explain the following statements :
 - i) getchar()
 - ii) putchar()
 - e) When passing parameters to functions, explain the difference between pass-by-value and pass-by-reference.
3. Solve **any one** : **8**
- a) Write a program to copy the contents of one string to another string using a pointer method.
 - b) Write a program to read a set of values from the keyboard using a pointer structure operator and to display the contents of the structure onto the screen.
4. Solve **any one** : **8**
- a) Write a recursive function in C to compute the value of X^n where n is a positive integer and X has a real value.
 - b) Write a C function for searching an element in an array of size N. Assume that elements in array are stored in ascending order.

Set Q



SECTION – II

5. Solve **any four** of the following : **(3×4=12)**
- a) What is file ? Explain any three file operations.
 - b) What is big-O notation ? Explain it's significance.
 - c) Describe the concept of binary search technique. Is it efficient than sequential search.
 - d) What is the time complexity of the quick sort algorithm to sort a list of n equal elements ?
 - e) What is the difference between internal sorting and external sorting ?
6. Solve **any one** : **8**
- a) Sort the following elements in ascending order using insertion sort. Show the step by step process.
65, 76, 10, 87, 98, 21, 32, 43, 54, 76, 2, 3, 4.
 - b) Write a C program to create file called emprec.c and store information about a person, in terms of his name, age, salary and display the same information appropriately.
7. Write a C program to sort a list of elements using bubble sort and find out its time complexity. **8**
-



SLR-TJ – 297

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

Set **R**

**S.E. (Information Technology) (Part – I) (Old CGPA Pattern)
Examination, 2017
ADVANCED C CONCEPTS**

Day and Date : Saturday, 16-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Attempt **all** questions from Section I and II.
 - 2) Figures to the **right** indicates **full** marks.
 - 3) Assume data **wherever** necessary.
 - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Chose correct options :

14

- 1) For a typical program, the input is taken using
 - a) scanf
 - b) files
 - c) command-line
 - d) none of the mentioned
- 2) What is the default return-type of getchar() ?
 - a) char
 - b) int
 - c) char*
 - d) reading character doesn't require a return-type
- 3) The value of EOF is
 - a) -1
 - b) 0
 - c) 1
 - d) 10
- 4) What is the use of getchar() ?
 - a) The next input character each time it is called
 - b) EOF when it encounters end of file
 - c) Both a) and b)
 - d) None of the mentioned
- 5) What is the use of putchar () ?
 - a) The character written
 - b) EOF is an error occurs
 - c) Nothing
 - d) Both a) and b)
- 6) What is the output of this C code ?

```
# include <stdio.h>
int x = 5;
void main ()
{
    int x = 3;
    printf("%d", x);
    {
        x = 4;
    }
    printf("%d", x);
}
```

 - a) Run time error
 - b) 3 3
 - c) 3 5
 - d) 3 4

P.T.O.



- 7) Functions in C are always
 a) Internal
 b) External
 c) Both Internal and External
 d) External and Internal are not valid terms for functions
- 8) The complexity of merge sort algorithm is
 a) $O(n)$ b) $O(\log n)$ c) $O(n^2)$ d) $O(n \log n)$
- 9) _____ sorting algorithm is frequently used when n is small where n is total number of elements.
 a) Heap b) Insertion c) Bubble d) Quick
- 10) Which of the following is not possible in C ?
 a) Array of function pointer b) Returning a function pointer
 c) Comparison of function pointer d) None of the mentioned
- 11) Comment on the output of following code :

```
#include <stdio.h>
main ()
{
    char *p = 0;
    *p = 'a';
    printf ("value in pointer p is %c\n", *p);
}
```

 a) It will print a b) It will print 0 c) Compile time error d) Run time error
- 12) What is the output of this C code ?

```
# include <stdio.h>
main ()
{
    if (sizeof (int) > -1)
        printf ("True");
    else
        printf ("False");
}
```

 a) True b) False
- 13) What is the output of this C code ?

```
# include <stdio.h>
main ()
{
    char *p = "Sanfoundry C-Test";
    p[0] = 'a';
    p[1] = 'b';
    printf ("%s", p);
}
```

 a) abnfoundry C-Test b) sanfoundry C-Test
 c) compile time error d) run time error
- 14) Which among the following is odd one out ?
 a) printf b) fprintf c) putchar d) scanf
-



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

**S.E. (Information Technology) (Part – I) (Old CGPA Pattern)
Examination, 2017
ADVANCED C CONCEPTS**

Day and Date : Saturday, 16-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :**
- 1) Attempt **all** questions from Section I and II.
 - 2) Figures to the **right** indicates **full** marks.
 - 3) Assume data **wherever** necessary.

SECTION – I

2. Solve **any four** of the following : **(3×4=12)**
- a) Explain library string functions.
 - b) Define the functions : (i) fwrite() (ii) fread(). Write their syntax.
 - c) Write an algorithm to generate Fibonacci series.
 - d) Explain the following statements :
 - i) getchar()
 - ii) putchar()
 - e) When passing parameters to functions, explain the difference between pass-by-value and pass-by-reference.
3. Solve **any one** : **8**
- a) Write a program to copy the contents of one string to another string using a pointer method.
 - b) Write a program to read a set of values from the keyboard using a pointer structure operator and to display the contents of the structure onto the screen.
4. Solve **any one** : **8**
- a) Write a recursive function in C to compute the value of X^n where n is a positive integer and X has a real value.
 - b) Write a C function for searching an element in an array of size N. Assume that elements in array are stored in ascending order.

Set R



SECTION – II

5. Solve **any four** of the following : **(3×4=12)**
- a) What is file ? Explain any three file operations.
 - b) What is big-O notation ? Explain it's significance.
 - c) Describe the concept of binary search technique. Is it efficient than sequential search.
 - d) What is the time complexity of the quick sort algorithm to sort a list of n equal elements ?
 - e) What is the difference between internal sorting and external sorting ?
6. Solve **any one** : **8**
- a) Sort the following elements in ascending order using insertion sort. Show the step by step process.
65, 76, 10, 87, 98, 21, 32, 43, 54, 76, 2, 3, 4.
 - b) Write a C program to create file called emprec.c and store information about a person, in terms of his name, age, salary and display the same information appropriately.
7. Write a C program to sort a list of elements using bubble sort and find out its time complexity. **8**
-



SLR-TJ – 297

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

Set

S

**S.E. (Information Technology) (Part – I) (Old CGPA Pattern)
Examination, 2017
ADVANCED C CONCEPTS**

Day and Date : Saturday, 16-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Attempt **all** questions from Section I and II.
 - 2) Figures to the **right** indicates **full** marks.
 - 3) Assume data **wherever** necessary.
 - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Chose correct options :

14

1) What is the output of this C code ?

```
# include <stdio.h>
int x = 5;
void main ()
{
    int x = 3;
    printf("%d", x);
    {
        x = 4;
    }
    printf("%d", x);
}
```

- a) Run time error b) 3 3 c) 3 5 d) 3 4
- 2) Functions in C are always
- a) Internal
 - b) External
 - c) Both Internal and External
 - d) External and Internal are not valid terms for functions
- 3) The complexity of merge sort algorithm is
- a) $O(n)$
 - b) $O(\log n)$
 - c) $O(n^2)$
 - d) $O(n \log n)$
- 4) _____ sorting algorithm is frequently used when n is small where n is total number of elements.
- a) Heap
 - b) Insertion
 - c) Bubble
 - d) Quick
- 5) Which of the following is not possible in C ?
- a) Array of function pointer
 - b) Returning a function pointer
 - c) Comparison of function pointer
 - d) None of the mentioned

P.T.O.



- 6) Comment on the output of following code :
- ```
#include <stdio.h>
main ()
{
 char *p = 0;
 *p = 'a';
 printf ("value in pointer p is %c\n", *p);
}
```
- a) It will print a            b) It will print 0            c) Compile time error            d) Run time error
- 7) What is the output of this C code ?
- ```
# include <stdio.h>
main ()
{
    if (sizeof (int) > -1)
        printf ("True");
    else
        printf ("False");
}
```
- a) True b) False
- 8) What is the output of this C code ?
- ```
include <stdio.h>
main ()
{
 char *p = "Sanfoundry C-Test";
 p[0] = 'a';
 p[1] = 'b';
 printf ("%s", p);
}
```
- a) abnfoundry C-Test                            b) sanfoundry C-Test  
c) compile time error                            d) run time error
- 9) Which among the following is odd one out ?
- a) printf                            b) fprintf                            c) putchar                            d) scanf
- 10) For a typical program, the input is taken using
- a) scanf                            b) files  
c) command-line                            d) none of the mentioned
- 11) What is the default return-type of getchar() ?
- a) char  
b) int  
c) char\*  
d) reading character doesn't require a return-type
- 12) The value of EOF is
- a) - 1                            b) 0                            c) 1                            d) 10
- 13) What is the use of getchar() ?
- a) The next input character each time it is called  
b) EOF when it encounters end of file  
c) Both a) and b)  
d) None of the mentioned
- 14) What is the use of putchar () ?
- a) The character written                            b) EOF is an error occurs  
c) Nothing                            d) Both a) and b)



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

**S.E. (Information Technology) (Part – I) (Old CGPA Pattern)  
Examination, 2017  
ADVANCED C CONCEPTS**

Day and Date : Saturday, 16-12-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :**
- 1) Attempt **all** questions from Section I and II.
  - 2) Figures to the **right** indicates **full** marks.
  - 3) Assume data **wherever** necessary.

SECTION – I

2. Solve **any four** of the following : **(3×4=12)**
- a) Explain library string functions.
  - b) Define the functions : (i) fwrite() (ii) fread(). Write their syntax.
  - c) Write an algorithm to generate Fibonacci series.
  - d) Explain the following statements :
    - i) getchar()
    - ii) putchar()
  - e) When passing parameters to functions, explain the difference between pass-by-value and pass-by-reference.
3. Solve **any one** : **8**
- a) Write a program to copy the contents of one string to another string using a pointer method.
  - b) Write a program to read a set of values from the keyboard using a pointer structure operator and to display the contents of the structure onto the screen.
4. Solve **any one** : **8**
- a) Write a recursive function in C to compute the value of  $X^n$  where n is a positive integer and X has a real value.
  - b) Write a C function for searching an element in an array of size N. Assume that elements in array are stored in ascending order.

**Set S**



## SECTION – II

5. Solve **any four** of the following : **(3×4=12)**
- a) What is file ? Explain any three file operations.
  - b) What is big-O notation ? Explain it's significance.
  - c) Describe the concept of binary search technique. Is it efficient than sequential search.
  - d) What is the time complexity of the quick sort algorithm to sort a list of n equal elements ?
  - e) What is the difference between internal sorting and external sorting ?
6. Solve **any one** : **8**
- a) Sort the following elements in ascending order using insertion sort. Show the step by step process.  
65, 76, 10, 87, 98, 21, 32, 43, 54, 76, 2, 3, 4.
  - b) Write a C program to create file called emprec.c and store information about a person, in terms of his name, age, salary and display the same information appropriately.
7. Write a C program to sort a list of elements using bubble sort and find out its time complexity. **8**
-





SLR- TJ – 298

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

Set **P**

**S.E. (Information Technology) (Part – I) Examination, 2017  
DIGITAL TECHNIQUES (Old)  
(CGPA)**

Day and Date : Tuesday, 19-12-2017

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) Which of the following respectively represent Associative Law, Commutative Law and Distributive Law ?

I)  $(X.Y) Z = X (Y. Z)$

II)  $X. Y = Y. X$

III)  $X (Y + Z) = XY + XZ$

a) I, III and II      b) II, I and III      c) III, II and I      d) I, II and III

2) A graphical display of the fundamental products in a truth-table is known as

a) Arc-map

b) Computer graphics

c) T-map

d) Karnaugh-map

3) \_\_\_\_\_ is the dual for  $P + PR = P$ .

a)  $P(PR) = P$

b)  $P(P + R) = \bar{P}$

c)  $P(PR) = \bar{R}$

d)  $P(P + R) = P$

4) The 2's complement of the number of 1010101

a) 0101011

b) 0101010

c) 1101010

d) 1110011

5) FLIP-FLOP is a \_\_\_\_\_ element and how is a J-K flip-flop made to toggle ?

a) Memory and  $J = 0, K = 0$

b) Circuit and  $J = 1, K = 0$

c) Circuit and  $J = 0, K = 1$

d) Memory and  $J = 1, K = 1$

P.T.O.



- 6) With regard to a D latch, \_\_\_\_\_
- The Q output follows the D input when EN is LOW
  - The Q output is opposite the D input when EN is LOW
  - The Q output follows the D input when EN is HIGH
  - The Q output is HIGH regardless of EN's input state
- 7) Asynchronous inputs will cause the flip-flop to respond immediately with regard to the clock input.
- True
  - False
- 8) The device which changes from serial data to parallel data is
- Counter
  - Multiplexer
  - Demultiplexer
  - Flip-Flop
- 9) A device which converts BCD to seven segment is called
- Encoder
  - Decoder
  - Multiplexer
  - Demultiplexer
- 10) EPROM contents can be erased by exposing it to
- Ultraviolet rays
  - Infrared rays
  - Burst of microwaves
  - Intense heat radiations
- 11) In a RAM, information can be stored
- By the user, number of times
  - By the user, only once
  - By the manufacturer, a number of times
  - By the manufacture only once
- 12) Which of the following memories stores the most number of bits
- a  $5\text{ M} \times 8$  memory
  - a  $1\text{ M} \times 16$  memory
  - a  $5\text{ M} \times 4$  memory
  - a  $1\text{ M} \times 12$  memory
- 13) The following VHDL ENTITY declaration code is incorrect because :
- ```
Entity boolean2 IS
  PORT (A,B,C,D,E: INstd_logic;
        X : OUT std_logic);
END boolean 1;
```
- It has too many inputs
 - Missing ENTITY name
 - Missing "PORT END"
 - Mismatch in the ENTITY name
- 14) In VHDL, the mode of a port does not define
- An input
 - An output
 - Both an input and an output
 - The type of the bit



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

**S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL TECHNIQUES (Old)
(CGPA)**

Day and Date : Tuesday, 19-12-2017

Marks : 56

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

SECTION – I

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

a) Minimise the following expressions using K-maps and realise using NOR gates only.

$$f_1(A, B, C, D) = \prod M(1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15)$$

b) Explain Arithmetic Logic Unit using 74181 IC.

c) Simplify the following expression by considering Don't care conditions.

$$y = \sum m(1, 4, 8, 9, 11, 15) + d(0, 3, 14)$$

d) Design full adder using NAND gates.

3. Attempt **any two** : **(8×2=16)**

a) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.

b) What is a Flip-Flop ? What are the types of Flip Flops ? Explain Excitation table for Flip Flops.

c) Design and explain Asynchronous Up-down counter in detail.



SECTION – II

4. Answer **any three** questions of the following. **(4×3=12)**
- a) Using a suitable logic diagram explain the working of multiplexer.
 - b) What is a decoder ? Discuss the differences between a demultiplexer and a decoder.
 - c) Distinguish between ROM, PROM, EPROM and EEPROM.
 - d) Describe combinational circuits using VHDL with an example.
5. Answer **any two** of the following questions : **(8×2=16)**
- a) Distinguish between combinational logic circuits and sequential logic circuits. How are the design requirements of combinational circuits specified ?
 - b) Explain the organization of the memory with diagram and list out the memory operations.
 - c) Write VHDL program for implementing full adder and full subtracter.
-



SLR- TJ – 298

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

Set

Q

**S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL TECHNIQUES (Old)
(CGPA)**

Day and Date : Tuesday, 19-12-2017

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) The device which changes from serial data to parallel data is
 - a) Counter
 - b) Multiplexer
 - c) Demultiplexer
 - d) Flip-Flop
- 2) A device which converts BCD to seven segment is called
 - a) Encoder
 - b) Decoder
 - c) Multiplexer
 - d) Demultiplexer
- 3) EPROM contents can be erased by exposing it to
 - a) Ultraviolet rays
 - b) Infrared rays
 - c) Burst of microwaves
 - d) Intense heat radiations
- 4) In a RAM, information can be stored
 - a) By the user, number of times
 - b) By the user, only once
 - c) By the manufacturer, a number of times
 - d) By the manufacture only once
- 5) Which of the following memories stores the most number of bits
 - a) a 5 M × 8 memory
 - b) a 1 M × 16 memory
 - c) a 5 M × 4 memory
 - d) a 1 M × 12 memory
- 6) The following VHDL ENTITY declaration code is incorrect because :
Entity boolean2 IS
PORT (A,B,C,D,E: INstd_logic;
X : OUT std_logic);
END boolean 1;
 - a) It has too many inputs
 - b) Missing ENTITY name
 - c) Missing "PORT END"
 - d) Mismatch in the ENTITY name

P.T.O.



- 7) In VHDL, the mode of a port does not define
- a) An input
 - b) An output
 - c) Both an input and an output
 - d) The type of the bit
- 8) Which of the following respectively represent Associative Law, Commutative Law and Distributive Law ?
- I) $(X.Y) Z = X (Y. Z)$
 - II) $X. Y = Y. X$
 - III) $X (Y + Z) = XY + XZ$
- a) I, III and II
 - b) II, I and III
 - c) III, II and I
 - d) I, II and III
- 9) A graphical display of the fundamental products in a truth-table is known as
- a) Arc-map
 - b) Computer graphics
 - c) T-map
 - d) Karnaugh-map
- 10) _____ is the dual for $P + PR = P$.
- a) $P(PR) = P$
 - b) $P(P + R) = \bar{P}$
 - c) $P(PR) = \bar{R}$
 - d) $P(P + R) = P$
- 11) The 2's complement of the number of 1010101
- a) 0101011
 - b) 0101010
 - c) 1101010
 - d) 1110011
- 12) FLIP-FLOP is a _____ element and how is a J-K flip-flop made to toggle ?
- a) Memory and $J = 0, K = 0$
 - b) Circuit and $J = 1, K = 0$
 - c) Circuit and $J = 0, K = 1$
 - d) Memory and $J = 1, K = 1$
- 13) With regard to a D latch, _____
- a) The Q output follows the D input when EN is LOW
 - b) The Q output is opposite the D input when EN is LOW
 - c) The Q output follows the D input when EN is HIGH
 - d) The Q output is HIGH regardless of EN's input state
- 14) Asynchronous inputs will cause the flip-flop to respond immediately with regard to the clock input.
- a) True
 - b) False
-



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

**S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL TECHNIQUES (Old)
(CGPA)**

Day and Date : Tuesday, 19-12-2017

Marks : 56

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

SECTION – I

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

a) Minimise the following expressions using K-maps and realise using NOR gates only.

$$f_1(A, B, C, D) = \prod M(1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15)$$

b) Explain Arithmetic Logic Unit using 74181 IC.

c) Simplify the following expression by considering Don't care conditions.

$$y = \sum m(1, 4, 8, 9, 11, 15) + d(0, 3, 14)$$

d) Design full adder using NAND gates.

3. Attempt **any two** : **(8×2=16)**

a) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.

b) What is a Flip-Flop ? What are the types of Flip Flops ? Explain Excitation table for Flip Flops.

c) Design and explain Asynchronous Up-down counter in detail.



SECTION – II

4. Answer **any three** questions of the following. **(4×3=12)**
- a) Using a suitable logic diagram explain the working of multiplexer.
 - b) What is a decoder ? Discuss the differences between a demultiplexer and a decoder.
 - c) Distinguish between ROM, PROM, EPROM and EEPROM.
 - d) Describe combinational circuits using VHDL with an example.
5. Answer **any two** of the following questions : **(8×2=16)**
- a) Distinguish between combinational logic circuits and sequential logic circuits. How are the design requirements of combinational circuits specified ?
 - b) Explain the organization of the memory with diagram and list out the memory operations.
 - c) Write VHDL program for implementing full adder and full subtracter.
-



SLR- TJ – 298

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

Set **R**

**S.E. (Information Technology) (Part – I) Examination, 2017
DIGITAL TECHNIQUES (Old)
(CGPA)**

Day and Date : Tuesday, 19-12-2017

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) FLIP-FLOP is a _____ element and how is a J-K flip-flop made to toggle ?

- a) Memory and $J = 0, K = 0$ b) Circuit and $J = 1, K = 0$
c) Circuit and $J = 0, K = 1$ d) Memory and $J = 1, K = 1$

2) With regard to a D latch, _____
a) The Q output follows the D input when EN is LOW

- b) The Q output is opposite the D input when EN is LOW
c) The Q output follows the D input when EN is HIGH
d) The Q output is HIGH regardless of EN's input state

3) Asynchronous inputs will cause the flip-flop to respond immediately with regard to the clock input.

- a) True b) False

4) The device which changes from serial data to parallel data is

- a) Counter b) Multiplexer c) Demultiplexer d) Flip-Flop

5) A device which converts BCD to seven segment is called

- a) Encoder b) Decoder c) Multiplexer d) Demultiplexer

6) EPROM contents can be erased by exposing it to

- a) Ultraviolet rays b) Infrared rays
c) Burst of microwaves d) Intense heat radiations

P.T.O.



- 7) In a RAM, information can be stored
- By the user, number of times
 - By the user, only once
 - By the manufacturer, a number of times
 - By the manufacture only once
- 8) Which of the following memories stores the most number of bits
- a $5\text{ M} \times 8$ memory
 - a $1\text{ M} \times 16$ memory
 - a $5\text{ M} \times 4$ memory
 - a $1\text{ M} \times 12$ memory
- 9) The following VHDL ENTITY declaration code is incorrect because :
- ```
Entity boolean2 IS
 PORT (A,B,C,D,E: INstd_logic;
 X : OUT std_logic);
END boolean 1;
```
- It has too many inputs
  - Missing ENTITY name
  - Missing "PORT END"
  - Mismatch in the ENTITY name
- 10) In VHDL, the mode of a port does not define
- An input
  - An output
  - Both an input and an output
  - The type of the bit
- 11) Which of the following respectively represent Associative Law, Commutative Law and Distributive Law ?
- $(X.Y) Z = X (Y. Z)$
  - $X. Y = Y. X$
  - $X (Y + Z) = XY + XZ$
- I, III and II
  - II, I and III
  - III, II and I
  - I, II and III
- 12) A graphical display of the fundamental products in a truth-table is known as
- Arc-map
  - Computer graphics
  - T-map
  - Karnaugh-map
- 13) \_\_\_\_\_ is the dual for  $P + PR = P$ .
- $P(PR) = P$
  - $P(P + R) = \bar{P}$
  - $P(PR) = \bar{R}$
  - $P(P + R) = P$
- 14) The 2's complement of the number of 1010101
- 0101011
  - 0101010
  - 1101010
  - 1110011



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

**S.E. (Information Technology) (Part – I) Examination, 2017  
DIGITAL TECHNIQUES (Old)  
(CGPA)**

Day and Date : Tuesday, 19-12-2017

Marks : 56

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

**SECTION – I**

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

a) Minimise the following expressions using K-maps and realise using NOR gates only.

$$f_1(A, B, C, D) = \prod M(1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15)$$

b) Explain Arithmetic Logic Unit using 74181 IC.

c) Simplify the following expression by considering Don't care conditions.

$$y = \sum m(1, 4, 8, 9, 11, 15) + d(0, 3, 14)$$

d) Design full adder using NAND gates.

3. Attempt **any two** : **(8×2=16)**

a) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.

b) What is a Flip-Flop ? What are the types of Flip Flops ? Explain Excitation table for Flip Flops.

c) Design and explain Asynchronous Up-down counter in detail.



## SECTION – II

4. Answer **any three** questions of the following. **(4×3=12)**
- a) Using a suitable logic diagram explain the working of multiplexer.
  - b) What is a decoder ? Discuss the differences between a demultiplexer and a decoder.
  - c) Distinguish between ROM, PROM, EPROM and EEPROM.
  - d) Describe combinational circuits using VHDL with an example.
5. Answer **any two** of the following questions : **(8×2=16)**
- a) Distinguish between combinational logic circuits and sequential logic circuits. How are the design requirements of combinational circuits specified ?
  - b) Explain the organization of the memory with diagram and list out the memory operations.
  - c) Write VHDL program for implementing full adder and full subtracter.
-



SLR- TJ – 298

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

Set **S**

**S.E. (Information Technology) (Part – I) Examination, 2017  
DIGITAL TECHNIQUES (Old)  
(CGPA)**

Day and Date : Tuesday, 19-12-2017

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) EPROM contents can be erased by exposing it to
  - a) Ultraviolet rays
  - b) Infrared rays
  - c) Burst of microwaves
  - d) Intense heat radiations
- 2) In a RAM, information can be stored
  - a) By the user, number of times
  - b) By the user, only once
  - c) By the manufacturer, a number of times
  - d) By the manufacture only once
- 3) Which of the following memories stores the most number of bits
  - a) a 5 M × 8 memory
  - b) a 1 M × 16 memory
  - c) a 5 M × 4 memory
  - d) a 1 M × 12 memory
- 4) The following VHDL ENTITY declaration code is incorrect because :  
Entity boolean2 IS  
PORT (A,B,C,D,E: INstd\_logic;  
X : OUT std\_logic);  
END boolean 1;
  - a) It has too many inputs
  - b) Missing ENTITY name
  - c) Missing "PORT END"
  - d) Mismatch in the ENTITY name

P.T.O.



- 5) In VHDL, the mode of a port does not define
- a) An input
  - b) An output
  - c) Both an input and an output
  - d) The type of the bit
- 6) Which of the following respectively represent Associative Law, Commutative Law and Distributive Law ?
- I)  $(X.Y) Z = X (Y. Z)$
  - II)  $X. Y = Y. X$
  - III)  $X (Y + Z) = XY + XZ$
- a) I, III and II
  - b) II, I and III
  - c) III, II and I
  - d) I, II and III
- 7) A graphical display of the fundamental products in a truth-table is known as
- a) Arc-map
  - b) Computer graphics
  - c) T-map
  - d) Karnaugh-map
- 8) \_\_\_\_\_ is the dual for  $P + PR = P$ .
- a)  $P(PR) = P$
  - b)  $P(P + R) = \bar{P}$
  - c)  $P(PR) = \bar{R}$
  - d)  $P(P + R) = P$
- 9) The 2's complement of the number of 1010101
- a) 0101011
  - b) 0101010
  - c) 1101010
  - d) 1110011
- 10) FLIP-FLOP is a \_\_\_\_\_ element and how is a J-K flip-flop made to toggle ?
- a) Memory and  $J = 0, K = 0$
  - b) Circuit and  $J = 1, K = 0$
  - c) Circuit and  $J = 0, K = 1$
  - d) Memory and  $J = 1, K = 1$
- 11) With regard to a D latch, \_\_\_\_\_
- a) The Q output follows the D input when EN is LOW
  - b) The Q output is opposite the D input when EN is LOW
  - c) The Q output follows the D input when EN is HIGH
  - d) The Q output is HIGH regardless of EN's input state
- 12) Asynchronous inputs will cause the flip-flop to respond immediately with regard to the clock input.
- a) True
  - b) False
- 13) The device which changes from serial data to parallel data is
- a) Counter
  - b) Multiplexer
  - c) Demultiplexer
  - d) Flip-Flop
- 14) A device which converts BCD to seven segment is called
- a) Encoder
  - b) Decoder
  - c) Multiplexer
  - d) Demultiplexer



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

**S.E. (Information Technology) (Part – I) Examination, 2017  
DIGITAL TECHNIQUES (Old)  
(CGPA)**

Day and Date : Tuesday, 19-12-2017

Marks : 56

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

**SECTION – I**

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

a) Minimise the following expressions using K-maps and realise using NOR gates only.

$$f_1(A, B, C, D) = \prod M(1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15)$$

b) Explain Arithmetic Logic Unit using 74181 IC.

c) Simplify the following expression by considering Don't care conditions.

$$y = \sum m(1, 4, 8, 9, 11, 15) + d(0, 3, 14)$$

d) Design full adder using NAND gates.

3. Attempt **any two** : **(8×2=16)**

a) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.

b) What is a Flip-Flop ? What are the types of Flip Flops ? Explain Excitation table for Flip Flops.

c) Design and explain Asynchronous Up-down counter in detail.



## SECTION – II

4. Answer **any three** questions of the following. **(4×3=12)**
- a) Using a suitable logic diagram explain the working of multiplexer.
  - b) What is a decoder ? Discuss the differences between a demultiplexer and a decoder.
  - c) Distinguish between ROM, PROM, EPROM and EEPROM.
  - d) Describe combinational circuits using VHDL with an example.
5. Answer **any two** of the following questions : **(8×2=16)**
- a) Distinguish between combinational logic circuits and sequential logic circuits. How are the design requirements of combinational circuits specified ?
  - b) Explain the organization of the memory with diagram and list out the memory operations.
  - c) Write VHDL program for implementing full adder and full subtracter.
-





SLR-TJ – 299

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

|     |          |
|-----|----------|
| Set | <b>P</b> |
|-----|----------|

**S.E. (I.T.) (Part – I) (Old – CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) **Do not use pen to draw and label the diagrams.**  
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) The process of determining the appropriate pixels for representing picture or graphics object is known as
    - a) Conversion
    - b) Rasterization
    - c) Transformations
    - d) None of the above
  - 2) The process of introducing changes in the shape size and orientation of the object is called as
    - a) Transformation
    - b) Projections
    - c) Surface removal
    - d) Clipping
  - 3) \_\_\_\_\_ is repositioning the co-ordinates along a circular path, in the x-y plane by making an angle with the axes.
    - a) Combined transformation
    - b) Rotation
    - c) Scaling
    - d) Translation
  - 4) Two basic technique used for producing color display are Beam penetration technique and
    - a) Front dark technique
    - b) Shadow mask technique
    - c) Ray penetration technique
    - d) None of the above
  - 5) LCD stands for
    - a) Liquid Core Display
    - b) Liquid Crystal Display
    - c) Liquid Crystal Diagram
    - d) None of these

P.T.O.



- 6) The algorithm used for filling the interior of a polygon is called
- a) Flood fill algorithm                      b) Boundary fill algorithm  
c) Scan line polygon fill algorithm      d) None of these
- 7) The side effect of scan conversion is
- a) Aliasing                                      b) Anti aliasing  
c) Both a) and b)                              d) None of these
- 8) Z-Buffer algorithm is developed by
- a) Go Che Leong    b) Warnock                      c) Cohen                      d) Catmull
- 9) The problems of hidden surface are
- a) Removal of hidden surface              b) Identification of hidden surface  
c) Both a) and b)                              d) None of these
- 10) A two-dimensional array contain the details of all the segment are called
- a) Segmentation table                      b) Segment name  
c) Operation                                      d) None of these
- 11) \_\_\_\_\_ is a flexible strip that is used to produce smooth curve using a set of point.
- a) Spline                                              b) Scan-line method  
c) Depth-sorting method                      d) None of these
- 12) In which transformation the shape of an object can be modified in x-direction, y-direction as well as in both the direction depending upon the value assigned to shearing variables
- a) Reflection              b) Shearing              c) Rotation              d) Scaling
- 13) Two dimensional color model are
- a) RGB and CMKY                              b) RBG and CYMK  
c) RGB and CMYK                              d) None
- 14) Several graphics image file formats that are used by most of graphics system are
- a) GIF                              b) JPEG                              c) TIFF                              d) All of these
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**S.E. (I.T.) (Part – I) (Old – CGPA) Examination, 2017**  
**COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017

Marks : 56

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

- 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 four** of the following : **16**
- a) What is DDA ? Write stepwise algorithm for DDA.
  - b) Explain rotation about an arbitrary point.
  - c) Differentiate between Random Scan and Raster Scan.
  - d) Short note on Color Models.
  - e) Short note on 3D Scaling.
3. Answer **any two** of the following : **12**
- a) Consider the line coordinates (0, 0) and (6, 4). Rasterize the line segment using Bresenham's algorithm.
  - b) Explain 2D :
    - i) Translation
    - ii) Rotation
    - iii) Scaling with matrix and diagram.
  - c) Explain the working of CRT in detail with diagram.



## SECTION – II

4. Attempt **any four** of the following : **16**
- a) What is compression ? Explain Lossy and Lossless compression.
  - b) Explain Bezier curve and its properties.
  - c) Short note : Anti aliasing and half toning.
  - d) Define multimedia and elements and need of multimedia.
  - e) Explain viewing transformation.
5. Answer **any two** of the following : **12**
- a) What is clipping ? Explain working of Sutherland-Cohen line clipping algorithm in detail.
  - b) Explain Warnock algorithm.
  - c) Short note :
    - i) GIF
    - ii) JPEG.
-



SLR-TJ – 299

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

|     |   |
|-----|---|
| Set | Q |
|-----|---|

**S.E. (I.T.) (Part – I) (Old – CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) **Do not use pen to draw and label the diagrams.**  
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) Z-Buffer algorithm is developed by  
a) Go Che Leong    b) Warnock    c) Cohen    d) Catmull
  - 2) The problems of hidden surface are  
a) Removal of hidden surface    b) Identification of hidden surface  
c) Both a) and b)    d) None of these
  - 3) A two-dimensional array contain the details of all the segment are called  
a) Segmentation table    b) Segment name  
c) Operation    d) None of these
  - 4) \_\_\_\_\_ is a flexible strip that is used to produce smooth curve using a set of point.  
a) Spline    b) Scan-line method  
c) Depth-sorting method    d) None of these
  - 5) In which transformation the shape of an object can be modified in x-direction, y-direction as well as in both the direction depending upon the value assigned to shearing variables  
a) Reflection    b) Shearing  
c) Rotation    d) Scaling
  - 6) Two dimensional color model are  
a) RGB and CMKY    b) RBG and CYMK  
c) RGB and CMYK    d) None

P.T.O.



- 7) Several graphics image file formats that are used by most of graphics system are  
a) GIF                      b) JPEG                      c) TIFF                      d) All of these
- 8) The process of determining the appropriate pixels for representing picture or graphics object is known as  
a) Conversion                      b) Rasterization  
c) Transformations                      d) None of the above
- 9) The process of introducing changes in the shape size and orientation of the object is called as  
a) Transformation                      b) Projections  
c) Surface removal                      d) Clipping
- 10) \_\_\_\_\_ is repositioning the co-ordinates along a circular path, in the x-y plane by making an angle with the axes.  
a) Combined transformation                      b) Rotation  
c) Scaling                      d) Translation
- 11) Two basic technique used for producing color display are Beam penetration technique and  
a) Front dark technique                      b) Shadow mask technique  
c) Ray penetration technique                      d) None of the above
- 12) LCD stands for  
a) Liquid Core Display                      b) Liquid Crystal Display  
c) Liquid Crystal Diagram                      d) None of these
- 13) The algorithm used for filling the interior of a polygon is called  
a) Flood fill algorithm                      b) Boundary fill algorithm  
c) Scan line polygon fill algorithm                      d) None of these
- 14) The side effect of scan conversion is  
a) Aliasing                      b) Anti aliasing  
c) Both a) and b)                      d) None of these
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**S.E. (I.T.) (Part – I) (Old – CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017

Marks : 56

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

- 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 four** of the following : **16**
- a) What is DDA ? Write stepwise algorithm for DDA.
  - b) Explain rotation about an arbitrary point.
  - c) Differentiate between Random Scan and Raster Scan.
  - d) Short note on Color Models.
  - e) Short note on 3D Scaling.
3. Answer **any two** of the following : **12**
- a) Consider the line coordinates (0, 0) and (6, 4). Rasterize the line segment using Bresenham's algorithm.
  - b) Explain 2D :
    - i) Translation
    - ii) Rotation
    - iii) Scaling with matrix and diagram.
  - c) Explain the working of CRT in detail with diagram.



## SECTION – II

4. Attempt **any four** of the following : **16**
- a) What is compression ? Explain Lossy and Lossless compression.
  - b) Explain Bezier curve and its properties.
  - c) Short note : Anti aliasing and half toning.
  - d) Define multimedia and elements and need of multimedia.
  - e) Explain viewing transformation.
5. Answer **any two** of the following : **12**
- a) What is clipping ? Explain working of Sutherland-Cohen line clipping algorithm in detail.
  - b) Explain Warnock algorithm.
  - c) Short note :
    - i) GIF
    - ii) JPEG.
-





SLR-TJ – 299

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

|     |          |
|-----|----------|
| Set | <b>R</b> |
|-----|----------|

**S.E. (I.T.) (Part – I) (Old – CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) **Do not use pen to draw and label the diagrams.**  
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) LCD stands for
    - a) Liquid Core Display
    - b) Liquid Crystal Display
    - c) Liquid Crystal Diagram
    - d) None of these
  - 2) The algorithm used for filling the interior of a polygon is called
    - a) Flood fill algorithm
    - b) Boundary fill algorithm
    - c) Scan line polygon fill algorithm
    - d) None of these
  - 3) The side effect of scan conversion is
    - a) Aliasing
    - b) Anti aliasing
    - c) Both a) and b)
    - d) None of these
  - 4) Z-Buffer algorithm is developed by
    - a) Go Che Leong
    - b) Warnock
    - c) Cohen
    - d) Catmull
  - 5) The problems of hidden surface are
    - a) Removal of hidden surface
    - b) Identification of hidden surface
    - c) Both a) and b)
    - d) None of these
  - 6) A two-dimensional array contain the details of all the segment are called
    - a) Segmentation table
    - b) Segment name
    - c) Operation
    - d) None of these

P.T.O.



- 7) \_\_\_\_\_ is a flexible strip that is used to produce smooth curve using a set of point.
- a) Spline
  - b) Scan-line method
  - c) Depth-sorting method
  - d) None of these
- 8) In which transformation the shape of an object can be modified in x-direction, y-direction as well as in both the direction depending upon the value assigned to shearing variables
- a) Reflection
  - b) Shearing
  - c) Rotation
  - d) Scaling
- 9) Two dimensional color model are
- a) RGB and CMKY
  - b) RBG and CYMK
  - c) RGB and CMYK
  - d) None
- 10) Several graphics image file formats that are used by most of graphics system are
- a) GIF
  - b) JPEG
  - c) TIFF
  - d) All of these
- 11) The process of determining the appropriate pixels for representing picture or graphics object is known as
- a) Conversion
  - b) Rasterization
  - c) Transformations
  - d) None of the above
- 12) The process of introducing changes in the shape size and orientation of the object is called as
- a) Transformation
  - b) Projections
  - c) Surface removal
  - d) Clipping
- 13) \_\_\_\_\_ is repositioning the co-ordinates along a circular path, in the x-y plane by making an angle with the axes.
- a) Combined transformation
  - b) Rotation
  - c) Scaling
  - d) Translation
- 14) Two basic technique used for producing color display are Beam penetration technique and
- a) Front dark technique
  - b) Shadow mask technique
  - c) Ray penetration technique
  - d) None of the above



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**S.E. (I.T.) (Part – I) (Old – CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017

Marks : 56

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

- 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 four** of the following : **16**
- a) What is DDA ? Write stepwise algorithm for DDA.
  - b) Explain rotation about an arbitrary point.
  - c) Differentiate between Random Scan and Raster Scan.
  - d) Short note on Color Models.
  - e) Short note on 3D Scaling.
3. Answer **any two** of the following : **12**
- a) Consider the line coordinates (0, 0) and (6, 4). Rasterize the line segment using Bresenham's algorithm.
  - b) Explain 2D :
    - i) Translation
    - ii) Rotation
    - iii) Scaling with matrix and diagram.
  - c) Explain the working of CRT in detail with diagram.



## SECTION – II

4. Attempt **any four** of the following : **16**
- a) What is compression ? Explain Lossy and Lossless compression.
  - b) Explain Bezier curve and its properties.
  - c) Short note : Anti aliasing and half toning.
  - d) Define multimedia and elements and need of multimedia.
  - e) Explain viewing transformation.
5. Answer **any two** of the following : **12**
- a) What is clipping ? Explain working of Sutherland-Cohen line clipping algorithm in detail.
  - b) Explain Warnock algorithm.
  - c) Short note :
    - i) GIF
    - ii) JPEG.
-



SLR-TJ – 299

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

|     |   |
|-----|---|
| Set | S |
|-----|---|

**S.E. (I.T.) (Part – I) (Old – CGPA) Examination, 2017  
COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) **Do not use pen to draw and label the diagrams.**  
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) A two-dimensional array contain the details of all the segment are called
    - a) Segmentation table
    - b) Segment name
    - c) Operation
    - d) None of these
  - 2) \_\_\_\_\_ is a flexible strip that is used to produce smooth curve using a set of point.
    - a) Spline
    - b) Scan-line method
    - c) Depth-sorting method
    - d) None of these
  - 3) In which transformation the shape of an object can be modified in x-direction, y-direction as well as in both the direction depending upon the value assigned to shearing variables
    - a) Reflection
    - b) Shearing
    - c) Rotation
    - d) Scaling
  - 4) Two dimensional color model are
    - a) RGB and CMKY
    - b) RBG and CYMK
    - c) RGB and CMYK
    - d) None
  - 5) Several graphics image file formats that are used by most of graphics system are
    - a) GIF
    - b) JPEG
    - c) TIFF
    - d) All of these

P.T.O.



- 6) The process of determining the appropriate pixels for representing picture or graphics object is known as
- a) Conversion
  - b) Rasterization
  - c) Transformations
  - d) None of the above
- 7) The process of introducing changes in the shape size and orientation of the object is called as
- a) Transformation
  - b) Projections
  - c) Surface removal
  - d) Clipping
- 8) \_\_\_\_\_ is repositioning the co-ordinates along a circular path, in the x-y plane by making an angle with the axes.
- a) Combined transformation
  - b) Rotation
  - c) Scaling
  - d) Translation
- 9) Two basic technique used for producing color display are Beam penetration technique and
- a) Front dark technique
  - b) Shadow mask technique
  - c) Ray penetration technique
  - d) None of the above
- 10) LCD stands for
- a) Liquid Core Display
  - b) Liquid Crystal Display
  - c) Liquid Crystal Diagram
  - d) None of these
- 11) The algorithm used for filling the interior of a polygon is called
- a) Flood fill algorithm
  - b) Boundary fill algorithm
  - c) Scan line polygon fill algorithm
  - d) None of these
- 12) The side effect of scan conversion is
- a) Aliasing
  - b) Anti aliasing
  - c) Both a) and b)
  - d) None of these
- 13) Z-Buffer algorithm is developed by
- a) Go Che Leong
  - b) Warnock
  - c) Cohen
  - d) Catmull
- 14) The problems of hidden surface are
- a) Removal of hidden surface
  - b) Identification of hidden surface
  - c) Both a) and b)
  - d) None of these
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**S.E. (I.T.) (Part – I) (Old – CGPA) Examination, 2017**  
**COMPUTER GRAPHICS**

Day and Date : Thursday, 21-12-2017

Marks : 56

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

- 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 four** of the following : **16**
- a) What is DDA ? Write stepwise algorithm for DDA.
  - b) Explain rotation about an arbitrary point.
  - c) Differentiate between Random Scan and Raster Scan.
  - d) Short note on Color Models.
  - e) Short note on 3D Scaling.
3. Answer **any two** of the following : **12**
- a) Consider the line coordinates (0, 0) and (6, 4). Rasterize the line segment using Bresenham's algorithm.
  - b) Explain 2D :
    - i) Translation
    - ii) Rotation
    - iii) Scaling with matrix and diagram.
  - c) Explain the working of CRT in detail with diagram.



## SECTION – II

4. Attempt **any four** of the following : **16**
- a) What is compression ? Explain Lossy and Lossless compression.
  - b) Explain Bezier curve and its properties.
  - c) Short note : Anti aliasing and half toning.
  - d) Define multimedia and elements and need of multimedia.
  - e) Explain viewing transformation.
5. Answer **any two** of the following : **12**
- a) What is clipping ? Explain working of Sutherland-Cohen line clipping algorithm in detail.
  - b) Explain Warnock algorithm.
  - c) Short note :
    - i) GIF
    - ii) JPEG.
-





SLR-TJ – 300

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

|     |   |
|-----|---|
| Set | P |
|-----|---|

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

Day and Date : Tuesday, 28-11-2017  
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 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 : 20

1. Choose the correct alternatives :

**20**

- 1) When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal would return
  - A) FAEKDCBHG
  - B) FAEKCDHGB
  - C) EAFKHDCBG
  - D) FEAKDCHBG
- 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) Empty
  - D) Saturated
- 3) 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
- 4) Which data structure is needed to convert infix notation to postfix notation ?
  - A) Branch
  - B) Queue
  - C) Tree
  - D) Stack
- 5) A linear collection of data elements where the linear node is given by means of pointer is called
  - A) Linked list
  - B) Node list
  - C) Primitive list
  - D) None of these
- 6) A queue is a
  - A) FIFO
  - B) LIFO
  - C) Ordered array
  - D) Linear tree
- 7) 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

P.T.O.



- 8) 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
- 9) State true or false :  
i) The degree of root node is always zero.  
ii) Nodes that are not root and not leaf are called as internal nodes.  
A) i) True, ii) True                                            B) i) True, ii) False  
C) i) False, ii) True                                         D) i) False, ii) False
- 10) Which is/are the application(s) of stack ?  
A) Function calls                                            B) Large number Arithmetic  
C) Evaluation of arithmetic expressions             D) All of the above
- 11) By default, all the files are opened in \_\_\_\_\_ mode.  
A) Binary                                                        B) Text
- 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) strninit()                                                 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 : Tuesday, 28-11-2017  
Time : 3.00 p.m. to 6.00 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) Explain application of linked list.
  - 2) Explain insertion and deletion of a node from Doubly Link List with diagram.
  - 3) Evaluate  $(A + B) * (C - D)$  Infix to Postfix with stack values.
  - 4) Define stack and explain Push, Pop operations with diagram.
  - 5) What are the operations that we can perform on file ?
3. Define Queue. Explain sequential representation, operations and implementation of Queue in detail. **10**
4. Attempt the following : **(5×2=10)**
- a) Explain Priority Queue.
  - b) Explain types of linked list and their operations.

SECTION – II

5. Answer the following questions (**any four**) : **(5×4=20)**
- A) Explain in detail stack operations.
  - B) Define Queue and state its applications.
  - C) Describe two types of lists.
  - D) Define circular queue. Explain in detail.
  - E) Write a note on Priority Queue.

**Set P**



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**
- a) Stack using Linked List
  - b) Queue using Linked List.
-



SLR-TJ – 300

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

|     |   |
|-----|---|
| Set | Q |
|-----|---|

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

Day and Date : Tuesday, 28-11-2017  
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 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 : 20

1. Choose the correct alternatives :

**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) When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal would return  
A) FAEKADBHG                      B) FAEKCDHGB  
C) EAFKHDCBG                      D) FEAKDCHBG
- 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) Empty                      D) Saturated

**P.T.O.**



- 8) 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
- 9) Which data structure is needed to convert infix notation to postfix notation ?  
A) Branch                      B) Queue                      C) Tree                      D) Stack
- 10) A linear collection of data elements where the linear node is given by means of pointer is called  
A) Linked list                      B) Node list                      C) Primitive list                      D) None of these
- 11) A queue is a  
A) FIFO                                              B) LIFO  
C) Ordered array                                              D) Linear tree
- 12) 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
- 13) 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
- 14) State true or false :  
i) The degree of root node is always zero.  
ii) Nodes that are not root and not leaf are called as internal nodes.  
A) i) True, ii) True                                              B) i) True, ii) False  
C) i) False, ii) True                                              D) i) False, ii) False
- 15) Which is/are the application(s) of stack ?  
A) Function calls                                              B) Large number Arithmetic  
C) Evaluation of arithmetic expressions                      D) All of the above
- 16) By default, all the files are opened in \_\_\_\_\_ mode.  
A) Binary                                              B) Text
- 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) strnset()                                              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<br>No. |  |
|-------------|--|

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

Day and Date : Tuesday, 28-11-2017  
Time : 3.00 p.m. to 6.00 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) Explain application of linked list.
  - 2) Explain insertion and deletion of a node from Doubly Link List with diagram.
  - 3) Evaluate  $(A + B) * (C - D)$  Infix to Postfix with stack values.
  - 4) Define stack and explain Push, Pop operations with diagram.
  - 5) What are the operations that we can perform on file ?
3. Define Queue. Explain sequential representation, operations and implementation of Queue in detail. **10**
4. Attempt the following : **(5×2=10)**
- a) Explain Priority Queue.
  - b) Explain types of linked list and their operations.

SECTION – II

5. Answer the following questions (**any four**) : **(5×4=20)**
- A) Explain in detail stack operations.
  - B) Define Queue and state its applications.
  - C) Describe two types of lists.
  - D) Define circular queue. Explain in detail.
  - E) Write a note on Priority Queue.

**Set Q**



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**
- a) Stack using Linked List
  - b) Queue using Linked List.
-





SLR-TJ – 300

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

Set **R**

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

Day and Date : Tuesday, 28-11-2017  
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 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 : 20

1. Choose the correct alternatives : **20**
- 1) By default, all the files are opened in \_\_\_\_\_ mode.  
A) Binary B) Text
  - 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) strninit() 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)
  - 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

P.T.O.



- 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) When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal would return  
A) FAEKCDHBG                      B) FAEKCDHGB  
C) EAFKHDCBG                      D) FEAKDCHBG
- 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) Empty                      D) Saturated
- 13) 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
- 14) Which data structure is needed to convert infix notation to postfix notation ?  
A) Branch                      B) Queue                      C) Tree                      D) Stack
- 15) A linear collection of data elements where the linear node is given by means of pointer is called  
A) Linked list                      B) Node list                      C) Primitive list                      D) None of these
- 16) A queue is a  
A) FIFO                      B) LIFO  
C) Ordered array                      D) Linear tree
- 17) 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
- 18) 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
- 19) State true or false :  
i) The degree of root node is always zero.  
ii) Nodes that are not root and not leaf are called as internal nodes.  
A) i) True, ii) True                      B) i) True, ii) False  
C) i) False, ii) True                      D) i) False, ii) False
- 20) Which is/are the application(s) of stack ?  
A) Function calls                      B) Large number Arithmetic  
C) Evaluation of arithmetic expressions                      D) All of the above



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

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

Day and Date : Tuesday, 28-11-2017  
Time : 3.00 p.m. to 6.00 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) Explain application of linked list.
  - 2) Explain insertion and deletion of a node from Doubly Link List with diagram.
  - 3) Evaluate  $(A + B) * (C - D)$  Infix to Postfix with stack values.
  - 4) Define stack and explain Push, Pop operations with diagram.
  - 5) What are the operations that we can perform on file ?
3. Define Queue. Explain sequential representation, operations and implementation of Queue in detail. **10**
4. Attempt the following : **(5×2=10)**
- a) Explain Priority Queue.
  - b) Explain types of linked list and their operations.

SECTION – II

5. Answer the following questions (**any four**) : **(5×4=20)**
- A) Explain in detail stack operations.
  - B) Define Queue and state its applications.
  - C) Describe two types of lists.
  - D) Define circular queue. Explain in detail.
  - E) Write a note on Priority Queue.

**Set R**



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**
- a) Stack using Linked List
  - b) Queue using Linked List.
-



SLR-TJ – 300

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

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

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

Day and Date : Tuesday, 28-11-2017  
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 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 : 20

1. Choose the correct alternatives :

**20**

- 1) A queue is a
  - A) FIFO
  - B) LIFO
  - C) Ordered array
  - D) Linear tree
- 2) 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
- 3) 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
- 4) State true or false :
  - i) The degree of root node is always zero.
  - ii) Nodes that are not root and not leaf are called as internal nodes.
  - A) i) True, ii) True
  - B) i) True, ii) False
  - C) i) False, ii) True
  - D) i) False, ii) False
- 5) Which is/are the application(s) of stack ?
  - A) Function calls
  - B) Large number Arithmetic
  - C) Evaluation of arithmetic expressions
  - D) All of the above
- 6) By default, all the files are opened in \_\_\_\_\_ mode.
  - A) Binary
  - B) Text
- 7) It is not possible to combine two or more file opening mode in open () method.
  - A) True
  - B) False

**P.T.O.**



- 8) Which of the following function sets first n characters of a string to a given character ?  
A) strnset()                                  B) strnset()  
C) strset()                                      D) strcset()
- 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) When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal would return  
A) FAEKCDHBG                                  B) FAEKCDHGB  
C) EAFKHDCBG                                  D) FEAKDCHBG
- 17) 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) Empty                                  D) Saturated
- 18) 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
- 19) Which data structure is needed to convert infix notation to postfix notation ?  
A) Branch                                  B) Queue                                  C) Tree                                  D) Stack
- 20) A linear collection of data elements where the linear node is given by means of pointer is called  
A) Linked list                                  B) Node list                                  C) Primitive list                                  D) None of these



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

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

Day and Date : Tuesday, 28-11-2017  
Time : 3.00 p.m. to 6.00 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) Explain application of linked list.
  - 2) Explain insertion and deletion of a node from Doubly Link List with diagram.
  - 3) Evaluate  $(A + B) * (C - D)$  Infix to Postfix with stack values.
  - 4) Define stack and explain Push, Pop operations with diagram.
  - 5) What are the operations that we can perform on file ?
3. Define Queue. Explain sequential representation, operations and implementation of Queue in detail. **10**
4. Attempt the following : **(5×2=10)**
- a) Explain Priority Queue.
  - b) Explain types of linked list and their operations.

SECTION – II

5. Answer the following questions (**any four**) : **(5×4=20)**
- A) Explain in detail stack operations.
  - B) Define Queue and state its applications.
  - C) Describe two types of lists.
  - D) Define circular queue. Explain in detail.
  - E) Write a note on Priority Queue.

**Set S**



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**
- a) Stack using Linked List
  - b) Queue using Linked List.
-





SLR- TJ – 301

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

Set **P**

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

Day and Date : Thursday, 30-11-2017

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) A Boolean function can be converted from algebraic expressions to a product of maxterms by using
  - a) Graphical representation
  - b) Truth table
  - c) Canonical conversion method
  - d) Both b and c
- 2) Each "1" entry in a K-map square represents
  - a) A HIGH for each input truth table condition that produces a HIGH output
  - b) A HIGH output on the truth table for all LOW input combinations
  - c) A LOW output for all possible HIGH input conditions
  - d) A DON'T CARE condition for all possible input truth table combinations
- 3) What is the form of the Boolean expression  $Z = (P + \bar{Q})(P + \bar{R})$  ?
  - a) Product of sums
  - b) Sum of products
  - c) Karnaugh map
  - d) Matrix
- 4) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates ?
  - a) AND or OR gates
  - b) XOR or XNOR gates
  - c) NOR or NAND gates
  - d) AND or NOR gates
- 5) The terminal count of a 3 bit binary counter in the down mode is \_\_\_\_\_
  - a) 000
  - b) 111
  - c) 101
  - d) 010
- 6) The logic expression for  $Y (P,Q,R) = \sum m (1, 5, 6,)$  is equivalent to
  - a)  $\sum m (0,2,5,6)$
  - b)  $\sum m (0,2,3,4,5)$
  - c)  $\prod M (0, 2, 3, 4, 7)$
  - d) None of these
- 7) A logic circuit used to compare binary number is
  - a) Analog comparator
  - b) Binary compare circuit
  - c) Digital comparator
  - d) Digital technique

P.T.O.



- 8) A carry look ahead adder is frequently used for addition because it
- a) is faster
  - b) is more accurate
  - c) uses fewer gates
  - d) costs less
- 9) A shift register can be used for
- a) Digital delay line
  - b) Serial to parallel conversion
  - c) Parallel to serial conversion
  - d) All of these
- 10) When two counters are cascaded, the overall MOD number is equal to the \_\_\_\_\_ of their individual MOD numbers.
- a) Product
  - b) Sum
  - c) Log
  - d) Reciprocal
- 11) Which of the following are not a Standard multiplexer ICs ?
- a) 74151
  - b) 74152
  - c) 74153
  - d) 74155
- 12) Which of the following circuit can be used as parallel to serial converter ?
- a) Multiplexer
  - b) Demultiplexer
  - c) Decoder
  - d) Digital counter
- 13) 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
- 14) Can we combine smaller chips to make wider memories, for example (64 K × 16) RAM, created from two ( 64 K × 8) chips. The left chip contains the most significant 8 bits of the data. The right chip contains the lower 8 bits of the data.
- a) True
  - b) False
- 15) Applications of PLAs are
- a) Registered PALs
  - b) Configurable PALs
  - c) PAL programming
  - d) All of the mentioned
- 16) In 1-to-4 multiplexer, if C1 = 0 and C2 =1, then the output will be
- a) Y0
  - b) Y1
  - c) Y2
  - d) Y3
- 17) There are following levels in design methodology
- i) Gate level
  - ii) Register Transfer level
  - iii) Processor level
- a) i, ii only
  - b) i, iii only
  - c) i, ii, iii
  - d) ii, iii, only
- 18) A memory whose data need to be refreshed periodically is called
- a) Static memory
  - b) Dynamic memory
  - c) Content addressable memory
  - d) RAM
- 19) PLA has more flexibility in the logic circuit function implementation than PAL.
- a) True
  - b) False
- 20) Two 16 : 1 and one 2 : 1 multiplexers can be connected to form a
- a) 16 : 1 Multiplexer
  - b) 32 : 1 Multiplexer
  - c) 64 : 1 Multiplexer
  - d) 8 :1 Multiplexer



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

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

Day and Date : Thursday, 30-11-2017

Marks : 80

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

**SECTION – I**

2. Solve **any four** :

**(4×5=20)**

a) Simplify the following Boolean expressions to minimum no. of literals.

i)  $x'yz+xz$

ii)  $xy + x (wz + wz')$

b) State and prove the following Boolean laws :

i) Commutative

ii) Associative

iii) Distributive

c) Design 1 bit Comparator using K-map and implement it using Universal gates.

d) Design Up-down Counter with neat circuit diagram.

e) Compare combinational and sequential circuit from all aspects.

3. Solve **any two** :

**(2×10=20)**

a) What is flip-flop ? Explain different types of flip-flop with truth table and Excitation table.

b) Simplify the following expressions using K-map and realize with NAND gates.

$$F = \sum m (0, 2, 5, 9, 15) + \sum d (6, 7, 8, 10, 12, 13)$$

c) Draw and explain Operation of carry look ahead adder.

**Set P**



## SECTION – II

4. Solve **any four** : **(4×5=20)**
- a) Implement the following  $8 \times 1$  MUX.  $F = (0, 1, 3, 4, 6, 8, 15)$ .
  - b) Explain the different drivers for 7 segment display using 7447.
  - c) Define the terms :  $t_{wc}$  (Write cycle time) and Access cycle time ( $t_a$ ).
  - d) Explain the different types of memories in details.
  - e) Explain the 3-level design methodology.
5. Solve **any two** : **(2×10=20)**
- a) Design a 8-line to 256 -line decoder using 4-line to 16-line decoder.
  - b) Explain in block diagram of PLA Device in detail.
  - c) Obtain a  $16 \times 8$  memory using  $16 \times 4$  memory IC's.
-



SLR- TJ – 301

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

Set **Q**

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

Day and Date : Thursday, 30-11-2017

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) In 1-to-4 multiplexer, if  $C1 = 0$  and  $C2 = 1$ , then the output will be  
a) Y0                      b) Y1                      c) Y2                      d) Y3
- 2) There are following levels in design methodology  
i) Gate level                      ii) Register Transfer level                      iii) Processor level  
a) i, ii only                      b) i, iii only                      c) i, ii, iii                      d) ii, iii, only
- 3) A memory whose data need to be refreshed periodically is called  
a) Static memory                      b) Dynamic memory  
c) Content addressable memory                      d) RAM
- 4) PLA has more flexibility in the logic circuit function implementation than PAL.  
a) True                      b) False
- 5) Two 16 : 1 and one 2 : 1 multiplexers can be connected to form a  
a) 16 : 1 Multiplexer    b) 32 : 1 Multiplexer    c) 64 : 1 Multiplexer    d) 8 : 1 Multiplexer
- 6) A Boolean function can be converted from algebraic expressions to a product of maxterms by using  
a) Graphical representation                      b) Truth table  
c) Canonical conversion method                      d) Both b and c
- 7) Each "1" entry in a K-map square represents  
a) A HIGH for each input truth table condition that produces a HIGH output  
b) A HIGH output on the truth table for all LOW input combinations  
c) A LOW output for all possible HIGH input conditions  
d) A DON'T CARE condition for all possible input truth table combinations

P.T.O.



- 8) What is the form of the Boolean expression  $Z = (P + \bar{Q}) (P + \bar{R})$  ?
- Product of sums
  - Sum of products
  - Karnaugh map
  - Matrix
- 9) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates ?
- AND or OR gates
  - XOR or XNOR gates
  - NOR or NAND gates
  - AND or NOR gates
- 10) The terminal count of a 3 bit binary counter in the down mode is \_\_\_\_\_
- 000
  - 111
  - 101
  - 010
- 11) The logic expression for  $Y (P,Q,R) = \sum m (1, 5, 6,)$  is equivalent to
- $\sum m (0,2,5,6)$
  - $\sum m (0,2,3,4,5)$
  - $\prod M (0, 2, 3, 4, 7)$
  - None of these
- 12) A logic circuit used to compare binary number is
- Analog comparator
  - Binary compare circuit
  - Digital comparator
  - Digital technique
- 13) A carry look ahead adder is frequently used for addition because it
- is faster
  - is more accurate
  - uses fewer gates
  - costs less
- 14) A shift register can be used for
- Digital delay line
  - Serial to parallel conversion
  - Parallel to serial conversion
  - All of these
- 15) When two counters are cascaded, the overall MOD number is equal to the \_\_\_\_\_ of their individual MOD numbers.
- Product
  - Sum
  - Log
  - Reciprocal
- 16) Which of the following are not a Standard multiplexer ICs ?
- 74151
  - 74152
  - 74153
  - 74155
- 17) Which of the following circuit can be used as parallel to serial converter ?
- Multiplexer
  - Demultiplexer
  - Decoder
  - Digital counter
- 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.
- True
  - False
- 19) Can we combine smaller chips to make wider memories, for example (64 K  $\times$  16) RAM, created from two ( 64 K  $\times$  8) chips. The left chip contains the most significant 8 bits of the data. The right chip contains the lower 8 bits of the data.
- True
  - False
- 20) Applications of PLAs are
- Registered PALs
  - Configurable PALs
  - PAL programming
  - All of the mentioned



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

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

Day and Date : Thursday, 30-11-2017

Marks : 80

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

**SECTION – I**

2. Solve **any four** :

**(4×5=20)**

- a) Simplify the following Boolean expressions to minimum no. of literals.
  - i)  $x'yz+xz$
  - ii)  $xy + x (wz + wz')$
- b) State and prove the following Boolean laws :
  - i) Commutative
  - ii) Associative
  - iii) Distributive
- c) Design 1 bit Comparator using K-map and implement it using Universal gates.
- d) Design Up-down Counter with neat circuit diagram.
- e) Compare combinational and sequential circuit from all aspects.

3. Solve **any two** :

**(2×10=20)**

- a) What is flip-flop ? Explain different types of flip-flop with truth table and Excitation table.
- b) Simplify the following expressions using K-map and realize with NAND gates.  
$$F = \sum m (0, 2, 5, 9, 15) + \sum d (6, 7, 8, 10, 12, 13)$$
- c) Draw and explain Operation of carry look ahead adder.

**Set Q**



## SECTION – II

4. Solve **any four** : **(4×5=20)**
- a) Implement the following  $8 \times 1$  MUX.  $F = (0, 1, 3, 4, 6, 8, 15)$ .
  - b) Explain the different drivers for 7 segment display using 7447.
  - c) Define the terms :  $t_{wc}$  (Write cycle time) and Access cycle time ( $t_a$ ).
  - d) Explain the different types of memories in details.
  - e) Explain the 3-level design methodology.
5. Solve **any two** : **(2×10=20)**
- a) Design a 8-line to 256 -line decoder using 4-line to 16-line decoder.
  - b) Explain in block diagram of PLA Device in detail.
  - c) Obtain a  $16 \times 8$  memory using  $16 \times 4$  memory IC's.
-





SLR- TJ – 301

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

Set 

|   |
|---|
| R |
|---|

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

Day and Date : Thursday, 30-11-2017

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Which of the following are not a Standard multiplexer ICs ?  
a) 74151                      b) 74152                      c) 74153                      d) 74155
- 2) Which of the following circuit can be used as parallel to serial converter ?  
a) Multiplexer              b) Demultiplexer          c) Decoder                  d) Digital counter
- 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) Can we combine smaller chips to make wider memories, for example (64 K × 16) RAM, created from two ( 64 K × 8) chips. The left chip contains the most significant 8 bits of the data. The right chip contains the lower 8 bits of the data.  
a) True                      b) False
- 5) Applications of PLAs are  
a) Registered PALs                                              b) Configurable PALs  
c) PAL programming                                              d) All of the mentioned
- 6) In 1-to-4 multiplexer, if C1 = 0 and C2 =1, then the output will be  
a) Y0                      b) Y1                      c) Y2                      d) Y3
- 7) There are following levels in design methodology  
i) Gate level                      ii) Register Transfer level                      iii) Processor level  
a) i, ii only                      b) i, iii only                      c) i, ii, iii                      d) ii, iii, only
- 8) A memory whose data need to be refreshed periodically is called  
a) Static memory                                              b) Dynamic memory  
c) Content addressable memory                                              d) RAM

P.T.O.



- 9) PLA has more flexibility in the logic circuit function implementation than PAL.  
a) True                      b) False
- 10) Two 16 : 1 and one 2 : 1 multiplexers can be connected to form a  
a) 16 : 1 Multiplexer    b) 32 : 1 Multiplexer    c) 64 : 1 Multiplexer    d) 8 : 1 Multiplexer
- 11) A Boolean function can be converted from algebraic expressions to a product of maxterms by using  
a) Graphical representation                      b) Truth table  
c) Canonical conversion method                      d) Both b and c
- 12) Each “1” entry in a K-map square represents  
a) A HIGH for each input truth table condition that produces a HIGH output  
b) A HIGH output on the truth table for all LOW input combinations  
c) A LOW output for all possible HIGH input conditions  
d) A DON'T CARE condition for all possible input truth table combinations
- 13) What is the form of the Boolean expression  $Z = (P + \bar{Q}) (P + \bar{R})$  ?  
a) Product of sums                      b) Sum of products  
c) Karnaugh map                      d) Matrix
- 14) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates ?  
a) AND or OR gates                      b) XOR or XNOR gates  
c) NOR or NAND gates                      d) AND or NOR gates
- 15) The terminal count of a 3 bit binary counter in the down mode is \_\_\_\_\_  
a) 000                      b) 111                      c) 101                      d) 010
- 16) The logic expression for  $Y (P,Q,R) = \sum m (1, 5, 6,)$  is equivalent to  
a)  $\sum m (0,2,5,6)$                       b)  $\sum m (0,2,3,4,5)$   
c)  $\prod M (0, 2, 3, 4, 7)$                       d) None of these
- 17) A logic circuit used to compare binary number is  
a) Analog comparator                      b) Binary compare circuit  
c) Digital comparator                      d) Digital technique
- 18) A carry look ahead adder is frequently used for addition because it  
a) is faster                      b) is more accurate  
c) uses fewer gates                      d) costs less
- 19) A shift register can be used for  
a) Digital delay line                      b) Serial to parallel conversion  
c) Parallel to serial conversion                      d) All of these
- 20) When two counters are cascaded, the overall MOD number is equal to the \_\_\_\_\_ of their individual MOD numbers.  
a) Product                      b) Sum                      c) Log                      d) Reciprocal



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

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

Day and Date : Thursday, 30-11-2017

Marks : 80

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

**SECTION – I**

2. Solve **any four** :

**(4×5=20)**

- a) Simplify the following Boolean expressions to minimum no. of literals.
  - i)  $x'yz+xz$
  - ii)  $xy + x (wz + wz')$
- b) State and prove the following Boolean laws :
  - i) Commutative
  - ii) Associative
  - iii) Distributive
- c) Design 1 bit Comparator using K-map and implement it using Universal gates.
- d) Design Up-down Counter with neat circuit diagram.
- e) Compare combinational and sequential circuit from all aspects.

3. Solve **any two** :

**(2×10=20)**

- a) What is flip-flop ? Explain different types of flip-flop with truth table and Excitation table.
- b) Simplify the following expressions using K-map and realize with NAND gates.  
$$F = \sum m (0, 2, 5, 9, 15) + \sum d (6, 7, 8, 10, 12, 13)$$
- c) Draw and explain Operation of carry look ahead adder.

**Set R**



## SECTION – II

4. Solve **any four** : **(4×5=20)**
- a) Implement the following  $8 \times 1$  MUX.  $F = (0, 1, 3, 4, 6, 8, 15)$ .
  - b) Explain the different drivers for 7 segment display using 7447.
  - c) Define the terms :  $t_{wc}$  (Write cycle time) and Access cycle time ( $t_a$ ).
  - d) Explain the different types of memories in details.
  - e) Explain the 3-level design methodology.
5. Solve **any two** : **(2×10=20)**
- a) Design a 8-line to 256 -line decoder using 4-line to 16-line decoder.
  - b) Explain in block diagram of PLA Device in detail.
  - c) Obtain a  $16 \times 8$  memory using  $16 \times 4$  memory IC's.
-



SLR- TJ – 301

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

Set 

|   |
|---|
| S |
|---|

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

Day and Date : Thursday, 30-11-2017

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.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The logic expression for  $Y (P,Q,R) = \sum m (1, 5, 6,)$  is equivalent to
  - a)  $\sum m (0,2,5,6)$
  - b)  $\sum m (0,2,3,4,5)$
  - c)  $\prod M (0, 2, 3, 4, 7)$
  - d) None of these
- 2) A logic circuit used to compare binary number is
  - a) Analog comparator
  - b) Binary compare circuit
  - c) Digital comparator
  - d) Digital technique
- 3) A carry look ahead adder is frequently used for addition because it
  - a) is faster
  - b) is more accurate
  - c) uses fewer gates
  - d) costs less
- 4) A shift register can be used for
  - a) Digital delay line
  - b) Serial to parallel conversion
  - c) Parallel to serial conversion
  - d) All of these
- 5) When two counters are cascaded, the overall MOD number is equal to the \_\_\_\_\_ of their individual MOD numbers.
  - a) Product
  - b) Sum
  - c) Log
  - d) Reciprocal
- 6) Which of the following are not a Standard multiplexer ICs ?
  - a) 74151
  - b) 74152
  - c) 74153
  - d) 74155
- 7) Which of the following circuit can be used as parallel to serial converter ?
  - a) Multiplexer
  - b) Demultiplexer
  - c) Decoder
  - d) Digital counter
- 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

P.T.O.



- 9) Can we combine smaller chips to make wider memories, for example (64 K × 16) RAM, created from two (64 K × 8) chips. The left chip contains the most significant 8 bits of the data. The right chip contains the lower 8 bits of the data.
- a) True                      b) False
- 10) Applications of PLAs are
- a) Registered PALs                      b) Configurable PALs  
c) PAL programming                      d) All of the mentioned
- 11) In 1-to-4 multiplexer, if  $C_1 = 0$  and  $C_2 = 1$ , then the output will be
- a)  $Y_0$                       b)  $Y_1$                       c)  $Y_2$                       d)  $Y_3$
- 12) There are following levels in design methodology
- i) Gate level                      ii) Register Transfer level                      iii) Processor level
- a) i, ii only                      b) i, iii only                      c) i, ii, iii                      d) ii, iii, only
- 13) A memory whose data need to be refreshed periodically is called
- a) Static memory                      b) Dynamic memory  
c) Content addressable memory                      d) RAM
- 14) PLA has more flexibility in the logic circuit function implementation than PAL.
- a) True                      b) False
- 15) Two 16 : 1 and one 2 : 1 multiplexers can be connected to form a
- a) 16 : 1 Multiplexer    b) 32 : 1 Multiplexer    c) 64 : 1 Multiplexer    d) 8 : 1 Multiplexer
- 16) A Boolean function can be converted from algebraic expressions to a product of maxterms by using
- a) Graphical representation                      b) Truth table  
c) Canonical conversion method                      d) Both b and c
- 17) Each “1” entry in a K-map square represents
- a) A HIGH for each input truth table condition that produces a HIGH output  
b) A HIGH output on the truth table for all LOW input combinations  
c) A LOW output for all possible HIGH input conditions  
d) A DON'T CARE condition for all possible input truth table combinations
- 18) What is the form of the Boolean expression  $Z = (P + \bar{Q}) (P + \bar{R})$  ?
- a) Product of sums                      b) Sum of products  
c) Karnaugh map                      d) Matrix
- 19) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates ?
- a) AND or OR gates                      b) XOR or XNOR gates  
c) NOR or NAND gates                      d) AND or NOR gates
- 20) The terminal count of a 3 bit binary counter in the down mode is \_\_\_\_\_
- a) 000                      b) 111                      c) 101                      d) 010



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

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

Day and Date : Thursday, 30-11-2017

Marks : 80

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

**SECTION – I**

2. Solve **any four** :

**(4×5=20)**

- a) Simplify the following Boolean expressions to minimum no. of literals.
  - i)  $x'yz+xz$
  - ii)  $xy + x (wz + wz')$
- b) State and prove the following Boolean laws :
  - i) Commutative
  - ii) Associative
  - iii) Distributive
- c) Design 1 bit Comparator using K-map and implement it using Universal gates.
- d) Design Up-down Counter with neat circuit diagram.
- e) Compare combinational and sequential circuit from all aspects.

3. Solve **any two** :

**(2×10=20)**

- a) What is flip-flop ? Explain different types of flip-flop with truth table and Excitation table.
- b) Simplify the following expressions using K-map and realize with NAND gates.  
$$F = \sum m (0, 2, 5, 9, 15) + \sum d (6, 7, 8, 10, 12, 13)$$
- c) Draw and explain Operation of carry look ahead adder.

**Set S**



## SECTION – II

4. Solve **any four** : **(4×5=20)**
- a) Implement the following  $8 \times 1$  MUX.  $F = (0, 1, 3, 4, 6, 8, 15)$ .
  - b) Explain the different drivers for 7 segment display using 7447.
  - c) Define the terms :  $t_{wc}$  (Write cycle time) and Access cycle time ( $t_a$ ).
  - d) Explain the different types of memories in details.
  - e) Explain the 3-level design methodology.
5. Solve **any two** : **(2×10=20)**
- a) Design a 8-line to 256 -line decoder using 4-line to 16-line decoder.
  - b) Explain in block diagram of PLA Device in detail.
  - c) Obtain a  $16 \times 8$  memory using  $16 \times 4$  memory IC's.
-





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

|     |   |
|-----|---|
| Set | P |
|-----|---|

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

Day and Date : Tuesday, 21-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Attempt **any three** questions from **each** Section.
  - 2) Figures to the **right** indicate **full** marks.
  - 3) **Use** of calculator is **allowed**.
  - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
  - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) Which of the following statement applies to Bisection method ?
  - a) converges within few iterations
  - b) it is faster than Newton-Raphsons method
  - c) rate of convergence is 2
  - d) it requires that there will be no error in determining the sign of function  $f(x)$  in each approximation
- 2) Using Newtons Raphson method, the first approximation to the root of equation  $2x^3 - 3x - 6 = 0$  near to  $x = 2$  is
  - a) 1.908
  - b) 1.809
  - c) 1.709
  - d) 1.609
- 3) For solving simultaneous linear equation, in which method as soon as getting the value of one variable is immediately used to compute next variable ?
  - a) Gauss Seidal Method
  - b) Jacobi Method
  - c) Gauss Jordan Method
  - d) Gauss Elimination Method
- 4) The power method is used to \_\_\_\_\_
  - a) fit the curve
  - b) solve non-linear equations
  - c) find greatest eigen value of matrix
  - d) find roots of transcendental equations
- 5) If  $I = \int_{-1}^1 f(x) dx = a_1 f(x_1) + a_2 f(x_2) + a_3 f(x_3)$  by Gaussian three point quadrature formula, the value of  $a_1, a_2, a_3$  are \_\_\_\_\_
  - a)  $\frac{5}{8}, \frac{9}{8}, \frac{5}{8}$
  - b)  $-\sqrt{\frac{3}{5}}, 0, \sqrt{\frac{3}{5}}$
  - c)  $\frac{5}{9}, \frac{8}{9}, \frac{5}{9}$
  - d)  $-\frac{5}{8}, \frac{8}{9}, \frac{5}{9}$

P.T.O.



- 6) For given data 

|   |   |     |     |
|---|---|-----|-----|
| x | 0 | 0.5 | 1   |
| y | 1 | 0.8 | 0.5 |

 by Trapezoidal rule the value of  $I = \int_0^1 y^2 dx$  is \_\_\_\_\_
- a) 0.7750                      b) 0.5750                      c) 0.6750                      d) 0.6325
- 7) The Newton Raphson iterative formula for finding  $\sqrt{N}$ , where N is positive real number is \_\_\_\_\_
- a)  $x_{n+1} = \frac{1}{2} \left( x_n + \frac{N}{x_n} \right)$                       b)  $x_{n+1} = \frac{1}{2} \left( x_n - \frac{N}{x_n} \right)$
- c)  $x_{n+1} = \frac{1}{2} (3x_n - Nx_n)$                       d)  $x_{n+1} = 2 \left( x_n + \frac{N}{x_n} \right)$
- 8) A method of converting fuzzy set into classical set is known as
- a) fuzzification                      b) defuzzification  
c) extension principle                      d) None
- 9) An ordinary fuzzy set is also called as
- a) Type 2 fuzzy set                      b) Level 2 fuzzy set  
c) Type 1 level 1 fuzzy set                      d) Type 2 level 2 fuzzy set
- 10) 1 – cut of a given fuzzy set is also called as
- a) Normal fuzzy set                      b) Core of fuzzy set  
c) Interval valued fuzzy set                      d) Sub-normal set
- 11) If  $B(x) = 2^{-x}$  for  $x \in (0, 10) = X$  then  $\alpha_{+A} =$  \_\_\_\_\_
- a)  $\left( \frac{\log \alpha}{\log 2}, 10 \right)$                       b)  $\left[ \frac{\log \alpha}{\log 2}, 10 \right]$                       c)  $\left[ 0, \frac{\log \alpha}{\log 2} \right)$                       d)  $\left( 0, \frac{\log \alpha}{\log 2} \right)$
- 12) The  $\alpha$  -cuts of fuzzy number, except O-cut are \_\_\_\_\_
- a) closed intervals    b) open intervals    c) bounded                      d) fuzzy set
- 13) Using Lukasiewicz implication  $i \left( \frac{1}{2}, 0 \right) =$  \_\_\_\_\_
- a) 0                      b)  $\frac{1}{2}$                       c) 1.5                      d)  $-\frac{1}{2}$
- 14) Consider the fuzzy sets
- $$A = \frac{0.4}{x} + \frac{0.6}{y} + \frac{1}{z} + \frac{0.34}{u} + \frac{0.12}{v}$$
- $$B = \frac{0.3}{x} + \frac{0.5}{y} + \frac{0.67}{z} + \frac{0.9}{u} + \frac{0.8}{v}$$
- then the scalar cardinality  $|A \cup B| =$  \_\_\_\_\_
- a) 4.02                      b) 5.95                      c) 5.63                      d) 3.7



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

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

Day and Date : Tuesday, 21-11-2017  
 Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. a) Solve for a positive real root of the equation  $x - \cos x = 0$  by Regula Falsi method (Perform three approximations). **3**  
 b) Find a positive real root of  $x e^x - 2 = 0$  correct to three places of decimals using Newton-Raphson's method. **3**  
 c) Solve the system of non-linear equations  $x^2 = 3xy - 8$ ,  $y = 3(x + 1)$  by Newton Raphsons method in one step, starting with initial approximation  $x_0 = -2$ ,  $y_0 = -2$ . **4**
3. a) Solve the following set of equations by Jacobi method (perform three iterations). **3**  
 $2x + 20y - 2z = -44$ ,  $10x + 2y + z = 9$ ,  $-2x + 3y + 10z = 22$   
 b) Find the largest eigen value of the matrix  $\begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$  by performing 4 iterations of Power method. Taking initial vector  $X_0 = [0 \ 1]^T$ . **3**  
 c) Solve the following set of algebraic equations by Gauss Elimination method. **3**  
 $x + y + z = 9$ ,  $2x - 3y + 4z = 13$ ,  $3x + 4y + 5z = 40$
4. a) Evaluate  $\int_0^1 \frac{x^2}{1+x^3} dx$  using Simpsons  $\frac{1}{3}$ <sup>rd</sup> rule with  $h = 0.25$ . **3**  
 b) Evaluate  $\int_0^2 \frac{1}{(1+x^3)} dx$  using Gaussian two point quadrature formula. **3**  
 c) Evaluate  $\int_1^{1.4} \int_2^{2.4} \frac{1}{xy} dx dy$  by using Trapezoidal rule taking  $h = k = 0.2$ . **3**
5. a) Find a double root of the equation  $x^3 - 5x^2 + 8x - 4 = 0$  which is near to 1.8 by Newton Raphson method. **3**  
 b) Evaluate  $\int_0^{0.5} \left( \frac{x}{\sin x} \right) dx$  using Romberg's method taking width 0.25, 0.125 and 0.0625. **6**
- OR
- b) Solve the following set of linear algebraic equations by LU – decomposition method. **6**  
 $x + 5y + z = 14$ ,  $2x + y + 3z = 13$ ,  $3x + y + 4z = 17$

**Set P**



## SECTION – II

6. a) Solve the fuzzy equation  $A + x = B$

5

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

$$\begin{aligned} B(x) &= \frac{x-2}{2} & 2 < x \leq 4 \\ &= \frac{6-x}{2} & 4 < x \leq 6 \\ &= 0 & \text{otherwise} \end{aligned}$$

b) For the given two fuzzy sets

4

$$A = \frac{0.1}{x_1} + \frac{0.6}{x_2} + \frac{0.8}{x_3} + \frac{0.9}{x_4} + \frac{0.7}{x_5} + \frac{0.1}{x_6}$$

$$B = \frac{0.9}{x_1} + \frac{0.7}{x_2} + \frac{0.5}{x_3} + \frac{0.2}{x_4} + \frac{0.1}{x_5} + \frac{0}{x_6}$$

Find :

i)  $0.5_{\bar{A}}$

ii)  $0.2_{\bar{B}}$

iii)  $0.4_{(\bar{A} \cap \bar{B})}$ .

7. a) Explain the concept of fuzzy quantifiers and their types.

5

OR

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

5

$$A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$$

$$B = \frac{0.5}{2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{5} \text{ and let } f \text{ such that } f : XXX \rightarrow X \text{ be a crisp function given by}$$

$$f(x_1, x_2) = x_1 \cdot x_2 \quad \forall x_1, x_2 \in X \text{ then by using an extension principle find } f(A, B).$$

b) Find  $\alpha$ -cut and strong  $\alpha$ -cut of fuzzy set A defined by

4

$$\begin{aligned} A(x) &= \frac{x-2}{2} & 2 < x \leq 4 \\ &= \frac{6-x}{2} & 4 < x \leq 6 \\ &= 0 & \text{otherwise} \end{aligned}$$

for  $\alpha = 0.1, 0.3$ .



8. a) Find the fuzzy number MIN (A, B) where A and B are two fuzzy numbers whose membership functions are given by 6

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

- b) Determine which of the following fuzzy sets qualify as fuzzy numbers with justification. 4

i)  $C(x) = \min \{1, x\} \quad x \geq 0$   
 $= 0 \quad x < 0$

ii)  $D(x) = 1 \quad \text{if } x = 3$   
 $= 0 \quad \text{otherwise}$

9. a) Use Max-Min composition rule for the following matrix relation. 3

$$\begin{bmatrix} 1 & 0.5 & 0 \\ 0.3 & 1 & 0.4 \\ 0 & 0.2 & 1 \end{bmatrix} \circ \begin{bmatrix} 1 & 0.2 & 0 \\ 0.7 & 1 & 0.3 \\ 0 & 0.7 & 1 \end{bmatrix}$$

- b) Calculate the fuzzy numbers A + B and B – A where the membership functions as below. 6

$$\begin{aligned}
 A(x) &= \frac{x-1}{3} \quad 1 < x \leq 4 \\
 &= \frac{7-x}{3} \quad 4 < x \leq 7 \\
 &= 0 \quad x > 7, x \leq 1 \\
 B(x) &= 0 \quad x \leq 7, x > 13 \\
 &= \frac{x-7}{13} \quad 7 < x \leq 10 \\
 &= \frac{13-x}{13} \quad 10 < x \leq 13
 \end{aligned}$$





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

Set **Q**

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

Day and Date : Tuesday, 21-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Attempt **any three** questions from **each** Section.
  - 2) Figures to the **right** indicate **full** marks.
  - 3) **Use of calculator is allowed.**
  - 4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. **3**. **Each** question carries **one** mark.
  - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) A method of converting fuzzy set into classical set is known as
  - a) fuzzification
  - b) defuzzification
  - c) extension principle
  - d) None
- 2) An ordinary fuzzy set is also called as
  - a) Type 2 fuzzy set
  - b) Level 2 fuzzy set
  - c) Type 1 level 1 fuzzy set
  - d) Type 2 level 2 fuzzy set
- 3) 1 – cut of a given fuzzy set is also called as
  - a) Normal fuzzy set
  - b) Core of fuzzy set
  - c) Interval valued fuzzy set
  - d) Sub-normal set
- 4) If  $B(x) = 2^{-x}$  for  $x \in (0, 10) = X$  then  $\alpha_{+A} =$  \_\_\_\_\_
  - a)  $\left( \frac{\log \alpha}{\log 2}, 10 \right)$
  - b)  $\left[ \frac{\log \alpha}{\log 2}, 10 \right]$
  - c)  $\left[ 0, \frac{\log \alpha}{\log 2} \right]$
  - d)  $\left( 0, \frac{\log \alpha}{\log 2} \right)$
- 5) The  $\alpha$ -cuts of fuzzy number, except O-cut are \_\_\_\_\_
  - a) closed intervals
  - b) open intervals
  - c) bounded
  - d) fuzzy set
- 6) Using Lukasiewicz implication  $i\left(\frac{1}{2}, 0\right) =$  \_\_\_\_\_
  - a) 0
  - b)  $\frac{1}{2}$
  - c) 1.5
  - d)  $-\frac{1}{2}$
- 7) Consider the fuzzy sets
 
$$A = \frac{0.4}{x} + \frac{0.6}{y} + \frac{1}{z} + \frac{0.34}{u} + \frac{0.12}{v}$$

$$B = \frac{0.3}{x} + \frac{0.5}{y} + \frac{0.67}{z} + \frac{0.9}{u} + \frac{0.8}{v}$$
 then the scalar cardinality  $|A \cup B| =$  \_\_\_\_\_
  - a) 4.02
  - b) 5.95
  - c) 5.63
  - d) 3.7

P.T.O.



- 8) Which of the following statement applies to Bisection method ?
- converges within few iterations
  - it is faster than Newton-Raphsons method
  - rate of convergence is 2
  - it requires that there will be no error in determining the sign of function  $f(x)$  in each approximation
- 9) Using Newtons Raphson method, the first approximation to the root of equation  $2x^3 - 3x - 6 = 0$  near to  $x = 2$  is
- 1.908
  - 1.809
  - 1.709
  - 1.609
- 10) For solving simultaneous linear equation, in which method as soon as getting the value of one variable is immediately used to compute next variable ?
- Gauss Seidal Method
  - Jacobi Method
  - Gauss Jordon Method
  - Gauss Elimination Method
- 11) The power method is used to \_\_\_\_\_
- fit the curve
  - solve non-linear equations
  - find greatest eigen value of matrix
  - find roots of transcendental equations
- 12) If  $I = \int_{-1}^1 f(x) dx = a_1 f(x_1) + a_2 f(x_2) + a_3 f(x_3)$  by Gaussian three point quadrature formula, the value of  $a_1, a_2, a_3$  are \_\_\_\_\_
- $\frac{5}{8}, \frac{9}{8}, \frac{5}{8}$
  - $-\sqrt{\frac{3}{5}}, 0, \sqrt{\frac{3}{5}}$
  - $\frac{5}{9}, \frac{8}{9}, \frac{5}{9}$
  - $-\frac{5}{8}, \frac{8}{9}, \frac{5}{9}$
- 13) For given data 

|          |   |     |     |
|----------|---|-----|-----|
| <b>x</b> | 0 | 0.5 | 1   |
| <b>y</b> | 1 | 0.8 | 0.5 |

 by Trapezoidal rule the value of  $I = \int_0^1 y^2 dx$  is \_\_\_\_\_
- 0.7750
  - 0.5750
  - 0.6750
  - 0.6325
- 14) The Newton Raphson iterative formula for finding  $\sqrt{N}$ , where  $N$  is positive real number is \_\_\_\_\_
- $x_{n+1} = \frac{1}{2} \left( x_n + \frac{N}{x_n} \right)$
  - $x_{n+1} = \frac{1}{2} \left( x_n - \frac{N}{x_n} \right)$
  - $x_{n+1} = \frac{1}{2} (3x_n - Nx_n)$
  - $x_{n+1} = 2 \left( x_n + \frac{N}{x_n} \right)$





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

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

Day and Date : Tuesday, 21-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. a) Solve for a positive real root of the equation  $x - \cos x = 0$  by Regula Falsi method (Perform three approximations). 3
- b) Find a positive real root of  $x e^x - 2 = 0$  correct to three places of decimals using Newton-Raphson's method. 3
- c) Solve the system of non-linear equations  $x^2 = 3xy - 8$ ,  $y = 3(x + 1)$  by Newton Raphsons method in one step, starting with initial approximation  $x_0 = -2$ ,  $y_0 = -2$ . 4
3. a) Solve the following set of equations by Jacobi method (perform three iterations). 3  
 $2x + 20y - 2z = -44$ ,  $10x + 2y + z = 9$ ,  $-2x + 3y + 10z = 22$
- b) Find the largest eigen value of the matrix  $\begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$  by performing 4 iterations of Power method. Taking initial vector  $X_0 = [0 \ 1]^T$ . 3
- c) Solve the following set of algebraic equations by Gauss Elimination method. 3  
 $x + y + z = 9$ ,  $2x - 3y + 4z = 13$ ,  $3x + 4y + 5z = 40$
4. a) Evaluate  $\int_0^1 \frac{x^2}{1+x^3} dx$  using Simpsons  $\frac{1}{3}$ <sup>rd</sup> rule with  $h = 0.25$ . 3
- b) Evaluate  $\int_0^2 \frac{1}{(1+x^3)} dx$  using Gaussian two point quadrature formula. 3
- c) Evaluate  $\int_1^{1.4} \int_2^{2.4} \frac{1}{xy} dx dy$  by using Trapezoidal rule taking  $h = k = 0.2$ . 3
5. a) Find a double root of the equation  $x^3 - 5x^2 + 8x - 4 = 0$  which is near to 1.8 by Newton Raphson method. 3
- b) Evaluate  $\int_0^{0.5} \left( \frac{x}{\sin x} \right) dx$  using Romberg's method taking width 0.25, 0.125 and 0.0625. 6
- OR
- b) Solve the following set of linear algebraic equations by LU – decomposition method. 6  
 $x + 5y + z = 14$ ,  $2x + y + 3z = 13$ ,  $3x + y + 4z = 17$

**Set Q**



## SECTION – II

6. a) Solve the fuzzy equation  $A + x = B$

5

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

$$\begin{aligned} B(x) &= \frac{x-2}{2} & 2 < x \leq 4 \\ &= \frac{6-x}{2} & 4 < x \leq 6 \\ &= 0 & \text{otherwise} \end{aligned}$$

b) For the given two fuzzy sets

4

$$A = \frac{0.1}{x_1} + \frac{0.6}{x_2} + \frac{0.8}{x_3} + \frac{0.9}{x_4} + \frac{0.7}{x_5} + \frac{0.1}{x_6}$$

$$B = \frac{0.9}{x_1} + \frac{0.7}{x_2} + \frac{0.5}{x_3} + \frac{0.2}{x_4} + \frac{0.1}{x_5} + \frac{0}{x_6}$$

Find :

i)  $0.5_{\bar{A}}$

ii)  $0.2_{\bar{B}}$

iii)  $0.4_{(\bar{A} \cap \bar{B})}$ .

7. a) Explain the concept of fuzzy quantifiers and their types.

5

OR

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

5

$$A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$$

$$B = \frac{0.5}{2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{5} \text{ and let } f \text{ such that } f : XXX \rightarrow X \text{ be a crisp function given by}$$

$$f(x_1, x_2) = x_1 \cdot x_2 \quad \forall x_1, x_2 \in X \text{ then by using an extension principle find } f(A, B).$$

b) Find  $\alpha$ -cut and strong  $\alpha$ -cut of fuzzy set A defined by

4

$$\begin{aligned} A(x) &= \frac{x-2}{2} & 2 < x \leq 4 \\ &= \frac{6-x}{2} & 4 < x \leq 6 \\ &= 0 & \text{otherwise} \end{aligned}$$

for  $\alpha = 0.1, 0.3$ .



8. a) Find the fuzzy number MIN (A, B) where A and B are two fuzzy numbers whose membership functions are given by 6

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

- b) Determine which of the following fuzzy sets qualify as fuzzy numbers with justification. 4

i)  $C(x) = \min \{1, x\} \quad x \geq 0$   
 $= 0 \quad x < 0$

ii)  $D(x) = 1 \quad \text{if } x = 3$   
 $= 0 \quad \text{otherwise}$

9. a) Use Max-Min composition rule for the following matrix relation. 3

$$\begin{bmatrix} 1 & 0.5 & 0 \\ 0.3 & 1 & 0.4 \\ 0 & 0.2 & 1 \end{bmatrix} \circ \begin{bmatrix} 1 & 0.2 & 0 \\ 0.7 & 1 & 0.3 \\ 0 & 0.7 & 1 \end{bmatrix}$$

- b) Calculate the fuzzy numbers A + B and B – A where the membership functions as below. 6

$$\begin{aligned} A(x) &= \frac{x-1}{3} \quad 1 < x \leq 4 \\ &= \frac{7-x}{3} \quad 4 < x \leq 7 \\ &= 0 \quad x > 7, x \leq 1 \\ B(x) &= 0 \quad x \leq 7, x > 13 \\ &= \frac{x-7}{13} \quad 7 < x \leq 10 \\ &= \frac{13-x}{13} \quad 10 < x \leq 13 \end{aligned}$$





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

|     |   |
|-----|---|
| Set | R |
|-----|---|

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

Day and Date : Tuesday, 21-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Attempt **any three** questions from **each** Section.
  - 2) Figures to the **right** indicate **full** marks.
  - 3) **Use** of calculator is **allowed**.
  - 4) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
  - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

1) If  $I = \int_{-1}^1 f(x) dx = a_1 f(x_1) + a_2 f(x_2) + a_3 f(x_3)$  by Gaussian three point quadrature formula, the value of  $a_1, a_2, a_3$  are \_\_\_\_\_

a)  $\frac{5}{8}, \frac{9}{8}, \frac{5}{8}$

b)  $-\sqrt{\frac{3}{5}}, 0, \sqrt{\frac{3}{5}}$

c)  $\frac{5}{9}, \frac{8}{9}, \frac{5}{9}$

d)  $-\frac{5}{8}, \frac{8}{9}, \frac{5}{9}$

2) For given data 

|   |   |     |     |
|---|---|-----|-----|
| x | 0 | 0.5 | 1   |
| y | 1 | 0.8 | 0.5 |

 by Trapezoidal rule the value of  $I = \int_0^1 y^2 dx$  is \_\_\_\_\_

a) 0.7750

b) 0.5750

c) 0.6750

d) 0.6325

3) The Newton Raphson iterative formula for finding  $\sqrt{N}$ , where N is positive real number is \_\_\_\_\_

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

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

c)  $x_{n+1} = \frac{1}{2} (3x_n - Nx_n)$

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

4) A method of converting fuzzy set into classical set is known as

a) fuzzification

b) defuzzification

c) extension principle

d) None

P.T.O.



- 5) An ordinary fuzzy set is also called as
- a) Type 2 fuzzy set                      b) Level 2 fuzzy set  
c) Type 1 level 1 fuzzy set              d) Type 2 level 2 fuzzy set
- 6) 1 – cut of a given fuzzy set is also called as
- a) Normal fuzzy set                      b) Core of fuzzy set  
c) Interval valued fuzzy set              d) Sub-normal set
- 7) If  $B(x) = 2^{-x}$  for  $x \in (0, 10) = X$  then  $\alpha_{+A} =$  \_\_\_\_\_
- a)  $\left(\frac{\log \alpha}{\log 2}, 10\right)$       b)  $\left[\frac{\log \alpha}{\log 2}, 10\right]$       c)  $\left[0, \frac{\log \alpha}{\log 2}\right)$       d)  $\left(0, \frac{\log \alpha}{\log 2}\right)$
- 8) The  $\alpha$  -cuts of fuzzy number, except O-cut are \_\_\_\_\_
- a) closed intervals      b) open intervals      c) bounded      d) fuzzy set
- 9) Using Lukasiewicz implication  $i\left(\frac{1}{2}, 0\right) =$  \_\_\_\_\_
- a) 0                      b)  $\frac{1}{2}$                       c) 1.5                      d)  $-\frac{1}{2}$
- 10) Consider the fuzzy sets
- $$A = \frac{0.4}{x} + \frac{0.6}{y} + \frac{1}{z} + \frac{0.34}{u} + \frac{0.12}{v}$$
- $$B = \frac{0.3}{x} + \frac{0.5}{y} + \frac{0.67}{z} + \frac{0.9}{u} + \frac{0.8}{v}$$
- then the scalar cardinality  $|A \cup B| =$  \_\_\_\_\_
- a) 4.02                      b) 5.95                      c) 5.63                      d) 3.7
- 11) Which of the following statement applies to Bisection method ?
- a) converges within few iterations  
b) it is faster than Newton-Raphsons method  
c) rate of convergence is 2  
d) it requires that there will be no error in determining the sign of function  $f(x)$  in each approximation
- 12) Using Newtons Raphson method, the first approximation to the root of equation  $2x^3 - 3x - 6 = 0$  near to  $x = 2$  is
- a) 1.908                      b) 1.809                      c) 1.709                      d) 1.609
- 13) For solving simultaneous linear equation, in which method as soon as getting the value of one variable is immediately used to compute next variable ?
- a) Gauss Seidal Method                      b) Jacobi Method  
c) Gauss Jordon Method                      d) Gauss Elimination Method
- 14) The power method is used to \_\_\_\_\_
- a) fit the curve                      b) solve non-linear equations  
c) find greatest eigen value of matrix      d) find roots of transcendental equations



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

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

Day and Date : Tuesday, 21-11-2017  
 Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. a) Solve for a positive real root of the equation  $x - \cos x = 0$  by Regula Falsi method (Perform three approximations). 3
- b) Find a positive real root of  $x e^x - 2 = 0$  correct to three places of decimals using Newton-Raphson's method. 3
- c) Solve the system of non-linear equations  $x^2 = 3xy - 8$ ,  $y = 3(x + 1)$  by Newton Raphsons method in one step, starting with initial approximation  $x_0 = -2$ ,  $y_0 = -2$ . 4
3. a) Solve the following set of equations by Jacobi method (perform three iterations). 3  
 $2x + 20y - 2z = -44$ ,  $10x + 2y + z = 9$ ,  $-2x + 3y + 10z = 22$
- b) Find the largest eigen value of the matrix  $\begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$  by performing 4 iterations of Power method. Taking initial vector  $X_0 = [0 \ 1]^T$ . 3
- c) Solve the following set of algebraic equations by Gauss Elimination method. 3  
 $x + y + z = 9$ ,  $2x - 3y + 4z = 13$ ,  $3x + 4y + 5z = 40$
4. a) Evaluate  $\int_0^1 \frac{x^2}{1+x^3} dx$  using Simpsons  $\frac{1}{3}$ <sup>rd</sup> rule with  $h = 0.25$ . 3
- b) Evaluate  $\int_0^2 \frac{1}{(1+x^3)} dx$  using Gaussian two point quadrature formula. 3
- c) Evaluate  $\int_1^{1.4} \int_2^{2.4} \frac{1}{xy} dx dy$  by using Trapezoidal rule taking  $h = k = 0.2$ . 3
5. a) Find a double root of the equation  $x^3 - 5x^2 + 8x - 4 = 0$  which is near to 1.8 by Newton Raphson method. 3
- b) Evaluate  $\int_0^{0.5} \left( \frac{x}{\sin x} \right) dx$  using Romberg's method taking width 0.25, 0.125 and 0.0625. 6
- OR
- b) Solve the following set of linear algebraic equations by LU – decomposition method. 6  
 $x + 5y + z = 14$ ,  $2x + y + 3z = 13$ ,  $3x + y + 4z = 17$

**Set R**



## SECTION – II

6. a) Solve the fuzzy equation  $A + x = B$

5

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

$$\begin{aligned} B(x) &= \frac{x-2}{2} & 2 < x \leq 4 \\ &= \frac{6-x}{2} & 4 < x \leq 6 \\ &= 0 & \text{otherwise} \end{aligned}$$

b) For the given two fuzzy sets

4

$$A = \frac{0.1}{x_1} + \frac{0.6}{x_2} + \frac{0.8}{x_3} + \frac{0.9}{x_4} + \frac{0.7}{x_5} + \frac{0.1}{x_6}$$

$$B = \frac{0.9}{x_1} + \frac{0.7}{x_2} + \frac{0.5}{x_3} + \frac{0.2}{x_4} + \frac{0.1}{x_5} + \frac{0}{x_6}$$

Find :

i)  $0.5_{\bar{A}}$

ii)  $0.2_{\bar{B}}$

iii)  $0.4_{(\bar{A} \cap \bar{B})}$ .

7. a) Explain the concept of fuzzy quantifiers and their types.

5

OR

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

5

$$A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$$

$$B = \frac{0.5}{2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{5} \text{ and let } f \text{ such that } f : XXX \rightarrow X \text{ be a crisp function given by}$$

$$f(x_1, x_2) = x_1 \cdot x_2 \quad \forall x_1, x_2 \in X \text{ then by using an extension principle find } f(A, B).$$

b) Find  $\alpha$ -cut and strong  $\alpha$ -cut of fuzzy set A defined by

4

$$\begin{aligned} A(x) &= \frac{x-2}{2} & 2 < x \leq 4 \\ &= \frac{6-x}{2} & 4 < x \leq 6 \\ &= 0 & \text{otherwise} \end{aligned}$$

for  $\alpha = 0.1, 0.3$ .





8. a) Find the fuzzy number MIN (A, B) where A and B are two fuzzy numbers whose membership functions are given by 6

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

- b) Determine which of the following fuzzy sets qualify as fuzzy numbers with justification. 4

i)  $C(x) = \min \{1, x\} \quad x \geq 0$   
 $= 0 \quad x < 0$

ii)  $D(x) = 1 \quad \text{if } x = 3$   
 $= 0 \quad \text{otherwise}$

9. a) Use Max-Min composition rule for the following matrix relation. 3

$$\begin{bmatrix} 1 & 0.5 & 0 \\ 0.3 & 1 & 0.4 \\ 0 & 0.2 & 1 \end{bmatrix} \circ \begin{bmatrix} 1 & 0.2 & 0 \\ 0.7 & 1 & 0.3 \\ 0 & 0.7 & 1 \end{bmatrix}$$

- b) Calculate the fuzzy numbers A + B and B – A where the membership functions as below. 6

$$\begin{aligned}
 A(x) &= \frac{x-1}{3} \quad 1 < x \leq 4 \\
 &= \frac{7-x}{3} \quad 4 < x \leq 7 \\
 &= 0 \quad x > 7, x \leq 1 \\
 B(x) &= 0 \quad x \leq 7, x > 13 \\
 &= \frac{x-7}{13} \quad 7 < x \leq 10 \\
 &= \frac{13-x}{13} \quad 10 < x \leq 13
 \end{aligned}$$





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

|     |   |
|-----|---|
| Set | S |
|-----|---|

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

Day and Date : Tuesday, 21-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Attempt **any three** questions from **each** Section.
  - 2) Figures to the **right** indicate **full** marks.
  - 3) **Use** of calculator is **allowed**.
  - 4) Q. No. **1** is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. **3**. **Each** question carries **one** mark.
  - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**14**

- 1) 1 – cut of a given fuzzy set is also called as
 

|                              |                      |
|------------------------------|----------------------|
| a) Normal fuzzy set          | b) Core of fuzzy set |
| c) Interval valued fuzzy set | d) Sub-normal set    |
  
- 2) If  $B(x) = 2^{-x}$  for  $x \in (0, 10) = X$  then  $\alpha_{+A} =$  \_\_\_\_\_
 

|                                                  |                                                  |                                                 |                                                 |
|--------------------------------------------------|--------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| a) $\left(\frac{\log \alpha}{\log 2}, 10\right)$ | b) $\left[\frac{\log \alpha}{\log 2}, 10\right]$ | c) $\left[0, \frac{\log \alpha}{\log 2}\right]$ | d) $\left(0, \frac{\log \alpha}{\log 2}\right)$ |
|--------------------------------------------------|--------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
  
- 3) The  $\alpha$ -cuts of fuzzy number, except O-cut are \_\_\_\_\_
 

|                     |                   |            |              |
|---------------------|-------------------|------------|--------------|
| a) closed intervals | b) open intervals | c) bounded | d) fuzzy set |
|---------------------|-------------------|------------|--------------|
  
- 4) Using Lukasiewicz implication  $i\left(\frac{1}{2}, 0\right) =$  \_\_\_\_\_
 

|      |                  |        |                   |
|------|------------------|--------|-------------------|
| a) 0 | b) $\frac{1}{2}$ | c) 1.5 | d) $-\frac{1}{2}$ |
|------|------------------|--------|-------------------|
  
- 5) Consider the fuzzy sets
 
$$A = \frac{0.4}{x} + \frac{0.6}{y} + \frac{1}{z} + \frac{0.34}{u} + \frac{0.12}{v}$$

$$B = \frac{0.3}{x} + \frac{0.5}{y} + \frac{0.67}{z} + \frac{0.9}{u} + \frac{0.8}{v}$$
 then the scalar cardinality  $|A \cup B| =$  \_\_\_\_\_
 

|         |         |         |        |
|---------|---------|---------|--------|
| a) 4.02 | b) 5.95 | c) 5.63 | d) 3.7 |
|---------|---------|---------|--------|
  
- 6) Which of the following statement applies to Bisection method ?
  - a) converges within few iterations
  - b) it is faster than Newton-Raphsons method
  - c) rate of convergence is 2
  - d) it requires that there will be no error in determining the sign of function  $f(x)$  in each approximation

**P.T.O.**



- 7) Using Newtons Raphson method, the first approximation to the root of equation  $2x^3 - 3x - 6 = 0$  near to  $x = 2$  is  
 a) 1.908                      b) 1.809                      c) 1.709                      d) 1.609
- 8) For solving simultaneous linear equation, in which method as soon as getting the value of one variable is immediately used to compute next variable ?  
 a) Gauss Seidal Method                      b) Jacobi Method  
 c) Gauss Jordan Method                      d) Gauss Elimination Method
- 9) The power method is used to \_\_\_\_\_  
 a) fit the curve                      b) solve non-linear equations  
 c) find greatest eigen value of matrix                      d) find roots of transcendental equations
- 10) If  $I = \int_{-1}^1 f(x) dx = a_1 f(x_1) + a_2 f(x_2) + a_3 f(x_3)$  by Gaussian three point quadrature formula, the value of  $a_1, a_2, a_3$  are \_\_\_\_\_  
 a)  $\frac{5}{8}, \frac{9}{8}, \frac{5}{8}$                       b)  $-\sqrt{\frac{3}{5}}, 0, \sqrt{\frac{3}{5}}$   
 c)  $\frac{5}{9}, \frac{8}{9}, \frac{5}{9}$                       d)  $-\frac{5}{8}, \frac{8}{9}, \frac{5}{9}$
- 11) For given data 

|          |   |     |     |
|----------|---|-----|-----|
| <b>x</b> | 0 | 0.5 | 1   |
| <b>y</b> | 1 | 0.8 | 0.5 |

 by Trapezoidal rule the value of  $I = \int_0^1 y^2 dx$  is \_\_\_\_\_  
 a) 0.7750                      b) 0.5750                      c) 0.6750                      d) 0.6325
- 12) The Newton Raphson iterative formula for finding  $\sqrt{N}$ , where N is positive real number is \_\_\_\_\_  
 a)  $x_{n+1} = \frac{1}{2} \left( x_n + \frac{N}{x_n} \right)$                       b)  $x_{n+1} = \frac{1}{2} \left( x_n - \frac{N}{x_n} \right)$   
 c)  $x_{n+1} = \frac{1}{2} (3x_n - Nx_n)$                       d)  $x_{n+1} = 2 \left( x_n + \frac{N}{x_n} \right)$
- 13) A method of converting fuzzy set into classical set is known as  
 a) fuzzification                      b) defuzzification  
 c) extension principle                      d) None
- 14) An ordinary fuzzy set is also called as  
 a) Type 2 fuzzy set                      b) Level 2 fuzzy set  
 c) Type 1 level 1 fuzzy set                      d) Type 2 level 2 fuzzy set



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

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

Day and Date : Tuesday, 21-11-2017  
 Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. a) Solve for a positive real root of the equation  $x - \cos x = 0$  by Regula Falsi method (Perform three approximations). **3**  
 b) Find a positive real root of  $x e^x - 2 = 0$  correct to three places of decimals using Newton-Raphson's method. **3**  
 c) Solve the system of non-linear equations  $x^2 = 3xy - 8$ ,  $y = 3(x + 1)$  by Newton Raphsons method in one step, starting with initial approximation  $x_0 = -2$ ,  $y_0 = -2$ . **4**
3. a) Solve the following set of equations by Jacobi method (perform three iterations). **3**  
 $2x + 20y - 2z = -44$ ,  $10x + 2y + z = 9$ ,  $-2x + 3y + 10z = 22$   
 b) Find the largest eigen value of the matrix  $\begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$  by performing 4 iterations of Power method. Taking initial vector  $X_0 = [0 \ 1]^T$ . **3**  
 c) Solve the following set of algebraic equations by Gauss Elimination method. **3**  
 $x + y + z = 9$ ,  $2x - 3y + 4z = 13$ ,  $3x + 4y + 5z = 40$
4. a) Evaluate  $\int_0^1 \frac{x^2}{1+x^3} dx$  using Simpsons  $\frac{1}{3}$ <sup>rd</sup> rule with  $h = 0.25$ . **3**  
 b) Evaluate  $\int_0^2 \frac{1}{(1+x^3)} dx$  using Gaussian two point quadrature formula. **3**  
 c) Evaluate  $\int_1^{1.4} \int_2^{2.4} \frac{1}{xy} dx dy$  by using Trapezoidal rule taking  $h = k = 0.2$ . **3**
5. a) Find a double root of the equation  $x^3 - 5x^2 + 8x - 4 = 0$  which is near to 1.8 by Newton Raphson method. **3**  
 b) Evaluate  $\int_0^{0.5} \left( \frac{x}{\sin x} \right) dx$  using Romberg's method taking width 0.25, 0.125 and 0.0625. **6**
- OR
- b) Solve the following set of linear algebraic equations by LU – decomposition method. **6**  
 $x + 5y + z = 14$ ,  $2x + y + 3z = 13$ ,  $3x + y + 4z = 17$

**Set S**



## SECTION – II

6. a) Solve the fuzzy equation  $A + x = B$

5

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

$$\begin{aligned} B(x) &= \frac{x-2}{2} & 2 < x \leq 4 \\ &= \frac{6-x}{2} & 4 < x \leq 6 \\ &= 0 & \text{otherwise} \end{aligned}$$

b) For the given two fuzzy sets

4

$$A = \frac{0.1}{x_1} + \frac{0.6}{x_2} + \frac{0.8}{x_3} + \frac{0.9}{x_4} + \frac{0.7}{x_5} + \frac{0.1}{x_6}$$

$$B = \frac{0.9}{x_1} + \frac{0.7}{x_2} + \frac{0.5}{x_3} + \frac{0.2}{x_4} + \frac{0.1}{x_5} + \frac{0}{x_6}$$

Find :

i)  $0.5_{\bar{A}}$

ii)  $0.2_{\bar{B}}$

iii)  $0.4_{(\bar{A} \cap \bar{B})}$ .

7. a) Explain the concept of fuzzy quantifiers and their types.

5

OR

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

5

$$A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$$

$$B = \frac{0.5}{2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{5} \text{ and let } f \text{ such that } f : XXX \rightarrow X \text{ be a crisp function given by}$$

$$f(x_1, x_2) = x_1 \cdot x_2 \quad \forall x_1, x_2 \in X \text{ then by using an extension principle find } f(A, B).$$

b) Find  $\alpha$ -cut and strong  $\alpha$ -cut of fuzzy set A defined by

4

$$\begin{aligned} A(x) &= \frac{x-2}{2} & 2 < x \leq 4 \\ &= \frac{6-x}{2} & 4 < x \leq 6 \\ &= 0 & \text{otherwise} \end{aligned}$$

for  $\alpha = 0.1, 0.3$ .



8. a) Find the fuzzy number MIN (A, B) where A and B are two fuzzy numbers whose membership functions are given by 6

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

- b) Determine which of the following fuzzy sets qualify as fuzzy numbers with justification. 4

i)  $C(x) = \min \{1, x\} \quad x \geq 0$   
 $= 0 \quad x < 0$

ii)  $D(x) = 1 \quad \text{if } x = 3$   
 $= 0 \quad \text{otherwise}$

9. a) Use Max-Min composition rule for the following matrix relation. 3

$$\begin{bmatrix} 1 & 0.5 & 0 \\ 0.3 & 1 & 0.4 \\ 0 & 0.2 & 1 \end{bmatrix} \circ \begin{bmatrix} 1 & 0.2 & 0 \\ 0.7 & 1 & 0.3 \\ 0 & 0.7 & 1 \end{bmatrix}$$

- b) Calculate the fuzzy numbers A + B and B – A where the membership functions as below. 6

$$\begin{aligned} A(x) &= \frac{x-1}{3} \quad 1 < x \leq 4 \\ &= \frac{7-x}{3} \quad 4 < x \leq 7 \\ &= 0 \quad x > 7, x \leq 1 \\ B(x) &= 0 \quad x \leq 7, x > 13 \\ &= \frac{x-7}{13} \quad 7 < x \leq 10 \\ &= \frac{13-x}{13} \quad 10 < x \leq 13 \end{aligned}$$







SLR-TJ – 303

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

Set 

|   |
|---|
| P |
|---|

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

Day and Date : Wednesday, 22-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : 14
- 1) Which string can be generated by  $S \rightarrow aS/bA, A \rightarrow d/ccA$  ?  
a) aabccd                      b) adabcca                      c) abcca                      d) abababd
  - 2)  $(P + Q)^* = ?$   
a)  $(P^* + Q^*)$                       b)  $P^* + Q^*$                       c)  $(P^*Q^*)^*$                       d) Both a) and c)
  - 3) Finite state machine \_\_\_\_\_ recognize palindromes.  
a) Can                      b) Cannot                      c) May                      d) May not
  - 4) A language L is accepted by a FSA if it is  
a) CFL                      b) CSL                      c) Recursive                      d) Regular
  - 5) The regular expression have all strings in which any number of 0's is followed by any number of 1's followed by any number of 2's is  
a)  $(0 + 1 + 2)^*$                       b)  $0^*1^*2^*$                       c)  $0^*+1+2$                       d)  $(0 + 1)^*2^*$
  - 6) Which of the following String can be obtained by the language  $L = \{a^i b^{2i} \mid i \geq 1\}$  ?  
a) aaabbbbb                      b) aabbb                      c) abbabbba                      d) aaaabbbabb
  - 7) Finite automata are used for pattern matching in text editors for  
a) Compiler lexical analysis  
b) Programming in localized application  
c) Both a) and b)  
d) None of the above
  - 8) The set of Legal C Programs Is Not a CFL  
a) True                      b) False

P.T.O.



- 9) In \_\_\_\_\_  $\delta$  is the transition function :  $\delta : Q \times (U \cup \{ \epsilon \}) \rightarrow (Q \cup \{ \text{halt} \})$   
 $\times (U \cup \{ \epsilon \}) \times \{R, L, S\}$ .
- a) Turing machine                                b) Push down automata  
c) CFG                                                d) None
- 10) The symbol  $Z_0$  in formal definition of PDA is used for  
a) Stack symbol    b) Input symbol    c) Both a) and b)    d) None of these
- 11) In one move the Turing machine  
a) May change its state  
b) Write a symbol on the cell being scanned  
c) Move the head one position left or right  
d) All of the above
- 12) An instantaneous description of Turing machine consists of  
a) Present state only  
b) Present state and entire input to be processed  
c) Present input only  
d) None of these
- 13) A \_\_\_\_\_ is formally defined as  $M = (Q, \Sigma, \Gamma, \delta, q_0, Z, F)$   
a) Turing machine                                b) Push down Automata  
c) DFA                                                d) NFA
- 14) The pumping lemma is extremely useful in proving that certain sets are  
a) Non-regular    b) Regular    c) Both    d) None



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Wednesday, 22-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Answer **any three** of following questions : (3×4=12)

a) Write regular expression for the following languages over {0, 1}.

- i) all strings containing an even number of 0's
- ii) all string with at most two occurrences of the substring 00.

b) Design FA for the language  $L = \{ab^5Wb^4 : W \in \{a, b\}^*\}$ .

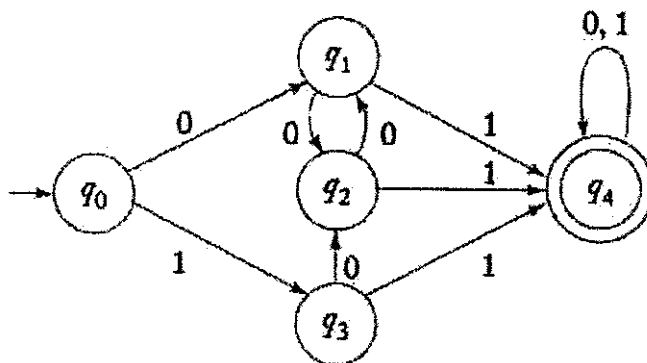
c) Convert the given  $\epsilon$ -NFA to NFA without  $\epsilon$ .

|                 |          |          |          |
|-----------------|----------|----------|----------|
| $\epsilon$      | <b>a</b> | <b>b</b> | <b>c</b> |
| $\rightarrow p$ | $\phi$   | {p}      | {q}      |
| <b>q</b>        | {p}      | {q}      | {r}      |
| <b>*r</b>       | {q}      | {r}      | $\phi$   |
|                 |          |          | {p}      |

d) Write CFG for the language  $L = \{a^n b^m c^k / n=m \text{ or } m \leq k\}$ .

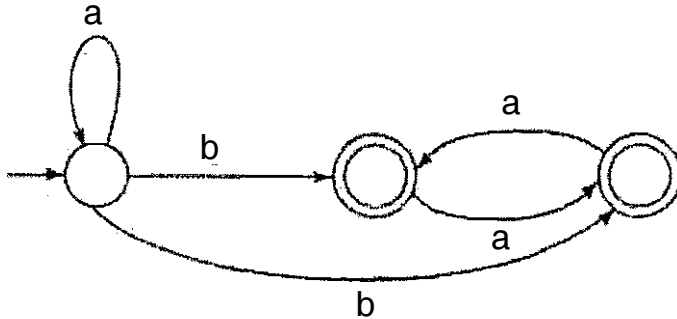
3. Answer **any two** of the following : (2×8=16)

a) Minimize the given FA





b) Find regular expression for the given FA using Kleene's theorem.



c) Eliminate  $\wedge$  productions, unit productions and useless symbols.

$S \rightarrow aA | aBB$        $A \rightarrow aaA | \wedge$        $B \rightarrow bB | bbC$        $C \rightarrow B$

### SECTION – II

4. Solve **any three** : (3×4=12)
- 1) Define deterministic PDA.
  - 2) What are the different types of grammars/languages ?
  - 3) What is a multi-tape Turing machine ?
  - 4) Compare NPDA and DPDA.
5. Solve **any two** : (2×8=16)
- 1) Design a Turing machine for coping string.
  - 2) Construct a PDA to accept a given language L by empty stack and final state both where  $L = \{a^n b^n, \text{ where } n \geq 1\}$ .
  - 3) Write short note on universal Turing machine.
-



SLR-TJ – 303

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

Set 

|   |
|---|
| Q |
|---|

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

Day and Date : Wednesday, 22-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : 14
- 1) The set of Legal C Programs Is Not a CFL  
a) True                      b) False
  - 2) In \_\_\_\_\_  $\delta$  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
  - 3) The symbol  $Z_0$  in formal definition of PDA is used for  
a) Stack symbol    b) Input symbol    c) Both a) and b)    d) None of these
  - 4) In one move the Turing machine  
a) May change its state  
b) Write a symbol on the cell being scanned  
c) Move the head one position left or right  
d) All of the above
  - 5) An instantaneous description of Turing machine consists of  
a) Present state only  
b) Present state and entire input to be processed  
c) Present input only  
d) None of these
  - 6) A \_\_\_\_\_ is formally defined as  $M = (Q, \Sigma, \Gamma, \delta, q_0, Z, F)$   
a) Turing machine                      b) Push down Automata  
c) DFA                                      d) NFA
  - 7) The pumping lemma is extremely useful in proving that certain sets are  
a) Non-regular    b) Regular    c) Both    d) None

P.T.O.



- 8) Which string can be generated by  $S \rightarrow aS/bA, A \rightarrow d/ccA$  ?  
a) aabccd                      b) adabcca                      c) abcca                      d) abababd
- 9)  $(P + Q)^* = ?$   
a)  $(P^* + Q^*)$                       b)  $P^* + Q^*$                       c)  $(P^*Q^*)^*$                       d) Both a) and c)
- 10) Finite state machine \_\_\_\_\_ recognize palindromes.  
a) Can                      b) Cannot                      c) May                      d) May not
- 11) A language L is accepted by a FSA if it is  
a) CFL                      b) CSL                      c) Recursive                      d) Regular
- 12) The regular expression have all strings in which any number of 0's is followed by any number of 1's followed by any number of 2's is  
a)  $(0 + 1 + 2)^*$                       b)  $0^*1^*2^*$                       c)  $0^*+1+2$                       d)  $(0 + 1)^*2^*$
- 13) Which of the following String can be obtained by the language  $L = \{a^i b^{2i} \mid i \geq 1\}$  ?  
a) aaabbbbb                      b) aabbb                      c) abbabbba                      d) aaaabbbabb
- 14) Finite automata are used for pattern matching in text editors for  
a) Compiler lexical analysis  
b) Programming in localized application  
c) Both a) and b)  
d) None of the above
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Wednesday, 22-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Answer **any three** of following questions : (3×4=12)

a) Write regular expression for the following languages over {0, 1}.

- i) all strings containing an even number of 0's
- ii) all string with at most two occurrences of the substring 00.

b) Design FA for the language  $L = \{ab^5Wb^4 : W \in \{a, b\}^*\}$ .

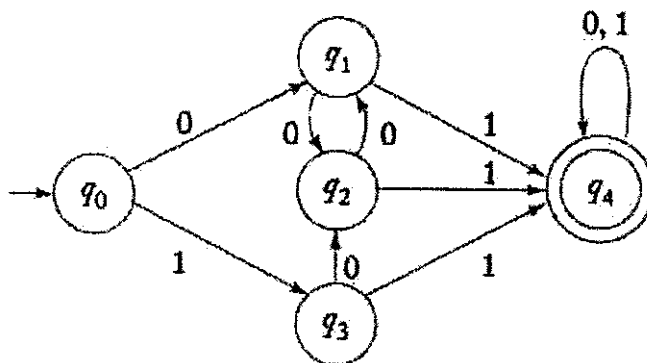
c) Convert the given  $\epsilon$ -NFA to NFA without  $\epsilon$ .

| $\epsilon$      | a       | b       | c       |
|-----------------|---------|---------|---------|
| $\rightarrow p$ | $\phi$  | $\{p\}$ | $\{q\}$ |
| q               | $\{p\}$ | $\{q\}$ | $\{r\}$ |
| *r              | $\{q\}$ | $\{r\}$ | $\phi$  |

d) Write CFG for the language  $L = \{a^n b^m c^k / n=m \text{ or } m \leq k\}$ .

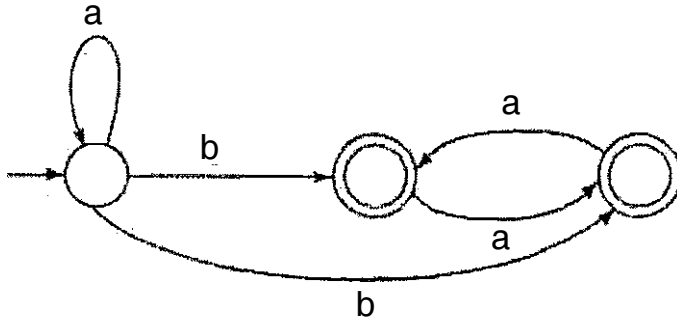
3. Answer **any two** of the following : (2×8=16)

a) Minimize the given FA





b) Find regular expression for the given FA using Kleene's theorem.



c) Eliminate  $\wedge$  productions, unit productions and useless symbols.

$S \rightarrow aA | aBB$        $A \rightarrow aaA | \wedge$        $B \rightarrow bB | bbC$        $C \rightarrow B$

### SECTION – II

4. Solve **any three** : (3×4=12)
- 1) Define deterministic PDA.
  - 2) What are the different types of grammars/languages ?
  - 3) What is a multi-tape Turing machine ?
  - 4) Compare NPDA and DPDA.
5. Solve **any two** : (2×8=16)
- 1) Design a Turing machine for coping string.
  - 2) Construct a PDA to accept a given language L by empty stack and final state both where  $L = \{a^n b^n, \text{ where } n \geq 1\}$ .
  - 3) Write short note on universal Turing machine.
-





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

Set **R**

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

Day and Date : Wednesday, 22-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : 14
- 1) The regular expression have all strings in which any number of 0's is followed by any number of 1's followed by any number of 2's is  
a)  $(0 + 1 + 2)^*$       b)  $0^*1^*2^*$       c)  $0^*+1+2$       d)  $(0 + 1)^*2^*$
  - 2) Which of the following String can be obtained by the language  $L = \{a^i b^{2i} \mid i \geq 1\}$ ?  
a) aaabbbbb      b) aabbb      c) abbabbbba      d) aaaabbbabb
  - 3) Finite automata are used for pattern matching in text editors for  
a) Compiler lexical analysis  
b) Programming in localized application  
c) Both a) and b)  
d) None of the above
  - 4) The set of Legal C Programs Is Not a CFL  
a) True      b) False
  - 5) In \_\_\_\_\_  $\delta$  is the transition function :  $\delta : Q \times (U \cup \{h, r\}) \rightarrow (Q \cup \{h, r\}) \times (U \cup \{h, r\}) \times \{R, L, S\}$ .  
a) Turing machine      b) Push down automata  
c) CFG      d) None
  - 6) The symbol  $Z_0$  in formal definition of PDA is used for  
a) Stack symbol      b) Input symbol      c) Both a) and b)      d) None of these
  - 7) In one move the Turing machine  
a) May change its state  
b) Write a symbol on the cell being scanned  
c) Move the head one position left or right  
d) All of the above



- 8) An instantaneous description of Turing machine consists of
- Present state only
  - Present state and entire input to be processed
  - Present input only
  - None of these
- 9) A \_\_\_\_\_ is formally defined as  $M = (Q, \Sigma, \Gamma, \delta, q_0, Z, F)$
- Turing machine
  - Push down Automata
  - DFA
  - NFA
- 10) The pumping lemma is extremely useful in proving that certain sets are
- Non-regular
  - Regular
  - Both
  - None
- 11) Which string can be generated by  $S \rightarrow aS/bA, A \rightarrow d/ccA$  ?
- aabccd
  - adabcca
  - abcca
  - abababd
- 12)  $(P + Q)^* = ?$
- $(P^* + Q^*)$
  - $P^* + Q^*$
  - $(P^*Q^*)^*$
  - Both a) and c)
- 13) Finite state machine \_\_\_\_\_ recognize palindromes.
- Can
  - Cannot
  - May
  - May not
- 14) A language L is accepted by a FSA if it is
- CFL
  - CSL
  - Recursive
  - Regular
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Wednesday, 22-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Answer **any three** of following questions : (3×4=12)

a) Write regular expression for the following languages over {0, 1}.

- i) all strings containing an even number of 0's
- ii) all string with at most two occurrences of the substring 00.

b) Design FA for the language  $L = \{ab^5Wb^4 : W \in \{a, b\}^*\}$ .

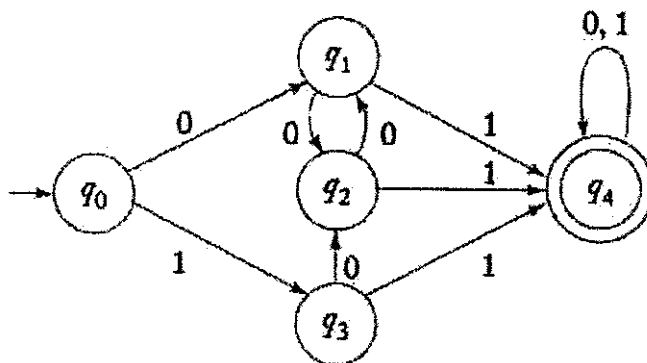
c) Convert the given  $\epsilon$ -NFA to NFA without  $\epsilon$ .

|                 |          |          |          |
|-----------------|----------|----------|----------|
| $\epsilon$      | <b>a</b> | <b>b</b> | <b>c</b> |
| $\rightarrow p$ | $\phi$   | {p}      | {q}      |
| <b>q</b>        | {p}      | {q}      | {r}      |
| <b>*r</b>       | {q}      | {r}      | $\phi$   |

d) Write CFG for the language  $L = \{a^n b^m c^k / n=m \text{ or } m \leq k\}$ .

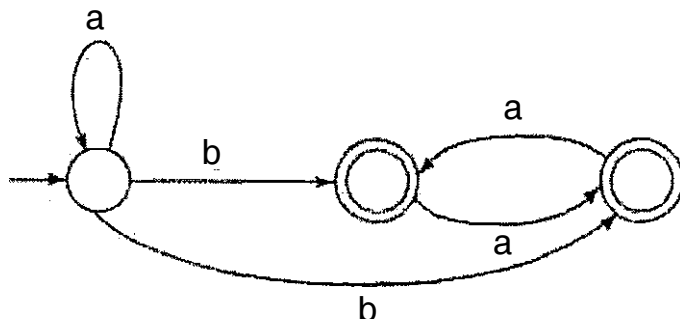
3. Answer **any two** of the following : (2×8=16)

a) Minimize the given FA





b) Find regular expression for the given FA using Kleene's theorem.



c) Eliminate  $\wedge$  productions, unit productions and useless symbols.

$S \rightarrow aA | aBB$

$A \rightarrow aaA | \wedge$

$B \rightarrow bB | bbC$

$C \rightarrow B$

#### SECTION – II

4. Solve **any three** :

(3×4=12)

- 1) Define deterministic PDA.
- 2) What are the different types of grammars/languages ?
- 3) What is a multi-tape Turing machine ?
- 4) Compare NPDA and DPDA.

5. Solve **any two** :

(2×8=16)

- 1) Design a Turing machine for coping string.
- 2) Construct a PDA to accept a given language L by empty stack and final state both where  $L = \{a^n b^n, \text{ where } n \geq 1\}$ .
- 3) Write short note on universal Turing machine.



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

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

Day and Date : Wednesday, 22-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) The symbol  $Z_0$  in formal definition of PDA is used for
  - a) Stack symbol
  - b) Input symbol
  - c) Both a) and b)
  - d) None of these
- 2) In one move the Turing machine
  - a) May change its state
  - b) Write a symbol on the cell being scanned
  - c) Move the head one position left or right
  - d) All of the above
- 3) An instantaneous description of Turing machine consists of
  - a) Present state only
  - b) Present state and entire input to be processed
  - c) Present input only
  - d) None of these
- 4) A \_\_\_\_\_ is formally defined as  $M = (Q, \Sigma, \Gamma, \delta, q_0, Z, F)$ 
  - a) Turing machine
  - b) Push down Automata
  - c) DFA
  - d) NFA
- 5) The pumping lemma is extremely useful in proving that certain sets are
  - a) Non-regular
  - b) Regular
  - c) Both
  - d) None
- 6) Which string can be generated by  $S \rightarrow aS/bA, A \rightarrow d/ccA$  ?
  - a) aabccd
  - b) adabcca
  - c) abcca
  - d) abababd
- 7)  $(P + Q)^* = ?$ 
  - a)  $(P^* + Q^*)$
  - b)  $P^* + Q^*$
  - c)  $(P^*Q^*)^*$
  - d) Both a) and c)



- 8) Finite state machine \_\_\_\_\_ recognize palindromes.  
a) Can                      b) Cannot                      c) May                      d) May not
- 9) A language L is accepted by a FSA if it is  
a) CFL                      b) CSL                      c) Recursive                      d) Regular
- 10) The regular expression have all strings in which any number of 0's is followed by any number of 1's followed by any number of 2's is  
a)  $(0 + 1 + 2)^*$                       b)  $0^*1^*2^*$                       c)  $0^*+1+2$                       d)  $(0 + 1)^*2^*$
- 11) Which of the following String can be obtained by the language  $L = \{a^i b^{2i} \mid i \geq 1\}$  ?  
a) aaabbbbb                      b) aabbb                      c) abbabba                      d) aaaabbbabb
- 12) Finite automata are used for pattern matching in text editors for  
a) Compiler lexical analysis  
b) Programming in localized application  
c) Both a) and b)  
d) None of the above
- 13) The set of Legal C Programs Is Not a CFL  
a) True                      b) False
- 14) In \_\_\_\_\_  $\delta$  is the transition function :  $\delta : Q \times (U \cup \{ \}) \rightarrow (Q \cup \{ \text{ha, hr} \})$   
 $\times (U \cup \{ \}) \times \{R, L, S\}$ .  
a) Turing machine                      b) Push down automata  
c) CFG                      d) None
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Wednesday, 22-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Answer **any three** of following questions : (3×4=12)

a) Write regular expression for the following languages over {0, 1}.

- i) all strings containing an even number of 0's
- ii) all string with at most two occurrences of the substring 00.

b) Design FA for the language  $L = \{ab^5Wb^4 : W \in \{a, b\}^*\}$ .

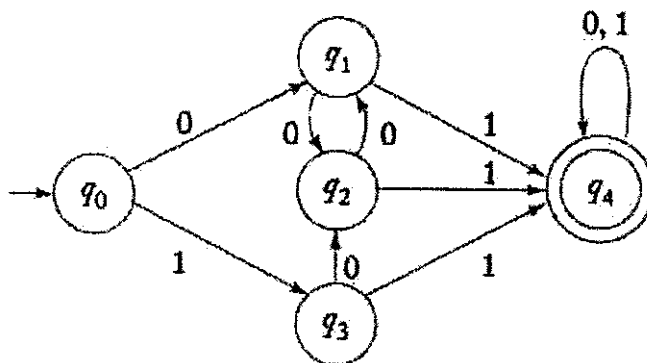
c) Convert the given  $\epsilon$ -NFA to NFA without  $\epsilon$ .

| $\epsilon$      | a       | b       | c       |
|-----------------|---------|---------|---------|
| $\rightarrow p$ | $\phi$  | $\{p\}$ | $\{q\}$ |
| q               | $\{p\}$ | $\{q\}$ | $\{r\}$ |
| *r              | $\{q\}$ | $\{r\}$ | $\phi$  |

d) Write CFG for the language  $L = \{a^n b^m c^k / n=m \text{ or } m \leq k\}$ .

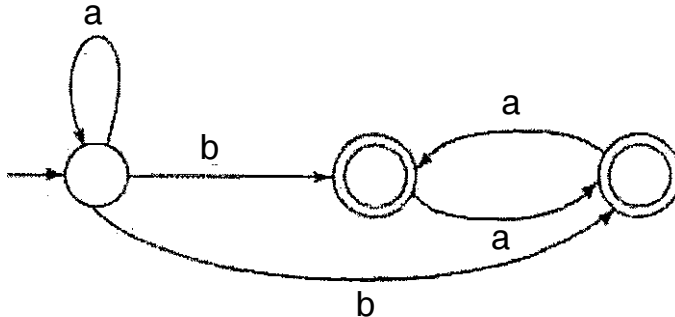
3. Answer **any two** of the following : (2×8=16)

a) Minimize the given FA





b) Find regular expression for the given FA using Kleene's theorem.



c) Eliminate  $\wedge$  productions, unit productions and useless symbols.

$S \rightarrow aA | aBB$        $A \rightarrow aaA | \wedge$        $B \rightarrow bB | bbC$        $C \rightarrow B$

### SECTION – II

4. Solve **any three** : (3×4=12)
- 1) Define deterministic PDA.
  - 2) What are the different types of grammars/languages ?
  - 3) What is a multi-tape Turing machine ?
  - 4) Compare NPDA and DPDA.
5. Solve **any two** : (2×8=16)
- 1) Design a Turing machine for coping string.
  - 2) Construct a PDA to accept a given language L by empty stack and final state both where  $L = \{a^n b^n, \text{ where } n \geq 1\}$ .
  - 3) Write short note on universal Turing machine.
-





SLR-TJ – 304

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

|     |   |
|-----|---|
| Set | P |
|-----|---|

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

Day and Date : Thursday, 23-11-2017  
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 (1 mark each) :

- 1) Which of the following is not a 8085 instruction ?
  - a) STA X B
  - b) STA X H
  - c) MOV A, A
  - d) MOV A, B
- 2) To construct 2K X 8 memory using 1K X 8 memory, no. of chips required are
  - a) 4
  - b) 3
  - c) 2
  - d) 8
- 3) Which microprocessor pins are used to request and acknowledge a DMA transfer ?
  - a) Reset and Ready
  - b) Ready and Wait
  - c) HOLD and HLDA
  - d) None of these
- 4) In a microprocessor, the register which holds address of the next instruction to be fetched is
  - a) Accumulator
  - b) Program Counter
  - c) Stack Pointer
  - d) Instruction Register
- 5) What is the addressing mode used in instruction LDA 1050 ?
  - a) Direct
  - b) Indirect
  - c) Indexed
  - d) Immediate

P.T.O.



- 6) Which one of the following is the control signal ?
- a)  $\overline{RD}$
  - b) S1
  - c) S2
  - d) ALE
- 7) which of the following statement is true ?
- a) The group of machine cycle is called a state
  - b) A machine cycle consist of one or more instruction cycle
  - c) An instruction cycle is made up of machine cycles and machine cycle is made up of number of states
  - d) None of the above
- 8) LTIM stands for
- a) Level Triggered Interrupt Mode
  - b) Least Triggered Interrupt Mode
  - c) Load Time Input Mode
  - d) None
- 9) OCW stands for
- a) Output Control World
  - b) Operational Command World
  - c) Operational Command Word
  - d) Operational Constant Word
- 10) For serial communication interface which IC is used ?
- a) 8251
  - b) 8085
  - c) 8259
  - d) 8257
- 11) The vector address of RST 4 is
- a) 0008H
  - b) 0018H
  - c) 0020H
  - d) 0024H
- 12) Which processor structure is pipelined ?
- a) All X 80 processors
  - b) All X 85 processors
  - c) All X 86 processors
  - d) None
- 13) In 8086 the overflow flag is set when
- a) The sum is more than 16 bit
  - b) Signed numbers go out of their range after an arithmetic operation
  - c) Carry and sign flags are set
  - d) During subtraction
- 14)  $\overline{BHE}$  of 8086 microprocessor signal is used to interface the
- a) Even bank
  - b) Odd bank
  - c) I/O
  - d) DMA



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

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

Day and Date : Thursday, 23-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**SECTION – I**

2. Solve **any three** : **(3×4=12)**
- a) Draw and explain the timing diagram of OP CODE Fetch cycle.
  - b) What are the features of 8085 ?
  - c) Explain Logical instruction.
  - d) Explain following pins :
    - 1) TRAP
    - 2) READY
    - 3) ALE
    - 4) HOLD and HLDA.
  - e) With example describe following instructions :
    - 1) DAA
    - 2) PUSH Rp.
3. Solve **any one** : **(1×8=8)**
- a) Draw and explain architecture of 8085.
  - b) Draw and explain timing diagram of IN 80H instruction.
4. Solve **any one** : **(1×8=8)**
- a) Write 8085 ALP to transfer 10 data bytes. Data is stored at C200H. Shift it to C400H.
  - b) Interface 1K X 8 memory to 8085 using 1K X 4 memory chips. Give the address range of each chip used.

**Set P**



## SECTION – II

5. Attempt **any 3** :

12

- 1) Draw interfacing of 2 digit thumb wheel switches using 8255 PPI.
- 2) Write a set of instructions to perform the following operations :
  - a) Set bit 4 of port c
  - b) Set bit 1 of port c
  - c) Reset bit 4 of port c
  - d) Reset bit 1 of port c.

Assume control register = 13H.

- 3) What are the functions of the following blocks ?
  - a) IRR
  - b) ISR
  - c) Priority resolver
  - d) IMR.
- 4) Write a note on USART.

6. Attempt **any 2** :

16

- 1) Explain interrupt structure of 8085 with neat diagram.
  - 2) Explain mode 1-input and mode 1-output of 8255 with neat diagram.
  - 3) List the features of programmable DMA controller 8257.
-



SLR-TJ – 304

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

|     |   |
|-----|---|
| Set | Q |
|-----|---|

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

Day and Date : Thursday, 23-11-2017  
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 (1 mark **each**) :

- 1) LTIM stands for
  - a) Level Triggered Interrupt Mode
  - b) Least Triggered Interrupt Mode
  - c) Load Time Input Mode
  - d) None
- 2) OCW stands for
  - a) Output Control World
  - b) Operational Command World
  - c) Operational Command Word
  - d) Operational Constant Word
- 3) For serial communication interface which IC is used ?
  - a) 8251
  - b) 8085
  - c) 8259
  - d) 8257
- 4) The vector address of RST 4 is
  - a) 0008H
  - b) 0018H
  - c) 0020H
  - d) 0024H
- 5) Which processor structure is pipelined ?
  - a) All X 80 processors
  - b) All X 85 processors
  - c) All X 86 processors
  - d) None
- 6) In 8086 the overflow flag is set when
  - a) The sum is more than 16 bit
  - b) Signed numbers go out of their range after an arithmetic operation
  - c) Carry and sign flags are set
  - d) During subtraction

P.T.O.



- 7)  $\overline{\text{BHE}}$  of 8086 microprocessor signal is used to interface the
- a) Even bank
  - b) Odd bank
  - c) I/O
  - d) DMA
- 8) Which of the following is not a 8085 instruction ?
- a) STA X B
  - b) STA X H
  - c) MOV A, A
  - d) MOV A, B
- 9) To construct 2K X 8 memory using 1K X 8 memory, no. of chips required are
- a) 4
  - b) 3
  - c) 2
  - d) 8
- 10) Which microprocessor pins are used to request and acknowledge a DMA transfer ?
- a) Reset and Ready
  - b) Ready and Wait
  - c) HOLD and HLDA
  - d) None of these
- 11) In a microprocessor, the register which holds address of the next instruction to be fetched is
- a) Accumulator
  - b) Program Counter
  - c) Stack Pointer
  - d) Instruction Register
- 12) What is the addressing mode used in instruction LDA 1050 ?
- a) Direct
  - b) Indirect
  - c) Indexed
  - d) Immediate
- 13) Which one of the following is the control signal ?
- a)  $\overline{\text{RD}}$
  - b) S1
  - c) S2
  - d) ALE
- 14) which of the following statement is true ?
- a) The group of machine cycle is called a state
  - b) A machine cycle consist of one or more instruction cycle
  - c) An instruction cycle is made up of machine cycles and machine cycle is made up of number of states
  - d) None of the above
-



|                     |  |
|---------------------|--|
| <b>Seat<br/>No.</b> |  |
|---------------------|--|

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

Day and Date : Thursday, 23-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**SECTION – I**

2. Solve **any three** : **(3×4=12)**
- a) Draw and explain the timing diagram of OP CODE Fetch cycle.
  - b) What are the features of 8085 ?
  - c) Explain Logical instruction.
  - d) Explain following pins :
    - 1) TRAP
    - 2) READY
    - 3) ALE
    - 4) HOLD and HLDA.
  - e) With example describe following instructions :
    - 1) DAA
    - 2) PUSH Rp.
3. Solve **any one** : **(1×8=8)**
- a) Draw and explain architecture of 8085.
  - b) Draw and explain timing diagram of IN 80H instruction.
4. Solve **any one** : **(1×8=8)**
- a) Write 8085 ALP to transfer 10 data bytes. Data is stored at C200H. Shift it to C400H.
  - b) Interface 1K X 8 memory to 8085 using 1K X 4 memory chips. Give the address range of each chip used.



## SECTION – II

5. Attempt **any 3** :

12

- 1) Draw interfacing of 2 digit thumb wheel switches using 8255 PPI.
- 2) Write a set of instructions to perform the following operations :
  - a) Set bit 4 of port c
  - b) Set bit 1 of port c
  - c) Reset bit 4 of port c
  - d) Reset bit 1 of port c.

Assume control register = 13H.

- 3) What are the functions of the following blocks ?
  - a) IRR
  - b) ISR
  - c) Priority resolver
  - d) IMR.
- 4) Write a note on USART.

6. Attempt **any 2** :

16

- 1) Explain interrupt structure of 8085 with neat diagram.
  - 2) Explain mode 1-input and mode 1-output of 8255 with neat diagram.
  - 3) List the features of programmable DMA controller 8257.
-





SLR-TJ – 304

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

|     |   |
|-----|---|
| Set | R |
|-----|---|

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

Day and Date : Thursday, 23-11-2017  
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 (1 mark **each**) :

- 1) What is the addressing mode used in instruction LDA 1050 ?
  - a) Direct
  - b) Indirect
  - c) Indexed
  - d) Immediate
- 2) Which one of the following is the control signal ?
  - a)  $\overline{RD}$
  - b) S1
  - c) S2
  - d) ALE
- 3) which of the following statement is true ?
  - a) The group of machine cycle is called a state
  - b) A machine cycle consist of one or more instruction cycle
  - c) An instruction cycle is made up of machine cycles and machine cycle is made up of number of states
  - d) None of the above
- 4) LTIM stands for
  - a) Level Triggered Interrupt Mode
  - b) Least Triggered Interrupt Mode
  - c) Load Time Input Mode
  - d) None
- 5) OCW stands for
  - a) Output Control World
  - b) Operational Command World
  - c) Operational Command Word
  - d) Operational Constant Word

P.T.O.



- 6) For serial communication interface which IC is used ?
- a) 8251                                          b) 8085  
c) 8259                                          d) 8257
- 7) The vector address of RST 4 is
- a) 0008H                                        b) 0018H  
c) 0020H                                        d) 0024H
- 8) Which processor structure is pipelined ?
- a) All X 80 processors                      b) All X 85 processors  
c) All X 86 processors                      d) None
- 9) In 8086 the overflow flag is set when
- a) The sum is more than 16 bit  
b) Signed numbers go out of their range after an arithmetic operation  
c) Carry and sign flags are set  
d) During subtraction
- 10)  $\overline{BHE}$  of 8086 microprocessor signal is used to interface the
- a) Even bank                                    b) Odd bank  
c) I/O                                              d) DMA
- 11) Which of the following is not a 8085 instruction ?
- a) STA X B                                      b) STA X H  
c) MOV A, A                                    d) MOV A, B
- 12) To construct 2K X 8 memory using 1K X 8 memory, no. of chips required are
- a) 4                                                b) 3  
c) 2                                                d) 8
- 13) Which microprocessor pins are used to request and acknowledge a DMA transfer ?
- a) Reset and Ready                          b) Ready and Wait  
c) HOLD and HLDA                          d) None of these
- 14) In a microprocessor, the register which holds address of the next instruction to be fetched is
- a) Accumulator                                b) Program Counter  
c) Stack Pointer                                d) Instruction Register



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

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

Day and Date : Thursday, 23-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**SECTION – I**

2. Solve **any three** : **(3×4=12)**
- a) Draw and explain the timing diagram of OP CODE Fetch cycle.
  - b) What are the features of 8085 ?
  - c) Explain Logical instruction.
  - d) Explain following pins :
    - 1) TRAP
    - 2) READY
    - 3) ALE
    - 4) HOLD and HLDA.
  - e) With example describe following instructions :
    - 1) DAA
    - 2) PUSH Rp.
3. Solve **any one** : **(1×8=8)**
- a) Draw and explain architecture of 8085.
  - b) Draw and explain timing diagram of IN 80H instruction.
4. Solve **any one** : **(1×8=8)**
- a) Write 8085 ALP to transfer 10 data bytes. Data is stored at C200H. Shift it to C400H.
  - b) Interface 1K X 8 memory to 8085 using 1K X 4 memory chips. Give the address range of each chip used.

**Set R**



## SECTION – II

5. Attempt **any 3** :

12

- 1) Draw interfacing of 2 digit thumb wheel switches using 8255 PPI.
- 2) Write a set of instructions to perform the following operations :
  - a) Set bit 4 of port c
  - b) Set bit 1 of port c
  - c) Reset bit 4 of port c
  - d) Reset bit 1 of port c.

Assume control register = 13H.

- 3) What are the functions of the following blocks ?
  - a) IRR
  - b) ISR
  - c) Priority resolver
  - d) IMR.
- 4) Write a note on USART.

6. Attempt **any 2** :

16

- 1) Explain interrupt structure of 8085 with neat diagram.
  - 2) Explain mode 1-input and mode 1-output of 8255 with neat diagram.
  - 3) List the features of programmable DMA controller 8257.
-



SLR-TJ – 304

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

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

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

Day and Date : Thursday, 23-11-2017  
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 (1 mark **each**) :

- 1) For serial communication interface which IC is used ?
  - a) 8251
  - b) 8085
  - c) 8259
  - d) 8257
- 2) The vector address of RST 4 is
  - a) 0008H
  - b) 0018H
  - c) 0020H
  - d) 0024H
- 3) Which processor structure is pipelined ?
  - a) All X 80 processors
  - b) All X 85 processors
  - c) All X 86 processors
  - d) None
- 4) In 8086 the overflow flag is set when
  - a) The sum is more than 16 bit
  - b) Signed numbers go out of their range after an arithmetic operation
  - c) Carry and sign flags are set
  - d) During subtraction
- 5)  $\overline{\text{BHE}}$  of 8086 microprocessor signal is used to interface the
  - a) Even bank
  - b) Odd bank
  - c) I/O
  - d) DMA

P.T.O.



- 6) Which of the following is not a 8085 instruction ?
- |             |             |
|-------------|-------------|
| a) STA X B  | b) STA X H  |
| c) MOV A, A | d) MOV A, B |
- 7) To construct 2K X 8 memory using 1K X 8 memory, no. of chips required are
- |      |      |
|------|------|
| a) 4 | b) 3 |
| c) 2 | d) 8 |
- 8) Which microprocessor pins are used to request and acknowledge a DMA transfer ?
- |                    |                   |
|--------------------|-------------------|
| a) Reset and Ready | b) Ready and Wait |
| c) HOLD and HLDA   | d) None of these  |
- 9) In a microprocessor, the register which holds address of the next instruction to be fetched is
- |                  |                         |
|------------------|-------------------------|
| a) Accumulator   | b) Program Counter      |
| c) Stack Pointer | d) Instruction Register |
- 10) What is the addressing mode used in instruction LDA 1050 ?
- |            |              |
|------------|--------------|
| a) Direct  | b) Indirect  |
| c) Indexed | d) Immediate |
- 11) Which one of the following is the control signal ?
- |                    |        |
|--------------------|--------|
| a) $\overline{RD}$ | b) S1  |
| c) S2              | d) ALE |
- 12) which of the following statement is true ?
- |                                                                                                       |
|-------------------------------------------------------------------------------------------------------|
| a) The group of machine cycle is called a state                                                       |
| b) A machine cycle consist of one or more instruction cycle                                           |
| c) An instruction cycle is made up of machine cycles and machine cycle is made up of number of states |
| d) None of the above                                                                                  |
- 13) LTIM stands for
- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| a) Level Triggered Interrupt Mode | b) Least Triggered Interrupt Mode |
| c) Load Time Input Mode           | d) None                           |
- 14) OCW stands for
- |                             |                              |
|-----------------------------|------------------------------|
| a) Output Control World     | b) Operational Command World |
| c) Operational Command Word | d) Operational Constant Word |



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

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

Day and Date : Thursday, 23-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

**SECTION – I**

2. Solve **any three** : **(3×4=12)**
- a) Draw and explain the timing diagram of OP CODE Fetch cycle.
  - b) What are the features of 8085 ?
  - c) Explain Logical instruction.
  - d) Explain following pins :
    - 1) TRAP
    - 2) READY
    - 3) ALE
    - 4) HOLD and HLDA.
  - e) With example describe following instructions :
    - 1) DAA
    - 2) PUSH Rp.
3. Solve **any one** : **(1×8=8)**
- a) Draw and explain architecture of 8085.
  - b) Draw and explain timing diagram of IN 80H instruction.
4. Solve **any one** : **(1×8=8)**
- a) Write 8085 ALP to transfer 10 data bytes. Data is stored at C200H. Shift it to C400H.
  - b) Interface 1K X 8 memory to 8085 using 1K X 4 memory chips. Give the address range of each chip used.

**Set S**



## SECTION – II

5. Attempt **any 3** :

12

- 1) Draw interfacing of 2 digit thumb wheel switches using 8255 PPI.
- 2) Write a set of instructions to perform the following operations :
  - a) Set bit 4 of port c
  - b) Set bit 1 of port c
  - c) Reset bit 4 of port c
  - d) Reset bit 1 of port c.

Assume control register = 13H.

- 3) What are the functions of the following blocks ?
  - a) IRR
  - b) ISR
  - c) Priority resolver
  - d) IMR.
- 4) Write a note on USART.

6. Attempt **any 2** :

16

- 1) Explain interrupt structure of 8085 with neat diagram.
  - 2) Explain mode 1-input and mode 1-output of 8255 with neat diagram.
  - 3) List the features of programmable DMA controller 8257.
-





SLR-TJ – 305

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

Set 

|   |
|---|
| P |
|---|

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

Day and Date : Friday, 24-11-2017  
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 option :

14

- 1) The retrieval of items in a stack is \_\_\_\_\_ operation.  
A) push                      B) pop                      C) retrieval                      D) access
- 2) Choose correct output for the following sequence of operations performed on Stack. push (15), push (18), pop, push(12), push(15), pop, pop, pop, push(11), pop  
A) 18 15 12 15 11                      B) 18 15 15 12 11  
C) 18 11 12 15 15                      D) None of the above
- 3) In which data structure element is inserted at one end called Rear and deleted at other end called Front  
A) Stack                      B) Queue                      C) Both                      D) Binary Tree
- 4) Stack can be implemented using \_\_\_\_\_ and \_\_\_\_\_ ?  
A) Array and Binary Tree                      B) Linked List and Graph  
C) Array and Linked List                      D) Queue and Linked List
- 5) Postfix form of following expression  
D + (E \* F)  
A) EF \* D+                      B) DEF \* +                      C) DEF ++                      D) EFD ++
- 6) The post order traversal of binary tree is DEBFCA. Find out the pre order traversal.  
A) ABFCDE                      B) ADBFEC                      C) ABDECF                      D) ABDCEF

P.T.O.



- 7) State True or False.
- i) An undirected graph which contains no cycles is called forest.
  - ii) A graph is said to be complete if there is an edge between every pair of vertices.
- A) True, True      B) False, True      C) False, False      D) True, False
- 8) In a graph if  $e = (u, v)$  means
- A)  $u$  is adjacent to  $v$  but  $v$  is not adjacent to  $u$
  - B)  $e$  begins at  $u$  and ends at  $v$
  - C)  $u$  is node and  $v$  is an edge
  - D) both  $u$  and  $v$  are edges
- 9) In threaded binary tree \_\_\_\_\_ points to higher nodes in tree.
- A) Info      B) Root      C) Threads      D) Child
- 10) In the \_\_\_\_\_ traversal we process all of a vertex's descendants before we move to an adjacent vertex.
- A) Depth first      B) Breadth first      C) Width first      D) Depth limited
- 11) If  $n$  elements are sorted in a binary search tree. What would be the asymptotic complexity to search a key in the tree ?
- A)  $O(1)$       B)  $O(\log n)$       C)  $O(n)$       D)  $O(n \log n)$
- 12) A binary search tree whose left subtree and right subtree differ in height by atmost 1 unit is called
- A) AVL tree      B) Red-black tree  
C) Lemma tree      D) None of the above
- 13) Three standards ways of traversing a binary tree  $T$  with root  $R$
- A) Prefix, infix, postfix  
B) Pre-process, in-process, post-process  
C) Pre-traversal, in-traversal, post-traversal  
D) Pre-order, in-order, post-order
- 14) Which of the following data structure is non linear type ?
- A) Strings      B) Lists      C) Stacks      D) Graph
-



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

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

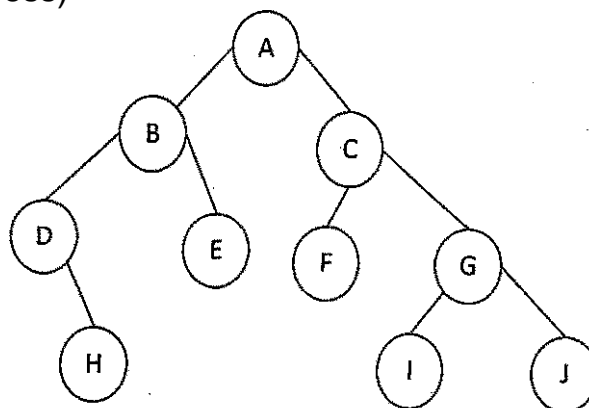
Day and Date : Friday, 24-11-2017

Marks : 56

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

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Write a function in 'C' language to check whether stack is empty or not.
  - b) Write a short note on Circular Queue.
  - c) Explain queue implementation using linked list.
  - d) Describe the following terms with example :
    - 1) Height of tree
    - 2) Balance factor of a node
3. Attempt **any one** : **(1×8=8)**
- a) Write a program to implement Singly Linked List and perform following operations on it :
    - 1) Insert node
    - 2) Delete node
    - 3) Display
    - 4) Exit
  - b) Define Queue. Explain sequential representation, operations and implementation of Queue in detail.
4. Attempt **any one** : **(1×8=8)**
- a) What is Binary Search Tree (BST) ? Make a BST for the following sequence of numbers.  
48, 69, 56, 41, 98, 115, 89, 29, 23, 76, 35, 45.  
Traverse the tree in Preorder, Inorder and Postorder.
  - b) Traverse the given tree using Inorder, Preorder and Postorder traversal. (Give step-by-step process)

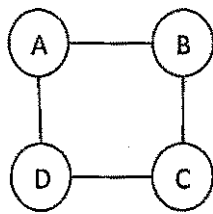


Set P

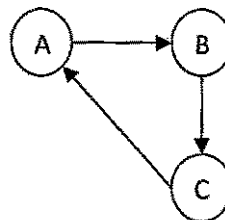


## SECTION – II

5. Attempt **any three** : (3×4=12)
- Write a short note on Balanced Multiway Trees.
  - What is Height Balanced Tree ? Explain its benefits with example.
  - How single rotation is performed in AVL tree ?
  - Explain the difference between depth-first and breadth-first traversing techniques of a graph.
6. Attempt **any one** : (1×8=8)
- Write pseudo code of Dijkstra's algorithm for finding shortest path. Explain algorithm with example showing each step with corresponding graph.
  - Construct a B-tree of order 3 by inserting following keys in the order-M, Q, A, N, P, W, X, T, G, E, J.
7. Attempt **any one** : (1×8=8)
- What is an AVL tree ? Explain Insertion and Deletion of node in AVL tree in detail with example.
  - What are the different representations of graph ? Write both representations for the following graph.



G1



G2



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

Set 

|   |
|---|
| Q |
|---|

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

Day and Date : Friday, 24-11-2017  
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 option :

14

- 1) In a graph if  $e = (u, v)$  means
  - A) u is adjacent to v but v is not adjacent to u
  - B) e begins at u and ends at v
  - C) u is node and v is an edge
  - D) both u and v are edges
- 2) In threaded binary tree \_\_\_\_\_ points to higher nodes in tree.
  - A) Info
  - B) Root
  - C) Threads
  - D) Child
- 3) In the \_\_\_\_\_ traversal we process all of a vertex's descendants before we move to an adjacent vertex.
  - A) Depth first
  - B) Breadth first
  - C) Width first
  - D) Depth limited
- 4) If n elements are sorted in a binary search tree. What would be the asymptotic complexity to search a key in the tree ?
  - A)  $O(1)$
  - B)  $O(\log n)$
  - C)  $O(n)$
  - D)  $O(n \log n)$
- 5) A binary search tree whose left subtree and right subtree differ in height by atmost 1 unit is called
  - A) AVL tree
  - B) Red-black tree
  - C) Lemma tree
  - D) None of the above
- 6) Three standards ways of traversing a binary tree T with root R
  - A) Prefix, infix, postfix
  - B) Pre-process, in-process, post-process
  - C) Pre-traversal, in-traversal, post-traversal
  - D) Pre-order, in-order, post-order



- 7) Which of the following data structure is non linear type ?  
A) Strings                      B) Lists                      C) Stacks                      D) Graph
- 8) The retrieval of items in a stack is \_\_\_\_\_ operation.  
A) push                      B) pop                      C) retrieval                      D) access
- 9) Choose correct output for the following sequence of operations performed on Stack. push (15), push (18), pop, push(12), push(15), pop, pop, pop, push(11), pop  
A) 18 15 12 15 11                      B) 18 15 15 12 11  
C) 18 11 12 15 15                      D) None of the above
- 10) In which data structure element is inserted at one end called Rear and deleted at other end called Front  
A) Stack                      B) Queue                      C) Both                      D) Binary Tree
- 11) Stack can be implemented using \_\_\_\_\_ and \_\_\_\_\_ ?  
A) Array and Binary Tree                      B) Linked List and Graph  
C) Array and Linked List                      D) Queue and Linked List
- 12) Postfix form of following expression  
 $D + (E * F)$   
A)  $EF * D+$                       B)  $DEF * +$                       C)  $DEF ++$                       D)  $EFD ++$
- 13) The post order traversal of binary tree is DEBFCA. Find out the pre order traversal.  
A) ABFCDE                      B) ADBFEC                      C) ABDECF                      D) ABDCEF
- 14) State True or False.  
i) An undirected graph which contains no cycles is called forest.  
ii) A graph is said to be complete if there is an edge between every pair of vertices.  
A) True, True                      B) False, True                      C) False, False                      D) True, False
-



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

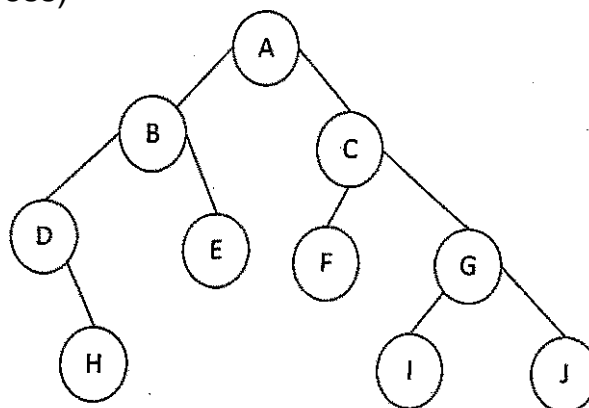
**S.E. (Information Technology) (Part – II) (CGPA)  
Examination, 2017  
DATA STRUCTURES**

Day and Date : Friday, 24-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

- 2. Attempt **any three** : **(3×4=12)**
  - a) Write a function in 'C' language to check whether stack is empty or not.
  - b) Write a short note on Circular Queue.
  - c) Explain queue implementation using linked list.
  - d) Describe the following terms with example :
    - 1) Height of tree
    - 2) Balance factor of a node
  
- 3. Attempt **any one** : **(1×8=8)**
  - a) Write a program to implement Singly Linked List and perform following operations on it :
    - 1) Insert node
    - 2) Delete node
    - 3) Display
    - 4) Exit
  - b) Define Queue. Explain sequential representation, operations and implementation of Queue in detail.
  
- 4. Attempt **any one** : **(1×8=8)**
  - a) What is Binary Search Tree (BST) ? Make a BST for the following sequence of numbers.  
48, 69, 56, 41, 98, 115, 89, 29, 23, 76, 35, 45.  
Traverse the tree in Preorder, Inorder and Postorder.
  - b) Traverse the given tree using Inorder, Preorder and Postorder traversal. (Give step-by-step process)

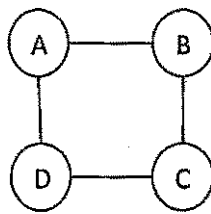
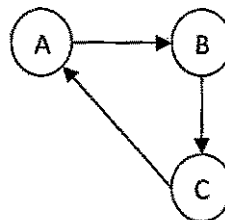


Set Q



## SECTION – II

5. Attempt **any three** : **(3×4=12)**
- Write a short note on Balanced Multiway Trees.
  - What is Height Balanced Tree ? Explain its benefits with example.
  - How single rotation is performed in AVL tree ?
  - Explain the difference between depth-first and breadth-first traversing techniques of a graph.
6. Attempt **any one** : **(1×8=8)**
- Write pseudo code of Dijkstra's algorithm for finding shortest path. Explain algorithm with example showing each step with corresponding graph.
  - Construct a B-tree of order 3 by inserting following keys in the order-M, Q, A, N, P, W, X, T, G, E, J.
7. Attempt **any one** : **(1×8=8)**
- What is an AVL tree ? Explain Insertion and Deletion of node in AVL tree in detail with example.
  - What are the different representations of graph ? Write both representations for the following graph.

**G1****G2**





SLR-TJ – 305

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

Set **R**

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

Day and Date : Friday, 24-11-2017  
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 option :

14

- 1) Postfix form of following expression  
 $D + (E * F)$   
A)  $EF * D+$       B)  $DEF * +$       C)  $DEF ++$       D)  $EFD ++$
- 2) The post order traversal of binary tree is DEBFCA. Find out the pre order traversal.  
A) ABFCDE      B) ADBFEC      C) ABDECF      D) ABDCEF
- 3) State True or False.
  - i) An undirected graph which contains no cycles is called forest.
  - ii) A graph is said to be complete if there is an edge between every pair of vertices.A) True, True      B) False, True      C) False, False      D) True, False
- 4) In a graph if  $e = (u, v)$  means  
A)  $u$  is adjacent to  $v$  but  $v$  is not adjacent to  $u$   
B)  $e$  begins at  $u$  and ends at  $v$   
C)  $u$  is node and  $v$  is an edge  
D) both  $u$  and  $v$  are edges
- 5) In threaded binary tree \_\_\_\_\_ points to higher nodes in tree.  
A) Info      B) Root      C) Threads      D) Child
- 6) In the \_\_\_\_\_ traversal we process all of a vertex's descendants before we move to an adjacent vertex.  
A) Depth first      B) Breadth first      C) Width first      D) Depth limited

P.T.O.



- 7) If  $n$  elements are sorted in a binary search tree. What would be the asymptotic complexity to search a key in the tree ?  
A)  $O(1)$                       B)  $O(\log n)$                       C)  $O(n)$                       D)  $O(n \log n)$
- 8) A binary search tree whose left subtree and right subtree differ in height by at most 1 unit is called  
A) AVL tree                                              B) Red-black tree  
C) Lemma tree                                              D) None of the above
- 9) Three standard ways of traversing a binary tree  $T$  with root  $R$   
A) Prefix, infix, postfix  
B) Pre-process, in-process, post-process  
C) Pre-traversal, in-traversal, post-traversal  
D) Pre-order, in-order, post-order
- 10) Which of the following data structure is non linear type ?  
A) Strings                      B) Lists                      C) Stacks                      D) Graph
- 11) The retrieval of items in a stack is \_\_\_\_\_ operation.  
A) push                      B) pop                      C) retrieval                      D) access
- 12) Choose correct output for the following sequence of operations performed on Stack. push (15), push (18), pop, push(12), push(15), pop, pop, pop, push(11), pop  
A) 18 15 12 15 11                                              B) 18 15 15 12 11  
C) 18 11 12 15 15                                              D) None of the above
- 13) In which data structure element is inserted at one end called Rear and deleted at other end called Front  
A) Stack                      B) Queue                      C) Both                      D) Binary Tree
- 14) Stack can be implemented using \_\_\_\_\_ and \_\_\_\_\_ ?  
A) Array and Binary Tree                                              B) Linked List and Graph  
C) Array and Linked List                                              D) Queue and Linked List
-



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

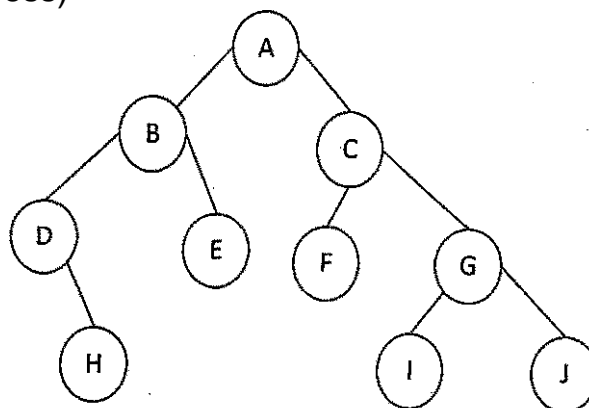
**S.E. (Information Technology) (Part – II) (CGPA)  
Examination, 2017  
DATA STRUCTURES**

Day and Date : Friday, 24-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Write a function in 'C' language to check whether stack is empty or not.
  - b) Write a short note on Circular Queue.
  - c) Explain queue implementation using linked list.
  - d) Describe the following terms with example :
    - 1) Height of tree
    - 2) Balance factor of a node
3. Attempt **any one** : **(1×8=8)**
- a) Write a program to implement Singly Linked List and perform following operations on it :
    - 1) Insert node
    - 2) Delete node
    - 3) Display
    - 4) Exit
  - b) Define Queue. Explain sequential representation, operations and implementation of Queue in detail.
4. Attempt **any one** : **(1×8=8)**
- a) What is Binary Search Tree (BST) ? Make a BST for the following sequence of numbers.  
48, 69, 56, 41, 98, 115, 89, 29, 23, 76, 35, 45.  
Traverse the tree in Preorder, Inorder and Postorder.
  - b) Traverse the given tree using Inorder, Preorder and Postorder traversal. (Give step-by-step process)

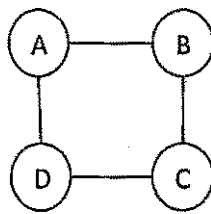


Set R

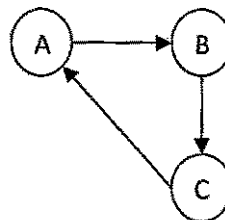


## SECTION – II

5. Attempt **any three** : (3×4=12)
- Write a short note on Balanced Multiway Trees.
  - What is Height Balanced Tree ? Explain its benefits with example.
  - How single rotation is performed in AVL tree ?
  - Explain the difference between depth-first and breadth-first traversing techniques of a graph.
6. Attempt **any one** : (1×8=8)
- Write pseudo code of Dijkstra's algorithm for finding shortest path. Explain algorithm with example showing each step with corresponding graph.
  - Construct a B-tree of order 3 by inserting following keys in the order-M, Q, A, N, P, W, X, T, G, E, J.
7. Attempt **any one** : (1×8=8)
- What is an AVL tree ? Explain Insertion and Deletion of node in AVL tree in detail with example.
  - What are the different representations of graph ? Write both representations for the following graph.



G1



G2



SLR-TJ – 305

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

Set 

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

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

Day and Date : Friday, 24-11-2017  
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 option :

14

- 1) In the \_\_\_\_\_ traversal we process all of a vertex's descendants before we move to an adjacent vertex.  
A) Depth first                      B) Breadth first  
C) Width first                      D) Depth limited
- 2) If  $n$  elements are sorted in a binary search tree. What would be the asymptotic complexity to search a key in the tree ?  
A)  $O(1)$                       B)  $O(\log n)$                       C)  $O(n)$                       D)  $O(n \log n)$
- 3) A binary search tree whose left subtree and right subtree differ in height by atmost 1 unit is called  
A) AVL tree                      B) Red-black tree  
C) Lemma tree                      D) None of the above
- 4) Three standards ways of traversing a binary tree T with root R  
A) Prefix, infix, postfix  
B) Pre-process, in-process, post-process  
C) Pre-traversal, in-traversal, post-traversal  
D) Pre-order, in-order, post-order
- 5) Which of the following data structure is non linear type ?  
A) Strings                      B) Lists                      C) Stacks                      D) Graph
- 6) The retrieval of items in a stack is \_\_\_\_\_ operation.  
A) push                      B) pop                      C) retrieval                      D) access

P.T.O.



- 7) Choose correct output for the following sequence of operations performed on Stack. push (15), push (18), pop, push(12), push(15), pop, pop, pop, push(11), pop
- A) 18 15 12 15 11                      B) 18 15 15 12 11  
C) 18 11 12 15 15                      D) None of the above
- 8) In which data structure element is inserted at one end called Rear and deleted at other end called Front
- A) Stack                      B) Queue                      C) Both                      D) Binary Tree
- 9) Stack can be implemented using \_\_\_\_\_ and \_\_\_\_\_ ?
- A) Array and Binary Tree                      B) Linked List and Graph  
C) Array and Linked List                      D) Queue and Linked List
- 10) Postfix form of following expression  
 $D + (E * F)$
- A)  $EF * D+$                       B)  $DEF * +$                       C)  $DEF ++$                       D)  $EFD * +$
- 11) The post order traversal of binary tree is DEBFCA. Find out the pre order traversal.
- A) ABFCDE                      B) ADBFEC                      C) ABDECF                      D) ABDCEF
- 12) State True or False.
- i) An undirected graph which contains no cycles is called forest.  
ii) A graph is said to be complete if there is an edge between every pair of vertices.
- A) True, True                      B) False, True                      C) False, False                      D) True, False
- 13) In a graph if  $e = (u, v)$  means
- A) u is adjacent to v but v is not adjacent to u  
B) e begins at u and ends at v  
C) u is node and v is an edge  
D) both u and v are edges
- 14) In threaded binary tree \_\_\_\_\_ points to higher nodes in tree.
- A) Info                      B) Root                      C) Threads                      D) Child
-



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

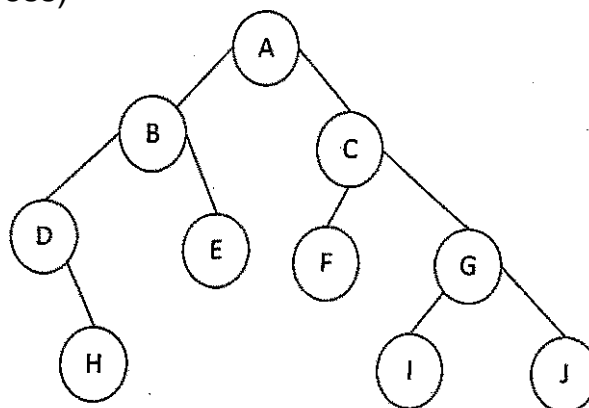
**S.E. (Information Technology) (Part – II) (CGPA)  
Examination, 2017  
DATA STRUCTURES**

Day and Date : Friday, 24-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

- 2. Attempt **any three** : **(3×4=12)**
  - a) Write a function in 'C' language to check whether stack is empty or not.
  - b) Write a short note on Circular Queue.
  - c) Explain queue implementation using linked list.
  - d) Describe the following terms with example :
    - 1) Height of tree
    - 2) Balance factor of a node
  
- 3. Attempt **any one** : **(1×8=8)**
  - a) Write a program to implement Singly Linked List and perform following operations on it :
    - 1) Insert node
    - 2) Delete node
    - 3) Display
    - 4) Exit
  - b) Define Queue. Explain sequential representation, operations and implementation of Queue in detail.
  
- 4. Attempt **any one** : **(1×8=8)**
  - a) What is Binary Search Tree (BST) ? Make a BST for the following sequence of numbers.  
48, 69, 56, 41, 98, 115, 89, 29, 23, 76, 35, 45.  
Traverse the tree in Preorder, Inorder and Postorder.
  - b) Traverse the given tree using Inorder, Preorder and Postorder traversal. (Give step-by-step process)

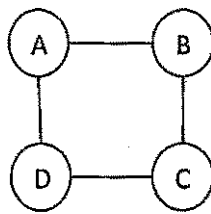


Set S

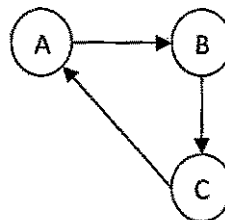


## SECTION – II

5. Attempt **any three** : (3×4=12)
- Write a short note on Balanced Multiway Trees.
  - What is Height Balanced Tree ? Explain its benefits with example.
  - How single rotation is performed in AVL tree ?
  - Explain the difference between depth-first and breadth-first traversing techniques of a graph.
6. Attempt **any one** : (1×8=8)
- Write pseudo code of Dijkstra's algorithm for finding shortest path. Explain algorithm with example showing each step with corresponding graph.
  - Construct a B-tree of order 3 by inserting following keys in the order-M, Q, A, N, P, W, X, T, G, E, J.
7. Attempt **any one** : (1×8=8)
- What is an AVL tree ? Explain Insertion and Deletion of node in AVL tree in detail with example.
  - What are the different representations of graph ? Write both representations for the following graph.



G1



G2





SLR-TJ – 306

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

Set 

|   |
|---|
| P |
|---|

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

Day and Date : Saturday, 25-11-2017  
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) Figures to the **right** indicate **full** marks.
- 4) **All** questions are **compulsory**.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose correct alternative : **(14×1=14)**
- 1) File transfer, mail transfer are the functions of \_\_\_\_\_ layer.  
a) Application      b) DLL      c) Transport      d) Session
  - 2) Which of the transport layer protocol is connectionless ?  
a) UDP      b) TCP      c) FTP      d) NVT
  - 3) \_\_\_\_\_ protocol is used for mapping physical addresses to logical address.  
a) ARP      b) OSPF      c) RARP      d) SMTP
  - 4) \_\_\_\_\_ protocol is used for sending mail.  
a) CSMA      b) CDMA      c) SMTP      d) OSPF
  - 5) The term 'duplex' refers to the ability of the data receiving stations to echo back a confirming message to the sender. In full duplex data transmission, both the sender and receiver  
a) Cannot talk at once  
b) Can receive and send data simultaneously  
c) Can send or receive data one at a time  
d) Can do one way transmission only

P.T.O.



- 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
- 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) Which one of the following task is not done by data link layer ?  
a) Framing    b) Error control    c) Flow control    d) Channel control
- 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) The Data link layer takes the data from \_\_\_\_\_ and encapsulate them into frames for transmission.  
a) Network layer    b) Physical layer  
c) Transport layer    d) Application layer
- 13) IEEE 802.5 is known as  
a) Ethernet    b) Token bus  
c) Token ring    d) DQDB
- 14) \_\_\_\_\_ is a loss of energy as the signal propagates outwards.  
a) Attenuation    b) Noise  
c) Distortion    d) None of these
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Saturday, 25-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three (each carries 4 marks)**. **12**
- 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 do you mean by bit stuffing and byte stuffing methods ?
  - e) Explain Simplex Stop and Wait Protocol.
3. Attempt **any one**. **8**
- a) Explain Cyclic Redundancy Check method with a suitable example in detail.
- OR
- b) Describe ATM reference model. Draw diagrams and explain functions of each layer.
4. Attempt **any one**. **8**
- a) Go-back-N protocol.
- OR
- b) Hamming Code method of error detection.



## SECTION – II

5. Attempt **any three** (**each** carries **4** marks). **12**
- a) Explain ALOHA and its types in detail.
  - b) What is Bridges ? Explain Spanning Tree Bridge.
  - c) What do you mean by Congestion ? How congestion is controlled ?
  - d) Explain Firewall in detail.
  - e) What is Variable Length Blocks in Classless Addressing ?
6. Explain IEEE std. 802.5. What is Wire Centre ? Explain its Frame Format in detail. **8**
7. Write a short notes on (**each** carries **4** marks). **8**
- a) NAT
  - b) Classful Addressing.
-



SLR-TJ – 306

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

Set 

|   |
|---|
| Q |
|---|

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

Day and Date : Saturday, 25-11-2017  
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) *Figures to the right indicate full marks.*  
4) **All questions are compulsory.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose correct alternative : **(14×1=14)**
- Which one of the following task is not done by data link layer ?
    - Framing
    - Error control
    - Flow control
    - Channel control
  - The \_\_\_\_\_ layer is split into a SAR sub layer and CS sub layer in Asynchronous Transfer Mode.
    - AAL
    - Physical
    - ATM
    - None of these
  - Which of the following is required to communicate between two computers ?
    - Transmission medium
    - Protocol
    - Communication hardware
    - All of these
  - An error detection code in which, code is remainder resulting from dividing the bits to be checked by a predetermined primary number
    - Cyclic redundancy check
    - Checksum
    - Hamming code
    - None of these

P.T.O.



- 5) The Data link layer takes the data from \_\_\_\_\_ and encapsulate them into frames for transmission.
- a) Network layer
  - b) Physical layer
  - c) Transport layer
  - d) Application layer
- 6) IEEE 802.5 is known as
- a) Ethernet
  - b) Token bus
  - c) Token ring
  - d) DQDB
- 7) \_\_\_\_\_ is a loss of energy as the signal propagates outwards.
- a) Attenuation
  - b) Noise
  - c) Distortion
  - d) None of these
- 8) File transfer, mail transfer are the functions of \_\_\_\_\_ layer.
- a) Application
  - b) DLL
  - c) Transport
  - d) Session
- 9) Which of the transport layer protocol is connectionless ?
- a) UDP
  - b) TCP
  - c) FTP
  - d) NVT
- 10) \_\_\_\_\_ protocol is used for mapping physical addresses to logical address.
- a) ARP
  - b) OSPF
  - c) RARP
  - d) SMTP
- 11) \_\_\_\_\_ protocol is used for sending mail.
- a) CSMA
  - b) CDMA
  - c) SMTP
  - d) OSPF
- 12) The term 'duplex' refers to the ability of the data receiving stations to echo back a confirming message to the sender. In full duplex data transmission, both the sender and receiver
- a) Cannot talk at once
  - b) Can receive and send data simultaneously
  - c) Can send or receive data one at a time
  - d) Can do one way transmission only
- 13) \_\_\_\_\_ 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
- 14) A \_\_\_\_\_ is an agreement between the communicating parties on how communication is to proceed.
- a) Protocol
  - b) Algorithm
  - c) Internet
  - d) None of these
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Saturday, 25-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three (each carries 4 marks)**. **12**
- 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 do you mean by bit stuffing and byte stuffing methods ?
  - e) Explain Simplex Stop and Wait Protocol.
3. Attempt **any one**. **8**
- a) Explain Cyclic Redundancy Check method with a suitable example in detail.
- OR
- b) Describe ATM reference model. Draw diagrams and explain functions of each layer.
4. Attempt **any one**. **8**
- a) Go-back-N protocol.
- OR
- b) Hamming Code method of error detection.

**Set Q**



## SECTION – II

5. Attempt **any three** (**each** carries **4** marks). **12**
- a) Explain ALOHA and its types in detail.
  - b) What is Bridges ? Explain Spanning Tree Bridge.
  - c) What do you mean by Congestion ? How congestion is controlled ?
  - d) Explain Firewall in detail.
  - e) What is Variable Length Blocks in Classless Addressing ?
6. Explain IEEE std. 802.5. What is Wire Centre ? Explain its Frame Format in detail. **8**
7. Write a short notes on (**each** carries **4** marks). **8**
- a) NAT
  - b) Classful Addressing.
-





SLR-TJ – 306

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

Set 

|   |
|---|
| R |
|---|

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

Day and Date : Saturday, 25-11-2017  
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) Figures to the **right** indicate **full** marks.
- 4) **All** questions are **compulsory**.

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose correct alternative : **(14×1=14)**
- 1) The term 'duplex' refers to the ability of the data receiving stations to echo back a confirming message to the sender. In full duplex data transmission, both the sender and receiver
- a) Cannot talk at once  
b) Can receive and send data simultaneously  
c) Can send or receive data one at a time  
d) Can do one way transmission only
- 2) \_\_\_\_\_ 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
- 3) A \_\_\_\_\_ is an agreement between the communicating parties on how communication is to proceed.
- a) Protocol    b) Algorithm    c) Internet    d) None of these
- 4) Which one of the following task is not done by data link layer ?
- a) Framing    b) Error control    c) Flow control    d) Channel control

P.T.O.



- 5) 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
- 6) Which of the following is required to communicate between two computers ?
- a) Transmission medium                      b) Protocol  
c) Communication hardware                      d) All of these
- 7) 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
- 8) The Data link layer takes the data from \_\_\_\_\_ and encapsulate them into frames for transmission.
- a) Network layer                      b) Physical layer  
c) Transport layer                      d) Application layer
- 9) IEEE 802.5 is known as
- a) Ethernet                      b) Token bus  
c) Token ring                      d) DQDB
- 10) \_\_\_\_\_ is a loss of energy as the signal propagates outwards.
- a) Attenuation                      b) Noise  
c) Distortion                      d) None of these
- 11) File transfer, mail transfer are the functions of \_\_\_\_\_ layer.
- a) Application                      b) DLL                      c) Transport                      d) Session
- 12) Which of the transport layer protocol is connectionless ?
- a) UDP                      b) TCP                      c) FTP                      d) NVT
- 13) \_\_\_\_\_ protocol is used for mapping physical addresses to logical address.
- a) ARP                      b) OSPF                      c) RARP                      d) SMTP
- 14) \_\_\_\_\_ protocol is used for sending mail.
- a) CSMA                      b) CDMA                      c) SMTP                      d) OSPF
-



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

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

Day and Date : Saturday, 25-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three (each carries 4 marks)**. **12**
- 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 do you mean by bit stuffing and byte stuffing methods ?
  - e) Explain Simplex Stop and Wait Protocol.
3. Attempt **any one**. **8**
- a) Explain Cyclic Redundancy Check method with a suitable example in detail.
- OR
- b) Describe ATM reference model. Draw diagrams and explain functions of each layer.
4. Attempt **any one**. **8**
- a) Go-back-N protocol.
- OR
- b) Hamming Code method of error detection.



## SECTION – II

5. Attempt **any three** (**each** carries **4** marks). **12**
- a) Explain ALOHA and its types in detail.
  - b) What is Bridges ? Explain Spanning Tree Bridge.
  - c) What do you mean by Congestion ? How congestion is controlled ?
  - d) Explain Firewall in detail.
  - e) What is Variable Length Blocks in Classless Addressing ?
6. Explain IEEE std. 802.5. What is Wire Centre ? Explain its Frame Format in detail. **8**
7. Write a short notes on (**each** carries **4** marks). **8**
- a) NAT
  - b) Classful Addressing.
-



SLR-TJ – 306

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

Set 

|   |
|---|
| S |
|---|

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

Day and Date : Saturday, 25-11-2017  
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) Figures to the **right** indicate **full** marks.  
4) **All questions are compulsory.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose 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) The Data link layer takes the data from \_\_\_\_\_ and encapsulate them into frames for transmission.
  - a) Network layer
  - b) Physical layer
  - c) Transport layer
  - d) Application layer
- 4) IEEE 802.5 is known as
  - a) Ethernet
  - b) Token bus
  - c) Token ring
  - d) DQDB

P.T.O.



- 15) \_\_\_\_\_ is a loss of energy as the signal propagates outwards.  
a) Attenuation                                  b) Noise  
c) Distortion                                      d) None of these
- 6) File transfer, mail transfer are the functions of \_\_\_\_\_ layer.  
a) Application          b) DLL                  c) Transport          d) Session
- 7) Which of the transport layer protocol is connectionless ?  
a) UDP                  b) TCP                  c) FTP                  d) NVT
- 8) \_\_\_\_\_ protocol is used for mapping physical addresses to logical address.  
a) ARP                  b) OSPF                  c) RARP                  d) SMTP
- 9) \_\_\_\_\_ protocol is used for sending mail.  
a) CSMA                  b) CDMA                  c) SMTP                  d) OSPF
- 10) The term 'duplex' refers to the ability of the data receiving stations to echo back a confirming message to the sender. In full duplex data transmission, both the sender and receiver  
a) Cannot talk at once  
b) Can receive and send data simultaneously  
c) Can send or receive data one at a time  
d) Can do one way transmission only
- 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) Which one of the following task is not done by data link layer ?  
a) Framing              b) Error control      c) Flow control      d) Channel control
- 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<br>No. |  |
|-------------|--|

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

Day and Date : Saturday, 25-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three (each carries 4 marks)**. **12**
- 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 do you mean by bit stuffing and byte stuffing methods ?
  - e) Explain Simplex Stop and Wait Protocol.
3. Attempt **any one**. **8**
- a) Explain Cyclic Redundancy Check method with a suitable example in detail.
- OR
- b) Describe ATM reference model. Draw diagrams and explain functions of each layer.
4. Attempt **any one**. **8**
- a) Go-back-N protocol.
- OR
- b) Hamming Code method of error detection.

**Set S**



## SECTION – II

5. Attempt **any three** (**each** carries **4** marks). **12**
- a) Explain ALOHA and its types in detail.
  - b) What is Bridges ? Explain Spanning Tree Bridge.
  - c) What do you mean by Congestion ? How congestion is controlled ?
  - d) Explain Firewall in detail.
  - e) What is Variable Length Blocks in Classless Addressing ?
6. Explain IEEE std. 802.5. What is Wire Centre ? Explain its Frame Format in detail. **8**
7. Write a short notes on (**each** carries **4** marks). **8**
- a) NAT
  - b) Classful Addressing.
-





SLR-TJ – 307

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

|     |   |
|-----|---|
| Set | P |
|-----|---|

**S.E. (IT) (Part – II) (Old) Examination, 2017  
DATA STRUCTURE – II**

Day and Date : Tuesday, 28-11-2017  
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 : **(1×20=20)**
- 1) A stack holding elements equal to its capacity and if push is performed then such situation is called
    - a) stack overflow
    - b) stack underflow
    - c) illegal operation
    - d) none of the above
  - 2) An expression containing more than one operation are solved according to
    - a) priority of operators
    - b) priority of operands
    - c) from left to right
    - d) right to left
  - 3) The following brackets changes the priority.
    - a) ( )
    - b) [ ]
    - c) { }
    - d) &
  - 4) When an element is inserted in queue the position of rear ?
    - a) increase
    - b) decreased
    - c) remain constant
    - d) none of the above
  - 5) In this queue smallest element of the queue is deleted first
    - a) ascending priority queue
    - b) descending priority queue
    - c) circular queue
    - d) simple queue
  - 6) When the circular queue is full and if one element is removed the next inserted element is sorted at
    - a) first location
    - b) last location
    - c) intermediate location
    - d) none of the above
  - 7) The pointer head points to the
    - a) first node
    - b) last node
    - c) either first or last node
    - d) none of the above

P.T.O.



- 8) The element of linked lists are stored in  
a) successive memory location                      b) random memory location  
c) alternate memory location                      d) all the above
- 9) A binary tree whose every node has either zero or two children is called  
a) Complete binary tree                      b) Binary search tree  
c) Extended binary tree                      d) None of the above
- 10) The maximum number of nodes in a binary tree of depth 5 is  
a) 31                      b) 16                      c) 32                      d) 15
- 11) Worst case time complexity for inserting a record in B+ tree is  
a)  $O(\log n)$                       b)  $O(n \log n)$                       c)  $O(n)$                       d)  $O(n^2)$
- 12) A M-way search tree is a tree in which  
 $s_1$  : The nodes hold between 1 to m-1 distinct keys  
 $s_2$  : The key in each node are sorted  
 $s_3$  : A node with K values has K+1 Sub tree, where the subtrees may be empty  
a) all  $s_1, s_2, s_3$  are true                      b) only  $s_1$  and  $s_2$  are true  
c) only  $s_2, s_3$  are true                      d) only  $s_1$  and  $s_3$  are true
- 13) B-Tree is  
a) Binary tree                      b) Balanced binary tree  
c) Balanced multiway tree                      d) All the above
- 14) A binary search tree whose left subtree and right subtree differ in height by at most 1 unit is called  
a) AVL tree                      b) Red-black tree                      c) Lemma tree                      d) None of the above
- 15) In AVL tree \_\_\_\_\_ of a node is the height of the left subtree minus the height of the right subtree.  
a) Balanced factor                      b) Depth  
c) Degree                      d) None of the above
- 16) Maximum possible height of a AVL tree with M nodes is  
a) 3                      b) 5                      c) Both a and b                      d) None of these
- 17) A vertex of degree one is called as  
a) Pendent                      b) Isolated vertex                      c) Null vertex                      d) Coloured vertex
- 18) A graph in which all nodes are of equal degree is known as  
a) multi graph                      b) isolated vertex                      c) regular graph                      d) complete graph
- 19) When first and last nodes of a path are same such a path is known as  
a) open path                      b) closed path  
c) critical path                      d) none of the above
- 20) Graph is a \_\_\_\_\_ data structure.  
a) Linear                      b) Non-linear  
c) Static data structure                      d) None of the above
-



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

**S.E. (IT) (Part – II) (Old) Examination, 2017  
DATA STRUCTURE – II**

Day and Date : Tuesday, 28-11-2017  
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) Write push and pop function for stack.
  - b) Write a function to create a singly linked list.
  - c) Explain the working of priority queue show a priority queue containing some information.
  - d) Write a function for inserting a node before a given node in a doubly circular linked list.
  - e) Explain any one traversal of binary search trees with neat example.
3. Attempt **any one** : **(1×10=10)**
- a) Write an algorithm for converting a infix expression into postfix form.
- OR
- a) Write a program to implement circular queue using array.
4. Attempt **any one** : **(1×10=10)**
- a) Explain with suitable example linked implementation of Binary trees.
- OR
- a) Discuss different types of linked lists with declaration of node and pointer used in these linked lists.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) What is B-tree ? List the conditions for implementing B-tree.
  - b) Write a C function for depth first traversal of a graph and explain with example.
  - c) Explain four types of rotation in AVL tree with example.
  - d) What is multiway tree ? List its features with the help of example.
  - e) Explain B+ tree with example.

**Set P**



6. Solve **any one** :

(1×10=10)

a) Define the following terms with example.

- 1) Graph.
- 2) Connected graph.
- 3) Directed graph.
- 4) Cycle graph.
- 5) DAG.

OR

a) Write C functions for breadth first traversal and depth first traversal of a graph using example.

7. Attempt **any one** :

(1×10=10)

a) Define AVL tree and explain deletion of node in AVL tree with example.

OR

a) List the properties of B-tree and show the stepwise insertion of following elements in B-tree of order 5.

2, 14, 12, 4, 22, 8, 16, 26, 20, 10, 38, 18, 36.

---



SLR-TJ – 307

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

|     |   |
|-----|---|
| Set | Q |
|-----|---|

**S.E. (IT) (Part – II) (Old) Examination, 2017  
DATA STRUCTURE – II**

Day and Date : Tuesday, 28-11-2017  
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 : (1×20=20)
- 1) Maximum possible height of a AVL tree with M nodes is  
a) 3                                      b) 5                                      c) Both a and b                      d) None of these
  - 2) A vertex of degree one is called as  
a) Pendent                              b) Isolated vertex                  c) Null vertex                      d) Coloured vertex
  - 3) A graph in which all nodes are of equal degree is known as  
a) multi graph                      b) isolated vertex                  c) regular graph                      d) complete graph
  - 4) When first and last nodes of a path are same such a path is known as  
a) open path                              b) closed path  
c) critical path                              d) none of the above
  - 5) Graph is a \_\_\_\_\_ data structure.  
a) Linear                                      b) Non-linear  
c) Static data structure                  d) None of the above
  - 6) A stack holding elements equal to its capacity and if push is performed then such situation is called  
a) stack overflow                              b) stack underflow  
c) illegal operation                              d) none of the above
  - 7) An expression containing more than one operation are solved according to  
a) priority of operators                      b) priority of operands  
c) from left to right                              d) right to left
  - 8) The following brackets changes the priority.  
a) ()                                      b) []                                      c) {}                                      d) &
  - 9) When an element is inserted in queue the position of rear ?  
a) increase                                      b) decreased  
c) remain constant                              d) none of the above

P.T.O.



- 10) In this queue smallest element of the queue is deleted first
- a) ascending priority queue
  - b) descending priority queue
  - c) circular queue
  - d) simple queue
- 11) When the circular queue is full and if one element is removed the next inserted element is sorted at
- a) first location
  - b) last location
  - c) intermediate location
  - d) none of the above
- 12) The pointer head points to the
- a) first node
  - b) last node
  - c) either first or last node
  - d) none of the above
- 13) The element of linked lists are stored in
- a) successive memory location
  - b) random memory location
  - c) alternate memory location
  - d) all the above
- 14) A binary tree whose every node has either zero or two children is called
- a) Complete binary tree
  - b) Binary search tree
  - c) Extended binary tree
  - d) None of the above
- 15) The maximum number of nodes in a binary tree of depth 5 is
- a) 31
  - b) 16
  - c) 32
  - d) 15
- 16) Worst case time complexity for inserting a record in B+ tree is
- a)  $O(\log n)$
  - b)  $O(n \log n)$
  - c)  $O(n)$
  - d)  $O(n^2)$
- 17) A M-way search tree is a tree in which
- $s_1$  : The nodes hold between 1 to m-1 distinct keys
  - $s_2$  : The key in each node are sorted
  - $s_3$  : A node with K values has K+1 Sub tree, where the subtrees may be empty
- a) all  $s_1, s_2, s_3$  are true
  - b) only  $s_1$  and  $s_2$  are true
  - c) only  $s_2, s_3$  are true
  - d) only  $s_1$  and  $s_3$  are true
- 18) B-Tree is
- a) Binary tree
  - b) Balanced binary tree
  - c) Balanced multiway tree
  - d) All the above
- 19) A binary search tree whose left subtree and right subtree differ in height by at most 1 unit is called
- a) AVL tree
  - b) Red-black tree
  - c) Lemma tree
  - d) None of the above
- 20) In AVL tree \_\_\_\_\_ of a node is the height of the left subtree minus the height of the right subtree.
- a) Balanced factor
  - b) Depth
  - c) Degree
  - d) None of the above
-



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

**S.E. (IT) (Part – II) (Old) Examination, 2017  
DATA STRUCTURE – II**

Day and Date : Tuesday, 28-11-2017  
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) Write push and pop function for stack.
  - b) Write a function to create a singly linked list.
  - c) Explain the working of priority queue show a priority queue containing some information.
  - d) Write a function for inserting a node before a given node in a doubly circular linked list.
  - e) Explain any one traversal of binary search trees with neat example.
3. Attempt **any one** : **(1×10=10)**
- a) Write an algorithm for converting a infix expression into postfix form.
- OR
- a) Write a program to implement circular queue using array.
4. Attempt **any one** : **(1×10=10)**
- a) Explain with suitable example linked implementation of Binary trees.
- OR
- a) Discuss different types of linked lists with declaration of node and pointer used in these linked lists.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) What is B-tree ? List the conditions for implementing B-tree.
  - b) Write a C function for depth first traversal of a graph and explain with example.
  - c) Explain four types of rotation in AVL tree with example.
  - d) What is multiway tree ? List its features with the help of example.
  - e) Explain B+ tree with example.

**Set Q**



6. Solve **any one** :

(1×10=10)

a) Define the following terms with example.

- 1) Graph.
- 2) Connected graph.
- 3) Directed graph.
- 4) Cycle graph.
- 5) DAG.

OR

a) Write C functions for breadth first traversal and depth first traversal of a graph using example.

7. Attempt **any one** :

(1×10=10)

a) Define AVL tree and explain deletion of node in AVL tree with example.

OR

a) List the properties of B-tree and show the stepwise insertion of following elements in B-tree of order 5.

2, 14, 12, 4, 22, 8, 16, 26, 20, 10, 38, 18, 36.

---





SLR-TJ – 307

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

|     |   |
|-----|---|
| Set | R |
|-----|---|

**S.E. (IT) (Part – II) (Old) Examination, 2017  
DATA STRUCTURE – II**

Day and Date : Tuesday, 28-11-2017  
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 :

(1×20=20)

- 1) Worst case time complexity for inserting a record in B+ tree is  
a)  $O(\log n)$                       b)  $O(n \log n)$                       c)  $O(n)$                                       d)  $O(n^2)$
- 2) A M-way search tree is a tree in which  
 $s_1$  : The nodes hold between 1 to m-1 distinct keys  
 $s_2$  : The key in each node are sorted  
 $s_3$  : A node with K values has K+1 Sub tree, where the subtrees may be empty  
a) all  $s_1, s_2, s_3$  are true                                      b) only  $s_1$  and  $s_2$  are true  
c) only  $s_2, s_3$  are true                                      d) only  $s_1$  and  $s_3$  are true
- 3) B-Tree is  
a) Binary tree                                      b) Balanced binary tree  
c) Balanced multiway tree                                      d) All the above
- 4) A binary search tree whose left subtree and right subtree differ in height by at most 1 unit is called  
a) AVL tree                                      b) Red-black tree                                      c) Lemma tree                                      d) None of the above
- 5) In AVL tree \_\_\_\_\_ of a node is the height of the left subtree minus the height of the right subtree.  
a) Balanced factor                                      b) Depth  
c) Degree                                      d) None of the above
- 6) Maximum possible height of a AVL tree with M nodes is  
a) 3                                      b) 5                                      c) Both a and b                                      d) None of these
- 7) A vertex of degree one is called as  
a) Pendent                                      b) Isolated vertex                                      c) Null vertex                                      d) Coloured vertex
- 8) A graph in which all nodes are of equal degree is known as  
a) multi graph                                      b) isolated vertex                                      c) regular graph                                      d) complete graph

P.T.O.



- 9) When first and last nodes of a path are same such a path is known as  
a) open path  
b) closed path  
c) critical path  
d) none of the above
- 10) Graph is a \_\_\_\_\_ data structure.  
a) Linear  
b) Non-linear  
c) Static data structure  
d) None of the above
- 11) A stack holding elements equal to its capacity and if push is performed then such situation is called  
a) stack overflow  
b) stack underflow  
c) illegal operation  
d) none of the above
- 12) An expression containing more than one operation are solved according to  
a) priority of operators  
b) priority of operands  
c) from left to right  
d) right to left
- 13) The following brackets changes the priority.  
a) ( )                      b) [ ]                      c) { }                      d) &
- 14) When an element is inserted in queue the position of rear ?  
a) increase  
b) decreased  
c) remain constant  
d) none of the above
- 15) In this queue smallest element of the queue is deleted first  
a) ascending priority queue  
b) descending priority queue  
c) circular queue  
d) simple queue
- 16) When the circular queue is full and if one element is removed the next inserted element is sorted at  
a) first location  
b) last location  
c) intermediate location  
d) none of the above
- 17) The pointer head points to the  
a) first node  
b) last node  
c) either first or last node  
d) none of the above
- 18) The element of linked lists are stored in  
a) successive memory location  
b) random memory location  
c) alternate memory location  
d) all the above
- 19) A binary tree whose every node has either zero or two children is called  
a) Complete binary tree  
b) Binary search tree  
c) Extended binary tree  
d) None of the above
- 20) The maximum number of nodes in a binary tree of depth 5 is  
a) 31                      b) 16                      c) 32                      d) 15
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**S.E. (IT) (Part – II) (Old) Examination, 2017  
DATA STRUCTURE – II**

Day and Date : Tuesday, 28-11-2017  
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) Write push and pop function for stack.  
b) Write a function to create a singly linked list.  
c) Explain the working of priority queue show a priority queue containing some information.  
d) Write a function for inserting a node before a given node in a doubly circular linked list.  
e) Explain any one traversal of binary search trees with neat example.
3. Attempt **any one** : **(1×10=10)**  
a) Write an algorithm for converting a infix expression into postfix form.  
OR  
a) Write a program to implement circular queue using array.
4. Attempt **any one** : **(1×10=10)**  
a) Explain with suitable example linked implementation of Binary trees.  
OR  
a) Discuss different types of linked lists with declaration of node and pointer used in these linked lists.

SECTION – II

5. Attempt **any four** : **(4×5=20)**  
a) What is B-tree ? List the conditions for implementing B-tree.  
b) Write a C function for depth first traversal of a graph and explain with example.  
c) Explain four types of rotation in AVL tree with example.  
d) What is multiway tree ? List its features with the help of example.  
e) Explain B+ tree with example.

**Set R**



6. Solve **any one** :

(1×10=10)

a) Define the following terms with example.

- 1) Graph.
- 2) Connected graph.
- 3) Directed graph.
- 4) Cycle graph.
- 5) DAG.

OR

a) Write C functions for breadth first traversal and depth first traversal of a graph using example.

7. Attempt **any one** :

(1×10=10)

a) Define AVL tree and explain deletion of node in AVL tree with example.

OR

a) List the properties of B-tree and show the stepwise insertion of following elements in B-tree of order 5.

2, 14, 12, 4, 22, 8, 16, 26, 20, 10, 38, 18, 36.

---



SLR-TJ – 307

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

|     |   |
|-----|---|
| Set | S |
|-----|---|

**S.E. (IT) (Part – II) (Old) Examination, 2017  
DATA STRUCTURE – II**

Day and Date : Tuesday, 28-11-2017  
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 : (1×20=20)
- 1) When the circular queue is full and if one element is removed the next inserted element is sorted at
    - a) first location
    - b) last location
    - c) intermediate location
    - d) none of the above
  - 2) The pointer head points to the
    - a) first node
    - b) last node
    - c) either first or last node
    - d) none of the above
  - 3) The element of linked lists are stored in
    - a) successive memory location
    - b) random memory location
    - c) alternate memory location
    - d) all the above
  - 4) A binary tree whose every node has either zero or two children is called
    - a) Complete binary tree
    - b) Binary search tree
    - c) Extended binary tree
    - d) None of the above
  - 5) The maximum number of nodes in a binary tree of depth 5 is
    - a) 31
    - b) 16
    - c) 32
    - d) 15
  - 6) Worst case time complexity for inserting a record in B+ tree is
    - a)  $O(\log n)$
    - b)  $O(n \log n)$
    - c)  $O(n)$
    - d)  $O(n^2)$
  - 7) A M-way search tree is a tree in which
    - $s_1$  : The nodes hold between 1 to m-1 distinct keys
    - $s_2$  : The key in each node are sorted
    - $s_3$  : A node with K values has K+1 Sub tree, where the subtrees may be empty
    - a) all  $s_1, s_2, s_3$  are true
    - b) only  $s_1$  and  $s_2$  are true
    - c) only  $s_2, s_3$  are true
    - d) only  $s_1$  and  $s_3$  are true

P.T.O.



- 8) B-Tree is
- a) Binary tree
  - b) Balanced binary tree
  - c) Balanced multiway tree
  - d) All the above
- 9) A binary search tree whose left subtree and right subtree differ in height by at most 1 unit is called
- a) AVL tree
  - b) Red-black tree
  - c) Lemma tree
  - d) None of the above
- 10) In AVL tree \_\_\_\_\_ of a node is the height of the left subtree minus the height of the right subtree.
- a) Balanced factor
  - b) Depth
  - c) Degree
  - d) None of the above
- 11) Maximum possible height of a AVL tree with M nodes is
- a) 3
  - b) 5
  - c) Both a and b
  - d) None of these
- 12) A vertex of degree one is called as
- a) Pendent
  - b) Isolated vertex
  - c) Null vertex
  - d) Coloured vertex
- 13) A graph in which all nodes are of equal degree is known as
- a) multi graph
  - b) isolated vertex
  - c) regular graph
  - d) complete graph
- 14) When first and last nodes of a path are same such a path is known as
- a) open path
  - b) closed path
  - c) critical path
  - d) none of the above
- 15) Graph is a \_\_\_\_\_ data structure.
- a) Linear
  - b) Non-linear
  - c) Static data structure
  - d) None of the above
- 16) A stack holding elements equal to its capacity and if push is performed then such situation is called
- a) stack overflow
  - b) stack underflow
  - c) illegal operation
  - d) none of the above
- 17) An expression containing more than one operation are solved according to
- a) priority of operators
  - b) priority of operands
  - c) from left to right
  - d) right to left
- 18) The following brackets changes the priority.
- a) ( )
  - b) [ ]
  - c) { }
  - d) &
- 19) When an element is inserted in queue the position of rear ?
- a) increase
  - b) decreased
  - c) remain constant
  - d) none of the above
- 20) In this queue smallest element of the queue is deleted first
- a) ascending priority queue
  - b) descending priority queue
  - c) circular queue
  - d) simple queue
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**S.E. (IT) (Part – II) (Old) Examination, 2017  
DATA STRUCTURE – II**

Day and Date : Tuesday, 28-11-2017  
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) Write push and pop function for stack.
  - b) Write a function to create a singly linked list.
  - c) Explain the working of priority queue show a priority queue containing some information.
  - d) Write a function for inserting a node before a given node in a doubly circular linked list.
  - e) Explain any one traversal of binary search trees with neat example.
3. Attempt **any one** : **(1×10=10)**
- a) Write an algorithm for converting a infix expression into postfix form.
- OR
- a) Write a program to implement circular queue using array.
4. Attempt **any one** : **(1×10=10)**
- a) Explain with suitable example linked implementation of Binary trees.
- OR
- a) Discuss different types of linked lists with declaration of node and pointer used in these linked lists.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) What is B-tree ? List the conditions for implementing B-tree.
  - b) Write a C function for depth first traversal of a graph and explain with example.
  - c) Explain four types of rotation in AVL tree with example.
  - d) What is multiway tree ? List its features with the help of example.
  - e) Explain B+tree with example.

**Set S**



6. Solve **any one** :

(1×10=10)

a) Define the following terms with example.

- 1) Graph.
- 2) Connected graph.
- 3) Directed graph.
- 4) Cycle graph.
- 5) DAG.

OR

a) Write C functions for breadth first traversal and depth first traversal of a graph using example.

7. Attempt **any one** :

(1×10=10)

a) Define AVL tree and explain deletion of node in AVL tree with example.

OR

a) List the properties of B-tree and show the stepwise insertion of following elements in B- tree of order 5.

2, 14, 12, 4, 22, 8, 16, 26, 20, 10, 38, 18, 36.

---





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

|     |   |
|-----|---|
| Set | P |
|-----|---|

**S.E. (IT) (Part – II) (Old) Examination, 2017**  
**FORMAL SYSTEM AND AUTOMATA**

Day and Date : Thursday, 30-11-2017  
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 finite automata accept the following language
  - a) Regular language
  - b) Context free language
  - c) Both (a) and (b)
  - d) None of these
- 2) While converting the context free grammar into Greibach normal form, which of the following is not necessary ?
  - a) Elimination of null production
  - b) Elimination of unit production
  - c) Converting given grammar in Chomsky normal form
  - d) None of these
- 3) The context free grammar  $S \rightarrow SS \mid 0S1 \mid 1S0 \mid \epsilon$  generates
  - a) Equal number of 0's and 1's
  - b) Unequal number of 0's and 1's
  - c) Any number of 0's followed by any number of 1's
  - d) None of these
- 4) Regular expression  $a + b$  denotes the set
  - a)  $\{a\}$
  - b)  $\{\wedge, a, b\}$
  - c)  $\{a, b\}$
  - d) none of these
- 5) A language represented by a non-deterministic finite state automaton is
  - a) Context Free Language
  - b) Context Sensitive Language
  - c) Regular Language
  - d) Natural Language
- 6) Can a DFA simulate NFA
  - a) No
  - b) Yes
  - c) Sometimes
  - d) Depends on NFA
- 7) Regular expression  $(a + b)(a + b)$  gives set
  - a)  $\{ab, ab, aa\}$
  - b)  $\{a, b\}$
  - c)  $\{aa, ab, ba, bb\}$
  - d) none
- 8) The production of non terminal ( $\rightarrow \wedge$ ) is said to be null production
  - a) True
  - b) False



- 9) Consider regular expression  $(0 + 1) (0 + 1) \dots n$  times what are minimum states in DFA  
 a)  $n$                                       b)  $n + 1$                                       c)  $n - 1$                                       d) none
- 10) Shown figure accepts ...  $\rightarrow \bigcirc$   
 a) all string                                      b) no string                                      c)  $\wedge \epsilon$                                       d) none
- 11) 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
- 12) 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
- 13) The difference between finite automata and PDA is in  
 a) Reading Head    b) Input tape                                      c) Finite control                                      d) Stack
- 14) Turing Machine is the machine format of \_\_\_\_\_ language.  
 a) Type 0                                      b) Type 1                                      c) Type 2                                      d) Type 3
- 15) In \_\_\_\_\_  $\delta$  is the transition function :  
 $\delta : Q \times (U \{ \}) \rightarrow (Q \cup \{h, hr\}) \times (U \{ \}) \times \{R, L, S\}$   
 a) Turning machine                                      b) Push down automata  
 c) CFG                                      d) None
- 16) The symbol  $Z_0$  in formal definition of PDA is used for  
 a) Stack symbol    b) Input symbol    c) Both a and b                                      d) None of these
- 17) In one move the Turing machine  
 a) May change its state  
 b) Write a symbol on the cell being scanned  
 c) Move the head one position left or right  
 d) All of the above
- 18) An instantaneous description of Turing machine consists of  
 a) Present state only  
 b) Present state and entire input to be processed  
 c) Present input only  
 d) None of these
- 19) A \_\_\_\_\_ is formally defined as  $M = (Q, \Sigma, \Gamma, \delta, q_0, Z, F)$   
 a) Turing machine                                      b) Push down automata  
 c) DFA                                      d) NFA
- 20) The pumping lemma is extremely useful in proving that certain sets are  
 a) non-regular                                      b) regular                                      c) both                                      d) none



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

**S.E. (IT) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Thursday, 30-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four**. (4×5=20)

- 1) Construct a grammar for the language L which has all the strings which are all palindrome over  $\Sigma = \{a, b\}$ .
- 2) What is a : (a) String (b) Regular language.
- 3) Differentiate  $L^*$  and  $L^+$ .
- 4) Write a r.e to denote a language L which accepts all the strings which begin or end with either 00 or 11.
- 5) Construct a r.e for the language over the set  $\Sigma = \{a, b\}$  in which total number of a's are divisible by 3.

3. Answer **any one**. 10

- 1) Write the DFA's for the following languages over  $\Sigma = \{a, b\}$  :
  - i) The set of all strings ending with abb
  - ii) The set of all strings not containing the substring aab
  - iii)  $L = \{a w a \mid w \in (a + b)^*\}$
  - iv)  $L = \{w \mid |w| \bmod 3 = 0\}$ .
- 2) Systematically construct an NFA for the regular expression  $(a(a+b))^*(c + d + \phi)$ .

4. Define DFA, NFA and Language. Obtain a DFA to accept strings of a's and b's starting with the string ab. 10

Set P



## SECTION – II

5. Solve **any four**. **(4×5=20)**
- 1) Define Deterministic PDA.
  - 2) What are the different types of grammars/languages ?
  - 3) What is a multi-tape Turing machine ?
  - 4) Obtain a TM to accept the language containing string of 0's and 1's and ending with 011.
  - 5) Compare NPDA and DPDA.
6. Answer **any one**. **10**
- 1) Design a Turing Machine for coping string.
  - 2) Construct a PDA to accept a given language L by empty stack and final state both where  $L = \{a^n b^n, \text{ where } n \geq 1\}$  with transition and string "aaabbb".
7. Write short note on universal Turing machine. **10**
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

|     |          |
|-----|----------|
| Set | <b>Q</b> |
|-----|----------|

**S.E. (IT) (Part – II) (Old) Examination, 2017**  
**FORMAL SYSTEM AND AUTOMATA**

Day and Date : Thursday, 30-11-2017  
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 symbol  $Z_0$  in formal definition of PDA is used for  
a) Stack symbol    b) Input symbol    c) Both a and b    d) None of these
- 2) In one move the Turing machine  
a) May change its state  
b) Write a symbol on the cell being scanned  
c) Move the head one position left or right  
d) All of the above
- 3) An instantaneous description of Turing machine consists of  
a) Present state only  
b) Present state and entire input to be processed  
c) Present input only  
d) None of these
- 4) A \_\_\_\_\_ is formally defined as  $M = (Q, \Sigma, \Gamma, \delta, q_0, Z, F)$   
a) Turing machine    b) Push down automata  
c) DFA    d) NFA
- 5) The pumping lemma is extremely useful in proving that certain sets are  
a) non-regular    b) regular    c) both    d) none
- 6) The finite automata accept the following language  
a) Regular language    b) Context free language  
c) Both (a) and (b)    d) None of these
- 7) While converting the context free grammar into Greibach normal form, which of the following is not necessary ?  
a) Elimination of null production  
b) Elimination of unit production  
c) Converting given grammar in Chomsky normal form  
d) None of these



- 8) The context free grammar  $S \rightarrow SS \mid 0S1 \mid 1S0 \mid \epsilon$  generates
- Equal number of 0's and 1's
  - Unequal number of 0's and 1's
  - Any number of 0's followed by any number of 1's
  - None of these
- 9) Regular expression  $a + b$  denotes the set
- $\{a\}$
  - $\{\wedge, a, b\}$
  - $\{a, b\}$
  - none of these
- 10) A language represented by a non-deterministic finite state automaton is
- Context Free Language
  - Context Sensitive Language
  - Regular Language
  - Natural Language
- 11) Can a DFA simulate NFA
- No
  - Yes
  - Sometimes
  - Depends on NFA
- 12) Regular expression  $(a + b)(a + b)$  gives set
- $\{ab, ab, aa\}$
  - $\{a, b\}$
  - $\{aa, ab, ba, bb\}$
  - none
- 13) The production of non terminal ( $\rightarrow \wedge$ ) is said to be null production
- True
  - False
- 14) Consider regular expression  $(0 + 1)(0 + 1) \dots n$  times what are minimum states in DFA
- $n$
  - $n + 1$
  - $n - 1$
  - none
- 15) Shown figure accepts ...  $\rightarrow$  
- all string
  - no string
  - $\wedge/\epsilon$
  - none
- 16) Which of the following statements is 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
- 17) 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
- 18) The difference between finite automata and PDA is in
- Reading Head
  - Input tape
  - Finite control
  - Stack
- 19) Turing Machine is the machine format of \_\_\_\_\_ language.
- Type 0
  - Type 1
  - Type 2
  - Type 3
- 20) In \_\_\_\_\_  $\delta$  is the transition function :
- $$\delta : Q \times (U \cup \{\}) \rightarrow (Q \cup \{h_a, h_r\}) \times (U \cup \{\}) \times \{R, L, S\}$$
- Turning machine
  - Push down automata
  - CFG
  - None



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

**S.E. (IT) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Thursday, 30-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Solve **any four**. **(4×5=20)**

- 1) Construct a grammar for the language L which has all the strings which are all palindrome over  $\Sigma = \{a, b\}$ .
- 2) What is a : (a) String (b) Regular language.
- 3) Differentiate  $L^*$  and  $L^+$ .
- 4) Write a r.e to denote a language L which accepts all the strings which begin or end with either 00 or 11.
- 5) Construct a r.e for the language over the set  $\Sigma = \{a, b\}$  in which total number of a's are divisible by 3.

3. Answer **any one**. **10**

- 1) Write the DFA's for the following languages over  $\Sigma = \{a, b\}$  :
  - i) The set of all strings ending with abb
  - ii) The set of all strings not containing the substring aab
  - iii)  $L = \{a w a \mid w \in (a + b)^*\}$
  - iv)  $L = \{w \mid |w| \bmod 3=0\}$ .
- 2) Systematically construct an NFA for the regular expression  $(a(a+b))^*(c + d + \phi)$ .

4. Define DFA, NFA and Language. Obtain a DFA to accept strings of a's and b's starting with the string ab. **10**

**Set Q**



## SECTION – II

5. Solve **any four**. **(4×5=20)**
- 1) Define Deterministic PDA.
  - 2) What are the different types of grammars/languages ?
  - 3) What is a multi-tape Turing machine ?
  - 4) Obtain a TM to accept the language containing string of 0's and 1's and ending with 011.
  - 5) Compare NPDA and DPDA.
6. Answer **any one**. **10**
- 1) Design a Turing Machine for coping string.
  - 2) Construct a PDA to accept a given language L by empty stack and final state both where  $L = \{a^n b^n, \text{ where } n \geq 1\}$  with transition and string "aaabbb".
7. Write short note on universal Turing machine. **10**
-





SLR-TJ – 308

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

Set 

|   |
|---|
| R |
|---|

**S.E. (IT) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Thursday, 30-11-2017  
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) 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
- 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) Turing Machine is the machine format of \_\_\_\_\_ language.
  - a) Type 0
  - b) Type 1
  - c) Type 2
  - d) Type 3
- 5) In \_\_\_\_  $\delta$  is the transition function :  
$$\delta : Q \times (U \{ \}) \rightarrow (Q \cup \{h_a, h_r\}) \times (U \{ \}) \times \{R, L, S\}$$
  - a) Turning machine
  - b) Push down automata
  - c) CFG
  - d) None
- 6) The symbol  $Z_0$  in formal definition of PDA is used for
  - a) Stack symbol
  - b) Input symbol
  - c) Both a and b
  - d) None of these
- 7) In one move the Turing machine
  - a) May change its state
  - b) Write a symbol on the cell being scanned
  - c) Move the head one position left or right
  - d) All of the above

P.T.O.



- 8) An instantaneous description of Turing machine consists of  
 a) Present state only  
 b) Present state and entire input to be processed  
 c) Present input only  
 d) None of these
- 9) A \_\_\_\_\_ is formally defined as  $M = (Q, \Sigma, \Gamma, \delta, q_0, Z, F)$   
 a) Turing machine  
 b) Push down automata  
 c) DFA  
 d) NFA
- 10) The pumping lemma is extremely useful in proving that certain sets are  
 a) non-regular  
 b) regular  
 c) both  
 d) none
- 11) The finite automata accept the following language  
 a) Regular language  
 b) Context free language  
 c) Both (a) and (b)  
 d) None of these
- 12) While converting the context free grammar into Greibach normal form, which of the following is not necessary ?  
 a) Elimination of null production  
 b) Elimination of unit production  
 c) Converting given grammar in Chomsky normal form  
 d) None of these
- 13) The context free grammar  $S \rightarrow SS \mid 0S1 \mid 1S0 \mid \epsilon$  generates  
 a) Equal number of 0's and 1's  
 b) Unequal number of 0's and 1's  
 c) Any number of 0's followed by any number of 1's  
 d) None of these
- 14) Regular expression  $a + b$  denotes the set  
 a)  $\{a\}$   
 b)  $\{\wedge, a, b\}$   
 c)  $\{a, b\}$   
 d) none of these
- 15) A language represented by a non-deterministic finite state automaton is  
 a) Context Free Language  
 b) Context Sensitive Language  
 c) Regular Language  
 d) Natural Language
- 16) Can a DFA simulate NFA  
 a) No  
 b) Yes  
 c) Sometimes  
 d) Depends on NFA
- 17) Regular expression  $(a + b)(a + b)$  gives set  
 a)  $\{ab, ab, aa\}$   
 b)  $\{a, b\}$   
 c)  $\{aa, ab, ba, bb\}$   
 d) none
- 18) The production of non terminal  $(\rightarrow \wedge)$  is said to be null production  
 a) True  
 b) False
- 19) Consider regular expression  $(0 + 1)(0 + 1) \dots n$  times what are minimum states in DFA  
 a)  $n$   
 b)  $n + 1$   
 c)  $n - 1$   
 d) none
- 20) Shown figure accepts ...   
 a) all string  
 b) no string  
 c)  $\wedge/\epsilon$   
 d) none



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

**S.E. (IT) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Thursday, 30-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Solve **any four**. **(4×5=20)**

- 1) Construct a grammar for the language L which has all the strings which are all palindrome over  $\Sigma = \{a, b\}$ .
- 2) What is a : (a) String (b) Regular language.
- 3) Differentiate  $L^*$  and  $L^+$ .
- 4) Write a r.e to denote a language L which accepts all the strings which begin or end with either 00 or 11.
- 5) Construct a r.e for the language over the set  $\Sigma = \{a, b\}$  in which total number of a's are divisible by 3.

3. Answer **any one**. **10**

- 1) Write the DFA's for the following languages over  $\Sigma = \{a, b\}$  :
  - i) The set of all strings ending with abb
  - ii) The set of all strings not containing the substring aab
  - iii)  $L = \{a w a \mid w \in (a + b)^*\}$
  - iv)  $L = \{w \mid |w| \bmod 3 = 0\}$ .
- 2) Systematically construct an NFA for the regular expression  $(a(a+b))^*(c + d + \phi)$ .

4. Define DFA, NFA and Language. Obtain a DFA to accept strings of a's and b's starting with the string ab. **10**

**Set R**



## SECTION – II

5. Solve **any four**. **(4×5=20)**
- 1) Define Deterministic PDA.
  - 2) What are the different types of grammars/languages ?
  - 3) What is a multi-tape Turing machine ?
  - 4) Obtain a TM to accept the language containing string of 0's and 1's and ending with 011.
  - 5) Compare NPDA and DPDA.
6. Answer **any one**. **10**
- 1) Design a Turing Machine for coping string.
  - 2) Construct a PDA to accept a given language L by empty stack and final state both where  $L = \{a^n b^n, \text{ where } n \geq 1\}$  with transition and string "aaabbb".
7. Write short note on universal Turing machine. **10**
-



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

|     |   |
|-----|---|
| Set | S |
|-----|---|

**S.E. (IT) (Part – II) (Old) Examination, 2017**  
**FORMAL SYSTEM AND AUTOMATA**

Day and Date : Thursday, 30-11-2017  
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) Can a DFA simulate NFA
  - a) No
  - b) Yes
  - c) Sometimes
  - d) Depends on NFA
- 2) Regular expression  $(a + b)(a + b)$  gives set
  - a) {ab, ab, aa}
  - b) {a, b}
  - c) {aa, ab, ba, bb}
  - d) none
- 3) The production of non terminal ( $\rightarrow \wedge$ ) is said to be null production
  - a) True
  - b) False
- 4) Consider regular expression  $(0 + 1)(0 + 1) \dots n$  times what are minimum states in DFA
  - a) n
  - b) n + 1
  - c) n – 1
  - d) none
- 5) Shown figure accepts ...  $\rightarrow \bigcirc$ 
  - a) all string
  - b) no string
  - c)  $\wedge/\epsilon$
  - 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



- 9) Turing Machine is the machine format of \_\_\_\_\_ language.  
 a) Type 0                      b) Type 1                      c) Type 2                      d) Type 3
- 10) In \_\_\_\_\_  $\delta$  is the transition function :  
 $\delta : Q \times (U \cup \{ \}) \rightarrow (Q \cup \{h, r\}) \times (U \cup \{ \}) \times \{R, L, S\}$   
 a) Turing machine                      b) Push down automata  
 c) CFG                      d) None
- 11) The symbol  $Z_0$  in formal definition of PDA is used for  
 a) Stack symbol      b) Input symbol      c) Both a and b      d) None of these
- 12) In one move the Turing machine  
 a) May change its state  
 b) Write a symbol on the cell being scanned  
 c) Move the head one position left or right  
 d) All of the above
- 13) An instantaneous description of Turing machine consists of  
 a) Present state only  
 b) Present state and entire input to be processed  
 c) Present input only  
 d) None of these
- 14) A \_\_\_\_\_ is formally defined as  $M = (Q, \Sigma, \Gamma, \delta, q_0, Z, F)$   
 a) Turing machine                      b) Push down automata  
 c) DFA                      d) NFA
- 15) The pumping lemma is extremely useful in proving that certain sets are  
 a) non-regular      b) regular      c) both      d) none
- 16) The finite automata accept the following language  
 a) Regular language                      b) Context free language  
 c) Both (a) and (b)                      d) None of these
- 17) While converting the context free grammar into Greibach normal form, which of the following is not necessary ?  
 a) Elimination of null production  
 b) Elimination of unit production  
 c) Converting given grammar in Chomsky normal form  
 d) None of these
- 18) The context free grammar  $S \rightarrow SS \mid 0S1 \mid 1S0 \mid \epsilon$  generates  
 a) Equal number of 0's and 1's  
 b) Unequal number of 0's and 1's  
 c) Any number of 0's followed by any number of 1's  
 d) None of these
- 19) Regular expression  $a + b$  denotes the set  
 a)  $\{a\}$                       b)  $\{\wedge, a, b\}$                       c)  $\{a, b\}$                       d) none of these
- 20) A language represented by a non-deterministic finite state automaton is  
 a) Context Free Language                      b) Context Sensitive Language  
 c) Regular Language                      d) Natural Language



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

**S.E. (IT) (Part – II) (Old) Examination, 2017  
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Thursday, 30-11-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

**SECTION – I**

2. Solve **any four**. **(4×5=20)**

- 1) Construct a grammar for the language L which has all the strings which are all palindrome over  $\Sigma = \{a, b\}$ .
- 2) What is a : (a) String (b) Regular language.
- 3) Differentiate  $L^*$  and  $L^+$ .
- 4) Write a r.e to denote a language L which accepts all the strings which begin or end with either 00 or 11.
- 5) Construct a r.e for the language over the set  $\Sigma = \{a, b\}$  in which total number of a's are divisible by 3.

3. Answer **any one**. **10**

- 1) Write the DFA's for the following languages over  $\Sigma = \{a, b\}$  :
  - i) The set of all strings ending with abb
  - ii) The set of all strings not containing the substring aab
  - iii)  $L = \{a w a \mid w \in (a + b)^*\}$
  - iv)  $L = \{w \mid |w| \bmod 3=0\}$ .
- 2) Systematically construct an NFA for the regular expression  $(a(a+b))^*(c + d + \phi)$ .

4. Define DFA, NFA and Language. Obtain a DFA to accept strings of a's and b's starting with the string ab. **10**

**Set S**



## SECTION – II

5. Solve **any four**. **(4×5=20)**
- 1) Define Deterministic PDA.
  - 2) What are the different types of grammars/languages ?
  - 3) What is a multi-tape Turing machine ?
  - 4) Obtain a TM to accept the language containing string of 0's and 1's and ending with 011.
  - 5) Compare NPDA and DPDA.
6. Answer **any one**. **10**
- 1) Design a Turing Machine for coping string.
  - 2) Construct a PDA to accept a given language L by empty stack and final state both where  $L = \{a^n b^n, \text{ where } n \geq 1\}$  with transition and string "aaabbb".
7. Write short note on universal Turing machine. **10**
-





SLR-TJ – 309

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

|     |   |
|-----|---|
| Set | P |
|-----|---|

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

Day and Date : Monday, 4-12-2017  
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

- I) In Token Ring, when a frame reaches its destination station, then  
A) Message is copied  
B) Four bits in the packet are changed  
C) Message is taken of the ring and replaced by the token  
D) Both A) and B)
- II) Which of the following is not a transceiver function ?  
A) Transmission and receipt of data    B) Checking of line voltages  
C) Addition and subtraction of headers    D) Collision detection
- III) 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
- IV) In which circuit switching, delivery of data is delayed because data must be stored and retrieved from RAM ?  
A) Space-division    B) Time-division    C) Virtual                D) Packet
- V) In cyclic redundancy checking CRC is the  
A) Divisor                B) Quotient                C) Dividend                D) Remainder
- VI) Slotted ALOHA  
A) Divide time into discrete intervals    B) Require global time synchronization  
C) Both A) and B)                                D) None of these
- VII) Start and stop bits are used in serial communication for  
A) Error detection                                B) Error correction  
C) Synchronization                                D) Slowing down the communication

P.T.O.



- VIII) Consider  $s$  be the average number of new frames generated per frame time. If  $s > 1$ , then
- A) Frames not at all collide
  - B) Every frame will suffer collision
  - C) Maximum utilization of channel
  - D) No change in throughput
- IX) A network that contains multiple hubs is most likely configured in which topology ?
- A) Mesh
  - B) Tree
  - C) Bus
  - D) Star
- X) In which topology if there are  $n$  devices in a network each device has  $n-1$  ports for cables ?
- A) Mesh
  - B) Star
  - C) Bus
  - D) Ring
- XI) Bit stuffing refers to
- A) Inserting a '0' in user stream to differentiate it with a lag
  - B) Inserting a '0' in lag stream to avoid ambiguity
  - C) Appending a nibble to the lag sequence
  - D) Appending a nibble to the use data stream
- XII) The secondary device in a multipoint configuration sends data in response to which of the following event ?
- A) ACK
  - B) ENQ
  - C) Poll
  - D) Sel
- XIII) In TCP, a unique sequence number assigned to each
- A) Byte
  - B) Word
  - C) Segment
  - D) Message
- XIV) Which is not LAN standard ?
- A) 802.1
  - B) 802.2
  - C) 802.3
  - D) 802.11
- XV) On which layer of the OSI model the router configuration reside ?
- A) Transport
  - B) Network
  - C) Logical link
  - D) Physical
- XVI) A bridge can
- A) Filter a frame
  - B) Forward a frame
  - C) Extend a LAN
  - D) All of the above
- XVII) The store and forward mechanism is used in
- A) Packet switching
  - B) Message switching
  - C) Circuit switching
  - D) Data gram switching
- XVIII) IEEE 802.4 standard for
- A) Overview and Architecture
  - B) Token Bus
  - C) Token Ring
  - D) Virtual LAN and Security
- XIX) Which protocol is used to convert MAC addresses to Ip address ?
- A) IP
  - B) RARP
  - C) In ARP
  - D) ARP
- XX) What can happen at a Token Ring Station ?
- A) Examination of the destination address
  - B) Regeneration of the frame
  - C) Passing of the frame to the next station
  - D) All of these



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Monday, 4-12-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions : **20**
- A) Explain CRC.
  - B) Explain Token Ring.
  - C) Explain use and significance of Computer Network.
  - D) Write a note on UDP.
  - E) Write a short note on Transport and Application Layer of OSI model.

3. Write note on Go-Back – N protocol. **10**

OR

Write a note on STOP and WAIT sliding window protocol.

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

- A) DLL design issues                      B) Error correction technique                      C) TCP

SECTION – II

5. Attempt **any four** questions : **20**
- A) Explain CSMA.
  - B) Explain Layer 1 (HUB) device.
  - C) Explain different network layer design issues.
  - D) Write a note on Slotted ALOHA.
  - E) Differentiate IPv4 7 IPv 6.

6. Explain link state routing algorithm. **10**

OR

Explain hierarchical routing algorithm with example.

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

- A) OSPF Routing Protocol
- B) Border Gateway Protocol
- C) ARP.





SLR-TJ – 309

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

|     |   |
|-----|---|
| Set | Q |
|-----|---|

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

Day and Date : Monday, 4-12-2017  
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**

- I) A bridge can  
A) Filter a frame  
B) Forward a frame  
C) Extend a LAN  
D) All of the above
- II) The store and forward mechanism is used in  
A) Packet switching  
B) Message switching  
C) Circuit switching  
D) Data gram switching
- III) IEEE 802.4 standard for  
A) Overview and Architecture  
B) Token Bus  
C) Token Ring  
D) Virtual LAN and Security
- IV) Which protocol is used to convert MAC addresses to Ip address ?  
A) IP  
B) RARP  
C) In ARP  
D) ARP
- V) What can happen at a Token Ring Station ?  
A) Examination of the destination address  
B) Regeneration of the frame  
C) Passing of the frame to the next station  
D) All of these
- VI) In Token Ring, when a frame reaches its destination station, then  
A) Message is copied  
B) Four bits in the packet are changed  
C) Message is taken of the ring and replaced by the token  
D) Both A) and B)
- VII) Which of the following is not a transceiver function ?  
A) Transmission and receipt of data  
B) Checking of line voltages  
C) Addition and subtraction of headers  
D) Collision detection

**P.T.O.**



- VIII) 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
- IX) In which circuit switching, delivery of data is delayed because data must be stored and retrieved from RAM ?  
A) Space-division  
B) Time-division  
C) Virtual  
D) Packet
- X) In cyclic redundancy checking CRC is the  
A) Divisor  
B) Quotient  
C) Dividend  
D) Remainder
- XI) Slotted ALOHA  
A) Divide time into discrete intervals  
B) Require global time synchronization  
C) Both A) and B)  
D) None of these
- XII) Start and stop bits are used in serial communication for  
A) Error detection  
B) Error correction  
C) Synchronization  
D) Slowing down the communication
- XIII) Consider  $s$  be the average number of new frames generated per frame time. If  $s > 1$ , then  
A) Frames not at all collide  
B) Every frame will suffer collision  
C) Maximum utilization of channel  
D) No change in throughput
- XIV) A network that contains multiple hubs is most likely configured in which topology ?  
A) Mesh  
B) Tree  
C) Bus  
D) Star
- XV) In which topology if there are  $n$  devices in a network each device has  $n-1$  ports for cables ?  
A) Mesh  
B) Star  
C) Bus  
D) Ring
- XVI) Bit stuffing refers to  
A) Inserting a '0' in user stream to differentiate it with a lag  
B) Inserting a '0' in lag stream to avoid ambiguity  
C) Appending a nibble to the lag sequence  
D) Appending a nibble to the use data stream
- XVII) The secondary device in a multipoint configuration sends data in response to which of the following event ?  
A) ACK  
B) ENQ  
C) Poll  
D) Sel
- XVIII) In TCP, a unique sequence number assigned to each  
A) Byte  
B) Word  
C) Segment  
D) Message
- XIX) Which is not LAN standard ?  
A) 802.1  
B) 802.2  
C) 802.3  
D) 802.11
- XX) On which layer of the OSI model the router configuration reside ?  
A) Transport  
B) Network  
C) Logical link  
D) Physical



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Monday, 4-12-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions : **20**
- A) Explain CRC.
  - B) Explain Token Ring.
  - C) Explain use and significance of Computer Network.
  - D) Write a note on UDP.
  - E) Write a short note on Transport and Application Layer of OSI model.

3. Write note on Go-Back – N protocol. **10**

OR

Write a note on STOP and WAIT sliding window protocol.

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

- A) DLL design issues                      B) Error correction technique                      C) TCP

SECTION – II

5. Attempt **any four** questions : **20**
- A) Explain CSMA.
  - B) Explain Layer 1 (HUB) device.
  - C) Explain different network layer design issues.
  - D) Write a note on Slotted ALOHA.
  - E) Differentiate IPv4 7 IPv 6.

6. Explain link state routing algorithm. **10**

OR

Explain hierarchical routing algorithm with example.

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

- A) OSPF Routing Protocol
- B) Border Gateway Protocol
- C) ARP.







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

|     |   |
|-----|---|
| Set | R |
|-----|---|

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

Day and Date : Monday, 4-12-2017

Max. Marks : 100

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

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- I) Bit stuffing refers to
  - A) Inserting a '0' in user stream to differentiate it with a lag
  - B) Inserting a '0' in lag stream to avoid ambiguity
  - C) Appending a nibble to the lag sequence
  - D) Appending a nibble to the use data stream
- II) The secondary device in a multipoint configuration sends data in response to which of the following event ?
  - A) ACK
  - B) ENQ
  - C) Poll
  - D) Sel
- III) In TCP, a unique sequence number assigned to each
  - A) Byte
  - B) Word
  - C) Segment
  - D) Message
- IV) Which is not LAN standard ?
  - A) 802.1
  - B) 802.2
  - C) 802.3
  - D) 802.11
- V) On which layer of the OSI model the router configuration reside ?
  - A) Transport
  - B) Network
  - C) Logical link
  - D) Physical
- VI) A bridge can
  - A) Filter a frame
  - B) Forward a frame
  - C) Extend a LAN
  - D) All of the above
- VII) The store and forward mechanism is used in
  - A) Packet switching
  - B) Message switching
  - C) Circuit switching
  - D) Data gram switching
- VIII) IEEE 802.4 standard for
  - A) Overview and Architecture
  - B) Token Bus
  - C) Token Ring
  - D) Virtual LAN and Security

P.T.O.



- IX) Which protocol is used to convert MAC addresses to Ip address ?  
A) IP                      B) RARP                      C) In ARP                      D) ARP
- X) What can happen at a Token Ring Station ?  
A) Examination of the destination address  
B) Regeneration of the frame  
C) Passing of the frame to the next station  
D) All of these
- XI) In Token Ring, when a frame reaches its destination station, then  
A) Message is copied  
B) Four bits in the packet are changed  
C) Message is taken of the ring and replaced by the token  
D) Both A) and B)
- XII) Which of the following is not a transceiver function ?  
A) Transmission and receipt of data      B) Checking of line voltages  
C) Addition and subtraction of headers      D) Collision detection
- XIII) 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
- XIV) In which circuit switching, delivery of data is delayed because data must be stored and retrieved from RAM ?  
A) Space-division      B) Time-division      C) Virtual                      D) Packet
- XV) In cyclic redundancy checking CRC is the  
A) Divisor                      B) Quotient                      C) Dividend                      D) Remainder
- XVI) Slotted ALOHA  
A) Divide time into discrete intervals      B) Require global time synchronization  
C) Both A) and B)                      D) None of these
- XVII) Start and stop bits are used in serial communication for  
A) Error detection                      B) Error correction  
C) Synchronization                      D) Slowing down the communication
- XVIII) Consider  $s$  be the average number of new frames generated per frame time. If  $s > 1$ , then  
A) Frames not at all collide                      B) Every frame will suffer collision  
C) Maximum utilization of channel                      D) No change in throughput
- XIX) A network that contains multiple hubs is most likely configured in which topology ?  
A) Mesh                      B) Tree                      C) Bus                      D) Star
- XX) In which topology if there are  $n$  devices in a network each device has  $n-1$  ports for cables ?  
A) Mesh                      B) Star                      C) Bus                      D) Ring



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Monday, 4-12-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions : **20**
- A) Explain CRC.
  - B) Explain Token Ring.
  - C) Explain use and significance of Computer Network.
  - D) Write a note on UDP.
  - E) Write a short note on Transport and Application Layer of OSI model.

3. Write note on Go-Back – N protocol. **10**

OR

Write a note on STOP and WAIT sliding window protocol.

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

- A) DLL design issues                      B) Error correction technique                      C) TCP

SECTION – II

5. Attempt **any four** questions : **20**
- A) Explain CSMA.
  - B) Explain Layer 1 (HUB) device.
  - C) Explain different network layer design issues.
  - D) Write a note on Slotted ALOHA.
  - E) Differentiate IPv4 7 IPv 6.

6. Explain link state routing algorithm. **10**

OR

Explain hierarchical routing algorithm with example.

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

- A) OSPF Routing Protocol
- B) Border Gateway Protocol
- C) ARP.





SLR-TJ – 309

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

|     |   |
|-----|---|
| Set | S |
|-----|---|

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

Day and Date : Monday, 4-12-2017  
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

- I) Slotted ALOHA  
A) Divide time into discrete intervals      B) Require global time synchronization  
C) Both A) and B)      D) None of these
- II) Start and stop bits are used in serial communication for  
A) Error detection      B) Error correction  
C) Synchronization      D) Slowing down the communication
- III) Consider  $s$  be the average number of new frames generated per frame time. If  $s > 1$ , then  
A) Frames not at all collide      B) Every frame will suffer collision  
C) Maximum utilization of channel      D) No change in throughput
- IV) A network that contains multiple hubs is most likely configured in which topology ?  
A) Mesh      B) Tree      C) Bus      D) Star
- V) In which topology if there are  $n$  devices in a network each device has  $n-1$  ports for cables ?  
A) Mesh      B) Star      C) Bus      D) Ring
- VI) Bit stuffing refers to  
A) Inserting a '0' in user stream to differentiate it with a lag  
B) Inserting a '0' in lag stream to avoid ambiguity  
C) Appending a nibble to the lag sequence  
D) Appending a nibble to the use data stream
- VII) The secondary device in a multipoint configuration sends data in response to which of the following event ?  
A) ACK      B) ENQ      C) Poll      D) Sel

P.T.O.



- VIII) In TCP, a unique sequence number assigned to each  
A) Byte                      B) Word                      C) Segment                      D) Message
- IX) Which is not LAN standard ?  
A) 802.1                      B) 802.2                      C) 802.3                      D) 802.11
- X) On which layer of the OSI model the router configuration reside ?  
A) Transport                      B) Network                      C) Logical link                      D) Physical
- XI) A bridge can  
A) Filter a frame                      B) Forward a frame  
C) Extend a LAN                      D) All of the above
- XII) The store and forward mechanism is used in  
A) Packet switching                      B) Message switching  
C) Circuit switching                      D) Data gram switching
- XIII) IEEE 802.4 standard for  
A) Overview and Architecture                      B) Token Bus  
C) Token Ring                      D) Virtual LAN and Security
- XIV) Which protocol is used to convert MAC addresses to Ip address ?  
A) IP                      B) RARP                      C) In ARP                      D) ARP
- XV) What can happen at a Token Ring Station ?  
A) Examination of the destination address  
B) Regeneration of the frame  
C) Passing of the frame to the next station  
D) All of these
- XVI) In Token Ring, when a frame reaches its destination station, then  
A) Message is copied  
B) Four bits in the packet are changed  
C) Message is taken of the ring and replaced by the token  
D) Both A) and B)
- XVII) Which of the following is not a transceiver function ?  
A) Transmission and receipt of data                      B) Checking of line voltages  
C) Addition and subtraction of headers                      D) Collision detection
- XVIII) 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
- XIX) In which circuit switching, delivery of data is delayed because data must be stored and retrieved from RAM ?  
A) Space-division                      B) Time-division                      C) Virtual                      D) Packet
- XX) In cyclic redundancy checking CRC is the  
A) Divisor                      B) Quotient                      C) Dividend                      D) Remainder



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

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

Day and Date : Monday, 4-12-2017  
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions : **20**
- A) Explain CRC.
  - B) Explain Token Ring.
  - C) Explain use and significance of Computer Network.
  - D) Write a note on UDP.
  - E) Write a short note on Transport and Application Layer of OSI model.

3. Write note on Go-Back – N protocol. **10**

OR

Write a note on STOP and WAIT sliding window protocol.

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

- A) DLL design issues                      B) Error correction technique                      C) TCP

SECTION – II

5. Attempt **any four** questions : **20**
- A) Explain CSMA.
  - B) Explain Layer 1 (HUB) device.
  - C) Explain different network layer design issues.
  - D) Write a note on Slotted ALOHA.
  - E) Differentiate IPv4 7 IPv 6.

6. Explain link state routing algorithm. **10**

OR

Explain hierarchical routing algorithm with example.

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

- A) OSPF Routing Protocol
- B) Border Gateway Protocol
- C) ARP.







SLR-TJ – 310

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

|     |          |
|-----|----------|
| Set | <b>P</b> |
|-----|----------|

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

Day and Date : Wednesday, 29 -11-2017  
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 transport layer protocols is used to support electronic mail ?  
a) SMTP                      b) IP                      c) TCP                      d) UDP
  - 2) What is the purpose of flow control ?  
a) to ensure that data is retransmitted if an acknowledgment is not received  
b) to reassemble segments in the correct order at the destination device  
c) to provide a means for the receiver to govern the amount of data sent by the sender  
d) to regulate the size of each segment
  - 3) Which of the following are types of flow control ?  
1) Buffering                      2) Cut-through  
3) Windowing                      4) Congestion avoidance  
a) 1 and 2                      b) 1, 3 and 4                      c) 2 only                      d) 3 only
  - 4) Acknowledgments, sequencing and flow control are characteristics of which OSI layer ?  
a) Layer 2                      b) Layer 3                      c) Layer 4                      d) Layer 7
  - 5) When data is encapsulated, which is the correct order ?  
a) Data, frame, packet, segment, bit  
b) Segment, data, packet, frame, bit  
c) Data, segment, packet, frame, bit  
d) Data, segment, frame, packet, bit

P.T.O.



- 6) Which layer 4 protocol is used for a Telnet connection ?  
a) SMTP                      b) IP                      c) TCP /IP                      d) UDP
- 7) Which of the following are TCP/IP protocols used at the application layer of the OSI model ?  
1) IP                      2) TCP                      3) Telnet                      4) FTP                      5) TFTP  
a) 1 and 3                      b) 1, 3 and 5                      c ) 3, 4 and 5                      d) All of the above
- 8) SNMP TRAP types are \_\_\_\_\_.  
a) Cols and warm                      b) Link down and link up  
c) Luke warm and extreme cold                      d) None of these
- 9) Network provisioning uses \_\_\_\_\_ to transmit information from source to destination.  
a) Circuit switching                      b) Packet switching  
c) Message switching                      d) None of these
- 10) \_\_\_\_\_ defines the general rules for naming objects, defining object types and showing how to encode objects and values.  
a) MIB                      b) BER                      c) SMI                      d) None of these
- 11) For a 1-byte length field, what is the maximum value for the data length ?  
a) 127                      b) 128                      c) 255                      d) None of these
- 12) INTEGER, OCTET STRING and Object Identifier are \_\_\_\_\_ definitions used by SMI.  
a) MIB  
b) SNMP  
c) ASN. 1 (Abstract Syntax Notation. 1)  
d) None of these
- 13) SMI emphasizes three attributes to handle an object: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.  
a) name ; data type; size  
b) name; size; encoding method  
c) name; data type; encoding method  
d) none of these
- 14) We can compare the task of network management to the task of writing a program, both tasks need variable declarations. In network management this is handled by \_\_\_\_\_.  
a) SMNP                      b) MIB                      c) SMI                      d) None of these
- \_\_\_\_\_



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

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

Day and Date : Wednesday, 29 -11-2017

Marks : 56

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

**Instruction :** Figures the **right** indicate **full** marks.

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- 1) Explain TCP services.
  - 2) What is the use of sequence numbers in error control ?
  - 3) How algorithm pop3 works ?
  - 4) How does recursive name resolution works ?
3. Answer **any two** of the following : **(8×2=16)**
- 1) What are the different DNS servers ? Explain DNS messages of records.
  - 2) What is the BOOTP host configuration ?
  - 3) Give details of UDP process to process communication with uses.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
- a) Explain the administrative model with SNMP community and SMNP community profile.
  - b) What is lexicographic ordering in NMA ? Explain with example.

**Set P**



- c) What is fault management ? Explain all the steps of fault management.
- d) Explain with figure basic rule based reasoning paradigm.

5. Attempt **any two** :

**(2×8=16)**

- a) What is performance management ? Explain performance metrics and statistics with respect to it.
  - b) What is SMI ? Explain all the data types of its object type.
  - c) Explain the following with respect to configuration management.
    - a) Network provisioning
    - b) Inventory management
    - c) Network topology.
-



SLR-TJ – 310

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

|     |   |
|-----|---|
| Set | Q |
|-----|---|

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

Day and Date : Wednesday, 29 -11-2017  
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) SNMP TRAP types are \_\_\_\_\_.
    - a) Cols and warm
    - b) Link down and link up
    - c) Luke warm and extreme cold
    - d) None of these
  - 2) Network provisioning uses \_\_\_\_\_ to transmit information from source to destination.
    - a) Circuit switching
    - b) Packet switching
    - c) Message switching
    - d) None of these
  - 3) \_\_\_\_\_ defines the general rules for naming objects, defining object types and showing how to encode objects and values.
    - a) MIB
    - b) BER
    - c) SMI
    - d) None of these
  - 4) For a 1-byte length field, what is the maximum value for the data length ?
    - a) 127
    - b) 128
    - c) 255
    - d) None of these
  - 5) INTEGER, OCTET STRING and Object Identifier are \_\_\_\_\_ definitions used by SMI.
    - a) MIB
    - b) SNMP
    - c) ASN. 1 (Abstract Syntax Notation. 1)
    - d) None of these
  - 6) SMI emphasizes three attributes to handle an object: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
    - a) name ; data type; size
    - b) name; size; encoding method
    - c) name; data type; encoding method
    - d) none of these

P.T.O.



- 7) We can compare the task of network management to the task of writing a program, both tasks need variable declarations. In network management this is handled by \_\_\_\_\_.
- a) SMNP                      b) MIB                      c) SMI                      d) None of these
- 8) Which of the following transport layer protocols is used to support electronic mail ?
- a) SMTP                      b) IP                      c) TCP                      d) UDP
- 9) What is the purpose of flow control ?
- a) to ensure that data is retransmitted if an acknowledgment is not received  
b) to reassemble segments in the correct order at the destination device  
c) to provide a means for the receiver to govern the amount of data sent by the sender  
d) to regulate the size of each segment
- 10) Which of the following are types of flow control ?
- 1) Buffering                      2) Cut-through  
3) Windowing                      4) Congestion avoidance
- a) 1 and 2                      b) 1, 3 and 4                      c) 2 only                      d) 3 only
- 11) Acknowledgments, sequencing and flow control are characteristics of which OSI layer ?
- a) Layer 2                      b) Layer 3                      c) Layer 4                      d) Layer 7
- 12) When data is encapsulated, which is the correct order ?
- a) Data, frame, packet, segment, bit  
b) Segment, data, packet, frame, bit  
c) Data, segment, packet, frame, bit  
d) Data, segment, frame, packet, bit
- 13) Which layer 4 protocol is used for a Telnet connection ?
- a) SMTP                      b) IP                      c) TCP /IP                      d) UDP
- 14) Which of the following are TCP/IP protocols used at the application layer of the OSI model ?
- 1) IP                      2) TCP                      3) Telnet                      4) FTP                      5) TFTP
- a) 1 and 3                      b) 1, 3 and 5                      c) 3, 4 and 5                      d) All of the above
-



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

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

Day and Date : Wednesday, 29 -11-2017

Marks : 56

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

**Instruction :** Figures the **right** indicate **full** marks.

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- 1) Explain TCP services.
  - 2) What is the use of sequence numbers in error control ?
  - 3) How algorithm pop3 works ?
  - 4) How does recursive name resolution works ?
3. Answer **any two** of the following : **(8×2=16)**
- 1) What are the different DNS servers ? Explain DNS messages of records.
  - 2) What is the BOOTP host configuration ?
  - 3) Give details of UDP process to process communication with uses.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
- a) Explain the administrative model with SNMP community and SMNP community profile.
  - b) What is lexicographic ordering in NMA ? Explain with example.

**Set Q**



- c) What is fault management ? Explain all the steps of fault management.
- d) Explain with figure basic rule based reasoning paradigm.

5. Attempt **any two** :

**(2×8=16)**

- a) What is performance management ? Explain performance metrics and statistics with respect to it.
  - b) What is SMI ? Explain all the data types of its object type.
  - c) Explain the following with respect to configuration management.
    - a) Network provisioning
    - b) Inventory management
    - c) Network topology.
-





SLR-TJ – 310

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

|     |          |
|-----|----------|
| Set | <b>R</b> |
|-----|----------|

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

Day and Date : Wednesday, 29 -11-2017  
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) SNMP TRAP types are \_\_\_\_\_.
    - a) Cols and warm
    - b) Link down and link up
    - c) Luke warm and extreme cold
    - d) None of these
  - 2) Network provisioning uses \_\_\_\_\_ to transmit information from source to destination.
    - a) Circuit switching
    - b) Packet switching
    - c) Message switching
    - d) None of these
  - 3) \_\_\_\_\_ defines the general rules for naming objects, defining object types and showing how to encode objects and values.
    - a) MIB
    - b) BER
    - c) SMI
    - d) None of these
  - 4) For a 1-byte length field, what is the maximum value for the data length ?
    - a) 127
    - b) 128
    - c) 255
    - d) None of these
  - 5) INTEGER, OCTET STRING and Object Identifier are \_\_\_\_\_ definitions used by SMI.
    - a) MIB
    - b) SNMP
    - c) ASN. 1 (Abstract Syntax Notation. 1)
    - d) None of these
  - 6) SMI emphasizes three attributes to handle an object: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
    - a) name ; data type; size
    - b) name; size; encoding method
    - c) name; data type; encoding method
    - d) none of these

P.T.O.



- 7) We can compare the task of network management to the task of writing a program, both tasks need variable declarations. In network management this is handled by \_\_\_\_\_.
- a) SMNP                      b) MIB                      c) SMI                      d) None of these
- 8) Which of the following transport layer protocols is used to support electronic mail ?
- a) SMTP                      b) IP                      c) TCP                      d) UDP
- 9) What is the purpose of flow control ?
- a) to ensure that data is retransmitted if an acknowledgment is not received  
b) to reassemble segments in the correct order at the destination device  
c) to provide a means for the receiver to govern the amount of data sent by the sender  
d) to regulate the size of each segment
- 10) Which of the following are types of flow control ?
- 1) Buffering                      2) Cut-through  
3) Windowing                      4) Congestion avoidance
- a) 1 and 2                      b) 1, 3 and 4                      c) 2 only                      d) 3 only
- 11) Acknowledgments, sequencing and flow control are characteristics of which OSI layer ?
- a) Layer 2                      b) Layer 3                      c) Layer 4                      d) Layer 7
- 12) When data is encapsulated, which is the correct order ?
- a) Data, frame, packet, segment, bit  
b) Segment, data, packet, frame, bit  
c) Data, segment, packet, frame, bit  
d) Data, segment, frame, packet, bit
- 13) Which layer 4 protocol is used for a Telnet connection ?
- a) SMTP                      b) IP                      c) TCP /IP                      d) UDP
- 14) Which of the following are TCP/IP protocols used at the application layer of the OSI model ?
- 1) IP                      2) TCP                      3) Telnet                      4) FTP                      5) TFTP
- a) 1 and 3                      b) 1, 3 and 5                      c) 3, 4 and 5                      d) All of the above
-



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

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

Day and Date : Wednesday, 29 -11-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instruction :** Figures the **right** indicate **full** marks.

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- 1) Explain TCP services.
  - 2) What is the use of sequence numbers in error control ?
  - 3) How algorithm pop3 works ?
  - 4) How does recursive name resolution works ?
3. Answer **any two** of the following : **(8×2=16)**
- 1) What are the different DNS servers ? Explain DNS messages of records.
  - 2) What is the BOOTP host configuration ?
  - 3) Give details of UDP process to process communication with uses.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
- a) Explain the administrative model with SNMP community and SMNP community profile.
  - b) What is lexicographic ordering in NMA ? Explain with example.



- c) What is fault management ? Explain all the steps of fault management.
- d) Explain with figure basic rule based reasoning paradigm.

5. Attempt **any two** : **(2×8=16)**

- a) What is performance management ? Explain performance metrics and statistics with respect to it.
  - b) What is SMI ? Explain all the data types of its object type.
  - c) Explain the following with respect to configuration management.
    - a) Network provisioning
    - b) Inventory management
    - c) Network topology.
-



SLR-TJ – 310

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

|     |   |
|-----|---|
| Set | S |
|-----|---|

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

Day and Date : Wednesday, 29 -11-2017  
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) \_\_\_\_\_ defines the general rules for naming objects, defining object types and showing how to encode objects and values.  
a) MIB                      b) BER                      c) SMI                      d) None of these
  - 2) For a 1-byte length field, what is the maximum value for the data length ?  
a) 127                      b) 128                      c) 255                      d) None of these
  - 3) INTEGER, OCTET STRING and Object Identifier are \_\_\_\_\_ definitions used by SMI.  
a) MIB  
b) SNMP  
c) ASN. 1 (Abstract Syntax Notation. 1)  
d) None of these
  - 4) SMI emphasizes three attributes to handle an object: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.  
a) name ; data type; size  
b) name; size; encoding method  
c) name; data type; encoding method  
d) none of these
  - 5) We can compare the task of network management to the task of writing a program, both tasks need variable declarations. In network management this is handled by \_\_\_\_\_.  
a) SMNP                      b) MIB                      c) SMI                      d) None of these

P.T.O.



- 6) Which of the following transport layer protocols is used to support electronic mail ?  
a) SMTP                      b) IP                      c) TCP                      d) UDP
- 7) What is the purpose of flow control ?  
a) to ensure that data is retransmitted if an acknowledgment is not received  
b) to reassemble segments in the correct order at the destination device  
c) to provide a means for the receiver to govern the amount of data sent by the sender  
d) to regulate the size of each segment
- 8) Which of the following are types of flow control ?  
1) Buffering                      2) Cut-through  
3) Windowing                      4) Congestion avoidance  
a) 1 and 2                      b) 1, 3 and 4                      c) 2 only                      d) 3 only
- 9) Acknowledgments, sequencing and flow control are characteristics of which OSI layer ?  
a) Layer 2                      b) Layer 3                      c) Layer 4                      d) Layer 7
- 10) When data is encapsulated, which is the correct order ?  
a) Data, frame, packet, segment, bit  
b) Segment, data, packet, frame, bit  
c) Data, segment, packet, frame, bit  
d) Data, segment, frame, packet, bit
- 11) Which layer 4 protocol is used for a Telnet connection ?  
a) SMTP                      b) IP                      c) TCP /IP                      d) UDP
- 12) Which of the following are TCP/IP protocols used at the application layer of the OSI model ?  
1) IP                      2) TCP                      3) Telnet                      4) FTP                      5) TFTP  
a) 1 and 3                      b) 1, 3 and 5                      c) 3, 4 and 5                      d) All of the above
- 13) SNMP TRAP types are \_\_\_\_\_.  
a) Cols and warm                      b) Link down and link up  
c) Luke warm and extreme cold                      d) None of these
- 14) Network provisioning uses \_\_\_\_\_ to transmit information from source to destination.  
a) Circuit switching                      b) Packet switching  
c) Message switching                      d) None of these
-



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

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

Day and Date : Wednesday, 29 -11-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

**Instruction :** Figures the **right** indicate **full** marks.

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- 1) Explain TCP services.
  - 2) What is the use of sequence numbers in error control ?
  - 3) How algorithm pop3 works ?
  - 4) How does recursive name resolution works ?
3. Answer **any two** of the following : **(8×2=16)**
- 1) What are the different DNS servers ? Explain DNS messages of records.
  - 2) What is the BOOTP host configuration ?
  - 3) Give details of UDP process to process communication with uses.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
- a) Explain the administrative model with SNMP community and SMNP community profile.
  - b) What is lexicographic ordering in NMA ? Explain with example.



- c) What is fault management ? Explain all the steps of fault management.
- d) Explain with figure basic rule based reasoning paradigm.

5. Attempt **any two** : **(2×8=16)**

- a) What is performance management ? Explain performance metrics and statistics with respect to it.
  - b) What is SMI ? Explain all the data types of its object type.
  - c) Explain the following with respect to configuration management.
    - a) Network provisioning
    - b) Inventory management
    - c) Network topology.
-





SLR-TJ – 311

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

|     |   |
|-----|---|
| Set | P |
|-----|---|

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

Day and Date : Saturday, 2-12-2017  
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 :

- When the result of an arithmetic operation is outside the representable range then it is termed as \_\_\_\_\_  
A) Arithmetic overflow                                      B) Arithmetic underflow  
C) Garbage flow                                                      D) None of these
- \_\_\_\_\_ memory is placed in between the CPU and the main memory.  
A) Magnetic                                                              B) ROM  
C) Optical storage                                                              D) Cache
- 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
- The CPU control units (Both Hardwired and micro programmed) are often organized as \_\_\_\_\_  
A) Micro instructions pipelines                                      B) Parallel processors  
C) Multi processors                                                              D) Multi programs
- The MOTOROLA 680X0 series is \_\_\_\_\_ Microprocessor series computer.  
A) RISC                      B) CISC                      C) Both of these                      D) None of these
- CD ROMs are also called as \_\_\_\_\_  
A) Magnetic Storage Device                                      B) Semi Conductor Device  
C) Optical Storage Device                                                              D) None of these
- The term \_\_\_\_\_ is used when the main memory and secondary memories appear to a user program like large, single and directly addressable memory.  
A) Cache memory                                                              B) Buffer memory  
C) Register memory                                                              D) Virtual memory

P.T.O.



- 8) \_\_\_\_\_ have been developed specifically for pipelined systems.
- A) Optimizing compilers                      B) Utility software's  
C) Speed up utilities                         D) None of the mentioned
- 9) In a coherent multiprocessor, the caches provide both \_\_\_\_\_ and \_\_\_\_\_ of shared data items.
- A) Migration and duplicate                      B) Migration and replication  
C) Consistency and coherence                 D) Consistency and replication
- 10) Register renaming can eliminate hazard based on
- A) WAR                      B) WAW                      C) Both A) and B)     D) None of these
- 11) Tomasulo scheme operates on
- A) Renaming                                              B) Reservation stations  
C) Common data bus                                      D) All of the above
- 12) \_\_\_\_\_ is a set of related attributes that must be considered when designing, manufacturing, purchasing or using a computer product or component.
- A) Dependability  
B) Serviceability  
C) Availability  
D) Reliability, Availability and Serviceability (RAS)
- 13) SIMD Computers exploit \_\_\_\_\_
- A) Data – level parallelism                      B) Thread – level parallelism  
C) Control – level parallelism                 D) None of these
- 14) \_\_\_\_\_ 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
-



|                     |  |
|---------------------|--|
| <b>Seat<br/>No.</b> |  |
|---------------------|--|

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

Day and Date : Saturday, 2-12-2017  
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 IEEE-754 floating point formats in detail.
  - 3) Explain Assembly Language Format and Memory Map for the ARC processor.
  - 4) Explain the concept of Pseudo-operations and Synthetic instructions with examples.
  - 5) Explain the concept of direct mapping Cache memory organization in detail.
3. Attempt **any two** : **(2×8=16)**
- 1) Multiply +13 with –8 using Booth’s Algorithm.
  - 2) Perform Division of 35/12 using Restoring division algorithm.
  - 3) Design Multiplier control unit using Delay element method.

**SECTION – II**

4. Attempt **any three** : **(3×4=12)**
- 1) Discuss the major factors that influence the cost of a computer and show how these factors are changing over time.
  - 2) With a neat diagram explain the classic five – stage pipeline for a RISC Processor.
  - 3) Explain basic VLIW approach. List its drawbacks.
  - 4) Explain difference between linear and non linear pipeline.
  - 5) What is the purpose of Distributed Memory Multiprocessor ? Explain about the same.
5. Attempt **any two** : **(2×8=16)**
- 1) What is pipelining ? List pipeline hazards. Explain how to handle data hazards in detail.
  - 2) Explain the basic schemes for enforcing Coherence in a shared memory multiprocessor system.
  - 3) Explain Advanced Techniques for instruction delivery and speculation.





SLR-TJ – 311

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

|     |   |
|-----|---|
| Set | Q |
|-----|---|

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

Day and Date : Saturday, 2-12-2017  
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) \_\_\_\_\_ have been developed specifically for pipelined systems.  
A) Optimizing compilers                      B) Utility software's  
C) Speed up utilities                          D) None of the mentioned
- 2) In a coherent multiprocessor, the caches provide both \_\_\_\_\_ and \_\_\_\_\_ of shared data items.  
A) Migration and duplicate                      B) Migration and replication  
C) Consistency and coherence                      D) Consistency and replication
- 3) Register renaming can eliminate hazard based on  
A) WAR                      B) WAW                      C) Both A) and B)                      D) None of these
- 4) Tomasulo scheme operates on  
A) Renaming                      B) Reservation stations  
C) Common data bus                      D) All of the above
- 5) \_\_\_\_\_ is a set of related attributes that must be considered when designing, manufacturing, purchasing or using a computer product or component.  
A) Dependability  
B) Serviceability  
C) Availability  
D) Reliability, Availability and Serviceability (RAS)
- 6) SIMD Computers exploit \_\_\_\_\_  
A) Data – level parallelism                      B) Thread – level parallelism  
C) Control – level parallelism                      D) None of these
- 7) \_\_\_\_\_ 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.



- 8) When the result of an arithmetic operation is outside the representable range then it is termed as \_\_\_\_\_
- A) Arithmetic overflow                      B) Arithmetic underflow  
C) Garbage flow                                D) None of these
- 9) \_\_\_\_\_ memory is placed in between the CPU and the main memory.
- A) Magnetic                                      B) ROM  
C) Optical storage                              D) Cache
- 10) 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
- 11) The CPU control units (Both Hardwired and micro programmed) are often organized as \_\_\_\_\_
- A) Micro instructions pipelines              B) Parallel processors  
C) Multi processors                              D) Multi programs
- 12) The MOTOROLA 680X0 series is \_\_\_\_\_ Microprocessor series computer.
- A) RISC                      B) CISC                      C) Both of these              D) None of these
- 13) CD ROMs are also called as \_\_\_\_\_
- A) Magnetic Storage Device                      B) Semi Conductor Device  
C) Optical Storage Device                        D) None of these
- 14) The term \_\_\_\_\_ is used when the main memory and secondary memories appear to a user program like large, single and directly addressable memory.
- A) Cache memory                                B) Buffer memory  
C) Register memory                                D) Virtual memory
-



|                 |  |
|-----------------|--|
| <b>Seat No.</b> |  |
|-----------------|--|

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

Day and Date : Saturday, 2-12-2017  
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 IEEE-754 floating point formats in detail.
  - 3) Explain Assembly Language Format and Memory Map for the ARC processor.
  - 4) Explain the concept of Pseudo-operations and Synthetic instructions with examples.
  - 5) Explain the concept of direct mapping Cache memory organization in detail.
3. Attempt **any two** : **(2×8=16)**
- 1) Multiply +13 with –8 using Booth’s Algorithm.
  - 2) Perform Division of 35/12 using Restoring division algorithm.
  - 3) Design Multiplier control unit using Delay element method.

**SECTION – II**

4. Attempt **any three** : **(3×4=12)**
- 1) Discuss the major factors that influence the cost of a computer and show how these factors are changing over time.
  - 2) With a neat diagram explain the classic five – stage pipeline for a RISC Processor.
  - 3) Explain basic VLIW approach. List its drawbacks.
  - 4) Explain difference between linear and non linear pipeline.
  - 5) What is the purpose of Distributed Memory Multiprocessor ? Explain about the same.
5. Attempt **any two** : **(2×8=16)**
- 1) What is pipelining ? List pipeline hazards. Explain how to handle data hazards in detail.
  - 2) Explain the basic schemes for enforcing Coherence in a shared memory multiprocessor system.
  - 3) Explain Advanced Techniques for instruction delivery and speculation.







SLR-TJ – 311

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

|     |   |
|-----|---|
| Set | R |
|-----|---|

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

Day and Date : Saturday, 2-12-2017  
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) The MOTOROLA 680X0 series is \_\_\_\_\_ Microprocessor series computer.  
A) RISC                      B) CISC                      C) Both of these      D) None of these
- 2) CD ROMs are also called as \_\_\_\_\_  
A) Magnetic Storage Device                      B) Semi Conductor Device  
C) Optical Storage Device                      D) None of these
- 3) The term \_\_\_\_\_ is used when the main memory and secondary memories appear to a user program like large, single and directly addressable memory.  
A) Cache memory                      B) Buffer memory  
C) Register memory                      D) Virtual memory
- 4) \_\_\_\_\_ have been developed specifically for pipelined systems.  
A) Optimizing compilers                      B) Utility software's  
C) Speed up utilities                      D) None of the mentioned
- 5) In a coherent multiprocessor, the caches provide both \_\_\_\_\_ and \_\_\_\_\_ of shared data items.  
A) Migration and duplicate                      B) Migration and replication  
C) Consistency and coherence                      D) Consistency and replication
- 6) Register renaming can eliminate hazard based on  
A) WAR                      B) WAW                      C) Both A) and B)      D) None of these
- 7) Tomasulo scheme operates on  
A) Renaming                      B) Reservation stations  
C) Common data bus                      D) All of the above

P.T.O.



- 8) \_\_\_\_\_ is a set of related attributes that must be considered when designing, manufacturing, purchasing or using a computer product or component.
- A) Dependability
  - B) Serviceability
  - C) Availability
  - D) Reliability, Availability and Serviceability (RAS)
- 9) SIMD Computers exploit \_\_\_\_\_
- A) Data – level parallelism
  - B) Thread – level parallelism
  - C) Control – level parallelism
  - D) None of these
- 10) \_\_\_\_\_ 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
- 11) When the result of an arithmetic operation is outside the representable range then it is 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) The CPU control units (Both Hardwired and micro programmed) are often organized as \_\_\_\_\_
- A) Micro instructions pipelines
  - B) Parallel processors
  - C) Multi processors
  - D) Multi programs
-



|                     |  |
|---------------------|--|
| <b>Seat<br/>No.</b> |  |
|---------------------|--|

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

Day and Date : Saturday, 2-12-2017  
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 IEEE-754 floating point formats in detail.
  - 3) Explain Assembly Language Format and Memory Map for the ARC processor.
  - 4) Explain the concept of Pseudo-operations and Synthetic instructions with examples.
  - 5) Explain the concept of direct mapping Cache memory organization in detail.
3. Attempt **any two** : **(2×8=16)**
- 1) Multiply +13 with –8 using Booth’s Algorithm.
  - 2) Perform Division of 35/12 using Restoring division algorithm.
  - 3) Design Multiplier control unit using Delay element method.

**SECTION – II**

4. Attempt **any three** : **(3×4=12)**
- 1) Discuss the major factors that influence the cost of a computer and show how these factors are changing over time.
  - 2) With a neat diagram explain the classic five – stage pipeline for a RISC Processor.
  - 3) Explain basic VLIW approach. List its drawbacks.
  - 4) Explain difference between linear and non linear pipeline.
  - 5) What is the purpose of Distributed Memory Multiprocessor ? Explain about the same.
5. Attempt **any two** : **(2×8=16)**
- 1) What is pipelining ? List pipeline hazards. Explain how to handle data hazards in detail.
  - 2) Explain the basic schemes for enforcing Coherence in a shared memory multiprocessor system.
  - 3) Explain Advanced Techniques for instruction delivery and speculation.





SLR-TJ – 311

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

|     |   |
|-----|---|
| Set | S |
|-----|---|

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

Day and Date : Saturday, 2-12-2017  
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) Register renaming can eliminate hazard based on  
A) WAR                      B) WAW                      C) Both A) and B)    D) None of these
- 2) Tomasulo scheme operates on  
A) Renaming                      B) Reservation stations  
C) Common data bus                      D) All of the above
- 3) \_\_\_\_\_ is a set of related attributes that must be considered when designing, manufacturing, purchasing or using a computer product or component.  
A) Dependability  
B) Serviceability  
C) Availability  
D) Reliability, Availability and Serviceability (RAS)
- 4) SIMD Computers exploit \_\_\_\_\_  
A) Data – level parallelism                      B) Thread – level parallelism  
C) Control – level parallelism                      D) None of these
- 5) \_\_\_\_\_ 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
- 6) When the result of an arithmetic operation is outside the representable range then it is termed as \_\_\_\_\_  
A) Arithmetic overflow                      B) Arithmetic underflow  
C) Garbage flow                      D) None of these

P.T.O.



- 7) \_\_\_\_\_ memory is placed in between the CPU and the main memory.  
A) Magnetic  
B) ROM  
C) Optical storage  
D) Cache
- 8) 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
- 9) The CPU control units (Both Hardwired and micro programmed) are often organized as \_\_\_\_\_.  
A) Micro instructions pipelines  
B) Parallel processors  
C) Multi processors  
D) Multi programs
- 10) The MOTOROLA 680X0 series is \_\_\_\_\_ Microprocessor series computer.  
A) RISC  
B) CISC  
C) Both of these  
D) None of these
- 11) CD ROMs are also called as \_\_\_\_\_.  
A) Magnetic Storage Device  
B) Semi Conductor Device  
C) Optical Storage Device  
D) None of these
- 12) The term \_\_\_\_\_ is used when the main memory and secondary memories appear to a user program like large, single and directly addressable memory.  
A) Cache memory  
B) Buffer memory  
C) Register memory  
D) Virtual memory
- 13) \_\_\_\_\_ have been developed specifically for pipelined systems.  
A) Optimizing compilers  
B) Utility software's  
C) Speed up utilities  
D) None of the mentioned
- 14) In a coherent multiprocessor, the caches provide both \_\_\_\_\_ and \_\_\_\_\_ of shared data items.  
A) Migration and duplicate  
B) Migration and replication  
C) Consistency and coherence  
D) Consistency and replication
-



|                     |  |
|---------------------|--|
| <b>Seat<br/>No.</b> |  |
|---------------------|--|

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

Day and Date : Saturday, 2-12-2017  
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 IEEE-754 floating point formats in detail.
  - 3) Explain Assembly Language Format and Memory Map for the ARC processor.
  - 4) Explain the concept of Pseudo-operations and Synthetic instructions with examples.
  - 5) Explain the concept of direct mapping Cache memory organization in detail.
3. Attempt **any two** : **(2×8=16)**
- 1) Multiply +13 with –8 using Booth’s Algorithm.
  - 2) Perform Division of 35/12 using Restoring division algorithm.
  - 3) Design Multiplier control unit using Delay element method.

**SECTION – II**

4. Attempt **any three** : **(3×4=12)**
- 1) Discuss the major factors that influence the cost of a computer and show how these factors are changing over time.
  - 2) With a neat diagram explain the classic five – stage pipeline for a RISC Processor.
  - 3) Explain basic VLIW approach. List its drawbacks.
  - 4) Explain difference between linear and non linear pipeline.
  - 5) What is the purpose of Distributed Memory Multiprocessor ? Explain about the same.
5. Attempt **any two** : **(2×8=16)**
- 1) What is pipelining ? List pipeline hazards. Explain how to handle data hazards in detail.
  - 2) Explain the basic schemes for enforcing Coherence in a shared memory multiprocessor system.
  - 3) Explain Advanced Techniques for instruction delivery and speculation.







SLR-TJ – 312

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

|     |          |
|-----|----------|
| Set | <b>P</b> |
|-----|----------|

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

Day and Date : Tuesday, 5-12-2017  
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) 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<br>No. |  |
|-------------|--|

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

Day and Date : Tuesday, 5-12-2017  
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 a compiler ? Give input and output of each phase of a compiler.
  - b) What is a pattern ? How is it identified ?
  - c) What is a Macro ? Give its structure.
  - d) What are imperative statements ? Illustrate their use.
  - e) What do problem oriented languages deal with ?
3. Attempt **any two** : **(2×5=10)**
- a) What is system software ? How is it different from an Application software ?
  - b) Compare between translation and interpretation.
  - c) Illustrate the development of a predictive parser for an illustrative grammar and parse a string.
4. Attempt **any two** : **(2×5=10)**
- a) State the logic behind a two pass assembler using flowcharts.
  - b) What are the types of parsers ? Compare between LL, LR, SLR and LALR parsing techniques.
  - c) Illustrate a simple assembly scheme.

SECTION – II

5. Attempt **any four** : **(4×2=8)**
- a) What are DAGS ? How do they help in analysis ?
  - b) What is constant folding ? Illustrate.
  - c) What is machine dependent and machine independent optimization ?
  - d) What is a public definition ? How does it affect linking ?
  - e) What are functions of loader ? How are they carried out ?

**Set P**



6. Attempt **any two** : **(2×5=10)**
- a) What is relocation ? When is it required ?
  - b) What characteristics of a target machine should be considered when generating a target code ?
  - c) What criteria is involved in code optimization ? Illustrate in different code optimization techniques.
7. Attempt **any two** : **(2×5=10)**
- a) With neat diagram explain steps involved in program execution.
  - b) Compare between linking and loading w.r.t. concepts, relation with OS and schemes.
  - c) What changes are required in basic linker algorithm when dealing with overlays ?
-



SLR-TJ – 312

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

|     |   |
|-----|---|
| Set | Q |
|-----|---|

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

Day and Date : Tuesday, 5-12-2017  
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) Instruction cost of ADD 4(R0), \*12(R1) is  
a) 2                      b) 3                      c) 4                      d) 5
- 2) Peephole optimization uses which of the following transformations ?  
a) Redundant instruction elimination  
b) Algebraic transformations  
c) Use of machine idioms  
d) All of these
- 3) Problem oriented language used in language processing affects  
a) Specification gap                      b) Execution gap  
c) Both a) and b)                      d) Semantic gap
- 4) Which of the following is a Phrase-structure grammar ?  
a)  $A ::= \pi$                       b)  $\alpha ::= \beta$                       c)  $A ::= Bt|t$                       d)  $\alpha A\beta ::= \alpha \pi \beta$
- 5) 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
- 6) 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

P.T.O.



- 7) Compilers are
- a) Recursive
  - b) Non-reusable
  - c) Re-enterable
  - d) Serially usable
- 8) Number of digits used for Opcode in m/c instruction format are
- a) 1
  - b) 2
  - c) 3
  - d) None
- 9) Regular expressions are used as input for
- a) Assembler
  - b) Syntax analysis
  - c) LEX
  - d) YACC
- 10) Which of the following is not an advanced assembler directive ?
- a) START
  - b) ORIGIN
  - c) EQU
  - d) LTORG
- 11) Action and Goto tables are part of
- a) Predictive parser
  - b) Shift-reduce parser
  - c) LR parser
  - d) None of these
- 12) Which of the following is not a part of object modules ?
- a) Machine program
  - b) Relocation table
  - c) Linking table
  - d) None of these
- 13) A macro prototype statement declares
- a) Name of the macro
  - b) Name and kinds of its parameters
  - c) Both a) and b)
  - d) None of the above
- 14) 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
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Tuesday, 5-12-2017  
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 a compiler ? Give input and output of each phase of a compiler.
  - b) What is a pattern ? How is it identified ?
  - c) What is a Macro ? Give its structure.
  - d) What are imperative statements ? Illustrate their use.
  - e) What do problem oriented languages deal with ?
3. Attempt **any two** : **(2×5=10)**
- a) What is system software ? How is it different from an Application software ?
  - b) Compare between translation and interpretation.
  - c) Illustrate the development of a predictive parser for an illustrative grammar and parse a string.
4. Attempt **any two** : **(2×5=10)**
- a) State the logic behind a two pass assembler using flowcharts.
  - b) What are the types of parsers ? Compare between LL, LR, SLR and LALR parsing techniques.
  - c) Illustrate a simple assembly scheme.

SECTION – II

5. Attempt **any four** : **(4×2=8)**
- a) What are DAGS ? How do they help in analysis ?
  - b) What is constant folding ? Illustrate.
  - c) What is machine dependent and machine independent optimization ?
  - d) What is a public definition ? How does it affect linking ?
  - e) What are functions of loader ? How are they carried out ?

**Set Q**



6. Attempt **any two** : **(2×5=10)**
- a) What is relocation ? When is it required ?
  - b) What characteristics of a target machine should be considered when generating a target code ?
  - c) What criteria is involved in code optimization ? Illustrate in different code optimization techniques.
7. Attempt **any two** : **(2×5=10)**
- a) With neat diagram explain steps involved in program execution.
  - b) Compare between linking and loading w.r.t. concepts, relation with OS and schemes.
  - c) What changes are required in basic linker algorithm when dealing with overlays ?
-





SLR-TJ – 312

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

|     |          |
|-----|----------|
| Set | <b>R</b> |
|-----|----------|

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

Day and Date : Tuesday, 5-12-2017  
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) Which of the following is not a part of object modules ?
  - a) Machine program
  - b) Relocation table
  - c) Linking table
  - d) None of these
- 2) 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
- 3) 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
- 4) Instruction cost of ADD 4(R0), \*12(R1) is
  - a) 2
  - b) 3
  - c) 4
  - d) 5
- 5) Peephole optimization uses which of the following transformations ?
  - a) Redundant instruction elimination
  - b) Algebraic transformations
  - c) Use of machine idioms
  - d) All of these

P.T.O.



- 6) Problem oriented language used in language processing affects
- a) Specification gap
  - b) Execution gap
  - c) Both a) and b)
  - d) Semantic gap
- 7) Which of the following is a Phrase-structure grammar ?
- a)  $A ::= \pi$
  - b)  $\alpha ::= \beta$
  - c)  $A ::= Bt|t$
  - d)  $\alpha A\beta ::= \alpha \pi \beta$
- 8) 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
- 9) 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
- 10) Compilers are
- a) Recursive
  - b) Non-reusable
  - c) Re-enterable
  - d) Serially usable
- 11) Number of digits used for Opcode in m/c instruction format are
- a) 1
  - b) 2
  - c) 3
  - d) None
- 12) Regular expressions are used as input for
- a) Assembler
  - b) Syntax analysis
  - c) LEX
  - d) YACC
- 13) Which of the following is not an advanced assembler directive ?
- a) START
  - b) ORIGIN
  - c) EQU
  - d) LORG
- 14) Action and Goto tables are part of
- a) Predictive parser
  - b) Shift-reduce parser
  - c) LR parser
  - d) None of these
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Tuesday, 5-12-2017  
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 a compiler ? Give input and output of each phase of a compiler.
  - b) What is a pattern ? How is it identified ?
  - c) What is a Macro ? Give its structure.
  - d) What are imperative statements ? Illustrate their use.
  - e) What do problem oriented languages deal with ?
3. Attempt **any two** : **(2×5=10)**
- a) What is system software ? How is it different from an Application software ?
  - b) Compare between translation and interpretation.
  - c) Illustrate the development of a predictive parser for an illustrative grammar and parse a string.
4. Attempt **any two** : **(2×5=10)**
- a) State the logic behind a two pass assembler using flowcharts.
  - b) What are the types of parsers ? Compare between LL, LR, SLR and LALR parsing techniques.
  - c) Illustrate a simple assembly scheme.

SECTION – II

5. Attempt **any four** : **(4×2=8)**
- a) What are DAGS ? How do they help in analysis ?
  - b) What is constant folding ? Illustrate.
  - c) What is machine dependent and machine independent optimization ?
  - d) What is a public definition ? How does it affect linking ?
  - e) What are functions of loader ? How are they carried out ?

**Set R**



6. Attempt **any two** : **(2×5=10)**
- a) What is relocation ? When is it required ?
  - b) What characteristics of a target machine should be considered when generating a target code ?
  - c) What criteria is involved in code optimization ? Illustrate in different code optimization techniques.
7. Attempt **any two** : **(2×5=10)**
- a) With neat diagram explain steps involved in program execution.
  - b) Compare between linking and loading w.r.t. concepts, relation with OS and schemes.
  - c) What changes are required in basic linker algorithm when dealing with overlays ?
-



SLR-TJ – 312

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

|     |   |
|-----|---|
| Set | S |
|-----|---|

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

Day and Date : Tuesday, 5-12-2017  
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) 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

P.T.O.



- 7) Regular expressions are used as input for
- a) Assembler
  - b) Syntax analysis
  - c) LEX
  - d) YACC
- 8) Which of the following is not an advanced assembler directive ?
- a) START
  - b) ORIGIN
  - c) EQU
  - d) LTORG
- 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<br>No. |  |
|-------------|--|

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

Day and Date : Tuesday, 5-12-2017  
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 a compiler ? Give input and output of each phase of a compiler.
  - b) What is a pattern ? How is it identified ?
  - c) What is a Macro ? Give its structure.
  - d) What are imperative statements ? Illustrate their use.
  - e) What do problem oriented languages deal with ?
3. Attempt **any two** : **(2×5=10)**
- a) What is system software ? How is it different from an Application software ?
  - b) Compare between translation and interpretation.
  - c) Illustrate the development of a predictive parser for an illustrative grammar and parse a string.
4. Attempt **any two** : **(2×5=10)**
- a) State the logic behind a two pass assembler using flowcharts.
  - b) What are the types of parsers ? Compare between LL, LR, SLR and LALR parsing techniques.
  - c) Illustrate a simple assembly scheme.

SECTION – II

5. Attempt **any four** : **(4×2=8)**
- a) What are DAGS ? How do they help in analysis ?
  - b) What is constant folding ? Illustrate.
  - c) What is machine dependent and machine independent optimization ?
  - d) What is a public definition ? How does it affect linking ?
  - e) What are functions of loader ? How are they carried out ?

**Set S**



6. Attempt **any two** : **(2×5=10)**
- a) What is relocation ? When is it required ?
  - b) What characteristics of a target machine should be considered when generating a target code ?
  - c) What criteria is involved in code optimization ? Illustrate in different code optimization techniques.
7. Attempt **any two** : **(2×5=10)**
- a) With neat diagram explain steps involved in program execution.
  - b) Compare between linking and loading w.r.t. concepts, relation with OS and schemes.
  - c) What changes are required in basic linker algorithm when dealing with overlays ?
-





SLR-TJ – 313

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

Set

|          |
|----------|
| <b>P</b> |
|----------|

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

Day and Date : Thursday, 7-12-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**
  - 3) **All questions are compulsory.**
  - 4) **Figures drawn by pencil, ruler only indicate full marks.**
  - 5) **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) Which is not a criteria of algorithm ?
  - a) Input
  - b) Output
  - c) Time complexity
  - d) Best case
- 2) The output of Kruskal and Prims algorithm is
  - a) Maximum spanning tree
  - b) Spanning tree
  - c) Minimum spanning tree
  - d) None of these
- 3) The optimal merge pattern is based on \_\_\_\_\_ method.
  - a) Greedy method
  - b) Dynamic programming
  - c) Knapsack method
  - d) Branch and bound
- 4) Who invented the word Algorithm ?
  - a) Abu Ja'far Mohammed ibn Musa
  - b) Abu Mohammed Khan
  - c) Abu Jafar Mohammed Kasim
  - d) Abu Ja'far Mohammed Ali Khan
- 5) Upper bound is denoted as
  - a)  $\Omega$
  - b)  $\Theta$
  - c)  $\omega$
  - d)  $O$

P.T.O.



- 6) The amount of memory needs to run to completion is known as
- a) Space complexity
  - b) Worst case
  - c) Time complexity
  - d) Best case
- 7) Best case complexity of the selection sort algorithm is
- a)  $O(n^3)$
  - b)  $O(n^4)$
  - c)  $O(n^2)$
  - d)  $O(n)$
- 8) \_\_\_\_\_ 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
- 9) 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
- 10) 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
- 11) Bounding function are used to avoid the generation of subtrees that do not contain an
- a) E-node
  - b) Live node
  - c) Answer node
  - d) None of the above
- 12) 0/1 Knapsack problem can be solved by
- a) Dynamic programming
  - b) Backtracking
  - c) Branch and Bound
  - d) All of the above
- 13) The multistage graph problem is to find a
- a) Minimum distance
  - b) Maximum distance
  - c) Maximum cost
  - d) Minimum cost
- 14) The smallest number of colors needed to color a graph G is called its
- a) Face number
  - b) Chromatic number
  - c) Edges number
  - d) Vertex number
-



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

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

Day and Date : Thursday, 7-12-2017  
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

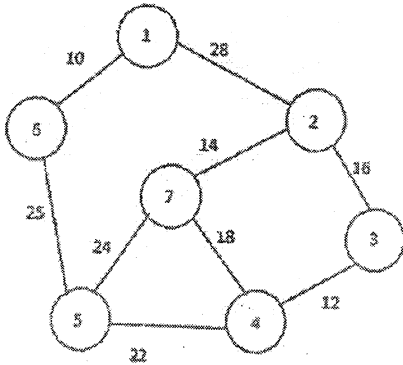
2. Attempt **any three** of the following. **12**
- a) Define the terms :
    - i) Algorithm
    - ii) Time complexity
    - iii) Space complexity
    - iv) Performance analysis.
  - b) Short Note : Optimal merge pattern.
  - c) Short Note : Single source shortest path.
  - d) Short Note : Greedy method.
  - e) Differentiate between recursive and non-recursive algorithms.
3. Answer **any one** of the following. **8**
- a) Explain the concepts of job sequencing with deadlines for given instance  
Let  $n = 4$  ( $p_1, p_2, p_3, p_4$ ) = (100, 10, 15, 27) and ( $d_1, d_2, d_3, d_4$ ) = (2, 1, 2, 1).  
Find the feasible solutions and their values.
  - b) Write an algorithm for Merge sort algorithm and write its time complexity.



4. Answer the following.

8

Apply Prim's algorithm to the following graph. Find the minimum cost.



### SECTION – II

5. Answer **any three**.

(4×3=12)

- Explain the term w.r.t flow shop scheduling with example.
  - Preemptive scheduling
  - Non-Preemptive scheduling
- State and explain graph colouring problem.
- Explain the principal of optimality with example.
- Explain optimal binary search tree with example ?
- Solve the 0/1 Knapsack with  $n = 3$ ,  $(w_1, w_2, w_3) = (2, 3, 4)$ ,  $(p_1, p_2, p_3) = (1, 2, 5)$  and  $m = 6$  using dynamic programming by generating Set  $S^i$ .

6. Solve **any one**.

8

- Solve 0/1 Knapsack problem using LC branch and bound where  $n = 4$ ,  $(p_1, p_2, p_3, p_4) = (10, 10, 12, 18)$ ,  $(w_1, w_2, w_3, w_4) = (2, 4, 6, 9)$  and  $m = 15$ .
- Given  $n = 6$ ,  $w[1 : 6] = \{5, 10, 12, 13, 15, 18\}$  and  $m = 30$ . Find all possible subsets of  $w$  that sum to  $m$  using sum of subset.

7. Solve the following.

8

Find the optimal binary search tree for given data

$n = 4$  identifier  $(a_1, a_2, a_3, a_4) = (\text{do}, \text{if}, \text{int}, \text{while})$   $p(1 : 4) = (3, 3, 1, 1)$  and  $q(0 : 4) = (2, 3, 1, 1, 1)$



SLR-TJ – 313

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

Set 

|   |
|---|
| Q |
|---|

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

Day and Date : Thursday, 7-12-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*  
2) *Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.*  
3) *All questions are compulsory.*  
4) *Figures drawn by pencil, ruler only indicate full marks.*  
5) *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) \_\_\_\_\_ 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
- 2) 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
- 3) 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
- 4) Bounding function are used to avoid the generation of subtrees that do not contain an
- a) E-node
  - b) Live node
  - c) Answer node
  - d) None of the above

P.T.O.



- 5) 0/1 Knapsack problem can be solved by
- a) Dynamic programming                      b) Backtracking  
c) Branch and Bound                          d) All of the above
- 6) The multistage graph problem is to find a
- a) Minimum distance                          b) Maximum distance  
c) Maximum cost                              d) Minimum cost
- 7) The smallest number of colors needed to color a graph G is called its
- a) Face number                                b) Chromatic number  
c) Edges number                              d) Vertex number
- 8) Which is not a criteria of algorithm ?
- a) Input                                          b) Output  
c) Time complexity                          d) Best case
- 9) The output of Kruskal and Prim's algorithm is
- a) Maximum spanning tree                  b) Spanning tree  
c) Minimum spanning tree                  d) None of these
- 10) The optimal merge pattern is based on \_\_\_\_\_ method.
- a) Greedy method                              b) Dynamic programming  
c) Knapsack method                          d) Branch and bound
- 11) Who invented the word Algorithm ?
- a) Abu Ja'far Mohammed ibn Musa      b) Abu Mohammed Khan  
c) Abu Jafar Mohammed Kasim          d) Abu Ja'far Mohammed Ali Khan
- 12) Upper bound is denoted as
- a)  $\Omega$                                           b)  $\Theta$                                           c)  $\omega$                                           d)  $O$
- 13) The amount of memory needed to run to completion is known as
- a) Space complexity                          b) Worst case  
c) Time complexity                            d) Best case
- 14) Best case complexity of the selection sort algorithm is
- a)  $O(n^3)$                                       b)  $O(n^4)$                                       c)  $O(n^2)$                                       d)  $O(n)$
-



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

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

Day and Date : Thursday, 7-12-2017  
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

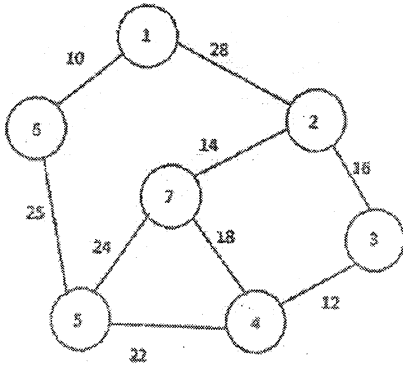
2. Attempt **any three** of the following. **12**
- a) Define the terms :
    - i) Algorithm
    - ii) Time complexity
    - iii) Space complexity
    - iv) Performance analysis.
  - b) Short Note : Optimal merge pattern.
  - c) Short Note : Single source shortest path.
  - d) Short Note : Greedy method.
  - e) Differentiate between recursive and non-recursive algorithms.
3. Answer **any one** of the following. **8**
- a) Explain the concepts of job sequencing with deadlines for given instance  
Let  $n = 4$  ( $p_1, p_2, p_3, p_4$ ) = (100, 10, 15, 27) and ( $d_1, d_2, d_3, d_4$ ) = (2, 1, 2, 1).  
Find the feasible solutions and their values.
  - b) Write an algorithm for Merge sort algorithm and write its time complexity.



4. Answer the following.

8

Apply Prim's algorithm to the following graph. Find the minimum cost.



### SECTION – II

5. Answer **any three**.

(4×3=12)

- Explain the term w.r.t flow shop scheduling with example.
  - Preemptive scheduling
  - Non-Preemptive scheduling
- State and explain graph colouring problem.
- Explain the principal of optimality with example.
- Explain optimal binary search tree with example ?
- Solve the 0/1 Knapsack with  $n = 3$ ,  $(w_1, w_2, w_3) = (2, 3, 4)$ ,  $(p_1, p_2, p_3) = (1, 2, 5)$  and  $m = 6$  using dynamic programming by generating Set  $S^i$ .

6. Solve **any one**.

8

- Solve 0/1 Knapsack problem using LC branch and bound where  $n = 4$ ,  $(p_1, p_2, p_3, p_4) = (10, 10, 12, 18)$ ,  $(w_1, w_2, w_3, w_4) = (2, 4, 6, 9)$  and  $m = 15$ .
- Given  $n = 6$ ,  $w[1 : 6] = \{5, 10, 12, 13, 15, 18\}$  and  $m = 30$ . Find all possible subsets of  $w$  that sum to  $m$  using sum of subset.

7. Solve the following.

8

Find the optimal binary search tree for given data

$n = 4$  identifier  $(a_1, a_2, a_3, a_4) = (\text{do}, \text{if}, \text{int}, \text{while})$   $p(1 : 4) = (3, 3, 1, 1)$  and  $q(0 : 4) = (2, 3, 1, 1, 1)$





SLR-TJ – 313

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

Set 

|   |
|---|
| R |
|---|

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

Day and Date : Thursday, 7-12-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
- 2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**
- 3) **All questions are compulsory.**
- 4) **Figures drawn by pencil, ruler only indicate full marks.**
- 5) **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) Upper bound is denoted as  
a)  $\Omega$                       b)  $\Theta$                       c)  $\omega$                       d)  $O$
- 2) The amount of memory needs to run to completion is known as  
a) Space complexity                      b) Worst case  
c) Time complexity                      d) Best case
- 3) Best case complexity of the selection sort algorithm is  
a)  $O(n^3)$                       b)  $O(n^4)$                       c)  $O(n^2)$                       d)  $O(n)$
- 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) 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

P.T.O.



- 6) 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
- 7) Bounding function are used to avoid the generation of subtrees that do not contain an
- a) E-node
  - b) Live node
  - c) Answer node
  - d) None of the above
- 8) 0/1 Knapsack problem can be solved by
- a) Dynamic programming
  - b) Backtracking
  - c) Branch and Bound
  - d) All of the above
- 9) The multistage graph problem is to find a
- a) Minimum distance
  - b) Maximum distance
  - c) Maximum cost
  - d) Minimum cost
- 10) The smallest number of colors needed to color a graph G is called its
- a) Face number
  - b) Chromatic number
  - c) Edges number
  - d) Vertex number
- 11) Which is not a criteria of algorithm ?
- a) Input
  - b) Output
  - c) Time complexity
  - d) Best case
- 12) The output of Kruskal and Prim's algorithm is
- a) Maximum spanning tree
  - b) Spanning tree
  - c) Minimum spanning tree
  - d) None of these
- 13) The optimal merge pattern is based on \_\_\_\_\_ method.
- a) Greedy method
  - b) Dynamic programming
  - c) Knapsack method
  - d) Branch and bound
- 14) Who invented the word Algorithm ?
- a) Abu Ja'far Mohammed ibn Musa
  - b) Abu Mohammed Khan
  - c) Abu Jafar Mohammed Kasim
  - d) Abu Ja'far Mohammed Ali Khan
-



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

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

Day and Date : Thursday, 7-12-2017  
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

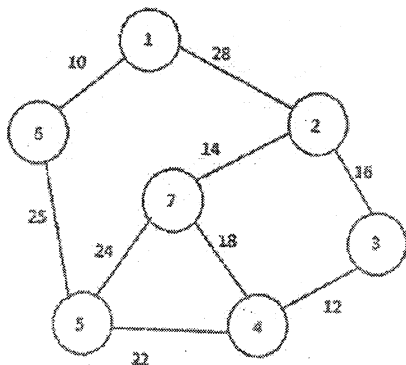
2. Attempt **any three** of the following. **12**
- a) Define the terms :
    - i) Algorithm
    - ii) Time complexity
    - iii) Space complexity
    - iv) Performance analysis.
  - b) Short Note : Optimal merge pattern.
  - c) Short Note : Single source shortest path.
  - d) Short Note : Greedy method.
  - e) Differentiate between recursive and non-recursive algorithms.
3. Answer **any one** of the following. **8**
- a) Explain the concepts of job sequencing with deadlines for given instance  
Let  $n = 4$  ( $p_1, p_2, p_3, p_4$ ) = (100, 10, 15, 27) and ( $d_1, d_2, d_3, d_4$ ) = (2, 1, 2, 1).  
Find the feasible solutions and their values.
  - b) Write an algorithm for Merge sort algorithm and write its time complexity.



4. Answer the following.

8

Apply Prim's algorithm to the following graph. Find the minimum cost.



### SECTION – II

5. Answer **any three**.

(4×3=12)

- a) Explain the term w.r.t flow shop scheduling with example.
  - i) Preemptive scheduling
  - ii) Non-Preemptive scheduling
- b) State and explain graph colouring problem.
- c) Explain the principal of optimality with example.
- d) Explain optimal binary search tree with example ?
- e) Solve the 0/1 Knapsack with  $n = 3$ ,  $(w_1, w_2, w_3) = (2, 3, 4)$ ,  $(p_1, p_2, p_3) = (1, 2, 5)$  and  $m = 6$  using dynamic programming by generating Set  $S^i$ .

6. Solve **any one**.

8

- a) Solve 0/1 Knapsack problem using LC branch and bound where  $n = 4$ ,  $(p_1, p_2, p_3, p_4) = (10, 10, 12, 18)$ ,  $(w_1, w_2, w_3, w_4) = (2, 4, 6, 9)$  and  $m = 15$ .
- b) Given  $n = 6$ ,  $w[1 : 6] = \{5, 10, 12, 13, 15, 18\}$  and  $m = 30$ . Find all possible subsets of  $w$  that sum to  $m$  using sum of subset.

7. Solve the following.

8

Find the optimal binary search tree for given data

$n = 4$  identifier  $(a_1, a_2, a_3, a_4) = (\text{do}, \text{if}, \text{int}, \text{while})$   $p(1 : 4) = (3, 3, 1, 1)$  and  $q(0 : 4) = (2, 3, 1, 1, 1)$



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

Set 

|   |
|---|
| S |
|---|

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

Day and Date : Thursday, 7-12-2017  
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
  - 2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**
  - 3) **All** questions are **compulsory**.
  - 4) Figures drawn by pencil, ruler only indicate **full** marks.
  - 5) **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) 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
- 2) Bounding function are used to avoid the generation of subtrees that do not contain an
  - a) E-node
  - b) Live node
  - c) Answer node
  - d) None of the above
- 3) 0/1 Knapsack problem can be solved by
  - a) Dynamic programming
  - b) Backtracking
  - c) Branch and Bound
  - d) All of the above
- 4) The multistage graph problem is to find a
  - a) Minimum distance
  - b) Maximum distance
  - c) Maximum cost
  - d) Minimum cost

P.T.O.



- 5) The smallest number of colors needed to color a graph G is called its
- a) Face number
  - b) Chromatic number
  - c) Edges number
  - d) Vertex number
- 6) Which is not a criteria of algorithm ?
- a) Input
  - b) Output
  - c) Time complexity
  - d) Best case
- 7) The output of Kruskal and Prim's algorithm is
- a) Maximum spanning tree
  - b) Spanning tree
  - c) Minimum spanning tree
  - d) None of these
- 8) The optimal merge pattern is based on \_\_\_\_\_ method.
- a) Greedy method
  - b) Dynamic programming
  - c) Knapsack method
  - d) Branch and bound
- 9) Who invented the word Algorithm ?
- a) Abu Ja'far Mohammed ibn Musa
  - b) Abu Mohammed Khan
  - c) Abu Jafar Mohammed Kasim
  - d) Abu Ja'far Mohammed Ali Khan
- 10) Upper bound is denoted as
- a)  $\Omega$
  - b)  $\Theta$
  - c)  $\omega$
  - d)  $O$
- 11) The amount of memory needed to run to completion is known as
- a) Space complexity
  - b) Worst case
  - c) Time complexity
  - d) Best case
- 12) Best case complexity of the selection sort algorithm is
- a)  $O(n^3)$
  - b)  $O(n^4)$
  - c)  $O(n^2)$
  - d)  $O(n)$
- 13) \_\_\_\_\_ 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
- 14) 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
-



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

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

Day and Date : Thursday, 7-12-2017  
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

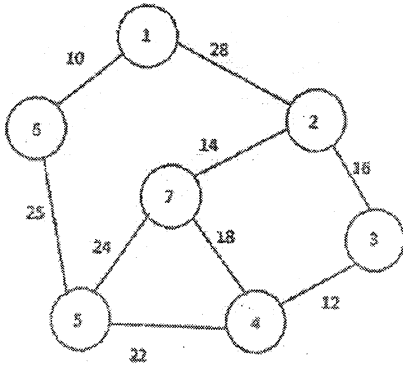
2. Attempt **any three** of the following. **12**
- a) Define the terms :
    - i) Algorithm
    - ii) Time complexity
    - iii) Space complexity
    - iv) Performance analysis.
  - b) Short Note : Optimal merge pattern.
  - c) Short Note : Single source shortest path.
  - d) Short Note : Greedy method.
  - e) Differentiate between recursive and non-recursive algorithms.
3. Answer **any one** of the following. **8**
- a) Explain the concepts of job sequencing with deadlines for given instance  
Let  $n = 4$  ( $p_1, p_2, p_3, p_4$ ) = (100, 10, 15, 27) and ( $d_1, d_2, d_3, d_4$ ) = (2, 1, 2, 1).  
Find the feasible solutions and their values.
  - b) Write an algorithm for Merge sort algorithm and write its time complexity.



4. Answer the following.

8

Apply Prim's algorithm to the following graph. Find the minimum cost.



### SECTION – II

5. Answer **any three**.

(4×3=12)

- Explain the term w.r.t flow shop scheduling with example.
  - Preemptive scheduling
  - Non-Preemptive scheduling
- State and explain graph colouring problem.
- Explain the principal of optimality with example.
- Explain optimal binary search tree with example ?
- Solve the 0/1 Knapsack with  $n = 3$ ,  $(w_1, w_2, w_3) = (2, 3, 4)$ ,  $(p_1, p_2, p_3) = (1, 2, 5)$  and  $m = 6$  using dynamic programming by generating Set  $S^i$ .

6. Solve **any one**.

8

- Solve 0/1 Knapsack problem using LC branch and bound where  $n = 4$ ,  $(p_1, p_2, p_3, p_4) = (10, 10, 12, 18)$ ,  $(w_1, w_2, w_3, w_4) = (2, 4, 6, 9)$  and  $m = 15$ .
- Given  $n = 6$ ,  $w[1 : 6] = \{5, 10, 12, 13, 15, 18\}$  and  $m = 30$ . Find all possible subsets of  $w$  that sum to  $m$  using sum of subset.

7. Solve the following.

8

Find the optimal binary search tree for given data

$n = 4$  identifier  $(a_1, a_2, a_3, a_4) = (\text{do}, \text{if}, \text{int}, \text{while})$   $p(1 : 4) = (3, 3, 1, 1)$  and  $q(0 : 4) = (2, 3, 1, 1, 1)$





SLR-TJ – 314

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

|     |          |
|-----|----------|
| Set | <b>P</b> |
|-----|----------|

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

Day and Date : Saturday, 9-12-2017  
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) **All** questions are **compulsory**.
- 3) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

**14**

- 1) A thread is a \_\_\_\_\_ process.
- A) Heavy weight                      B) Light weight  
C) Multiprocess                      D) Inter thread
- 2) Situations where two or more processes are reading or writing some shared data and the final results depends on the order of usage the shared data are called \_\_\_\_\_
- A) Race conditions                      B) Critical section  
C) Mutual exclusion                      D) Deadlocks
- 3) The operating system manages \_\_\_\_\_
- A) Memory                      B) Processor  
C) Disk and I/O devices                      D) All of the above
- 4) With \_\_\_\_\_ only one process can execute at a time; meanwhile all other process are waiting for the processor. With \_\_\_\_\_ more than one process can be running simultaneously each on a different processor.
- A) Multiprocessing, Multiprogramming  
B) Multiprogramming, Uniprocessing  
C) Multiprogramming, Multiprocessing  
D) Uniprogramming, Multiprocessing

P.T.O.



- 5) It is not the layer of the Operating system.
    - A) Kernel
    - B) Shell
    - C) Application program
    - D) Critical Section
  - 6) Which process can be affected by other processes executing in the system ?
    - A) Cooperating process
    - B) Child process
    - C) Parent process
    - D) Init process
  - 7) Which one of the following is a synchronization tool ?
    - A) Thread
    - B) Pipe
    - C) Semaphore
    - D) Socket
  - 8) The circular wait condition can be prevented by
    - A) Defining a linear ordering of resource types
    - B) Using thread
    - C) Using pipes
    - D) All of the mentioned
  - 9) Which one of the following is the deadlock avoidance algorithm ?
    - A) Banker's algorithm
    - B) Round-robin algorithm
    - C) Elevator algorithm
    - D) Karn's algorithm
  - 10) The data structures available in the Banker's algorithm are
    - A) Available, Need, Allocation, Maximum
    - B) Available, Need, Allocation, Minimum
    - C) Available, Need, Allocation, Maximum, Minimum
    - D) None of the above
  - 11) A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlocks free is
    - A) 2
    - B) 3
    - C) 4
    - D) 1
  - 12) Swap space exists in \_\_\_\_\_
    - A) Primary memory
    - B) Secondary memory
    - C) CPU
    - D) None of the mentioned
  - 13) When the entries in the segment tables of two different processes point to the same physical location ?
    - A) The segments are invalid
    - B) The processes get blocked
    - C) Segments are shared
    - D) All of these
  - 14) Which module gives control of the CPU to the process selected by the short-term scheduler ?
    - A) Dispatcher
    - B) Interrupt
    - C) Scheduler
    - D) None of the mentioned
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Saturday, 9-12-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Explain process management in operating system.
  - b) Explain single and multithreaded processes concept with diagram.
  - c) What is independent and cooperating process concept ? Write advantages of process cooperation.
  - d) Explain Dinning-Philosophers Problem with diagram.
3. Attempt **any one** : **(1×8=8)**
- a) What is Semaphore ? Explain how it is used to provide synchronization between Co-operating process.
  - b) What is Monitor ? Explain a monitor with condition variables.
4. Attempt **any one** : **(1×8=8)**
- a) What is Critical section problem ? Explain the implementation of mutual-exclusion using 'Test and Set' instruction.
  - b) Explain in detail round robin scheduling algorithm and priority scheduling algorithm.



## SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain structure of a page table with diagram.
  - b) Explain steps in a DMA transfer.
  - c) Explain Thrashing with working set model.
  - d) Write short note on Paging hardware with TLB.
6. Attempt **any one** : **(1×8=8)**
- a) Describe deadlock detection methods for single and multiple instances of resource type.
  - b) What is Swapping ? Explain swapping of two processes using a disk as a backing store.
7. Attempt **any one** : **(1×8=8)**
- a) Explain Inverted Page Table concept and draw Inverted Page Table Architecture.
  - b) Explain the concept of transforming I/O requests to Hardware operations with the help of diagram.
-



SLR-TJ – 314

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

|     |   |
|-----|---|
| Set | Q |
|-----|---|

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

Day and Date : Saturday, 9-12-2017  
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) **All** questions are **compulsory**.
- 3) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

14

- 1) The circular wait condition can be prevented by
  - A) Defining a linear ordering of resource types
  - B) Using thread
  - C) Using pipes
  - D) All of the mentioned
- 2) Which one of the following is the deadlock avoidance algorithm ?
  - A) Banker's algorithm
  - B) Round-robin algorithm
  - C) Elevator algorithm
  - D) Karn's algorithm
- 3) The data structures available in the Banker's algorithm are
  - A) Available, Need, Allocation, Maximum
  - B) Available, Need, Allocation, Minimum
  - C) Available, Need, Allocation, Maximum, Minimum
  - D) None of the above
- 4) A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlocks free is
  - A) 2
  - B) 3
  - C) 4
  - D) 1
- 5) Swap space exists in \_\_\_\_\_
  - A) Primary memory
  - B) Secondary memory

P.T.O.



- C) CPU  
D) None of the mentioned
- 6) When the entries in the segment tables of two different processes point to the same physical location ?  
A) The segments are invalid  
B) The processes get blocked  
C) Segments are shared  
D) All of these
- 7) Which module gives control of the CPU to the process selected by the short-term scheduler ?  
A) Dispatcher  
B) Interrupt  
C) Scheduler  
D) None of the mentioned
- 8) A thread is a \_\_\_\_\_ process.  
A) Heavy weight  
B) Light weight  
C) Multiprocess  
D) Inter thread
- 9) Situations where two or more processes are reading or writing some shared data and the final results depends on the order of usage the shared data are called \_\_\_\_\_  
A) Race conditions  
B) Critical section  
C) Mutual exclusion  
D) Deadlocks
- 10) The operating system manages \_\_\_\_\_  
A) Memory  
B) Processor  
C) Disk and I/O devices  
D) All of the above
- 11) With \_\_\_\_\_ only one process can execute at a time; meanwhile all other process are waiting for the processor. With \_\_\_\_\_ more than one process can be running simultaneously each on a different processor.  
A) Multiprocessing, Multiprogramming  
B) Multiprogramming, Uniprocessing  
C) Multiprogramming, Multiprocessing  
D) Uniprogramming, Multiprocessing
- 12) It is not the layer of the Operating system.  
A) Kernel  
B) Shell  
C) Application program  
D) Critical Section
- 13) Which process can be affected by other processes executing in the system ?  
A) Cooperating process  
B) Child process  
C) Parent process  
D) Init process
- 14) Which one of the following is a synchronization tool ?  
A) Thread  
B) Pipe  
C) Semaphore  
D) Socket



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Saturday, 9-12-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Explain process management in operating system.
  - b) Explain single and multithreaded processes concept with diagram.
  - c) What is independent and cooperating process concept ? Write advantages of process cooperation.
  - d) Explain Dinning-Philosophers Problem with diagram.
3. Attempt **any one** : **(1×8=8)**
- a) What is Semaphore ? Explain how it is used to provide synchronization between Co-operating process.
  - b) What is Monitor ? Explain a monitor with condition variables.
4. Attempt **any one** : **(1×8=8)**
- a) What is Critical section problem ? Explain the implementation of mutual-exclusion using 'Test and Set' instruction.
  - b) Explain in detail round robin scheduling algorithm and priority scheduling algorithm.



## SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain structure of a page table with diagram.
  - b) Explain steps in a DMA transfer.
  - c) Explain Thrashing with working set model.
  - d) Write short note on Paging hardware with TLB.
6. Attempt **any one** : **(1×8=8)**
- a) Describe deadlock detection methods for single and multiple instances of resource type.
  - b) What is Swapping ? Explain swapping of two processes using a disk as a backing store.
7. Attempt **any one** : **(1×8=8)**
- a) Explain Inverted Page Table concept and draw Inverted Page Table Architecture.
  - b) Explain the concept of transforming I/O requests to Hardware operations with the help of diagram.
-







- 7) A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlocks free is  
A) 2                      B) 3                      C) 4                      D) 1
- 8) Swap space exists in \_\_\_\_\_  
A) Primary memory                      B) Secondary memory  
C) CPU                      D) None of the mentioned
- 9) When the entries in the segment tables of two different processes point to the same physical location ?  
A) The segments are invalid                      B) The processes get blocked  
C) Segments are shared                      D) All of these
- 10) Which module gives control of the CPU to the process selected by the short-term scheduler ?  
A) Dispatcher                      B) Interrupt  
C) Scheduler                      D) None of the mentioned
- 11) A thread is a \_\_\_\_\_ process.  
A) Heavy weight                      B) Light weight  
C) Multiprocess                      D) Inter thread
- 12) Situations where two or more processes are reading or writing some shared data and the final results depends on the order of usage the shared data are called \_\_\_\_\_  
A) Race conditions                      B) Critical section  
C) Mutual exclusion                      D) Deadlocks
- 13) The operating system manages \_\_\_\_\_  
A) Memory                      B) Processor  
C) Disk and I/O devices                      D) All of the above
- 14) With \_\_\_\_\_ only one process can execute at a time; meanwhile all other process are waiting for the processor. With \_\_\_\_\_ more than one process can be running simultaneously each on a different processor.  
A) Multiprocessing, Multiprogramming  
B) Multiprogramming, Uniprocessing  
C) Multiprogramming, Multiprocessing  
D) Uniprogramming, Multiprocessing
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Saturday, 9-12-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Explain process management in operating system.
  - b) Explain single and multithreaded processes concept with diagram.
  - c) What is independent and cooperating process concept ? Write advantages of process cooperation.
  - d) Explain Dinning-Philosophers Problem with diagram.
3. Attempt **any one** : **(1×8=8)**
- a) What is Semaphore ? Explain how it is used to provide synchronization between Co-operating process.
  - b) What is Monitor ? Explain a monitor with condition variables.
4. Attempt **any one** : **(1×8=8)**
- a) What is Critical section problem ? Explain the implementation of mutual-exclusion using 'Test and Set' instruction.
  - b) Explain in detail round robin scheduling algorithm and priority scheduling algorithm.



## SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain structure of a page table with diagram.
  - b) Explain steps in a DMA transfer.
  - c) Explain Thrashing with working set model.
  - d) Write short note on Paging hardware with TLB.
6. Attempt **any one** : **(1×8=8)**
- a) Describe deadlock detection methods for single and multiple instances of resource type.
  - b) What is Swapping ? Explain swapping of two processes using a disk as a backing store.
7. Attempt **any one** : **(1×8=8)**
- a) Explain Inverted Page Table concept and draw Inverted Page Table Architecture.
  - b) Explain the concept of transforming I/O requests to Hardware operations with the help of diagram.
-



SLR-TJ – 314

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

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

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

Day and Date : Saturday, 9-12-2017  
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) **All** questions are **compulsory**.  
3) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

**14**

- 1) The data structures available in the Banker's algorithm are
  - A) Available, Need, Allocation, Maximum
  - B) Available, Need, Allocation, Minimum
  - C) Available, Need, Allocation, Maximum, Minimum
  - D) None of the above
- 2) A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlocks free is
  - A) 2
  - B) 3
  - C) 4
  - D) 1
- 3) Swap space exists in \_\_\_\_\_
  - A) Primary memory
  - B) Secondary memory
  - C) CPU
  - D) None of the mentioned
- 4) When the entries in the segment tables of two different processes point to the same physical location ?
  - A) The segments are invalid
  - B) The processes get blocked
  - C) Segments are shared
  - D) All of these
- 5) Which module gives control of the CPU to the process selected by the short-term scheduler ?
  - A) Dispatcher
  - B) Interrupt
  - C) Scheduler
  - D) None of the mentioned

P.T.O.



- 6) A thread is a \_\_\_\_\_ process.
- A) Heavy weight                      B) Light weight  
C) Multiprocess                      D) Inter thread
- 7) Situations where two or more processes are reading or writing some shared data and the final results depends on the order of usage the shared data are called \_\_\_\_\_
- A) Race conditions                      B) Critical section  
C) Mutual exclusion                      D) Deadlocks
- 8) The operating system manages \_\_\_\_\_
- A) Memory                                      B) Processor  
C) Disk and I/O devices                      D) All of the above
- 9) With \_\_\_\_\_ only one process can execute at a time; meanwhile all other process are waiting for the processor. With \_\_\_\_\_ more than one process can be running simultaneously each on a different processor.
- A) Multiprocessing, Multiprogramming  
B) Multiprogramming, Uniprocessing  
C) Multiprogramming, Multiprocessing  
D) Uniprogramming, Multiprocessing
- 10) It is not the layer of the Operating system.
- A) Kernel                                      B) Shell  
C) Application program                      D) Critical Section
- 11) Which process can be affected by other processes executing in the system ?
- A) Cooperating process                      B) Child process  
C) Parent process                              D) Init process
- 12) Which one of the following is a synchronization tool ?
- A) Thread                      B) Pipe                      C) Semaphore                      D) Socket
- 13) The circular wait condition can be prevented by
- A) Defining a linear ordering of resource types  
B) Using thread  
C) Using pipes  
D) All of the mentioned
- 14) Which one of the following is the deadlock avoidance algorithm ?
- A) Banker's algorithm                      B) Round-robin algorithm  
C) Elevator algorithm                      D) Karn's algorithm
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

Day and Date : Saturday, 9-12-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Explain process management in operating system.
  - b) Explain single and multithreaded processes concept with diagram.
  - c) What is independent and cooperating process concept ? Write advantages of process cooperation.
  - d) Explain Dining-Philosophers Problem with diagram.
3. Attempt **any one** : **(1×8=8)**
- a) What is Semaphore ? Explain how it is used to provide synchronization between Co-operating process.
  - b) What is Monitor ? Explain a monitor with condition variables.
4. Attempt **any one** : **(1×8=8)**
- a) What is Critical section problem ? Explain the implementation of mutual-exclusion using 'Test and Set' instruction.
  - b) Explain in detail round robin scheduling algorithm and priority scheduling algorithm.



## SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain structure of a page table with diagram.
  - b) Explain steps in a DMA transfer.
  - c) Explain Thrashing with working set model.
  - d) Write short note on Paging hardware with TLB.
6. Attempt **any one** : **(1×8=8)**
- a) Describe deadlock detection methods for single and multiple instances of resource type.
  - b) What is Swapping ? Explain swapping of two processes using a disk as a backing store.
7. Attempt **any one** : **(1×8=8)**
- a) Explain Inverted Page Table concept and draw Inverted Page Table Architecture.
  - b) Explain the concept of transforming I/O requests to Hardware operations with the help of diagram.
-





SLR-TJ – 316

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

|     |          |
|-----|----------|
| Set | <b>P</b> |
|-----|----------|

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Tuesday, 21-11-2017  
Time : 10.00 a.m. to 1.00 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 answer : **(14×1=14)**

- 1) \_\_\_\_\_ are useful in SQL update statements, where they can be used in the set clause.
  - a) Multiple queries
  - b) Sub queries
  - c) Update
  - d) Scalar subqueries
- 2) The problem of ordering the update in multiple update is avoided using
  - a) Set
  - b) Where
  - c) Case
  - d) When
- 3) The \_\_\_\_\_ operation, denoted by  $-$ , allows us to find tuples that are in one relation but are not in another.
  - a) Union
  - b) Set-difference
  - c) Difference
  - d) Intersection
- 4) Which is a unary operation ?
  - a) Selection operation
  - b) Primitive operation
  - c) Projection operation
  - d) Generalized selection
- 5) For like predicate which of the following is true
  - i. % matches zero or more characters
  - ii. \_ matches exactly one character
  - a) i – only
  - b) ii – only
  - c) Both of the mentioned
  - d) None of the mentioned

P.T.O.



- 6) The number of attributes in relation is called as it's
- a) Cardinality
  - b) Degree
  - c) Tuples
  - d) Entity
- 7) Which one of the following provides the ability to query information from the database and to insert tuples into, delete tuples from and modify tuples in the database ?
- a) DML (Data Manipulation Language)
  - b) DDL (Data Definition Language)
  - c) Query
  - d) Relational Scheme
- 8) Create table employee (name varchar, id integer)  
what type of statement is this ?
- a) DML
  - b) DDL
  - c) View
  - d) Integrity constraint
- 9) Select \* from employee  
what type of statement is this ?
- a) DML
  - b) DDL
  - c) View
  - d) Integrity constraint
- 10) Which of the following is not outer join ?
- a) Left outer join
  - b) Right outer join
  - c) Full outer join
  - d) All of the mentioned
- 11) 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
- 12) Identify the characteristics of transactions
- a) Atomicity
  - b) Durability
  - c) Isolation
  - d) All of the mentioned
- 13) Which refers to a property of computer to run several operation simultaneously and possible as computers await response of each other
- a) Concurrency
  - b) Deadlock
  - c) Backup
  - d) Recovery
- 14) All lock information is managed by a \_\_\_\_\_ which is responsible for assigning and policing the locks used by the transactions.
- a) Scheduler
  - b) DBMS
  - c) Lock manager
  - d) Locking agent



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Tuesday, 21-11-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain levels of data abstraction.
  - 2) Define super key, candidate key, primary key and foreign key.
  - 3) Explain weak entity with example in detail.
  - 4) Explain INF with appropriate example.
3. Attempt **any one** : **8**
- 1) Explain in detail the concept of entity set and relationship set.
  - 2) Explain in detail the closure set of functional dependencies.
4. Explain fundamental relational algebra operations with example. **8**

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on multiple key access.
  - 2) What do you mean by transaction ? What are desirable properties of transaction ?

**Set P**



3) What is lock ? Describe the types of locks in concurrency control.

4) Discuss different types of transactions failures.

6. Attempt **any one** : **8**

1) Write a short note on :

a) Testing for view serialability

b) Testing for conflict serialability

2) Explain in brief deadlock detection and recovery.

7. Explain in detail immediate database modifications. **8**

---



SLR-TJ – 316

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

|     |          |
|-----|----------|
| Set | <b>Q</b> |
|-----|----------|

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Tuesday, 21-11-2017  
Time : 10.00 a.m. to 1.00 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 answer :

**(14×1=14)**

- 1) Create table employee (name varchar, id integer)  
what type of statement is this ?
  - a) DML
  - b) DDL
  - c) View
  - d) Integrity constraint
- 2) Select \* from employee  
what type of statement is this ?
  - a) DML
  - b) DDL
  - c) View
  - d) Integrity constraint
- 3) Which of the following is not outer join ?
  - a) Left outer join
  - b) Right outer join
  - c) Full outer join
  - d) All of the mentioned
- 4) 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
- 5) Identify the characteristics of transactions
  - a) Atomicity
  - b) Durability
  - c) Isolation
  - d) All of the mentioned

P.T.O.



- 6) Which refers to a property of computer to run several operation simultaneously and possible as computers await response of each other
- Concurrency
  - Deadlock
  - Backup
  - Recovery
- 7) All lock information is managed by a \_\_\_\_\_ which is responsible for assigning and policing the locks used by the transactions.
- Scheduler
  - DBMS
  - Lock manager
  - Locking agent
- 8) \_\_\_\_\_ are useful in SQL update statements, where they can be used in the set clause.
- Multiple queries
  - Sub queries
  - Update
  - Scalar subqueries
- 9) The problem of ordering the update in multiple update is avoided using
- Set
  - Where
  - Case
  - When
- 10) The \_\_\_\_\_ operation, denoted by  $-$ , allows us to find tuples that are in one relation but are not in another.
- Union
  - Set-difference
  - Difference
  - Intersection
- 11) Which is a unary operation ?
- Selection operation
  - Primitive operation
  - Projection operation
  - Generalized selection
- 12) For like predicate which of the following is true
- % matches zero or more characters
  - \_ matches exactly one character
- i – only
  - ii – only
  - Both of the mentioned
  - None of the mentioned
- 13) The number of attributes in relation is called as it's
- Cardinality
  - Degree
  - Tuples
  - Entity
- 14) Which one of the following provides the ability to query information from the database and to insert tuples into, delete tuples from and modify tuples in the database ?
- DML (Data Manipulation Language)
  - DDL (Data Definition Language)
  - Query
  - Relational Scheme
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Tuesday, 21-11-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain levels of data abstraction.
  - 2) Define super key, candidate key, primary key and foreign key.
  - 3) Explain weak entity with example in detail.
  - 4) Explain INF with appropriate example.
3. Attempt **any one** : **8**
- 1) Explain in detail the concept of entity set and relationship set.
  - 2) Explain in detail the closure set of functional dependencies.
4. Explain fundamental relational algebra operations with example. **8**

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on multiple key access.
  - 2) What do you mean by transaction ? What are desirable properties of transaction ?

**Set Q**



3) What is lock ? Describe the types of locks in concurrency control.

4) Discuss different types of transactions failures.

6. Attempt **any one** : **8**

1) Write a short note on :

a) Testing for view serialability

b) Testing for conflict serialability

2) Explain in brief deadlock detection and recovery.

7. Explain in detail immediate database modifications. **8**

---





SLR-TJ – 316

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

|     |          |
|-----|----------|
| Set | <b>R</b> |
|-----|----------|

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Tuesday, 21-11-2017  
Time : 10.00 a.m. to 1.00 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 answer : **(14×1=14)**
- 1) For like predicate which of the following is true
    - i. % matches zero or more characters
    - ii. \_ matches exactly one character

|                          |                          |
|--------------------------|--------------------------|
| a) i – only              | b) ii – only             |
| c) Both of the mentioned | d) None of the mentioned |
  - 2) The number of attributes in relation is called as it's
    - a) Cardinality
    - b) Degree
    - c) Tuples
    - d) Entity
  - 3) Which one of the following provides the ability to query information from the database and to insert tuples into, delete tuples from and modify tuples in the database ?
    - a) DML (Data Manipulation Language)
    - b) DDL (Data Definition Language)
    - c) Query
    - d) Relational Scheme
  - 4) Create table employee (name varchar, id integer)  
what type of statement is this ?

|         |                         |
|---------|-------------------------|
| a) DML  | b) DDL                  |
| c) View | d) Integrity constraint |

P.T.O.



- 5) Select \* from employee  
what type of statement is this ?
- a) DML
  - b) DDL
  - c) View
  - d) Integrity constraint
- 6) Which of the following is not outer join ?
- a) Left outer join
  - b) Right outer join
  - c) Full outer join
  - d) All of the mentioned
- 7) 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
- 8) Identify the characteristics of transactions
- a) Atomicity
  - b) Durability
  - c) Isolation
  - d) All of the mentioned
- 9) Which refers to a property of computer to run several operation simultaneously and possible as computers await response of each other
- a) Concurrency
  - b) Deadlock
  - c) Backup
  - d) Recovery
- 10) All lock information is managed by a \_\_\_\_\_ which is responsible for assigning and policing the locks used by the transactions.
- a) Scheduler
  - b) DBMS
  - c) Lock manager
  - d) Locking agent
- 11) \_\_\_\_\_ are useful in SQL update statements, where they can be used in the set clause.
- a) Multiple queries
  - b) Sub queries
  - c) Update
  - d) Scalar subqueries
- 12) The problem of ordering the update in multiple update is avoided using
- a) Set
  - b) Where
  - c) Case
  - d) When
- 13) The \_\_\_\_\_ operation, denoted by  $-$ , allows us to find tuples that are in one relation but are not in another.
- a) Union
  - b) Set-difference
  - c) Difference
  - d) Intersection
- 14) Which is a unary operation ?
- a) Selection operation
  - b) Primitive operation
  - c) Projection operation
  - d) Generalized selection
-



|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Tuesday, 21-11-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain levels of data abstraction.
  - 2) Define super key, candidate key, primary key and foreign key.
  - 3) Explain weak entity with example in detail.
  - 4) Explain INF with appropriate example.
3. Attempt **any one** : **8**
- 1) Explain in detail the concept of entity set and relationship set.
  - 2) Explain in detail the closure set of functional dependencies.
4. Explain fundamental relational algebra operations with example. **8**

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on multiple key access.
  - 2) What do you mean by transaction ? What are desirable properties of transaction ?

**Set R**



3) What is lock ? Describe the types of locks in concurrency control.

4) Discuss different types of transactions failures.

6. Attempt **any one** : **8**

1) Write a short note on :

a) Testing for view serialability

b) Testing for conflict serialability

2) Explain in brief deadlock detection and recovery.

7. Explain in detail immediate database modifications. **8**

---



SLR-TJ – 316

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Tuesday, 21-11-2017  
Time : 10.00 a.m. to 1.00 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 answer : **(14×1=14)**
- 1) Which of the following is not outer join ?
    - a) Left outer join
    - b) Right outer join
    - c) Full outer join
    - d) All of the mentioned
  - 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) Identify the characteristics of transactions
    - a) Atomicity
    - b) Durability
    - c) Isolation
    - d) All of the mentioned
  - 4) Which refers to a property of computer to run several operation simultaneously and possible as computers await response of each other
    - a) Concurrency
    - b) Deadlock
    - c) Backup
    - d) Recovery
  - 5) All lock information is managed by a \_\_\_\_\_ which is responsible for assigning and policing the locks used by the transactions.
    - a) Scheduler
    - b) DBMS
    - c) Lock manager
    - d) Locking agent

P.T.O.





|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
DATABASE ENGINEERING**

Day and Date : Tuesday, 21-11-2017  
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain levels of data abstraction.
  - 2) Define super key, candidate key, primary key and foreign key.
  - 3) Explain weak entity with example in detail.
  - 4) Explain INF with appropriate example.
3. Attempt **any one** : **8**
- 1) Explain in detail the concept of entity set and relationship set.
  - 2) Explain in detail the closure set of functional dependencies.
4. Explain fundamental relational algebra operations with example. **8**

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- 1) Write a short note on multiple key access.
  - 2) What do you mean by transaction ? What are desirable properties of transaction ?

**Set S**



3) What is lock ? Describe the types of locks in concurrency control.

4) Discuss different types of transactions failures.

6. Attempt **any one** : **8**

1) Write a short note on :

a) Testing for view serialability

b) Testing for conflict serialability

2) Explain in brief deadlock detection and recovery.

7. Explain in detail immediate database modifications. **8**

---





SLR-TJ – 317

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

|     |          |
|-----|----------|
| Set | <b>P</b> |
|-----|----------|

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Wednesday, 22-11-2017

Total Marks : 70

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

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(14×1=14)**

- I) Given a word statement of a problem potential objects are identified by selecting  
a) verb phrases in the statement                      b) noun phrases in the statement  
c) adjectives in the statement                              d) adverbs in the statement
- II) The major elements of object model are  
a) Class, Object, Method, Interface  
b) Class, Property, Inheritance  
c) Abstraction, Encapsulation, Modularity, Hierarchy  
d) Abstraction, Class, Polymorphism
- III) What are the advantages of inheritance ?  
a) It permits code reusability. Reusability saves time in program development  
b) It encourages the reuse of proven and debugged high-quality software, thus reducing problem after a system becomes functional  
c) Both a & b  
d) None of these
- IV) The following are intangible entities which can be defined as objects (i) a motor car (ii) a bank account (iii) an aircraft (iv) a linked list  
a) i, ii                              b) ii, iv                              c) iii, iv                              d) ii, iii, iv
- V) Attributes are assigned value  
a) when operations are performed on an object  
b) when instances of objects are defined  
c) when methods are invoked  
d) when classes are identified
- VI) If you need to show the physical relationship between software components and the hardware in the delivered system, which diagram can you use ?  
a) component diagram                              b) deployment diagram  
c) class diagram                                      d) network diagram

P.T.O.



- VII) What is true about a Sequence Diagram ?
- It describes the behavior in many Use Cases
  - It describes the behavior in a single Use Case
  - It describes the behavior of a single object
  - None of the above
- VIII) Object oriented technology is built upon a sound engineering foundation, whose elements are collectively called as
- Von Neumann Model
  - Object Model
  - Structured Model
  - Programming Model
- IX) Subclass represents \_\_\_\_\_ abstractions.
- Generalized abstractions
  - Specialization abstractions
  - Both
  - None of the mentioned
- X) The following is an example of  
Struct PersonnelRecord  
{  
char name [100];  
int social Security Number;  
char department [10];  
float salary;  
};
- Objects
  - Class
  - Both a and b
  - None of the mentioned
- XI) In object-oriented design
- operations and methods are identical
  - methods specify algorithms whereas operations only state what is to be done
  - methods do not change values of attributes
  - methods and constructor are same
- XII) What is true about UML stereotypes ?
- A stereotype is used for extending the UML language
  - A stereotyped class must be abstract
  - The stereotype {frozen} indicates that the UML element cannot be changed
  - UML Profiles can be stereotyped for backward compatibility
- XIII) If you want to plan project activities such as developing new functionalities or test cases, which of the following OOAD artifacts is the most useful ?
- Sequence diagrams
  - Use cases
  - Domain model
  - Package diagrams
- XIV) What is an aggregate object ?
- An object instance that has only static methods
  - An object instance that has only primitive attributes
  - An object instance that contains other objects
  - An object that has only primitive attributes and instances methods



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Wednesday, 22-11-2017

Marks : 56

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

- Instructions :** 1) *All questions are compulsory.*  
2) *Assume suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4x4=16)**
- A) Discuss the steps involved in system design phase of OMT.
  - B) What are the three models used in analysis phase in OMT ?
  - C) Discuss various object oriented themes.
  - D) What is aggregation ? How is it represented ?
  - E) Define and illustrate the terms generalization and inheritance.
3. Draw an object Model consisting of object diagram and instance diagram for a University Automation System. **6**
4. Discuss various ways of representing a functional model. **6**

SECTION – II

5. Attempt **any four** : **(4x4=16)**
- A) Explain :
    - i) swim lanes
    - ii) forking and joining
  - B) What are patterns and frameworks ? In which diagram of OMT are they used ?
  - C) State and explain the significance of nine diagrams facilitated by UML.
  - D) Compare deployment diagram with use case diagram in UML.
  - E) What is a package ? Explain importing and exporting of package.
6. Draw a component diagram for online shopping. The diagram should depict the internal structure of three related subsystems-WebStore, Warehouse and Accounting. **6**
7. Draw from the nine UML diagrams required for a Water Distribution System. **6**

---

**Set P**





SLR-TJ – 317

|             |  |
|-------------|--|
| Seat<br>No. |  |
|-------------|--|

|     |   |
|-----|---|
| Set | Q |
|-----|---|

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017  
OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Wednesday, 22-11-2017  
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.  
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

**MCQ/Objective Type Questions**

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

**(14×1=14)**

- I) Object oriented technology is built upon a sound engineering foundation, whose elements are collectively called as
- a) Von Neumann Model
  - b) Object Model
  - c) Structured Model
  - d) Programming Model
- II) Subclass represents \_\_\_\_\_ abstractions.
- a) Generalized abstractions
  - b) Specialization abstractions
  - c) Both
  - d) None of the mentioned
- III) The following is an example of Struct PersonnelRecord
- ```
{  
char name [100];  
int social Security Number;  
char department [10];  
float salary;  
};
```
- a) Objects
 - b) Class
 - c) Both a and b
 - d) None of the mentioned
- IV) In object-oriented design
- a) operations and methods are identical
 - b) methods specify algorithms whereas operations only state what is to be done
 - c) methods do not change values of attributes
 - d) methods and constructor are same
- V) What is true about UML stereotypes ?
- a) A stereotype is used for extending the UML language
 - b) A stereotyped class must be abstract
 - c) The stereotype {frozen} indicates that the UML element cannot be changed
 - d) UML Profiles can be stereotyped for backward compatibility

P.T.O.



- VI) If you want to plan project activities such as developing new functionalities or test cases, which of the following OOAD artifacts is the most useful ?
- a) Sequence diagrams
 - b) Use cases
 - c) Domain model
 - d) Package diagrams
- VII) What is an aggregate object ?
- a) An object instance that has only static methods
 - b) An object instance that has only primitive attributes
 - c) An object instance that contains other objects
 - d) An object that has only primitive attributes and instances methods
- VIII) Given a word statement of a problem potential objects are identified by selecting
- a) verb phrases in the statement
 - b) noun phrases in the statement
 - c) adjectives in the statement
 - d) adverbs in the statement
- IX) The major elements of object model are
- a) Class, Object, Method, Interface
 - b) Class, Property, Inheritance
 - c) Abstraction, Encapsulation, Modularity, Hierarchy
 - d) Abstraction, Class, Polymorphism
- X) What are the advantages of inheritance ?
- a) It permits code reusability. Reusability saves time in program development
 - b) It encourages the reuse of proven and debugged high-quality software, thus reducing problem after a system becomes functional
 - c) Both a & b
 - d) None of these
- XI) The following are intangible entities which can be defined as objects (i) a motor car (ii) a bank account (iii) an aircraft (iv) a linked list
- a) i, ii
 - b) ii, iv
 - c) iii, iv
 - d) ii, iii, iv
- XII) Attributes are assigned value
- a) when operations are performed on an object
 - b) when instances of objects are defined
 - c) when methods are invoked
 - d) when classes are identified
- XIII) If you need to show the physical relationship between software components and the hardware in the delivered system, which diagram can you use ?
- a) component diagram
 - b) deployment diagram
 - c) class diagram
 - d) network diagram
- XIV) What is true about a Sequence Diagram ?
- a) It describes the behavior in many Use Cases
 - b) It describes the behavior in a single Use Case
 - c) It describes the behavior of a single object
 - d) None of the above



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Wednesday, 22-11-2017

Marks : 56

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

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4x4=16)**
- A) Discuss the steps involved in system design phase of OMT.
 - B) What are the three models used in analysis phase in OMT ?
 - C) Discuss various object oriented themes.
 - D) What is aggregation ? How is it represented ?
 - E) Define and illustrate the terms generalization and inheritance.
3. Draw an object Model consisting of object diagram and instance diagram for a University Automation System. **6**
4. Discuss various ways of representing a functional model. **6**

SECTION – II

5. Attempt **any four** : **(4x4=16)**
- A) Explain :
 - i) swim lanes
 - ii) forking and joining
 - B) What are patterns and frameworks ? In which diagram of OMT are they used ?
 - C) State and explain the significance of nine diagrams facilitated by UML.
 - D) Compare deployment diagram with use case diagram in UML.
 - E) What is a package ? Explain importing and exporting of package.
6. Draw a component diagram for online shopping. The diagram should depict the internal structure of three related subsystems-WebStore, Warehouse and Accounting. **6**
7. Draw from the nine UML diagrams required for a Water Distribution System. **6**

Set Q



SLR-TJ – 317

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

Set	R
-----	---

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Wednesday, 22-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only.**
Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

(14x1=14)

1. Choose the correct answer :

- I) Attributes are assigned value
a) when operations are performed on an object
b) when instances of objects are defined
c) when methods are invoked
d) when classes are identified
- II) If you need to show the physical relationship between software components and the hardware in the delivered system, which diagram can you use ?
a) component diagram b) deployment diagram
c) class diagram d) network diagram
- III) What is true about a Sequence Diagram ?
a) It describes the behavior in many Use Cases
b) It describes the behavior in a single Use Case
c) It describes the behavior of a single object
d) None of the above
- IV) Object oriented technology is built upon a sound engineering foundation, whose elements are collectively called as
a) Von Neumann Model b) Object Model
c) Structured Model d) Programming Model
- V) Subclass represents _____ abstractions.
a) Generalized abstractions b) Specialization abstractions
c) Both d) None of the mentioned
- VI) The following is an example of
Struct PersonnelRecord
{
char name [100];
int social Security Number;
char department [10];
float salary;
};
a) Objects b) Class
c) Both a and b d) None of the mentioned

P.T.O.



- VII) In object-oriented design
- operations and methods are identical
 - methods specify algorithms whereas operations only state what is to be done
 - methods do not change values of attributes
 - methods and constructor are same
- VIII) What is true about UML stereotypes ?
- A stereotype is used for extending the UML language
 - A stereotyped class must be abstract
 - The stereotype {frozen} indicates that the UML element cannot be changed
 - UML Profiles can be stereotyped for backward compatibility
- IX) If you want to plan project activities such as developing new functionalities or test cases, which of the following OOAD artifacts is the most useful ?
- Sequence diagrams
 - Use cases
 - Domain model
 - Package diagrams
- X) What is an aggregate object ?
- An object instance that has only static methods
 - An object instance that has only primitive attributes
 - An object instance that contains other objects
 - An object that has only primitive attributes and instances methods
- XI) Given a word statement of a problem potential objects are identified by selecting
- verb phrases in the statement
 - noun phrases in the statement
 - adjectives in the statement
 - adverbs in the statement
- XII) The major elements of object model are
- Class, Object, Method, Interface
 - Class, Property, Inheritance
 - Abstraction, Encapsulation, Modularity, Hierarchy
 - Abstraction, Class, Polymorphism
- XIII) What are the advantages of inheritance ?
- It permits code reusability. Reusability saves time in program development
 - It encourages the reuse of proven and debugged high-quality software, thus reducing problem after a system becomes functional
 - Both a & b
 - None of these
- XIV) The following are intangible entities which can be defined as objects (i) a motor car (ii) a bank account (iii) an aircraft (iv) a linked list
- i, ii
 - ii, iv
 - iii, iv
 - ii, iii, iv
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Wednesday, 22-11-2017

Marks : 56

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

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4x4=16)**
- A) Discuss the steps involved in system design phase of OMT.
 - B) What are the three models used in analysis phase in OMT ?
 - C) Discuss various object oriented themes.
 - D) What is aggregation ? How is it represented ?
 - E) Define and illustrate the terms generalization and inheritance.
3. Draw an object Model consisting of object diagram and instance diagram for a University Automation System. **6**
4. Discuss various ways of representing a functional model. **6**

SECTION – II

5. Attempt **any four** : **(4x4=16)**
- A) Explain :
 - i) swim lanes
 - ii) forking and joining
 - B) What are patterns and frameworks ? In which diagram of OMT are they used ?
 - C) State and explain the significance of nine diagrams facilitated by UML.
 - D) Compare deployment diagram with use case diagram in UML.
 - E) What is a package ? Explain importing and exporting of package.
6. Draw a component diagram for online shopping. The diagram should depict the internal structure of three related subsystems-WebStore, Warehouse and Accounting. **6**
7. Draw from the nine UML diagrams required for a Water Distribution System. **6**

Set R



SLR-TJ – 317

Seat
No.Set **S****T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
OBJECT ORIENTED MODELLING AND DESIGN**Day and Date : Wednesday, 22-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 70

- Instructions :** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*
2) *Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.*

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

(14x1=14)

1. Choose the correct answer :

- I) The following is an example of Struct PersonnelRecord

```
{  
char name [100];  
int social Security Number;  
char department [10];  
float salary;  
};
```

 - a) Objects
 - b) Class
 - c) Both a and b
 - d) None of the mentioned
- II) In object-oriented design
 - a) operations and methods are identical
 - b) methods specify algorithms whereas operations only state what is to be done
 - c) methods do not change values of attributes
 - d) methods and constructor are same
- III) What is true about UML stereotypes ?
 - a) A stereotype is used for extending the UML language
 - b) A stereotyped class must be abstract
 - c) The stereotype {frozen} indicates that the UML element cannot be changed
 - d) UML Profiles can be stereotyped for backward compatibility
- IV) If you want to plan project activities such as developing new functionalities or test cases, which of the following OOAD artifacts is the most useful ?
 - a) Sequence diagrams
 - b) Use cases
 - c) Domain model
 - d) Package diagrams
- V) What is an aggregate object ?
 - a) An object instance that has only static methods
 - b) An object instance that has only primitive attributes
 - c) An object instance that contains other objects
 - d) An object that has only primitive attributes and instances methods

P.T.O.



- VI) Given a word statement of a problem potential objects are identified by selecting
- a) verb phrases in the statement
 - b) noun phrases in the statement
 - c) adjectives in the statement
 - d) adverbs in the statement
- VII) The major elements of object model are
- a) Class, Object, Method, Interface
 - b) Class, Property, Inheritance
 - c) Abstraction, Encapsulation, Modularity, Hierarchy
 - d) Abstraction, Class, Polymorphism
- VIII) What are the advantages of inheritance ?
- a) It permits code reusability. Reusability saves time in program development
 - b) It encourages the reuse of proven and debugged high-quality software, thus reducing problem after a system becomes functional
 - c) Both a & b
 - d) None of these
- IX) The following are intangible entities which can be defined as objects (i) a motor car (ii) a bank account (iii) an aircraft (iv) a linked list
- a) i, ii
 - b) ii, iv
 - c) iii, iv
 - d) ii, iii, iv
- X) Attributes are assigned value
- a) when operations are performed on an object
 - b) when instances of objects are defined
 - c) when methods are invoked
 - d) when classes are identified
- XI) If you need to show the physical relationship between software components and the hardware in the delivered system, which diagram can you use ?
- a) component diagram
 - b) deployment diagram
 - c) class diagram
 - d) network diagram
- XII) What is true about a Sequence Diagram ?
- a) It describes the behavior in many Use Cases
 - b) It describes the behavior in a single Use Case
 - c) It describes the behavior of a single object
 - d) None of the above
- XIII) Object oriented technology is built upon a sound engineering foundation, whose elements are collectively called as
- a) Von Neumann Model
 - b) Object Model
 - c) Structured Model
 - d) Programming Model
- XIV) Subclass represents _____ abstractions.
- a) Generalized abstractions
 - b) Specialization abstractions
 - c) Both
 - d) None of the mentioned
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
OBJECT ORIENTED MODELLING AND DESIGN**

Day and Date : Wednesday, 22-11-2017

Marks : 56

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

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4x4=16)**
- A) Discuss the steps involved in system design phase of OMT.
 - B) What are the three models used in analysis phase in OMT ?
 - C) Discuss various object oriented themes.
 - D) What is aggregation ? How is it represented ?
 - E) Define and illustrate the terms generalization and inheritance.
3. Draw an object Model consisting of object diagram and instance diagram for a University Automation System. **6**
4. Discuss various ways of representing a functional model. **6**

SECTION – II

5. Attempt **any four** : **(4x4=16)**
- A) Explain :
 - i) swim lanes
 - ii) forking and joining
 - B) What are patterns and frameworks ? In which diagram of OMT are they used ?
 - C) State and explain the significance of nine diagrams facilitated by UML.
 - D) Compare deployment diagram with use case diagram in UML.
 - E) What is a package ? Explain importing and exporting of package.
6. Draw a component diagram for online shopping. The diagram should depict the internal structure of three related subsystems-WebStore, Warehouse and Accounting. **6**
7. Draw from the nine UML diagrams required for a Water Distribution System. **6**

Set S



SLR-TJ – 318

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

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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 23-11-2017

Max. Marks : 70

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

- Instructions:** 1) *Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.*
2) *Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.*

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

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

- 1) _____ are not serviced by special processes but by special functions in the kernel, called in the context of the currently running process.
a) Schedules b) Files c) Interrupts d) None
- 2) Applications communicate with kernel by using
a) System Calls b) C Programs
c) Shell Script d) Shell
- 3) The file system of UNIX describes by
a) Tree b) Directory c) Super block d) None
- 4) The kernel caches data in the buffer pool according to a _____
a) Least recently used b) Queue
c) Link list d) None
- 5) When a process wants _____, the kernel brings the data into main memory where the process can examine it, alter it and request that the data be saved in the file system again.
a) To access data from a file b) Write data in a file
c) Both d) None
- 6) The kernel returns a file descriptor for the _____ system calls, which is an index into the user file descriptor table.
a) Open and creat b) Open
c) Creat d) None

P.T.O.



- 7) When a process creates a _____, the kernel assigns it an unused inode.
- a) New thread
 - b) New file
 - c) PID
 - d) None
- 8) The memory management hardware divides physical memory into set of equal sized blocks called _____
- a) Region
 - b) Pregion
 - c) Pages
 - d) Offset
- 9) When a process accesses a page that is not part of its working set, it incurs _____ page fault.
- a) Validity
 - b) Invalid
 - c) Modification
 - d) Recent
- 10) A process can Synchronize its execution with the termination of a child process by executing the _____ system call.
- a) exit ()
 - b) wait ()
 - c) join ()
 - d) fork ()
- 11) The process is ready to run, but _____ must swap the process into main memory before execution.
- a) Kernel
 - b) Swapper
 - c) Scheduler
 - d) Process
- 12) Algorithm alloc is used to _____
- a) Allocate disk block
 - b) Allocate inode
 - c) Allocate data region
 - d) Allocate text region
- 13) _____ contains the virtual addresses for text, data and stack regions.
- a) Page table
 - b) Pregion table
 - c) File table
 - d) Inode table
- 14) The _____ is a kernel process that swaps out memory pages that are no longer part of working set of process.
- a) Table entry
 - b) Page swapper
 - c) Page stealer
 - d) Both b) and c)
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 23-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three** : **(3×4=12)**
- 1) Explain the scenarios of buffer retrieval in case of buffer found on the hash queue.
 - 2) What is the return value and type of creat() system call ?
 - 3) Why there are two different mechanisms for accessing hardware control and file subsystem ?
 - 4) What is the purpose of brelse algorithm ?
3. Solve **any two** : **(2×8=16)**
- 1) Explain in detail about UNIX system architecture.
 - 2) Explain breada algorithm. How it is differs from bread ?
 - 3) Describe any one algorithm from following in detail, ialloc, iput, bmap, ifree.

SECTION – II

4. Write short note on **any 3** of the following : **(3×4=12)**
- 1) Algorithm for attaching a region
 - 2) Init process
 - 3) times() system call
 - 4) Algorithm for booting the system.
5. Solve **any two** : **(2×8=16)**
- 1) Explain the various data structures of demand paging.
 - 2) With a neat figure explain process state transition diagram.
 - 3) Explain Boot and INIT processes.



SLR-TJ – 318

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

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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 23-11-2017

Max. Marks : 70

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

Instructions: 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only.**
Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

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

- 1) The memory management hardware divides physical memory into set of equal sized blocks called _____
 - a) Region
 - b) Pregion
 - c) Pages
 - d) Offset
- 2) When a process accesses a page that is not part of its working set, it incurs _____ page fault.
 - a) Validity
 - b) Invalid
 - c) Modification
 - d) Recent
- 3) A process can Synchronize its execution with the termination of a child process by executing the _____ system call.
 - a) exit ()
 - b) wait ()
 - c) join ()
 - d) fork ()
- 4) The process is ready to run, but _____ must swap the process into main memory before execution.
 - a) Kernel
 - b) Swapper
 - c) Scheduler
 - d) Process
- 5) Algorithm alloc is used to _____
 - a) Allocate disk block
 - b) Allocate inode
 - c) Allocate data region
 - d) Allocate text region
- 6) _____ contains the virtual addresses for text, data and stack regions.
 - a) Page table
 - b) Pregion table
 - c) File table
 - d) Inode table

P.T.O.



- 7) The _____ is a kernel process that swaps out memory pages that are no longer part of working set of process.
- a) Table entry
 - b) Page swapper
 - c) Page stealer
 - d) Both b) and c)
- 8) _____ are not serviced by special processes but by special functions in the kernel, called in the context of the currently running process.
- a) Schedules
 - b) Files
 - c) Interrupts
 - d) None
- 9) Applications communicate with kernel by using
- a) System Calls
 - b) C Programs
 - c) Shell Script
 - d) Shell
- 10) The file system of UNIX describes by
- a) Tree
 - b) Directory
 - c) Super block
 - d) None
- 11) The kernel caches data in the buffer pool according to a _____
- a) Least recently used
 - b) Queue
 - c) Link list
 - d) None
- 12) When a process wants _____, the kernel brings the data into main memory where the process can examine it, alter it and request that the data be saved in the file system again.
- a) To access data from a file
 - b) Write data in a file
 - c) Both
 - d) None
- 13) The kernel returns a file descriptor for the _____ system calls, which is an index into the user file descriptor table.
- a) Open and creat
 - b) Open
 - c) Creat
 - d) None
- 14) When a process creates a _____, the kernel assigns it an unused inode.
- a) New thread
 - b) New file
 - c) PID
 - d) None
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 23-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three** : **(3×4=12)**
- 1) Explain the scenarios of buffer retrieval in case of buffer found on the hash queue.
 - 2) What is the return value and type of creat() system call ?
 - 3) Why there are two different mechanisms for accessing hardware control and file subsystem ?
 - 4) What is the purpose of brelse algorithm ?
3. Solve **any two** : **(2×8=16)**
- 1) Explain in detail about UNIX system architecture.
 - 2) Explain breada algorithm. How it is differs from bread ?
 - 3) Describe any one algorithm from following in detail, ialloc, iput, bmap, ifree.

SECTION – II

4. Write short note on **any 3** of the following : **(3×4=12)**
- 1) Algorithm for attaching a region
 - 2) Init process
 - 3) times() system call
 - 4) Algorithm for booting the system.
5. Solve **any two** : **(2×8=16)**
- 1) Explain the various data structures of demand paging.
 - 2) With a neat figure explain process state transition diagram.
 - 3) Explain Boot and INIT processes.



SLR-TJ – 318

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

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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 23-11-2017

Max. Marks : 70

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

Instructions: 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only.**
Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

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

- 1) When a process wants _____, the kernel brings the data into main memory where the process can examine it, alter it and request that the data be saved in the file system again.
 - a) To access data from a file
 - b) Write data in a file
 - c) Both
 - d) None
- 2) The kernel returns a file descriptor for the _____ system calls, which is an index into the user file descriptor table.
 - a) Open and creat
 - b) Open
 - c) Creat
 - d) None
- 3) When a process creates a _____, the kernel assigns it an unused inode.
 - a) New thread
 - b) New file
 - c) PID
 - d) None
- 4) The memory management hardware divides physical memory into set of equal sized blocks called _____.
 - a) Region
 - b) Pregion
 - c) Pages
 - d) Offset
- 5) When a process accesses a page that is not part of its working set, it incurs _____ page fault.
 - a) Validity
 - b) Invalid
 - c) Modification
 - d) Recent

P.T.O.



- 6) A process can Synchronize its execution with the termination of a child process by executing the _____ system call.
a) exit () b) wait () c) join () d) fork ()
- 7) The process is ready to run, but _____ must swap the process into main memory before execution.
a) Kernel b) Swapper c) Scheduler d) Process
- 8) Algorithm alloc is used to _____
a) Allocate disk block b) Allocate inode
c) Allocate data region d) Allocate text region
- 9) _____ contains the virtual addresses for text, data and stack regions.
a) Page table b) Pregion table
c) File table d) Inode table
- 10) The _____ is a kernel process that swaps out memory pages that are no longer part of working set of process.
a) Table entry b) Page swapper
c) Page stealer d) Both b) and c)
- 11) _____ are not serviced by special processes but by special functions in the kernel, called in the context of the currently running process.
a) Schedules b) Files c) Interrupts d) None
- 12) Applications communicate with kernel by using
a) System Calls b) C Programs
c) Shell Script d) Shell
- 13) The file system of UNIX describes by
a) Tree b) Directory c) Super block d) None
- 14) The kernel caches data in the buffer pool according to a _____
a) Least recently used b) Queue
c) Link list d) None
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 23-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three** : **(3×4=12)**
- 1) Explain the scenarios of buffer retrieval in case of buffer found on the hash queue.
 - 2) What is the return value and type of creat() system call ?
 - 3) Why there are two different mechanisms for accessing hardware control and file subsystem ?
 - 4) What is the purpose of brelse algorithm ?
3. Solve **any two** : **(2×8=16)**
- 1) Explain in detail about UNIX system architecture.
 - 2) Explain breada algorithm. How it is differs from bread ?
 - 3) Describe any one algorithm from following in detail, ialloc, iput, bmap, ifree.

SECTION – II

4. Write short note on **any 3** of the following : **(3×4=12)**
- 1) Algorithm for attaching a region
 - 2) Init process
 - 3) times() system call
 - 4) Algorithm for booting the system.
5. Solve **any two** : **(2×8=16)**
- 1) Explain the various data structures of demand paging.
 - 2) With a neat figure explain process state transition diagram.
 - 3) Explain Boot and INIT processes.



SLR-TJ – 318

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

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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 23-11-2017

Max. Marks : 70

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

Instructions: 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only.**
Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

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

- 1) A process can Synchronize its execution with the termination of a child process by executing the _____ system call.
a) exit () b) wait () c) join () d) fork ()
- 2) The process is ready to run, but _____ must swap the process into main memory before execution.
a) Kernel b) Swapper c) Scheduler d) Process
- 3) Algorithm alloc is used to _____
a) Allocate disk block b) Allocate inode
c) Allocate data region d) Allocate text region
- 4) _____ contains the virtual addresses for text, data and stack regions.
a) Page table b) Pregion table
c) File table d) Inode table
- 5) The _____ is a kernel process that swaps out memory pages that are no longer part of working set of process.
a) Table entry b) Page swapper
c) Page stealer d) Both b) and c)
- 6) _____ are not serviced by special processes but by special functions in the kernel, called in the context of the currently running process.
a) Schedules b) Files c) Interrupts d) None
- 7) Applications communicate with kernel by using
a) System Calls b) C Programs
c) Shell Script d) Shell

P.T.O.



- 8) The file system of UNIX describes by
a) Tree b) Directory c) Super block d) None
- 9) The kernel caches data in the buffer pool according to a _____
a) Least recently used b) Queue
c) Link list d) None
- 10) When a process wants _____, the kernel brings the data into main memory where the process can examine it, alter it and request that the data be saved in the file system again.
a) To access data from a file b) Write data in a file
c) Both d) None
- 11) The kernel returns a file descriptor for the _____ system calls, which is an index into the user file descriptor table.
a) Open and creat b) Open
c) Creat d) None
- 12) When a process creates a _____, the kernel assigns it an unused inode.
a) New thread b) New file
c) PID d) None
- 13) The memory management hardware divides physical memory into set of equal sized blocks called _____
a) Region b) Pregion
c) Pages d) Offset
- 14) When a process accesses a page that is not part of its working set, it incurs _____ page fault.
a) Validity b) Invalid
c) Modification d) Recent
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Thursday, 23-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Solve **any three** : **(3×4=12)**
- 1) Explain the scenarios of buffer retrieval in case of buffer found on the hash queue.
 - 2) What is the return value and type of creat() system call ?
 - 3) Why there are two different mechanisms for accessing hardware control and file subsystem ?
 - 4) What is the purpose of brelse algorithm ?
3. Solve **any two** : **(2×8=16)**
- 1) Explain in detail about UNIX system architecture.
 - 2) Explain breada algorithm. How it is differs from bread ?
 - 3) Describe any one algorithm from following in detail, ialloc, iput, bmap, ifree.

SECTION – II

4. Write short note on **any 3** of the following : **(3×4=12)**
- 1) Algorithm for attaching a region
 - 2) Init process
 - 3) times() system call
 - 4) Algorithm for booting the system.
5. Solve **any two** : **(2×8=16)**
- 1) Explain the various data structures of demand paging.
 - 2) With a neat figure explain process state transition diagram.
 - 3) Explain Boot and INIT processes.



SLR-TJ – 319

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

Set	P
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (CGPA)**

Day and Date : Friday, 24-11-2017
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) _____ contains the component of the structure of the dataflow diagram.
 - a) Data document
 - b) Data dictionary
 - c) Report files
 - d) SRS documents
- 2) The relationship between the various classes in a software project can be shown by
 - a) Association
 - b) Aggregation
 - c) DFD
 - d) None
- 3) Which of the following method provides the interaction between clients and developer ?
 - a) Informal approach
 - b) Prototyping
 - c) Both
 - d) None of the above
- 4) Which of the following characteristics of an SRS leads to verification and validation ?
 - a) Ambiguous
 - b) Verifiable
 - c) Modifiable
 - d) Traceable
- 5) Which of the following is not an error under validation ?
 - a) Omission
 - b) Inconsistency
 - c) Incorrect fact
 - d) Missing process
- 6) _____ shows the strength of interconnection between the model.
 - a) Coupling
 - b) Cohesion
 - c) Abstraction
 - d) None
- 7) Which type of cohesion occurs when there is no meaningful relationship among the elements of the model ?
 - a) Coincidental
 - b) Procedural
 - c) Functional
 - d) Temporal

P.T.O.



- 8) Effective software project management focuses on the four P's. What are those four P's ?
- a) People, performance, payment, product
 - b) People, product, process, project
 - c) People, product, performance, project
 - d) All of the above
- 9) State if the following are true for Project Management. During Project scope management, it is necessary to-Define the scope, Decide its verification and control, Divide the project into various smaller parts for ease of management, Verify the scope.
- a) True
 - b) False
- 10) The Agile process
- a) Has no meetings
 - b) Has lengthy reporting requirements
 - c) Encourages the team to meet regularly
 - d) Has no reporting requirements
- 11) An Agile approach advocates which of the following approaches ?
- a) Get something "quick and dirty" delivered, to save time
 - b) Get something simple released as quickly as possible
 - c) Get something business-valuable delivered as quickly as possible, consistent with the right level of quality
 - d) Get something delivered once it has been fully documented and the documentation has been signed off as complete
- 12) Adaptive life cycles (also known as change-driven or agile methods) are intended to respond to
- a) Low levels of change and ongoing stakeholder involvement
 - b) High levels of change and ongoing stakeholder involvement
 - c) Both a) and b)
 - d) None of these
- 13) Which one of the below is not a White Box Testing techniques ?
- a) Decision Coverage
 - b) Condition Coverage
 - c) Multiple Decision Coverage
 - d) Multiple Condition Coverage
- 14) The objective of testing is
- a) Debugging
 - b) To uncover errors
 - c) To gain modularity
 - d) To analyze system
-



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

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (CGPA)**

Day and Date : Friday, 24-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

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

- 1) What is the purpose of software engineering principles and explain the importance of various software engineering principles in software development.
- 2) What are the advantages of using Spiral model over the classical waterfall model ?
- 3) What is a software process ? How is it related to a software project and a software product ?
- 4) What is coupling ? Explain different types of coupling with their examples.
- 5) Write a short note on SRS document.

3. Attempt **any two** : **(2×8=16)**

- 1) Explain the concept of Prototype and RUP Process model with the help of diagram.
- 2) What is role of Software Architecture ? Explain the different views of architectural styles.
- 3) Write a short note on :
 - i) Software metrics
 - ii) Cohesion and Open Closed Principle.



SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) What is CMM ? Explain in detail the COCOMO model.
 - 2) Write a short note on detailed scheduling.
 - 3) What is Agile Project Management and explain its principles.
 - 4) Explain the object-oriented testing strategies.
 - 5) Explain Adaptive Project Management Life Cycle Model with a neat diagram.
5. Attempt **any two** : **(2×8=16)**
- 1) What do you mean by project monitoring and tracking ? Explain the various methods of project monitoring and tracking.
 - 2) Explain types of iterative PMLC Models in detail.
 - 3) Explain in detail following testing methods in detail.
 - a) Functional testing
 - b) Unit testing
 - c) System testing
 - d) User satisfaction testing.
-



SLR-TJ – 319

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

Set	Q
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (CGPA)**

Day and Date : Friday, 24-11-2017
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) Effective software project management focuses on the four P's. What are those four P's ?
 - a) People, performance, payment, product
 - b) People, product, process, project
 - c) People, product, performance, project
 - d) All of the above
- 2) State if the following are true for Project Management. During Project scope management, it is necessary to-Define the scope, Decide its verification and control, Divide the project into various smaller parts for ease of management, Verify the scope.
 - a) True
 - b) False
- 3) The Agile process
 - a) Has no meetings
 - b) Has lengthy reporting requirements
 - c) Encourages the team to meet regularly
 - d) Has no reporting requirements
- 4) An Agile approach advocates which of the following approaches ?
 - a) Get something "quick and dirty" delivered, to save time
 - b) Get something simple released as quickly as possible
 - c) Get something business-valuable delivered as quickly as possible, consistent with the right level of quality
 - d) Get something delivered once it has been fully documented and the documentation has been signed off as complete

P.T.O.



- 5) Adaptive life cycles (also known as change-driven or agile methods) are intended to respond to
- a) Low levels of change and ongoing stakeholder involvement
 - b) High levels of change and ongoing stakeholder involvement
 - c) Both a) and b)
 - d) None of these
- 6) Which one of the below is not a White Box Testing techniques ?
- a) Decision Coverage
 - b) Condition Coverage
 - c) Multiple Decision Coverage
 - d) Multiple Condition Coverage
- 7) The objective of testing is
- a) Debugging
 - b) To uncover errors
 - c) To gain modularity
 - d) To analyze system
- 8) _____ contains the component of the structure of the dataflow diagram.
- a) Data document
 - b) Data dictionary
 - c) Report files
 - d) SRS documents
- 9) The relationship between the various classes in a software project can be shown by
- a) Association
 - b) Aggregation
 - c) DFD
 - d) None
- 10) Which of the following method provides the interaction between clients and developer ?
- a) Informal approach
 - b) Prototyping
 - c) Both
 - d) None of the above
- 11) Which of the following characteristics of an SRS leads to verification and validation ?
- a) Ambiguous
 - b) Verifiable
 - c) Modifiable
 - d) Traceable
- 12) Which of the following is not an error under validation ?
- a) Omission
 - b) Inconsistency
 - c) Incorrect fact
 - d) Missing process
- 13) _____ shows the strength of interconnection between the model.
- a) Coupling
 - b) Cohesion
 - c) Abstraction
 - d) None
- 14) Which type of cohesion occurs when there is no meaningful relationship among the elements of the model ?
- a) Coincidental
 - b) Procedural
 - c) Functional
 - d) Temporal



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

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (CGPA)**

Day and Date : Friday, 24-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt any three : (3×4=12)

- 1) What is the purpose of software engineering principles and explain the importance of various software engineering principles in software development.
- 2) What are the advantages of using Spiral model over the classical waterfall model ?
- 3) What is a software process ? How is it related to a software project and a software product ?
- 4) What is coupling ? Explain different types of coupling with their examples.
- 5) Write a short note on SRS document.

3. Attempt any two : (2×8=16)

- 1) Explain the concept of Prototype and RUP Process model with the help of diagram.
- 2) What is role of Software Architecture ? Explain the different views of architectural styles.
- 3) Write a short note on :
 - i) Software metrics
 - ii) Cohesion and Open Closed Principle.



SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) What is CMM ? Explain in detail the COCOMO model.
 - 2) Write a short note on detailed scheduling.
 - 3) What is Agile Project Management and explain its principles.
 - 4) Explain the object-oriented testing strategies.
 - 5) Explain Adaptive Project Management Life Cycle Model with a neat diagram.
5. Attempt **any two** : **(2×8=16)**
- 1) What do you mean by project monitoring and tracking ? Explain the various methods of project monitoring and tracking.
 - 2) Explain types of iterative PMLC Models in detail.
 - 3) Explain in detail following testing methods in detail.
 - a) Functional testing
 - b) Unit testing
 - c) System testing
 - d) User satisfaction testing.
-



SLR-TJ – 319

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

Set	R
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (CGPA)**

Day and Date : Friday, 24-11-2017
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 not an error under validation ?
 - a) Omission
 - b) Inconsistency
 - c) Incorrect fact
 - d) Missing process
- 2) _____ shows the strength of interconnection between the model.
 - a) Coupling
 - b) Cohesion
 - c) Abstraction
 - d) None
- 3) Which type of cohesion occurs when there is no meaningful relationship among the elements of the model ?
 - a) Coincidental
 - b) Procedural
 - c) Functional
 - d) Temporal
- 4) Effective software project management focuses on the four P's. What are those four P's ?
 - a) People, performance, payment, product
 - b) People, product, process, project
 - c) People, product, performance, project
 - d) All of the above
- 5) State if the following are true for Project Management. During Project scope management, it is necessary to-Define the scope, Decide its verification and control, Divide the project into various smaller parts for ease of management, Verify the scope.
 - a) True
 - b) False

P.T.O.



- 6) The Agile process
 - a) Has no meetings
 - b) Has lengthy reporting requirements
 - c) Encourages the team to meet regularly
 - d) Has no reporting requirements
- 7) An Agile approach advocates which of the following approaches ?
 - a) Get something “quick and dirty” delivered, to save time
 - b) Get something simple released as quickly as possible
 - c) Get something business-valuable delivered as quickly as possible, consistent with the right level of quality
 - d) Get something delivered once it has been fully documented and the documentation has been signed off as complete
- 8) Adaptive life cycles (also known as change-driven or agile methods) are intended to respond to
 - a) Low levels of change and ongoing stakeholder involvement
 - b) High levels of change and ongoing stakeholder involvement
 - c) Both a) and b)
 - d) None of these
- 9) Which one of the below is not a White Box Testing techniques ?
 - a) Decision Coverage
 - b) Condition Coverage
 - c) Multiple Decision Coverage
 - d) Multiple Condition Coverage
- 10) The objective of testing is
 - a) Debugging
 - b) To uncover errors
 - c) To gain modularity
 - d) To analyze system
- 11) _____ contains the component of the structure of the dataflow diagram.
 - a) Data document
 - b) Data dictionary
 - c) Report files
 - d) SRS documents
- 12) The relationship between the various classes in a software project can be shown by
 - a) Association
 - b) Aggregation
 - c) DFD
 - d) None
- 13) Which of the following method provides the interaction between clients and developer ?
 - a) Informal approach
 - b) Prototyping
 - c) Both
 - d) None of the above
- 14) Which of the following characteristics of an SRS leads to verification and validation ?
 - a) Ambiguous
 - b) Verifiable
 - c) Modifiable
 - d) Traceable



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

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (CGPA)**

Day and Date : Friday, 24-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt any three : (3×4=12)

- 1) What is the purpose of software engineering principles and explain the importance of various software engineering principles in software development.
- 2) What are the advantages of using Spiral model over the classical waterfall model ?
- 3) What is a software process ? How is it related to a software project and a software product ?
- 4) What is coupling ? Explain different types of coupling with their examples.
- 5) Write a short note on SRS document.

3. Attempt any two : (2×8=16)

- 1) Explain the concept of Prototype and RUP Process model with the help of diagram.
- 2) What is role of Software Architecture ? Explain the different views of architectural styles.
- 3) Write a short note on :
 - i) Software metrics
 - ii) Cohesion and Open Closed Principle.



SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) What is CMM ? Explain in detail the COCOMO model.
 - 2) Write a short note on detailed scheduling.
 - 3) What is Agile Project Management and explain its principles.
 - 4) Explain the object-oriented testing strategies.
 - 5) Explain Adaptive Project Management Life Cycle Model with a neat diagram.
5. Attempt **any two** : **(2×8=16)**
- 1) What do you mean by project monitoring and tracking ? Explain the various methods of project monitoring and tracking.
 - 2) Explain types of iterative PMLC Models in detail.
 - 3) Explain in detail following testing methods in detail.
 - a) Functional testing
 - b) Unit testing
 - c) System testing
 - d) User satisfaction testing.
-



SLR-TJ – 319

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

Set	S
-----	---

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (CGPA)**

Day and Date : Friday, 24-11-2017
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 Agile process
 - a) Has no meetings
 - b) Has lengthy reporting requirements
 - c) Encourages the team to meet regularly
 - d) Has no reporting requirements
- 2) An Agile approach advocates which of the following approaches ?
 - a) Get something “quick and dirty” delivered, to save time
 - b) Get something simple released as quickly as possible
 - c) Get something business-valuable delivered as quickly as possible, consistent with the right level of quality
 - d) Get something delivered once it has been fully documented and the documentation has been signed off as complete
- 3) Adaptive life cycles (also known as change-driven or agile methods) are intended to respond to
 - a) Low levels of change and ongoing stakeholder involvement
 - b) High levels of change and ongoing stakeholder involvement
 - c) Both a) and b)
 - d) None of these
- 4) Which one of the below is not a White Box Testing techniques ?
 - a) Decision Coverage
 - b) Condition Coverage
 - c) Multiple Decision Coverage
 - d) Multiple Condition Coverage

P.T.O.



- 5) The objective of testing is
- a) Debugging
 - b) To uncover errors
 - c) To gain modularity
 - d) To analyze system
- 6) _____ contains the component of the structure of the dataflow diagram.
- a) Data document
 - b) Data dictionary
 - c) Report files
 - d) SRS documents
- 7) The relationship between the various classes in a software project can be shown by
- a) Association
 - b) Aggregation
 - c) DFD
 - d) None
- 8) Which of the following method provides the interaction between clients and developer ?
- a) Informal approach
 - b) Prototyping
 - c) Both
 - d) None of the above
- 9) Which of the following characteristics of an SRS leads to verification and validation ?
- a) Ambiguous
 - b) Verifiable
 - c) Modifiable
 - d) Traceable
- 10) Which of the following is not an error under validation ?
- a) Omission
 - b) Inconsistency
 - c) Incorrect fact
 - d) Missing process
- 11) _____ shows the strength of interconnection between the model.
- a) Coupling
 - b) Cohesion
 - c) Abstraction
 - d) None
- 12) Which type of cohesion occurs when there is no meaningful relationship among the elements of the model ?
- a) Coincidental
 - b) Procedural
 - c) Functional
 - d) Temporal
- 13) Effective software project management focuses on the four P's. What are those four P's ?
- a) People, performance, payment, product
 - b) People, product, process, project
 - c) People, product, performance, project
 - d) All of the above
- 14) State if the following are true for Project Management. During Project scope management, it is necessary to-Define the scope, Decide its verification and control, Divide the project into various smaller parts for ease of management, Verify the scope.
- a) True
 - b) False
-



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

**T.E. (Information Technology) (Part – II) Examination, 2017
SOFTWARE ENGINEERING (CGPA)**

Day and Date : Friday, 24-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt any three : (3×4=12)

- 1) What is the purpose of software engineering principles and explain the importance of various software engineering principles in software development.
- 2) What are the advantages of using Spiral model over the classical waterfall model ?
- 3) What is a software process ? How is it related to a software project and a software product ?
- 4) What is coupling ? Explain different types of coupling with their examples.
- 5) Write a short note on SRS document.

3. Attempt any two : (2×8=16)

- 1) Explain the concept of Prototype and RUP Process model with the help of diagram.
- 2) What is role of Software Architecture ? Explain the different views of architectural styles.
- 3) Write a short note on :
 - i) Software metrics
 - ii) Cohesion and Open Closed Principle.



SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) What is CMM ? Explain in detail the COCOMO model.
 - 2) Write a short note on detailed scheduling.
 - 3) What is Agile Project Management and explain its principles.
 - 4) Explain the object-oriented testing strategies.
 - 5) Explain Adaptive Project Management Life Cycle Model with a neat diagram.
5. Attempt **any two** : **(2×8=16)**
- 1) What do you mean by project monitoring and tracking ? Explain the various methods of project monitoring and tracking.
 - 2) Explain types of iterative PMLC Models in detail.
 - 3) Explain in detail following testing methods in detail.
 - a) Functional testing
 - b) Unit testing
 - c) System testing
 - d) User satisfaction testing.
-



SLR-TJ – 320

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

Set

P

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Saturday, 25-11-2017
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 answer :

(14×1=14)

- 1) Which tool converts class files to Dalvik Executable files ?
A) apk builder B) jar signer
C) dex D) none of the above
- 2) Mobility Panorama classified into _____ landscape.
A) Consumer and Enterprise B) Logical and Physical
C) Mobile and Enterprise D) None of the above
- 3) IntentService is the subclass of the _____ class.
A) Activity B) Content C) Context D) Service
- 4) A device with Android installed is needed to develop apps for Android
A) True B) False
- 5) Which operating system is used as the base of the Android stack ?
A) Linux B) Windows C) Java D) XML
- 6) Java source code is directly run on the Android device
A) True B) False
- 7) The _____ XML file contains all the text that your application uses.
A) stack.xml B) text.xml C) string.xml D) stringxml.xml

P.T.O.



- 8) Following is true with respect to shared preferences
- A) It is xml file
 - B) It stores values in key value pair
 - C) Shared preferences entries deleted using remove and commit function call
 - D) All
- 9) _____ is true with respect to sqlite.
- A) Sqlite is open source dbms
 - B) Sqlite is client side dbms
 - C) Reading of views is supported
 - D) All of the above
- 10) _____ is method to get internal storage directory.
- A) getFilesDir()
 - B) getFilesDirectory()
 - C) getInternalFilesDirectory
 - D) None of the above
- 11) _____ widget is useful to produce drawable animation effect.
- A) ImageView
 - B) VideoView
 - C) Both A and B
 - D) None of the above
- 12) _____ property in xml file can be used to enlarge or compress object in View animation.
- A) FromXScale, toXScale
 - B) fromAlpha, toAlpha
 - C) fromDegrees, toDegrees
 - D) None of the above
- 13) _____ method in Cursor returns number of rows in selection query result set.
- A) getColumnCount
 - B) getCount
 - C) c.getRowCount
 - D) none of the above
- 14) _____ tool is used to create certificate for mobile application.
- A) keytool
 - B) jarsigner
 - C) both
 - D) none of the above
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Saturday, 25-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Describe and explain Android App development flow.
 - b) Differentiate between Activity component and Service component in Android.
 - c) Explain event-handling paradigm with the help of an UI element.
 - d) Define and explain Broadcast Receiver component in Android with example.
3. Attempt **any one** : **(1×8=8)**
- a) Write a short note on :
 - i) TelephonyManager
 - ii) SmsManager in Android
 - b) Explain Service life-cycle states and respective callback methods.
4. Attempt **any one** : **(1×8=8)**
- a) What is notification in Android ? Explain categories of notifications and advantages of using notification. Define the procedure to create notifications.
 - b) Explain internal details of “Hello World” first Android application in detail with programming components, folder structure and resources used.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) What is relational data ? Explain characteristics/features of Sqlite.
 - b) Write a note on Canvas and Drawable.
 - c) How camera can be accessed in android program ? Explain with necessary classes and methods.
 - d) Explain use of position sensors.



6. Attempt **any one** : **(1×8=8)**
- a) Explain all tools used during app uploading procedure. Explain steps to upload app on play store.
 - b) How files on internal and external storage are operated in android ? Explain with example.
7. Attempt **any one** : **(1×8=8)**
- a) How multimedia is accessed in android (audio and video) ? Explain with example.
 - b) What is animation ? Explain drawable and view animation in detail.
-



SLR-TJ – 320

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

Set	Q
-----	---

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Saturday, 25-11-2017
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 answer :

(14×1=14)

- 1) Following is true with respect to shared preferences
- A) It is xml file
 - B) It stores values in key value pair
 - C) Shared preferences entries deleted using remove and commit function call
 - D) All
- 2) _____ is true with respect to sqlite.
- A) Sqlite is open source dbms
 - B) Sqlite is client side dbms
 - C) Reading of views is supported
 - D) All of the above
- 3) _____ is method to get internal storage directory.
- A) getFilesDir()
 - B) getFilesDirectory()
 - C) getInternalFilesDirectory
 - D) None of the above
- 4) _____ widget is useful to produce drawable animation effect.
- A) ImageView
 - B) VideoView
 - C) Both A and B
 - D) None of the above

P.T.O.



- 5) _____ property in xml file can be used to enlarge or compress object in View animation.
- A) FromXScale, toXScale B) fromAlpha, toAlpha
C) fromDegrees, toDegrees D) None of the above
- 6) _____ method in Cursor returns number of rows in selection query result set.
- A) getColumnCount B) getCount
C) c.getRowCount D) none of the above
- 7) _____ tool is used to create certificate for mobile application.
- A) keytool B) jarsigner
C) both D) none of the above
- 8) Which tool converts class files to Dalvik Executable files ?
- A) apk builder B) jar signer
C) dex D) none of the above
- 9) Mobility Panorama classified into _____ landscape.
- A) Consumer and Enterprise B) Logical and Physical
C) Mobile and Enterprise D) None of the above
- 10) IntentService is the subclass of the _____ class.
- A) Activity B) Content C) Context D) Service
- 11) A device with Android installed is needed to develop apps for Android
- A) True B) False
- 12) Which operating system is used as the base of the Android stack ?
- A) Linux B) Windows C) Java D) XML
- 13) Java source code is directly run on the Android device
- A) True B) False
- 14) The _____ XML file contains all the text that your application uses.
- A) stack.xml B) text.xml C) string.xml D) stringxml.xml
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Saturday, 25-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Describe and explain Android App development flow.
 - b) Differentiate between Activity component and Service component in Android.
 - c) Explain event-handling paradigm with the help of an UI element.
 - d) Define and explain Broadcast Receiver component in Android with example.
3. Attempt **any one** : **(1×8=8)**
- a) Write a short note on :
 - i) TelephonyManager
 - ii) SmsManager in Android
 - b) Explain Service life-cycle states and respective callback methods.
4. Attempt **any one** : **(1×8=8)**
- a) What is notification in Android ? Explain categories of notifications and advantages of using notification. Define the procedure to create notifications.
 - b) Explain internal details of “Hello World” first Android application in detail with programming components, folder structure and resources used.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) What is relational data ? Explain characteristics/features of Sqlite.
 - b) Write a note on Canvas and Drawable.
 - c) How camera can be accessed in android program ? Explain with necessary classes and methods.
 - d) Explain use of position sensors.

Set Q



6. Attempt **any one** : **(1×8=8)**
- a) Explain all tools used during app uploading procedure. Explain steps to upload app on play store.
 - b) How files on internal and external storage are operated in android ? Explain with example.
7. Attempt **any one** : **(1×8=8)**
- a) How multimedia is accessed in android (audio and video) ? Explain with example.
 - b) What is animation ? Explain drawable and view animation in detail.
-



SLR-TJ – 320

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

Set	R
-----	---

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Saturday, 25-11-2017
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 answer : **(14×1=14)**

- 1) Which operating system is used as the base of the Android stack ?
A) Linux B) Windows C) Java D) XML
- 2) Java source code is directly run on the Android device
A) True B) False
- 3) The _____ XML file contains all the text that your application uses.
A) stack.xml B) text.xml C) string.xml D) stringxml.xml
- 4) Following is true with respect to shared preferences
A) It is xml file
B) It stores values in key value pair
C) Shared preferences entries deleted using remove and commit function call
D) All
- 5) _____ is true with respect to sqlite.
A) Sqlite is open source dbms B) Sqlite is client side dbms
C) Reading of views is supported D) All of the above

P.T.O.



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Saturday, 25-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Describe and explain Android App development flow.
 - b) Differentiate between Activity component and Service component in Android.
 - c) Explain event-handling paradigm with the help of an UI element.
 - d) Define and explain Broadcast Receiver component in Android with example.
3. Attempt **any one** : **(1×8=8)**
- a) Write a short note on :
 - i) TelephonyManager
 - ii) SmsManager in Android
 - b) Explain Service life-cycle states and respective callback methods.
4. Attempt **any one** : **(1×8=8)**
- a) What is notification in Android ? Explain categories of notifications and advantages of using notification. Define the procedure to create notifications.
 - b) Explain internal details of “Hello World” first Android application in detail with programming components, folder structure and resources used.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) What is relational data ? Explain characteristics/features of Sqlite.
 - b) Write a note on Canvas and Drawable.
 - c) How camera can be accessed in android program ? Explain with necessary classes and methods.
 - d) Explain use of position sensors.

Set R



6. Attempt **any one** : **(1×8=8)**
- a) Explain all tools used during app uploading procedure. Explain steps to upload app on play store.
 - b) How files on internal and external storage are operated in android ? Explain with example.
7. Attempt **any one** : **(1×8=8)**
- a) How multimedia is accessed in android (audio and video) ? Explain with example.
 - b) What is animation ? Explain drawable and view animation in detail.
-



SLR-TJ – 320

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

Set	S
-----	---

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Saturday, 25-11-2017
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 answer :

(14×1=14)

- 1) _____ is method to get internal storage directory.
A) getFilesDir() B) getFilesDirectory()
C) getInternalFilesDirectory D) None of the above
- 2) _____ widget is useful to produce drawable animation effect.
A) ImageView B) VideoView
C) Both A and B D) None of the above
- 3) _____ property in xml file can be used to enlarge or compress object in View animation.
A) FromXScale, toXScale B) fromAlpha, toAlpha
C) fromDegrees, toDegrees D) None of the above
- 4) _____ method in Cursor returns number of rows in selection query result set.
A) getColumnCount B) getCount
C) c.getRowCount D) none of the above

P.T.O.



- 5) _____ tool is used to create certificate for mobile application.
A) keytool B) jarsigner
C) both D) none of the above
- 6) Which tool converts class files to Dalvik Executable files ?
A) apk builder B) jar signer
C) dex D) none of the above
- 7) Mobility Panorama classified into _____ landscape.
A) Consumer and Enterprise B) Logical and Physical
C) Mobile and Enterprise D) None of the above
- 8) IntentService is the subclass of the _____ class.
A) Activity B) Content C) Context D) Service
- 9) A device with Android installed is needed to develop apps for Android
A) True B) False
- 10) Which operating system is used as the base of the Android stack ?
A) Linux B) Windows C) Java D) XML
- 11) Java source code is directly run on the Android device
A) True B) False
- 12) The _____ XML file contains all the text that your application uses.
A) stack.xml B) text.xml C) string.xml D) stringxml.xml
- 13) Following is true with respect to shared preferences
A) It is xml file
B) It stores values in key value pair
C) Shared preferences entries deleted using remove and commit function call
D) All
- 14) _____ is true with respect to sqlite.
A) Sqlite is open source dbms B) Sqlite is client side dbms
C) Reading of views is supported D) All of the above
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Saturday, 25-11-2017
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Describe and explain Android App development flow.
 - b) Differentiate between Activity component and Service component in Android.
 - c) Explain event-handling paradigm with the help of an UI element.
 - d) Define and explain Broadcast Receiver component in Android with example.
3. Attempt **any one** : **(1×8=8)**
- a) Write a short note on :
 - i) TelephonyManager
 - ii) SmsManager in Android
 - b) Explain Service life-cycle states and respective callback methods.
4. Attempt **any one** : **(1×8=8)**
- a) What is notification in Android ? Explain categories of notifications and advantages of using notification. Define the procedure to create notifications.
 - b) Explain internal details of “Hello World” first Android application in detail with programming components, folder structure and resources used.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) What is relational data ? Explain characteristics/features of Sqlite.
 - b) Write a note on Canvas and Drawable.
 - c) How camera can be accessed in android program ? Explain with necessary classes and methods.
 - d) Explain use of position sensors.



6. Attempt **any one** : **(1×8=8)**
- a) Explain all tools used during app uploading procedure. Explain steps to upload app on play store.
 - b) How files on internal and external storage are operated in android ? Explain with example.
7. Attempt **any one** : **(1×8=8)**
- a) How multimedia is accessed in android (audio and video) ? Explain with example.
 - b) What is animation ? Explain drawable and view animation in detail.
-



SLR-TJ – 322

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

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

T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
Self Learning Module – II (HSS/Technical)
TOOLS FOR COMPUTER ARCHITECTURE

Day and Date : Monday, 27-11-2017

Max. Marks : 50

Time : 10.00 a.m. to 12.00 noon

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) **Solve questions 2, 3, 4.**

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct alternatives :

10

1) Which of the following are mnemonic of ARC instruction set ?

- | | |
|----------|-----------------|
| a) ld | b) st |
| c) andcc | d) All of these |

2) The _____ pseudo-op instructs the assembler to mark a symbol as being available to other object modules during the linking phase.

- | | |
|-----------|-----------|
| a) Global | b) Symbol |
| c) Extern | d) Equ |

3) The ARC and SPARC are _____ machines are nearly all general purpose computers.

- | | |
|---------------------|---------------------|
| a) One's complement | b) Two's complement |
| c) Both a) and b) | d) None of these |

4) Which of the following are not mnemonic of ARC instruction set ?

- | | |
|---------|--------|
| a) bneg | b) be |
| c) bvs | d) occ |

P.T.O.



- 5) The process of translating an assembly language program into a machine language program is referred to as the _____
- a) Assembly process
 - b) Compiler
 - c) Both a) and b)
 - d) None of these
- 6) DLL stands for _____ in linking and loading of ARC processor.
- a) Data link libraries
 - b) Data path line libraries
 - c) Dynamic link libraries
 - d) None of these
- 7) Which of the following are main simulator controls ?
- a) Step
 - b) Edit
 - c) Load
 - d) All of these
- 8) Which of the following instructions are not recognized by ARC tools ?
- a) ldsh
 - b) ldub
 - c) lduh
 - d) ldmh
- 9) What is the meaning of bvs Mnemonic ?
- a) Branch on overflow
 - b) Branch always
 - c) Branch on sign flag
 - d) Branch on shift
- 10) Which of the following are mnemonics of ARC instruction set ?
- a) bneg
 - b) be
 - c) bvs
 - d) All of these
-



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

T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
Self Learning Module – II (HSS/Technical)
TOOLS FOR COMPUTER ARCHITECTURE

Day and Date : Monday, 27-11-2017

Marks : 40

Time : 10.00 a.m. to 12.00 noon

Instruction : Solve questions 2, 3, 4.

2. Answer **any four** : **(5x4)**

- a) Which are the types of instruction sets available in RISC computer.
- b) Explain linking and loading.
- c) Describe the assembly process.
- 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 ? Give any example.

3. Write FPGA based VHDL program for Ripple-carry Adder. **10**

OR

Explain ARC processor and its architecture.

4. Write FPGA based VHDL program for Carry-look ahead Adder. **10**

OR

Write FPGA based VHDL program for Arithmetic and logical unit.



SLR-TJ – 322

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

Set	Q
-----	---

T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
Self Learning Module – II (HSS/Technical)
TOOLS FOR COMPUTER ARCHITECTURE

Day and Date : Monday, 27-11-2017

Max. Marks : 50

Time : 10.00 a.m. to 12.00 noon

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) **Solve questions 2, 3, 4.**

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct alternatives :

10

1) What is the meaning of bvs Mnemonic ?

- | | |
|------------------------|--------------------|
| a) Branch on overflow | b) Branch always |
| c) Branch on sign flag | d) Branch on shift |

2) Which of the following are mnemonic of ARC instruction set ?

- | | |
|---------|-----------------|
| a) bneg | b) be |
| c) bvs | d) All of these |

3) Which of the following are main simulator controls ?

- | | |
|---------|-----------------|
| a) Step | b) Edit |
| c) Load | d) All of these |

4) Which of the following instructions are not recognized by ARC tools ?

- | | |
|---------|---------|
| a) ldsh | b) ldub |
| c) lduh | d) ldmh |

P.T.O.



- 5) Which of the following are mnemonic of ARC instruction set ?
- a) ld
 - b) st
 - c) andcc
 - d) All of these
- 6) The _____ pseudo-op instructs the assembler to mark a symbol as being available to other object modules during the linking phase.
- a) Global
 - b) Symbol
 - c) Extern
 - d) Equ
- 7) The ARC and SPARC are _____ machines are nearly all general purpose computers.
- a) One's complement
 - b) Two's complement
 - c) Both a) and b)
 - d) None of these
- 8) Which of the following are not mnemonic of ARC instruction set ?
- a) bneg
 - b) be
 - c) bvs
 - d) occ
- 9) The process of translating as assembly language program into a machine language program is referred to as the _____
- a) Assembly process
 - b) Compiler
 - c) Both a) and b)
 - d) None of these
- 10) DLL stands for _____ in linking and loading of ARC processor.
- a) Data link libraries
 - b) Data path line libraries
 - c) Dynamic link libraries
 - d) None of these
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
Self Learning Module – II (HSS/Technical)
TOOLS FOR COMPUTER ARCHITECTURE**

Day and Date : Monday, 27-11-2017
Time : 10.00 a.m. to 12.00 noon

Marks : 40

Instruction : Solve questions 2, 3, 4.

2. Answer **any four** : **(5x4)**

- a) Which are the types of instruction sets available in RISC computer.
- b) Explain linking and loading.
- c) Describe the assembly process.
- 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 ? Give any example.

3. Write FPGA based VHDL program for Ripple-carry Adder. **10**

OR

Explain ARC processor and its architecture.

4. Write FPGA based VHDL program for Carry-look ahead Adder. **10**

OR

Write FPGA based VHDL program for Arithmetic and logical unit.



SLR-TJ – 322

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

Set	R
-----	---

T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
Self Learning Module – II (HSS/Technical)
TOOLS FOR COMPUTER ARCHITECTURE

Day and Date : Monday, 27-11-2017

Max. Marks : 50

Time : 10.00 a.m. to 12.00 noon

- 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) **Solve questions 2, 3, 4.**

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct alternatives :

10

- 1) The process of translating as assembly language program into a machine language program is referred to as the _____
- a) Assembly process b) Compiler
c) Both a) and b) d) None of these
- 2) DLL stands for _____ in linking and loading of ARC processor.
- a) Data link libraries b) Data path line libraries
c) Dynamic link libraries d) None of these
- 3) What is the meaning of bvs Mnemonic ?
- a) Branch on overflow b) Branch always
c) Branch on sign flag d) Branch on shift
- 4) Which of the following are mnemonic of ARC instruction set ?
- a) bneg b) be
c) bvs d) All of these

P.T.O.



- 5) The ARC and SPARC are _____ machines are nearly all general purpose computers.
- a) One's complement b) Two's complement
c) Both a) and b) d) None of these
- 6) Which of the following are not mnemonic of ARC instruction set ?
- a) bneg b) be
c) bvs d) occ
- 7) Which of the following are mnemonic of ARC instruction set ?
- a) ld b) st
c) andcc d) All of these
- 8) The _____ pseudo-op instructs the assembler to mark a symbol as being available to other object modules during the linking phase.
- a) Global b) Symbol
c) Extern d) Equ
- 9) Which of the following are main simulator controls ?
- a) Step b) Edit
c) Load d) All of these
- 10) Which of the following instructions are not recognized by ARC tools ?
- a) ldsh b) ldub
c) lduh d) ldmh
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
Self Learning Module – II (HSS/Technical)
TOOLS FOR COMPUTER ARCHITECTURE**

Day and Date : Monday, 27-11-2017
Time : 10.00 a.m. to 12.00 noon

Marks : 40

Instruction : Solve questions 2, 3, 4.

2. Answer **any four** : **(5x4)**

- a) Which are the types of instruction sets available in RISC computer.
- b) Explain linking and loading.
- c) Describe the assembly process.
- 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 ? Give any example.

3. Write FPGA based VHDL program for Ripple-carry Adder. **10**

OR

Explain ARC processor and its architecture.

4. Write FPGA based VHDL program for Carry-look ahead Adder. **10**

OR

Write FPGA based VHDL program for Arithmetic and logical unit.



SLR-TJ – 322

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

Set	S
-----	---

T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
Self Learning Module – II (HSS/Technical)
TOOLS FOR COMPUTER ARCHITECTURE

Day and Date : Monday, 27-11-2017

Max. Marks : 50

Time : 10.00 a.m. to 12.00 noon

- 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) **Solve questions 2, 3, 4.**

MCQ/Objective Type Questions

Duration : 15 Minutes

Marks : 10

1. Choose the correct alternatives :

10

- 1) The ARC and SPARC are _____ machines are nearly all general purpose computers.
- a) One's complement b) Two's complement
c) Both a) and b) d) None of these
- 2) Which of the following are not mnemonic of ARC instruction set ?
- a) bneg b) be
c) bvs d) occ
- 3) The process of translating as assembly language program into a machine language program is referred to as the _____
- a) Assembly process b) Compiler
c) Both a) and b) d) None of these
- 4) DLL stands for _____ in linking and loading of ARC processor.
- a) Data link libraries b) Data path line libraries
c) Dynamic link libraries d) None of these

P.T.O.



- 5) Which of the following are main simulator controls ?
- a) Step
 - b) Edit
 - c) Load
 - d) All of these
- 6) Which of the following instructions are not recognized by ARC tools ?
- a) ldsh
 - b) ldub
 - c) lduh
 - d) ldmh
- 7) What is the meaning of bvs Mnemonic ?
- a) Branch on overflow
 - b) Branch always
 - c) Branch on sign flag
 - d) Branch on shift
- 8) Which of the following are mnemonic of ARC instruction set ?
- a) bneg
 - b) be
 - c) bvs
 - d) All of these
- 9) Which of the following are mnemonic of ARC instruction set ?
- a) ld
 - b) st
 - c) andcc
 - d) All of these
- 10) The _____ pseudo-op instructs the assembler to mark a symbol as being available to other object modules during the linking phase.
- a) Global
 - b) Symbol
 - c) Extern
 - d) Equ
-



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

T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
Self Learning Module – II (HSS/Technical)
TOOLS FOR COMPUTER ARCHITECTURE

Day and Date : Monday, 27-11-2017

Marks : 40

Time : 10.00 a.m. to 12.00 noon

Instruction : Solve questions 2, 3, 4.

2. Answer **any four** : **(5x4)**

- a) Which are the types of instruction sets available in RISC computer.
- b) Explain linking and loading.
- c) Describe the assembly process.
- 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 ? Give any example.

3. Write FPGA based VHDL program for Ripple-carry Adder. **10**

OR

Explain ARC processor and its architecture.

4. Write FPGA based VHDL program for Carry-look ahead Adder. **10**

OR

Write FPGA based VHDL program for Arithmetic and logical unit.



SLR-TJ – 323

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

Set

P

**T.E. (Information Technology) (Part – II) (CGPA)
Examination, 2017
Self Learning Module – II
HSS/Technical : COMPILER DEVELOPMENT TOOLS**

Day and Date : Monday, 27-11-2017
Time : 10.00 a.m. to 12.00 noon

Total Marks : 50

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) Figures to the **right** indicate **full** marks.
 - 3) Assume **suitable** data **where** necessary.
 - 4) Q. No. **1** is **compulsory**. It should be solved 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

Marks : 10

1. Choose the correct answer : **10**
- 1) The _____ section of LEX file defines macros and imports header files written in C.
a) Pass
b) Definition
c) Parse
d) Pattern
 - 2) YACC is a _____ parser generator, generating a parser.
a) LL
b) LL(0)
c) LALR
d) LR(1)
 - 3) yytext is a pointer to the matched string (NULL-terminated) and _____ is the length of the matched string.
a) Yyleng
b) Yylex
c) Yywrap
d) Yypop
 - 4) Input of Lex is
a) Set to regular expression
b) Statement
c) Numeric data
d) ASCII data
 - 5) Yacc semantic action is a sequence of
a) Tokens
b) Expression
c) C statement
d) Rules

P.T.O.



- 6) Which of the following software tool is parser generator ?
- a) Lex
 - b) Yacc
 - c) Both a) and b)
 - d) None of these
- 7) Function yywrap is called by _____ when input is exhausted.
- a) Lex
 - b) YACC
 - c) COMP
 - d) PPNN
- 8) A Lex compiler generates
- a) Lex object code
 - b) Transition tables
 - c) C tokens
 - d) None of the above
- 9) The lexical analyzer takes _____ as input and produces a stream of _____ as output.
- a) Source program, tokens
 - b) Token, source program
 - c) Both a) and b)
 - d) None of the above
- 10) Which of the following is used for grouping of characters into tokens ?
- a) Parser
 - b) Code optimization
 - c) Code generator
 - d) Lexical analyser
-



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

**T.E. (Information Technology) (Part – II) (CGPA)
Examination, 2017
Self Learning Module – II
HSS/Technical : COMPILER DEVELOPMENT TOOLS**

Day and Date : Monday, 27-11-2017
Time : 10.00 a.m. to 12.00 noon

Marks : 40

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

2. Answer the following :
- a) How is LEX interfaced with YACC ? Draw necessary block diagrams. **10**
 - b) Compare between specifications and declarations with illustrations in LEX. **10**
3. Answer the following :
- a) How are conflicts dealt with in YACC ? Illustrate. **5**
 - b) Write a LEX specification for a Grammar of 'C' language and create a parser using YACC which will parse the strings generated. **15**
-



SLR-TJ – 323

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

Set

Q

**T.E. (Information Technology) (Part – II) (CGPA)
Examination, 2017
Self Learning Module – II
HSS/Technical : COMPILER DEVELOPMENT TOOLS**

Day and Date : Monday, 27-11-2017
Time : 10.00 a.m. to 12.00 noon

Total Marks : 50

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) Figures to the **right** indicate **full** marks.
 - 3) Assume **suitable** data **where** necessary.
 - 4) Q. No. **1** is **compulsory**. It should be solved 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

Marks : 10

1. Choose the correct answer : **10**
- 1) The lexical analyzer takes _____ as input and produces a stream of _____ as output.
 - a) Source program, tokens
 - b) Token, source program
 - c) Both a) and b)
 - d) None of the above
 - 2) Which of the following is used for grouping of characters into tokens ?
 - a) Parser
 - b) Code optimization
 - c) Code generator
 - d) Lexical analyser
 - 3) Function yywrap is called by _____ when input is exhausted.
 - a) Lex
 - b) YACC
 - c) COMP
 - d) PPNN
 - 4) A Lex compiler generates
 - a) Lex object code
 - b) Transition tables
 - c) C tokens
 - d) None of the above
 - 5) The _____ section of LEX file defines macros and imports header files written in C.
 - a) Pass
 - b) Definition
 - c) Parse
 - d) Pattern

P.T.O.



- 6) YACC is a _____ parser generator, generating a parser.
- | | |
|---------|----------|
| a) LL | b) LL(0) |
| c) LALR | d) LR(1) |
- 7) yytext is a pointer to the matched string (NULL-terminated) and _____ is the length of the matched string.
- | | |
|-----------|----------|
| a) Yyleng | b) Yylex |
| c) Yywrap | d) Yypop |
- 8) Input of Lex is
- | | |
|------------------------------|---------------|
| a) Set to regular expression | b) Statement |
| c) Numeric data | d) ASCII data |
- 9) Yacc semantic action is a sequence of
- | | |
|----------------|---------------|
| a) Tokens | b) Expression |
| c) C statement | d) Rules |
- 10) Which of the following software tool is parser generator ?
- | | |
|-------------------|------------------|
| a) Lex | b) Yacc |
| c) Both a) and b) | d) None of these |
-



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

**T.E. (Information Technology) (Part – II) (CGPA)
Examination, 2017
Self Learning Module – II
HSS/Technical : COMPILER DEVELOPMENT TOOLS**

Day and Date : Monday, 27-11-2017
Time : 10.00 a.m. to 12.00 noon

Marks : 40

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

2. Answer the following :
- a) How is LEX interfaced with YACC ? Draw necessary block diagrams. **10**
 - b) Compare between specifications and declarations with illustrations in LEX. **10**
3. Answer the following :
- a) How are conflicts dealt with in YACC ? Illustrate. **5**
 - b) Write a LEX specification for a Grammar of 'C' language and create a parser using YACC which will parse the strings generated. **15**
-



SLR-TJ – 323

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

Set

R

**T.E. (Information Technology) (Part – II) (CGPA)
Examination, 2017
Self Learning Module – II
HSS/Technical : COMPILER DEVELOPMENT TOOLS**

Day and Date : Monday, 27-11-2017
Time : 10.00 a.m. to 12.00 noon

Total Marks : 50

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) Figures to the **right** indicate **full** marks.
 - 3) Assume **suitable** data **where** necessary.
 - 4) Q. No. **1** is **compulsory**. It should be solved 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

Marks : 10

1. Choose the correct answer : **10**
- 1) Yacc semantic action is a sequence of
 - a) Tokens
 - b) Expression
 - c) C statement
 - d) Rules
 - 2) Which of the following software tool is parser generator ?
 - a) Lex
 - b) Yacc
 - c) Both a) and b)
 - d) None of these
 - 3) The lexical analyzer takes _____ as input and produces a stream of _____ as output.
 - a) Source program, tokens
 - b) Token, source program
 - c) Both a) and b)
 - d) None of the above
 - 4) Which of the following is used for grouping of characters into tokens ?
 - a) Parser
 - b) Code optimization
 - c) Code generator
 - d) Lexical analyser
 - 5) yytext is a pointer to the matched string (NULL-terminated) and _____ is the length of the matched string.
 - a) Yyleng
 - b) Yylex
 - c) Yywrap
 - d) Yypop

P.T.O.



- 6) Input of Lex is
- a) Set to regular expression
 - b) Statement
 - c) Numeric data
 - d) ASCII data
- 7) The _____ section of LEX file defines macros and imports header files written in C.
- a) Pass
 - b) Definition
 - c) Parse
 - d) Pattern
- 8) YACC is a _____ parser generator, generating a parser.
- a) LL
 - b) LL(0)
 - c) LALR
 - d) LR(1)
- 9) Function yywrap is called by _____ when input is exhausted.
- a) Lex
 - b) YACC
 - c) COMP
 - d) PPNN
- 10) A Lex compiler generates
- a) Lex object code
 - b) Transition tables
 - c) C tokens
 - d) None of the above
-



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

**T.E. (Information Technology) (Part – II) (CGPA)
Examination, 2017
Self Learning Module – II
HSS/Technical : COMPILER DEVELOPMENT TOOLS**

Day and Date : Monday, 27-11-2017
Time : 10.00 a.m. to 12.00 noon

Marks : 40

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

2. Answer the following :
- a) How is LEX interfaced with YACC ? Draw necessary block diagrams. **10**
 - b) Compare between specifications and declarations with illustrations in LEX. **10**
3. Answer the following :
- a) How are conflicts dealt with in YACC ? Illustrate. **5**
 - b) Write a LEX specification for a Grammar of 'C' language and create a parser using YACC which will parse the strings generated. **15**
-



SLR-TJ – 323

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

Set

S

T.E. (Information Technology) (Part – II) (CGPA)
Examination, 2017
Self Learning Module – II
HSS/Technical : COMPILER DEVELOPMENT TOOLS

Day and Date : Monday, 27-11-2017
Time : 10.00 a.m. to 12.00 noon

Total Marks : 50

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) Figures to the **right** indicate **full marks.**
 - 3) Assume **suitable data where necessary.**
 - 4) Q. No. **1** is **compulsory.** It should be solved 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

Marks : 10

1. Choose the correct answer : **10**
- 1) yytext is a pointer to the matched string (NULL-terminated) and _____ is the length of the matched string.

a) Yyleng	b) Yylex
c) Yywrap	d) Yypop
 - 2) Input of Lex is

a) Set to regular expression	b) Statement
c) Numeric data	d) ASCII data
 - 3) Yacc semantic action is a sequence of

a) Tokens	b) Expression
c) C statement	d) Rules
 - 4) Which of the following software tool is parser generator ?

a) Lex	b) Yacc
c) Both a) and b)	d) None of these
 - 5) Function yywrap is called by _____ when input is exhausted.

a) Lex	b) YACC
c) COMP	d) PPNN



- 6) A Lex compiler generates
- a) Lex object code
 - b) Transition tables
 - c) C tokens
 - d) None of the above
- 7) The lexical analyzer takes _____ as input and produces a stream of _____ as output.
- a) Source program, tokens
 - b) Token, source program
 - c) Both a) and b)
 - d) None of the above
- 8) Which of the following is used for grouping of characters into tokens ?
- a) Parser
 - b) Code optimization
 - c) Code generator
 - d) Lexical analyser
- 9) The _____ section of LEX file defines macros and imports header files written in C.
- a) Pass
 - b) Definition
 - c) Parse
 - d) Pattern
- 10) YACC is a _____ parser generator, generating a parser.
- a) LL
 - b) LL(0)
 - c) LALR
 - d) LR(1)
-



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

**T.E. (Information Technology) (Part – II) (CGPA)
Examination, 2017
Self Learning Module – II
HSS/Technical : COMPILER DEVELOPMENT TOOLS**

Day and Date : Monday, 27-11-2017
Time : 10.00 a.m. to 12.00 noon

Marks : 40

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

2. Answer the following :
- a) How is LEX interfaced with YACC ? Draw necessary block diagrams. **10**
 - b) Compare between specifications and declarations with illustrations in LEX. **10**
3. Answer the following :
- a) How are conflicts dealt with in YACC ? Illustrate. **5**
 - b) Write a LEX specification for a Grammar of 'C' language and create a parser using YACC which will parse the strings generated. **15**
-



SLR-TJ – 324

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

Set	P
-----	---

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
NETWORK SETUP AND MANAGEMENT (Self Learning)
(HSS/Technical)**

Day and Date : Monday, 27-11-2017

Max. Marks : 50

Time : 10.00 a.m. to 12.00 Noon

- 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. Write the correct answer from option given :

- 1) Where does routing occur within TCP/IP reference model ?
A) application
B) internet
C) network
D) transport
- 2) At which layer of the OSI model does Point to Point Protocol perform ?
A) Layer 2
B) Layer 3
C) Layer 4
D) Layer 1
- 3) What does a Layer 2 switch use to decide where to forward a received frame ?
A) source MAC address
B) source IP address
C) destination IP address
D) destination MAC address
- 4) What are the advantage of VLANs ?
A) VLANs establish broadcast domains in switched networks
B) VLANs allow access to network services based on department, not physical location
C) VLANs can greatly simplify adding, moving or changing hosts on the network
D) All of the above

P.T.O.



- 5) _____ routing table contains information entered manually.
- A) static 2
 - B) dynamic 3
 - C) hierarchical 4
 - D) none
- 6) Which of the following is mainly required to perform encryption ?
- A) Secret key
 - B) Session key
 - C) Digital signature
 - D) None
- 7) Which of the following is used to create robust web site through Java platform ?
- A) Servlet
 - B) Strut
 - C) JSP
 - D) All
- 8) Function of modem is
- A) To perform modulation demodulation
 - B) To convert analog to digital signal
 - C) Both A) and B)
 - D) None of these
- 9) Which of the following is the most prominent types of network ?
- A) Datagram
 - B) TCP/IP
 - C) Packet Switched
 - D) None
- 10) The engine of any Database Management system lies at
- A) Front end
 - B) Back end
 - C) Middleware
 - D) None of these
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
NETWORK SETUP AND MANAGEMENT (Self Learning)
(HSS/Technical)**

Day and Date : Monday, 27-11-2017

Marks : 40

Time : 10.00 a.m. to 12.00 Noon

Solve **any four** from following :

(10×4=40)

- 1) What are different functions of Network Interface Cards ?
 - 2) Discuss regarding different network connection devices.
 - 3) What parameters are required to design a good network ?
 - 4) Discuss in detail regarding functioning of Routers and switches.
 - 5) Explain network management architecture.
 - 6) Write short notes on :
 - i) Fault Management in network
 - ii) Layer 3 switches.
-



- 6) At which layer of the OSI model does Point to Point Protocol perform ?
- A) Layer 2 B) Layer 3
C) Layer 4 D) Layer 1
- 7) What does a Layer 2 switch use to decide where to forward a received frame ?
- A) source MAC address B) source IP address
C) destination IP address D) destination MAC address
- 8) What are the advantage of VLANs ?
- A) VLANs establish broadcast domains in switched networks
B) VLANs allow access to network services based on department, not physical location
C) VLANs can greatly simplify adding, moving or changing hosts on the network
D) All of the above
- 9) _____ routing table contains information entered manually.
- A) static 2 B) dynamic 3
C) hierarchical 4 D) none
- 10) Which of the following is mainly required to perform encryption ?
- A) Secret key B) Session key
C) Digital signature D) None
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
NETWORK SETUP AND MANAGEMENT (Self Learning)
(HSS/Technical)**

Day and Date : Monday, 27-11-2017

Marks : 40

Time : 10.00 a.m. to 12.00 Noon

Solve **any four** from following :

(10×4=40)

- 1) What are different functions of Network Interface Cards ?
 - 2) Discuss regarding different network connection devices.
 - 3) What parameters are required to design a good network ?
 - 4) Discuss in detail regarding functioning of Routers and switches.
 - 5) Explain network management architecture.
 - 6) Write short notes on :
 - i) Fault Management in network
 - ii) Layer 3 switches.
-



SLR-TJ – 324

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

Set **R**

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
NETWORK SETUP AND MANAGEMENT (Self Learning)
(HSS/Technical)**

Day and Date : Monday, 27-11-2017

Max. Marks : 50

Time : 10.00 a.m. to 12.00 Noon

- 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. Write the correct answer from option given :

- 1) _____ routing table contains information entered manually.
A) static 2 B) dynamic 3
C) hierarchical 4 D) none
- 2) Which of the following is mainly required to perform encryption ?
A) Secret key B) Session key
C) Digital signature D) None
- 3) Which of the following is the most prominent types of network ?
A) Datagram B) TCP/IP
C) Packet Switched D) None
- 4) The engine of any Database Management system lies at
A) Front end B) Back end
C) Middleware D) None of these
- 5) What does a Layer 2 switch use to decide where to forward a received frame ?
A) source MAC address B) source IP address
C) destination IP address D) destination MAC address

P.T.O.



- 6) What are the advantage of VLANs ?
- A) VLANs establish broadcast domains in switched networks
 - B) VLANs allow access to network services based on department, not physical location
 - C) VLANs can greatly simplify adding, moving or changing hosts on the network
 - D) All of the above
- 7) Where does routing occur within TCP/IP reference model ?
- A) application
 - B) internet
 - C) network
 - D) transport
- 8) At which layer of the OSI model does Point to Point Protocol perform ?
- A) Layer 2
 - B) Layer 3
 - C) Layer 4
 - D) Layer 1
- 9) Which of the following is used to create robust web site through Java platform ?
- A) Servlet
 - B) Strut
 - C) JSP
 - D) All
- 10) Function of modem is
- A) To perform modulation demodulation
 - B) To convert analog to digital signal
 - C) Both A) and B)
 - D) None of these
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
NETWORK SETUP AND MANAGEMENT (Self Learning)
(HSS/Technical)**

Day and Date : Monday, 27-11-2017

Marks : 40

Time : 10.00 a.m. to 12.00 Noon

Solve **any four** from following :

(10×4=40)

- 1) What are different functions of Network Interface Cards ?
 - 2) Discuss regarding different network connection devices.
 - 3) What parameters are required to design a good network ?
 - 4) Discuss in detail regarding functioning of Routers and switches.
 - 5) Explain network management architecture.
 - 6) Write short notes on :
 - i) Fault Management in network
 - ii) Layer 3 switches.
-



SLR-TJ – 324

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

Set	S
-----	---

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
NETWORK SETUP AND MANAGEMENT (Self Learning)
(HSS/Technical)**

Day and Date : Monday, 27-11-2017

Max. Marks : 50

Time : 10.00 a.m. to 12.00 Noon

- 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. Write the correct answer from option given :

- 1) What does a Layer 2 switch use to decide where to forward a received frame ?
A) source MAC address B) source IP address
C) destination IP address D) destination MAC address
- 2) What are the advantages of VLANs ?
A) VLANs establish broadcast domains in switched networks
B) VLANs allow access to network services based on department, not physical location
C) VLANs can greatly simplify adding, moving or changing hosts on the network
D) All above
- 3) _____ routing table contains information entered manually.
A) static 2 B) dynamic 3
C) hierarchical 4 D) none
- 4) Which of the following is mainly required to perform encryption ?
A) Secret key B) Session key
C) Digital signature D) None

P.T.O.



- 5) Which of the following is used to create robust web site through Java platform ?
A) Servlet B) Strut C) JSP D) All
- 6) Function of modem is
A) To perform modulation demodulation
B) To convert analog to digital signal
C) Both A) and B)
D) None of these
- 7) Which of the following is the most prominent types of network ?
A) Datagram B) TCP/IP
C) Packet Switched D) None
- 8) The engine of any Database Management system lies at
A) Front end B) Back end
C) Middleware D) None of these
- 9) Where does routing occur within TCP/IP reference model ?
A) application B) internet
C) network D) transport
- 10) At which layer of the OSI model does Point to Point Protocol perform ?
A) Layer 2 B) Layer 3
C) Layer 4 D) Layer 1
-



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

**T.E. (Information Technology) (Part – II) (CGPA) Examination, 2017
NETWORK SETUP AND MANAGEMENT (Self Learning)
(HSS/Technical)**

Day and Date : Monday, 27-11-2017

Marks : 40

Time : 10.00 a.m. to 12.00 Noon

Solve **any four** from following :

(10×4=40)

- 1) What are different functions of Network Interface Cards ?
 - 2) Discuss regarding different network connection devices.
 - 3) What parameters are required to design a good network ?
 - 4) Discuss in detail regarding functioning of Routers and switches.
 - 5) Explain network management architecture.
 - 6) Write short notes on :
 - i) Fault Management in network
 - ii) Layer 3 switches.
-



SLR-TJ – 325

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

Set	P
-----	---

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Wednesday, 13-12-2017
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
 - 2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Main processing device in second generation computer _____
a) Vacuum tubes b) Transistor c) Integrated circuit d) None
- 2) CISC stands for
a) Complex Instruction System Computer
b) Complex Instruction Set Car
c) Complex Instruction Set Computer
d) None of these
- 3) Which is the components of computer ?
a) System Bus b) CPU c) Memory Unit d) All of these
- 4) In computers, subtraction is carried out generally by
a) 1's complement method b) 2's complement method
c) Signed magnitude method d) BCD subtraction method
- 5) The main memory in a Personal Computer (PC) is made of _____
a) Cache memory b) Static RAM
c) Dynamic RAM d) Both a) and b)
- 6) 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
- 7) Virtual memory consists of _____
a) Static RAM b) Dynamic RAM
c) Magnetic memory d) None of these
- 8) Cache memory acts between _____
a) CPU and RAM b) RAM and ROM
c) CPU and Hard Disk d) None of these
- 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%

P.T.O.



- 10) (2FAOC) base 16 is equivalent to _____
a) (195 084) base 10
b) (001011111010 0000 1100) base 2
c) Both a) and b)
d) None of these
- 11) In the memory hierarchy, as the speed of memory access increases the memory size _____
a) Increases
b) Decreases
c) Both
d) None of the above
- 12) The extra time needed to bring the data into memory in case of a miss is called as _____
a) Delay
b) Propagation time
c) Miss penalty
d) None of the above
- 13) One possible technique that is used to increase the bandwidth is _____
a) Memory interleaving
b) Direct mapping
c) Associative mapping
d) None of these
- 14) Coherence means
a) Multiple copies of different data are not available at each level of hierarchy
b) Multiple copies of same data are available at each level of hierarchy
c) Single copy of data is available at only one level of hierarchy
d) Multiple copies of different data are available at only one level of hierarchy
- 15) The bus arbitration is handled by an external circuit in
a) Loosely coupled system
b) Tightly coupled system
c) Tightly and loosely coupled system
d) None of the mentioned
- 16) 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
- 17) _____ allows feedback and feed forward connections, in addition to the streamline connections.
a) Reservation table
b) Linear pipeline processor
c) Non linear pipeline processor
d) None
- 18) The statement that is not true for a pipelined processor is
a) All RAW hazards can be handled by Bypassing
b) All register carried WAR hazards can be eliminated by register renaming
c) By dynamic branch prediction, control hazard penalties can be eliminated
d) All of the above
- 19) Benefits of using a multiprocessor include
a) Multi-tasking inside an application
b) High throughput and/or responsiveness
c) Hardware sharing among CPUs
d) All of the above
- 20) When multiple-instructions are overlapped during execution of program, then function performed is called
a) Multitasking
b) Multiprogramming
c) Hardwired control
d) Pipelining
-



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

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Wednesday, 13-12-2017

Max. Marks : 80

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

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain the evolution of computers with an example.
 - b) Write a short note on fixed point arithmetic with an example.
 - c) Explain Bus-Hierarchical architecture with a neat diagram.
 - d) Write a short note on memory hierarchy.
 - e) Explain briefly multiplier control unit using state table design methods.
3. Attempt **any two** : **(2×10=20)**
- a) Write a flowchart of non restoring algorithm and perform $15/4$ division using non restoring algorithm.
 - b) Design multiplier control unit using delay element method.
 - c) Explain loosely coupled multiprocessor architecture with a neat diagram.
 - d) Explain the Booth's algorithm with an example.

SECTION – II

4. Attempt **any four** : **(4×5=20)**
- a) Explain with neat diagram interleaved memories in detail.
 - b) Explain linear and non linear pipeline.
 - c) Explain direct-Cache mapping method with a neat diagram.
 - d) Write a short note on bubbles in pipeline.
 - e) What is meant by vector processors ?
5. Attempt **any two** : **(2×10=20)**
- a) Explain the FIFO Page Replacement policy in detail.
 - b) What is pipelining ? Explain different types of hazards that occur in pipeline.
 - c) Explain tightly coupled and loosely coupled multiprocessor architecture with a neat diagrams.



SLR-TJ – 325

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

Set	Q
-----	---

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Wednesday, 13-12-2017
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
 - 2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**
- 1) 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
 - 2) _____ allows feedback and feed forward connections, in addition to the streamline connections.
 - a) Reservation table
 - b) Linear pipeline processor
 - c) Non linear pipeline processor
 - d) None
 - 3) The statement that is not true for a pipelined processor is
 - a) All RAW hazards can be handled by Bypassing
 - b) All register carried WAR hazards can be eliminated by register renaming
 - c) By dynamic branch prediction, control hazard penalties can be eliminated
 - d) All of the above
 - 4) Benefits of using a multiprocessor include
 - a) Multi-tasking inside an application
 - b) High throughput and/or responsiveness
 - c) Hardware sharing among CPUs
 - d) All of the above
 - 5) When multiple-instructions are overlapped during execution of program, then function performed is called
 - a) Multitasking
 - b) Multiprogramming
 - c) Hardwired control
 - d) Pipelining
 - 6) Main processing device in second generation computer _____
 - a) Vacuum tubes
 - b) Transistor
 - c) Integrated circuit
 - d) None
 - 7) CISC stands for
 - a) Complex Instruction System Computer
 - b) Complex Instruction Set Car
 - c) Complex Instruction Set Computer
 - d) None of these

P.T.O.



- 8) Which is the components of computer ?
a) System Bus b) CPU c) Memory Unit d) All of these
- 9) In computers, subtraction is carried out generally by
a) 1's complement method b) 2's complement method
c) Signed magnitude method d) BCD subtraction method
- 10) The main memory in a Personal Computer (PC) is made of _____
a) Cache memory b) Static RAM
c) Dynamic RAM d) Both a) and b)
- 11) 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
- 12) Virtual memory consists of _____
a) Static RAM b) Dynamic RAM
c) Magnetic memory d) None of these
- 13) Cache memory acts between _____
a) CPU and RAM b) RAM and ROM
c) CPU and Hard Disk d) None of these
- 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) (2FAOC) base 16 is equivalent to _____
a) (195 084) base 10 b) (001011111010 0000 1100) base 2
c) Both a) and b) d) None of these
- 16) In the memory hierarchy, as the speed of memory access increases the memory size _____
a) Increases b) Decreases
c) Both d) None of the above
- 17) The extra time needed to bring the data into memory in case of a miss is called as _____
a) Delay b) Propagation time
c) Miss penalty d) None of the above
- 18) One possible technique that is used to increase the bandwidth is _____
a) Memory interleaving b) Direct mapping
c) Associative mapping d) None of these
- 19) Coherence means
a) Multiple copies of different data are not available at each level of hierarchy
b) Multiple copies of same data are available at each level of hierarchy
c) Single copy of data is available at only one level of hierarchy
d) Multiple copies of different data are available at only one level of hierarchy
- 20) The bus arbitration is handled by an external circuit in
a) Loosely coupled system b) Tightly coupled system
c) Tightly and loosely coupled system d) None of the mentioned



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

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Wednesday, 13-12-2017

Max. Marks : 80

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

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain the evolution of computers with an example.
 - b) Write a short note on fixed point arithmetic with an example.
 - c) Explain Bus-Hierarchical architecture with a neat diagram.
 - d) Write a short note on memory hierarchy.
 - e) Explain briefly multiplier control unit using state table design methods.
3. Attempt **any two** : **(2×10=20)**
- a) Write a flowchart of non restoring algorithm and perform $15/4$ division using non restoring algorithm.
 - b) Design multiplier control unit using delay element method.
 - c) Explain loosely coupled multiprocessor architecture with a neat diagram.
 - d) Explain the Booth's algorithm with an example.

SECTION – II

4. Attempt **any four** : **(4×5=20)**
- a) Explain with neat diagram interleaved memories in detail.
 - b) Explain linear and non linear pipeline.
 - c) Explain direct-Cache mapping method with a neat diagram.
 - d) Write a short note on bubbles in pipeline.
 - e) What is meant by vector processors ?
5. Attempt **any two** : **(2×10=20)**
- a) Explain the FIFO Page Replacement policy in detail.
 - b) What is pipelining ? Explain different types of hazards that occur in pipeline.
 - c) Explain tightly coupled and loosely coupled multiprocessor architecture with a neat diagrams.



SLR-TJ – 325

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

Set	R
-----	---

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Wednesday, 13-12-2017
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
 - 2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) In the memory hierarchy, as the speed of memory access increases the memory size _____
 - a) Increases
 - b) Decreases
 - c) Both
 - d) None of the above
- 2) The extra time needed to bring the data into memory in case of a miss is called as _____
 - a) Delay
 - b) Propagation time
 - c) Miss penalty
 - d) None of the above
- 3) One possible technique that is used to increase the bandwidth is _____
 - a) Memory interleaving
 - b) Direct mapping
 - c) Associative mapping
 - d) None of these
- 4) Coherence means
 - a) Multiple copies of different data are not available at each level of hierarchy
 - b) Multiple copies of same data are available at each level of hierarchy
 - c) Single copy of data is available at only one level of hierarchy
 - d) Multiple copies of different data are available at only one level of hierarchy
- 5) The bus arbitration is handled by an external circuit in
 - a) Loosely coupled system
 - b) Tightly coupled system
 - c) Tightly and loosely coupled system
 - d) None of the mentioned
- 6) 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
- 7) _____ allows feedback and feed forward connections, in addition to the streamline connections.
 - a) Reservation table
 - b) Linear pipeline processor
 - c) Non linear pipeline processor
 - d) None

P.T.O.



- 8) The statement that is not true for a pipelined processor is
- All RAW hazards can be handled by Bypassing
 - All register carried WAR hazards can be eliminated by register renaming
 - By dynamic branch prediction, control hazard penalties can be eliminated
 - All of the above
- 9) Benefits of using a multiprocessor include
- Multi-tasking inside an application
 - High throughput and/or responsiveness
 - Hardware sharing among CPUs
 - All of the above
- 10) When multiple-instructions are overlapped during execution of program, then function performed is called
- Multitasking
 - Multiprogramming
 - Hardwired control
 - Pipelining
- 11) Main processing device in second generation computer _____
- Vacuum tubes
 - Transistor
 - Integrated circuit
 - None
- 12) CISC stands for
- Complex Instruction System Computer
 - Complex Instruction Set Car
 - Complex Instruction Set Computer
 - None of these
- 13) Which is the components of computer ?
- System Bus
 - CPU
 - Memory Unit
 - All of these
- 14) In computers, subtraction is carried out generally by
- 1's complement method
 - 2's complement method
 - Signed magnitude method
 - BCD subtraction method
- 15) The main memory in a Personal Computer (PC) is made of _____
- Cache memory
 - Static RAM
 - Dynamic RAM
 - Both a) and b)
- 16) Cache memory works on the principle of _____
- Locality of data
 - Locality of memory
 - Locality of reference
 - Locality of reference and memory
- 17) Virtual memory consists of _____
- Static RAM
 - Dynamic RAM
 - Magnetic memory
 - None of these
- 18) Cache memory acts between _____
- CPU and RAM
 - RAM and ROM
 - CPU and Hard Disk
 - None of these
- 19) If memory access takes 20 ns with cache and 110 ns without it, then the ratio (cache uses a 10 ns memory) is _____
- 93%
 - 90%
 - 88%
 - 87%
- 20) (2FAOC) base 16 is equivalent to _____
- (195 084) base 10
 - (001011111010 0000 1100) base 2
 - Both a) and b)
 - None of these



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

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Wednesday, 13-12-2017

Max. Marks : 80

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

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain the evolution of computers with an example.
 - b) Write a short note on fixed point arithmetic with an example.
 - c) Explain Bus-Hierarchical architecture with a neat diagram.
 - d) Write a short note on memory hierarchy.
 - e) Explain briefly multiplier control unit using state table design methods.
3. Attempt **any two** : **(2×10=20)**
- a) Write a flowchart of non restoring algorithm and perform $15/4$ division using non restoring algorithm.
 - b) Design multiplier control unit using delay element method.
 - c) Explain loosely coupled multiprocessor architecture with a neat diagram.
 - d) Explain the Booth's algorithm with an example.

SECTION – II

4. Attempt **any four** : **(4×5=20)**
- a) Explain with neat diagram interleaved memories in detail.
 - b) Explain linear and non linear pipeline.
 - c) Explain direct-Cache mapping method with a neat diagram.
 - d) Write a short note on bubbles in pipeline.
 - e) What is meant by vector processors ?
5. Attempt **any two** : **(2×10=20)**
- a) Explain the FIFO Page Replacement policy in detail.
 - b) What is pipelining ? Explain different types of hazards that occur in pipeline.
 - c) Explain tightly coupled and loosely coupled multiprocessor architecture with a neat diagrams.



SLR-TJ – 325

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

Set	S
-----	---

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Wednesday, 13-12-2017

Max. Marks : 100

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

- Instructions :**
- 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer book Page No. 3. **Each** question carries **one** mark.
 - 2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) 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
- 2) Virtual memory consists of _____
 - a) Static RAM
 - b) Dynamic RAM
 - c) Magnetic memory
 - d) None of these
- 3) Cache memory acts between _____
 - a) CPU and RAM
 - b) RAM and ROM
 - c) CPU and Hard Disk
 - d) None of these
- 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) (2FAOC) base 16 is equivalent to _____
 - a) (195 084) base 10
 - b) (001011111010 0000 1100) base 2
 - c) Both a) and b)
 - d) None of these
- 6) In the memory hierarchy, as the speed of memory access increases the memory size _____
 - a) Increases
 - b) Decreases
 - c) Both
 - d) None of the above
- 7) The extra time needed to bring the data into memory in case of a miss is called as _____
 - a) Delay
 - b) Propagation time
 - c) Miss penalty
 - d) None of the above
- 8) One possible technique that is used to increase the bandwidth is _____
 - a) Memory interleaving
 - b) Direct mapping
 - c) Associative mapping
 - d) None of these

P.T.O.



- 9) Coherence means
- a) Multiple copies of different data are not available at each level of hierarchy
 - b) Multiple copies of same data are available at each level of hierarchy
 - c) Single copy of data is available at only one level of hierarchy
 - d) Multiple copies of different data are available at only one level of hierarchy
- 10) The bus arbitration is handled by an external circuit in
- a) Loosely coupled system
 - b) Tightly coupled system
 - c) Tightly and loosely coupled system
 - d) None of the mentioned
- 11) 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
- 12) _____ allows feedback and feed forward connections, in addition to the streamline connections.
- a) Reservation table
 - b) Linear pipeline processor
 - c) Non linear pipeline processor
 - d) None
- 13) The statement that is not true for a pipelined processor is
- a) All RAW hazards can be handled by Bypassing
 - b) All register carried WAR hazards can be eliminated by register renaming
 - c) By dynamic branch prediction, control hazard penalties can be eliminated
 - d) All of the above
- 14) Benefits of using a multiprocessor include
- a) Multi-tasking inside an application
 - b) High throughput and/or responsiveness
 - c) Hardware sharing among CPUs
 - d) All of the above
- 15) When multiple-instructions are overlapped during execution of program, then function performed is called
- a) Multitasking
 - b) Multiprogramming
 - c) Hardwired control
 - d) Pipelining
- 16) Main processing device in second generation computer _____
- a) Vacuum tubes
 - b) Transistor
 - c) Integrated circuit
 - d) None
- 17) CISC stands for
- a) Complex Instruction System Computer
 - b) Complex Instruction Set Car
 - c) Complex Instruction Set Computer
 - d) None of these
- 18) Which is the components of computer ?
- a) System Bus
 - b) CPU
 - c) Memory Unit
 - d) All of these
- 19) In computers, subtraction is carried out generally by
- a) 1's complement method
 - b) 2's complement method
 - c) Signed magnitude method
 - d) BCD subtraction method
- 20) The main memory in a Personal Computer (PC) is made of _____
- a) Cache memory
 - b) Static RAM
 - c) Dynamic RAM
 - d) Both a) and b)



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

**T.E. (Information Technology) (Part – I) Examination, 2017
COMPUTER ORGANIZATION (Old)**

Day and Date : Wednesday, 13-12-2017

Max. Marks : 80

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

SECTION – I

2. Attempt **any four** : (4×5=20)
- a) Explain the evolution of computers with an example.
 - b) Write a short note on fixed point arithmetic with an example.
 - c) Explain Bus-Hierarchical architecture with a neat diagram.
 - d) Write a short note on memory hierarchy.
 - e) Explain briefly multiplier control unit using state table design methods.
3. Attempt **any two** : (2×10=20)
- a) Write a flowchart of non restoring algorithm and perform $15/4$ division using non restoring algorithm.
 - b) Design multiplier control unit using delay element method.
 - c) Explain loosely coupled multiprocessor architecture with a neat diagram.
 - d) Explain the Booth's algorithm with an example.

SECTION – II

4. Attempt **any four** : (4×5=20)
- a) Explain with neat diagram interleaved memories in detail.
 - b) Explain linear and non linear pipeline.
 - c) Explain direct-Cache mapping method with a neat diagram.
 - d) Write a short note on bubbles in pipeline.
 - e) What is meant by vector processors ?
5. Attempt **any two** : (2×10=20)
- a) Explain the FIFO Page Replacement policy in detail.
 - b) What is pipelining ? Explain different types of hazards that occur in pipeline.
 - c) Explain tightly coupled and loosely coupled multiprocessor architecture with a neat diagrams.



SLR-TJ – 326

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

Set

P

T.E. (IT) Part – II (Old) Examination, 2017
ARTIFICIAL INTELLIGENCE

Day and Date : Friday, 15-12-2017
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 answer :

(20×1=20)

- 1) A perceptron is a
 - a) Feed-forward neural network
 - b) Back-propagation algorithm
 - c) Back-tracking algorithm
 - d) Feed forward-backward algorithm
- 2) Which is true ?
 - a) Not all formal languages are context-free
 - b) All formal languages are context free
 - c) All formal languages are like natural language
 - d) Natural languages are context-oriented free
- 3) Which is not true ?
 - a) The union and concatenation of two context-free languages is context-free
 - b) The reverse of a context-free language is context-free, but the complement need not be
 - c) Every regular language is context-free because it can be described by a regular grammar
 - d) The intersection of a context-free language and a regular language is always context-free
- 4) What is the goal of artificial intelligence ?
 - a) To solve real-world problems
 - b) To solve artificial problems
 - c) To explain various sorts of intelligence
 - d) To extract scientific causes
- 5) An algorithm is complete if
 - a) It terminates with a solution when one exists
 - b) It starts with a solution
 - c) It does not terminate with a solution
 - d) It has a loop
- 6) Which is true regarding BFS ?
 - a) BFS will get trapped exploring a single path
 - b) The entire tree so far been generated must be stored in BFS
 - c) BFS is not guaranteed to find a solution, if exists
 - d) BFS is nothing but Binary First Search
- 7) What is a heuristic function ?
 - a) A function to solve mathematical problems
 - b) A function which takes parameters of type string and returns an integer value
 - c) A function whose return type is nothing
 - d) None of these

P.T.O.



- 8) The traveling salesman problem involves n cities with paths connecting the cities. The time taken for traversing through all the cities, without knowing in advance the length of a minimum tour is
- a) $O(n)$ b) $O(n^2)$ c) $O(n!)$ d) $O(n/2)$
- 9) The problem space of means-end analysis has
- a) An initial state and one or more goal states
b) One or more initial states and one goal state
c) One or more initial states and one or more goal state
d) One initial state and one goal state
- 10) An algorithm A is admissible if
- a) It is not guaranteed to return an optimal solution when one exists
b) It is guaranteed to return an optimal solution when one exists
c) It returns more solutions, but not an optimal one
d) None of the above
- 11) Knowledge may be :
- I. Declarative
II. Procedural
III. Non-procedural
- a) Only I above b) Only II above c) Only III above d) None of these
- 12) In Baye's theorem, what is meant by $P(H_i|E)$?
- a) The probability that hypotheses H_i is true given evidence E
b) The probability that hypotheses H_i is false given evidence E
c) The probability that hypotheses H_i is true given false evidence E
d) The probability that hypotheses H_i is false given false evidence E
- 13) Default reasoning is another type of
- a) Monotonic reasoning b) Analogical reasoning
c) Bitonic reasoning d) None of these
- 14) How many proposition symbols are there in artificial intelligence ?
- a) 1 b) 2 c) 3 d) 4
- 15) How many types of agents are there in artificial intelligence ?
- a) 1 b) 2 c) 3 d) 4
- 16) Semantic networks is
- a) A way of representing knowledge b) Data structure
c) Data type d) None of the mentioned
- 17) How many logical connectives are there in artificial intelligence ?
- a) 2 b) 3 c) 4 d) 5
- 18) Perception involves
- a) Sights, sounds, smell and touch b) Hitting
c) Boxing d) Dancing
- 19) Expert systems use _____ representation for knowledge.
- a) Symbolic b) Mathematical c) Conventional d) None of these
- 20) _____ is a theory of how to represent the kind of knowledge about events that is usually contained in natural language sentences.
- a) Acquisitional knowledge
b) Referential knowledge
c) Conceptual dependency
d) Frames



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

**T.E. (IT) Part – II (Old) Examination, 2017
ARTIFICIAL INTELLIGENCE**

Day and Date : Friday, 15-12-2017
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 frames. Give examples.
 - b) List the phases of resolution.
 - c) State the components of model development in AI.
 - d) What is means ends analysis ? Illustrate.
 - e) Compare between A * and AO* algorithms.
3. Answer **any two** of the following : **(2×5=10)**
- a) How is knowledge represented ? State the different approaches involved.
 - b) State and illustrate the characteristics of AI problems.
 - c) Elaborate on the use of Best First Search Algorithm in searching.
4. Answer **any one** of the following : **10**
- a) What are the steps involved in AI techniques ? Elaborate.
 - b) Elaborate on the strong and weak methods of searching.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is a clause form ? Illustrate.
 - b) How is global ontology established ?
 - c) How does CYC work ? Give examples.
 - d) What is PROLOG ? Illustrate.
 - e) What role does knowledge play in reasoning ? Illustrate.

Set P



6. Answer **any two** of the following : **(2×5=10)**
- a) Elaborate on the use of PROLOG for problem solving.
 - b) List the different logic techniques and compare them.
 - c) Define the following and elaborate :
 - i) Non monotonic reasoning.
 - ii) Heuristic search.
 - iii) Conceptual dependency.
7. Answer **any one** of the following : **10**
- a) How are semantic networks built ? Illustrate.
 - b) Elaborate on the methods used for matching. How are they carried out ?
-



SLR-TJ – 326

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

Set **Q**

**T.E. (IT) Part – II (Old) Examination, 2017
ARTIFICIAL INTELLIGENCE**

Day and Date : Friday, 15-12-2017
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 answer :

(20×1=20)

- 1) Semantic networks is
 - a) A way of representing knowledge
 - b) Data structure
 - c) Data type
 - d) None of the mentioned
- 2) How many logical connectives are there in artificial intelligence ?
 - a) 2
 - b) 3
 - c) 4
 - d) 5
- 3) Perception involves
 - a) Sights, sounds, smell and touch
 - b) Hitting
 - c) Boxing
 - d) Dancing
- 4) Expert systems use _____ representation for knowledge.
 - a) Symbolic
 - b) Mathematical
 - c) Conventional
 - d) None of these
- 5) _____ is a theory of how to represent the kind of knowledge about events that is usually contained in natural language sentences.
 - a) Acquisitional knowledge
 - b) Referential knowledge
 - c) Conceptual dependency
 - d) Frames
- 6) A perceptron is a
 - a) Feed-forward neural network
 - b) Back-propagation algorithm
 - c) Back-tracking algorithm
 - d) Feed forward-backward algorithm
- 7) Which is true ?
 - a) Not all formal languages are context-free
 - b) All formal languages are context free
 - c) All formal languages are like natural language
 - d) Natural languages are context-oriented free
- 8) Which is not true ?
 - a) The union and concatenation of two context-free languages is context-free
 - b) The reverse of a context-free language is context-free, but the complement need not be
 - c) Every regular language is context-free because it can be described by a regular grammar
 - d) The intersection of a context-free language and a regular language is always context-free

P.T.O.



- 9) What is the goal of artificial intelligence ?
a) To solve real-world problems b) To solve artificial problems
c) To explain various sorts of intelligence d) To extract scientific causes
- 10) An algorithm is complete if
a) It terminates with a solution when one exists b) It starts with a solution
c) It does not terminate with a solution d) It has a loop
- 11) Which is true regarding BFS ?
a) BFS will get trapped exploring a single path
b) The entire tree so far been generated must be stored in BFS
c) BFS is not guaranteed to find a solution, if exists
d) BFS is nothing but Binary First Search
- 12) What is a heuristic function ?
a) A function to solve mathematical problems
b) A function which takes parameters of type string and returns an integer value
c) A function whose return type is nothing
d) None of these
- 13) The traveling salesman problem involves n cities with paths connecting the cities. The time taken for traversing through all the cities, without knowing in advance the length of a minimum tour is
a) $O(n)$ b) $O(n^2)$ c) $O(n!)$ d) $O(n/2)$
- 14) The problem space of means-end analysis has
a) An initial state and one or more goal states
b) One or more initial states and one goal state
c) One or more initial states and one or more goal state
d) One initial state and one goal state
- 15) An algorithm A is admissible if
a) It is not guaranteed to return an optimal solution when one exists
b) It is guaranteed to return an optimal solution when one exists
c) It returns more solutions, but not an optimal one
d) None of the above
- 16) Knowledge may be :
I. Declarative
II. Procedural
III. Non-procedural
a) Only I above b) Only II above c) Only III above d) None of these
- 17) In Baye's theorem, what is meant by $P(H_i|E)$?
a) The probability that hypotheses H_i is true given evidence E
b) The probability that hypotheses H_i is false given evidence E
c) The probability that hypotheses H_i is true given false evidence E
d) The probability that hypotheses H_i is false given false evidence E
- 18) Default reasoning is another type of
a) Monotonic reasoning b) Analogical reasoning
c) Bitonic reasoning d) None of these
- 19) How many proposition symbols are there in artificial intelligence ?
a) 1 b) 2 c) 3 d) 4
- 20) How many types of agents are there in artificial intelligence ?
a) 1 b) 2 c) 3 d) 4
-



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

**T.E. (IT) Part – II (Old) Examination, 2017
ARTIFICIAL INTELLIGENCE**

Day and Date : Friday, 15-12-2017
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 frames. Give examples.
 - b) List the phases of resolution.
 - c) State the components of model development in AI.
 - d) What is means ends analysis ? Illustrate.
 - e) Compare between A * and AO* algorithms.
3. Answer **any two** of the following : **(2×5=10)**
- a) How is knowledge represented ? State the different approaches involved.
 - b) State and illustrate the characteristics of AI problems.
 - c) Elaborate on the use of Best First Search Algorithm in searching.
4. Answer **any one** of the following : **10**
- a) What are the steps involved in AI techniques ? Elaborate.
 - b) Elaborate on the strong and weak methods of searching.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is a clause form ? Illustrate.
 - b) How is global ontology established ?
 - c) How does CYC work ? Give examples.
 - d) What is PROLOG ? Illustrate.
 - e) What role does knowledge play in reasoning ? Illustrate.

Set Q



6. Answer **any two** of the following : **(2×5=10)**
- a) Elaborate on the use of PROLOG for problem solving.
 - b) List the different logic techniques and compare them.
 - c) Define the following and elaborate :
 - i) Non monotonic reasoning.
 - ii) Heuristic search.
 - iii) Conceptual dependency.
7. Answer **any one** of the following : **10**
- a) How are semantic networks built ? Illustrate.
 - b) Elaborate on the methods used for matching. How are they carried out ?
-



SLR-TJ – 326

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

Set **R**

T.E. (IT) Part – II (Old) Examination, 2017
ARTIFICIAL INTELLIGENCE

Day and Date : Friday, 15-12-2017
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 answer :

(20×1=20)

- 1) Knowledge may be :
 - I. Declarative
 - II. Procedural
 - III. Non-procedural

a) Only I above b) Only II above c) Only III above d) None of these
- 2) In Baye's theorem, what is meant by $P(H_i|E)$?
 - a) The probability that hypotheses H_i is true given evidence E
 - b) The probability that hypotheses H_i is false given evidence E
 - c) The probability that hypotheses H_i is true given false evidence E
 - d) The probability that hypotheses H_i is false given false evidence E
- 3) Default reasoning is another type of
 - a) Monotonic reasoning
 - b) Analogical reasoning
 - c) Bitonic reasoning
 - d) None of these
- 4) How many proposition symbols are there in artificial intelligence ?
 - a) 1
 - b) 2
 - c) 3
 - d) 4
- 5) How many types of agents are there in artificial intelligence ?
 - a) 1
 - b) 2
 - c) 3
 - d) 4
- 6) Semantic networks is
 - a) A way of representing knowledge
 - b) Data structure
 - c) Data type
 - d) None of the mentioned
- 7) How many logical connectives are there in artificial intelligence ?
 - a) 2
 - b) 3
 - c) 4
 - d) 5
- 8) Perception involves
 - a) Sights, sounds, smell and touch
 - b) Hitting
 - c) Boxing
 - d) Dancing

P.T.O.



- 9) Expert systems use _____ representation for knowledge.
a) Symbolic b) Mathematical c) Conventional d) None of these
- 10) _____ is a theory of how to represent the kind of knowledge about events that is usually contained in natural language sentences.
a) Acquisitional knowledge
b) Referential knowledge
c) Conceptual dependency
d) Frames
- 11) A perceptron is a
a) Feed-forward neural network b) Back-propagation algorithm
c) Back-tracking algorithm d) Feed forward-backward algorithm
- 12) Which is true ?
a) Not all formal languages are context-free b) All formal languages are context free
c) All formal languages are like natural language d) Natural languages are context-oriented free
- 13) Which is not true ?
a) The union and concatenation of two context-free languages is context-free
b) The reverse of a context-free language is context-free, but the complement need not be
c) Every regular language is context-free because it can be described by a regular grammar
d) The intersection of a context-free language and a regular language is always context-free
- 14) What is the goal of artificial intelligence ?
a) To solve real-world problems b) To solve artificial problems
c) To explain various sorts of intelligence d) To extract scientific causes
- 15) An algorithm is complete if
a) It terminates with a solution when one exists b) It starts with a solution
c) It does not terminate with a solution d) It has a loop
- 16) Which is true regarding BFS ?
a) BFS will get trapped exploring a single path
b) The entire tree so far been generated must be stored in BFS
c) BFS is not guaranteed to find a solution, if exists
d) BFS is nothing but Binary First Search
- 17) What is a heuristic function ?
a) A function to solve mathematical problems
b) A function which takes parameters of type string and returns an integer value
c) A function whose return type is nothing
d) None of these
- 18) The traveling salesman problem involves n cities with paths connecting the cities. The time taken for traversing through all the cities, without knowing in advance the length of a minimum tour is
a) $O(n)$ b) $O(n^2)$ c) $O(n!)$ d) $O(n/2)$
- 19) The problem space of means-end analysis has
a) An initial state and one or more goal states
b) One or more initial states and one goal state
c) One or more initial states and one or more goal state
d) One initial state and one goal state
- 20) An algorithm A is admissible if
a) It is not guaranteed to return an optimal solution when one exists
b) It is guaranteed to return an optimal solution when one exists
c) It returns more solutions, but not an optimal one
d) None of the above



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

**T.E. (IT) Part – II (Old) Examination, 2017
ARTIFICIAL INTELLIGENCE**

Day and Date : Friday, 15-12-2017
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 frames. Give examples.
 - b) List the phases of resolution.
 - c) State the components of model development in AI.
 - d) What is means ends analysis ? Illustrate.
 - e) Compare between A * and AO* algorithms.
3. Answer **any two** of the following : **(2×5=10)**
- a) How is knowledge represented ? State the different approaches involved.
 - b) State and illustrate the characteristics of AI problems.
 - c) Elaborate on the use of Best First Search Algorithm in searching.
4. Answer **any one** of the following : **10**
- a) What are the steps involved in AI techniques ? Elaborate.
 - b) Elaborate on the strong and weak methods of searching.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is a clause form ? Illustrate.
 - b) How is global ontology established ?
 - c) How does CYC work ? Give examples.
 - d) What is PROLOG ? Illustrate.
 - e) What role does knowledge play in reasoning ? Illustrate.

Set R



6. Answer **any two** of the following : **(2×5=10)**
- a) Elaborate on the use of PROLOG for problem solving.
 - b) List the different logic techniques and compare them.
 - c) Define the following and elaborate :
 - i) Non monotonic reasoning.
 - ii) Heuristic search.
 - iii) Conceptual dependency.
7. Answer **any one** of the following : **10**
- a) How are semantic networks built ? Illustrate.
 - b) Elaborate on the methods used for matching. How are they carried out ?
-



SLR-TJ – 326

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

Set **S**

T.E. (IT) Part – II (Old) Examination, 2017
ARTIFICIAL INTELLIGENCE

Day and Date : Friday, 15-12-2017
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 answer : (20×1=20)
- 1) Which is true regarding BFS ?
 - a) BFS will get trapped exploring a single path
 - b) The entire tree so far been generated must be stored in BFS
 - c) BFS is not guaranteed to find a solution, if exists
 - d) BFS is nothing but Binary First Search
 - 2) What is a heuristic function ?
 - a) A function to solve mathematical problems
 - b) A function which takes parameters of type string and returns an integer value
 - c) A function whose return type is nothing
 - d) None of these
 - 3) The traveling salesman problem involves n cities with paths connecting the cities. The time taken for traversing through all the cities, without knowing in advance the length of a minimum tour is
 - a) $O(n)$
 - b) $O(n^2)$
 - c) $O(n!)$
 - d) $O(n/2)$
 - 4) The problem space of means-end analysis has
 - a) An initial state and one or more goal states
 - b) One or more initial states and one goal state
 - c) One or more initial states and one or more goal state
 - d) One initial state and one goal state
 - 5) An algorithm A is admissible if
 - a) It is not guaranteed to return an optimal solution when one exists
 - b) It is guaranteed to return an optimal solution when one exists
 - c) It returns more solutions, but not an optimal one
 - d) None of the above
 - 6) Knowledge may be :
 - I. Declarative
 - II. Procedural
 - III. Non-procedural
 - a) Only I above
 - b) Only II above
 - c) Only III above
 - d) None of these

P.T.O.



- 7) In Baye's theorem, what is meant by $P(H_i|E)$?
- The probability that hypotheses H_i is true given evidence E
 - The probability that hypotheses H_i is false given evidence E
 - The probability that hypotheses H_i is true given false evidence E
 - The probability that hypotheses H_i is false given false evidence E
- 8) Default reasoning is another type of
- Monotonic reasoning
 - Analogical reasoning
 - Bitonic reasoning
 - None of these
- 9) How many proposition symbols are there in artificial intelligence ?
- 1
 - 2
 - 3
 - 4
- 10) How many types of agents are there in artificial intelligence ?
- 1
 - 2
 - 3
 - 4
- 11) Semantic networks is
- A way of representing knowledge
 - Data structure
 - Data type
 - None of the mentioned
- 12) How many logical connectives are there in artificial intelligence ?
- 2
 - 3
 - 4
 - 5
- 13) Perception involves
- Sights, sounds, smell and touch
 - Hitting
 - Boxing
 - Dancing
- 14) Expert systems use _____ representation for knowledge.
- Symbolic
 - Mathematical
 - Conventional
 - None of these
- 15) _____ is a theory of how to represent the kind of knowledge about events that is usually contained in natural language sentences.
- Acquisitional knowledge
 - Referential knowledge
 - Conceptual dependency
 - Frames
- 16) A perceptron is a
- Feed-forward neural network
 - Back-propagation algorithm
 - Back-tracking algorithm
 - Feed forward-backward algorithm
- 17) Which is true ?
- Not all formal languages are context-free
 - All formal languages are context free
 - All formal languages are like natural language
 - Natural languages are context-oriented free
- 18) Which is not true ?
- The union and concatenation of two context-free languages is context-free
 - The reverse of a context-free language is context-free, but the complement need not be
 - Every regular language is context-free because it can be described by a regular grammar
 - The intersection of a context-free language and a regular language is always context-free
- 19) What is the goal of artificial intelligence ?
- To solve real-world problems
 - To solve artificial problems
 - To explain various sorts of intelligence
 - To extract scientific causes
- 20) An algorithm is complete if
- It terminates with a solution when one exists
 - It starts with a solution
 - It does not terminate with a solution
 - It has a loop



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

**T.E. (IT) Part – II (Old) Examination, 2017
ARTIFICIAL INTELLIGENCE**

Day and Date : Friday, 15-12-2017
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 frames. Give examples.
 - b) List the phases of resolution.
 - c) State the components of model development in AI.
 - d) What is means ends analysis ? Illustrate.
 - e) Compare between A * and AO* algorithms.
3. Answer **any two** of the following : **(2×5=10)**
- a) How is knowledge represented ? State the different approaches involved.
 - b) State and illustrate the characteristics of AI problems.
 - c) Elaborate on the use of Best First Search Algorithm in searching.
4. Answer **any one** of the following : **10**
- a) What are the steps involved in AI techniques ? Elaborate.
 - b) Elaborate on the strong and weak methods of searching.

SECTION – II

5. Answer briefly **any four** : **(4×5=20)**
- a) What is a clause form ? Illustrate.
 - b) How is global ontology established ?
 - c) How does CYC work ? Give examples.
 - d) What is PROLOG ? Illustrate.
 - e) What role does knowledge play in reasoning ? Illustrate.

Set S



6. Answer **any two** of the following : **(2×5=10)**
- a) Elaborate on the use of PROLOG for problem solving.
 - b) List the different logic techniques and compare them.
 - c) Define the following and elaborate :
 - i) Non monotonic reasoning.
 - ii) Heuristic search.
 - iii) Conceptual dependency.
7. Answer **any one** of the following : **10**
- a) How are semantic networks built ? Illustrate.
 - b) Elaborate on the methods used for matching. How are they carried out ?
-



SLR-TJ – 327

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

Set	P
-----	---

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 18-12-2017
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) Sentinel is used for
 - a) Input buffering
 - b) Indicating eof for each buffer
 - c) eof of line
 - d) All
- 2) For the conversion of NFA to DFA which of the following algorithm is used by the lexical analyzer ?
 - a) DFA simulation
 - b) Subset construction
 - c) Lexical analysis
 - d) NFA simulation algorithm
- 3) Which of the following is not allowed in FIRST and FOLLOW rules ?
 - a) FIRST (α)
 - b) FOLLOW (A)
 - c) FIRST (a)
 - d) FOLLOW (a)
- 4) The ambiguous grammar produces one or more _____
 - a) Left most derivation
 - b) Right most derivation
 - c) Both
 - d) None
- 5) Which of the following represent semantic rules ?
 - a) Syntax directed definition
 - b) Translation scheme
 - c) Both
 - d) None
- 6) Which of the following conflicts cannot arise in LR parsing ?
 - a) Shift-reduce
 - b) Reduce-reduce
 - c) Shift-shift
 - d) All
- 7) Which of the following is not included in an Activation record ?
 - a) Access link
 - b) Dynamic link
 - c) Control link
 - d) None

P.T.O.



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

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 18-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Back end of a compiler.
 - b) Syntax definition for a simple one pass compiler.
 - c) LALR parsing.
 - d) Conversion of regular expression in to CFG ? Convert the regular expression $(a|b)^* baa (a|b)^*$ in to CFG with the steps.
 - e) Synthesized attributes.

3. Attempt **any one** : **10**
- Elaborate the steps for FIRST and FOLLOW rules. Explain its requirement and find the FIRST and FOLLOW for the grammar.

$E \rightarrow TE'$

$E' \rightarrow + TE' \mid \epsilon$

$T \rightarrow FT'$

$T' \rightarrow *FT' \mid \epsilon$

$F \rightarrow (E) \mid id$

OR

What is SDD ? Explain SDD for constructing syntax trees using `mkleaf()` and `mknode()` functions. Give example.

4. Elaborate the model of an LR parser with LR parsing algorithm. **10**

Set P



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Control stack
 - b) Static allocation strategy
 - c) Loop optimization
 - d) Symbol table organization
 - e) Register allocation.
6. Attempt **any one** : **10**
- Elaborate the dynamic storage allocation techniques with the diagram.
- OR
- What are register descriptor and address descriptor ? Elaborate with example.
7. Explain optimization with structure preserving transformations. **10**
-



SLR-TJ – 327

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

Set	Q
-----	---

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 18-12-2017
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) An annotated parse tree is
 - a) A tree with values of only some attributes at nodes
 - b) A tree with attribute values shown at node
 - c) A tree without attribute values at node
 - d) None of the above
- 2) A variable is live if it cannot used subsequently. (State true/false)
- 3) Dominators are used in flow graphs. (State true/false)
- 4) Back patching is the mechanism of subsequent filling of lables. (State true/false)
- 5) If a SDD has only synthesized attributes and inherited attributes then it is called S-attributed tree. (State true/false)
- 6) Sentinel is used for
 - a) Input buffering
 - b) Indicating eof for each buffer
 - c) eof of line
 - d) All
- 7) For the conversion of NFA to DFA which of the following algorithm is used by the lexical analyzer ?
 - a) DFA simulation
 - b) Subset construction
 - c) Lexical analysis
 - d) NFA simulation algorithm
- 8) Which of the following is not allowed in FIRST and FOLLOW rules ?
 - a) FIRST (α)
 - b) FOLLOW (A)
 - c) FIRST (a)
 - d) FOLLOW (a)

P.T.O.



- 9) The ambiguous grammar produces one or more _____
a) Left most derivation b) Right most derivation
c) Both d) None
- 10) Which of the following represent semantic rules ?
a) Syntax directed definition b) Translation scheme
c) Both d) None
- 11) Which of the following conflicts cannot arise in LR parsing ?
a) Shift-reduce b) Reduce-reduce
c) Shift-shift d) All
- 12) Which of the following is not included in an Activation record ?
a) Access link b) Dynamic link c) Control link d) None
- 13) Which of the following is not an addressing mode ?
a) Indirect b) Absolute
c) Indirect-absolute d) Register
- 14) Which of the following not L-attributed definition for $A \rightarrow LM$, $P \rightarrow QR$?
a) $L.i = l(A.i)$ b) $A.s = f(M.s)$
c) $M.i = m(L.i)$ d) $L.i = n(M.i)$
- 15) Which of the following type of graph shows evaluation order ?
a) Dependency graph b) Flow graph
c) Basic block graph d) Recursion graph
- 16) Which of the following is not an addressing mode ?
a) Indirect b) Absolute
c) Indirect-absolute d) Register
- 17) Which of the following phase of the compilation is an optional phase ?
a) Lexical b) Semantic
c) Code optimization d) Code generation
- 18) Which of the following information is not required in code generation ?
a) Flow graphs b) Next-use info
c) Register descriptor d) Parameter descriptor
- 19) The Three-Address-Code for the statement $p = q + r$ by IC generator is
a) $t1 = q + r$ and $p = t1$ b) $p = q + r$
c) $t1 = q + r$ and $t2 = p$ d) All
- 20) Which of the following is the parameter passing method ?
a) Copy-restore b) Call by value
c) Call by reference d) All



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

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 18-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Back end of a compiler.
 - b) Syntax definition for a simple one pass compiler.
 - c) LALR parsing.
 - d) Conversion of regular expression in to CFG ? Convert the regular expression $(a|b)^* baa (a|b)^*$ in to CFG with the steps.
 - e) Synthesized attributes.

3. Attempt **any one** : **10**
- Elaborate the steps for FIRST and FOLLOW rules. Explain its requirement and find the FIRST and FOLLOW for the grammar.

$E \rightarrow TE'$
 $E' \rightarrow + TE' \mid \epsilon$
 $T \rightarrow FT'$
 $T' \rightarrow *FT' \mid \epsilon$
 $F \rightarrow (E) \mid id$

OR

What is SDD ? Explain SDD for constructing syntax trees using `mkleaf()` and `mknode()` functions. Give example.

4. Elaborate the model of an LR parser with LR parsing algorithm. **10**

Set Q



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Control stack
 - b) Static allocation strategy
 - c) Loop optimization
 - d) Symbol table organization
 - e) Register allocation.
6. Attempt **any one** : **10**
- Elaborate the dynamic storage allocation techniques with the diagram.
- OR
- What are register descriptor and address descriptor ? Elaborate with example.
7. Explain optimization with structure preserving transformations. **10**
-



SLR-TJ – 327

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

Set	R
-----	---

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 18-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative : 20

- 1) Which of the following is not an addressing mode ?
 - a) Indirect
 - b) Absolute
 - c) Indirect-absolute
 - d) Register
- 2) Which of the following phase of the compilation is an optional phase ?
 - a) Lexical
 - b) Semantic
 - c) Code optimization
 - d) Code generation
- 3) Which of the following information is not required in code generation ?
 - a) Flow graphs
 - b) Next-use info
 - c) Register descriptor
 - d) Parameter descriptor
- 4) The Three-Address-Code for the statement $p = q + r$ by IC generator is
 - a) $t1 = q + r$ and $p = t1$
 - b) $p = q + r$
 - c) $t1 = q + r$ and $t2 = p$
 - d) All
- 5) Which of the following is the parameter passing method ?
 - a) Copy-restore
 - b) Call by value
 - c) Call by reference
 - d) All
- 6) An annotated parse tree is
 - a) A tree with values of only some attributes at nodes
 - b) A tree with attribute values shown at node
 - c) A tree without attribute values at node
 - d) None of the above

P.T.O.



- 7) A variable is live if it cannot be used subsequently. (State true/false)
- 8) Dominators are used in flow graphs. (State true/false)
- 9) Back patching is the mechanism of subsequent filling of labels. (State true/false)
- 10) If a SDD has only synthesized attributes and inherited attributes then it is called S-attributed tree. (State true/false)
- 11) Sentinel is used for
 - a) Input buffering
 - b) Indicating eof for each buffer
 - c) eof of line
 - d) All
- 12) For the conversion of NFA to DFA which of the following algorithm is used by the lexical analyzer ?
 - a) DFA simulation
 - b) Subset construction
 - c) Lexical analysis
 - d) NFA simulation algorithm
- 13) Which of the following is not allowed in FIRST and FOLLOW rules ?
 - a) FIRST (α)
 - b) FOLLOW (A)
 - c) FIRST (a)
 - d) FOLLOW (a)
- 14) The ambiguous grammar produces one or more _____
 - a) Left most derivation
 - b) Right most derivation
 - c) Both
 - d) None
- 15) Which of the following represent semantic rules ?
 - a) Syntax directed definition
 - b) Translation scheme
 - c) Both
 - d) None
- 16) Which of the following conflicts cannot arise in LR parsing ?
 - a) Shift-reduce
 - b) Reduce-reduce
 - c) Shift-shift
 - d) All
- 17) Which of the following is not included in an Activation record ?
 - a) Access link
 - b) Dynamic link
 - c) Control link
 - d) None
- 18) Which of the following is not an addressing mode ?
 - a) Indirect
 - b) Absolute
 - c) Indirect-absolute
 - d) Register
- 19) Which of the following is not L-attributed definition for $A \rightarrow LM$, $P \rightarrow QR$?
 - a) $L.i = l(A.i)$
 - b) $A.s = f(M.s)$
 - c) $M.i = m(L.i)$
 - d) $L.i = n(M.i)$
- 20) Which of the following type of graph shows evaluation order ?
 - a) Dependency graph
 - b) Flow graph
 - c) Basic block graph
 - d) Recursion graph



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

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 18-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Back end of a compiler.
 - b) Syntax definition for a simple one pass compiler.
 - c) LALR parsing.
 - d) Conversion of regular expression in to CFG ? Convert the regular expression $(a|b)^* baa (a|b)^*$ in to CFG with the steps.
 - e) Synthesized attributes.

3. Attempt **any one** : **10**
- Elaborate the steps for FIRST and FOLLOW rules. Explain its requirement and find the FIRST and FOLLOW for the grammar.

$E \rightarrow TE'$
 $E' \rightarrow + TE' \mid \epsilon$
 $T \rightarrow FT'$
 $T' \rightarrow *FT' \mid \epsilon$
 $F \rightarrow (E) \mid id$

OR

What is SDD ? Explain SDD for constructing syntax trees using `mkleaf()` and `mknode()` functions. Give example.

4. Elaborate the model of an LR parser with LR parsing algorithm. **10**

Set R



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Control stack
 - b) Static allocation strategy
 - c) Loop optimization
 - d) Symbol table organization
 - e) Register allocation.
6. Attempt **any one** : **10**
- Elaborate the dynamic storage allocation techniques with the diagram.
- OR
- What are register descriptor and address descriptor ? Elaborate with example.
7. Explain optimization with structure preserving transformations. **10**
-



SLR-TJ – 327

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

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

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 18-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

20

- 1) Which of the following conflicts cannot arise in LR parsing ?
 - a) Shift-reduce
 - b) Reduce-reduce
 - c) Shift-shift
 - d) All
- 2) Which of the following is not included in an Activation record ?
 - a) Access link
 - b) Dynamic link
 - c) Control link
 - d) None
- 3) Which of the following is not an addressing mode ?
 - a) Indirect
 - b) Absolute
 - c) Indirect-absolute
 - d) Register
- 4) Which of the following not L-attributed definition for $A \rightarrow LM, P \rightarrow QR$?
 - a) $L.i = l(A.i)$
 - b) $A.s = f(M.s)$
 - c) $M.i = m(L.i)$
 - d) $L.i = n(M.i)$
- 5) Which of the following type of graph shows evaluation order ?
 - a) Dependency graph
 - b) Flow graph
 - c) Basic block graph
 - d) Recursion graph
- 6) Which of the following is not an addressing mode ?
 - a) Indirect
 - b) Absolute
 - c) Indirect-absolute
 - d) Register
- 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) Which of the following information is not required in code generation ?
- a) Flow graphs
 - b) Next-use info
 - c) Register descriptor
 - d) Parameter descriptor
- 9) The Three-Address-Code for the statement $p = q + r$ by IC generator is
- a) $t1 = q + r$ and $p = t1$
 - b) $p = q + r$
 - c) $t1 = q + r$ and $t2 = p$
 - d) All
- 10) Which of the following is the parameter passing method ?
- a) Copy-restore
 - b) Call by value
 - c) Call by reference
 - d) All
- 11) An annotated parse tree is
- a) A tree with values of only some attributes at nodes
 - b) A tree with attribute values shown at node
 - c) A tree without attribute values at node
 - d) None of the above
- 12) A variable is live if it cannot used subsequently. (State true/false)
- 13) Dominators are used in flow graphs. (State true/false)
- 14) Back patching is the mechanism of subsequent filling of lables. (State true/false)
- 15) If a SDD has only synthesized attributes and inherited attributes then it is called S-attributed tree. (State true/false)
- 16) Sentinel is used for
- a) Input buffering
 - b) Indicating eof for each buffer
 - c) eof of line
 - d) All
- 17) For the conversion of NFA to DFA which of the following algorithm is used by the lexical analyzer ?
- a) DFA simulation
 - b) Subset construction
 - c) Lexical analysis
 - d) NFA simulation algorithm
- 18) Which of the following is not allowed in FIRST and FOLLOW rules ?
- a) FIRST (α)
 - b) FOLLOW (A)
 - c) FIRST (a)
 - d) FOLLOW (a)
- 19) The ambiguous grammar produces one or more _____
- a) Left most derivation
 - b) Right most derivation
 - c) Both
 - d) None
- 20) Which of the following represent semantic rules ?
- a) Syntax directed definition
 - b) Translation scheme
 - c) Both
 - d) None



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

**T.E. (IT) (Part – II) (Old) Examination, 2017
COMPILER CONSTRUCTION**

Day and Date : Monday, 18-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (Attempt **any 4**) : **20**
- a) Back end of a compiler.
 - b) Syntax definition for a simple one pass compiler.
 - c) LALR parsing.
 - d) Conversion of regular expression in to CFG ? Convert the regular expression $(a|b)^* baa (a|b)^*$ in to CFG with the steps.
 - e) Synthesized attributes.

3. Attempt **any one** : **10**
- Elaborate the steps for FIRST and FOLLOW rules. Explain its requirement and find the FIRST and FOLLOW for the grammar.

$E \rightarrow TE'$
 $E' \rightarrow + TE' \mid \epsilon$
 $T \rightarrow FT'$
 $T' \rightarrow *FT' \mid \epsilon$
 $F \rightarrow (E) \mid id$

OR

What is SDD ? Explain SDD for constructing syntax trees using `mkleaf()` and `mknode()` functions. Give example.

4. Elaborate the model of an LR parser with LR parsing algorithm. **10**

Set S



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Control stack
 - b) Static allocation strategy
 - c) Loop optimization
 - d) Symbol table organization
 - e) Register allocation.
6. Attempt **any one** : **10**
- Elaborate the dynamic storage allocation techniques with the diagram.
- OR
- What are register descriptor and address descriptor ? Elaborate with example.
7. Explain optimization with structure preserving transformations. **10**
-



SLR-TJ – 328

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

Set	P
-----	---

**B.E. (Information Technology) (Part – I) (New – CGPA) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 28-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Assume data if necessary.**
 - 4) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **14**
- 1) Computer input is mapped to humans in ways of perception, processing and memory.
(True/False)
 - 2) Emotions have a host of sensory devices and inputs that cannot be accounted for in a machine.
(True/False)
 - 3) Perception concerns only with
 - a) Color and shape analysis
 - b) Color
 - c) Only shape
 - d) None of these
 - 4) Human's emotions affect every aspect of our cognitive processing.
(True/False)
 - 5) The magnetic and optical disks are related to
 - a) Short-term memory
 - b) Long-term memory
 - c) Both a) and b)
 - d) None of the above
 - 6) The interaction framework has
 - a) 2
 - b) 3
 - c) 4
 - d) 6

P.T.O.



- 7) _____ includes perception, attention, pattern matching, memory, language processing, decision making and problem solving.
a) Cognition b) Perception c) Ergonics d) Memory
- 8) _____ are rich design stories, which can be used and reused throughout design.
a) Scenarios b) Communication
c) Iterative d) Memory
- 9) Which of the following belongs from interaction style ?
a) Command line interface b) Menus
c) Natural language d) All of these
- 10) WIMP stands for
- 11) Which of the following choice of operations or services that can be performed offered on the screen ?
a) Menu b) Screen c) Dialog d) Icons
- 12) There are many definitions for task analysis. But, a simple interpretation is
a) The job and the people doing the job
b) What is the goal and who achieves it
c) Who does what and why
d) The overall task broken into its subtasks and actions
- 13) _____ is an attempt to introduce psychological theory into the informal and subjective walkthrough technique.
a) Goals b) Evaluation
c) Cognitive walkthrough d) Model based evaluation
- 14) _____ require detailed review of a sequence of actions.
a) Code walkthrough b) Cognitive walkthrough
c) Both a) and b) d) None of the above
-



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

**B.E. (Information Technology) (Part – I) (New – CGPA) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 28-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Answer **any four** from the following questions **each** carries **4** marks : **(4×4=16)**
- a) How does user interface design fit within the broader field of human computer interaction ?
 - b) State and explain any two styles of interaction framework.
 - c) Describe in detail any two paradigms for interaction.
 - d) State display device types and their specifications.
 - e) What is virtual reality ? Explain devices for virtual reality.
3. Answer **any one** from the following questions carries **6** marks : **6**
- a) Explain in detail the role of Human Computer Interaction in the software process.
 - b) What is Long term memory ? Mention its types.
4. Answer the following question : **6**
Explain metaphor and ubiquitous computing.

SECTION – II

5. Answer **any four** from the following questions **each** carries **4** marks : **(4×4=16)**
- a) What is evaluation ? Explain goals of evaluation.
 - b) How to choose evaluation method for optimal results ?
 - c) Describe in detail Linguistic models.
 - d) What are the activities involved in cognitive models ?
 - e) What is dialog ? Explain dialog design notations.
6. Answer **any one** from the following questions carries **6** marks : **6**
- a) Explain in detail about cognitive model and its techniques.
 - b) Explain in detail about communication and collaboration models.
7. Answer the following question : **6**
Write a short note on sensor based interaction.



SLR-TJ – 328

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

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

**B.E. (Information Technology) (Part – I) (New – CGPA) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 28-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Assume data if necessary.**
 - 4) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) _____ are rich design stories, which can be used and reused throughout design.
 - a) Scenarios
 - b) Communication
 - c) Iterative
 - d) Memory
- 2) Which of the following belongs from interaction style ?
 - a) Command line interface
 - b) Menus
 - c) Natural language
 - d) All of these
- 3) WIMP stands for
- 4) Which of the following choice of operations or services that can be performed offered on the screen ?
 - a) Menu
 - b) Screen
 - c) Dialog
 - d) Icons
- 5) There are many definitions for task analysis. But, a simple interpretation is
 - a) The job and the people doing the job
 - b) What is the goal and who achieves it
 - c) Who does what and why
 - d) The overall task broken into its subtasks and actions

P.T.O.



- 6) _____ is an attempt to introduce psychological theory into the informal and subjective walkthrough technique.
- a) Goals
 - b) Evaluation
 - c) Cognitive walkthrough
 - d) Model based evaluation
- 7) _____ require detailed review of a sequence of actions.
- a) Code walkthrough
 - b) Cognitive walkthrough
 - c) Both a) and b)
 - d) None of the above
- 8) Computer input is mapped to humans in ways of perception, processing and memory.
(True/False)
- 9) Emotions have a host of sensory devices and inputs that cannot be accounted for in a machine.
(True/False)
- 10) Perception concerns only with
- a) Color and shape analysis
 - b) Color
 - c) Only shape
 - d) None of these
- 11) Human's emotions affect every aspect of our cognitive processing.
(True/False)
- 12) The magnetic and optical disks are related to
- a) Short-term memory
 - b) Long-term memory
 - c) Both a) and b)
 - d) None of the above
- 13) The interaction framework has
- a) 2
 - b) 3
 - c) 4
 - d) 6
- 14) _____ includes perception, attention, pattern matching, memory, language processing, decision making and problem solving.
- a) Cognition
 - b) Perception
 - c) Ergonomics
 - d) Memory
-



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

**B.E. (Information Technology) (Part – I) (New – CGPA) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 28-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Answer **any four** from the following questions **each** carries **4** marks : **(4×4=16)**
- a) How does user interface design fit within the broader field of human computer interaction ?
 - b) State and explain any two styles of interaction framework.
 - c) Describe in detail any two paradigms for interaction.
 - d) State display device types and their specifications.
 - e) What is virtual reality ? Explain devices for virtual reality.
3. Answer **any one** from the following questions carries **6** marks : **6**
- a) Explain in detail the role of Human Computer Interaction in the software process.
 - b) What is Long term memory ? Mention its types.
4. Answer the following question : **6**
Explain metaphor and ubiquitous computing.

SECTION – II

5. Answer **any four** from the following questions **each** carries **4** marks : **(4×4=16)**
- a) What is evaluation ? Explain goals of evaluation.
 - b) How to choose evaluation method for optimal results ?
 - c) Describe in detail Linguistic models.
 - d) What are the activities involved in cognitive models ?
 - e) What is dialog ? Explain dialog design notations.
6. Answer **any one** from the following questions carries **6** marks : **6**
- a) Explain in detail about cognitive model and its techniques.
 - b) Explain in detail about communication and collaboration models.
7. Answer the following question : **6**
Write a short note on sensor based interaction.



SLR-TJ – 328

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

Set	R
-----	---

**B.E. (Information Technology) (Part – I) (New – CGPA) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 28-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Assume data if necessary.**
 - 4) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) The magnetic and optical disks are related to
 - a) Short-term memory
 - b) Long-term memory
 - c) Both a) and b)
 - d) None of the above
- 2) The interaction framework has
 - a) 2
 - b) 3
 - c) 4
 - d) 6
- 3) _____ includes perception, attention, pattern matching, memory, language processing, decision making and problem solving.
 - a) Cognition
 - b) Perception
 - c) Ergonics
 - d) Memory
- 4) _____ are rich design stories, which can be used and reused throughout design.
 - a) Scenarios
 - b) Communication
 - c) Iterative
 - d) Memory
- 5) Which of the following belongs from interaction style ?
 - a) Command line interface
 - b) Menus
 - c) Natural language
 - d) All of these
- 6) WIMP stands for

P.T.O.



- 7) Which of the following choice of operations or services that can be performed offered on the screen ?
a) Menu b) Screen c) Dialog d) Icons
- 8) There are many definitions for task analysis. But, a simple interpretation is
a) The job and the people doing the job
b) What is the goal and who achieves it
c) Who does what and why
d) The overall task broken into its subtasks and actions
- 9) _____ is an attempt to introduce psychological theory into the informal and subjective walkthrough technique.
a) Goals b) Evaluation
c) Cognitive walkthrough d) Model based evaluation
- 10) _____ require detailed review of a sequence of actions.
a) Code walkthrough b) Cognitive walkthrough
c) Both a) and b) d) None of the above
- 11) Computer input is mapped to humans in ways of perception, processing and memory.
(True/False)
- 12) Emotions have a host of sensory devices and inputs that cannot be accounted for in a machine.
(True/False)
- 13) Perception concerns only with
a) Color and shape analysis b) Color
c) Only shape d) None of these
- 14) Human's emotions affect every aspect of our cognitive processing.
(True/False)
-



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

**B.E. (Information Technology) (Part – I) (New – CGPA) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 28-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Answer **any four** from the following questions **each** carries **4** marks : **(4×4=16)**
- a) How does user interface design fit within the broader field of human computer interaction ?
 - b) State and explain any two styles of interaction framework.
 - c) Describe in detail any two paradigms for interaction.
 - d) State display device types and their specifications.
 - e) What is virtual reality ? Explain devices for virtual reality.
3. Answer **any one** from the following questions carries **6** marks : **6**
- a) Explain in detail the role of Human Computer Interaction in the software process.
 - b) What is Long term memory ? Mention its types.
4. Answer the following question : **6**
Explain metaphor and ubiquitous computing.

SECTION – II

5. Answer **any four** from the following questions **each** carries **4** marks : **(4×4=16)**
- a) What is evaluation ? Explain goals of evaluation.
 - b) How to choose evaluation method for optimal results ?
 - c) Describe in detail Linguistic models.
 - d) What are the activities involved in cognitive models ?
 - e) What is dialog ? Explain dialog design notations.
6. Answer **any one** from the following questions carries **6** marks : **6**
- a) Explain in detail about cognitive model and its techniques.
 - b) Explain in detail about communication and collaboration models.
7. Answer the following question : **6**
Write a short note on sensor based interaction.



SLR-TJ – 328

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

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

**B.E. (Information Technology) (Part – I) (New – CGPA) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 28-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Assume data if necessary.**
 - 4) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) WIMP stands for
- 2) Which of the following choice of operations or services that can be performed offered on the screen ?
a) Menu b) Screen c) Dialog d) Icons
- 3) There are many definitions for task analysis. But, a simple interpretation is
a) The job and the people doing the job
b) What is the goal and who achieves it
c) Who does what and why
d) The overall task broken into its subtasks and actions
- 4) _____ is an attempt to introduce psychological theory into the informal and subjective walkthrough technique.
a) Goals b) Evaluation
c) Cognitive walkthrough d) Model based evaluation
- 5) _____ require detailed review of a sequence of actions.
a) Code walkthrough b) Cognitive walkthrough
c) Both a) and b) d) None of the above

P.T.O.



- 6) Computer input is mapped to humans in ways of perception, processing and memory.
(True/False)
- 7) Emotions have a host of sensory devices and inputs that cannot be accounted for in a machine.
(True/False)
- 8) Perception concerns only with
a) Color and shape analysis b) Color
c) Only shape d) None of these
- 9) Human's emotions affect every aspect of our cognitive processing.
(True/False)
- 10) The magnetic and optical disks are related to
a) Short-term memory b) Long-term memory
c) Both a) and b) d) None of the above
- 11) The interaction framework has
a) 2 b) 3 c) 4 d) 6
- 12) _____ includes perception, attention, pattern matching, memory, language processing, decision making and problem solving.
a) Cognition b) Perception c) Ergonomics d) Memory
- 13) _____ are rich design stories, which can be used and reused throughout design.
a) Scenarios b) Communication
c) Iterative d) Memory
- 14) Which of the following belongs from interaction style ?
a) Command line interface b) Menus
c) Natural language d) All of these
-



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

**B.E. (Information Technology) (Part – I) (New – CGPA) Examination, 2017
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 28-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Answer **any four** from the following questions **each** carries **4** marks : **(4×4=16)**
- a) How does user interface design fit within the broader field of human computer interaction ?
 - b) State and explain any two styles of interaction framework.
 - c) Describe in detail any two paradigms for interaction.
 - d) State display device types and their specifications.
 - e) What is virtual reality ? Explain devices for virtual reality.
3. Answer **any one** from the following questions carries **6** marks : **6**
- a) Explain in detail the role of Human Computer Interaction in the software process.
 - b) What is Long term memory ? Mention its types.
4. Answer the following question : **6**
Explain metaphor and ubiquitous computing.

SECTION – II

5. Answer **any four** from the following questions **each** carries **4** marks : **(4×4=16)**
- a) What is evaluation ? Explain goals of evaluation.
 - b) How to choose evaluation method for optimal results ?
 - c) Describe in detail Linguistic models.
 - d) What are the activities involved in cognitive models ?
 - e) What is dialog ? Explain dialog design notations.
6. Answer **any one** from the following questions carries **6** marks : **6**
- a) Explain in detail about cognitive model and its techniques.
 - b) Explain in detail about communication and collaboration models.
7. Answer the following question : **6**
Write a short note on sensor based interaction.



SLR-TJ – 329

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

Set	P
-----	---

**B.E. (IT) (Part – I) (New CGPA) Examination, 2017
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 30-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All questions are compulsory**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
 - 4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers :

- 1) Systems that span all functional areas and focus on executing business processes across the firm are called
 - a) Production applications
 - b) Enterprise applications
 - c) Heuristic applications
 - d) None of these
- 2) Which type of enterprise application is specifically used to help a business increase sales ?
 - a) Steepest – ascent hill climbing
 - b) Simple hill climbing
 - c) Generate and test
 - d) Customer relationship management
- 3) This term refers to the use of digital technology and the Internet to execute the major business processes in an enterprise
 - a) Electronic business
 - b) Constriction verification
 - c) Business satisfaction
 - d) None of these
- 4) Logically related sets of activities that define how business tasks are performed are called
 - a) Market process
 - b) Standard process
 - c) Business processes
 - d) Substrate process

P.T.O.



- 5) Which business function is responsible for providing customer service support ?
a) Sales and marketing b) Commerce
c) Business d) Manufacturing
- 6) Google are using information technology to pursue this generic strategy
a) Market niche b) Product differentiation
c) Intelligence d) Competence
- 7) Locking in customers by making it difficult for them to change to another product is referred to as
a) Switching b) Motion c) Failure d) Heuristic
- 8) When two organizations pool markets and expertise and the relationship results in lower costs and generating profits is known as creating ?
a) Synergies b) Heuristics c) Switching d) None of these
- 9) Which type of system produces reports on a regular schedule in a predetermined format ?
a) MIS b) ESS c) USS d) MMS
- 10) Which type of system is most often used for analyzing data ?
a) MIS b) DSS c) OSS d) GIS
- 11) These systems address non routine decisions requiring judgment, evaluation and insight because there is no agreed-on procedure for arriving at a solution
a) MIS b) ESS c) USS d) MMS
- 12) The set of fundamental assumptions about what products the organization should produce, how and where it should produce them and for whom they should be produced is
a) Organizational culture b) Business culture
c) Home culture d) Enterprise culture
- 13) In postindustrial societies, authority increasingly relied on
a) Human b) People
c) Machine d) Knowledge and competence
- 14) This individual is credited with the development of the five forces competitive model
a) Isaac Newton b) Michael Porter
c) Galileo d) Mathew Smith
-



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

**B.E. (IT) (Part – I) (New CGPA) Examination, 2017
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 30-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Answer **any four** of the following in brief : **16**
- a) What are the five morale dimensions of the information age ?
 - b) What are the contemporary approaches to IS ?
 - c) What changes has technology brought into information systems ?
 - d) What is an ESS ? Who use them ?
 - e) What is a supply chain management system ?
3. Answer **any two** of the following : **12**
- a) What steps are carried out in Ethical analysis of IS ?
 - b) Elaborate on the Potter's competitive forces model to show a competitive advantage.
 - c) What are the components of IT infrastructure ? Elaborate on each component.



SECTION – II

4. Answer **any four** of the following in brief : **16**
- a) What is E-Commerce ?
 - b) State the techniques for managing knowledge.
 - c) How is business value for systems established ?
 - d) How is decision making enhanced ?
 - e) List the steps involved in the building of information systems.
5. Answer **any two** of the following : **12**
- a) How do supply chain management systems coordinate planning, production and Logistics with supplies ?
 - b) How has the Internet changed business models ?
 - c) What are the major types of knowledge work systems and how do they provide value to firms ?
-



SLR-TJ – 329

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

Set	Q
-----	---

**B.E. (IT) (Part – I) (New CGPA) Examination, 2017
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 30-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All questions are compulsory**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
 - 4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers :

- 1) When two organizations pool markets and expertise and the relationship results in lower costs and generating profits is known as creating ?
a) Synergies b) Heuristics c) Switching d) None of these
- 2) Which type of system produces reports on a regular schedule in a predetermined format ?
a) MIS b) ESS c) USS d) MMS
- 3) Which type of system is most often used for analyzing data ?
a) MIS b) DSS c) OSS d) GIS
- 4) These systems address non routine decisions requiring judgment, evaluation and insight because there is no agreed-on procedure for arriving at a solution
a) MIS b) ESS c) USS d) MMS
- 5) The set of fundamental assumptions about what products the organization should produce, how and where it should produce them and for whom they should be produced is
a) Organizational culture b) Business culture
c) Home culture d) Enterprise culture

P.T.O.



- 6) In postindustrial societies, authority increasingly relied on
- a) Human
 - b) People
 - c) Machine
 - d) Knowledge and competence
- 7) This individual is credited with the development of the five forces competitive model
- a) Isaac Newton
 - b) Michael Porter
 - c) Galileo
 - d) Mathew Smith
- 8) Systems that span all functional areas and focus on executing business processes across the firm are called
- a) Production applications
 - b) Enterprise applications
 - c) Heuristic applications
 - d) None of these
- 9) Which type of enterprise application is specifically used to help a business increase sales ?
- a) Steepest – ascent hill climbing
 - b) Simple hill climbing
 - c) Generate and test
 - d) Customer relationship management
- 10) This term refers to the use of digital technology and the Internet to execute the major business processes in an enterprise
- a) Electronic business
 - b) Constriction verification
 - c) Business satisfaction
 - d) None of these
- 11) Logically related sets of activities that define how business tasks are performed are called
- a) Market process
 - b) Standard process
 - c) Business processes
 - d) Substrate process
- 12) Which business function is responsible for providing customer service support ?
- a) Sales and marketing
 - b) Commerce
 - c) Business
 - d) Manufacturing
- 13) Google are using information technology to pursue this generic strategy
- a) Market niche
 - b) Product differentiation
 - c) Intelligence
 - d) Competence
- 14) Locking in customers by making it difficult for them to change to another product is referred to as
- a) Switching
 - b) Motion
 - c) Failure
 - d) Heuristic
-



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

**B.E. (IT) (Part – I) (New CGPA) Examination, 2017
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 30-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Answer **any four** of the following in brief : **16**
- a) What are the five morale dimensions of the information age ?
 - b) What are the contemporary approaches to IS ?
 - c) What changes has technology brought into information systems ?
 - d) What is an ESS ? Who use them ?
 - e) What is a supply chain management system ?
3. Answer **any two** of the following : **12**
- a) What steps are carried out in Ethical analysis of IS ?
 - b) Elaborate on the Potter's competitive forces model to show a competitive advantage.
 - c) What are the components of IT infrastructure ? Elaborate on each component.



SECTION – II

4. Answer **any four** of the following in brief : **16**
- a) What is E-Commerce ?
 - b) State the techniques for managing knowledge.
 - c) How is business value for systems established ?
 - d) How is decision making enhanced ?
 - e) List the steps involved in the building of information systems.
5. Answer **any two** of the following : **12**
- a) How do supply chain management systems coordinate planning, production and Logistics with supplies ?
 - b) How has the Internet changed business models ?
 - c) What are the major types of knowledge work systems and how do they provide value to firms ?
-



SLR-TJ – 329

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

Set	R
-----	---

**B.E. (IT) (Part – I) (New CGPA) Examination, 2017
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 30-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All questions are compulsory**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
 - 4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers :

- 1) Which business function is responsible for providing customer service support ?
a) Sales and marketing b) Commerce
c) Business d) Manufacturing
- 2) Google are using information technology to pursue this generic strategy
a) Market niche b) Product differentiation
c) Intelligence d) Competence
- 3) Locking in customers by making it difficult for them to change to another product is referred to as
a) Switching b) Motion c) Failure d) Heuristic
- 4) When two organizations pool markets and expertise and the relationship results in lower costs and generating profits is known as creating ?
a) Synergies b) Heuristics c) Switching d) None of these
- 5) Which type of system produces reports on a regular schedule in a predetermined format ?
a) MIS b) ESS c) USS d) MMS

P.T.O.



- 6) Which type of system is most often used for analyzing data ?
a) MIS b) DSS c) OSS d) GIS
- 7) These systems address non routine decisions requiring judgment, evaluation and insight because there is no agreed-on procedure for arriving at a solution
a) MIS b) ESS c) USS d) MMS
- 8) The set of fundamental assumptions about what products the organization should produce, how and where it should produce them and for whom they should be produced is
a) Organizational culture b) Business culture
c) Home culture d) Enterprise culture
- 9) In postindustrial societies, authority increasingly relied on
a) Human b) People
c) Machine d) Knowledge and competence
- 10) This individual is credited with the development of the five forces competitive model
a) Isaac Newton b) Michael Porter
c) Galileo d) Mathew Smith
- 11) Systems that span all functional areas and focus on executing business processes across the firm are called
a) Production applications b) Enterprise applications
c) Heuristic applications d) None of these
- 12) Which type of enterprise application is specifically used to help a business increase sales ?
a) Steepest – ascent hill climbing
b) Simple hill climbing
c) Generate and test
d) Customer relationship management
- 13) This term refers to the use of digital technology and the Internet to execute the major business processes in an enterprise
a) Electronic business b) Constriction verification
c) Business satisfaction d) None of these
- 14) Logically related sets of activities that define how business tasks are performed are called
a) Market process b) Standard process
c) Business processes d) Substrate process
-



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

**B.E. (IT) (Part – I) (New CGPA) Examination, 2017
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 30-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Answer **any four** of the following in brief : **16**
- a) What are the five morale dimensions of the information age ?
 - b) What are the contemporary approaches to IS ?
 - c) What changes has technology brought into information systems ?
 - d) What is an ESS ? Who use them ?
 - e) What is a supply chain management system ?
3. Answer **any two** of the following : **12**
- a) What steps are carried out in Ethical analysis of IS ?
 - b) Elaborate on the Potter's competitive forces model to show a competitive advantage.
 - c) What are the components of IT infrastructure ? Elaborate on each component.



SECTION – II

4. Answer **any four** of the following in brief : **16**
- a) What is E-Commerce ?
 - b) State the techniques for managing knowledge.
 - c) How is business value for systems established ?
 - d) How is decision making enhanced ?
 - e) List the steps involved in the building of information systems.
5. Answer **any two** of the following : **12**
- a) How do supply chain management systems coordinate planning, production and Logistics with supplies ?
 - b) How has the Internet changed business models ?
 - c) What are the major types of knowledge work systems and how do they provide value to firms ?
-



SLR-TJ – 329

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

Set	S
-----	---

**B.E. (IT) (Part – I) (New CGPA) Examination, 2017
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 30-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) **All questions are compulsory**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer Book Page No. 3. Each question carries one mark.**
 - 4) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answers :

- 1) Which type of system is most often used for analyzing data ?
a) MIS b) DSS c) OSS d) GIS
- 2) These systems address non routine decisions requiring judgment, evaluation and insight because there is no agreed-on procedure for arriving at a solution
a) MIS b) ESS c) USS d) MMS
- 3) The set of fundamental assumptions about what products the organization should produce, how and where it should produce them and for whom they should be produced is
a) Organizational culture b) Business culture
c) Home culture d) Enterprise culture
- 4) In postindustrial societies, authority increasingly relied on
a) Human b) People
c) Machine d) Knowledge and competence

P.T.O.



- 5) This individual is credited with the development of the five forces competitive model
- a) Isaac Newton
 - b) Michael Porter
 - c) Galileo
 - d) Mathew Smith
- 6) Systems that span all functional areas and focus on executing business processes across the firm are called
- a) Production applications
 - b) Enterprise applications
 - c) Heuristic applications
 - d) None of these
- 7) Which type of enterprise application is specifically used to help a business increase sales ?
- a) Steepest – ascent hill climbing
 - b) Simple hill climbing
 - c) Generate and test
 - d) Customer relationship management
- 8) This term refers to the use of digital technology and the Internet to execute the major business processes in an enterprise
- a) Electronic business
 - b) Constriction verification
 - c) Business satisfaction
 - d) None of these
- 9) Logically related sets of activities that define how business tasks are performed are called
- a) Market process
 - b) Standard process
 - c) Business processes
 - d) Substrate process
- 10) Which business function is responsible for providing customer service support ?
- a) Sales and marketing
 - b) Commerce
 - c) Business
 - d) Manufacturing
- 11) Google are using information technology to pursue this generic strategy
- a) Market niche
 - b) Product differentiation
 - c) Intelligence
 - d) Competence
- 12) Locking in customers by making it difficult for them to change to another product is referred to as
- a) Switching
 - b) Motion
 - c) Failure
 - d) Heuristic
- 13) When two organizations pool markets and expertise and the relationship results in lower costs and generating profits is known as creating ?
- a) Synergies
 - b) Heuristics
 - c) Switching
 - d) None of these
- 14) Which type of system produces reports on a regular schedule in a predetermined format ?
- a) MIS
 - b) ESS
 - c) USS
 - d) MMS



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

**B.E. (IT) (Part – I) (New CGPA) Examination, 2017
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 30-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Answer **any four** of the following in brief : **16**
- a) What are the five morale dimensions of the information age ?
 - b) What are the contemporary approaches to IS ?
 - c) What changes has technology brought into information systems ?
 - d) What is an ESS ? Who use them ?
 - e) What is a supply chain management system ?
3. Answer **any two** of the following : **12**
- a) What steps are carried out in Ethical analysis of IS ?
 - b) Elaborate on the Potter's competitive forces model to show a competitive advantage.
 - c) What are the components of IT infrastructure ? Elaborate on each component.



SECTION – II

4. Answer **any four** of the following in brief : **16**
- a) What is E-Commerce ?
 - b) State the techniques for managing knowledge.
 - c) How is business value for systems established ?
 - d) How is decision making enhanced ?
 - e) List the steps involved in the building of information systems.
5. Answer **any two** of the following : **12**
- a) How do supply chain management systems coordinate planning, production and Logistics with supplies ?
 - b) How has the Internet changed business models ?
 - c) What are the major types of knowledge work systems and how do they provide value to firms ?
-



SLR-TJ – 330

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

Set	P
-----	---

**B.E. (Information Technology) (Part – I) (New) Examination, 2017
ADVANCED DATABASE SYSTEMS (CGPA)**

Day and Date : Monday, 4-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**
3) **All questions are compulsory.**
4) Figures to **right** indicate marks to question.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

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

- 1) Some of the columns of a relation are at different sites is which of the following ?
 - a) Data replication
 - b) Horizontal Fragmentation
 - c) Vertical Fragmentation
 - d) Horizontal and Vertical Fragmentation
- 2) Data that can be modeled as dimension attributes and measure attributes are called _____ data.
 - a) Multi-dimensional
 - b) Single-dimensional
 - c) Measured
 - d) Dimensional
- 3) The generalization of cross-tab which is represented visually is _____ which is also called as data cube.
 - a) Two dimensional cube
 - b) Multidimensional cube
 - c) N-dimensional cube
 - d) Cuboid
- 4) {(item name, color, clothes size), (item name, color), (item name, clothes size), (color, clothes size), (item name), (color), (clothes size), () }
This can be achieved by using which of the following ?
 - a) Group by roll up
 - b) Group by cubic
 - c) Both a and b
 - d) None of the mentioned
- 5) Which of the following is an ordered collection of elements of the same type ?
 - a) set
 - b) bag
 - c) list
 - d) dictionary
- 6) Database objects are almost always transient
 - a) True
 - b) False

P.T.O.



- 7) A goal of data mining includes which of the following ?
- To explain some observed event or condition
 - To confirm that data exists
 - To analyze data for expected relationships
 - To create a new data warehouse
- 8) A heterogeneous 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
- 9) Fact tables are which of the following ?
- Completely denormalized
 - Partially denormalized
 - Completely normalized
 - Partially normalized
- 10) A distributed database can use which of the following strategies ?
- Totally centralized at one location and accessed by many sites
 - Partially or totally replicated across sites
 - Fragmented into segments at different sites
 - All of the above
- 11) $\Pi_{L_1 \cup L_2}(E_1 X_{\theta} E_2) =$
- $\Pi_{L_1} \cup \Pi_{L_2}(E_1 X_{\theta} E_2)$
 - $\Pi_{L_1}(E_1) \cup \Pi_{L_2}(E_2)$
 - $(\Pi_{L_1}(E_1)) X_{\theta} (\Pi_{L_2}(E_2))$
 - $\Pi_{L_1} \cap \Pi_{L_2}(E_1 X_{\theta} E_2)$
- 12) $\sigma_p(E_1 - E_2) =$
- $\sigma_p(E_1)$
 - $\sigma_p(E_2)$
 - $\sigma_p(E_1) - \sigma_p(E_2)$
 - $\sigma_p(E_2) - \sigma_p(E_1)$
- 13) Which of the following is correct explanation of MongoDB processes ?
- mongod.exe is the shell process and mongo.exe is the actual database process
 - mongo.exe is the shell process and mongod.exe is the actual database process
 - mongos.exe is the MongoDB server process needed to run database
 - mongodump.exe can be used to import database backup dump
- 14) Which of the following is not the Demeon process that runs on a hadoop cluster ?
- JobTracker
 - DataNode
 - TaskTracker
 - TaskNode



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

**B.E. (Information Technology) (Part – I) (New) Examination, 2017
ADVANCED DATABASE SYSTEMS (CGPA)**

Day and Date : Monday, 4-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **12**
- 1) Explain how fragmentation, location and replication transparency differ ?
 - 2) State different issues in data server architecture.
 - 3) Explain parallel external merge sort.
 - 4) Explain knowledge discovery process.
 - 5) Explain association rules, support and confidence with example.
3. Attempt **any one** : **8**
- 1) Explain different types of skew generated due to partitioning. Explain different methods to handle skews.
 - 2) Explain any two locking protocols used in distributed environment.
4. Explain Fragment and replicate join and partitioned parallel hash join. **8**

SECTION – II

5. Attempt **any three** : **12**
- 1) Elaborate Bigdata features.
 - 2) Explain Map-reduce functions.
 - 3) Draw possible evaluation plans for the query :
Select salary from instructor where salary < 75000.
 - 4) What statistical information is stored, in database system catalogue ?
 - 5) State difference in object oriented database and object relational database.



6. Attempt **any one** : **8**
- 1) Write down equivalence rules used in query transformations.
 - 2) What is Hadoop used for ? Explain its components and implementation basics.
7. Explain terms with example : Structured type, Type inheritance Table inheritance, Arrays and Multisets, Reference types in SQL. **8**
-



SLR-TJ – 330

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

Set	Q
-----	---

**B.E. (Information Technology) (Part – I) (New) Examination, 2017
ADVANCED DATABASE SYSTEMS (CGPA)**

Day and Date : Monday, 4-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**
3) **All questions are compulsory.**
4) Figures to **right** indicate marks to question.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(14×1=14)

- 1) A heterogeneous 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) Fact tables are which of the following ?
 - a) Completely denormalized
 - b) Partially denormalized
 - c) Completely normalized
 - d) Partially normalized
- 3) A distributed database can use which of the following strategies ?
 - a) Totally centralized at one location and accessed by many sites
 - b) Partially or totally replicated across sites
 - c) Fragmented into segments at different sites
 - d) All of the above
- 4) $\Pi_{L_1 \cup L_2}(E_1 X_{\theta} E_2) =$
 - a) $\Pi_{L_1} \cup \Pi_{L_2}(E_1 X_{\theta} E_2)$
 - b) $\Pi_{L_1}(E_1) \cup \Pi_{L_2}(E_2)$
 - c) $(\Pi_{L_1}(E_1)) X_{\theta} (\Pi_{L_2}(E_2))$
 - d) $\Pi_{L_1} \cap \Pi_{L_2}(E_1 X_{\theta} E_2)$

P.T.O.



- 5) $\sigma_p (E_1 - E_2) =$
- a) $\sigma_p (E_1)$
 - b) $\sigma_p (E_2)$
 - c) $\sigma_p (E_1) - \sigma_p (E_2)$
 - d) $\sigma_p (E_2) - \sigma_p (E_1)$
- 6) Which of the following is correct explanation of MongoDB processes ?
- a) mongod.exe is the shell process and mongo.exe is the actual database process
 - b) mongo.exe is the shell process and mongod.exe is the actual database process
 - c) mongos.exe is the MongoDB server process needed to run database
 - d) mongodump.exe can be used to import database backup dump
- 7) Which of the following is not the Demeon process that runs on a hadoop cluster ?
- a) JobTracker
 - b) DataNode
 - c) TaskTracker
 - d) TaskNode
- 8) Some of the columns of a relation are at different sites is which of the following ?
- a) Data replication
 - b) Horizontal Fragmentation
 - c) Vertical Fragmentation
 - d) Horizontal and Vertical Fragmentation
- 9) Data that can be modeled as dimension attributes and measure attributes are called _____ data.
- a) Multi-dimensional
 - b) Single-dimensional
 - c) Measured
 - d) Dimensional
- 10) The generalization of cross-tab which is represented visually is _____ which is also called as data cube.
- a) Two dimensional cube
 - b) Multidimensional cube
 - c) N-dimensional cube
 - d) Cuboid
- 11) {(item name, color, clothes size), (item name, color), (item name, clothes size), (color, clothes size), (item name), (color), (clothes size), () }
- This can be achieved by using which of the following ?
- a) Group by roll up
 - b) Group by cubic
 - c) Both a and b
 - d) None of the mentioned
- 12) Which of the following is an ordered collection of elements of the same type ?
- a) set
 - b) bag
 - c) list
 - d) dictionary
- 13) Database objects are almost always transient
- a) True
 - b) False
- 14) A goal of data mining includes which of the following ?
- a) To explain some observed event or condition
 - b) To confirm that data exists
 - c) To analyze data for expected relationships
 - d) To create a new data warehouse



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

**B.E. (Information Technology) (Part – I) (New) Examination, 2017
ADVANCED DATABASE SYSTEMS (CGPA)**

Day and Date : Monday, 4-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **12**
- 1) Explain how fragmentation, location and replication transparency differ ?
 - 2) State different issues in data server architecture.
 - 3) Explain parallel external merge sort.
 - 4) Explain knowledge discovery process.
 - 5) Explain association rules, support and confidence with example.
3. Attempt **any one** : **8**
- 1) Explain different types of skew generated due to partitioning. Explain different methods to handle skews.
 - 2) Explain any two locking protocols used in distributed environment.
4. Explain Fragment and replicate join and partitioned parallel hash join. **8**

SECTION – II

5. Attempt **any three** : **12**
- 1) Elaborate Bigdata features.
 - 2) Explain Map-reduce functions.
 - 3) Draw possible evaluation plans for the query :
Select salary from instructor where salary < 75000.
 - 4) What statistical information is stored, in database system catalogue ?
 - 5) State difference in object oriented database and object relational database.



6. Attempt **any one** : **8**
- 1) Write down equivalence rules used in query transformations.
 - 2) What is Hadoop used for ? Explain its components and implementation basics.
7. Explain terms with example : Structured type, Type inheritance Table inheritance, Arrays and Multisets, Reference types in SQL. **8**
-



SLR-TJ – 330

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

Set	R
-----	---

**B.E. (Information Technology) (Part – I) (New) Examination, 2017
ADVANCED DATABASE SYSTEMS (CGPA)**

Day and Date : Monday, 4-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**
3) **All questions are compulsory.**
4) Figures to **right** indicate marks to question.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(14×1=14)**
- 1) Which of the following is an ordered collection of elements of the same type ?
a) set b) bag c) list d) dictionary
 - 2) Database objects are almost always transient
a) True b) False
 - 3) A goal of data mining includes which of the following ?
a) To explain some observed event or condition
b) To confirm that data exists
c) To analyze data for expected relationships
d) To create a new data warehouse
 - 4) A heterogeneous 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
 - 5) Fact tables are which of the following ?
a) Completely denormalized b) Partially denormalized
c) Completely normalized d) Partially normalized

P.T.O.



- 6) A distributed database can use which of the following strategies ?
- Totally centralized at one location and accessed by many sites
 - Partially or totally replicated across sites
 - Fragmented into segments at different sites
 - All of the above
- 7) $\Pi_{L_1 \cup L_2}(E_1 X_{\theta} E_2) =$
- $\Pi_{L_1} \cup \Pi_{L_2}(E_1 X_{\theta} E_2)$
 - $\Pi_{L_1}(E_1) \cup \Pi_{L_2}(E_2)$
 - $(\Pi_{L_1}(E_1)) X_{\theta} (\Pi_{L_2}(E_2))$
 - $\Pi_{L_1} \cap \Pi_{L_2}(E_1 X_{\theta} E_2)$
- 8) $\sigma_p(E_1 - E_2) =$
- $\sigma_p(E_1)$
 - $\sigma_p(E_2)$
 - $\sigma_p(E_1) - \sigma_p(E_2)$
 - $\sigma_p(E_2) - \sigma_p(E_1)$
- 9) Which of the following is correct explanation of MongoDB processes ?
- mongod.exe is the shell process and mongo.exe is the actual database process
 - mongo.exe is the shell process and mongod.exe is the actual database process
 - mongos.exe is the MongoDB server process needed to run database
 - mongodump.exe can be used to import database backup dump
- 10) Which of the following is not the Demeon process that runs on a hadoop cluster ?
- JobTracker
 - DataNode
 - TaskTracker
 - TaskNode
- 11) Some of the columns of a relation are at different sites is which of the following ?
- Data replication
 - Horizontal Fragmentation
 - Vertical Fragmentation
 - Horizontal and Vertical Fragmentation
- 12) Data that can be modeled as dimension attributes and measure attributes are called _____ data.
- Multi-dimensional
 - Single-dimensional
 - Measured
 - Dimensional
- 13) The generalization of cross-tab which is represented visually is _____ which is also called as data cube.
- Two dimensional cube
 - Multidimensional cube
 - N-dimensional cube
 - Cuboid
- 14) $\{(item\ name,\ color,\ clothes\ size), (item\ name,\ color), (item\ name,\ clothes\ size), (color,\ clothes\ size), (item\ name), (color), (clothes\ size), ()\}$
This can be achieved by using which of the following ?
- Group by roll up
 - Group by cubic
 - Both a and b
 - None of the mentioned



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

**B.E. (Information Technology) (Part – I) (New) Examination, 2017
ADVANCED DATABASE SYSTEMS (CGPA)**

Day and Date : Monday, 4-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **12**
- 1) Explain how fragmentation, location and replication transparency differ ?
 - 2) State different issues in data server architecture.
 - 3) Explain parallel external merge sort.
 - 4) Explain knowledge discovery process.
 - 5) Explain association rules, support and confidence with example.
3. Attempt **any one** : **8**
- 1) Explain different types of skew generated due to partitioning. Explain different methods to handle skews.
 - 2) Explain any two locking protocols used in distributed environment.
4. Explain Fragment and replicate join and partitioned parallel hash join. **8**

SECTION – II

5. Attempt **any three** : **12**
- 1) Elaborate Bigdata features.
 - 2) Explain Map-reduce functions.
 - 3) Draw possible evaluation plans for the query :
Select salary from instructor where salary < 75000.
 - 4) What statistical information is stored, in database system catalogue ?
 - 5) State difference in object oriented database and object relational database.



6. Attempt **any one** : **8**
- 1) Write down equivalence rules used in query transformations.
 - 2) What is Hadoop used for ? Explain its components and implementation basics.
7. Explain terms with example : Structured type, Type inheritance Table inheritance, Arrays and Multisets, Reference types in SQL. **8**
-



SLR-TJ – 330

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

Set	S
-----	---

**B.E. (Information Technology) (Part – I) (New) Examination, 2017
ADVANCED DATABASE SYSTEMS (CGPA)**

Day and Date : Monday, 4-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 70

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**
3) **All questions are compulsory.**
4) Figures to **right** indicate marks to question.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(14×1=14)

- 1) A distributed database can use which of the following strategies ?
 - a) Totally centralized at one location and accessed by many sites
 - b) Partially or totally replicated across sites
 - c) Fragmented into segments at different sites
 - d) All of the above
- 2) $\Pi_{L_1 \cup L_2}(E_1 X_{\theta} E_2) =$
 - a) $\Pi_{L_1} \cup \Pi_{L_2}(E_1 X_{\theta} E_2)$
 - b) $\Pi_{L_1}(E_1) \cup \Pi_{L_2}(E_2)$
 - c) $(\Pi_{L_1}(E_1)) X_{\theta} (\Pi_{L_2}(E_2))$
 - d) $\Pi_{L_1} \cap \Pi_{L_2}(E_1 X_{\theta} E_2)$
- 3) $\sigma_p(E_1 - E_2) =$
 - a) $\sigma_p(E_1)$
 - b) $\sigma_p(E_2)$
 - c) $\sigma_p(E_1) - \sigma_p(E_2)$
 - d) $\sigma_p(E_2) - \sigma_p(E_1)$
- 4) Which of the following is correct explanation of MongoDB processes ?
 - a) mongod.exe is the shell process and mongo.exe is the actual database process
 - b) mongo.exe is the shell process and mongod.exe is the actual database process
 - c) mongos.exe is the MongoDB server process needed to run database
 - d) mongodump.exe can be used to import database backup dump
- 5) Which of the following is not the Demeon process that runs on a hadoop cluster ?
 - a) JobTracker
 - b) DataNode
 - c) TaskTracker
 - d) TaskNode

P.T.O.



- 6) Some of the columns of a relation are at different sites is which of the following ?
- a) Data replication
 - b) Horizontal Fragmentation
 - c) Vertical Fragmentation
 - d) Horizontal and Vertical Fragmentation
- 7) Data that can be modeled as dimension attributes and measure attributes are called _____ data.
- a) Multi-dimensional
 - b) Single-dimensional
 - c) Measured
 - d) Dimensional
- 8) The generalization of cross-tab which is represented visually is _____ which is also called as data cube.
- a) Two dimensional cube
 - b) Multidimensional cube
 - c) N-dimensional cube
 - d) Cuboid
- 9) {(item name, color, clothes size), (item name, color), (item name, clothes size), (color, clothes size), (item name), (color), (clothes size), () }
- This can be achieved by using which of the following ?
- a) Group by roll up
 - b) Group by cubic
 - c) Both a and b
 - d) None of the mentioned
- 10) Which of the following is an ordered collection of elements of the same type ?
- a) set
 - b) bag
 - c) list
 - d) dictionary
- 11) Database objects are almost always transient
- a) True
 - b) False
- 12) A goal of data mining includes which of the following ?
- a) To explain some observed event or condition
 - b) To confirm that data exists
 - c) To analyze data for expected relationships
 - d) To create a new data warehouse
- 13) A heterogeneous 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
- 14) Fact tables are which of the following ?
- a) Completely denormalized
 - b) Partially denormalized
 - c) Completely normalized
 - d) Partially normalized



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

**B.E. (Information Technology) (Part – I) (New) Examination, 2017
ADVANCED DATABASE SYSTEMS (CGPA)**

Day and Date : Monday, 4-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

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

SECTION – I

2. Attempt **any three** : **12**
- 1) Explain how fragmentation, location and replication transparency differ ?
 - 2) State different issues in data server architecture.
 - 3) Explain parallel external merge sort.
 - 4) Explain knowledge discovery process.
 - 5) Explain association rules, support and confidence with example.
3. Attempt **any one** : **8**
- 1) Explain different types of skew generated due to partitioning. Explain different methods to handle skews.
 - 2) Explain any two locking protocols used in distributed environment.
4. Explain Fragment and replicate join and partitioned parallel hash join. **8**

SECTION – II

5. Attempt **any three** : **12**
- 1) Elaborate Bigdata features.
 - 2) Explain Map-reduce functions.
 - 3) Draw possible evaluation plans for the query :
Select salary from instructor where salary < 75000.
 - 4) What statistical information is stored, in database system catalogue ?
 - 5) State difference in object oriented database and object relational database.



6. Attempt **any one** : **8**
- 1) Write down equivalence rules used in query transformations.
 - 2) What is Hadoop used for ? Explain its components and implementation basics.
7. Explain terms with example : Structured type, Type inheritance Table inheritance, Arrays and Multisets, Reference types in SQL. **8**
-



SLR-TJ – 331

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

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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Wednesday, 6-12-2017
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) Assume suitable data if **necessary**.
4) Figure **must** be draw **wherever** necessary.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- 1) Execution Verifier is a dynamic tool that is also known as
A) Test File Generator B) Coverage Analyser
C) Output Comparator D) Test Harness System
 - 2) In _____ once errors in individual tasks and in system behaviour have been isolated, testing shifts to time related errors.
A) Task testing B) Inter task testing
C) Behavioural testing D) System testing
 - 3) _____ probes the programs ability to handle data at the limits of acceptability.
A) Boundary value analysis B) Graph-based testing
C) Equivalence partitioning D) Loop testing
 - 4) _____ tests are designed to validate functional requirements without regard to the internal working of program.
A) White-box test B) Control structure test
C) Black-box test D) Gray-box test
 - 5) _____ can be used to define various classes and input and associated interactions.
A) Equivalence partitioning and graph based testing
B) Equivalence partitioning and boundary value analysis
C) Condition testing and equivalence partitioning
D) Graph based testing and boundary value analysis

P.T.O.



- 6) A _____ for documentation can be approached using techniques that are analogous to many of the black-box testing methods.
- A) Loop test B) Live test
C) Comparison test D) Review and inspection
- 7) While using white-box testing methods, the software engineer can derive test cases that
- i. Guarantee that all independent paths with in a module have been exercised atleast once.
ii. Exercise all logical decisions on their True and False sides.
iii. Execute all loops at their boundaries and within their operational bounds.
- A) i and ii only B) ii and iii only C) i and iii only D) All i, ii and iii
- 8) _____, also called behavioral testing which focuses on the functional requirements of the software.
- A) White-box testing B) Control structure testing
C) Black-box testing D) Gray-box testing
- 9) _____ enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program.
- A) White-box testing B) Control structure testing
C) Black-box testing D) Gray-box testing
- 10) In case of Large Systems
- A) Only few tests should be run
B) Test cases written by good test engineers should be executed
C) Only good test cases should be executed
D) Testing should be on the basis of risk
- 11) Which of the following will be the best definition for testing ?
- A) Testing is executing software for the purpose of finding defects
B) The purpose of testing is to demonstrate that the program is defect free
C) The purpose of testing is to demonstrate that the program does what it is supposed to do
D) The goal/purpose of testing is to demonstrate that the program works
- 12) Test conditions are derived from
- A) Test Design B) Test Cases C) Test Data D) Specifications
- 13) Which of the following is not an appraisal cost in SQA ?
- A) Inter-process inspection B) Maintenance
C) Quality planning D) Testing
- 14) Defects Removal Efficiency (DRE) depends on
- A) E – errors found before software delivery
B) D – defects found after delivery to user
C) Both E and D
D) Varies with project



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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Wednesday, 6-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary*
3) *Figure must be draw wherever necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) State and explain the principles of software testing, also explain policy and strategy.
 - b) Explain in detail all the white box testing techniques.
 - c) Explain with example smoke, sanity and ad-hoc testing.
 - d) What are the challenges in testing, also explain the challenges in defect classification ?

3. a) Explain module, integration and system testing with example. **8**

OR

- b) Explain with example software verification and validation, also explain the testing techniques and equivalence partitioning.

4. Write note on : **(2×4=8)**

- 1) Proposal, requirement and design testing.
- 2) Defect lifecycle and defect management process.

Set P



SECTION – II

5. Solve **any three** : **(3×4=12)**
- a) State and explain the realities of using test tools and automation.
 - b) Explain the statistical and formal approaches to SQA.
 - c) Explain with example the goal of test case planning.
 - d) What is selenium testing ? Explain with example.

6. a) Write minimum eight test cases for GMAIL account by considering sign in and password fields. **8**

OR

- b) Explain with example the background issues and elements of SQA.

7. Write note on : **(2×4=8)**
- 1) Open source testing tools.
 - 2) ISO 9000 and CMM.
-



SLR-TJ – 331

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

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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Wednesday, 6-12-2017
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) Assume suitable data if **necessary**.
4) Figure **must** be draw **wherever** necessary.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

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

- 1) _____, also called behavioral testing which focuses on the functional requirements of the software.
A) White-box testing B) Control structure testing
C) Black-box testing D) Gray-box testing
- 2) _____ enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program.
A) White-box testing B) Control structure testing
C) Black-box testing D) Gray-box testing
- 3) In case of Large Systems
A) Only few tests should be run
B) Test cases written by good test engineers should be executed
C) Only good test cases should be executed
D) Testing should be on the basis of risk
- 4) Which of the following will be the best definition for testing ?
A) Testing is executing software for the purpose of finding defects
B) The purpose of testing is to demonstrate that the program is defect free
C) The purpose of testing is to demonstrate that the program does what it is supposed to do
D) The goal/purpose of testing is to demonstrate that the program works
- 5) Test conditions are derived from
A) Test Design B) Test Cases C) Test Data D) Specifications

P.T.O.



- 6) Which of the following is not an appraisal cost in SQA ?
A) Inter-process inspection B) Maintenance
C) Quality planning D) Testing
- 7) Defects Removal Efficiency (DRE) depends on
A) E – errors found before software delivery
B) D – defects found after delivery to user
C) Both E and D
D) Varies with project
- 8) Execution Verifier is a dynamic tool that is also known as
A) Test File Generator B) Coverage Analyser
C) Output Comparator D) Test Harness System
- 9) In _____ once errors in individual tasks and in system behaviour have been isolated, testing shifts to time related errors.
A) Task testing B) Inter task testing
C) Behavioural testing D) System testing
- 10) _____ probes the programs ability to handle data at the limits of acceptability.
A) Boundary value analysis B) Graph-based testing
C) Equivalence partitioning D) Loop testing
- 11) _____ tests are designed to validate functional requirements without regard to the internal working of program.
A) White-box test B) Control structure test
C) Black-box test D) Gray-box test
- 12) _____ can be used to define various classes and input and associated interactions.
A) Equivalence partitioning and graph based testing
B) Equivalence partitioning and boundary value analysis
C) Condition testing and equivalence partitioning
D) Graph based testing and boundary value analysis
- 13) A _____ for documentation can be approached using techniques that are analogous to many of the black-box testing methods.
A) Loop test B) Live test
C) Comparison test D) Review and inspection
- 14) While using white-box testing methods, the software engineer can derive test cases that
i. Guarantee that all independent paths with in a module have been exercised atleast once.
ii. Exercise all logical decisions on their True and False sides.
iii. Execute all loops at their boundaries and within their operational bounds.
A) i and ii only B) ii and iii only C) i and iii only D) All i, ii and iii



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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Wednesday, 6-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary*
3) *Figure must be draw wherever necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) State and explain the principles of software testing, also explain policy and strategy.
 - b) Explain in detail all the white box testing techniques.
 - c) Explain with example smoke, sanity and ad-hoc testing.
 - d) What are the challenges in testing, also explain the challenges in defect classification ?

3. a) Explain module, integration and system testing with example. **8**

OR

- b) Explain with example software verification and validation, also explain the testing techniques and equivalence partitioning.

4. Write note on : **(2×4=8)**

- 1) Proposal, requirement and design testing.
- 2) Defect lifecycle and defect management process.

Set Q



SECTION – II

5. Solve **any three** : **(3×4=12)**
- a) State and explain the realities of using test tools and automation.
 - b) Explain the statistical and formal approaches to SQA.
 - c) Explain with example the goal of test case planning.
 - d) What is selenium testing ? Explain with example.
6. a) Write minimum eight test cases for GMAIL account by considering sign in and password fields. **8**
- OR
- b) Explain with example the background issues and elements of SQA.
7. Write note on : **(2×4=8)**
- 1) Open source testing tools.
 - 2) ISO 9000 and CMM.
-



SLR-TJ – 331

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

Set	R
-----	---

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Wednesday, 6-12-2017
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) **Assume suitable data if necessary.**
4) **Figure must be draw wherever necessary.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

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

- 1) _____ can be used to define various classes and input and associated interactions.
A) Equivalence partitioning and graph based testing
B) Equivalence partitioning and boundary value analysis
C) Condition testing and equivalence partitioning
D) Graph based testing and boundary value analysis
- 2) A _____ for documentation can be approached using techniques that are analogous to many of the black-box testing methods.
A) Loop test
B) Live test
C) Comparison test
D) Review and inspection
- 3) While using white-box testing methods, the software engineer can derive test cases that
i. Guarantee that all independent paths with in a module have been exercised atleast once.
ii. Exercise all logical decisions on their True and False sides.
iii. Execute all loops at their boundaries and within their operational bounds.
A) i and ii only B) ii and iii only C) i and iii only D) All i, ii and iii
- 4) _____, also called behavioral testing which focuses on the functional requirements of the software.
A) White-box testing
B) Control structure testing
C) Black-box testing
D) Gray-box testing

P.T.O.



- 5) _____ enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program.
- A) White-box testing B) Control structure testing
C) Black-box testing D) Gray-box testing
- 6) In case of Large Systems
- A) Only few tests should be run
B) Test cases written by good test engineers should be executed
C) Only good test cases should be executed
D) Testing should be on the basis of risk
- 7) Which of the following will be the best definition for testing ?
- A) Testing is executing software for the purpose of finding defects
B) The purpose of testing is to demonstrate that the program is defect free
C) The purpose of testing is to demonstrate that the program does what it is supposed to do
D) The goal/purpose of testing is to demonstrate that the program works
- 8) Test conditions are derived from
- A) Test Design B) Test Cases C) Test Data D) Specifications
- 9) Which of the following is not an appraisal cost in SQA ?
- A) Inter-process inspection B) Maintenance
C) Quality planning D) Testing
- 10) Defects Removal Efficiency (DRE) depends on
- A) E – errors found before software delivery
B) D – defects found after delivery to user
C) Both E and D
D) Varies with project
- 11) Execution Verifier is a dynamic tool that is also known as
- A) Test File Generator B) Coverage Analyser
C) Output Comparator D) Test Harness System
- 12) In _____ once errors in individual tasks and in system behaviour have been isolated, testing shifts to time related errors.
- A) Task testing B) Inter task testing
C) Behavioural testing D) System testing
- 13) _____ probes the programs ability to handle data at the limits of acceptability.
- A) Boundary value analysis B) Graph-based testing
C) Equivalence partitioning D) Loop testing
- 14) _____ tests are designed to validate functional requirements without regard to the internal working of program.
- A) White-box test B) Control structure test
C) Black-box test D) Gray-box test



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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Wednesday, 6-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary*
3) *Figure must be draw wherever necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) State and explain the principles of software testing, also explain policy and strategy.
 - b) Explain in detail all the white box testing techniques.
 - c) Explain with example smoke, sanity and ad-hoc testing.
 - d) What are the challenges in testing, also explain the challenges in defect classification ?
3. a) Explain module, integration and system testing with example. **8**

OR

- b) Explain with example software verification and validation, also explain the testing techniques and equivalence partitioning.
4. Write note on : **(2×4=8)**
- 1) Proposal, requirement and design testing.
 - 2) Defect lifecycle and defect management process.

Set R



SECTION – II

5. Solve **any three** : **(3×4=12)**
- a) State and explain the realities of using test tools and automation.
 - b) Explain the statistical and formal approaches to SQA.
 - c) Explain with example the goal of test case planning.
 - d) What is selenium testing ? Explain with example.

6. a) Write minimum eight test cases for GMAIL account by considering sign in and password fields. **8**

OR

- b) Explain with example the background issues and elements of SQA.

7. Write note on : **(2×4=8)**
- 1) Open source testing tools.
 - 2) ISO 9000 and CMM.
-



SLR-TJ – 331

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

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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Wednesday, 6-12-2017
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) *Assume suitable data if necessary.*
4) *Figure must be draw wherever necessary.*

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **(1×14=14)**
- 1) In case of Large Systems
 - A) Only few tests should be run
 - B) Test cases written by good test engineers should be executed
 - C) Only good test cases should be executed
 - D) Testing should be on the basis of risk
 - 2) Which of the following will be the best definition for testing ?
 - A) Testing is executing software for the purpose of finding defects
 - B) The purpose of testing is to demonstrate that the program is defect free
 - C) The purpose of testing is to demonstrate that the program does what it is supposed to do
 - D) The goal/purpose of testing is to demonstrate that the program works
 - 3) Test conditions are derived from
 - A) Test Design
 - B) Test Cases
 - C) Test Data
 - D) Specifications
 - 4) Which of the following is not an appraisal cost in SQA ?
 - A) Inter-process inspection
 - B) Maintenance
 - C) Quality planning
 - D) Testing
 - 5) Defects Removal Efficiency (DRE) depends on
 - A) E – errors found before software delivery
 - B) D – defects found after delivery to user
 - C) Both E and D
 - D) Varies with project

P.T.O.



- 6) Execution Verifier is a dynamic tool that is also known as
A) Test File Generator B) Coverage Analyser
C) Output Comparator D) Test Harness System
- 7) In _____ once errors in individual tasks and in system behaviour have been isolated, testing shifts to time related errors.
A) Task testing B) Inter task testing
C) Behavioural testing D) System testing
- 8) _____ probes the programs ability to handle data at the limits of acceptability.
A) Boundary value analysis B) Graph-based testing
C) Equivalence partitioning D) Loop testing
- 9) _____ tests are designed to validate functional requirements without regard to the internal working of program.
A) White-box test B) Control structure test
C) Black-box test D) Gray-box test
- 10) _____ can be used to define various classes and input and associated interactions.
A) Equivalence partitioning and graph based testing
B) Equivalence partitioning and boundary value analysis
C) Condition testing and equivalence partitioning
D) Graph based testing and boundary value analysis
- 11) A _____ for documentation can be approached using techniques that are analogous to many of the black-box testing methods.
A) Loop test B) Live test
C) Comparison test D) Review and inspection
- 12) While using white-box testing methods, the software engineer can derive test cases that
i. Guarantee that all independent paths with in a module have been exercised atleast once.
ii. Exercise all logical decisions on their True and False sides.
iii. Execute all loops at their boundaries and within their operational bounds.
A) i and ii only B) ii and iii only C) i and iii only D) All i, ii and iii
- 13) _____, also called behavioral testing which focuses on the functional requirements of the software.
A) White-box testing B) Control structure testing
C) Black-box testing D) Gray-box testing
- 14) _____ enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program.
A) White-box testing B) Control structure testing
C) Black-box testing D) Gray-box testing



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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Wednesday, 6-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary*
3) *Figure must be draw wherever necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) State and explain the principles of software testing, also explain policy and strategy.
 - b) Explain in detail all the white box testing techniques.
 - c) Explain with example smoke, sanity and ad-hoc testing.
 - d) What are the challenges in testing, also explain the challenges in defect classification ?
3. a) Explain module, integration and system testing with example. **8**

OR

- b) Explain with example software verification and validation, also explain the testing techniques and equivalence partitioning.
4. Write note on : **(2×4=8)**
- 1) Proposal, requirement and design testing.
 - 2) Defect lifecycle and defect management process.

Set S



SECTION – II

5. Solve **any three** : **(3×4=12)**
- a) State and explain the realities of using test tools and automation.
 - b) Explain the statistical and formal approaches to SQA.
 - c) Explain with example the goal of test case planning.
 - d) What is selenium testing ? Explain with example.

6. a) Write minimum eight test cases for GMAIL account by considering sign in and password fields. **8**

OR

- b) Explain with example the background issues and elements of SQA.

7. Write note on : **(2×4=8)**
- 1) Open source testing tools.
 - 2) ISO 9000 and CMM.
-



SLR-TJ – 333

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

Set	P
-----	---

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Friday, 8-12-2017
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) Assume suitable data **if necessary**.
 - 4) Figure must be drawn **wherever** necessary.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

(1×14=14)

- 1) In distributed systems, link and site failure is detected by
 - a) Polling
 - b) Handshaking
 - c) Token passing
 - d) None of these
- 2) If one site fails in distributed system
 - a) The remaining sites can continue operating
 - b) All the sites will stop working
 - c) Directly connected sites will stop working
 - d) None of these
- 3) If timestamps of two events are same, then the events are
 - a) Concurrent
 - b) Non-concurrent
 - c) Monotonic
 - d) Non-monotonic
- 4) If a process is executing in its critical section
 - a) Any other process can also execute in its critical section
 - b) No other process can execute in its critical section
 - c) One more process can execute in its critical section
 - d) None of these
- 5) In the token passing approach of distributed systems, processes are organized in a ring structure
 - a) Logically
 - b) Physically
 - c) Both a) and b)
 - d) None of these

P.T.O.



- 6) In the non-blocking send
 - a) The sending process keeps sending until the message is received
 - b) The sending process sends the message and resumes operation
 - c) The sending process keeps sending until it receives a message
 - d) None of these
- 7) Bounded capacity and unbounded capacity queues are referred to as
 - a) Programmed buffering
 - b) Automatic buffering
 - c) Used defined buffering
 - d) No buffering
- 8) In addressing, a many to one relationship is useful for
 - a) Client Interaction
 - b) Client/Server Interaction
 - c) Server Interaction
 - d) None of these
- 9) What are the different ways file accesses take place ?
 - a) Sequential access
 - b) Direct access
 - c) Indexed sequential access
 - d) All of these
- 10) What are characteristic of NFS protocol ?
 - a) Search for file within directory
 - b) Read a set of directory entries
 - c) Manipulate links and directories
 - d) All of these
- 11) What is coherency of replicated data ?
 - a) All replicas are identical at all times
 - b) Replicas are perceived as identical only at some points in time
 - c) Users always read the most recent data in the replicas
 - d) All of these
- 12) Which one of the following hides the location where in the network the file is stored ?
 - a) Transparent distributed file system
 - b) Hidden distributed file system
 - c) Escaped distribution file system
 - d) Spy distributed file system
- 13) In distributed file system, _____ is mapping between logical and physical objects.
 - a) Client interfacing
 - b) Naming
 - c) Migration
 - d) Heterogeneity
- 14) In distributed file system, file name does not reveal the files
 - a) Local name
 - b) Physical storage location
 - c) Both a) and b)
 - d) None of these



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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Friday, 8-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary.*
3) *Figure must be drawn wherever necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Why are distributed system gaining popularity, state and explain all reasons.
 - b) Explain issues in IPC by message passing, also explain the synchronization.
 - c) Explain the types of messages involved in the implementation of an RPC system.
 - d) Draw and explain the workstation-server and processor-pool models.
3. a) Explain with example idempotency and handling of duplicate request messages. **8**

OR

- b) Explain the following w.r.t. RPC :
 - 1) Transparency of RPC
 - 2) Implementing RPC mechanism.
4. What do you mean by mult Datagram message, explain encoding and decoding of message data, draw and explain all the buffering strategies ? **8**

SECTION – II

5. Solve **any three** : **(3×4=12)**
- a) Explain the ways and recovery from deadlock.
 - b) State and explain all the advantages of process migration.
 - c) Explain with example synchronization and scheduling w.r.t. threads.
 - d) Explain with figure the file accessing models.

Set P



6. a) Explain with example the centralized and distributed approach for mutual exclusion. **8**

OR

b) Explain in detail all the process migration mechanisms.

7. Write note on : **8**

1) Fault tolerance

2) Implementation of logical clocks.



SLR-TJ – 333

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

Set	Q
-----	---

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Friday, 8-12-2017
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) Assume suitable data **if necessary**.
 - 4) Figure must be drawn **wherever** necessary.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

(1×14=14)

- 1) In addressing, a many to one relationship is useful for
 - a) Client Interaction
 - b) Client/Server Interaction
 - c) Server Interaction
 - d) None of these
- 2) What are the different ways file accesses take place ?
 - a) Sequential access
 - b) Direct access
 - c) Indexed sequential access
 - d) All of these
- 3) What are characteristic of NFS protocol ?
 - a) Search for file within directory
 - b) Read a set of directory entries
 - c) Manipulate links and directories
 - d) All of these
- 4) What is coherency of replicated data ?
 - a) All replicas are identical at all times
 - b) Replicas are perceived as identical only at some points in time
 - c) Users always read the most recent data in the replicas
 - d) All of these
- 5) Which one of the following hides the location where in the network the file is stored ?
 - a) Transparent distributed file system
 - b) Hidden distributed file system
 - c) Escaped distribution file system
 - d) Spy distributed file system

P.T.O.



- 6) In distributed file system, _____ is mapping between logical and physical objects.
- a) Client interfacing
 - b) Naming
 - c) Migration
 - d) Heterogeneity
- 7) In distributed file system, file name does not reveal the files
- a) Local name
 - b) Physical storage location
 - c) Both a) and b)
 - d) None of these
- 8) In distributed systems, link and site failure is detected by
- a) Polling
 - b) Handshaking
 - c) Token passing
 - d) None of these
- 9) If one site fails in distributed system
- a) The remaining sites can continue operating
 - b) All the sites will stop working
 - c) Directly connected sites will stop working
 - d) None of these
- 10) If timestamps of two events are same, then the events are
- a) Concurrent
 - b) Non-concurrent
 - c) Monotonic
 - d) Non-monotonic
- 11) If a process is executing in its critical section
- a) Any other process can also execute in its critical section
 - b) No other process can execute in its critical section
 - c) One more process can execute in its critical section
 - d) None of these
- 12) In the token passing approach of distributed systems, processes are organized in a ring structure
- a) Logically
 - b) Physically
 - c) Both a) and b)
 - d) None of these
- 13) In the non-blocking send
- a) The sending process keeps sending until the message is received
 - b) The sending process sends the message and resumes operation
 - c) The sending process keeps sending until it receives a message
 - d) None of these
- 14) Bounded capacity and unbounded capacity queues are referred to as
- a) Programmed buffering
 - b) Automatic buffering
 - c) Used defined buffering
 - d) No buffering



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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Friday, 8-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary.*
3) *Figure must be drawn wherever necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Why are distributed system gaining popularity, state and explain all reasons.
 - b) Explain issues in IPC by message passing, also explain the synchronization.
 - c) Explain the types of messages involved in the implementation of an RPC system.
 - d) Draw and explain the workstation-server and processor-pool models.
3. a) Explain with example idempotency and handling of duplicate request messages. **8**

OR

- b) Explain the following w.r.t. RPC :
 - 1) Transparency of RPC
 - 2) Implementing RPC mechanism.
4. What do you mean by mult Datagram message, explain encoding and decoding of message data, draw and explain all the buffering strategies ? **8**

SECTION – II

5. Solve **any three** : **(3×4=12)**
- a) Explain the ways and recovery from deadlock.
 - b) State and explain all the advantages of process migration.
 - c) Explain with example synchronization and scheduling w.r.t. threads.
 - d) Explain with figure the file accessing models.

Set Q



6. a) Explain with example the centralized and distributed approach for mutual exclusion. 8

OR

b) Explain in detail all the process migration mechanisms.

7. Write note on : 8

- 1) Fault tolerance
 - 2) Implementation of logical clocks.
-



SLR-TJ – 333

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

Set	R
-----	---

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Friday, 8-12-2017
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) Assume suitable data **if necessary**.
 - 4) Figure must be drawn **wherever** necessary.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

(1×14=14)

- 1) In the token passing approach of distributed systems, processes are organized in a ring structure
 - a) Logically
 - b) Physically
 - c) Both a) and b)
 - d) None of these
- 2) In the non-blocking send
 - a) The sending process keeps sending until the message is received
 - b) The sending process sends the message and resumes operation
 - c) The sending process keeps sending until it receives a message
 - d) None of these
- 3) Bounded capacity and unbounded capacity queues are referred to as
 - a) Programmed buffering
 - b) Automatic buffering
 - c) Used defined buffering
 - d) No buffering
- 4) In addressing, a many to one relationship is useful for
 - a) Client Interaction
 - b) Client/Server Interaction
 - c) Server Interaction
 - d) None of these
- 5) What are the different ways file accesses take place ?
 - a) Sequential access
 - b) Direct access
 - c) Indexed sequential access
 - d) All of these

P.T.O.



- 6) What are characteristic of NFS protocol ?
- a) Search for file within directory
 - b) Read a set of directory entries
 - c) Manipulate links and directories
 - d) All of these
- 7) What is coherency of replicated data ?
- a) All replicas are identical at all times
 - b) Replicas are perceived as identical only at some points in time
 - c) Users always read the most recent data in the replicas
 - d) All of these
- 8) Which one of the following hides the location where in the network the file is stored ?
- a) Transparent distributed file system
 - b) Hidden distributed file system
 - c) Escaped distribution file system
 - d) Spy distributed file system
- 9) In distributed file system, _____ is mapping between logical and physical objects.
- a) Client interfacing
 - b) Naming
 - c) Migration
 - d) Heterogeneity
- 10) In distributed file system, file name does not reveal the files
- a) Local name
 - b) Physical storage location
 - c) Both a) and b)
 - d) None of these
- 11) In distributed systems, link and site failure is detected by
- a) Polling
 - b) Handshaking
 - c) Token passing
 - d) None of these
- 12) If one site fails in distributed system
- a) The remaining sites can continue operating
 - b) All the sites will stop working
 - c) Directly connected sites will stop working
 - d) None of these
- 13) If timestamps of two events are same, then the events are
- a) Concurrent
 - b) Non-concurrent
 - c) Monotonic
 - d) Non-monotonic
- 14) If a process is executing in its critical section
- a) Any other process can also execute in its critical section
 - b) No other process can execute in its critical section
 - c) One more process can execute in its critical section
 - d) None of these



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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Friday, 8-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary.*
3) *Figure must be drawn wherever necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Why are distributed system gaining popularity, state and explain all reasons.
 - b) Explain issues in IPC by message passing, also explain the synchronization.
 - c) Explain the types of messages involved in the implementation of an RPC system.
 - d) Draw and explain the workstation-server and processor-pool models.
3. a) Explain with example idempotency and handling of duplicate request messages. **8**

OR

- b) Explain the following w.r.t. RPC :
 - 1) Transparency of RPC
 - 2) Implementing RPC mechanism.
4. What do you mean by mult Datagram message, explain encoding and decoding of message data, draw and explain all the buffering strategies ? **8**

SECTION – II

5. Solve **any three** : **(3×4=12)**
- a) Explain the ways and recovery from deadlock.
 - b) State and explain all the advantages of process migration.
 - c) Explain with example synchronization and scheduling w.r.t. threads.
 - d) Explain with figure the file accessing models.

Set R



6. a) Explain with example the centralized and distributed approach for mutual exclusion. **8**

OR

b) Explain in detail all the process migration mechanisms.

7. Write note on : **8**

- 1) Fault tolerance
 - 2) Implementation of logical clocks.
-



SLR-TJ – 333

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

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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Friday, 8-12-2017
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) Assume suitable data **if necessary**.
 - 4) Figure must be drawn **wherever** necessary.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct alternatives :

(1×14=14)

- 1) What are characteristic of NFS protocol ?
 - a) Search for file within directory
 - b) Read a set of directory entries
 - c) Manipulate links and directories
 - d) All of these
- 2) What is coherency of replicated data ?
 - a) All replicas are identical at all times
 - b) Replicas are perceived as identical only at some points in time
 - c) Users always read the most recent data in the replicas
 - d) All of these
- 3) Which one of the following hides the location where in the network the file is stored ?
 - a) Transparent distributed file system
 - b) Hidden distributed file system
 - c) Escaped distribution file system
 - d) Spy distributed file system
- 4) In distributed file system, _____ is mapping between logical and physical objects.
 - a) Client interfacing
 - b) Naming
 - c) Migration
 - d) Heterogeneity
- 5) In distributed file system, file name does not reveal the files
 - a) Local name
 - b) Physical storage location
 - c) Both a) and b)
 - d) None of these

P.T.O.



- 6) In distributed systems, link and site failure is detected by
 - a) Polling
 - b) Handshaking
 - c) Token passing
 - d) None of these
 - 7) If one site fails in distributed system
 - a) The remaining sites can continue operating
 - b) All the sites will stop working
 - c) Directly connected sites will stop working
 - d) None of these
 - 8) If timestamps of two events are same, then the events are
 - a) Concurrent
 - b) Non-concurrent
 - c) Monotonic
 - d) Non-monotonic
 - 9) If a process is executing in its critical section
 - a) Any other process can also execute in its critical section
 - b) No other process can execute in its critical section
 - c) One more process can execute in its critical section
 - d) None of these
 - 10) In the token passing approach of distributed systems, processes are organized in a ring structure
 - a) Logically
 - b) Physically
 - c) Both a) and b)
 - d) None of these
 - 11) In the non-blocking send
 - a) The sending process keeps sending until the message is received
 - b) The sending process sends the message and resumes operation
 - c) The sending process keeps sending until it receives a message
 - d) None of these
 - 12) Bounded capacity and unbounded capacity queues are referred to as
 - a) Programmed buffering
 - b) Automatic buffering
 - c) Used defined buffering
 - d) No buffering
 - 13) In addressing, a many to one relationship is useful for
 - a) Client Interaction
 - b) Client/Server Interaction
 - c) Server Interaction
 - d) None of these
 - 14) What are the different ways file accesses take place ?
 - a) Sequential access
 - b) Direct access
 - c) Indexed sequential access
 - d) All of these
-



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

**B.E. (Information Technology) (Part – I) (New CGPA) Examination, 2017
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Friday, 8-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

- Instructions :** 1) *All questions are compulsory.*
2) *Assume suitable data if necessary.*
3) *Figure must be drawn wherever necessary.*

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Why are distributed system gaining popularity, state and explain all reasons.
 - b) Explain issues in IPC by message passing, also explain the synchronization.
 - c) Explain the types of messages involved in the implementation of an RPC system.
 - d) Draw and explain the workstation-server and processor-pool models.
3. a) Explain with example idempotency and handling of duplicate request messages. **8**

OR

- b) Explain the following w.r.t. RPC :
 - 1) Transparency of RPC
 - 2) Implementing RPC mechanism.
4. What do you mean by mult Datagram message, explain encoding and decoding of message data, draw and explain all the buffering strategies ? **8**

SECTION – II

5. Solve **any three** : **(3×4=12)**
- a) Explain the ways and recovery from deadlock.
 - b) State and explain all the advantages of process migration.
 - c) Explain with example synchronization and scheduling w.r.t. threads.
 - d) Explain with figure the file accessing models.

Set S



6. a) Explain with example the centralized and distributed approach for mutual exclusion. **8**

OR

b) Explain in detail all the process migration mechanisms.

7. Write note on : **8**

1) Fault tolerance

2) Implementation of logical clocks.



SLR-TJ – 336

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

Set	P
-----	---

B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE

Day and Date : Wednesday, 13-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 20

1. Choose the correct answer.

20

- 1) Structural Hazard can be avoided by
 - a) Loop unrolling
 - b) Caesar cipher
 - c) Duplication of resources
 - d) Sequential execution
- 2) Register renaming is a method to resolve
 - a) RAW
 - b) WAW
 - c) RAR
 - d) None
- 3) The amount of ILP in a program code depends on
 - a) Data dependence
 - b) Control dependence
 - c) Name dependence
 - d) All of above
- 4) In distributed memory architecture, data communication is performed by
 - a) Shared main memory
 - b) Distributed multiprocessor
 - c) All
 - d) None
- 5) VLIM stands for
 - a) Very Long Identity Word
 - b) Very Long Instruction Word
 - c) Both a and b
 - d) None
- 6) Data hazard is overcome by
 - a) Branch prediction
 - b) Loop unrolling
 - c) Forwarding
 - d) Pipelining
- 7) Branch prediction buffer stores
 - a) Instruction address
 - b) Target address
 - c) Both a and b
 - d) None
- 8) Technique which exploits parallelism
 - a) Sequential execution
 - b) Parallel execution
 - c) Branch prediction
 - d) All
- 9) Bubble in a pipeline
 - a) Stall the pipeline
 - b) Slows down the clock
 - c) Increases the efficiency
 - d) None

P.T.O.



- 10) Loop unrolling is used for
- a) Executing branch instructions
 - b) Executing the loop program
 - c) Both a and b
 - d) None
- 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 behaviour 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 : Wednesday, 13-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Answer the following. **Each** question carries **5** marks. **20**
- 1) Explain ILP along with its limitations.
 - 2) How to enhance performance of vector processor ?
 - 3) Explain the term speculation in details.
 - 4) How to reduce branch penalties using dynamic hardware prediction.
3. Answer the following. **Each** question carries **10** marks : **20**
- 1) Explain Vector Length and Vector Stride.
 - 2) How to reduce branch cost with prediction (Static and Dynamic Branch prediction) ?

SECTION – II

4. Answer **any two** of the following : **14**
- a) Explain the concept of dataflow computing and also state potential problems.
 - b) Compare static and dynamic dataflow architecture.
 - c) What are the different dataflow operators ?
5. Answer **any two** of the following : **14**
- a) Compare loosely and tightly coupled multiprocessors.
 - b) Compare shared and distributed memory architecture.
 - c) Explain with example Write Invalidate and Write Update protocol.
6. Answer **any two** of the following : **12**
- a) Draw and explain centralized shared memory multiprocessor architecture.
 - b) Draw and explain distributed shared memory multiprocessor architecture.
 - c) How synchronization is achieved in multiprocessors ? Explain.



SLR-TJ – 336

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

Set	Q
-----	---

B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE

Day and Date : Wednesday, 13-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 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) Structural Hazard can be avoided by
a) Loop unrolling b) Caesar cipher
c) Duplication of resources d) Sequential execution
 - 7) Register renaming is a method to resolve
a) RAW b) WAW c) RAR d) None
 - 8) The amount of ILP in a program code depends on
a) Data dependence b) Control dependence
c) Name dependence d) All of above

P.T.O.



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

**B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Wednesday, 13-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Answer the following. **Each** question carries **5** marks. **20**
- 1) Explain ILP along with its limitations.
 - 2) How to enhance performance of vector processor ?
 - 3) Explain the term speculation in details.
 - 4) How to reduce branch penalties using dynamic hardware prediction.
3. Answer the following. **Each** question carries **10** marks : **20**
- 1) Explain Vector Length and Vector Stride.
 - 2) How to reduce branch cost with prediction (Static and Dynamic Branch prediction) ?

SECTION – II

4. Answer **any two** of the following : **14**
- a) Explain the concept of dataflow computing and also state potential problems.
 - b) Compare static and dynamic dataflow architecture.
 - c) What are the different dataflow operators ?
5. Answer **any two** of the following : **14**
- a) Compare loosely and tightly coupled multiprocessors.
 - b) Compare shared and distributed memory architecture.
 - c) Explain with example Write Invalidate and Write Update protocol.
6. Answer **any two** of the following : **12**
- a) Draw and explain centralized shared memory multiprocessor architecture.
 - b) Draw and explain distributed shared memory multiprocessor architecture.
 - c) How synchronization is achieved in multiprocessors ? Explain.

Set Q



SLR-TJ – 336

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

Set	R
-----	---

B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE

Day and Date : Wednesday, 13-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 20

1. Choose the correct answer.

20

- 1) 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
- 2) An entire loop is replaced by a vector instruction whose behaviour is predetermined, _____ that would normally arise from the loop branch are nonexistent.
 - a) Control hazard
 - b) Data hazard
 - c) Both
 - d) None
- 3) 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
- 4) Tomasulos algorithm eliminates
 - a) WAR hazard
 - b) WAW hazards
 - c) WAR and WAW hazard
 - d) None of these
- 5) To minimizing RAW stalls method used
 - a) Forwarding
 - b) High pass
 - c) Both
 - d) None
- 6) Dynamic scheduling is when the hardware rearranges the order of _____ execution to reduce stall.
 - a) Data
 - b) Instructions
 - c) Memory
 - d) None
- 7) Register renaming resolution method for artificial dependence is used in
 - a) Scoreboarding
 - b) Tomasulos algorithm
 - c) Both (a) and (b)
 - d) None
- 8) CPI of pipeline increases with
 - a) Data hazards
 - b) Control hazards
 - c) Structural hazards
 - d) All of these

P.T.O.



- 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) Structural Hazard can be avoided by
- a) Loop unrolling
 - b) Caesar cipher
 - c) Duplication of resources
 - d) Sequential execution
- 12) Register renaming is a method to resolve
- a) RAW
 - b) WAW
 - c) RAR
 - d) None
- 13) The amount of ILP in a program code depends on
- a) Data dependence
 - b) Control dependence
 - c) Name dependence
 - d) All of above
- 14) In distributed memory architecture, data communication is performed by
- a) Shared main memory
 - b) Distributed multiprocessor
 - c) All
 - d) None
- 15) VLIM stands for
- a) Very Long Identity Word
 - b) Very Long Instruction Word
 - c) Both a and b
 - d) None
- 16) Data hazard is overcome by
- a) Branch prediction
 - b) Loop unrolling
 - c) Forwarding
 - d) Pipelining
- 17) Branch prediction buffer stores
- a) Instruction address
 - b) Target address
 - c) Both a and b
 - d) None
- 18) Technique which exploits parallelism
- a) Sequential execution
 - b) Parallel execution
 - c) Branch prediction
 - d) All
- 19) Bubble in a pipeline
- a) Stall the pipeline
 - b) Slows down the clock
 - c) Increases the efficiency
 - d) None
- 20) Loop unrolling is used for
- a) Executing branch instructions
 - b) Executing the loop program
 - c) Both a and b
 - d) None
-



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

**B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Wednesday, 13-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Answer the following. **Each** question carries **5** marks. **20**
- 1) Explain ILP along with its limitations.
 - 2) How to enhance performance of vector processor ?
 - 3) Explain the term speculation in details.
 - 4) How to reduce branch penalties using dynamic hardware prediction.
3. Answer the following. **Each** question carries **10** marks : **20**
- 1) Explain Vector Length and Vector Stride.
 - 2) How to reduce branch cost with prediction (Static and Dynamic Branch prediction) ?

SECTION – II

4. Answer **any two** of the following : **14**
- a) Explain the concept of dataflow computing and also state potential problems.
 - b) Compare static and dynamic dataflow architecture.
 - c) What are the different dataflow operators ?
5. Answer **any two** of the following : **14**
- a) Compare loosely and tightly coupled multiprocessors.
 - b) Compare shared and distributed memory architecture.
 - c) Explain with example Write Invalidate and Write Update protocol.
6. Answer **any two** of the following : **12**
- a) Draw and explain centralized shared memory multiprocessor architecture.
 - b) Draw and explain distributed shared memory multiprocessor architecture.
 - c) How synchronization is achieved in multiprocessors ? Explain.



SLR-TJ – 336

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

Set	S
-----	---

B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE

Day and Date : Wednesday, 13-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 20

1. Choose the correct answer.

20

- 1) Data hazard is overcome by
a) Branch prediction b) Loop unrolling c) Forwarding d) Pipelining
- 2) Branch prediction buffer stores
a) Instruction address b) Target address
c) Both a and b d) None
- 3) Technique which exploits parallelism
a) Sequential execution b) Parallel execution
c) Branch prediction d) All
- 4) Bubble in a pipeline
a) Stall the pipeline b) Slows down the clock
c) Increases the efficiency d) None
- 5) Loop unrolling is used for
a) Executing branch instructions b) Executing the loop program
c) Both a and b d) None
- 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 behaviour is predetermined, _____ that would normally arise from the loop branch are nonexistent.
a) Control hazard b) Data hazard c) Both d) None
- 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

P.T.O.



- 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) Structural Hazard can be avoided by
- a) Loop unrolling
 - b) Caesar cipher
 - c) Duplication of resources
 - d) Sequential execution
- 17) Register renaming is a method to resolve
- a) RAW
 - b) WAW
 - c) RAR
 - d) None
- 18) The amount of ILP in a program code depends on
- a) Data dependence
 - b) Control dependence
 - c) Name dependence
 - d) All of above
- 19) In distributed memory architecture, data communication is performed by
- a) Shared main memory
 - b) Distributed multiprocessor
 - c) All
 - d) None
- 20) VLIM stands for
- a) Very Long Identity Word
 - b) Very Long Instruction Word
 - c) Both a and b
 - d) None
-



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

**B.E. (Information Technology) (Part – I) (Old) Examination, 2017
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Wednesday, 13-12-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Answer the following. **Each** question carries **5** marks. **20**
- 1) Explain ILP along with its limitations.
 - 2) How to enhance performance of vector processor ?
 - 3) Explain the term speculation in details.
 - 4) How to reduce branch penalties using dynamic hardware prediction.
3. Answer the following. **Each** question carries **10** marks : **20**
- 1) Explain Vector Length and Vector Stride.
 - 2) How to reduce branch cost with prediction (Static and Dynamic Branch prediction) ?

SECTION – II

4. Answer **any two** of the following : **14**
- a) Explain the concept of dataflow computing and also state potential problems.
 - b) Compare static and dynamic dataflow architecture.
 - c) What are the different dataflow operators ?
5. Answer **any two** of the following : **14**
- a) Compare loosely and tightly coupled multiprocessors.
 - b) Compare shared and distributed memory architecture.
 - c) Explain with example Write Invalidate and Write Update protocol.
6. Answer **any two** of the following : **12**
- a) Draw and explain centralized shared memory multiprocessor architecture.
 - b) Draw and explain distributed shared memory multiprocessor architecture.
 - c) How synchronization is achieved in multiprocessors ? Explain.

Set S



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

Set	P
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL

Day and Date : Tuesday, 21-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :**
- 1) Figures to the **right** indicate marks to a question.
 - 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. A) Choose the correct answer : 10
- 1) 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) $(\sum (S[i] - Q[i])^2)^{1/2}$
 - 2) Find five similar stocks to IBM's stock is example of _____ query.
 - a) Nearest neighbor
 - b) all pairs
 - c) spatial join
 - d) None of the above
 - 3) _____ evaluation allows the application to control when to do work of obtaining new results.
 - a) Full
 - b) Lazy
 - 4) Fraction of documents known (to the user) to be relevant which has actually been retrieved is _____.
 - a) Coverage
 - b) Novelty
 - c) Recall effort
 - d) Relative recall
 - 5) Term _____ refers to the position in the text of a sequence of words which satisfies the user query.
 - a) node
 - b) region
 - c) match point
 - d) section
 - 6) If query is 'Digital Library' and system retrieves all pages containing words 'Digital Library' as entered in query. This is example of _____ retrieval.
 - a) Data
 - b) Information
 - c) Multimedia
 - d) None of the above

P.T.O.



- 7) The string _____ comes in the range between 'pace' and 'pavement'.
a) Pattern b) Placement c) Piece d) Paucity
- 8) No. of string comparisons required to build suffix array is _____.
a) $O(\log n)$ b) $O(n)$ c) $O(n \log n)$ d) $O(n^2)$
- 9) _____ predicates can be answered by using some form of metadata and database schema.
a) Attribute b) Structural c) Semantic d) All
- 10) In _____ algorithm Match and occurrence heuristic combined while sequential searching.
a) KMP b) BM c) BDM d) Shift-Or

1. B) Match correctly :

5

- 1) Classic Information Retrieval a) Structure guided model
2) Structured text retrieval model b) Allowing errors
3) Browsing model c) Probabilistic model
4) Pat Expressions d) Model based on proximal nodes
5) Pattern matching e) No special index structure

1. C) State whether the following statement is **True** or **False**.

5

- 1) Suffix arrays uses sequential search for searching.
2) In vector model, greater the angle between document vector and query vector, they are closer.
3) First day's stock value is a bad feature in searching the collection of equal length time series.
4) In Altavista a sequence of words is a reference to the union of all web pages having at least one of these words.
5) Query should not miss any qualifying object is called False Alarms.
-



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

B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL

Day and Date : Tuesday, 21-11-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**

- 1) Explain how probabilities are calculated in probabilistic model.
- 2) Explain information retrieval process.
- 3) Explain precision histograms.
- 4) Construct nondeterministic finite automaton for pattern 'course' with at most 2 errors and find whether word 'court' is accepted or not.
- 5) Define pattern and explain different patterns with example.
- 6) Construct suffix tree for the following text.
This is a text. A text has many words. Words are made from letters.

3. Attempt **any one** : **10**

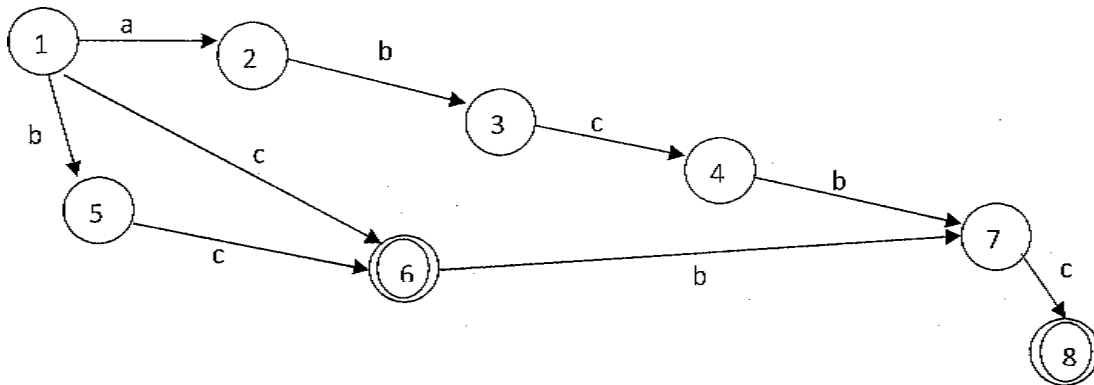
- 1) How BM algorithm works for following pattern and text ?
Text : bacbabababacaca
Pattern : ababaca



2) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.

Pattern : cbcba

Text : aabacbacbcba



4. Define retrieval performance evaluation. How performance is evaluated ? What are different measures of evaluation ? 10

SECTION – II

5. Attempt **any four** : 20

- 1) Define conceptual structure of type Generic Letter and Business_product_letter.
- 2) How the degree of relevance of retrieved objects is calculated in multimedia query language ?
- 3) Explain different techniques of crawling web.
- 4) Explain architectural issues in digital library.
- 5) Discuss the problems related to web data.
- 6) How to specify different conditions on multimedia data ?

6. Attempt **any one** : 10

- 1) What is ranking ? Explain HITS and Pagerank algorithm.
- 2) Why GEMINI approach is preferred ? Explain dimensionality curse and cross talk problem with example.

7. Explain MULTOS Query language with example. 10



SLR-TJ – 337

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

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

B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL

Day and Date : Tuesday, 21-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :**
- 1) Figures to the **right** indicate marks to a question.
 - 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. A) State whether the following statement is **True** or **False**. **5**
 - 1) Suffix arrays uses sequential search for searching.
 - 2) In vector model, greater the angle between document vector and query vector, they are closer.
 - 3) First day's stock value is a bad feature in searching the collection of equal length time series.
 - 4) In Altavista a sequence of words is a reference to the union of all web pages having at least one of these words.
 - 5) Query should not miss any qualifying object is called False Alarms.
1. B) Match correctly : **5**
 - 1) Classic Information Retrieval a) Structure guided model
 - 2) Structured text retrieval model b) Allowing errors
 - 3) Browsing model c) Probabilistic model
 - 4) Pat Expressions d) Model based on proximal nodes
 - 5) Pattern matching e) No special index structure

P.T.O.



1. C) Choose the correct answer :

10

- 1) If query is 'Digital Library' and system retrieves all pages containing words 'Digital Library' as entered in query. This is example of _____ retrieval.
a) Data b) Information c) Multimedia d) None of the above
- 2) The string _____ comes in the range between 'pace' and 'pavement'.
a) Pattern b) Placement c) Piece d) Paucity
- 3) No. of string comparisons required to build suffix array is _____
a) $O(\log n)$ b) $O(n)$ c) $O(n \log n)$ d) $O(n^2)$
- 4) _____ predicates can be answered by using some form of metadata and database schema.
a) Attribute b) Structural c) Semantic d) All
- 5) In _____ algorithm Match and occurrence heuristic combined while sequential searching.
a) KMP b) BM c) BDM d) Shift-Or
- 6) 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) $(\sum (S[i] - Q[i])^2)^{1/2}$
- 7) Find five similar stocks to IBM's stock is example of _____ query.
a) Nearest neighbor b) all pairs
c) Spatial join d) None of the above
- 8) _____ evaluation allows the application to control when to do work of obtaining new results.
a) Full b) Lazy
- 9) Fraction of documents known (to the user) to be relevant which has actually been retrieved is _____
a) Coverage b) Novelty c) Recall effort d) Relative recall
- 10) Term _____ refers to the position in the text of a sequence of words which satisfies the user query.
a) node b) region c) match point d) section



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

B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL

Day and Date : Tuesday, 21-11-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**

- 1) Explain how probabilities are calculated in probabilistic model.
- 2) Explain information retrieval process.
- 3) Explain precision histograms.
- 4) Construct nondeterministic finite automaton for pattern 'course' with at most 2 errors and find whether word 'court' is accepted or not.
- 5) Define pattern and explain different patterns with example.
- 6) Construct suffix tree for the following text.
This is a text. A text has many words. Words are made from letters.

3. Attempt **any one** : **10**

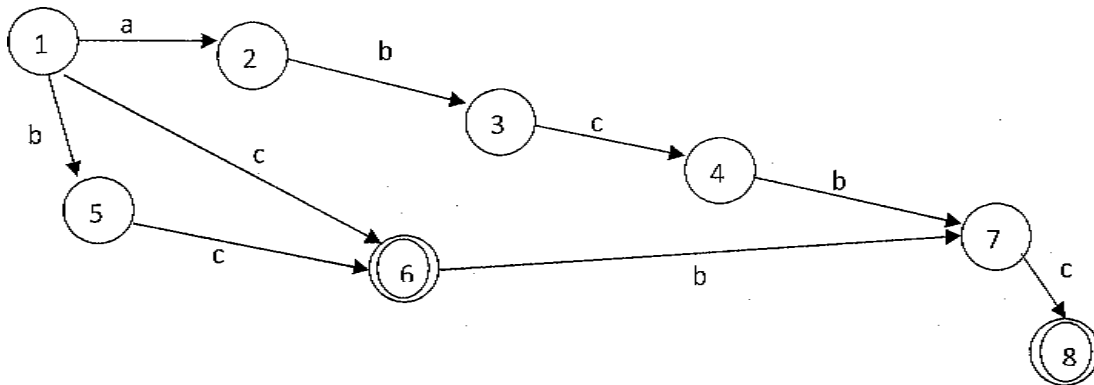
- 1) How BM algorithm works for following pattern and text ?
Text : bacbabababacaca
Pattern : ababaca



2) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.

Pattern : cbcba

Text : aabacbacbcba



4. Define retrieval performance evaluation. How performance is evaluated ? What are different measures of evaluation ? 10

SECTION – II

5. Attempt **any four** : 20

- 1) Define conceptual structure of type Generic Letter and Business_product_letter.
- 2) How the degree of relevance of retrieved objects is calculated in multimedia query language ?
- 3) Explain different techniques of crawling web.
- 4) Explain architectural issues in digital library.
- 5) Discuss the problems related to web data.
- 6) How to specify different conditions on multimedia data ?

6. Attempt **any one** : 10

- 1) What is ranking ? Explain HITS and Pagerank algorithm.
- 2) Why GEMINI approach is preferred ? Explain dimensionality curse and cross talk problem with example.

7. Explain MULTOS Query language with example. 10



SLR-TJ – 337

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

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

B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL

Day and Date : Tuesday, 21-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions:** 1) Figures to the **right** indicate marks to a question.
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. A) Match correctly : 5
- | | |
|------------------------------------|----------------------------------|
| 1) Classic Information Retrieval | a) Structure guided model |
| 2) Structured text retrieval model | b) Allowing errors |
| 3) Browsing model | c) Probabilistic model |
| 4) Pat Expressions | d) Model based on proximal nodes |
| 5) Pattern matching | e) No special index structure |
1. B) State whether the following statement is **True** or **False**. 5
- 1) Suffix arrays uses sequential search for searching.
 - 2) In vector model, greater the angle between document vector and query vector, they are closer.
 - 3) First day's stock value is a bad feature in searching the collection of equal length time series.
 - 4) In Altavista a sequence of words is a reference to the union of all web pages having at least one of these words.
 - 5) Query should not miss any qualifying object is called False Alarms.

P.T.O.



1. C) Choose the correct answer :

10

- 1) _____ predicates can be answered by using some form of metadata and database schema.
a) Attribute b) Structural c) Semantic d) All
- 2) In _____ algorithm Match and occurrence heuristic combined while sequential searching.
a) KMP b) BM c) BDM d) Shift-Or
- 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) Find five similar stocks to IBM's stock is example of _____ query.
a) Nearest neighbor b) all pairs
c) Spatial join d) None of the above
- 5) _____ evaluation allows the application to control when to do work of obtaining new results.
a) Full b) Lazy
- 6) Fraction of documents known (to the user) to be relevant which has actually been retrieved is _____
a) Coverage b) Novelty c) Recall effort d) Relative recall
- 7) Term _____ refers to the position in the text of a sequence of words which satisfies the user query.
a) node b) region c) match point d) section
- 8) If query is 'Digital Library' and system retrieves all pages containing words 'Digital Library' as entered in query. This is example of _____ retrieval.
a) Data b) Information c) Multimedia d) None of the above
- 9) The string _____ comes in the range between 'pace' and 'pavement'.
a) Pattern b) Placement c) Piece d) Paucity
- 10) No. of string comparisons required to build suffix array is _____
a) $O(\log n)$ b) $O(n)$ c) $O(n \log n)$ d) $O(n^2)$



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

**B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL**

Day and Date : Tuesday, 21-11-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**

- 1) Explain how probabilities are calculated in probabilistic model.
- 2) Explain information retrieval process.
- 3) Explain precision histograms.
- 4) Construct nondeterministic finite automaton for pattern 'course' with at most 2 errors and find whether word 'court' is accepted or not.
- 5) Define pattern and explain different patterns with example.
- 6) Construct suffix tree for the following text.
This is a text. A text has many words. Words are made from letters.

3. Attempt **any one** : **10**

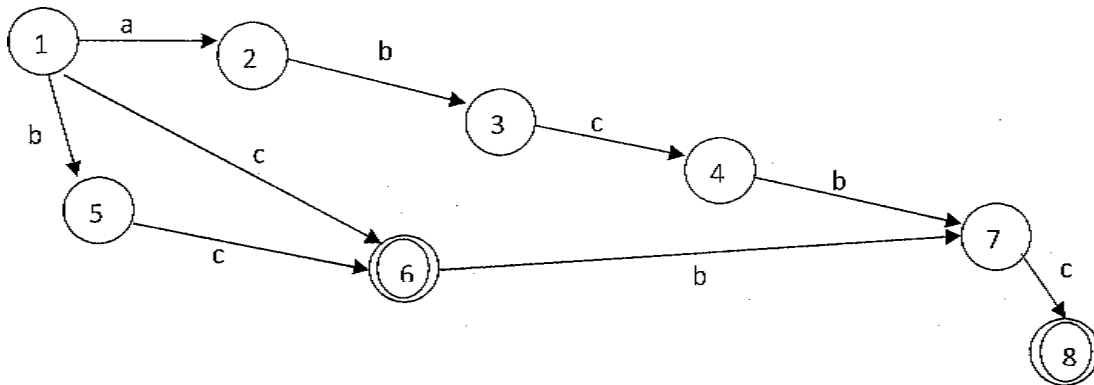
- 1) How BM algorithm works for following pattern and text ?
Text : bacbabababacaca
Pattern : ababaca



2) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.

Pattern : cbcba

Text : aabacbacbcba



4. Define retrieval performance evaluation. How performance is evaluated ? What are different measures of evaluation ? 10

SECTION – II

5. Attempt **any four** : 20

- 1) Define conceptual structure of type Generic Letter and Business_product_letter.
- 2) How the degree of relevance of retrieved objects is calculated in multimedia query language ?
- 3) Explain different techniques of crawling web.
- 4) Explain architectural issues in digital library.
- 5) Discuss the problems related to web data.
- 6) How to specify different conditions on multimedia data ?

6. Attempt **any one** : 10

- 1) What is ranking ? Explain HITS and Pagerank algorithm.
- 2) Why GEMINI approach is preferred ? Explain dimensionality curse and cross talk problem with example.

7. Explain MULTOS Query language with example. 10



SLR-TJ – 337

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

Set	S
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL

Day and Date : Tuesday, 21-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions:**
- 1) Figures to the **right** indicate marks to a question.
 - 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. A) State whether the following statement is **True** or **False**. **5**
 - 1) Suffix arrays uses sequential search for searching.
 - 2) In vector model, greater the angle between document vector and query vector, they are closer.
 - 3) First day's stock value is a bad feature in searching the collection of equal length time series.
 - 4) In Altavista a sequence of words is a reference to the union of all web pages having at least one of these words.
 - 5) Query should not miss any qualifying object is called False Alarms.
1. B) Match correctly : **5**
 - 1) Classic Information Retrieval a) Structure guided model
 - 2) Structured text retrieval model b) Allowing errors
 - 3) Browsing model c) Probabilistic model
 - 4) Pat Expressions d) Model based on proximal nodes
 - 5) Pattern matching e) No special index structure

P.T.O.



1. C) Choose the correct answer :

10

- 1) _____ evaluation allows the application to control when to do work of obtaining new results.
a) Full b) Lazy
 - 2) Fraction of documents known (to the user) to be relevant which has actually been retrieved is _____.
a) Coverage b) Novelty c) Recall effort d) Relative recall
 - 3) Term _____ refers to the position in the text of a sequence of words which satisfies the user query.
a) node b) region c) match point d) section
 - 4) If query is 'Digital Library' and system retrieves all pages containing words 'Digital Library' as entered in query. This is example of _____ retrieval.
a) Data b) Information c) Multimedia d) None of the above
 - 5) The string _____ comes in the range between 'pace' and 'pavement'.
a) Pattern b) Placement c) Piece d) Paucity
 - 6) No. of string comparisons required to build suffix array is _____.
a) $O(\log n)$ b) $O(n)$ c) $O(n \log n)$ d) $O(n^2)$
 - 7) _____ predicates can be answered by using some form of metadata and database schema.
a) Attribute b) Structural c) Semantic d) All
 - 8) In _____ algorithm Match and occurrence heuristic combined while sequential searching.
a) KMP b) BM c) BDM d) Shift-Or
 - 9) 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) $(\sum (S[i] - Q[i])^2)^{1/2}$
 - 10) Find five similar stocks to IBM's stock is example of _____ query.
a) Nearest neighbor b) all pairs
c) Spatial join d) None of the above
-



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

**B.E. (Information Technology) (Part – II) Examination, 2017
INFORMATION RETRIEVAL**

Day and Date : Tuesday, 21-11-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**

- 1) Explain how probabilities are calculated in probabilistic model.
- 2) Explain information retrieval process.
- 3) Explain precision histograms.
- 4) Construct nondeterministic finite automaton for pattern 'course' with at most 2 errors and find whether word 'court' is accepted or not.
- 5) Define pattern and explain different patterns with example.
- 6) Construct suffix tree for the following text.
This is a text. A text has many words. Words are made from letters.

3. Attempt **any one** : **10**

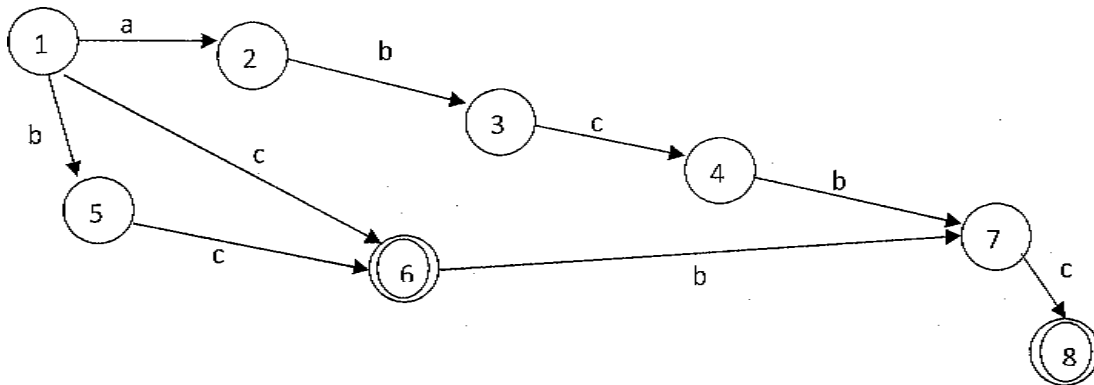
- 1) How BM algorithm works for following pattern and text ?
Text : bacbabababacaca
Pattern : ababaca



2) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.

Pattern : cbcba

Text : aabacbacbcba



4. Define retrieval performance evaluation. How performance is evaluated ? What are different measures of evaluation ? 10

SECTION – II

5. Attempt **any four** : 20

- 1) Define conceptual structure of type Generic Letter and Business_product_letter.
- 2) How the degree of relevance of retrieved objects is calculated in multimedia query language ?
- 3) Explain different techniques of crawling web.
- 4) Explain architectural issues in digital library.
- 5) Discuss the problems related to web data.
- 6) How to specify different conditions on multimedia data ?

6. Attempt **any one** : 10

- 1) What is ranking ? Explain HITS and Pagerank algorithm.
- 2) Why GEMINI approach is preferred ? Explain dimensionality curse and cross talk problem with example.

7. Explain MULTOS Query language with example. 10



SLR-TJ – 338

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

Set	P
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION

Day and Date : Wednesday, 22-11-2017
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) Draw figure **wherever** is necessary.
 - 4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer.

- 1) What is the basic service unit of cellular telephony ?
A) Location area
B) Cell
C) PLMN service area
D) MSC/VLR service area
- 2) Modulation refers to
A) the distance between the uplink and downlink frequencies
B) the separation between adjacent carrier frequencies
C) the process of changing the characteristics of a carrier frequency
D) the number of cycles per unit of time
- 3) The authentication centre (AUC) provides authentication and encryption parameters that verify the user's identity and ensure the confidentiality of each call
A) True
B) False
- 4) A _____ is a computerized centre that is responsible for connecting calls, recording call information and billing.
A) Base station
B) Mobile switching centre
C) Cell
D) Mobile station
- 5) What is the routing algorithm used in MANETs ?
A) Shortest Path First
B) Routing Information Protocol
C) Distance Vector Protocol
D) Ad hoc on-demand Distance Vector Protocol
- 6) It is the presence of one or more continuous, unwanted tones within the message channels, the tones are often caused by crosstalk or 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
- 7) 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
- 8) 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

P.T.O.



- 9) The technique adopted to increase the system capacity and reduce co-chl interference is
A) High power BTS
B) By installing the Omni directional antenna
C) Sectorisation
D) None of the above
- 10) Modulation technique used in DECT is
A) GFSK
B) QPSK
C) BPSK
D) None of the above
- 11) 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
- 12) FDMA is the division of
A) Time
B) Phase
C) Spectrum
D) Amplitude
- 13) Guard band is
A) The small unused bandwidth between the frequency channels to avoid interference
B) The bandwidth allotted to the signal
C) The channel spectrum
D) The spectrum acquired by the noise between the signals
- 14) The windowing technique used for speech coding in GSM Codec is
A) Blackman window
B) Welch window
C) Cosine window
D) Hamming window
- 15) TDMA is employed with a TDMA frame that has preamble. The preamble contains Address of base station and subscribers
1) Synchronization information
2) Frequency allotted
3) Coded sequence
4) Sectorization
A) 1 and 2 are correct
B) 1, 2 and 3 are correct
C) 2 and 4 are correct
D) All the four correct
- 16) World's first cellular system was developed by
A) Nippon Telephone and Telegraph (NTT)
B) Bellcore and Motorola
C) AT&T Bell Laboratories
D) Qualcomm
- 17) Coherence time refers to
A) Time required to attain a call with the busy base station
B) Time required for synchronization between the transmitter and the receiver
C) Minimum time for change in magnitude and phase of the channel
D) None of the above
- 18) Doppler spread refers to
A) Signal fading due to Doppler shift in the channel
B) Temporary failure of message transfer
C) Large coherence time of the channel as compared to the delay constraints
D) All of the above
- 19) Interference in cellular systems is caused by
A) Two base stations operating in same frequency band
B) Two calls in progress in nearby mobile stations
C) Leakage of energy signals by non-cellular systems into cellular frequency band
D) All of the above
- 20) The minimum spectrum allocation required for W-CDMA is
A) 5 MHz
B) 2 MHz
C) 500 KHz
D) 100 KHz



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

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

Day and Date : Wednesday, 22-11-2017
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) State and explain the different entities and terminology, also explain the IP packet delivery.
 - b) Explain the registration of mobile node via FA and directly with HA, with registration request and reply.
 - c) Explain the handover decision and Intra-MSC handover with figure.
 - d) Explain the GPRS architecture with GPRS transmission plane protocol reference model.
 - e) Explain the comparison between SDMA, TDMA, FDMA and CDMA.
3. a) What is spread spectrum ? How spreading is achieved also explain the following : **10**
- 1) DSSS
 - 2) FHSS.

OR

- b) Explain the following w.r.t. mobile IP network :
- 1) Entities
 - 2) Packet loss
 - 3) Registration
 - 4) Tunnelling and encapsulation.
4. Write note on **(any two)** : **(2×5=10)**
- a) Tunnelling and encapsulation.
 - b) Ubiquitous computing.
 - c) IPv4 and IPv6.

Set P



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain the several mechanism of TCP that influence the efficiency of in mobile environment.
 - b) Explain with figure wireless media access technique using CSMA/CA.
 - c) State and explain the several requirements of location management.
 - d) Explain the power management in 802.11.
 - e) Explain with example transaction oriented TCP.
6. a) Explain the following w.r.t Bluetooth : **10**
- 1) User scenario
 - 2) Piconet and scatternet
 - 3) Protocol stack.
- OR
- b) Explain with example routing protocols DSR and AODV.
7. Write note on (**any two**) : **(2×5=10)**
- a) Snooping TCP.
 - b) Security in wireless LANs.
 - c) Adhoc routing and sensor network.
-



SLR-TJ – 338

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

Set	Q
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION

Day and Date : Wednesday, 22-11-2017
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) Draw figure **wherever** is necessary.
 - 4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer.

- 1) World's first cellular system was developed by
A) Nippon Telephone and Telegraph (NTT) B) Bellcore and Motorola
C) AT&T Bell Laboratories D) Qualcomm
- 2) Coherence time refers to
A) Time required to attain a call with the busy base station
B) Time required for synchronization between the transmitter and the receiver
C) Minimum time for change in magnitude and phase of the channel
D) None of the above
- 3) Doppler spread refers to
A) Signal fading due to Doppler shift in the channel
B) Temporary failure of message transfer
C) Large coherence time of the channel as compared to the delay constraints
D) All of the above
- 4) Interference in cellular systems is caused by
A) Two base stations operating in same frequency band
B) Two calls in progress in nearby mobile stations
C) Leakage of energy signals by non-cellular systems into cellular frequency band
D) All of the above
- 5) The minimum spectrum allocation required for W-CDMA is
A) 5 MHz B) 2 MHz C) 500 KHz D) 100 KHz
- 6) What is the basic service unit of cellular telephony ?
A) Location area B) Cell
C) PLMN service area D) MSC/VLR service area
- 7) Modulation refers to
A) the distance between the uplink and downlink frequencies
B) the separation between adjacent carrier frequencies
C) the process of changing the characteristics of a carrier frequency
D) the number of cycles per unit of time

P.T.O.



- 8) The authentication centre (AUC) provides authentication and encryption parameters that verify the user's identity and ensure the confidentiality of each call
A) True B) False
- 9) A _____ is a computerized centre that is responsible for connecting calls, recording call information and billing.
A) Base station B) Mobile switching centre
C) Cell D) Mobile station
- 10) What is the routing algorithm used in MANETs ?
A) Shortest Path First B) Routing Information Protocol
C) Distance Vector Protocol D) Ad hoc on-demand Distance Vector Protocol
- 11) It is the presence of one or more continuous, unwanted tones within the message channels, the tones are often caused by crosstalk or 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
- 12) 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
- 13) 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
- 14) The technique adopted to increase the system capacity and reduce co-chl interference is
A) High power BTS B) By installing the Omni directional antenna
C) Sectorisation D) None of the above
- 15) Modulation technique used in DECT is
A) GFSK B) QPSK C) BPSK D) None of the above
- 16) 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
- 17) FDMA is the division of
A) Time B) Phase C) Spectrum D) Amplitude
- 18) Guard band is
A) The small unused bandwidth between the frequency channels to avoid interference
B) The bandwidth allotted to the signal
C) The channel spectrum
D) The spectrum acquired by the noise between the signals
- 19) The windowing technique used for speech coding in GSM Codec is
A) Blackman window B) Welch window
C) Cosine window D) Hamming window
- 20) TDMA is employed with a TDMA frame that has preamble. The preamble contains Address of base station and subscribers
1) Synchronization information 2) Frequency allotted
3) Coded sequence 4) Sectorization
A) 1 and 2 are correct B) 1, 2 and 3 are correct
C) 2 and 4 are correct D) All the four correct



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

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

Day and Date : Wednesday, 22-11-2017
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) State and explain the different entities and terminology, also explain the IP packet delivery.
 - b) Explain the registration of mobile node via FA and directly with HA, with registration request and reply.
 - c) Explain the handover decision and Intra-MSC handover with figure.
 - d) Explain the GPRS architecture with GPRS transmission plane protocol reference model.
 - e) Explain the comparison between SDMA, TDMA, FDMA and CDMA.
3. a) What is spread spectrum ? How spreading is achieved also explain the following : **10**
- 1) DSSS
 - 2) FHSS.

OR

- b) Explain the following w.r.t. mobile IP network :
- 1) Entities
 - 2) Packet loss
 - 3) Registration
 - 4) Tunnelling and encapsulation.
4. Write note on (**any two**) : **(2×5=10)**
- a) Tunnelling and encapsulation.
 - b) Ubiquitous computing.
 - c) IPv4 and IPv6.

Set Q



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain the several mechanism of TCP that influence the efficiency of in mobile environment.
 - b) Explain with figure wireless media access technique using CSMA/CA.
 - c) State and explain the several requirements of location management.
 - d) Explain the power management in 802.11.
 - e) Explain with example transaction oriented TCP.
6. a) Explain the following w.r.t Bluetooth : **10**
- 1) User scenario
 - 2) Piconet and scatternet
 - 3) Protocol stack.
- OR
- b) Explain with example routing protocols DSR and AODV.
7. Write note on (**any two**) : **(2×5=10)**
- a) Snooping TCP.
 - b) Security in wireless LANs.
 - c) Adhoc routing and sensor network.
-



SLR-TJ – 338

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

Set	R
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION

Day and Date : Wednesday, 22-11-2017
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) Draw figure **wherever** is necessary.
 - 4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer.

- 1) 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
- 2) FDMA is the division of
A) Time B) Phase C) Spectrum D) Amplitude
- 3) Guard band is
A) The small unused bandwidth between the frequency channels to avoid interference
B) The bandwidth allotted to the signal
C) The channel spectrum
D) The spectrum acquired by the noise between the signals
- 4) The windowing technique used for speech coding in GSM Codec is
A) Blackman window B) Welch window
C) Cosine window D) Hamming window
- 5) TDMA is employed with a TDMA frame that has preamble. The preamble contains Address of base station and subscribers
1) Synchronization information 2) Frequency allotted
3) Coded sequence 4) Sectorization
A) 1 and 2 are correct B) 1, 2 and 3 are correct
C) 2 and 4 are correct D) All the four correct
- 6) World's first cellular system was developed by
A) Nippon Telephone and Telegraph (NTT) B) Bellcore and Motorola
C) AT&T Bell Laboratories D) Qualcomm
- 7) Coherence time refers to
A) Time required to attain a call with the busy base station
B) Time required for synchronization between the transmitter and the receiver
C) Minimum time for change in magnitude and phase of the channel
D) None of the above

P.T.O.



- 8) Doppler spread refers to
A) Signal fading due to Doppler shift in the channel
B) Temporary failure of message transfer
C) Large coherence time of the channel as compared to the delay constraints
D) All of the above
- 9) Interference in cellular systems is caused by
A) Two base stations operating in same frequency band
B) Two calls in progress in nearby mobile stations
C) Leakage of energy signals by non-cellular systems into cellular frequency band
D) All of the above
- 10) The minimum spectrum allocation required for W-CDMA is
A) 5 MHz B) 2 MHz C) 500 KHz D) 100 KHz
- 11) What is the basic service unit of cellular telephony ?
A) Location area B) Cell
C) PLMN service area D) MSC/VLR service area
- 12) Modulation refers to
A) the distance between the uplink and downlink frequencies
B) the separation between adjacent carrier frequencies
C) the process of changing the characteristics of a carrier frequency
D) the number of cycles per unit of time
- 13) The authentication centre (AUC) provides authentication and encryption parameters that verify the user's identity and ensure the confidentiality of each call
A) True B) False
- 14) A _____ is a computerized centre that is responsible for connecting calls, recording call information and billing.
A) Base station B) Mobile switching centre
C) Cell D) Mobile station
- 15) What is the routing algorithm used in MANETs ?
A) Shortest Path First B) Routing Information Protocol
C) Distance Vector Protocol D) Ad hoc on-demand Distance Vector Protocol
- 16) It is the presence of one or more continuous, unwanted tones within the message channels, the tones are often caused by crosstalk or 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
- 17) 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
- 18) 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
- 19) The technique adopted to increase the system capacity and reduce co-chl interference is
A) High power BTS B) By installing the Omni directional antenna
C) Sectorisation D) None of the above
- 20) Modulation technique used in DECT is
A) GFSK B) QPSK C) BPSK D) None of the above



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

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

Day and Date : Wednesday, 22-11-2017
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) State and explain the different entities and terminology, also explain the IP packet delivery.
 - b) Explain the registration of mobile node via FA and directly with HA, with registration request and reply.
 - c) Explain the handover decision and Intra-MSC handover with figure.
 - d) Explain the GPRS architecture with GPRS transmission plane protocol reference model.
 - e) Explain the comparison between SDMA, TDMA, FDMA and CDMA.
3. a) What is spread spectrum ? How spreading is achieved also explain the following : **10**
- 1) DSSS
 - 2) FHSS.

OR

- b) Explain the following w.r.t. mobile IP network :
- 1) Entities
 - 2) Packet loss
 - 3) Registration
 - 4) Tunnelling and encapsulation.
4. Write note on **(any two)** : **(2×5=10)**
- a) Tunnelling and encapsulation.
 - b) Ubiquitous computing.
 - c) IPv4 and IPv6.

Set R



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain the several mechanism of TCP that influence the efficiency of in mobile environment.
 - b) Explain with figure wireless media access technique using CSMA/CA.
 - c) State and explain the several requirements of location management.
 - d) Explain the power management in 802.11.
 - e) Explain with example transaction oriented TCP.
6. a) Explain the following w.r.t Bluetooth : **10**
- 1) User scenario
 - 2) Piconet and scatternet
 - 3) Protocol stack.
- OR
- b) Explain with example routing protocols DSR and AODV.
7. Write note on (**any two**) : **(2×5=10)**
- a) Snooping TCP.
 - b) Security in wireless LANs.
 - c) Adhoc routing and sensor network.
-



SLR-TJ – 338

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

Set	S
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION

Day and Date : Wednesday, 22-11-2017
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) Draw figure **wherever** is necessary.
 - 4) Assume suitable data if **necessary**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer.

- 1) It is the presence of one or more continuous, unwanted tones within the message channels, the tones are often caused by crosstalk or 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
- 2) 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
- 3) 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
- 4) The technique adopted to increase the system capacity and reduce co-chl interference is
A) High power BTS B) By installing the Omni directional antenna
C) Sectorisation D) None of the above
- 5) Modulation technique used in DECT is
A) GFSK B) QPSK C) BPSK D) None of the above
- 6) 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
- 7) FDMA is the division of
A) Time B) Phase C) Spectrum D) Amplitude
- 8) Guard band is
A) The small unused bandwidth between the frequency channels to avoid interference
B) The bandwidth allotted to the signal
C) The channel spectrum
D) The spectrum acquired by the noise between the signals
- 9) The windowing technique used for speech coding in GSM Codec is
A) Blackman window B) Welch window
C) Cosine window D) Hamming window

P.T.O.



- 10) TDMA is employed with a TDMA frame that has preamble. The preamble contains Address of base station and subscribers
- 1) Synchronization information
 - 2) Frequency allotted
 - 3) Coded sequence
 - 4) Sectorization
- A) 1 and 2 are correct B) 1, 2 and 3 are correct
C) 2 and 4 are correct D) All the four correct
- 11) World's first cellular system was developed by
- A) Nippon Telephone and Telegraph (NTT) B) Bellcore and Motorola
C) AT&T Bell Laboratories D) Qualcomm
- 12) Coherence time refers to
- A) Time required to attain a call with the busy base station
 - B) Time required for synchronization between the transmitter and the receiver
 - C) Minimum time for change in magnitude and phase of the channel
 - D) None of the above
- 13) Doppler spread refers to
- A) Signal fading due to Doppler shift in the channel
 - B) Temporary failure of message transfer
 - C) Large coherence time of the channel as compared to the delay constraints
 - D) All of the above
- 14) Interference in cellular systems is caused by
- A) Two base stations operating in same frequency band
 - B) Two calls in progress in nearby mobile stations
 - C) Leakage of energy signals by non-cellular systems into cellular frequency band
 - D) All of the above
- 15) The minimum spectrum allocation required for W-CDMA is
- A) 5 MHz B) 2 MHz C) 500 KHz D) 100 KHz
- 16) What is the basic service unit of cellular telephony ?
- A) Location area B) Cell
C) PLMN service area D) MSC/VLR service area
- 17) Modulation refers to
- A) the distance between the uplink and downlink frequencies
 - B) the separation between adjacent carrier frequencies
 - C) the process of changing the characteristics of a carrier frequency
 - D) the number of cycles per unit of time
- 18) The authentication centre (AUC) provides authentication and encryption parameters that verify the user's identity and ensure the confidentiality of each call
- A) True B) False
- 19) A _____ is a computerized centre that is responsible for connecting calls, recording call information and billing.
- A) Base station B) Mobile switching centre
C) Cell D) Mobile station
- 20) What is the routing algorithm used in MANETs ?
- A) Shortest Path First B) Routing Information Protocol
C) Distance Vector Protocol D) Ad hoc on-demand Distance Vector Protocol



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

**B.E. (Information Technology) (Part – II) Examination, 2017
MOBILE COMPUTING AND APPLICATION**

Day and Date : Wednesday, 22-11-2017
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) State and explain the different entities and terminology, also explain the IP packet delivery.
 - b) Explain the registration of mobile node via FA and directly with HA, with registration request and reply.
 - c) Explain the handover decision and Intra-MSC handover with figure.
 - d) Explain the GPRS architecture with GPRS transmission plane protocol reference model.
 - e) Explain the comparison between SDMA, TDMA, FDMA and CDMA.
3. a) What is spread spectrum ? How spreading is achieved also explain the following : **10**
- 1) DSSS
 - 2) FHSS.

OR

- b) Explain the following w.r.t. mobile IP network :
- 1) Entities
 - 2) Packet loss
 - 3) Registration
 - 4) Tunnelling and encapsulation.
4. Write note on **(any two)** : **(2×5=10)**
- a) Tunnelling and encapsulation.
 - b) Ubiquitous computing.
 - c) IPv4 and IPv6.

Set S



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain the several mechanism of TCP that influence the efficiency of in mobile environment.
 - b) Explain with figure wireless media access technique using CSMA/CA.
 - c) State and explain the several requirements of location management.
 - d) Explain the power management in 802.11.
 - e) Explain with example transaction oriented TCP.
6. a) Explain the following w.r.t Bluetooth : **10**
- 1) User scenario
 - 2) Piconet and scatternet
 - 3) Protocol stack.
- OR
- b) Explain with example routing protocols DSR and AODV.
7. Write note on (**any two**) : **(2×5=10)**
- a) Snooping TCP.
 - b) Security in wireless LANs.
 - c) Adhoc routing and sensor network.
-



SLR-TJ – 339

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

Set	P
-----	---

B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY

Day and Date : Thursday, 23-11-2017
Time : 3.00 p.m. to 6.00 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) _____ is the specification for an information security management system.
a) ISO 27000 b) ISO 27004 c) ISO 27001 d) ISO 27002
- 2) Which of the following describes programs that can run independently, travel from system to system and disrupt computer communication ?
a) Viruses b) Trojans c) Droppers d) Worm
- 3) A and B perform Diffie-Hellman key exchange using $p = 53$ and $g = 2$. If A choose her secret = 10 and B chooses his secret = 33, then the common secret they agree upon is
a) 44 b) 12 c) 27 d) 6
- 4) A _____ is a key used between entities for the purpose of distributing session keys.
a) Session Key b) Private Key c) Permanent Key d) Asymmetric Key
- 5) _____ was invented by Phil Zimmerman.
a) IPsec. b) SSL c) PGP d) None of the above
- 6) The things carried out by means of electronic data interchange and other means of electronic communication, is commonly referred to as
a) e-Communication b) e-Governance
c) e-Record d) e-Commerce
- 7) _____ defines a security service as a service that is provided by a protocol layer of communicating open systems and that ensures adequate security of that system or of data transfers.
a) X.801 b) X.800 c) X.008 d) X.108
- 8) Which scheme is used in Data Encryption Standard (DES) ?
a) Block cipher b) Stream cipher
c) Bit cipher d) None of the mentioned

P.T.O.



- 9) _____ is a computer on a network which acts as an intermediary for connections with other computers on that network.
- a) Hot Spot
 - b) Proxy Server
 - c) Host machine
 - d) Main server machine
- 10) An undetected intrusion is referred to as a false negative.
- a) True
 - b) False
- 11) A MAC may be implemented using DES in
- a) ECB mode
 - b) CBC mode
 - c) CFB mode
 - d) Counter mode
- 12) Attacks based on linear cryptanalysis use
- a) Chosen ciphertext only
 - b) Chosen plaintext
 - c) Known ciphertext only
 - d) Known plaintext-ciphertext pairs
- 13) Which of the following is NAT compatible with ?
- a) AH in transport mode
 - b) AH in tunnel mode
 - c) ESP in transport mode
 - d) ESP in tunnel mode
- 14) The advantage of IKE Phase 1 Main mode over IKE Phase 1 Aggressive mode is
- a) Main mode uses fewer messages
 - b) Main mode provides greater security
 - c) Main mode hides the identities of the communicating entities
 - d) Main mode has a larger suite of options for key exchange
- 15) Which of the following makes filtering decisions based on application payload ?
- a) Packet filter
 - b) Stateful packet inspection firewall
 - c) Deep inspection firewall
 - d) Reverse proxy
- 16) This type of attack attempts to slow down or stop a computer system or network by flooding it with requests for information and data.
- a) Cracker
 - b) Denial of service
 - c) Hacker
 - d) Trojan horse
- 17) 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 force cracking
- 18) _____ 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
- 19) 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 behaviour that accompany an attack
 - c) A network-based IDS identifies whether the behaviour 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
- 20) In computer security, _____ means the protection of data from unauthorized disclosure.
- a) Confidentiality
 - b) Integrity
 - c) Availability
 - d) Authenticity



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

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Thursday, 23-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Write short notes (**any four**) : **20**
- a) A model for network security
 - b) SSL Record layer protocol
 - c) MAC and other applications
 - d) Public key cryptography
 - e) X.509 digital certificate format.
3. A) What are the different types of PKI architectures ? Describe each in detail. **10**
- OR
- B) Explain the Internet Key Exchange (IKE) Protocol Phase-I in detail. **10**
4. Describe the different types of security attacks. **10**

SECTION – II

5. Answer the following (**any four**) : **20**
- a) Compare between host-based and network-based intrusion detection system.
 - b) What is Phishing ? Illustrate.
 - c) Describe the positive aspects of ITA 2000.
 - d) Differentiate between a computer virus and worm.
 - e) What are spywares ? How do they work ?
6. A) What is a firewall ? Explain the different types of firewalls with diagrams. **10**
- OR
- B) What are keyloggers ? Explain the different types of keyloggers. **10**
7. Explain in detail Proxy Servers and Anonymizers. **10**

Set P



- 8) A and B perform Diffie-Hellman key exchange using $p = 53$ and $g = 2$. If A choose her secret = 10 and B chooses his secret = 33, then the common secret they agree upon is
a) 44 b) 12 c) 27 d) 6
- 9) A _____ is a key used between entities for the purpose of distributing session keys.
a) Session Key b) Private Key c) Permanent Key d) Asymmetric Key
- 10) _____ was invented by Phil Zimmerman.
a) IPsec. b) SSL c) PGP d) None of the above
- 11) The things carried out by means of electronic data interchange and other means of electronic communication, is commonly referred to as
a) e-Communication b) e-Governance
c) e-Record d) e-Commerce
- 12) _____ defines a security service as a service that is provided by a protocol layer of communicating open systems and that ensures adequate security of that system or of data transfers.
a) X.801 b) X.800 c) X.008 d) X.108
- 13) Which scheme is used in Data Encryption Standard (DES) ?
a) Block cipher b) Stream cipher
c) Bit cipher d) None of the mentioned
- 14) _____ is a computer on a network which acts as an intermediary for connections with other computers on that network.
a) Hot Spot b) Proxy Server
c) Host machine d) Main server machine
- 15) An undetected intrusion is referred to as a false negative.
a) True b) False
- 16) A MAC may be implemented using DES in
a) ECB mode b) CBC mode c) CFB mode d) Counter mode
- 17) Attacks based on linear cryptanalysis use
a) Chosen ciphertext only b) Chosen plaintext
c) Known ciphertext only d) Known plaintext-ciphertext pairs
- 18) Which of the following is NAT compatible with ?
a) AH in transport mode b) AH in tunnel mode
c) ESP in transport mode d) ESP in tunnel mode
- 19) The advantage of IKE Phase 1 Main mode over IKE Phase 1 Aggressive mode is
a) Main mode uses fewer messages
b) Main mode provides greater security
c) Main mode hides the identities of the communicating entities
d) Main mode has a larger suite of options for key exchange
- 20) Which of the following makes filtering decisions based on application payload ?
a) Packet filter b) Stateful packet inspection firewall
c) Deep inspection firewall d) Reverse proxy



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

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Thursday, 23-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Write short notes (**any four**) : **20**
- a) A model for network security
 - b) SSL Record layer protocol
 - c) MAC and other applications
 - d) Public key cryptography
 - e) X.509 digital certificate format.
3. A) What are the different types of PKI architectures ? Describe each in detail. **10**
- OR
- B) Explain the Internet Key Exchange (IKE) Protocol Phase-I in detail. **10**
4. Describe the different types of security attacks. **10**

SECTION – II

5. Answer the following (**any four**) : **20**
- a) Compare between host-based and network-based intrusion detection system.
 - b) What is Phishing ? Illustrate.
 - c) Describe the positive aspects of ITA 2000.
 - d) Differentiate between a computer virus and worm.
 - e) What are spywares ? How do they work ?
6. A) What is a firewall ? Explain the different types of firewalls with diagrams. **10**
- OR
- B) What are keyloggers ? Explain the different types of keyloggers. **10**
7. Explain in detail Proxy Servers and Anonymizers. **10**

Set Q



SLR-TJ – 339

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

Set	R
-----	---

B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY

Day and Date : Thursday, 23-11-2017
Time : 3.00 p.m. to 6.00 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) A MAC may be implemented using DES in
a) ECB mode b) CBC mode c) CFB mode d) Counter mode
- 2) Attacks based on linear cryptanalysis use
a) Chosen ciphertext only b) Chosen plaintext
c) Known ciphertext only d) Known plaintext-ciphertext pairs
- 3) Which of the following is NAT compatible with ?
a) AH in transport mode b) AH in tunnel mode
c) ESP in transport mode d) ESP in tunnel mode
- 4) The advantage of IKE Phase 1 Main mode over IKE Phase 1 Aggressive mode is
a) Main mode uses fewer messages
b) Main mode provides greater security
c) Main mode hides the identities of the communicating entities
d) Main mode has a larger suite of options for key exchange
- 5) Which of the following makes filtering decisions based on application payload ?
a) Packet filter b) Stateful packet inspection firewall
c) Deep inspection firewall d) Reverse proxy
- 6) This type of attack attempts to slow down or stop a computer system or network by flooding it with requests for information and data.
a) Cracker b) Denial of service
c) Hacker d) Trojan horse
- 7) 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 force cracking
- 8) _____ 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

P.T.O.



- 9) 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 behaviour that accompany an attack
 - c) A network-based IDS identifies whether the behaviour 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
- 10) In computer security, _____ means the protection of data from unauthorized disclosure.
- a) Confidentiality
 - b) Integrity
 - c) Availability
 - d) Authenticity
- 11) _____ is the specification for an information security management system.
- a) ISO 27000
 - b) ISO 27004
 - c) ISO 27001
 - d) ISO 27002
- 12) Which of the following describes programs that can run independently, travel from system to system and disrupt computer communication ?
- a) Viruses
 - b) Trojans
 - c) Droppers
 - d) Worm
- 13) A and B perform Diffie-Hellman key exchange using $p = 53$ and $g = 2$. If A choose her secret = 10 and B chooses his secret = 33, then the common secret they agree upon is
- a) 44
 - b) 12
 - c) 27
 - d) 6
- 14) A _____ is a key used between entities for the purpose of distributing session keys.
- a) Session Key
 - b) Private Key
 - c) Permanent Key
 - d) Asymmetric Key
- 15) _____ was invented by Phil Zimmerman.
- a) IPsec.
 - b) SSL
 - c) PGP
 - d) None of the above
- 16) The things carried out by means of electronic data interchange and other means of electronic communication, is commonly referred to as
- a) e-Communication
 - b) e-Governance
 - c) e-Record
 - d) e-Commerce
- 17) _____ defines a security service as a service that is provided by a protocol layer of communicating open systems and that ensures adequate security of that system or of data transfers.
- a) X.801
 - b) X.800
 - c) X.008
 - d) X.108
- 18) Which scheme is used in Data Encryption Standard (DES) ?
- a) Block cipher
 - b) Stream cipher
 - c) Bit cipher
 - d) None of the mentioned
- 19) _____ is a computer on a network which acts as an intermediary for connections with other computers on that network.
- a) Hot Spot
 - b) Proxy Server
 - c) Host machine
 - d) Main server machine
- 20) An undetected intrusion is referred to as a false negative.
- a) True
 - b) False
-



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

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Thursday, 23-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Write short notes (**any four**) : **20**
- a) A model for network security
 - b) SSL Record layer protocol
 - c) MAC and other applications
 - d) Public key cryptography
 - e) X.509 digital certificate format.
3. A) What are the different types of PKI architectures ? Describe each in detail. **10**
- OR
- B) Explain the Internet Key Exchange (IKE) Protocol Phase-I in detail. **10**
4. Describe the different types of security attacks. **10**

SECTION – II

5. Answer the following (**any four**) : **20**
- a) Compare between host-based and network-based intrusion detection system.
 - b) What is Phishing ? Illustrate.
 - c) Describe the positive aspects of ITA 2000.
 - d) Differentiate between a computer virus and worm.
 - e) What are spywares ? How do they work ?
6. A) What is a firewall ? Explain the different types of firewalls with diagrams. **10**
- OR
- B) What are keyloggers ? Explain the different types of keyloggers. **10**
7. Explain in detail Proxy Servers and Anonymizers. **10**

Set R



SLR-TJ – 339

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

Set	S
-----	---

B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY

Day and Date : Thursday, 23-11-2017
Time : 3.00 p.m. to 6.00 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 things carried out by means of electronic data interchange and other means of electronic communication, is commonly referred to as
 - a) e-Communication
 - b) e-Governance
 - c) e-Record
 - d) e-Commerce
- 2) _____ defines a security service as a service that is provided by a protocol layer of communicating open systems and that ensures adequate security of that system or of data transfers.
 - a) X.801
 - b) X.800
 - c) X.008
 - d) X.108
- 3) Which scheme is used in Data Encryption Standard (DES) ?
 - a) Block cipher
 - b) Stream cipher
 - c) Bit cipher
 - d) None of the mentioned
- 4) _____ is a computer on a network which acts as an intermediary for connections with other computers on that network.
 - a) Hot Spot
 - b) Proxy Server
 - c) Host machine
 - d) Main server machine
- 5) An undetected intrusion is referred to as a false negative.
 - a) True
 - b) False
- 6) A MAC may be implemented using DES in
 - a) ECB mode
 - b) CBC mode
 - c) CFB mode
 - d) Counter mode
- 7) Attacks based on linear cryptanalysis use
 - a) Chosen ciphertext only
 - b) Chosen plaintext
 - c) Known ciphertext only
 - d) Known plaintext-ciphertext pairs
- 8) Which of the following is NAT compatible with ?
 - a) AH in transport mode
 - b) AH in tunnel mode
 - c) ESP in transport mode
 - d) ESP in tunnel mode

P.T.O.



- 9) The advantage of IKE Phase 1 Main mode over IKE Phase 1 Aggressive mode is
- a) Main mode uses fewer messages
 - b) Main mode provides greater security
 - c) Main mode hides the identities of the communicating entities
 - d) Main mode has a larger suite of options for key exchange
- 10) Which of the following makes filtering decisions based on application payload ?
- a) Packet filter
 - b) Stateful packet inspection firewall
 - c) Deep inspection firewall
 - d) Reverse proxy
- 11) This type of attack attempts to slow down or stop a computer system or network by flooding it with requests for information and data.
- a) Cracker
 - b) Denial of service
 - c) Hacker
 - d) Trojan horse
- 12) 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 force cracking
- 13) _____ 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
- 14) 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 behaviour that accompany an attack
 - c) A network-based IDS identifies whether the behaviour 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
- 15) In computer security, _____ means the protection of data from unauthorized disclosure.
- a) Confidentiality
 - b) Integrity
 - c) Availability
 - d) Authenticity
- 16) _____ is the specification for an information security management system.
- a) ISO 27000
 - b) ISO 27004
 - c) ISO 27001
 - d) ISO 27002
- 17) Which of the following describes programs that can run independently, travel from system to system and disrupt computer communication ?
- a) Viruses
 - b) Trojans
 - c) Droppers
 - d) Worm
- 18) A and B perform Diffie-Hellman key exchange using $p = 53$ and $g = 2$. If A choose her secret = 10 and B chooses his secret = 33, then the common secret they agree upon is
- a) 44
 - b) 12
 - c) 27
 - d) 6
- 19) A _____ is a key used between entities for the purpose of distributing session keys.
- a) Session Key
 - b) Private Key
 - c) Permanent Key
 - d) Asymmetric Key
- 20) _____ was invented by Phil Zimmerman.
- a) IPsec.
 - b) SSL
 - c) PGP
 - d) None of the above



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

**B.E. (I.T.) (Part – II) Examination, 2017
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Thursday, 23-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Write short notes (**any four**) : **20**
- a) A model for network security
 - b) SSL Record layer protocol
 - c) MAC and other applications
 - d) Public key cryptography
 - e) X.509 digital certificate format.
3. A) What are the different types of PKI architectures ? Describe each in detail. **10**
- OR
- B) Explain the Internet Key Exchange (IKE) Protocol Phase-I in detail. **10**
4. Describe the different types of security attacks. **10**

SECTION – II

5. Answer the following (**any four**) : **20**
- a) Compare between host-based and network-based intrusion detection system.
 - b) What is Phishing ? Illustrate.
 - c) Describe the positive aspects of ITA 2000.
 - d) Differentiate between a computer virus and worm.
 - e) What are spywares ? How do they work ?
6. A) What is a firewall ? Explain the different types of firewalls with diagrams. **10**
- OR
- B) What are keyloggers ? Explain the different types of keyloggers. **10**
7. Explain in detail Proxy Servers and Anonymizers. **10**

Set S



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

Set

P

B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) The data is stored, retrieved and updated in
A) OLAP B) OLTP C) SMTP D) FTP
- 2) The full form of OLAP is
A) Online Analytical Processing B) Online Advanced Processing
C) Online Advanced Preparation D) Online Analytical Performance
- 3) _____ 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
- 4) _____ is a good alternative to the star schema.
A) Star schema B) Snowflake schema
C) Fact constellation D) Star-sknowflake schema
- 5) 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
- 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) Metadata 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

P.T.O.



- 11) A data warehouse is which of the following ?
 - A) Can be updated by end users
 - B) Contains numerous naming conventions and formats
 - C) Organized around important subject areas
 - D) Contains only current data
- 12) An operational system is which of the following ?
 - A) A system that is used to run the business in real time and is based on historical data
 - B) A system that is used to run the business in real time and is based on current data
 - C) A system that is used to support decision making and is based on current data
 - D) A system that is used to support decision making and is based on historical data
- 13) The generic two-level data warehouse architecture includes which of the following ?
 - A) At least one data mart
 - B) Data that can be 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 be 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 : Friday, 24-11-2017
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 Data mining ?
 - b) List the basic elements of Data warehousing.
 - c) What is Visualisation ?
 - d) Compare between the different methods of classification.
 - e) List the steps in ARM Process.
3. Answer **any two**. (2×5=10)
- a) What is KDD ? How is it carried out ?
 - b) How is tree based classification carried out ?
 - c) How is extraction done using Data Mining ?
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) How is a GUI developed for a Query Language ?
 - 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) Illustrate how Web pages are 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 by web mining techniques ?
 - b) List and explain the Data Mining primitives.

Set P



SLR-TJ – 340

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

Set

Q

B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) 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 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 data is stored, retrieved and updated in
 - A) OLAP
 - B) OLTP
 - C) SMTP
 - D) FTP
- 7) The full form of OLAP is
 - A) Online Analytical Processing
 - B) Online Advanced Processing
 - C) Online Advanced Preparation
 - D) Online Analytical Performance

P.T.O.



- 8) _____ 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
- 9) _____ is a good alternative to the star schema.
- A) Star schema
B) Snowflake schema
C) Fact constellation
D) Star-snowflake schema
- 10) 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
- 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) Metadata
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 be 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 be 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 : Friday, 24-11-2017
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 Data mining ?
 - b) List the basic elements of Data warehousing.
 - c) What is Visualisation ?
 - d) Compare between the different methods of classification.
 - e) List the steps in ARM Process.
3. Answer **any two**. (2×5=10)
- a) What is KDD ? How is it carried out ?
 - b) How is tree based classification carried out ?
 - c) How is extraction done using Data Mining ?
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) How is a GUI developed for a Query Language ?
 - 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) Illustrate how Web pages are 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 by web mining techniques ?
 - b) List and explain the Data Mining primitives.

Set Q



SLR-TJ – 340

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

Set **R**

B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) 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 ?
- Capturing all of the data contained in various operational systems
 - Capturing a subset of the data contained in various operational systems
 - Capturing all of the data contained in various decision support systems
 - Capturing a subset of the data contained in various decision support systems
- 8) Data scrubbing is which of the following ?
- A process to reject data from the data warehouse and to create the necessary indexes
 - A process to load the data in the data warehouse and to create the necessary indexes
 - A process to upgrade the quality of data after it is moved into a data warehouse
 - A process to upgrade the quality of data before it is moved into a data warehouse
- 9) The load and index is which of the following ?
- A process to reject data from the data warehouse and to create the necessary indexes
 - A process to load the data in the data warehouse and to create the necessary indexes
 - A process to upgrade the quality of data after it is moved into a data warehouse
 - A process to upgrade the quality of before it is moved into a data warehouse
- 10) Data transformation includes which of the following ?
- A process to change data from a detailed level to a summary level
 - A process to change data from a summary level to a detailed level
 - Joining data from one source into various sources of data
 - Separating data from one source into various sources of data
- 11) The data is stored, retrieved and updated in
- | | | | |
|---------|---------|---------|--------|
| A) OLAP | B) OLTP | C) SMTP | D) FTP |
|---------|---------|---------|--------|
- 12) The full form of OLAP is
- | | |
|---------------------------------|----------------------------------|
| A) Online Analytical Processing | B) Online Advanced Processing |
| C) Online Advanced Preparation | D) Online Analytical Performance |
- 13) _____ 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 |
- 14) _____ is a good alternative to the star schema.
- | | |
|-----------------------|---------------------------|
| A) Star schema | B) Snowflake schema |
| C) Fact constellation | D) Star-sknowflake schema |
- 15) 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 |
|---------|---------|----------------------|----------------------|
- 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) Metadata | 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 : Friday, 24-11-2017
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 Data mining ?
 - b) List the basic elements of Data warehousing.
 - c) What is Visualisation ?
 - d) Compare between the different methods of classification.
 - e) List the steps in ARM Process.
3. Answer **any two**. **(2×5=10)**
- a) What is KDD ? How is it carried out ?
 - b) How is tree based classification carried out ?
 - c) How is extraction done using Data Mining ?
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) How is a GUI developed for a Query Language ?
 - 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) Illustrate how Web pages are 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 by web mining techniques ?
 - b) List and explain the Data Mining primitives.

Set R



SLR-TJ – 340

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

Set

S

B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :** 1) Q. No. 1 is **compulsory**. It should be solved in **first 30 minutes** in Answer Book Page No. 3. **Each** question carries **one** mark.
2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) 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
- 2) The type of relationship in star schema is
A) many to many
B) one to one
C) one to many
D) many to one
- 3) 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
- 4) Which of the following is not a component of a data warehouse ?
A) Metadata
B) Current detail data
C) Lightly summarized data
D) Component key
- 5) Which of the following is not a kind of data warehouse application ?
A) Information processing
B) Analytical processing
C) Data mining
D) Transaction processing
- 6) 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
- 7) 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
- 8) The generic two-level data warehouse architecture includes which of the following ?
A) At least one data mart
B) Data that can be extracted from numerous internal and external sources
C) Near real-time updates
D) None of the above

P.T.O.



- 9) 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
- 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 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 data is stored, retrieved and updated in

A) OLAP	B) OLTP	C) SMTP	D) FTP
---------	---------	---------	--------
- 17) The full form of OLAP is

A) Online Analytical Processing	B) Online Advanced Processing
C) Online Advanced Preparation	D) Online Analytical Performance
- 18) _____ 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
- 19) _____ is a good alternative to the star schema.

A) Star schema	B) Snowflake schema
C) Fact constellation	D) Star-sknowflake schema
- 20) 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
---------	---------	----------------------	----------------------



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective – II : DATA MINING AND WAREHOUSING**

Day and Date : Friday, 24-11-2017
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 Data mining ?
 - b) List the basic elements of Data warehousing.
 - c) What is Visualisation ?
 - d) Compare between the different methods of classification.
 - e) List the steps in ARM Process.
3. Answer **any two**. (2×5=10)
- a) What is KDD ? How is it carried out ?
 - b) How is tree based classification carried out ?
 - c) How is extraction done using Data Mining ?
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) How is a GUI developed for a Query Language ?
 - 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) Illustrate how Web pages are 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 by web mining techniques ?
 - b) List and explain the Data Mining primitives.

Set S



SLR-TJ – 341

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

Set	P
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
Elective II : PATTERN RECOGNITION

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total 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 coefficient is
a) $-1 \leq \rho_{xy} \leq 1$ b) $-0.5 \leq \rho_{xy} \leq 1$
c) $-1 \leq \rho_{xy} \leq 1.5$ d) $-0.5 \leq \rho_{xy} \leq 0.5$
- 4) The correlation coefficient 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 coefficient 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.



- 9) The mixture coefficients of the GMM add upto
- a) 1 b) 0
c) Any value greater than 0 d) Any value less than 0
- 10) The mixture coefficients are
- a) Strictly positive b) Positive
c) Strictly negative d) Negative
- 11) What is the relation between the distance between clusters and the corresponding class discriminability ?
- a) Proportional b) Inversely-proportional
c) No-relation d) All
- 12) 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)
- 13) Agglomerative clustering falls under which type of clustering method ?
- a) Partition b) Hierarchical
c) All d) None of the above
- 14) 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)
- 15) K means and K-medoids are example of which type of clustering method ?
- a) Hierarchical b) Partition
c) Probabilistic d) None of the above
- 16) Unsupervised classification can be termed as
- a) Distance measurement b) Dimensionality reduction
c) Clustering d) None of the above
- 17) Indicate which one is a method of density estimation ?
- a) Histogram based
b) Branch and bound procedure
c) Neighborhood distance
d) All of the above
- 18) Three components of Bayes decision rule are class prior, likelihood and
- a) Evidence b) Instance
c) Confidence d) Saliency
- 19) Gaussian function is also called _____ function.
- a) Bell b) Signum c) Fixed point d) Quintic
- 20) The span of the Gaussian curve is determined by the _____ of the distribution.
- a) Mean b) Mode c) Median d) Variance
-



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective II : PATTERN RECOGNITION**

Day and Date : Friday, 24-11-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**
- a) What is a pattern ? How is it modeled ?
 - b) State the geometric properties of decision function.
 - c) What are error probabilities ? Illustrate.
 - d) Define pattern space and weight space.
 - e) Compare between supervised and un-supervised pattern recognition.
3. Attempt **any two** : **10**
- a) How are generalized decision functions developed ? State the steps involved.
 - b) How are probability density functions estimated ?
 - c) What is the information handling problem ? How is it tackled ?
4. Attempt **any one** : **10**
- a) Why is pattern classification considered to be a statistical decision problem ? Illustrate.
 - b) How is pattern classification by minimum distance pattern classification carried out ?



SECTION – II

5. Attempt **any four** : **20**
- a) How is automata used for pattern recognition ?
 - b) What is a syntactic pattern description ?
 - c) What are distance measures ?
 - d) State the method of potential functions in statistical approach.
 - e) Compare between classification and clustering.
6. Attempt **any two** : **10**
- a) Derive a pattern classification algorithm. Illustrate.
 - b) How is feature selection carried out through entropy minimization.
 - c) Explain the stochastic approximation method for classifiers.
7. Attempt **any one** : **10**
- a) Develop a syntactic pattern recognition model using formalism.
 - b) Explain the different feature extraction techniques.
-



SLR-TJ – 341

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

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

B.E. (Information Technology) (Part – II) Examination, 2017
Elective II : PATTERN RECOGNITION

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total 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) Neighborhood 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 coefficient is
 - a) $-1 \leq \rho_{xy} \leq 1$
 - b) $-0.5 \leq \rho_{xy} \leq 1$
 - c) $-1 \leq \rho_{xy} \leq 1.5$
 - d) $-0.5 \leq \rho_{xy} \leq 0.5$

P.T.O.



- 9) The correlation coefficient can be viewed as _____ angle between two vectors in \mathbb{R}^D .
- a) Sin b) Cos c) Tan d) Sec
- 10) For a n-dimensional data, number of correlation coefficient 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 coefficients of the GMM add upto
- a) 1 b) 0
c) Any value greater than 0 d) Any value less than 0
- 15) The mixture coefficients 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) All 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 : Friday, 24-11-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**
- a) What is a pattern ? How is it modeled ?
 - b) State the geometric properties of decision function.
 - c) What are error probabilities ? Illustrate.
 - d) Define pattern space and weight space.
 - e) Compare between supervised and un-supervised pattern recognition.
3. Attempt **any two** : **10**
- a) How are generalized decision functions developed ? State the steps involved.
 - b) How are probability density functions estimated ?
 - c) What is the information handling problem ? How is it tackled ?
4. Attempt **any one** : **10**
- a) Why is pattern classification considered to be a statistical decision problem ? Illustrate.
 - b) How is pattern classification by minimum distance pattern classification carried out ?



SECTION – II

5. Attempt **any four** : **20**
- a) How is automata used for pattern recognition ?
 - b) What is a syntactic pattern description ?
 - c) What are distance measures ?
 - d) State the method of potential functions in statistical approach.
 - e) Compare between classification and clustering.
6. Attempt **any two** : **10**
- a) Derive a pattern classification algorithm. Illustrate.
 - b) How is feature selection carried out through entropy minimization.
 - c) Explain the stochastic approximation method for classifiers.
7. Attempt **any one** : **10**
- a) Develop a syntactic pattern recognition model using formalism.
 - b) Explain the different feature extraction techniques.
-



SLR-TJ – 341

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

Set	R
-----	---

B.E. (Information Technology) (Part – II) Examination, 2017
Elective II : PATTERN RECOGNITION

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total 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) All
 - 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) Neighborhood 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 coefficient is
- a) $-1 \leq \rho_{xy} \leq 1$
 - b) $-0.5 \leq \rho_{xy} \leq 1$
 - c) $-1 \leq \rho_{xy} \leq 1.5$
 - d) $-0.5 \leq \rho_{xy} \leq 0.5$
- 14) The correlation coefficient 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 coefficient 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 coefficients of the GMM add upto
- a) 1
 - b) 0
 - c) Any value greater than 0
 - d) Any value less than 0
- 20) The mixture coefficients 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 : Friday, 24-11-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**
- a) What is a pattern ? How is it modeled ?
 - b) State the geometric properties of decision function.
 - c) What are error probabilities ? Illustrate.
 - d) Define pattern space and weight space.
 - e) Compare between supervised and un-supervised pattern recognition.
3. Attempt **any two** : **10**
- a) How are generalized decision functions developed ? State the steps involved.
 - b) How are probability density functions estimated ?
 - c) What is the information handling problem ? How is it tackled ?
4. Attempt **any one** : **10**
- a) Why is pattern classification considered to be a statistical decision problem ? Illustrate.
 - b) How is pattern classification by minimum distance pattern classification carried out ?



SECTION – II

5. Attempt **any four** : **20**
- a) How is automata used for pattern recognition ?
 - b) What is a syntactic pattern description ?
 - c) What are distance measures ?
 - d) State the method of potential functions in statistical approach.
 - e) Compare between classification and clustering.
6. Attempt **any two** : **10**
- a) Derive a pattern classification algorithm. Illustrate.
 - b) How is feature selection carried out through entropy minimization.
 - c) Explain the stochastic approximation method for classifiers.
7. Attempt **any one** : **10**
- a) Develop a syntactic pattern recognition model using formalism.
 - b) Explain the different feature extraction techniques.
-



SLR-TJ – 341

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

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

B.E. (Information Technology) (Part – II) Examination, 2017
Elective II : PATTERN RECOGNITION

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Total 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 coefficients of the GMM add upto
 - a) 1
 - b) 0
 - c) Any value greater than 0
 - d) Any value less than 0
- 5) The mixture coefficients 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
- 7) 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)

P.T.O.



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

**B.E. (Information Technology) (Part – II) Examination, 2017
Elective II : PATTERN RECOGNITION**

Day and Date : Friday, 24-11-2017

Marks : 80

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

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

SECTION – I

2. Attempt **any four** : **20**
- a) What is a pattern ? How is it modeled ?
 - b) State the geometric properties of decision function.
 - c) What are error probabilities ? Illustrate.
 - d) Define pattern space and weight space.
 - e) Compare between supervised and un-supervised pattern recognition.
3. Attempt **any two** : **10**
- a) How are generalized decision functions developed ? State the steps involved.
 - b) How are probability density functions estimated ?
 - c) What is the information handling problem ? How is it tackled ?
4. Attempt **any one** : **10**
- a) Why is pattern classification considered to be a statistical decision problem ? Illustrate.
 - b) How is pattern classification by minimum distance pattern classification carried out ?



SECTION – II

5. Attempt **any four** : **20**
- a) How is automata used for pattern recognition ?
 - b) What is a syntactic pattern description ?
 - c) What are distance measures ?
 - d) State the method of potential functions in statistical approach.
 - e) Compare between classification and clustering.
6. Attempt **any two** : **10**
- a) Derive a pattern classification algorithm. Illustrate.
 - b) How is feature selection carried out through entropy minimization.
 - c) Explain the stochastic approximation method for classifiers.
7. Attempt **any one** : **10**
- a) Develop a syntactic pattern recognition model using formalism.
 - b) Explain the different feature extraction techniques.
-



SLR-TJ – 342

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

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

**B.E. (IT) (Part – II) Examination, 2017
BUSINESS INTELLIGENCE (Elective – II)**

Day and Date : Friday, 24-11-2017
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) _____ is the outcome of extraction and processing activities carried out on data.
 - a) Data
 - b) Information
 - c) Knowledge
 - d) Analysis
- 2) The data gathered from different sources are transferred and given to data warehouse using
 - a) Analysis tools
 - b) Mathematical tools
 - c) ETL tools
 - d) OLAP tools
- 3) Arrange the following phases in the development of BI system.
 - i. Design
 - ii. Planning
 - iii. Analysis
 - iv. Implement and control
 - a) i, ii, iii, iv
 - b) iii, i, ii, iv
 - c) ii, iii, i, iv
 - d) iv, iii, ii, i
- 4) Analysis, insight, decision evaluation are the parts of
 - a) Cycle of BI
 - b) Architecture of BI
 - c) Department of BI
 - d) Factors of BI
- 5) The performance of DSS system is evaluated by its
 - a) Effectiveness
 - b) Efficiency
 - c) Both
 - d) None
- 6) DSS is used for
 - a) Collecting data
 - b) Transforming data
 - c) Analysis
 - d) Solving complex problems
- 7) Which of the following type of decision is not categorized by their scope ?
 - a) Strategic
 - b) Structured
 - c) Tactical
 - d) Operational

P.T.O.



- 8) Which of the following type of decision is not according to nature ?
a) Structured b) Tactical c) Semi-structured d) Unstructured
- 9) Which is not the part of extended structure of DSS ?
a) Data management b) Knowledge management
c) Model management d) Memory management
- 10) Select the approaches to decision making process.
a) Rational approach b) Irrational approach
c) Dynamic d) Static
- 11) Datamining process consists of
a) Data gathering and analysis
b) Development of inductive learning models
c) Adaption of practical decisions
d) All
- 12) Verification of hypothesis formulated by analysis is called
a) OLAP b) Statistics c) Datamining d) Database
- 13) Select the applications of datamining.
a) Relational marketing b) Fraud detection
c) Risk evaluation d) All
- 14) Choose the measures of relative location for numerical attributes.
a) Mean b) Variance c) Qualities d) Range
- 15) Choose the measures of dispersion for numerical attributes.
a) Range b) Variance
c) Mean absolute deviation d) All
- 16) _____ can be used for the identification of attributes.
a) Scatter plot b) Loess plot c) Box plot d) QQ plot
- 17) In linear regression models the functional relationship between the _____ and _____ is linear.
a) Dependant and independent b) Dependant and dependant
c) Independent and Independent d) All
- 18) Vectors are used in
a) Simple linear regression b) Multiple linear regression
c) Both d) None
- 19) Which of the following are evaluations of validation of regression models ?
a) Significance of coefficients b) Analysis of variance
c) Coefficients of determination d) All
- 20) Classification rules are used to
a) To categorize attributes b) Identify numbers
c) Predict the class of attributes d) Get knowledge



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

**B.E. (IT) (Part – II) Examination, 2017
BUSINESS INTELLIGENCE (Elective – II)**

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (attempt **any 4**) : **20**
- a) Effective and timely decisions in BI.
 - b) Representation of input data.
 - c) Data transformation.
 - d) Rationality and problem solving in DSS.
 - e) Applications of datamining.

3. Attempt **any one** : **10**
- What is BI system ? Explain its benefits with the importance of effective and timely decisions.

OR

What is data exploration ? Elaborate Univariate analysis.

4. With neat diagram elaborate the phases in the development of BI system. **10**

Set P



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Regression and regression line calculation.
 - b) Coefficient of determination in variation of regression models.
 - c) Definition of time series with examples.
 - d) Apriori algorithm.
 - e) Clustering methods.
6. Attempt **any one** : **10**
- What are classification problems ? Explain the taxonomy of classification models.
- OR
- Discuss the evaluation of classification models.
7. List the BI applications and explain sales force management in detail. **10**
-



SLR-TJ – 342

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

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

**B.E. (IT) (Part – II) Examination, 2017
BUSINESS INTELLIGENCE (Elective – II)**

Day and Date : Friday, 24-11-2017
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) _____ can be used for the identification of attributes.
a) Scatter plot b) Loess plot c) Box plot d) QQ plot
- 2) In linear regression models the functional relationship between the _____ and _____ is linear.
a) Dependant and independent b) Dependant and dependant
c) Independent and Independent d) All
- 3) Vectors are used in
a) Simple linear regression b) Multiple linear regression
c) Both d) None
- 4) Which of the following are evaluations of validation of regression models ?
a) Significance of coefficients b) Analysis of variance
c) Coefficients of determination d) All
- 5) Classification rules are used to
a) To categorize attributes b) Identify numbers
c) Predict the class of attributes d) Get knowledge
- 6) _____ is the outcome of extraction and processing activities carried out on data.
a) Data b) Information
c) Knowledge d) Analysis
- 7) The data gathered from different sources are transferred and given to data warehouse using
a) Analysis tools b) Mathematical tools
c) ETL tools d) OLAP tools

P.T.O.



- 8) Arrange the following phases in the development of BI system.
- Design
 - Planning
 - Analysis
 - Implement and control
- a) i, ii, iii, iv b) iii, i, ii, iv c) ii, iii, i, iv d) iv, iii, ii, i
- 9) Analysis, insight, decision evaluation are the parts of
- a) Cycle of BI b) Architecture of BI
c) Department of BI d) Factors of BI
- 10) The performance of DSS system is evaluated by its
- a) Effectiveness b) Efficiency c) Both d) None
- 11) DSS is used for
- a) Collecting data b) Transforming data
c) Analysis d) Solving complex problems
- 12) Which of the following type of decision is not categorized by their scope ?
- a) Strategic b) Structured c) Tactical d) Operational
- 13) Which of the following type of decision is not according to nature ?
- a) Structured b) Tactical c) Semi-structured d) Unstructured
- 14) Which is not the part of extended structure of DSS ?
- a) Data management b) Knowledge management
c) Model management d) Memory management
- 15) Select the approaches to decision making process.
- a) Rational approach b) Irrational approach
c) Dynamic d) Static
- 16) Datamining process consists of
- a) Data gathering and analysis
b) Development of inductive learning models
c) Adaption of practical decisions
d) All
- 17) Verification of hypothesis formulated by analysis is called
- a) OLAP b) Statistics c) Datamining d) Database
- 18) Select the applications of datamining.
- a) Relational marketing b) Fraud detection
c) Risk evaluation d) All
- 19) Choose the measures of relative location for numerical attributes.
- a) Mean b) Variance c) Qualities d) Range
- 20) Choose the measures of dispersion for numerical attributes.
- a) Range b) Variance
c) Mean absolute deviation d) All



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

**B.E. (IT) (Part – II) Examination, 2017
BUSINESS INTELLIGENCE (Elective – II)**

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (attempt **any 4**) : **20**
- a) Effective and timely decisions in BI.
 - b) Representation of input data.
 - c) Data transformation.
 - d) Rationality and problem solving in DSS.
 - e) Applications of datamining.

3. Attempt **any one** : **10**
- What is BI system ? Explain its benefits with the importance of effective and timely decisions.

OR

What is data exploration ? Elaborate Univariate analysis.

4. With neat diagram elaborate the phases in the development of BI system. **10**



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Regression and regression line calculation.
 - b) Coefficient of determination in variation of regression models.
 - c) Definition of time series with examples.
 - d) Apriori algorithm.
 - e) Clustering methods.
6. Attempt **any one** : **10**
- What are classification problems ? Explain the taxonomy of classification models.
- OR
- Discuss the evaluation of classification models.
7. List the BI applications and explain sales force management in detail. **10**
-



SLR-TJ – 342

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

Set	R
-----	---

**B.E. (IT) (Part – II) Examination, 2017
BUSINESS INTELLIGENCE (Elective – II)**

Day and Date : Friday, 24-11-2017
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) Datamining process consists of
 - a) Data gathering and analysis
 - b) Development of inductive learning models
 - c) Adaption of practical decisions
 - d) All
- 2) Verification of hypothesis formulated by analysis is called
 - a) OLAP
 - b) Statistics
 - c) Datamining
 - d) Database
- 3) Select the applications of datamining.
 - a) Relational marketing
 - b) Fraud detection
 - c) Risk evaluation
 - d) All
- 4) Choose the measures of relative location for numerical attributes.
 - a) Mean
 - b) Variance
 - c) Qualities
 - d) Range
- 5) Choose the measures of dispersion for numerical attributes.
 - a) Range
 - b) Variance
 - c) Mean absolute deviation
 - d) All
- 6) _____ can be used for the identification of attributes.
 - a) Scatter plot
 - b) Loess plot
 - c) Box plot
 - d) QQ plot
- 7) In linear regression models the functional relationship between the _____ and _____ is linear.
 - a) Dependant and independent
 - b) Dependant and dependant
 - c) Independent and Independent
 - d) All
- 8) Vectors are used in
 - a) Simple linear regression
 - b) Multiple linear regression
 - c) Both
 - d) None

P.T.O.



- 9) Which of the following are evaluations of validation of regression models ?
a) Significance of coefficients b) Analysis of variance
c) Coefficients of determination d) All
- 10) Classification rules are used to
a) To categorize attributes b) Identify numbers
c) Predict the class of attributes d) Get knowledge
- 11) _____ is the outcome of extraction and processing activities carried out on data.
a) Data b) Information
c) Knowledge d) Analysis
- 12) The data gathered from different sources are transferred and given to data warehouse using
a) Analysis tools b) Mathematical tools
c) ETL tools d) OLAP tools
- 13) Arrange the following phases in the development of BI system.
i. Design
ii. Planning
iii. Analysis
iv. Implement and control
a) i, ii, iii, iv b) iii, i, ii, iv c) ii, iii, i, iv d) iv, iii, ii, i
- 14) Analysis, insight, decision evaluation are the parts of
a) Cycle of BI b) Architecture of BI
c) Department of BI d) Factors of BI
- 15) The performance of DSS system is evaluated by its
a) Effectiveness b) Efficiency c) Both d) None
- 16) DSS is used for
a) Collecting data b) Transforming data
c) Analysis d) Solving complex problems
- 17) Which of the following type of decision is not categorized by their scope ?
a) Strategic b) Structured c) Tactical d) Operational
- 18) Which of the following type of decision is not according to nature ?
a) Structured b) Tactical c) Semi-structured d) Unstructured
- 19) Which is not the part of extended structure of DSS ?
a) Data management b) Knowledge management
c) Model management d) Memory management
- 20) Select the approaches to decision making process.
a) Rational approach b) Irrational approach
c) Dynamic d) Static



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

**B.E. (IT) (Part – II) Examination, 2017
BUSINESS INTELLIGENCE (Elective – II)**

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (attempt **any 4**) : **20**
- a) Effective and timely decisions in BI.
 - b) Representation of input data.
 - c) Data transformation.
 - d) Rationality and problem solving in DSS.
 - e) Applications of datamining.

3. Attempt **any one** : **10**
- What is BI system ? Explain its benefits with the importance of effective and timely decisions.

OR

What is data exploration ? Elaborate Univariate analysis.

4. With neat diagram elaborate the phases in the development of BI system. **10**

Set R



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Regression and regression line calculation.
 - b) Coefficient of determination in variation of regression models.
 - c) Definition of time series with examples.
 - d) Apriori algorithm.
 - e) Clustering methods.
6. Attempt **any one** : **10**
- What are classification problems ? Explain the taxonomy of classification models.
- OR
- Discuss the evaluation of classification models.
7. List the BI applications and explain sales force management in detail. **10**
-



SLR-TJ – 342

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

Set	S
-----	---

**B.E. (IT) (Part – II) Examination, 2017
BUSINESS INTELLIGENCE (Elective – II)**

Day and Date : Friday, 24-11-2017
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) DSS is used for
 - a) Collecting data
 - b) Transforming data
 - c) Analysis
 - d) Solving complex problems
- 2) Which of the following type of decision is not categorized by their scope ?
 - a) Strategic
 - b) Structured
 - c) Tactical
 - d) Operational
- 3) Which of the following type of decision is not according to nature ?
 - a) Structured
 - b) Tactical
 - c) Semi-structured
 - d) Unstructured
- 4) Which is not the part of extended structure of DSS ?
 - a) Data management
 - b) Knowledge management
 - c) Model management
 - d) Memory management
- 5) Select the approaches to decision making process.
 - a) Rational approach
 - b) Irrational approach
 - c) Dynamic
 - d) Static
- 6) Datamining process consists of
 - a) Data gathering and analysis
 - b) Development of inductive learning models
 - c) Adaption of practical decisions
 - d) All
- 7) Verification of hypothesis formulated by analysis is called
 - a) OLAP
 - b) Statistics
 - c) Datamining
 - d) Database
- 8) Select the applications of datamining.
 - a) Relational marketing
 - b) Fraud detection
 - c) Risk evaluation
 - d) All

P.T.O.



- 9) Choose the measures of relative location for numerical attributes.
a) Mean b) Variance c) Qualities d) Range
- 10) Choose the measures of dispersion for numerical attributes.
a) Range b) Variance
c) Mean absolute deviation d) All
- 11) _____ can be used for the identification of attributes.
a) Scatter plot b) Loess plot c) Box plot d) QQ plot
- 12) In linear regression models the functional relationship between the _____ and _____ is linear.
a) Dependant and independent b) Dependant and dependant
c) Independent and Independent d) All
- 13) Vectors are used in
a) Simple linear regression b) Multiple linear regression
c) Both d) None
- 14) Which of the following are evaluations of validation of regression models ?
a) Significance of coefficients b) Analysis of variance
c) Coefficients of determination d) All
- 15) Classification rules are used to
a) To categorize attributes b) Identify numbers
c) Predict the class of attributes d) Get knowledge
- 16) _____ is the outcome of extraction and processing activities carried out on data.
a) Data b) Information
c) Knowledge d) Analysis
- 17) The data gathered from different sources are transferred and given to data warehouse using
a) Analysis tools b) Mathematical tools
c) ETL tools d) OLAP tools
- 18) Arrange the following phases in the development of BI system.
i. Design
ii. Planning
iii. Analysis
iv. Implement and control
a) i, ii, iii, iv b) iii, i, ii, iv c) ii, iii, i, iv d) iv, iii, ii, i
- 19) Analysis, insight, decision evaluation are the parts of
a) Cycle of BI b) Architecture of BI
c) Department of BI d) Factors of BI
- 20) The performance of DSS system is evaluated by its
a) Effectiveness b) Efficiency c) Both d) None



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

**B.E. (IT) (Part – II) Examination, 2017
BUSINESS INTELLIGENCE (Elective – II)**

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (attempt **any 4**) : **20**
- a) Effective and timely decisions in BI.
 - b) Representation of input data.
 - c) Data transformation.
 - d) Rationality and problem solving in DSS.
 - e) Applications of datamining.

3. Attempt **any one** : **10**
- What is BI system ? Explain its benefits with the importance of effective and timely decisions.

OR

What is data exploration ? Elaborate Univariate analysis.

4. With neat diagram elaborate the phases in the development of BI system. **10**

Set S



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Regression and regression line calculation.
 - b) Coefficient of determination in variation of regression models.
 - c) Definition of time series with examples.
 - d) Apriori algorithm.
 - e) Clustering methods.
6. Attempt **any one** : **10**
- What are classification problems ? Explain the taxonomy of classification models.
- OR
- Discuss the evaluation of classification models.
7. List the BI applications and explain sales force management in detail. **10**
-



SLR-TJ – 343

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

Set	P
-----	---

B.E. (I.T.) (Part – II) Examination, 2017
Elective – II : CLOUD COMPUTING

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 20

1. Choose the correct answer : **(1×20=20)**

- 1) _____ computing refers to applications and services that run on a distributed network using virtualized resources.
a) Distributed b) Cloud c) Soft d) Parallel
- 2) Which of the following cloud concept is related to pooling and sharing of resources ?
a) Polymorphism b) Abstraction
c) Virtualization d) None of the mentioned
- 3) _____ model consists of the particular types of services that you can access on a cloud computing platform.
a) Service b) Deployment
c) Application d) None of the mentioned
- 4) Cloud computing is an abstraction based on the notion of pooling physical resources and presenting them as a _____ resource.
a) real b) virtual
c) cloud d) None of the mentioned
- 5) _____ refers to the location and management of the cloud's infrastructure.
a) Service b) Deployment
c) Application d) None of the mentioned
- 6) Which of the following is deployment model ?
a) public b) private
c) hybrid d) All of the mentioned
- 7) Which of the following is best known service model ?
a) SaaS b) IaaS
c) PaaS d) All of the mentioned
- 8) _____ is a complete operating environment with applications, management and the user interface.
a) IaaS b) SaaS
c) PaaS d) All of the mentioned

P.T.O.



- 9) How many types of service model are mainly present in Cloud ?
 - a) 1
 - b) 2
 - c) 3
 - d) 4
- 10) The three different service models is together known as the _____ model of cloud computing.
 - a) SPI
 - b) SIP
 - c) CPI
 - d) All of the mentioned
- 11) Which of the following is IaaS service provider ?
 - a) EC2
 - b) EC1
 - c) EC10
 - d) Hybrid
- 12) Which of the following is most important area of concern in cloud computing ?
 - a) Security
 - b) Storage
 - c) Scalability
 - d) All of the mentioned
- 13) Which of the following is a virtual machine technology now owned by Oracle that can run various operating systems ?
 - a) Vmachiens
 - b) VirtualBox
 - c) ThoughtPolice
 - d) None of the mentioned
- 14) _____ serves as a PaaS vendor within Google App Engine system.
 - a) Google
 - b) Amazon
 - c) Microsoft
 - d) All of the mentioned
- 15) The _____ model originally did not require a cloud to use virtualization to pool resources.
 - a) NEFT
 - b) NIST
 - c) NIT
 - d) All of the mentioned
- 16) Which of the following dimension is related to organization's boundaries.
 - a) Physical location of data
 - b) Ownership
 - c) Security boundary
 - d) All of the mentioned
- 17) _____ cloud is one where the cloud has been organized to serve a common function or purpose.
 - a) Public
 - b) Private
 - c) Community
 - d) All of the mentioned
- 18) A hybrid cloud combines multiple clouds where those clouds retain their unique identities, but are bound together as a unit.
 - a) Public
 - b) Private
 - c) Community
 - d) Hybrid
- 19) You can't count on a cloud provider maintaining your _____ in the face of government actions.
 - a) scalability
 - b) reliability
 - c) privacy
 - d) none of the mentioned
- 20) Which of the following is most refined and restrictive service model ?
 - a) IaaS
 - b) CaaS
 - c) PaaS
 - d) All of the mentioned



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

**B.E. (I.T.) (Part – II) Examination, 2017
Elective – II : CLOUD COMPUTING**

Day and Date : Friday, 24-11-2017

Marks : 80

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

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- 1) What are difference between dedicated/traditional IT and Cloud Computing ?
 - 2) What is Data Security mitigation in cloud computing ?
 - 3) List and explain IAM standards and specification for organizations.
 - 4) Write a short note on Access Control in the Cloud .
 - 5) Write a brief note on cloud computing challenges.
3. Attempt **any two** of the following : **(8×2=16)**
- 1) What is cloud computing ? Explain SPI framework for Cloud Computing.
 - 2) What is IAM ? Explain enterprise IAM functional architecture.
 - 3) What are the different security management standards in Cloud Computing ? Explain ITIL service management framework.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- 1) What is privacy ? What are different key privacy concerns in the cloud.
 - 2) List and explain cloud audit framework.
 - 3) Write a short note on FISMA.

Set P



4) What is difference between developing on premise versus cloud application development ?

5) Write a short note on Web Trust.

5. Attempt **any two** of the following :

(8×2=16)

1) Explain data life cycle and who is responsible for protecting privacy.

2) Explain stages during the development process of cloud application.

3) What are the different cloud and audit requirement in context with internal audit, customer audit and government audit.



SLR-TJ – 343

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

Set	Q
-----	---

B.E. (I.T.) (Part – II) Examination, 2017
Elective – II : CLOUD COMPUTING

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 20

1. Choose the correct answer :

(1×20=20)

- 1) Which of the following dimension is related to organization's boundaries.
a) Physical location of data b) Ownership
c) Security boundary d) All of the mentioned
- 2) _____ cloud is one where the cloud has been organized to serve a common function or purpose.
a) Public b) Private
c) Community d) All of the mentioned
- 3) A hybrid cloud combines multiple clouds where those clouds retain their unique identities, but are bound together as a unit.
a) Public b) Private c) Community d) Hybrid
- 4) You can't count on a cloud provider maintaining your _____ in the face of government actions.
a) scalability b) reliability
c) privacy d) none of the mentioned
- 5) Which of the following is most refined and restrictive service model ?
a) IaaS b) CaaS
c) PaaS d) All of the mentioned
- 6) _____ computing refers to applications and services that run on a distributed network using virtualized resources.
a) Distributed b) Cloud c) Soft d) Parallel
- 7) Which of the following cloud concept is related to pooling and sharing of resources ?
a) Polymorphism b) Abstraction
c) Virtualization d) None of the mentioned
- 8) _____ model consists of the particular types of services that you can access on a cloud computing platform.
a) Service b) Deployment
c) Application d) None of the mentioned

P.T.O.



- 9) Cloud computing is an abstraction based on the notion of pooling physical resources and presenting them as a _____ resource.
- a) real
 - b) virtual
 - c) cloud
 - d) None of the mentioned
- 10) _____ refers to the location and management of the cloud's infrastructure.
- a) Service
 - b) Deployment
 - c) Application
 - d) None of the mentioned
- 11) Which of the following is deployment model ?
- a) public
 - b) private
 - c) hybrid
 - d) All of the mentioned
- 12) Which of the following is best known service model ?
- a) SaaS
 - b) IaaS
 - c) PaaS
 - d) All of the mentioned
- 13) _____ is a complete operating environment with applications, management and the user interface.
- a) IaaS
 - b) SaaS
 - c) PaaS
 - d) All of the mentioned
- 14) How many types of service model are mainly present in Cloud ?
- a) 1
 - b) 2
 - c) 3
 - d) 4
- 15) The three different service models is together known as the _____ model of cloud computing.
- a) SPI
 - b) SIP
 - c) CPI
 - d) All of the mentioned
- 16) Which of the following is IaaS service provider ?
- a) EC2
 - b) EC1
 - c) EC10
 - d) Hybrid
- 17) Which of the following is most important area of concern in cloud computing ?
- a) Security
 - b) Storage
 - c) Scalability
 - d) All of the mentioned
- 18) Which of the following is a virtual machine technology now owned by Oracle that can run various operating systems ?
- a) Vmachiens
 - b) VirtualBox
 - c) ThoughtPolice
 - d) None of the mentioned
- 19) _____ serves as a PaaS vendor within Google App Engine system.
- a) Google
 - b) Amazon
 - c) Microsoft
 - d) All of the mentioned
- 20) The _____ model originally did not require a cloud to use virtualization to pool resources.
- a) NEFT
 - b) NIST
 - c) NIT
 - d) All of the mentioned
-



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

**B.E. (I.T.) (Part – II) Examination, 2017
Elective – II : CLOUD COMPUTING**

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- 1) What are difference between dedicated/traditional IT and Cloud Computing ?
 - 2) What is Data Security mitigation in cloud computing ?
 - 3) List and explain IAM standards and specification for organizations.
 - 4) Write a short note on Access Control in the Cloud .
 - 5) Write a brief note on cloud computing challenges.
3. Attempt **any two** of the following : **(8×2=16)**
- 1) What is cloud computing ? Explain SPI framework for Cloud Computing.
 - 2) What is IAM ? Explain enterprise IAM functional architecture.
 - 3) What are the different security management standards in Cloud Computing ? Explain ITIL service management framework.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- 1) What is privacy ? What are different key privacy concerns in the cloud.
 - 2) List and explain cloud audit framework.
 - 3) Write a short note on FISMA.

Set Q



4) What is difference between developing on premise versus cloud application development ?

5) Write a short note on Web Trust.

5. Attempt **any two** of the following :

(8×2=16)

1) Explain data life cycle and who is responsible for protecting privacy.

2) Explain stages during the development process of cloud application.

3) What are the different cloud and audit requirement in context with internal audit, customer audit and government audit.



SLR-TJ – 343

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

Set	R
-----	---

B.E. (I.T.) (Part – II) Examination, 2017
Elective – II : CLOUD COMPUTING

Day and Date : Friday, 24-11-2017
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- 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 : 20

1. Choose the correct answer :

(1×20=20)

- 1) Which of the following is IaaS service provider ?
a) EC2 b) EC1 c) EC10 d) Hybrid
- 2) Which of the following is most important area of concern in cloud computing ?
a) Security b) Storage
c) Scalability d) All of the mentioned
- 3) Which of the following is a virtual machine technology now owned by Oracle that can run various operating systems ?
a) Vmachiens b) VirtualBox
c) ThoughtPolice d) None of the mentioned
- 4) _____ serves as a PaaS vendor within Google App Engine system.
a) Google b) Amazon
c) Microsoft d) All of the mentioned
- 5) The _____ model originally did not require a cloud to use virtualization to pool resources.
a) NEFT b) NIST
c) NIT d) All of the mentioned
- 6) Which of the following dimension is related to organization's boundaries.
a) Physical location of data b) Ownership
c) Security boundary d) All of the mentioned
- 7) _____ cloud is one where the cloud has been organized to serve a common function or purpose.
a) Public b) Private
c) Community d) All of the mentioned
- 8) A hybrid cloud combines multiple clouds where those clouds retain their unique identities, but are bound together as a unit.
a) Public b) Private c) Community d) Hybrid

P.T.O.



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

**B.E. (I.T.) (Part – II) Examination, 2017
Elective – II : CLOUD COMPUTING**

Day and Date : Friday, 24-11-2017

Marks : 80

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

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- 1) What are difference between dedicated/traditional IT and Cloud Computing ?
 - 2) What is Data Security mitigation in cloud computing ?
 - 3) List and explain IAM standards and specification for organizations.
 - 4) Write a short note on Access Control in the Cloud .
 - 5) Write a brief note on cloud computing challenges.
3. Attempt **any two** of the following : **(8×2=16)**
- 1) What is cloud computing ? Explain SPI framework for Cloud Computing.
 - 2) What is IAM ? Explain enterprise IAM functional architecture.
 - 3) What are the different security management standards in Cloud Computing ? Explain ITIL service management framework.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- 1) What is privacy ? What are different key privacy concerns in the cloud.
 - 2) List and explain cloud audit framework.
 - 3) Write a short note on FISMA.

Set R



4) What is difference between developing on premise versus cloud application development ?

5) Write a short note on Web Trust.

5. Attempt **any two** of the following :

(8×2=16)

1) Explain data life cycle and who is responsible for protecting privacy.

2) Explain stages during the development process of cloud application.

3) What are the different cloud and audit requirement in context with internal audit, customer audit and government audit.



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

**B.E. (I.T.) (Part – II) Examination, 2017
Elective – II : CLOUD COMPUTING**

Day and Date : Friday, 24-11-2017

Marks : 80

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

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- 1) What are difference between dedicated/traditional IT and Cloud Computing ?
 - 2) What is Data Security mitigation in cloud computing ?
 - 3) List and explain IAM standards and specification for organizations.
 - 4) Write a short note on Access Control in the Cloud .
 - 5) Write a brief note on cloud computing challenges.
3. Attempt **any two** of the following : **(8×2=16)**
- 1) What is cloud computing ? Explain SPI framework for Cloud Computing.
 - 2) What is IAM ? Explain enterprise IAM functional architecture.
 - 3) What are the different security management standards in Cloud Computing ? Explain ITIL service management framework.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- 1) What is privacy ? What are different key privacy concerns in the cloud.
 - 2) List and explain cloud audit framework.
 - 3) Write a short note on FISMA.

Set S



4) What is difference between developing on premise versus cloud application development ?

5) Write a short note on Web Trust.

5. Attempt **any two** of the following :

(8×2=16)

1) Explain data life cycle and who is responsible for protecting privacy.

2) Explain stages during the development process of cloud application.

3) What are the different cloud and audit requirement in context with internal audit, customer audit and government audit.
