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**S.E. (IT) (Part – I) (CGPA) Examination, 2016
APPLIED MATHEMATICS – I**

Day and Date : Tuesday, 13-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

- N.B.** : 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 option :

(14×1=14)

1) The general solution of the diff. equation $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = 0$ is

a) $c_1 e^{-x} + c_2 e^x$

b) $(c_1 + c_2 x)e^x$

c) $e^{-\frac{x}{2}} \left[c_1 \cos \frac{\sqrt{3}}{2} x + c_2 \sin \frac{\sqrt{3}}{2} x \right]$

d) $e^{x/2} \left[c_1 \cos \frac{\sqrt{3}}{2} x + c_2 \sin \frac{\sqrt{3}}{2} x \right]$

2) The particular integral of $(D^2 - 2D + 1)y = -4e^x$ is

a) $-2x^2 e^x$

b) $-4x^2 e^x$

c) $(c_1 + c_2 x)e^x$

d) e^x

3) $L^{-1} \left\{ \frac{1}{s^2 + 4s + 13} \right\} =$

a) $e^{-2t} \cos 3t$

b) $\frac{1}{3} e^{2t} \sin 3t$

c) $\frac{1}{3} e^{-2t} \sin 3t$

d) $e^{-2t} \sin 3t$

4) $L \left\{ \int_0^t \sin 2u du \right\} =$

a) $\frac{2}{s^2 + 4}$

b) $\frac{2}{s(s^2 + 4)}$

c) $\frac{1}{s(s^2 + 4)}$

d) $\frac{2s}{(s^2 + 4)^2}$



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SECTION – I

2. a) Solve : $(D^2 - 13D + 12) y = e^{-2x} + 5e^x$. **3**
 b) Solve : $(D^2 + 2D + 10) y = -37\sin 3x$. **3**
 c) Solve : $(D^3 - 3D - 2)y = 540x^3e^{-x}$. **4**

OR

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

- a) Find $L \{te^{-2t} \cos 3t\}$.
 b) Find $L^{-1} \left\{ \frac{s^2 + s - 2}{s(s + 3)(s - 2)} \right\}$.
 c) Find $L^{-1} \left\{ \frac{1}{s^2(s^2 + 1)} \right\}$, by convolution theorem.
 d) Evaluate $\int_0^\infty \frac{e^{-t} - e^{-3t}}{t} dt$ by using Laplace transform.

4. a) Find $Z \left\{ \frac{k}{3} \right\}$ for all k. **3**

- b) Find $Z^{-1} \left\{ \frac{1}{(z - 3)(z - 2)} \right\}$, $|z| > 3$. **3**

- c) Find $Z \{ \cos \alpha k \}$, $k \geq 0$. **3**



5. a) Find the Fourier series of

$$F(x) = 2, \quad -2 < x < 0$$

$$= x, \quad 0 < x < 2 \quad .$$

5

- b) Find the half-range cosine series of $f(x) = x(\pi - x)$ in the interval $(0, \pi)$.

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SECTION – II

6. Attempt the following :

- a) Find the directional derivative of $\phi = x^2 + y^2 + z^2$ in the direction of the line

$$\frac{x}{3} = \frac{y}{4} = \frac{z}{5} \text{ at } (1, 2, 3).$$

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- b) A vector field is given by $\bar{f} = (x^2 + xy^2) i + (y^2 + x^2y) j + (0) k$. Show that \bar{f} is irrotational and find its scalar potential ϕ .

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- c) Prove that $\nabla^2 \left(\frac{1}{r} \right) = 0$.

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7. Attempt the following :

- a) In a sample of 1000 students the mean and standard deviation of marks obtained by the students in a certain test are 14 and 2.5. Assuming the distribution to be normal. Find the number of students getting marks i) Between 12 and 15 ii) Above 18 iii) Below 8 (Given : For S.N.V.Z. area between $z = 0$ to $z = 0.4$ is 0.1554, that between $z = 0$ and $z = 0.8$ is 0.2881 that from $z = 0$ and $z = 1.6$ is 0.4452).

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- b) From a box containing 100 transistors 20 of which are defective. 10 are selected at random. Find the probability that i) all will be defective ii) all are non-defective iii) atleast one is defective.

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- c) Calculate the coefficient of correlation between export of raw material and import of finished goods from the following data :

Export of raw material

in crores of Rs. : 42 44 58 55 89 98 66

Import of finished

goods in crores of Rs. : 56 59 53 58 65 78 58

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8. Attempt the following :

a) Fit a second degree curve to the following data :

x : 1 2 3 4 5 6 7 8 9

y : 2 6 7 8 10 11 11 10 9

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b) From the following data find the coefficient of regression of x on y and estimate x when y = 105.

x : 44 58 49 46 58 56 48 46 48 47

y : 88 114 102 113 91 89 102 93 114 94

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c) During war one ship out of nine sunk on an average in making a certain voyage. What is the probability that exactly 3 out of 6 ships would arrive safely.

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9. Attempt the following :

a) In an infinite capacity queuing system with Poisson process, three servers

$\frac{\lambda}{\mu} = 2.5$ and $P_0 = \frac{1}{22.5}$. Find the average number of customers in the queue and in the system.

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b) There are three computers in a shop and three operators. Each operator on an average can send 10 messages per hour by E-mail. If messages arrive for being E-mailed at the rate of 25 per hour

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i) What is the probability that all the computers are busy ?

ii) What is the average number of messages waiting to be sent ?

iii) What is the average time a customer has to wait for waiting and for E-mailing his message ?



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MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct option :

(14×1=14)

- 1) The velocity of a particle moving along the curve $x = 2\sin 3t$, $y = 2\cos 3t$, $z = 8t$ at any time 't' is
a) 2 b) 4 c) 8 d) 10
- 2) If $\phi(x, y, z) = c$ represents a surface, then the unit normal vector to this surface is
a) $\frac{\text{grad.}\phi}{|\text{grad.}\phi|}$ b) $\text{grad.}\phi$ c) $\text{div}(\text{grad.}\phi)$ d) $\text{curl}(\text{grad.}\phi)$
- 3) The equations of the lines of regression are $x + 2y = 5$, and $2x + 3y = 8$ then \bar{x} and \bar{y} are
a) 1 and 3 b) 2 and 3 c) 2 and 5 d) 1 and 2
- 4) If the mean of $x = 90$, the mean of $y = 50$, the coefficient of regression of x on y is 0.9, then the equation of the lines of regression of x on y is
a) $y = 0.9x + 0.45$ b) $x = 0.9y + 0.45$
c) $y = 0.8x + 0.65$ d) $x = 0.8y + 0.65$
- 5) The mean and standard deviation of a standard normal variate is
a) 1 and 0 b) 0 and 1 c) 1 and 1 d) -1 and 1
- 6) The number of car accidents in a city in a year is Poisson distribution with mean 2. The probability that there will be no accident in a year is
a) 0.03 b) 0.04 c) 0.05 d) 0.06



7) The fraction of time the system is busy is

- a) $\frac{\lambda}{\mu}$ b) $\frac{\mu}{\lambda}$ c) $\frac{\lambda}{\mu^2}$ d) $\frac{\mu}{\lambda^2}$

8) The general solution of the diff. equation $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = 0$ is

- a) $c_1 e^{-x} + c_2 e^x$ b) $(c_1 + c_2 x)e^x$
 c) $e^{-\frac{x}{2}} \left[c_1 \cos \frac{\sqrt{3}}{2} x + c_2 \sin \frac{\sqrt{3}}{2} x \right]$ d) $e^{x/2} \left[c_1 \cos \frac{\sqrt{3}}{2} x + c_2 \sin \frac{\sqrt{3}}{2} x \right]$

9) The particular integral of $(D^2 - 2D + 1) y = -4e^x$ is

- a) $-2x^2 e^x$ b) $-4x^2 e^x$ c) $(c_1 + c_2 x)e^x$ d) e^x

10) $L^{-1} \left\{ \frac{1}{s^2 + 4s + 13} \right\} =$

- a) $e^{-2t} \cos 3t$ b) $\frac{1}{3} e^{2t} \sin 3t$ c) $\frac{1}{3} e^{-2t} \sin 3t$ d) $e^{-2t} \sin 3t$

11) $L \left\{ \int_0^t \sin 2u du \right\} =$

- a) $\frac{2}{s^2 + 4}$ b) $\frac{2}{s(s^2 + 4)}$ c) $\frac{1}{s(s^2 + 4)}$ d) $\frac{2s}{(s^2 + 4)^2}$

12) The Fourier expansion in $[-\pi, \pi]$ of the function

$$f(x) = -x^2, -\pi < x \leq 0$$

$$x^2, 0 \leq x \leq \pi$$

has

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

13) The half-range sine series for $F(x)$ defined in the interval $(0, 2)$ is

- a) $F(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $F(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$
 c) $F(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $F(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

14) If $Z\{f(k)\} = F(z)$, then $Z\{Kf(k)\} =$

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



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

11) The half-range sine series for $F(x)$ defined in the interval $(0, 2)$ is

- a) $F(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $F(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$
c) $F(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $F(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

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

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

13) The velocity of a particle moving along the curve $x = 2\sin 3t$, $y = 2\cos 3t$, $z = 8t$ at any time 't' is

- a) 2 b) 4 c) 8 d) 10

14) If $\phi(x, y, z) = c$ represents a surface, then the unit normal vector to this surface is

- a) $\frac{\text{grad.}\phi}{|\text{grad.}\phi|}$ b) $\text{grad.}\phi$ c) $\text{div}(\text{grad.}\phi)$ d) $\text{curl}(\text{grad.}\phi)$



Seat No.	
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**S.E. (IT) (Part – I) (CGPA) Examination, 2016
APPLIED MATHEMATICS – I**

Day and Date : Tuesday, 13-12-2016
Time : 10.00 a.m. to 1.00 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 : $(D^2 - 13D + 12) y = e^{-2x} + 5e^x$. **3**
 b) Solve : $(D^2 + 2D + 10) y = -37\sin 3x$. **3**
 c) Solve : $(D^3 - 3D - 2)y = 540x^3e^{-x}$. **4**

OR

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

- a) Find $L \{te^{-2t} \cos 3t\}$.
 b) Find $L^{-1} \left\{ \frac{s^2 + s - 2}{s(s + 3)(s - 2)} \right\}$.
 c) Find $L^{-1} \left\{ \frac{1}{s^2(s^2 + 1)} \right\}$, by convolution theorem.
 d) Evaluate $\int_0^\infty \frac{e^{-t} - e^{-3t}}{t} dt$ by using Laplace transform.

4. a) Find $Z \left\{ \begin{matrix} k \\ 3 \end{matrix} \right\}$ for all k. **3**

- b) Find $Z^{-1} \left\{ \frac{1}{(z - 3)(z - 2)} \right\}$, $|z| > 3$. **3**

- c) Find $Z \{ \cos \alpha k \}$, $k \geq 0$. **3**

Set S



5. a) Find the Fourier series of

$$F(x) = 2, \quad -2 < x < 0$$

$$= x, \quad 0 < x < 2 \quad .$$

5

b) Find the half-range cosine series of $f(x) = x(\pi - x)$ in the interval $(0, \pi)$.

4

SECTION – II

6. Attempt the following :

a) Find the directional derivative of $\phi = x^2 + y^2 + z^2$ in the direction of the line

$$\frac{x}{3} = \frac{y}{4} = \frac{z}{5} \text{ at } (1, 2, 3).$$

3

b) A vector field is given by $\bar{f} = (x^2 + xy^2) i + (y^2 + x^2y) j + (0) k$. Show that \bar{f} is irrotational and find its scalar potential ϕ .

3

c) Prove that $\nabla^2 \left(\frac{1}{r} \right) = 0$.

3

7. Attempt the following :

a) In a sample of 1000 students the mean and standard deviation of marks obtained by the students in a certain test are 14 and 2.5. Assuming the distribution to be normal. Find the number of students getting marks i) Between 12 and 15 ii) Above 18 iii) Below 8 (Given : For S.N.V.Z. area between $z = 0$ to $z = 0.4$ is 0.1554, that between $z = 0$ and $z = 0.8$ is 0.2881 that from $z = 0$ and $z = 1.6$ is 0.4452).

4

b) From a box containing 100 transistors 20 of which are defective. 10 are selected at random. Find the probability that i) all will be defective ii) all are non-defective iii) atleast one is defective.

3

c) Calculate the coefficient of correlation between export of raw material and import of finished goods from the following data :

Export of raw material

in crores of Rs. : 42 44 58 55 89 98 66

Import of finished

goods in crores of Rs. : 56 59 53 58 65 78 58

3

Set S



8. Attempt the following :

a) Fit a second degree curve to the following data :

x : 1 2 3 4 5 6 7 8 9

y : 2 6 7 8 10 11 11 10 9

3

b) From the following data find the coefficient of regression of x on y and estimate x when y = 105.

x : 44 58 49 46 58 56 48 46 48 47

y : 88 114 102 113 91 89 102 93 114 94

3

c) During war one ship out of nine sunk on an average in making a certain voyage. What is the probability that exactly 3 out of 6 ships would arrive safely.

3

9. Attempt the following :

a) In an infinite capacity queuing system with Poisson process, three servers

$\frac{\lambda}{\mu} = 2.5$ and $P_0 = \frac{1}{22.5}$. Find the average number of customers in the queue and in the system.

4

b) There are three computers in a shop and three operators. Each operator on an average can send 10 messages per hour by E-mail. If messages arrive for being E-mailed at the rate of 25 per hour

5

i) What is the probability that all the computers are busy ?

ii) What is the average number of messages waiting to be sent ?

iii) What is the average time a customer has to wait for waiting and for E-mailing his message ?



Seat No.	
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Set	P
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**S.E. (I.T.) (Part – I) (CGPA) Examination, 2016
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Thursday, 15-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(14×1=14)

I) $p \leftrightarrow q$ is

- a) $(p \rightarrow q) \wedge (q \rightarrow p)$ b) $(p \wedge q) \vee (\neg p \wedge \neg q)$
c) $(\neg p \wedge q) \vee (p \wedge \neg q)$ d) Both a and b

II) If $(A \wedge \neg B)$ is Infix the suffix is

- a) $AB\neg\wedge$ b) $AB\wedge\neg$ c) $\neg\wedge AB$ d) $A\neg B\wedge$

III) $P \uparrow Q \Leftrightarrow$

- a) $\neg(P \wedge Q)$ b) $\neg(P \vee Q)$ c) $\neg(\neg P \wedge Q)$ d) $\neg(p \rightarrow q)$

IV) Given $X = \{1, 2, 3\}$, $Y = \{1, 1, 2, 3\}$ then

- a) $x \subseteq y$ b) $y \subseteq x$ c) $x = y$ d) All the above

V) The set 'x' is a proper subset of set 'y' if

- a) $x \subseteq y$ but $x = y$ b) $x \subseteq y$ but $x \neq y$
c) $x \in y$ d) None of the above

VI) $A \cup A' =$

- a) A b) \cup c) A' d) Null



VII) If a relation is antisymmetric, then its matrix is such that

- a) $r_{ij} = 1$ then $r_{ji} = 0$ for $i = j$ b) $r_{ij} = 0$ then $r_{ji} = 0$ for $i \neq j$
 c) $r_{ij} = 1$ then $r_{ji} = 0$ for $i \neq j$ d) $r_{ij} = 0$ then $r_{ji} = 1$ for $i = j$

VIII) $R(s) =$

- a) $R(s) = \{y \mid (\exists x), ((x, y) \in s)\}$
 b) $R(s) = \{x \mid (\exists y), (x, y) \in s\}$
 c) $R(s) = \{(x, y) \mid (\exists x, y), (x, y) \in s\}$
 d) None of the above

IX) The bijective function is

- a) 1 to 1 and into b) 1 to 1
 c) 1 to 1 and onto d) into and onto

X) If the function 'f' is defined by $f(x) = x^2 + 1$ on the set $\{-2, -1, 0, 1, 2\}$, the range of f is

- a) $\{1, 3, 5\}$ b) $\{1, 2, 5\}$ c) $\{1, 3, 4\}$ d) $\{1, 2\}$

XI) If G is a group and the inverse of a is a^{-1} then inverse of a^{-1} is _____ for $a \in G$.

- a) a b) 1 c) 0 d) a^{-1}

XII) Cancellation law holds good in a

- a) Complete lattice b) Complemented lattice
 c) Distributive lattice d) Boolean algebra

XIII) A lattice (L, \leq) is called chain if for every $a, b \in L$

- a) $a \leq b \leq c$ b) $a \geq b \geq c$
 c) $a \leq b \leq c$ or $a \geq b \geq c$ d) $a \leq b \leq c$ and $a \geq b \geq c$

XIV) Identity law of Boolean algebra for any $a \in B$ is

- a) $a \vee 0 = a$ b) $a \wedge 1 = a$
 c) Both a and b d) $a \vee 1 = a$ and $a \wedge 0 = 0$



Seat No.	
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**S.E. (I.T.) (Part – I) (CGPA) Examination, 2016
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Thursday, 15-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

Instructions : 1) **All questions are compulsory.**
2) **Assume suitable data if required.**

SECTION – I

2. Attempt **any three** questions : **(3×4=12)**
- a) Explain functionally complete set of connectives and well formed formula.
 - b) Show that
 - i) $A - B = A \cap B^1$
 - ii) $A \subseteq B = B^1 \subseteq A^1$.
 - c) If $A = \{2, 3, 4\}$, $B = \{1, 2\}$, $C = \{4, 5, 6\}$ then find $A + B$, $B + C$, $A + B + C$ and $(A + B) + (B + C)$.
 - d) Let $X = \{1, 2, 3, \dots, 7\}$ and $R = \{(x, y) \mid (x - y) \text{ is divisible by } 3\}$. Show that 'R' is an equivalence relation. Draw the graph of R.
 - e) Show that $(\neg p \wedge (\neg q \wedge r)) \vee (q \wedge r) \vee (p \wedge r) \Leftrightarrow r$.
3. Attempt **any one** question : **(1×8=8)**
- a) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises $P \vee Q, Q \rightarrow R, P \rightarrow M$ and $\neg M$.
 - b) Let 'R' be a relation defined on the set of all real numbers by "If x, y are real numbers such that $xRy \Leftrightarrow x - y$ is a rational number". Show that the relation R is an equivalence relation.
4. Attempt the following question : **(1×8=8)**
- a) Obtain the product of sum canonical form of the following.
 $(p \wedge q \wedge r) \vee (\neg p \wedge r \wedge q) \vee (\neg p \wedge \neg q \wedge \neg r)$.



SECTION – II

5. Attempt **any three** questions : **(4×3=12)**
- a) Define semigroup Homomorphism, semigroup epimorphism, semigroup endomorphism and semigroup automorphism.
 - b) Determine whether the following poset is a lattice. $(\{1, 2, 4, 8, 16\}, \leq)$
 - c) Define sub lattice, complete lattice, Bounded lattice, Lattice.
 - d) Show that in a Boolean algebra, the complement of every element is unique.
 - e) Explain properties of Algebraic system.
6. Attempt **any one** : **(1×8=8)**
- a) Prove that every chain is distributive lattice.
 - b) Write all possible functions from $X = \{1, 2\}$, to $Y = \{a, b, c\}$ and classify them into one to one, onto and neither one to one nor onto types of function.
7. Attempt the following question : **(1×8=8)**

Show that $B \cup \left(\bigcap_{i=1}^n A_i \right) = \bigcap_{i=1}^n (B \cup A_i)$.



Seat No.	
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Set	Q
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**S.E. (I.T.) (Part – I) (CGPA) Examination, 2016
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Thursday, 15-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(14×1=14)

I) $R(s) =$

- a) $R(s) = \{y \mid (\exists x), ((x, y) \in s)\}$
- b) $R(s) = \{x \mid (\exists y), (x, y) \in s\}$
- c) $R(s) = \{(x, y) \mid (\exists x, y), (x, y) \in s\}$
- d) None of the above

II) The bijective function is

- a) 1 to 1 and Into
- b) 1 to 1
- c) 1 to 1 and onto
- d) Into and onto

III) If the function 'f' is derived by $f(x) = x^2 + 1$ on the set $\{-2, -1, 0, 1, 2\}$, the range of f is

- a) $\{1, 3, 5\}$
- b) $\{1, 2, 5\}$
- c) $\{1, 3, 4\}$
- d) $\{1, 2\}$

IV) If G is a group and the inverse of a is a^{-1} then inverse of a^{-1} is _____ for $a \in G$.

- a) a
- b) 1
- c) 0
- d) a^{-1}

V) Cancellation law holds good in a

- a) Complete lattice
- b) Complemeted lattice
- c) Distributive lattice
- d) Boolean algebra



Seat No.	
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**S.E. (I.T.) (Part – I) (CGPA) Examination, 2016
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Thursday, 15-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

Instructions : 1) **All questions are compulsory.**
2) **Assume suitable data if required.**

SECTION – I

2. Attempt **any three** questions : **(3×4=12)**
- a) Explain functionally complete set of connectives and well formed formula.
 - b) Show that
 - i) $A - B = A \cap B^1$
 - ii) $A \subseteq B = B^1 \subseteq A^1$.
 - c) If $A = \{2, 3, 4\}$, $B = \{1, 2\}$, $C = \{4, 5, 6\}$ then find $A + B$, $B + C$, $A + B + C$ and $(A + B) + (B + C)$.
 - d) Let $X = \{1, 2, 3, \dots, 7\}$ and $R = \{(x, y) \mid (x - y) \text{ is divisible by } 3\}$. Show that 'R' is an equivalence relation. Draw the graph of R.
 - e) Show that $(\neg p \wedge (\neg q \wedge r)) \vee (q \wedge r) \vee (p \wedge r) \Leftrightarrow r$.
3. Attempt **any one** question : **(1×8=8)**
- a) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises $P \vee Q, Q \rightarrow R, P \rightarrow M$ and $\neg M$.
 - b) Let 'R' be a relation defined on the set of all real numbers by "If x, y are real numbers such that $xRy \Leftrightarrow x - y$ is a rational number". Show that the relation R is an equivalence relation.
4. Attempt the following question : **(1×8=8)**
- a) Obtain the product of sum canonical form of the following.
 $(p \wedge q \wedge r) \vee (\neg p \wedge r \wedge q) \vee (\neg p \wedge \neg q \wedge \neg r)$.

Set Q



SECTION – II

5. Attempt **any three** questions : **(4×3=12)**
- a) Define semigroup Homomorphism, semigroup epimorphism, semigroup endomorphism and semigroup automorphism.
 - b) Determine whether the following poset is a lattice. $(\{1, 2, 4, 8, 16\}, \leq)$
 - c) Define sub lattice, complete lattice, Bounded lattice, Lattice.
 - d) Show that in a Boolean algebra, the complement of every element is unique.
 - e) Explain properties of Algebraic system.
6. Attempt **any one** : **(1×8=8)**
- a) Prove that every chain is distributive lattice.
 - b) Write all possible functions from $X = \{1, 2\}$, to $Y = \{a, b, c\}$ and classify them into one to one, onto and neither one to one nor onto types of function.
7. Attempt the following question : **(1×8=8)**

Show that $B \cup \left(\bigcap_{i=1}^n A_i \right) = \bigcap_{i=1}^n (B \cup A_i)$.



Seat No.	
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Set	R
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**S.E. (I.T.) (Part – I) (CGPA) Examination, 2016
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Thursday, 15-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(14×1=14)

I) The set 'x' is a proper subset of set 'y' if

- a) $x \subseteq y$ but $x = y$ b) $x \subseteq y$ but $x \neq y$
c) $x \in y$ $y \in x$ d) None of the above

II) $A \cup A' =$

- a) A b) \cup c) A' d) Null

III) If a relation is antisymmetric, then its matrix is such that

- a) $r_{ij} = 1$ then $r_{ji} = 0$ for $i = j$ b) $r_{ij} = 0$ then $r_{ji} = 0$ for $i \neq j$
c) $r_{ij} = 1$ then $r_{ji} = 0$ for $i \neq j$ d) $r_{ij} = 0$ then $r_{ji} = 1$ for $i = j$

IV) $R(s) =$

- a) $R(s) = \{y \mid (\exists x), ((x, y) \in s)\}$
b) $R(s) = \{x \mid (\exists y), (x, y) \in s\}$
c) $R(s) = \{(x, y) \mid (\exists x, y), (x, y) \in s\}$
d) None of the above

V) The bijective function is

- a) 1 to 1 and Into b) 1 to 1
c) 1 to 1 and onto d) Into and onto



- VI) If the function 'f' is derived by $f(x) = x^2 + 1$ on the set $\{-2, -1, 0, 1, 2\}$, the range of f is
 a) $\{1, 3, 5\}$ b) $\{1, 2, 5\}$ c) $\{1, 3, 4\}$ d) $\{1, 2\}$
- VII) If G is a group and the inverse of a is a^{-1} then inverse of a^{-1} is _____ for $a \in G$.
 a) a b) 1 c) 0 d) a^{-1}
- VIII) Cancellation law holds good in a
 a) Complete lattice b) Complemented lattice
 c) Distributive lattice d) Boolean algebra
- IX) A lattice (L, \leq) is called chain if for every $a, b \in L$
 a) $a \leq b \leq c$ b) $a \geq b \geq c$
 c) $a \leq b \leq c$ or $a \geq b \geq c$ d) $a \leq b \leq c$ and $a \geq b \geq c$
- X) Identity law of Boolean algebra for any $a \in B$ is
 a) $a \vee 0 = a$ b) $a \wedge 1 = a$
 c) Both a and b d) $a \vee 1 = a$ and $a \wedge 0 = 0$
- XI) $p \leftrightarrow q$ is
 a) $(p \rightarrow q) \wedge (q \rightarrow p)$ b) $(p \wedge q) \vee (\neg p \wedge \neg q)$
 c) $(\neg p \wedge q) \vee (p \wedge \neg q)$ d) Both a and b
- XII) If $(A \wedge \neg B)$ is Infix the suffix is
 a) $AB \neg \wedge$ b) $AB \wedge \neg$ c) $\neg \wedge AB$ d) $A \neg B \wedge$
- XIII) $P \uparrow Q \Leftrightarrow$
 a) $\neg(P \wedge Q)$ b) $\neg(P \vee Q)$ c) $\neg(\neg P \wedge Q)$ d) $\neg(p \rightarrow q)$
- XIV) Given $X = \{1, 2, 3\}$, $Y = \{1, 1, 2, 3\}$ then
 a) $x \subseteq y$ b) $y \subseteq x$ c) $x = y$ d) All the above
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Seat No.	
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**S.E. (I.T.) (Part – I) (CGPA) Examination, 2016
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Thursday, 15-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

Instructions : 1) **All questions are compulsory.**
2) **Assume suitable data if required.**

SECTION – I

2. Attempt **any three** questions : **(3×4=12)**
- a) Explain functionally complete set of connectives and well formed formula.
 - b) Show that
 - i) $A - B = A \cap B^1$
 - ii) $A \subseteq B = B^1 \subseteq A^1$.
 - c) If $A = \{2, 3, 4\}$, $B = \{1, 2\}$, $C = \{4, 5, 6\}$ then find $A + B$, $B + C$, $A + B + C$ and $(A + B) + (B + C)$.
 - d) Let $X = \{1, 2, 3, \dots, 7\}$ and $R = \{(x, y) \mid (x - y) \text{ is divisible by } 3\}$. Show that 'R' is an equivalence relation. Draw the graph of R.
 - e) Show that $(\neg p \wedge (\neg q \wedge r)) \vee (q \wedge r) \vee (p \wedge r) \Leftrightarrow r$.
3. Attempt **any one** question : **(1×8=8)**
- a) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises $P \vee Q, Q \rightarrow R, P \rightarrow M$ and $\neg M$.
 - b) Let 'R' be a relation defined on the set of all real numbers by "If x, y are real numbers such that $xRy \Leftrightarrow x - y$ is a rational number". Show that the relation R is an equivalence relation.
4. Attempt the following question : **(1×8=8)**
- a) Obtain the product of sum canonical form of the following.
 $(p \wedge q \wedge r) \vee (\neg p \wedge r \wedge q) \vee (\neg p \wedge \neg q \wedge \neg r)$.



SECTION – II

5. Attempt **any three** questions : **(4×3=12)**
- a) Define semigroup Homomorphism, semigroup epimorphism, semigroup endomorphism and semigroup automorphism.
 - b) Determine whether the following poset is a lattice. $(\{1, 2, 4, 8, 16\}, \leq)$
 - c) Define sub lattice, complete lattice, Bounded lattice, Lattice.
 - d) Show that in a Boolean algebra, the complement of every element is unique.
 - e) Explain properties of Algebraic system.

6. Attempt **any one** : **(1×8=8)**
- a) Prove that every chain is distributive lattice.
 - b) Write all possible functions from $X = \{1, 2\}$, to $Y = \{a, b, c\}$ and classify them into one to one, onto and neither one to one nor onto types of function.

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

Show that $B \cup \left(\bigcap_{i=1}^n A_i \right) = \bigcap_{i=1}^n (B \cup A_i)$.



Seat No.	
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Set	S
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**S.E. (I.T.) (Part – I) (CGPA) Examination, 2016
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Thursday, 15-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(14×1=14)

- I) If the function 'f' is defined by $f(x) = x^2 + 1$ on the set $\{-2, -1, 0, 1, 2\}$, the range of f is
a) $\{1, 3, 5\}$ b) $\{1, 2, 5\}$ c) $\{1, 3, 4\}$ d) $\{1, 2\}$
- II) If G is a group and the inverse of a is a^{-1} then inverse of a^{-1} is _____ for $a \in G$.
a) a b) 1 c) 0 d) a^{-1}
- III) Cancellation law holds good in a
a) Complete lattice b) Complemented lattice
c) Distributive lattice d) Boolean algebra
- IV) A lattice (L, \leq) is called chain if for every $a, b \in L$
a) $a \leq b \leq c$ b) $a \geq b \geq c$
c) $a \leq b \leq c$ or $a \geq b \geq c$ d) $a \leq b \leq c$ and $a \geq b \geq c$
- V) Identity law of Boolean algebra for any $a \in B$ is
a) $a \vee 0 = a$ b) $a \wedge 1 = a$
c) Both a and b d) $a \vee 1 = a$ and $a \wedge 0 = 0$
- VI) $p \leftrightarrow q$ is
a) $(p \rightarrow q) \wedge (q \rightarrow p)$ b) $(p \wedge q) \vee (\neg p \wedge \neg q)$
c) $(\neg p \wedge q) \vee (p \wedge \neg q)$ d) Both a and b



VII) If $(A \wedge \neg B)$ is Infix the suffix is

- a) $AB\neg\wedge$ b) $AB\wedge\neg$ c) $\neg\wedge AB$ d) $A\neg B\wedge$

VIII) $P \uparrow Q \Leftrightarrow$

- a) $\neg(P \wedge Q)$ b) $\neg(P \vee Q)$ c) $\neg(\neg P \wedge Q)$ d) $\neg(p \rightarrow q)$

IX) Given $X = \{1, 2, 3\}$, $Y = \{1, 1, 2, 3\}$ then

- a) $x \subseteq y$ b) $y \subseteq x$ c) $x = y$ d) All the above

X) The set 'x' is a proper subset of set 'y' if

- a) $x \subseteq y$ but $x = y$ b) $x \subseteq y$ but $x \neq y$
 c) $x \in y$ d) None of the above

XI) $A \cup A' =$

- a) A b) \cup c) A' d) Null

XII) If a relation is antisymmetric, then its matrix is such that

- a) $r_{ij} = 1$ then $r_{ji} = 0$ for $i = j$ b) $r_{ij} = 0$ then $r_{ji} = 0$ for $i \neq j$
 c) $r_{ij} = 1$ then $r_{ji} = 0$ for $i \neq j$ d) $r_{ij} = 0$ then $r_{ji} = 1$ for $i = j$

XIII) $R(s) =$

- a) $R(s) = \{y \mid (\exists x), ((x, y) \in s)\}$
 b) $R(s) = \{x \mid (\exists y), (x, y) \in s\}$
 c) $R(s) = \{(x, y) \mid (\exists x, y), (x, y) \in s\}$
 d) None of the above

XIV) The bijective function is

- a) 1 to 1 and Into b) 1 to 1
 c) 1 to 1 and onto d) Into and onto



Seat No.	
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**S.E. (I.T.) (Part – I) (CGPA) Examination, 2016
DISCRETE MATHEMATICAL STRUCTURES**

Day and Date : Thursday, 15-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

Instructions : 1) **All questions are compulsory.**
2) **Assume suitable data if required.**

SECTION – I

2. Attempt **any three** questions : **(3×4=12)**
- a) Explain functionally complete set of connectives and well formed formula.
 - b) Show that
 - i) $A - B = A \cap B^1$
 - ii) $A \subseteq B = B^1 \subseteq A^1$.
 - c) If $A = \{2, 3, 4\}$, $B = \{1, 2\}$, $C = \{4, 5, 6\}$ then find $A + B$, $B + C$, $A + B + C$ and $(A + B) + (B + C)$.
 - d) Let $X = \{1, 2, 3, \dots, 7\}$ and $R = \{(x, y) \mid (x - y) \text{ is divisible by } 3\}$. Show that 'R' is an equivalence relation. Draw the graph of R.
 - e) Show that $(\neg p \wedge (\neg q \wedge r)) \vee (q \wedge r) \vee (p \wedge r) \Leftrightarrow r$.
3. Attempt **any one** question : **(1×8=8)**
- a) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises $P \vee Q, Q \rightarrow R, P \rightarrow M$ and $\neg M$.
 - b) Let 'R' be a relation defined on the set of all real numbers by "If x, y are real numbers such that $xRy \Leftrightarrow x - y$ is a rational number". Show that the relation R is an equivalence relation.
4. Attempt the following question : **(1×8=8)**
- a) Obtain the product of sum canonical form of the following.
 $(p \wedge q \wedge r) \vee (\neg p \wedge r \wedge q) \vee (\neg p \wedge \neg q \wedge \neg r)$.



SECTION – II

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

- a) Define semigroup Homomorphism, semigroup epimorphism, semigroup endomorphism and semigroup automorphism.
- b) Determine whether the following poset is a lattice. $(\{1, 2, 4, 8, 16\}, \leq)$
- c) Define sub lattice, complete lattice, Bounded lattice, Lattice.
- d) Show that in a Boolean algebra, the complement of every element is unique.
- e) Explain properties of Algebraic system.

6. Attempt **any one** : **(1×8=8)**

- a) Prove that every chain is distributive lattice.
- b) Write all possible functions from $X = \{1, 2\}$, to $Y = \{a, b, c\}$ and classify them into one to one, onto and neither one to one nor onto types of function.

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

Show that $B \cup \left(\bigcap_{i=1}^n A_i \right) = \bigcap_{i=1}^n (B \cup A_i)$.



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**S.E. (Information Technology) (Part – I) (CGPA) Examination, 2016
ADVANCED C CONCEPTS**

Day and Date : Saturday, 17-12-2016
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) Recursive function call uses _____ data structure while execution.
A) Queue B) Stack C) Linked List D) String
- 2) When arrays are used the memory is allocated
A) Dynamically B) Statically
C) Both A) and B) D) None
- 3) Time complexity is amount of time required to _____ the program.
A) Write B) Compile
C) Execute D) Above B) and C) both
- 4) Linear search method is efficient than binary search when size of list is
A) Small B) Large
C) Above A) and B) both D) None of the above
- 5) Which function used to write formatted data to a file ?
A) printf B) fprintf C) scanf D) fscanf
- 6) Pointer is a variable which holds
A) Value B) Address of other variable
C) Address of other pointer D) Both B) and C)
- 7) The storage used for register storage class variable is
A) Memory B) Register
C) Capacitor D) None of the above
- 8) An array of pointers is a
A) Collection of addresses B) Collection of integer values
C) Collection of float values D) None of the above



9) What will be the output of the program ?

```
#include<stdio.h>
#include<string.h>
int main()
{
    char str1[20] = "Hello", str2[20] = "World";
    printf("%s\n", strcpy(str2, strcat(str1, str2)));
    return 0;
}
```

A) Hello B) World C) Hello World D) WorldHello

10) The technique of linear probing can lead to the

A) Underflow B) Overflow C) Can't say D) Both A) and B)

11) Bubble sort technique compares elements between _____ locations.

A) First and last B) Successive
C) First and middle D) None of the above

12) Two records cannot occupy the same position is called

A) Hashing B) Searching
C) Hash Collision D) None of the above

13) Big-Oh notation is used to denote _____ on a function $f(n)$ within a constant factor.

A) Upper bound B) Lower bound
C) Upper and lower bound D) None of the above

14) Consider the following code :

```
int i = 0;
while (i < n)
{
    printf("%d", i);
    i++;
}
```

If $n = 5$ and every statement require 1 unit of time to execute, how much total unit time require to execute the code ?

A) 4 B) 16 C) 17 D) 8



Seat No.	
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**S.E. (Information Technology) (Part – I) (CGPA) Examination, 2016
ADVANCED C CONCEPTS**

Day and Date : Saturday, 17-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

N. B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Differentiate between static and register storage classes.
 - b) State towers of Hanoi problem and write an algorithm to implement solution to Towers of Hanoi problem.
 - c) Describe any two string handling functions in C with example.
 - d) Explain pointer to function with example.
3. Attempt **any one** : **(1×8=8)**
- a) Explain storage classes with example and any four data conversion functions in 'C'.
 - b) Write a 'C' program to generate Fibonacci series with following approaches :
 - i) Non-recursive
 - ii) Recursive.
4. Attempt **any one** : **(1×8=8)**
- a) Explain array of strings concept with sample program.
 - b) Explain static and dynamic memory allocation concept. Explain the functions for dynamic memory management in 'C'.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain the differences between Linear Search and Binary Search.
 - b) Write an algorithm to implement shell sort.
 - c) What is Asymptotic Notation ? Explain Big-O and Omega notation with example.
 - d) Write a 'C' program to read contents of text file and display to console.

Set P



6. Attempt **any one** : **(1×8=8)**

- a) What is hashing ? Explain different collision resolution techniques with examples.
- b) What is a command line argument ? Write a 'C' program to read command line argument and display to console.

7. Attempt **any one** : **(1×8=8)**

- a) Explain time complexity and space complexity of an algorithm. Write time complexity for following given program with explanation.

```
main()
{
    int a = 2, b = 5, t, i;
    t = b;
    b = a;
    a = t;
    printf("\n a = %d", a);
    printf("\t b = %d\n", b);
    for (i = 0; i < t; i++)
        printf("\t%d", i)
}
```

b) Solve :

- i) Use Merge sort technique to sort the following and show all iterations :

21 17 14 84 18

- ii) Use Selection sort technique to sort the following and show all iterations :

5 62 12 19 34



Seat No.	
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Set	Q
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**S.E. (Information Technology) (Part – I) (CGPA) Examination, 2016
ADVANCED C CONCEPTS**

Day and Date : Saturday, 17-12-2016
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) An array of pointers is a
A) Collection of addresses B) Collection of integer values
C) Collection of float values D) None of the above
- 2) What will be the output of the program ?
`#include<stdio.h>`
`#include<string.h>`
`int main()`
`{`
`char str1[20] = "Hello", str2[20] = "World";`
`printf("%s\n", strcpy(str2, strcat(str1, str2)));`
`return 0;`
`}`
A) Hello B) World C) Hello World D) WorldHello
- 3) The technique of linear probing can lead to the
A) Underflow B) Overflow C) Can't say D) Both A) and B)
- 4) Bubble sort technique compares elements between _____ locations.
A) First and last B) Successive
C) First and middle D) None of the above
- 5) Two records cannot occupy the same position is called
A) Hashing B) Searching
C) Hash Collision D) None of the above



Seat No.	
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**S.E. (Information Technology) (Part – I) (CGPA) Examination, 2016
ADVANCED C CONCEPTS**

Day and Date : Saturday, 17-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

N. B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Differentiate between static and register storage classes.
 - b) State towers of Hanoi problem and write an algorithm to implement solution to Towers of Hanoi problem.
 - c) Describe any two string handling functions in C with example.
 - d) Explain pointer to function with example.
3. Attempt **any one** : **(1×8=8)**
- a) Explain storage classes with example and any four data conversion functions in 'C'.
 - b) Write a 'C' program to generate Fibonacci series with following approaches :
 - i) Non-recursive
 - ii) Recursive.
4. Attempt **any one** : **(1×8=8)**
- a) Explain array of strings concept with sample program.
 - b) Explain static and dynamic memory allocation concept. Explain the functions for dynamic memory management in 'C'.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain the differences between Linear Search and Binary Search.
 - b) Write an algorithm to implement shell sort.
 - c) What is Asymptotic Notation ? Explain Big-O and Omega notation with example.
 - d) Write a 'C' program to read contents of text file and display to console.

Set Q



6. Attempt **any one** : **(1×8=8)**

- a) What is hashing ? Explain different collision resolution techniques with examples.
- b) What is a command line argument ? Write a 'C' program to read command line argument and display to console.

7. Attempt **any one** : **(1×8=8)**

- a) Explain time complexity and space complexity of an algorithm. Write time complexity for following given program with explanation.

```
main()
{
    int a = 2, b = 5, t, i;
    t = b;
    b = a;
    a = t;
    printf("\n a = %d", a);
    printf("\t b = %d\n", b);
    for (i = 0; i < t; i++)
        printf("\t%d", i)
}
```

b) Solve :

- i) Use Merge sort technique to sort the following and show all iterations :

21 17 14 84 18

- ii) Use Selection sort technique to sort the following and show all iterations :

5 62 12 19 34



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**S.E. (Information Technology) (Part – I) (CGPA) Examination, 2016
ADVANCED C CONCEPTS**

Day and Date : Saturday, 17-12-2016
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) Which function used to write formatted data to a file ?
A) printf B) fprintf C) scanf D) fscanf
- 2) Pointer is a variable which holds
A) Value B) Address of other variable
C) Address of other pointer D) Both B) and C)
- 3) The storage used for register storage class variable is
A) Memory B) Register
C) Capacitor D) None of the above
- 4) An array of pointers is a
A) Collection of addresses B) Collection of integer values
C) Collection of float values D) None of the above
- 5) What will be the output of the program ?

```
#include<stdio.h>
#include<string.h>
int main()
{
    char str1[20] = "Hello", str2[20] = "World";
    printf("%s\n", strcpy(str2, strcat(str1, str2)));
    return 0;
}
```


A) Hello B) World C) Hello World D) WorldHello
- 6) The technique of linear probing can lead to the
A) Underflow B) Overflow C) Can't say D) Both A) and B)

P.T.O.



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**S.E. (Information Technology) (Part – I) (CGPA) Examination, 2016
ADVANCED C CONCEPTS**

Day and Date : Saturday, 17-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

N. B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Differentiate between static and register storage classes.
 - b) State towers of Hanoi problem and write an algorithm to implement solution to Towers of Hanoi problem.
 - c) Describe any two string handling functions in C with example.
 - d) Explain pointer to function with example.
3. Attempt **any one** : **(1×8=8)**
- a) Explain storage classes with example and any four data conversion functions in 'C'.
 - b) Write a 'C' program to generate Fibonacci series with following approaches :
 - i) Non-recursive
 - ii) Recursive.
4. Attempt **any one** : **(1×8=8)**
- a) Explain array of strings concept with sample program.
 - b) Explain static and dynamic memory allocation concept. Explain the functions for dynamic memory management in 'C'.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain the differences between Linear Search and Binary Search.
 - b) Write an algorithm to implement shell sort.
 - c) What is Asymptotic Notation ? Explain Big-O and Omega notation with example.
 - d) Write a 'C' program to read contents of text file and display to console.

Set R



6. Attempt **any one** : **(1×8=8)**

- a) What is hashing ? Explain different collision resolution techniques with examples.
- b) What is a command line argument ? Write a 'C' program to read command line argument and display to console.

7. Attempt **any one** : **(1×8=8)**

- a) Explain time complexity and space complexity of an algorithm. Write time complexity for following given program with explanation.

```
main()
{
    int a = 2, b = 5, t, i;
    t = b;
    b = a;
    a = t;
    printf("\n a = %d", a);
    printf("\t b = %d\n", b);
    for (i = 0; i < t; i++)
        printf("\t%d", i)
}
```

b) Solve :

- i) Use Merge sort technique to sort the following and show all iterations :

21 17 14 84 18

- ii) Use Selection sort technique to sort the following and show all iterations :

5 62 12 19 34



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**S.E. (Information Technology) (Part – I) (CGPA) Examination, 2016
ADVANCED C CONCEPTS**

Day and Date : Saturday, 17-12-2016
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) The technique of linear probing can lead to the
A) Underflow B) Overflow C) Can't say D) Both A) and B)
- 2) Bubble sort technique compares elements between _____ locations.
A) First and last B) Successive
C) First and middle D) None of the above
- 3) Two records cannot occupy the same position is called
A) Hashing B) Searching
C) Hash Collision D) None of the above
- 4) Big-Oh notation is used to denote _____ on a function $f(n)$ within a constant factor.
A) Upper bound B) Lower bound
C) Upper and lower bound D) None of the above
- 5) Consider the following code :
int i = 0;
while (i < n)
{
 printf("%d", i);
 i++;
}
If $n = 5$ and every statement require 1 unit of time to execute, how much total unit time require to execute the code ?
A) 4 B) 16 C) 17 D) 8



- 6) Recursive function call uses _____ data structure while execution.
A) Queue B) Stack C) Linked List D) String
- 7) When arrays are used the memory is allocated
A) Dynamically B) Statically
C) Both A) and B) D) None
- 8) Time complexity is amount of time required to _____ the program.
A) Write B) Compile
C) Execute D) Above B) and C) both
- 9) Linear search method is efficient than binary search when size of list is
A) Small B) Large
C) Above A) and B) both D) None of the above
- 10) Which function used to write formatted data to a file ?
A) printf B) fprintf C) scanf D) fscanf
- 11) Pointer is a variable which holds
A) Value B) Address of other variable
C) Address of other pointer D) Both B) and C)
- 12) The storage used for register storage class variable is
A) Memory B) Register
C) Capacitor D) None of the above
- 13) An array of pointers is a
A) Collection of addresses B) Collection of integer values
C) Collection of float values D) None of the above
- 14) What will be the output of the program ?
#include<stdio.h>
#include<string.h>
int main()
{
 char str1[20] = "Hello", str2[20] = "World";
 printf("%s\n", strcpy(str2, strcat(str1, str2)));
 return 0;
}
- A) Hello B) World C) Hello World D) WorldHello
-



Seat No.	
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**S.E. (Information Technology) (Part – I) (CGPA) Examination, 2016
ADVANCED C CONCEPTS**

Day and Date : Saturday, 17-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

N. B. : All questions are compulsory.

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- a) Differentiate between static and register storage classes.
 - b) State towers of Hanoi problem and write an algorithm to implement solution to Towers of Hanoi problem.
 - c) Describe any two string handling functions in C with example.
 - d) Explain pointer to function with example.
3. Attempt **any one** : **(1×8=8)**
- a) Explain storage classes with example and any four data conversion functions in 'C'.
 - b) Write a 'C' program to generate Fibonacci series with following approaches :
 - i) Non-recursive
 - ii) Recursive.
4. Attempt **any one** : **(1×8=8)**
- a) Explain array of strings concept with sample program.
 - b) Explain static and dynamic memory allocation concept. Explain the functions for dynamic memory management in 'C'.

SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain the differences between Linear Search and Binary Search.
 - b) Write an algorithm to implement shell sort.
 - c) What is Asymptotic Notation ? Explain Big-O and Omega notation with example.
 - d) Write a 'C' program to read contents of text file and display to console.

Set S



6. Attempt **any one** : **(1×8=8)**

- a) What is hashing ? Explain different collision resolution techniques with examples.
- b) What is a command line argument ? Write a 'C' program to read command line argument and display to console.

7. Attempt **any one** : **(1×8=8)**

- a) Explain time complexity and space complexity of an algorithm. Write time complexity for following given program with explanation.

```
main()
{
    int a = 2, b = 5, t, i;
    t = b;
    b = a;
    a = t;
    printf("\n a = %d", a);
    printf("\t b = %d\n", b);
    for (i = 0; i < t; i++)
        printf("\t%d", i)
}
```

b) Solve :

- i) Use Merge sort technique to sort the following and show all iterations :

21 17 14 84 18

- ii) Use Selection sort technique to sort the following and show all iterations :

5 62 12 19 34



Seat No.	
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Set

P

**S.E. (Information Technology) (Part – I) Examination, 2016
DIGITAL TECHNIQUES (CGPA)**

Day and Date : Tuesday, 20-12-2016
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) What are the maximum number of Boolean functions involving n Boolean variables ?
a) n^2 b) 2^n c) 2^{2n} d) 2^{n^3}
 - 2) What will be the reduced value of function $(\overline{BC} + \overline{AD})(\overline{AB} + \overline{CD})$?
a) \overline{ACD} b) $AB\overline{D}$
c) ABC d) $ABC\overline{D}$
 - 3) The look-ahead carry adder in the parallel carry adder where all sum digits are generated directly from the input digits
a) False b) True
c) Can't say d) Data insufficient
 - 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 $J = 1, K = 1$



- 6) An RS Latch is
- a) Combinational circuit
 - b) Synchronous sequential circuit
 - c) One bit memory element
 - d) One clock delay element
- 7) Asynchronous inputs will cause the flip-flop to respond immediately with regard to the clock input
- a) True
 - b) False
- 8) The device which changes from serial data to parallel data is
- a) Counter
 - b) Multiplexer
 - c) Demultiplexer
 - d) Flip-flop
- 9) A device which converts BCD to Seven Segment is called
- a) Encoder
 - b) Decoder
 - c) Multiplexer
 - d) Demultiplexer
- 10) EPROM contents can be erased by exposing it to
- a) Ultraviolet rays
 - b) Infrared rays
 - c) Burst of microwaves
 - d) Intense heat radiations
- 11) How many address bits are required to represent a 32 K MEMORY ?
- a) 15 bits
 - b) 12 bits
 - c) 14 bits
 - d) 16 bits
- 12) Which of the following cannot be accessed randomly ?
- a) DRAM
 - b) SRAM
 - c) ROM
 - d) Magnetic tape
- 13) How many architectures can be associated with an entity ?
- a) Only one
 - b) Three
 - c) More than one
 - d) None of these
- 14) What is the symbol used for assignment in VHDL programming ?
- a) ==
 - b) =
 - c) :=
 - d) <=
-



Seat No.	
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**S.E. (Information Technology) (Part – I) Examination, 2016
DIGITAL TECHNIQUES (CGPA)**

Day and Date : Tuesday, 20-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

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

- a) Minimise the following expressions using K-maps and realise using NOR gates only. $f_1(A, B, C, D) = \prod M(2, 7, 8, 9, 10, 12)$
- b) Design half adder and full subtractor using basic gates and universal gates.
- c) Design 1 bit Comparator using K-map and implement it using Universal gates.
- d) Design 3 bit Synchronous Counter.

3. Attempt **any two** : **(8×2=16)**

- a) Given the logic equation.
$$Y = (A + BC) (B + \overline{C} A)$$
 - i) Design a circuit using gates to realise this equation.
 - ii) Simplify the above Boolean function and design the circuit using universal gates.
 - iii) Convert the expression $Y = (A + B)(A + C)(B + \overline{C})$ into canonical POS form.
- b) Design a 5-bit Shift Register (7496) of serial input mode of operation with neat circuit diagram.
- c) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.



SECTION – II

4. Attempt **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) Explain how you expand the memory size of IC chip.
 - d) Explain the classification and characteristics of memories.
5. Attempt **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 Multiplexer and Demultiplexer.
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Seat No.	
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Set

Q

S.E. (Information Technology) (Part – I) Examination, 2016
DIGITAL TECHNIQUES (CGPA)

Day and Date : Tuesday, 20-12-2016
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 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) How many address bits are required to represent a 32 K MEMORY ?
 - a) 15 bits
 - b) 12 bits
 - c) 14 bits
 - d) 16 bits
- 5) Which of the following cannot be accessed randomly ?
 - a) DRAM
 - b) SRAM
 - c) ROM
 - d) Magnetic tape
- 6) How many architectures can be associated with an entity ?
 - a) Only one
 - b) Three
 - c) More than one
 - d) None of these



- 7) What is the symbol used for assignment in VHDL programming ?
a) == b) = c) := d) <=
- 8) What are the maximum number of Boolean functions involving n Boolean variables ?
a) n^2 b) 2^n c) 2^{2n} d) 2^{n^3}
- 9) What will be the reduced value of function $(\overline{BC} + \overline{AD})(\overline{AB} + \overline{CD})$?
a) \overline{ACD} b) $AB\overline{D}$
c) ABC d) $ABC\overline{D}$
- 10) The look-ahead carry adder in the parallel carry adder where all sum digits are generated directly from the input digits
a) False b) True
c) Can't say d) Data insufficient
- 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) An RS Latch is
a) Combinational circuit
b) Synchronous sequential circuit
c) One bit memory element
d) One clock delay element
- 14) Asynchronous inputs will cause the flip-flop to respond immediately with regard to the clock input
a) True b) False
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Seat No.	
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**S.E. (Information Technology) (Part – I) Examination, 2016
DIGITAL TECHNIQUES (CGPA)**

Day and Date : Tuesday, 20-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(4×3=12)**
- a) Minimise the following expressions using K-maps and realise using NOR gates only. $f_1(A, B, C, D) = \prod M(2, 7, 8, 9, 10, 12)$
 - b) Design half adder and full subtractor using basic gates and universal gates.
 - c) Design 1 bit Comparator using K-map and implement it using Universal gates.
 - d) Design 3 bit Synchronous Counter.
3. Attempt **any two** : **(8×2=16)**
- a) Given the logic equation.
$$Y = (A + BC) (B + \overline{C} A)$$
 - i) Design a circuit using gates to realise this equation.
 - ii) Simplify the above Boolean function and design the circuit using universal gates.
 - iii) Convert the expression $Y = (A + B)(A + C)(B + \overline{C})$ into canonical POS form.
 - b) Design a 5-bit Shift Register (7496) of serial input mode of operation with neat circuit diagram.
 - c) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.



SECTION – II

4. Attempt **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) Explain how you expand the memory size of IC chip.
 - d) Explain the classification and characteristics of memories.
5. Attempt **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 Multiplexer and Demultiplexer.
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SLR-EP – 205

Seat No.	
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Set

R

S.E. (Information Technology) (Part – I) Examination, 2016
DIGITAL TECHNIQUES (CGPA)

Day and Date : Tuesday, 20-12-2016
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) 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) An RS Latch is
 - a) Combinational circuit
 - b) Synchronous sequential circuit
 - c) One bit memory element
 - d) One clock delay element
 - 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

P.T.O.



- 6) EPROM contents can be erased by exposing it to
- Ultraviolet rays
 - Infrared rays
 - Burst of microwaves
 - Intense heat radiations
- 7) How many address bits are required to represent a 32 K MEMORY ?
- 15 bits
 - 12 bits
 - 14 bits
 - 16 bits
- 8) Which of the following cannot be accessed randomly ?
- DRAM
 - SRAM
 - ROM
 - Magnetic tape
- 9) How many architectures can be associated with an entity ?
- Only one
 - Three
 - More than one
 - None of these
- 10) What is the symbol used for assignment in VHDL programming ?
- ==
 - =
 - :=
 - <=
- 11) What are the maximum number of Boolean functions involving n Boolean variables ?
- n^2
 - 2^n
 - 2^{2n}
 - 2^{n^3}
- 12) What will be the reduced value of function $(\overline{BC} + \overline{AD})(\overline{AB} + \overline{CD})$?
- \overline{ACD}
 - $AB\overline{D}$
 - ABC
 - $AB\overline{CD}$
- 13) The look-ahead carry adder in the parallel carry adder where all sum digits are generated directly from the input digits
- False
 - True
 - Can't say
 - Data insufficient
- 14) The 2's complement of the number of 1010101
- 0101011
 - 0101010
 - 1101010
 - 1110011
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Seat No.	
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**S.E. (Information Technology) (Part – I) Examination, 2016
DIGITAL TECHNIQUES (CGPA)**

Day and Date : Tuesday, 20-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

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

- a) Minimise the following expressions using K-maps and realise using NOR gates only. $f_1(A, B, C, D) = \prod M(2, 7, 8, 9, 10, 12)$
- b) Design half adder and full subtractor using basic gates and universal gates.
- c) Design 1 bit Comparator using K-map and implement it using Universal gates.
- d) Design 3 bit Synchronous Counter.

3. Attempt **any two** : **(8×2=16)**

- a) Given the logic equation.
$$Y = (A + BC) (B + \overline{C} A)$$
 - i) Design a circuit using gates to realise this equation.
 - ii) Simplify the above Boolean function and design the circuit using universal gates.
 - iii) Convert the expression $Y = (A + B)(A + C)(B + \overline{C})$ into canonical POS form.
- b) Design a 5-bit Shift Register (7496) of serial input mode of operation with neat circuit diagram.
- c) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.



SECTION – II

4. Attempt **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) Explain how you expand the memory size of IC chip.
 - d) Explain the classification and characteristics of memories.
5. Attempt **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 Multiplexer and Demultiplexer.
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SLR-EP – 205

Seat No.	
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Set

S

S.E. (Information Technology) (Part – I) Examination, 2016
DIGITAL TECHNIQUES (CGPA)

Day and Date : Tuesday, 20-12-2016
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) EPROM contents can be erased by exposing it to
 - a) Ultraviolet rays
 - b) Infrared rays
 - c) Burst of microwaves
 - d) Intense heat radiations
- 2) How many address bits are required to represent a 32 K MEMORY ?
 - a) 15 bits
 - b) 12 bits
 - c) 14 bits
 - d) 16 bits
- 3) Which of the following cannot be accessed randomly ?
 - a) DRAM
 - b) SRAM
 - c) ROM
 - d) Magnetic tape
- 4) How many architectures can be associated with an entity ?
 - a) Only one
 - b) Three
 - c) More than one
 - d) None of these
- 5) What is the symbol used for assignment in VHDL programming ?
 - a) ==
 - b) =
 - c) :=
 - d) <=
- 6) What are the maximum number of Boolean functions involving n Boolean variables ?
 - a) n^2
 - b) 2^n
 - c) 2^{2n}
 - d) 2^{n^3}

P.T.O.



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**S.E. (Information Technology) (Part – I) Examination, 2016
DIGITAL TECHNIQUES (CGPA)**

Day and Date : Tuesday, 20-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

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

- a) Minimise the following expressions using K-maps and realise using NOR gates only. $f_1(A, B, C, D) = \prod M(2, 7, 8, 9, 10, 12)$
- b) Design half adder and full subtractor using basic gates and universal gates.
- c) Design 1 bit Comparator using K-map and implement it using Universal gates.
- d) Design 3 bit Synchronous Counter.

3. Attempt **any two** : **(8×2=16)**

- a) Given the logic equation.
$$Y = (A + BC) (B + \overline{C} A)$$
 - i) Design a circuit using gates to realise this equation.
 - ii) Simplify the above Boolean function and design the circuit using universal gates.
 - iii) Convert the expression $Y = (A + B)(A + C)(B + \overline{C})$ into canonical POS form.
- b) Design a 5-bit Shift Register (7496) of serial input mode of operation with neat circuit diagram.
- c) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.



SECTION – II

4. Attempt **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) Explain how you expand the memory size of IC chip.
 - d) Explain the classification and characteristics of memories.
5. Attempt **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 Multiplexer and Demultiplexer.
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SLR-EP – 206

Seat No.	
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Set

P

**S.E. (IT) (Part – I) Examination, 2016
COMPUTER GRAPHICS (CGPA)**

Day and Date : Thursday, 22-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) The window coordinates are called as _____ coordinates.
a) World b) Screen c) Normal d) Scalar
- 2) Distance between the actual line and nearest grid location is
a) Error term b) Rasterization
c) Resolution d) Intensity
- 3) _____ is a unit of display file.
a) Segment b) Byte c) LOC d) None of above
- 4) Z-buffer algorithm consists of frame buffer and
a) Pixel buffer b) Depth buffer
c) Image buffer d) None of above
- 5) Curve is defined as collection of
a) Lines b) Co-ordinates
c) Points d) All
- 6) _____ technique is used in midpoint subdivision algorithm.
a) Binary search b) Bubble sort
c) Sequential search d) Linear search
- 7) In Bezier curve basis functions are
a) Real b) Integer
c) Float d) None of above
- 8) Which of the following is a type of boundary fill algo. ?
a) Edge fill b) Fence fill c) Feed fill d) Both a) and b)

P.T.O.



- 9) The line segment is visible if both end point codes are
a) 0000 b) 1111 c) 0101 d) 1010
- 10) In quad tree structure _____ of the tree is the display window.
a) Leaf b) Root c) Non-leaf d) Successors
- 11) Super sampling is a technique for
a) Shading b) Halftoning
c) Antialiasing d) None of above
- 12) Speakers and microphones are the _____ of a multimedia system.
a) Technology b) Unsupportable devices
c) Elements d) All
- 13) In parametric curves each coordinate of a point on a curve is represented as _____ of a single parameter.
a) Precision b) Method c) Procedure d) Function
- 14) For a black and white with one bit per pixel, the frame buffer is commonly called as
a) Pixmap b) Bitmap c) Image d) Resolution
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Seat No.	
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**S.E. (IT) (Part – I) Examination, 2016
COMPUTER GRAPHICS (CGPA)**

Day and Date : Thursday, 22-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

N.B. : 1) **All questions are compulsory.**
2) **Each Section carries 28 marks.**

SECTION – I

2. Solve **any three** (Each carries 4 marks) : **12**
- a) Explain DDA line drawing algorithm.
 - b) What is RLE ? Explain.
 - c) Explain 2D-Shearing.
 - d) Describe Fence Fill algorithm with example.
3. Explain all 3D transformations in detail. **8**

OR

Write Bresenham's Circle generation algo. Illustrate the circle generation algo by considering the origin – centered circle of radius 5.

4. Consider we have co-ordinates ABCD A(0, 0) B (3, 0) C(3, 3) and D(0, 3). **8**
- a) Translate the square ABCD by 3 units in both direction.
 - b) Scale it by 1.5 units in x-direction and 0.5 in y-direction.
 - c) Translate back by 2 units in both direction to the same position.



SECTION – II

5. Attempt **any three** (**Each** carries **4** marks) : **12**
- a) What is the need of multimedia ? Explain all elements of multimedia in detail.
 - b) Explain midpoint sub division algo. in detail.
 - c) What is display file ? Explain all the functions for segmenting the display file.
 - d) Explain Z-buffer algo. With its advantages and disadvantages.
6. Explain image and its applications in detail. Also describe image capture in multimedia. **8**

OR

Explain Curve representation and also describe parametric and non-parametric curve in detail.

7. Explain working of Cohen – Sutherland line clipping algorithm. **8**
-



SLR-EP – 206

Seat No.	
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Set

Q

**S.E. (IT) (Part – I) Examination, 2016
COMPUTER GRAPHICS (CGPA)**

Day and Date : Thursday, 22-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) Which of the following is a type of boundary fill algo. ?
a) Edge fill b) Fence fill c) Feed fill d) Both a) and b)
- 2) The line segment is visible if both end point codes are
a) 0000 b) 1111 c) 0101 d) 1010
- 3) In quad tree structure _____ of the tree is the display window.
a) Leaf b) Root c) Non-leaf d) Successors
- 4) Super sampling is a technique for
a) Shading b) Halftoning
c) Antialiasing d) None of above
- 5) Speakers and microphones are the _____ of a multimedia system.
a) Technology b) Unsupportable devices
c) Elements d) All
- 6) In parametric curves each coordinate of a point on a curve is represented as _____ of a single parameter.
a) Precision b) Method c) Procedure d) Function
- 7) For a black and white with one bit per pixel, the frame buffer is commonly called as
a) Pixmap b) Bitmap c) Image d) Resolution
- 8) The window coordinates are called as _____ coordinates.
a) World b) Screen c) Normal d) Scalar

P.T.O.



Seat No.	
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**S.E. (IT) (Part – I) Examination, 2016
COMPUTER GRAPHICS (CGPA)**

Day and Date : Thursday, 22-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

N.B. : 1) **All questions are compulsory.**
2) **Each Section carries 28 marks.**

SECTION – I

2. Solve **any three** (Each carries 4 marks) : **12**
- a) Explain DDA line drawing algorithm.
 - b) What is RLE ? Explain.
 - c) Explain 2D-Shearing.
 - d) Describe Fence Fill algorithm with example.
3. Explain all 3D transformations in detail. **8**

OR

Write Bresenham's Circle generation algo. Illustrate the circle generation algo by considering the origin – centered circle of radius 5.

4. Consider we have co-ordinates ABCD A(0, 0) B (3, 0) C(3, 3) and D(0, 3). **8**
- a) Translate the square ABCD by 3 units in both direction.
 - b) Scale it by 1.5 units in x-direction and 0.5 in y-direction.
 - c) Translate back by 2 units in both direction to the same position.

Set Q



SECTION – II

5. Attempt **any three** (**Each** carries **4** marks) : **12**
- a) What is the need of multimedia ? Explain all elements of multimedia in detail.
 - b) Explain midpoint sub division algo. in detail.
 - c) What is display file ? Explain all the functions for segmenting the display file.
 - d) Explain Z-buffer algo. With its advantages and disadvantages.
6. Explain image and its applications in detail. Also describe image capture in multimedia. **8**

OR

Explain Curve representation and also describe parametric and non-parametric curve in detail.

7. Explain working of Cohen – Sutherland line clipping algorithm. **8**
-



SLR-EP – 206

Seat No.	
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Set

R

**S.E. (IT) (Part – I) Examination, 2016
COMPUTER GRAPHICS (CGPA)**

Day and Date : Thursday, 22-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) Curve is defined as collection of
 - a) Lines
 - b) Co-ordinates
 - c) Points
 - d) All
- 2) _____ technique is used in midpoint subdivision algorithm.
 - a) Binary search
 - b) Bubble sort
 - c) Sequential search
 - d) Linear search
- 3) In Bezier curve basis functions are
 - a) Real
 - b) Integer
 - c) Float
 - d) None of above
- 4) Which of the following is a type of boundary fill algo. ?
 - a) Edge fill
 - b) Fence fill
 - c) Feed fill
 - d) Both a) and b)
- 5) The line segment is visible if both end point codes are
 - a) 0000
 - b) 1111
 - c) 0101
 - d) 1010
- 6) In quad tree structure _____ of the tree is the display window.
 - a) Leaf
 - b) Root
 - c) Non-leaf
 - d) Successors
- 7) Super sampling is a technique for
 - a) Shading
 - b) Halftoning
 - c) Antialiasing
 - d) None of above
- 8) Speakers and microphones are the _____ of a multimedia system.
 - a) Technology
 - b) Unsupportable devices
 - c) Elements
 - d) All

P.T.O.



- 9) In parametric curves each coordinate of a point on a curve is represented as _____ of a single parameter.
a) Precision b) Method c) Procedure d) Function
- 10) For a black and white with one bit per pixel, the frame buffer is commonly called as
a) Pixmap b) Bitmap c) Image d) Resolution
- 11) The window coordinates are called as _____ coordinates.
a) World b) Screen c) Normal d) Scalar
- 12) Distance between the actual line and nearest grid location is
a) Error term b) Rasterization
c) Resolution d) Intensity
- 13) _____ is a unit of display file.
a) Segment b) Byte c) LOC d) None of above
- 14) Z-buffer algorithm consists of frame buffer and
a) Pixel buffer b) Depth buffer
c) Image buffer d) None of above
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**S.E. (IT) (Part – I) Examination, 2016
COMPUTER GRAPHICS (CGPA)**

Day and Date : Thursday, 22-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

N.B. : 1) **All questions are compulsory.**
2) **Each Section carries 28 marks.**

SECTION – I

2. Solve **any three** (Each carries 4 marks) : **12**
- a) Explain DDA line drawing algorithm.
 - b) What is RLE ? Explain.
 - c) Explain 2D-Shearing.
 - d) Describe Fence Fill algorithm with example.
3. Explain all 3D transformations in detail. **8**

OR

Write Bresenham's Circle generation algo. Illustrate the circle generation algo by considering the origin – centered circle of radius 5.

4. Consider we have co-ordinates ABCD A(0, 0) B (3, 0) C(3, 3) and D(0, 3). **8**
- a) Translate the square ABCD by 3 units in both direction.
 - b) Scale it by 1.5 units in x-direction and 0.5 in y-direction.
 - c) Translate back by 2 units in both direction to the same position.

Set R



SECTION – II

5. Attempt **any three** (**Each** carries **4** marks) : **12**
- a) What is the need of multimedia ? Explain all elements of multimedia in detail.
 - b) Explain midpoint sub division algo. in detail.
 - c) What is display file ? Explain all the functions for segmenting the display file.
 - d) Explain Z-buffer algo. With its advantages and disadvantages.
6. Explain image and its applications in detail. Also describe image capture in multimedia. **8**

OR

Explain Curve representation and also describe parametric and non-parametric curve in detail.

7. Explain working of Cohen – Sutherland line clipping algorithm. **8**
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Seat No.	
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**S.E. (IT) (Part – I) Examination, 2016
COMPUTER GRAPHICS (CGPA)**

Day and Date : Thursday, 22-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) In quad tree structure _____ of the tree is the display window.
a) Leaf b) Root c) Non-leaf d) Successors
- 2) Super sampling is a technique for
a) Shading b) Halftoning
c) Antialiasing d) None of above
- 3) Speakers and microphones are the _____ of a multimedia system.
a) Technology b) Unsupportable devices
c) Elements d) All
- 4) In parametric curves each coordinate of a point on a curve is represented as _____ of a single parameter.
a) Precision b) Method c) Procedure d) Function
- 5) For a black and white with one bit per pixel, the frame buffer is commonly called as
a) Pixmap b) Bitmap c) Image d) Resolution
- 6) The window coordinates are called as _____ coordinates.
a) World b) Screen c) Normal d) Scalar
- 7) Distance between the actual line and nearest grid location is
a) Error term b) Rasterization
c) Resolution d) Intensity
- 8) _____ is a unit of display file.
a) Segment b) Byte c) LOC d) None of above



- 9) Z-buffer algorithm consists of frame buffer and
- a) Pixel buffer
 - b) Depth buffer
 - c) Image buffer
 - d) None of above
- 10) Curve is defined as collection of
- a) Lines
 - b) Co-ordinates
 - c) Points
 - d) All
- 11) _____ technique is used in midpoint subdivision algorithm.
- a) Binary search
 - b) Bubble sort
 - c) Sequential search
 - d) Linear search
- 12) In Bezier curve basis functions are
- a) Real
 - b) Integer
 - c) Float
 - d) None of above
- 13) Which of the following is a type of boundary fill algo. ?
- a) Edge fill
 - b) Fence fill
 - c) Feed fill
 - d) Both a) and b)
- 14) The line segment is visible if both end point codes are
- a) 0000
 - b) 1111
 - c) 0101
 - d) 1010
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Seat No.	
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**S.E. (IT) (Part – I) Examination, 2016
COMPUTER GRAPHICS (CGPA)**

Day and Date : Thursday, 22-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

N.B. : 1) **All questions are compulsory.**
2) **Each Section carries 28 marks.**

SECTION – I

2. Solve **any three** (Each carries 4 marks) : **12**
- a) Explain DDA line drawing algorithm.
 - b) What is RLE ? Explain.
 - c) Explain 2D-Shearing.
 - d) Describe Fence Fill algorithm with example.
3. Explain all 3D transformations in detail. **8**

OR

Write Bresenham's Circle generation algo. Illustrate the circle generation algo by considering the origin – centered circle of radius 5.

4. Consider we have co-ordinates ABCD A(0, 0) B (3, 0) C(3, 3) and D(0, 3). **8**
- a) Translate the square ABCD by 3 units in both direction.
 - b) Scale it by 1.5 units in x-direction and 0.5 in y-direction.
 - c) Translate back by 2 units in both direction to the same position.

Set S



SECTION – II

5. Attempt **any three** (**Each** carries **4** marks) : **12**
- a) What is the need of multimedia ? Explain all elements of multimedia in detail.
 - b) Explain midpoint sub division algo. in detail.
 - c) What is display file ? Explain all the functions for segmenting the display file.
 - d) Explain Z-buffer algo. With its advantages and disadvantages.
6. Explain image and its applications in detail. Also describe image capture in multimedia. **8**

OR

Explain Curve representation and also describe parametric and non-parametric curve in detail.

7. Explain working of Cohen – Sutherland line clipping algorithm. **8**
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SLR-EP – 207

Seat No.	
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**S.E. (I.T.) (Part – I) Examination, 2016
DATA STRUCTURES – I (Old)**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answers :

- 1) 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
- 2) `int *p` means `p` is a pointer to an integer type.
A) True B) False
- 3) Dynamic memory allocation allocates memory during run time.
A) True B) False
- 4) Insertion does not happen in a linked list.
A) True B) False
- 5) Circular linked list allocates deletes one element at a time.
A) True B) False
- 6) Which of the following name is related to stacks ?
A) FIFO lists B) LIFO list C) Pipes D) Push-down lists
- 7) Finding the location of the element with a given value is
A) Traversal B) Search C) Sort D) None of above
- 8) The term “push” and “pop” is related to the
A) array B) lists C) stacks D) all of above

P.T.O.



- 9) Binary search algorithm can not be applied to
A) sorted linked list B) sorted binary trees
C) sorted linear array D) pointer array
- 10) In a linked list with n nodes, the time taken to insert an element after an element pointed by some pointer is
A) $O(1)$ B) $O(\log n)$ C) $O(n)$ D) $O(n \log n)$
- 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) 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
- 20) Which of the following data structure store the homogeneous data elements ?
A) Array B) Records C) Pointers D) None of above



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**S.E. (I.T.) (Part – I) Examination, 2016
DATA STRUCTURES – I (Old)**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) Define Recursion and explain its advantages.
 - 2) Explain pointer of arrays.
 - 3) What is dynamic memory allocation and how it works ?
 - 4) Define string and explain its library functions.
 - 5) Write an algorithm for Fibonacci sequence generation.
3. Attempt the following : **(5×2=10)**
- A) With the help of diagram, explain Tower of Hanoi using 3 disks.
 - B) Explain pointer to pointer with the help of an example.
4. Define file. Explain its operations and implementation. **10**

SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain stack operations.
 - B) Explain queue operations.

Set P



- C) Explain circular queue.
- D) Explain linked list.
- E) State and explain stack applications.

6. Explain priority queue with the help of an example. **10**

7. Explain the following terms : **(2+4+4)**

- 1) Stack using Linked List
 - 2) Queue using Linked List
 - 3) Applications of Linked List.
-



SLR-EP – 207

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Q

**S.E. (I.T.) (Part – I) Examination, 2016
DATA STRUCTURES – I (Old)**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answers :

- 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) 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
- 5) Which of the following data structure store the homogeneous data elements ?
A) Array B) Records C) Pointers D) None of above
- 6) 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

P.T.O.



- 7) int *p means p is a pointer to an integer type.
A) True B) False
- 8) Dynamic memory allocation allocates memory during run time.
A) True B) False
- 9) Insertion does not happen in a linked list.
A) True B) False
- 10) Circular linked list allocates deletes one element at a time.
A) True B) False
- 11) Which of the following name is related to stacks ?
A) FIFO lists B) LIFO list C) Pipes D) Push-down lists
- 12) Finding the location of the element with a given value is
A) Traversal B) Search C) Sort D) None of above
- 13) The term “push” and “pop” is related to the
A) array B) lists C) stacks D) all of above
- 14) Binary search algorithm can not be applied to
A) sorted linked list B) sorted binary trees
C) sorted linear array D) pointer array
- 15) In a linked list with n nodes, the time taken to insert an element after an element pointed by some pointer is
A) $O(1)$ B) $O(\log n)$ C) $O(n)$ D) $O(n \log n)$
- 16) When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal would return ?
A) FAEKCDHGB 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



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**S.E. (I.T.) (Part – I) Examination, 2016
DATA STRUCTURES – I (Old)**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) Define Recursion and explain its advantages.
 - 2) Explain pointer of arrays.
 - 3) What is dynamic memory allocation and how it works ?
 - 4) Define string and explain its library functions.
 - 5) Write an algorithm for Fibonacci sequence generation.
3. Attempt the following : **(5×2=10)**
- A) With the help of diagram, explain Tower of Hanoi using 3 disks.
 - B) Explain pointer to pointer with the help of an example.
4. Define file. Explain its operations and implementation. **10**

SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain stack operations.
 - B) Explain queue operations.

Set Q



- C) Explain circular queue.
- D) Explain linked list.
- E) State and explain stack applications.

6. Explain priority queue with the help of an example. **10**

7. Explain the following terms : **(2+4+4)**

- 1) Stack using Linked List
 - 2) Queue using Linked List
 - 3) Applications of Linked List.
-



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**S.E. (I.T.) (Part – I) Examination, 2016
DATA STRUCTURES – I (Old)**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answers :

- 1) 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
- 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) 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
- 10) Which of the following data structure store the homogeneous data elements ?
A) Array B) Records C) Pointers D) None of above
- 11) 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
- 12) $\text{int } *p$ means p is a pointer to an integer type.
A) True B) False
- 13) Dynamic memory allocation allocates memory during run time.
A) True B) False
- 14) Insertion does not heppen in a linked list.
A) True B) False
- 15) Circular linked list allocates deletes one element at a time.
A) True B) False
- 16) Which of the following name is related to stacks ?
A) FIFO lists B) LIFO list C) Pipes D) Push-down lists
- 17) Finding the location of the element with a given value is
A) Traversal B) Search C) Sort D) None of above
- 18) The term “push” and “pop” is related to the
A) array B) lists C) stacks D) all of above
- 19) Binary search algorithm can not be applied to
A) sorted linked list B) sorted binary trees
C) sorted linear array D) pointer array
- 20) In a linked list with n nodes, the time taken to insert an element after an element pointed by some pointer is
A) $O(1)$ B) $O(\log n)$ C) $O(n)$ D) $O(n \log n)$



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**S.E. (I.T.) (Part – I) Examination, 2016
DATA STRUCTURES – I (Old)**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) Define Recursion and explain its advantages.
 - 2) Explain pointer of arrays.
 - 3) What is dynamic memory allocation and how it works ?
 - 4) Define string and explain its library functions.
 - 5) Write an algorithm for Fibonacci sequence generation.
3. Attempt the following : **(5×2=10)**
- A) With the help of diagram, explain Tower of Hanoi using 3 disks.
 - B) Explain pointer to pointer with the help of an example.
4. Define file. Explain its operations and implementation. **10**

SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain stack operations.
 - B) Explain queue operations.

Set R



- C) Explain circular queue.
- D) Explain linked list.
- E) State and explain stack applications.

6. Explain priority queue with the help of an example. **10**

7. Explain the following terms : **(2+4+4)**

- 1) Stack using Linked List
 - 2) Queue using Linked List
 - 3) Applications of Linked List.
-



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**S.E. (I.T.) (Part – I) Examination, 2016
DATA STRUCTURES – I (Old)**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answers :

- 1) Which of the following name is related to stacks ?
A) FIFO lists B) LIFO list C) Pipes D) Push-down lists
- 2) Finding the location of the element with a given value is
A) Traversal B) Search C) Sort D) None of above
- 3) The term “push” and “pop” is related to the
A) array B) lists C) stacks D) all of above
- 4) Binary search algorithm can not be applied to
A) sorted linked list B) sorted binary trees
C) sorted linear array D) pointer array
- 5) In a linked list with n nodes, the time taken to insert an element after an element pointed by some pointer is
A) 0 (1) B) 0 (log n) C) 0 (n) D) 0 (n log n)
- 6) When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal would return ?
A) FAEK CDBHG B) FAEKCDHGB
C) EAFKHDCBG D) FEA KDCHBG
- 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) 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
- 15) Which of the following data structure store the homogeneous data elements ?
A) Array
B) Records
C) Pointers
D) None of above
- 16) 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
- 17) int *p means p is a pointer to an integer type.
A) True
B) False
- 18) Dynamic memory allocation allocates memory during run time.
A) True
B) False
- 19) Insertion does not heppen in a linked list.
A) True
B) False
- 20) Circular linked list allocates deletes one element at a time.
A) True
B) False



Seat No.	
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**S.E. (I.T.) (Part – I) Examination, 2016
DATA STRUCTURES – I (Old)**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** : **(5×4=20)**
- 1) Define Recursion and explain its advantages.
 - 2) Explain pointer of arrays.
 - 3) What is dynamic memory allocation and how it works ?
 - 4) Define string and explain its library functions.
 - 5) Write an algorithm for Fibonacci sequence generation.
3. Attempt the following : **(5×2=10)**
- A) With the help of diagram, explain Tower of Hanoi using 3 disks.
 - B) Explain pointer to pointer with the help of an example.
4. Define file. Explain its operations and implementation. **10**

SECTION – II

5. Answer the following questions (**any four**) : **20**
- A) Explain stack operations.
 - B) Explain queue operations.

Set S



- C) Explain circular queue.
- D) Explain linked list.
- E) State and explain stack applications.

6. Explain priority queue with the help of an example. **10**

7. Explain the following terms : **(2+4+4)**

- 1) Stack using Linked List
 - 2) Queue using Linked List
 - 3) Applications of Linked List.
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**S.E. (Information Technology) (Part – I) Examination, 2016
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) A Boolean function $\bar{x}\bar{y} + xy + \bar{x}y$ is equivalent to
 - a) $\bar{x} + \bar{y}$
 - b) $x + y$
 - c) $x + \bar{y}$
 - d) $\bar{x} + y$
- 2) The 2's complement representation of the decimal value -15 is
 - a) 1111
 - b) 11111
 - c) 111111
 - d) 10001
- 3) A graphical display of the fundamental products in a truth-table is known as
 - a) Mapping
 - b) Graphing
 - c) T-map
 - d) k-map
- 4) The simultaneous equations on the Boolean variables x, y, z and w
 $x + y + z = 1$
 $xy = 0$
 $xy + \bar{z}\bar{w} = 0$
Have the following solution for x, y, z and w , respectively.
 - a) 0 1 0 0
 - b) 1 1 0 1
 - c) 1 0 1 1
 - d) 1 0 0 0
- 5) The consensus theorem states that
 - a) $A + \bar{A}B = A + B$
 - b) $A + AB = A$
 - c) $AB + \bar{A}C + BC = AB + \bar{A}C$
 - d) $(A + B). (A + \bar{B}) = A$
- 6) The minimum time for which the input signal has to be maintained at the input of flip-flop is called _____ of the flip-flop.
 - a) Set-up time
 - b) Hold time
 - c) Pulse interval time
 - d) Pulse Stability Time (PST)
- 7) In an SR latch made by cross-coupling two NAND gates, if both S and R inputs are set to 0, then it will result in
 - a) $Q = 0, \bar{Q} = 1$
 - b) $Q = 1, \bar{Q} = 0$
 - c) $Q = 1, \bar{Q} = 1$
 - d) Indeterminate states

P.T.O.



- 8) The implementation of simplified sum-of-products expressions may be easily implemented into actual logic circuits using all universal _____ gates with little or no increase in circuit complexity. (Select the response for the blank space that will best make the statement true.)
a) AND/OR b) NAND c) OR d) NOR/AND
- 9) A counter with a modulus of 16 acts as a
a) divide by – 8 counter b) divide by – 16 counter
c) divide by – 32 counter d) divide by – 64 counter
- 10) A full adder can be realized using
a) One half adder, two OR gates b) Two half adders, two OR gates
c) Two half adders, one OR gates d) None of these
- 11) IC 74151 is used as
a) Encoder b) Decoder c) Multiplexer d) Demultiplexer
- 12) Following IC is used for BCD to 7 segment decoder
a) 74148 b) 74157 c) 7447 d) 7474
- 13) IC 74152 is a multiplexer having
a) 1 : 8 lines b) 1 : 32 lines c) 8 : 1 lines d) 16 : 1 lines
- 14) A PLA can be used
a) As a Dynamic memory b) As a Static memory
c) As a Short memory d) None of these
- 15) For register level the information units is
a) Bytes b) Words and Vectors
c) Bubbles d) None of these
- 16) A PAL is comprised of programmable _____ gates.
a) NAND b) NOR c) OR d) None of these
- 17) A Memory whose data need to be refreshed periodically is called
a) Static memory b) Dynamic memory
c) Content addressable memory d) None of these
- 18) An EPROM is _____ erasable.
a) Ultraviolet radiation b) Intense head radiation
c) Electrically d) None of these
- 19) In demultiplexer, the number of output lines is n and the number of select lines is m, where n =
a) $2 \times m$ b) 2^m c) $2^m \times n$ d) m^2
- 20) A PLA has
a) Programmable AND array and fixed OR array
b) Fixed AND array and fixed OR array
c) Programmable NAND array and fixed NOR array
d) Fixed AND array and Programmable OR array



Seat No.	
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**S.E. (Information Technology) (Part – I) Examination, 2016
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** : **(4×5=20)**

- a) Simplify the following expression by considering Don't care conditions
 $y = \sum m(1, 4, 8, 9, 11, 15) + d(0, 3, 14)$.
- b) Simplify the following three variables expression and realise using basic gates.
 $Y = \prod M(0, 2, 3, 4, 5)$.
- c) Design full adder using NOR gates.
- d) Explain the 4 types of Flip Flops with a neat circuit diagram.
- e) Design 3 bit Synchronous Counter.

3. Solve **any two** : **(2×10=20)**

- a) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.
- b) Design and explain 4 bit Bi-directional shift register.
- c) Minimise the following expressions using K-maps and realise using NOR gates only.
 - i) $f_1(A, B, C, D) = \prod M(1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15)$
 - ii) $f_2(A, B, C, D) = \prod M(1, 4, 6, 9, 10, 11, 14, 15)$
 - iii) $f_3(A, B, C, D) = \prod M(2, 7, 8, 9, 10, 12)$



SECTION – II

4. Solve **any four** : **(4×5=20)**
- a) Implement the following combinational circuit using a decoder
- $$f_1 = \sum m(1, 3, 5, 7, 9, 15)$$
- $$f_2 = \sum m(3, 5, 7, 11)$$
- $$f_3 = \sum m(1, 2, 4)$$
- b) Explain the following 7 segment decoder terms
- i) LT ii) RBI iii) BI iv) RBO
- c) Define the terms : t_{wc} (Write cycle time) and Access cycle time (t_a).
- d) Explain the classification of memories in details.
- e) Explain programmable logic array in detail with block diagram.
5. Solve **any four** : **(2×10=20)**
- a) Design 32 : 1 Multiplexer using two 16 : 1 Multiplexer and One 2 : 1 Multiplexer.
- b) Design 16×8 memory using 16×4 memory chips.
- c) What are the major components of processor level design ? Explain the processor level design with example in detail.
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Seat No.	
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Set	Q
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**S.E. (Information Technology) (Part – I) Examination, 2016
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) A PAL is comprised of programmable _____ gates.
a) NAND b) NOR c) OR d) None of these
- 2) A Memory whose data need to be refreshed periodically is called
a) Static memory b) Dynamic memory
c) Content addressable memory d) None of these
- 3) An EPROM is _____ erasable.
a) Ultraviolet radiation b) Intense head radiation
c) Electrically d) None of these
- 4) In demultiplexer, the number of output lines is n and the number of select lines is m, where n =
a) $2 \times m$ b) 2^m c) $2^m \times n$ d) m^2
- 5) A PLA has
a) Programmable AND array and fixed OR array
b) Fixed AND array and fixed OR array
c) Programmable NAND array and fixed NOR array
d) Fixed AND array and Programmable OR array
- 6) A Boolean function $\bar{x}\bar{y} + xy + \bar{x}y$ is equivalent to
a) $\bar{x} + \bar{y}$ b) $x + y$ c) $x + \bar{y}$ d) $\bar{x} + y$
- 7) The 2's complement representation of the decimal value -15 is
a) 1111 b) 11111 c) 111111 d) 10001
- 8) A graphical display of the fundamental products in a truth-table is known as
a) Mapping b) Graphing c) T-map d) k-map



- 9) The simultaneous equations on the Boolean variables x, y, z and w
 $x + y + z = 1$
 $xy = 0$
 $xy + \bar{z}\bar{w} = 0$
 Have the following solution for x, y, z and w, respectively.
 a) 0 1 0 0 b) 1 1 0 1 c) 1 0 1 1 d) 1 0 0 0
- 10) The consensus theorem states that
 a) $A + \bar{A}B = A + B$ b) $A + AB = A$
 c) $AB + \bar{A}C + BC = AB + \bar{A}C$ d) $(A + B) \cdot (A + \bar{B}) = A$
- 11) The minimum time for which the input signal has to be maintained at the input of flip-flop is called _____ of the flip-flop.
 a) Set-up time b) Hold time
 c) Pulse interval time d) Pulse Stability Time (PST)
- 12) In an SR latch made by cross-coupling two NAND gates, if both S and R inputs are set to 0, then it will result in
 a) $Q = 0, \bar{Q} = 1$ b) $Q = 1, \bar{Q} = 0$
 c) $Q = 1, \bar{Q} = 1$ d) Indeterminate states
- 13) The implementation of simplified sum-of-products expressions may be easily implemented into actual logic circuits using all universal _____ gates with little or no increase in circuit complexity. (Select the response for the blank space that will best make the statement true.)
 a) AND/OR b) NAND c) OR d) NOR/AND
- 14) A counter with a modulus of 16 acts as a
 a) divide by – 8 counter b) divide by – 16 counter
 c) divide by – 32 counter d) divide by – 64 counter
- 15) A full adder can be realized using
 a) One half adder, two OR gates b) Two half adders, two OR gates
 c) Two half adders, one OR gates d) None of these
- 16) IC 74151 is used as
 a) Encoder b) Decoder c) Multiplexer d) Demultiplexer
- 17) Following IC is used for BCD to 7 segment decoder
 a) 74148 b) 74157 c) 7447 d) 7474
- 18) IC 74152 is a multiplexer having
 a) 1 : 8 lines b) 1 : 32 lines c) 8 : 1 lines d) 16 : 1 lines
- 19) A PLA can be used
 a) As a Dynamic memory b) As a Static memory
 c) As a Short memory d) None of these
- 20) For register level the information units is
 a) Bytes b) Words and Vectors
 c) Bubbles d) None of these



Seat No.	
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**S.E. (Information Technology) (Part – I) Examination, 2016
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** : **(4×5=20)**

- a) Simplify the following expression by considering Don't care conditions
 $y = \sum m(1, 4, 8, 9, 11, 15) + d(0, 3, 14)$.
- b) Simplify the following three variables expression and realise using basic gates.
 $Y = \prod M(0, 2, 3, 4, 5)$.
- c) Design full adder using NOR gates.
- d) Explain the 4 types of Flip Flops with a neat circuit diagram.
- e) Design 3 bit Synchronous Counter.

3. Solve **any two** : **(2×10=20)**

- a) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.
- b) Design and explain 4 bit Bi-directional shift register.
- c) Minimise the following expressions using K-maps and realise using NOR gates only.
 - i) $f_1(A, B, C, D) = \prod M(1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15)$
 - ii) $f_2(A, B, C, D) = \prod M(1, 4, 6, 9, 10, 11, 14, 15)$
 - iii) $f_3(A, B, C, D) = \prod M(2, 7, 8, 9, 10, 12)$



SECTION – II

4. Solve **any four** : **(4×5=20)**
- a) Implement the following combinational circuit using a decoder
- $$f_1 = \sum m(1, 3, 5, 7, 9, 15)$$
- $$f_2 = \sum m(3, 5, 7, 11)$$
- $$f_3 = \sum m(1, 2, 4)$$
- b) Explain the following 7 segment decoder terms
- i) LT ii) RBI iii) BI iv) RBO
- c) Define the terms : t_{wc} (Write cycle time) and Access cycle time (t_a).
- d) Explain the classification of memories in details.
- e) Explain programmable logic array in detail with block diagram.
5. Solve **any four** : **(2×10=20)**
- a) Design 32 : 1 Multiplexer using two 16 : 1 Multiplexer and One 2 : 1 Multiplexer.
- b) Design 16×8 memory using 16×4 memory chips.
- c) What are the major components of processor level design ? Explain the processor level design with example in detail.
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Seat No.	
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Set	R
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**S.E. (Information Technology) (Part – I) Examination, 2016
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) IC 74151 is used as
 - a) Encoder
 - b) Decoder
 - c) Multiplexer
 - d) Demultiplexer
- 2) Following IC is used for BCD to 7 segment decoder
 - a) 74148
 - b) 74157
 - c) 7447
 - d) 7474
- 3) IC 74152 is a multiplexer having
 - a) 1 : 8 lines
 - b) 1 : 32 lines
 - c) 8 : 1 lines
 - d) 16 : 1 lines
- 4) A PLA can be used
 - a) As a Dynamic memory
 - b) As a Static memory
 - c) As a Short memory
 - d) None of these
- 5) For register level the information units is
 - a) Bytes
 - b) Words and Vectors
 - c) Bubbles
 - d) None of these
- 6) A PAL is comprised of programmable _____ gates.
 - a) NAND
 - b) NOR
 - c) OR
 - d) None of these
- 7) A Memory whose data need to be refreshed periodically is called
 - a) Static memory
 - b) Dynamic memory
 - c) Content addressable memory
 - d) None of these
- 8) An EPROM is _____ erasable.
 - a) Ultraviolet radiation
 - b) Intense head radiation
 - c) Electrically
 - d) None of these
- 9) In demultiplexer, the number of output lines is n and the number of select lines is m, where n =
 - a) $2 \times m$
 - b) 2^m
 - c) $2^m \times n$
 - d) m^2

P.T.O.



- 10) A PLA has
- Programmable AND array and fixed OR array
 - Fixed AND array and fixed OR array
 - Programmable NAND array and fixed NOR array
 - Fixed AND array and Programmable OR array
- 11) A Boolean function $\bar{x}\bar{y} + xy + \bar{x}y$ is equivalent to
- $\bar{x} + \bar{y}$
 - $x + y$
 - $x + \bar{y}$
 - $\bar{x} + y$
- 12) The 2's complement representation of the decimal value -15 is
- 1111
 - 11111
 - 111111
 - 10001
- 13) A graphical display of the fundamental products in a truth-table is known as
- Mapping
 - Graphing
 - T-map
 - k-map
- 14) The simultaneous equations on the Boolean variables x, y, z and w
- $$x + y + z = 1$$
- $$xy = 0$$
- $$xy + \bar{z}\bar{w} = 0$$
- Have the following solution for x, y, z and w , respectively.
- 0 1 0 0
 - 1 1 0 1
 - 1 0 1 1
 - 1 0 0 0
- 15) The consensus theorem states that
- $A + \bar{A}B = A + B$
 - $A + AB = A$
 - $AB + \bar{A}C + BC = AB + \bar{A}C$
 - $(A + B). (A + \bar{B}) = A$
- 16) The minimum time for which the input signal has to be maintained at the input of flip-flop is called _____ of the flip-flop.
- Set-up time
 - Hold time
 - Pulse interval time
 - Pulse Stability Time (PST)
- 17) In an SR latch made by cross-coupling two NAND gates, if both S and R inputs are set to 0, then it will result in
- $Q = 0, \bar{Q} = 1$
 - $Q = 1, \bar{Q} = 0$
 - $Q = 1, \bar{Q} = 1$
 - Indeterminate states
- 18) The implementation of simplified sum-of-products expressions may be easily implemented into actual logic circuits using all universal _____ gates with little or no increase in circuit complexity. (Select the response for the blank space that will best make the statement true.)
- AND/OR
 - NAND
 - OR
 - NOR/AND
- 19) A counter with a modulus of 16 acts as a
- divide by – 8 counter
 - divide by – 16 counter
 - divide by – 32 counter
 - divide by – 64 counter
- 20) A full adder can be realized using
- One half adder, two OR gates
 - Two half adders, two OR gates
 - Two half adders, one OR gates
 - None of these



Seat No.	
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**S.E. (Information Technology) (Part – I) Examination, 2016
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** : **(4×5=20)**

- a) Simplify the following expression by considering Don't care conditions
 $y = \sum m(1, 4, 8, 9, 11, 15) + d(0, 3, 14)$.
- b) Simplify the following three variables expression and realise using basic gates.
 $Y = \prod M(0, 2, 3, 4, 5)$.
- c) Design full adder using NOR gates.
- d) Explain the 4 types of Flip Flops with a neat circuit diagram.
- e) Design 3 bit Synchronous Counter.

3. Solve **any two** : **(2×10=20)**

- a) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.
- b) Design and explain 4 bit Bi-directional shift register.
- c) Minimise the following expressions using K-maps and realise using NOR gates only.
 - i) $f_1(A, B, C, D) = \prod M(1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15)$
 - ii) $f_2(A, B, C, D) = \prod M(1, 4, 6, 9, 10, 11, 14, 15)$
 - iii) $f_3(A, B, C, D) = \prod M(2, 7, 8, 9, 10, 12)$



SECTION – II

4. Solve **any four** : **(4×5=20)**
- a) Implement the following combinational circuit using a decoder
- $$f_1 = \sum m(1, 3, 5, 7, 9, 15)$$
- $$f_2 = \sum m(3, 5, 7, 11)$$
- $$f_3 = \sum m(1, 2, 4)$$
- b) Explain the following 7 segment decoder terms
- i) LT ii) RBI iii) BI iv) RBO
- c) Define the terms : t_{wc} (Write cycle time) and Access cycle time (t_a).
- d) Explain the classification of memories in details.
- e) Explain programmable logic array in detail with block diagram.
5. Solve **any four** : **(2×10=20)**
- a) Design 32 : 1 Multiplexer using two 16 : 1 Multiplexer and One 2 : 1 Multiplexer.
- b) Design 16×8 memory using 16×4 memory chips.
- c) What are the major components of processor level design ? Explain the processor level design with example in detail.
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Seat No.	
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Set	S
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**S.E. (Information Technology) (Part – I) Examination, 2016
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The minimum time for which the input signal has to be maintained at the input of flip-flop is called _____ of the flip-flop.
 - a) Set-up time
 - b) Hold time
 - c) Pulse interval time
 - d) Pulse Stability Time (PST)
- 2) In an SR latch made by cross-coupling two NAND gates, if both S and R inputs are set to 0, then it will result in
 - a) $Q = 0, \bar{Q} = 1$
 - b) $Q = 1, \bar{Q} = 0$
 - c) $Q = 1, \bar{Q} = 1$
 - d) Indeterminate states
- 3) The implementation of simplified sum-of-products expressions may be easily implemented into actual logic circuits using all universal _____ gates with little or no increase in circuit complexity. (Select the response for the blank space that will best make the statement true.)
 - a) AND/OR
 - b) NAND
 - c) OR
 - d) NOR/AND
- 4) A counter with a modulus of 16 acts as a
 - a) divide by – 8 counter
 - b) divide by – 16 counter
 - c) divide by – 32 counter
 - d) divide by – 64 counter
- 5) A full adder can be realized using
 - a) One half adder, two OR gates
 - b) Two half adders, two OR gates
 - c) Two half adders, one OR gates
 - d) None of these
- 6) IC 74151 is used as
 - a) Encoder
 - b) Decoder
 - c) Multiplexer
 - d) Demultiplexer
- 7) Following IC is used for BCD to 7 segment decoder
 - a) 74148
 - b) 74157
 - c) 7447
 - d) 7474

P.T.O.



- 8) IC 74152 is a multiplexer having
 a) 1 : 8 lines b) 1 : 32 lines c) 8 : 1 lines d) 16 : 1 lines
- 9) A PLA can be used
 a) As a Dynamic memory b) As a Static memory
 c) As a Short memory d) None of these
- 10) For register level the information units is
 a) Bytes b) Words and Vectors
 c) Bubbles d) None of these
- 11) A PAL is comprised of programmable _____ gates.
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- 12) A Memory whose data need to be refreshed periodically is called
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- 13) An EPROM is _____ erasable.
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- 14) In demultiplexer, the number of output lines is n and the number of select lines is m, where n =
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 b) Fixed AND array and fixed OR array
 c) Programmable NAND array and fixed NOR array
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- 16) A Boolean function $\bar{x}\bar{y} + xy + \bar{x}y$ is equivalent to
 a) $\bar{x} + \bar{y}$ b) $x + y$ c) $x + \bar{y}$ d) $\bar{x} + y$
- 17) The 2's complement representation of the decimal value -15 is
 a) 1111 b) 11111 c) 111111 d) 10001
- 18) A graphical display of the fundamental products in a truth-table is known as
 a) Mapping b) Graphing c) T-map d) k-map
- 19) The simultaneous equations on the Boolean variables x, y, z and w
 $x + y + z = 1$
 $xy = 0$
 $xy + \bar{z}w = 0$
 Have the following solution for x, y, z and w, respectively.
 a) 0 1 0 0 b) 1 1 0 1 c) 1 0 1 1 d) 1 0 0 0
- 20) The consensus theorem states that
 a) $A + \bar{A}B = A + B$ b) $A + AB = A$
 c) $AB + \bar{A}C + BC = AB + \bar{A}C$ d) $(A + B). (A + \bar{B}) = A$



Seat No.	
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**S.E. (Information Technology) (Part – I) Examination, 2016
SWITCHING THEORY AND LOGIC DESIGN (Old)**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** : **(4×5=20)**

- a) Simplify the following expression by considering Don't care conditions
 $y = \sum m(1, 4, 8, 9, 11, 15) + d(0, 3, 14)$.
- b) Simplify the following three variables expression and realise using basic gates.
 $Y = \prod M(0, 2, 3, 4, 5)$.
- c) Design full adder using NOR gates.
- d) Explain the 4 types of Flip Flops with a neat circuit diagram.
- e) Design 3 bit Synchronous Counter.

3. Solve **any two** : **(2×10=20)**

- a) Draw and explain operation of carry look ahead adder. Obtain the expression for carry at each stage for 4 bit adder.
- b) Design and explain 4 bit Bi-directional shift register.
- c) Minimise the following expressions using K-maps and realise using NOR gates only.
 - i) $f_1(A, B, C, D) = \prod M(1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15)$
 - ii) $f_2(A, B, C, D) = \prod M(1, 4, 6, 9, 10, 11, 14, 15)$
 - iii) $f_3(A, B, C, D) = \prod M(2, 7, 8, 9, 10, 12)$



SECTION – II

4. Solve **any four** : **(4×5=20)**
- a) Implement the following combinational circuit using a decoder
- $$f_1 = \sum m(1, 3, 5, 7, 9, 15)$$
- $$f_2 = \sum m(3, 5, 7, 11)$$
- $$f_3 = \sum m(1, 2, 4)$$
- b) Explain the following 7 segment decoder terms
- i) LT ii) RBI iii) BI iv) RBO
- c) Define the terms : t_{wc} (Write cycle time) and Access cycle time (t_a).
- d) Explain the classification of memories in details.
- e) Explain programmable logic array in detail with block diagram.
5. Solve **any four** : **(2×10=20)**
- a) Design 32 : 1 Multiplexer using two 16 : 1 Multiplexer and One 2 : 1 Multiplexer.
- b) Design 16×8 memory using 16×4 memory chips.
- c) What are the major components of processor level design ? Explain the processor level design with example in detail.
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Seat
No.Set **P****S.E. (IT) (Part – II) (CGPA) Examination, 2016
APPLIED MATHEMATICS – II**Day and Date : Monday, 21-11-2016
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) **Use of scientific calculator is allowed.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) The method which involves repeated use of intermediate value property is
 - a) Bisection method
 - b) Regula Falsi method
 - c) Both a) and b)
 - d) Neither a) nor b)
- 2) This method has quadratic convergence
 - a) Newton-Raphson
 - b) Regula-Falsi
 - c) Bisection
 - d) All the above
- 3) The coefficient matrix is transformed to _____ form in Gauss-elimination method.
 - a) diagonal
 - b) upper triangular
 - c) lower triangular
 - d) none of a, b, c
- 4) For Gauss-Seidal iterative method to converge the coefficient matrix must be
 - a) lower triangular
 - b) upper triangular
 - c) symmetric
 - d) diagonally dominant
- 5) By substituting $n = 2$ in Newton-Cote's quadrature formula, we obtain
 - a) Trapezoidal rule
 - b) Weddles rule
 - c) Simpson's $\frac{1}{3}$ rule
 - d) Simpson's $\frac{3}{8}$ rule
- 6) While applying Weddles rule, the number of sub-intervals in which range of integration must be divided into should be
 - a) Multiple of 2
 - b) Multiple of 3
 - c) Multiple of 4
 - d) Multiple of 6
- 7) Truncation error in Simpson's rule is of the order
 - a) h^4
 - b) h^3
 - c) h^2
 - d) h
- 8) The fuzzy cardinality of fuzzy set is
 - a) fuzzy set
 - b) a real number
 - c) fuzzy number
 - d) none

P.T.O.



9) For the fuzzy sets defined below

Elements :	x_1	x_2	x_3	x_4	x_5	x_6
A(x)	: 0.1	0.6	0.8	0.9	0.7	0.1
B(x)	: 0.9	0.7	0.5	0.2	0.1	0

The set $0.2_{A \cap B}$ is

a) $\frac{0.9}{x_1} + \frac{0.4}{x_2} + \frac{0.2}{x_3}$

b) $\frac{1}{x_1} + \frac{1}{x_2}$

c) $\frac{0.9}{x_1} + \frac{0.7}{x_2} + \frac{0.5}{x_3}$

d) $\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3}$

10) For the fuzzy set defined by the membership function $A(x) = \frac{2x}{x+5}$

$x \in \{0, 1, 2, 3, 4, 5\}$ then $|A|$ is

a) 0.5436

b) 3.5436

c) 2.5436

d) None

11) Consider the fuzzy set $A(x) = \frac{x}{x+1} - \infty < x < \infty$ then the level set of the fuzzy set is

a) $[0, 1)$

b) $[1, 1]$

c) $(0, 1)$

d) $(0, 1]$

12) Consider the fuzzy proposition

P : temperature (v) is high (f) is called

a) Conditional and qualified proposition

b) Conditional and unqualified proposition

c) Unconditional and qualified proposition

d) Unconditional and unqualified proposition

13) If A is fuzzy set defined on X

$A = \frac{0.2}{x_1} + \frac{0.4}{x_2} + \frac{0.6}{x_3} + \frac{0.8}{x_4} + \frac{1}{x_5}$ then 0.8^A is

a) $\frac{0.8}{x_4} + \frac{0.8}{x_5}$

b) $\frac{1}{x_4} + \frac{1}{x_5}$

c) $\frac{0.6}{x_3} + \frac{0.8}{x_2} + \frac{1}{x_5}$

d) none

14) Consider

i) $A(x) = x \quad 0 \leq x \leq 1$
 $0 \quad \text{otherwise}$

ii) $B(x) = \min \{1, x\} \quad x \geq 0$
 $0 \quad x < 0$

then the fuzzy numbers are

a) Both i) and ii)

b) Only ii)

c) Only i)

d) Neither i) nor ii)



Seat No.	
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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
APPLIED MATHEMATICS – II**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 56

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

SECTION – I

2. a) Perform 7 iterations of Bisection method to find a negative root of the equation $x^3 - 4x + 9 = 0$. 5
b) Find a real root of the equation $2^x - x - 3 = 0$ which lies between $(-3, -2)$. Perform three iterations of method of false position. 4

OR

- b) Find the smallest positive root of the equation $2x - \tan x = 0$, correct to three decimal places using Newton-Raphson method. Do not forget to put calculator on radian mode. 4
3. a) Solve by Gauss-Seidal iterative method, take initial solution vector as $(0, 0, 0)^T$
 $8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$. 3

- b) Find the largest eigen value and the corresponding eigen vector for the matrix

$A = \begin{pmatrix} 25 & 1 & 2 \\ 1 & 3 & 0 \\ 2 & 0 & -4 \end{pmatrix}$. Perform three iterations of power method, take initial vector

$X^{(0)} = [1, 0, 0]^T$. 3

- c) Apply Gauss-elimination method to find solution of the system of equations
 $6x - y + z = 13, x + y + z = 9, 10x + y - z = 19$. 3

Set P



- 4 a) Evaluate using Trapezoidal rule and Simpson's $\frac{1}{3}$ rule $\int_0^{\pi/2} \int_0^{\pi/2} \sin(x+y) dx dy$.
 Take $h = k = \frac{\pi}{4}$. Also evaluate directly and compare the error. 4
- b) Evaluate $\int_0^{\pi/2} e^{\sin x} dx$ by Trapezoidal rule, take $h = \frac{\pi}{6}$. 2
- c) Evaluate $\int_0^1 \frac{dx}{1+x}$ using Romberg's method. Take h as 0.5, 0.25 and 0.125 respectively. Hence obtain approximate value of \log_e^2 . 4
5. a) Evaluate $\int_2^3 \frac{\cos 2x}{1+\sin x} dx$ using three point Gaussian quadrature rule. 4
- b) Perform two iterations of Muller's method to find an approximate root of the equation $x^3 - 2x - 5$. It is known that a root lies in the interval (2, 3). 5

SECTION – II

6. a) If A, B are two fuzzy sets defined on $X = \{0, 1, 2, 3, 4, 5\}$ and given by membership function $A(x) = \frac{x}{x+3}$ and $B(x) = \frac{x}{x+5}$ then verify Demorgan's laws. 6
- b) Find fuzzy cardinality of fuzzy set $A = \frac{0.7}{0} + \frac{0.2}{1} + \frac{0.9}{2} + \frac{0.6}{3} + \frac{0.8}{4} + \frac{1}{5}$
 $X = \{0, 1, 2, 3, 4, 5\}$. 3
7. a) Find α -cut and strong α -cut for the following fuzzy set $A = \frac{1}{1+10x}$
 $x \in X = \{0, 1, 2, 3, 4, 5\}$ when $\alpha = 0.04, 0.02$. 3
- b) Solve the fuzzy equation $A + X = B$ where 6

$$A(x) = \begin{cases} 0 & x \leq 3, x \geq 5 \\ x-3 & 3 < x \leq 4 \\ 5-x & 4 < x \leq 5 \end{cases}$$

$$B(x) = \begin{cases} 0 & x \leq 12, x > 32 \\ \frac{x-12}{8} & 12 < x \leq 20 \\ \frac{32-x}{12} & 20 < x \leq 32 \end{cases}$$



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

$$A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$$

$$B = \frac{0.5}{2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{2}$$

and let f such that $f : X \times X \rightarrow X$ be a crisp function given by $f(x_1, x_2) = x_1 + x_2 \forall x_1, x_2 \in X$. Then by using extension principle find $f(A, B)$.

5

b) Let A and B are two fuzzy numbers with membership function given by

5

$$A(x) = \begin{cases} x - 4 & \text{for } 4 < x \leq 5 \\ 6 - x & \text{for } 5 < x \leq 6 \\ 0 & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x - 10}{10} & \text{for } 10 < x \leq 20 \\ \frac{35 - x}{15} & \text{for } 20 < x \leq 35 \\ 0 & \text{otherwise} \end{cases}$$

calculate fuzzy number $A - B$.

OR

b) Explain the concept of fuzzy quantifiers and their types.

5

9. a) Calculate the following fuzzy operations on the intervals

3

i) $[-1, 2] - [1, 3]$

ii) $\frac{[-4, 6]}{[2, 4]}$

iii) $[-3, 4] \cdot [-3, 5]$

OR



a) For the given fuzzy binary relation

x	:	1	1	2	2	3	3	4	4
y	:	1	3	2	3	1	4	3	4
R(x, y) :		0.7	0.3	0.7	1	0.9	1	0.8	0.5

represent the information using

- i) Membership matrix
- ii) Sagittal diagram
- iii) Simple diagram.

b) Let A and B be two fuzzy numbers whose membership functions are given by

$$A(x) = \begin{cases} \frac{x+2}{3} & -2 < x \leq 1 \\ \frac{4-x}{3} & 1 < x \leq 4 \\ 0 & \text{otherwise} \end{cases}$$

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

Find the fuzzy number MAX (A, B).

6

Seat
No.Set **Q**

**S.E. (IT) (Part – II) (CGPA) Examination, 2016
APPLIED MATHEMATICS – II**

Day and Date : Monday, 21-11-2016
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) **Use of scientific calculator is allowed.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) The fuzzy cardinality of fuzzy set is
a) fuzzy set b) a real number c) fuzzy number d) none
- 2) For the fuzzy sets defined below

Elements :	x_1	x_2	x_3	x_4	x_5	x_6
A(x)	: 0.1	0.6	0.8	0.9	0.7	0.1
B(x)	: 0.9	0.7	0.5	0.2	0.1	0

The set $0.2_{\overline{A \cap B}}$ is

- a) $\frac{0.9}{x_1} + \frac{0.4}{x_2} + \frac{0.2}{x_3}$ b) $\frac{1}{x_1} + \frac{1}{x_2}$
- c) $\frac{0.9}{x_1} + \frac{0.7}{x_2} + \frac{0.5}{x_3}$ d) $\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3}$
- 3) For the fuzzy set defined by the membership function $A(x) = \frac{2x}{x+5}$
 $x \in \{0, 1, 2, 3, 4, 5\}$ then $|A|$ is
a) 0.5436 b) 3.5436 c) 2.5436 d) None
- 4) Consider the fuzzy set $A(x) = \frac{x}{x+1} - \infty < x < \infty$ then the level set of the fuzzy set is
a) [0, 1) b) [1, 1] c) (0, 1) d) (0, 1]

P.T.O.



- 5) Consider the fuzzy proposition
 P : temperature (v) is high (f) is called
- Conditional and qualified proposition
 - Conditional and unqualified proposition
 - Unconditional and qualified proposition
 - Unconditional and unqualified proposition

- 6) If A is fuzzy set defined on X

$$A = \frac{0.2}{x_1} + \frac{0.4}{x_2} + \frac{0.6}{x_3} + \frac{0.8}{x_4} + \frac{1}{x_5} \text{ then } 0.8^A \text{ is}$$

- $\frac{0.8}{x_4} + \frac{0.8}{x_5}$
- $\frac{1}{x_4} + \frac{1}{x_5}$
- $\frac{0.6}{x_3} + \frac{0.8}{x_2} + \frac{1}{x_5}$
- none

- 7) Consider

i) $A(x) = x \quad 0 \leq x \leq 1$
 $0 \quad \text{otherwise}$

ii) $B(x) = \min \{1, x\} \quad x \geq 0$
 $0 \quad x < 0$

then the fuzzy numbers are

- Both i) and ii)
 - Only ii)
 - Only i)
 - Neither i) nor ii)
- 8) The method which involves repeated use of intermediate value property is
- Bisection method
 - Regula Falsi method
 - Both a) and b)
 - Neither a) nor b)
- 9) This method has quadratic convergence
- Newton-Raphson
 - Regula-Falsi
 - Bisection
 - All the above
- 10) The coefficient matrix is transformed to _____ form in Gauss-elimination method.
- diagonal
 - upper triangular
 - lower triangular
 - none of a, b, c
- 11) For Gauss-Seidal iterative method to converge the coefficient matrix must be
- lower triangular
 - upper triangular
 - symmetric
 - diagonally dominant
- 12) By substituting $n = 2$ in Newton-Cote's quadrature formula, we obtain
- Trapezoidal rule
 - Weddles rule
 - Simpson's $\frac{1}{3}$ rule
 - Simpson's $\frac{3}{8}$ rule
- 13) While applying Weddles rule, the number of sub-intervals in which range of integration must be divided into should be
- Multiple of 2
 - Multiple of 3
 - Multiple of 4
 - Multiple of 6
- 14) Truncation error in Simpson's rule is of the order
- h^4
 - h^3
 - h^2
 - h



Seat No.	
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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
APPLIED MATHEMATICS – II**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 56

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

SECTION – I

2. a) Perform 7 iterations of Bisection method to find a negative root of the equation $x^3 - 4x + 9 = 0$. 5
- b) Find a real root of the equation $2^x - x - 3 = 0$ which lies between $(-3, -2)$. Perform three iterations of method of false position. 4

OR

- b) Find the smallest positive root of the equation $2x - \tan x = 0$, correct to three decimal places using Newton-Raphson method. Do not forget to put calculator on radian mode. 4
3. a) Solve by Gauss-Seidal iterative method, take initial solution vector as $(0, 0, 0)^T$
 $8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$. 3

- b) Find the largest eigen value and the corresponding eigen vector for the matrix

$$A = \begin{pmatrix} 25 & 1 & 2 \\ 1 & 3 & 0 \\ 2 & 0 & -4 \end{pmatrix}. \text{ Perform three iterations of power method, take initial vector}$$

$$X^{(0)} = [1, 0, 0]^T. \span style="float: right;">3$$

- c) Apply Gauss-elimination method to find solution of the system of equations
 $6x - y + z = 13, x + y + z = 9, 10x + y - z = 19$. 3

Set Q



4 a) Evaluate using Trapezoidal rule and Simpson's $\frac{1}{3}$ rule $\int_0^{\pi/2} \int_0^{\pi/2} \sin(x+y) dx dy$.

Take $h = k = \frac{\pi}{4}$. Also evaluate directly and compare the error.

4

b) Evaluate $\int_0^{\pi/2} e^{\sin x} dx$ by Trapezoidal rule, take $h = \frac{\pi}{6}$.

2

c) Evaluate $\int_0^1 \frac{dx}{1+x}$ using Romberg's method. Take h as 0.5, 0.25 and 0.125

respectively. Hence obtain approximate value of \log_e^2 .

4

5. a) Evaluate $\int_2^3 \frac{\cos 2x}{1+\sin x} dx$ using three point Gaussian quadrature rule.

4

b) Perform two iterations of Muller's method to find an approximate root of the equation $x^3 - 2x - 5$. It is known that a root lies in the interval (2, 3).

5

SECTION – II

6. a) If A, B are two fuzzy sets defined on $X = \{0, 1, 2, 3, 4, 5\}$ and given by membership function $A(x) = \frac{x}{x+3}$ and $B(x) = \frac{x}{x+5}$ then verify Demorgan's laws.

6

b) Find fuzzy cardinality of fuzzy set $A = \frac{0.7}{0} + \frac{0.2}{1} + \frac{0.9}{2} + \frac{0.6}{3} + \frac{0.8}{4} + \frac{1}{5}$
 $X = \{0, 1, 2, 3, 4, 5\}$.

3

7. a) Find α -cut and strong α -cut for the following fuzzy set $A = \frac{1}{1+10x}$
 $x \in X = \{0, 1, 2, 3, 4, 5\}$ when $\alpha = 0.04, 0.02$.

3

b) Solve the fuzzy equation $A + X = B$ where

6

$$A(x) = \begin{cases} 0 & x \leq 3, x \geq 5 \\ x-3 & 3 < x \leq 4 \\ 5-x & 4 < x \leq 5 \end{cases}$$

$$B(x) = \begin{cases} 0 & x \leq 12, x > 32 \\ \frac{x-12}{8} & 12 < x \leq 20 \\ \frac{32-x}{12} & 20 < x \leq 32 \end{cases}$$



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

$$A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$$

$$B = \frac{0.5}{2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{2}$$

and let f such that $f : X \times X \rightarrow X$ be a crisp function given by $f(x_1, x_2) = x_1 + x_2 \forall x_1, x_2 \in X$. Then by using extension principle find $f(A, B)$.

5

b) Let A and B are two fuzzy numbers with membership function given by

5

$$A(x) = \begin{cases} x - 4 & \text{for } 4 < x \leq 5 \\ 6 - x & \text{for } 5 < x \leq 6 \\ 0 & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x - 10}{10} & \text{for } 10 < x \leq 20 \\ \frac{35 - x}{15} & \text{for } 20 < x \leq 35 \\ 0 & \text{otherwise} \end{cases}$$

calculate fuzzy number $A - B$.

OR

b) Explain the concept of fuzzy quantifiers and their types.

5

9. a) Calculate the following fuzzy operations on the intervals

3

i) $[-1, 2] - [1, 3]$

ii) $\frac{[-4, 6]}{[2, 4]}$

iii) $[-3, 4] \cdot [-3, 5]$

OR



a) For the given fuzzy binary relation

x	:	1	1	2	2	3	3	4	4
y	:	1	3	2	3	1	4	3	4
R(x, y) :		0.7	0.3	0.7	1	0.9	1	0.8	0.5

represent the information using

- i) Membership matrix
- ii) Sagittal diagram
- iii) Simple diagram.

b) Let A and B be two fuzzy numbers whose membership functions are given by

$$A(x) = \begin{cases} \frac{x+2}{3} & -2 < x \leq 1 \\ \frac{4-x}{3} & 1 < x \leq 4 \\ 0 & \text{otherwise} \end{cases}$$

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

Find the fuzzy number MAX (A, B).

6



Seat No.	
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Set

R

S.E. (IT) (Part – II) (CGPA) Examination, 2016
APPLIED MATHEMATICS – II

Day and Date : Monday, 21-11-2016
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) **Use of scientific calculator is allowed.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) By substituting $n = 2$ in Newton-Cote's quadrature formula, we obtain
 - a) Trapezoidal rule
 - b) Weddles rule
 - c) Simpson's $\frac{1}{3}$ rule
 - d) Simpson's $\frac{3}{8}$ rule
- 2) While applying Weddles rule, the number of sub-intervals in which range of integration must be divided into should be
 - a) Multiple of 2
 - b) Multiple of 3
 - c) Multiple of 4
 - d) Multiple of 6
- 3) Truncation error in Simpson's rule is of the order
 - a) h^4
 - b) h^3
 - c) h^2
 - d) h
- 4) The fuzzy cardinality of fuzzy set is
 - a) fuzzy set
 - b) a real number
 - c) fuzzy number
 - d) none
- 5) For the fuzzy sets defined below

Elements :	x_1	x_2	x_3	x_4	x_5	x_6
A(x)	: 0.1	: 0.6	: 0.8	: 0.9	: 0.7	: 0.1
B(x)	: 0.9	: 0.7	: 0.5	: 0.2	: 0.1	: 0

The set $0.2_{A \cap B}$ is

- a) $\frac{0.9}{x_1} + \frac{0.4}{x_2} + \frac{0.2}{x_3}$
- b) $\frac{1}{x_1} + \frac{1}{x_2}$
- c) $\frac{0.9}{x_1} + \frac{0.7}{x_2} + \frac{0.5}{x_3}$
- d) $\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3}$

P.T.O.



- 6) For the fuzzy set defined by the membership function $A(x) = \frac{2x}{x+5}$
 $x \in \{0, 1, 2, 3, 4, 5\}$ then $|A|$ is
 a) 0.5436 b) 3.5436 c) 2.5436 d) None
- 7) Consider the fuzzy set $A(x) = \frac{x}{x+1} - \infty < x < \infty$ then the level set of the fuzzy set is
 a) $[0, 1)$ b) $[1, 1]$ c) $(0, 1)$ d) $(0, 1]$
- 8) Consider the fuzzy proposition
 P : temperature (v) is high (f) is called
 a) Conditional and qualified proposition
 b) Conditional and unqualified proposition
 c) Unconditional and qualified proposition
 d) Unconditional and unqualified proposition
- 9) If A is fuzzy set defined on X
 $A = \frac{0.2}{x_1} + \frac{0.4}{x_2} + \frac{0.6}{x_3} + \frac{0.8}{x_4} + \frac{1}{x_5}$ then 0.8^A is
 a) $\frac{0.8}{x_4} + \frac{0.8}{x_5}$ b) $\frac{1}{x_4} + \frac{1}{x_5}$ c) $\frac{0.6}{x_3} + \frac{0.8}{x_2} + \frac{1}{x_5}$ d) none
- 10) Consider
 i) $A(x) = x \quad 0 \leq x \leq 1$
 0 otherwise
 ii) $B(x) = \min \{1, x\} \quad x \geq 0$
 0 $x < 0$
 then the fuzzy numbers are
 a) Both i) and ii) b) Only ii) c) Only i) d) Neither i) nor ii)
- 11) The method which involves repeated use of intermediate value property is
 a) Bisection method b) Regula Falsi method
 c) Both a) and b) d) Neither a) nor b)
- 12) This method has quadratic convergence
 a) Newton-Raphson b) Regula-Falsi
 c) Bisection d) All the above
- 13) The coefficient matrix is transformed to _____ form in Gauss-elimination method.
 a) diagonal b) upper triangular
 c) lower triangular d) none of a, b, c
- 14) For Gauss-Seidal iterative method to converge the coefficient matrix must be
 a) lower triangular b) upper triangular
 c) symmetric d) diagonally dominant



Seat No.	
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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
APPLIED MATHEMATICS – II**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 56

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

SECTION – I

2. a) Perform 7 iterations of Bisection method to find a negative root of the equation $x^3 - 4x + 9 = 0$. 5
- b) Find a real root of the equation $2^x - x - 3 = 0$ which lies between $(-3, -2)$. Perform three iterations of method of false position. 4

OR

- b) Find the smallest positive root of the equation $2x - \tan x = 0$, correct to three decimal places using Newton-Raphson method. Do not forget to put calculator on radian mode. 4
3. a) Solve by Gauss-Seidal iterative method, take initial solution vector as $(0, 0, 0)^T$
 $8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$. 3

- b) Find the largest eigen value and the corresponding eigen vector for the matrix

$A = \begin{pmatrix} 25 & 1 & 2 \\ 1 & 3 & 0 \\ 2 & 0 & -4 \end{pmatrix}$. Perform three iterations of power method, take initial vector

$X^{(0)} = [1, 0, 0]^T$. 3

- c) Apply Gauss-elimination method to find solution of the system of equations
 $6x - y + z = 13, x + y + z = 9, 10x + y - z = 19$. 3

Set R



- 4 a) Evaluate using Trapezoidal rule and Simpson's $\frac{1}{3}$ rule $\int_0^{\pi/2} \int_0^{\pi/2} \sin(x+y) dx dy$.
 Take $h = k = \frac{\pi}{4}$. Also evaluate directly and compare the error. 4
- b) Evaluate $\int_0^{\pi/2} e^{\sin x} dx$ by Trapezoidal rule, take $h = \frac{\pi}{6}$. 2
- c) Evaluate $\int_0^1 \frac{dx}{1+x}$ using Romberg's method. Take h as 0.5, 0.25 and 0.125 respectively. Hence obtain approximate value of \log_e^2 . 4
5. a) Evaluate $\int_2^3 \frac{\cos 2x}{1+\sin x} dx$ using three point Gaussian quadrature rule. 4
- b) Perform two iterations of Muller's method to find an approximate root of the equation $x^3 - 2x - 5$. It is known that a root lies in the interval (2, 3). 5

SECTION – II

6. a) If A, B are two fuzzy sets defined on $X = \{0, 1, 2, 3, 4, 5\}$ and given by membership function $A(x) = \frac{x}{x+3}$ and $B(x) = \frac{x}{x+5}$ then verify Demorgan's laws. 6
- b) Find fuzzy cardinality of fuzzy set $A = \frac{0.7}{0} + \frac{0.2}{1} + \frac{0.9}{2} + \frac{0.6}{3} + \frac{0.8}{4} + \frac{1}{5}$
 $X = \{0, 1, 2, 3, 4, 5\}$. 3
7. a) Find α -cut and strong α -cut for the following fuzzy set $A = \frac{1}{1+10x}$
 $x \in X = \{0, 1, 2, 3, 4, 5\}$ when $\alpha = 0.04, 0.02$. 3
- b) Solve the fuzzy equation $A + X = B$ where 6

$$A(x) = \begin{cases} 0 & x \leq 3, x \geq 5 \\ x-3 & 3 < x \leq 4 \\ 5-x & 4 < x \leq 5 \end{cases}$$

$$B(x) = \begin{cases} 0 & x \leq 12, x > 32 \\ \frac{x-12}{8} & 12 < x \leq 20 \\ \frac{32-x}{12} & 20 < x \leq 32 \end{cases}$$



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

$$A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$$

$$B = \frac{0.5}{2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{2}$$

and let f such that $f : X \times X \rightarrow X$ be a crisp function given by $f(x_1, x_2) = x_1 + x_2 \forall x_1, x_2 \in X$. Then by using extension principle find $f(A, B)$.

5

b) Let A and B are two fuzzy numbers with membership function given by

5

$$A(x) = \begin{cases} x - 4 & \text{for } 4 < x \leq 5 \\ 6 - x & \text{for } 5 < x \leq 6 \\ 0 & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x - 10}{10} & \text{for } 10 < x \leq 20 \\ \frac{35 - x}{15} & \text{for } 20 < x \leq 35 \\ 0 & \text{otherwise} \end{cases}$$

calculate fuzzy number $A - B$.

OR

b) Explain the concept of fuzzy quantifiers and their types.

5

9. a) Calculate the following fuzzy operations on the intervals

3

i) $[-1, 2] - [1, 3]$

ii) $\frac{[-4, 6]}{[2, 4]}$

iii) $[-3, 4] \cdot [-3, 5]$

OR

Set R



a) For the given fuzzy binary relation

x	:	1	1	2	2	3	3	4	4
y	:	1	3	2	3	1	4	3	4
R(x, y) :		0.7	0.3	0.7	1	0.9	1	0.8	0.5

represent the information using

- i) Membership matrix
- ii) Sagittal diagram
- iii) Simple diagram.

b) Let A and B be two fuzzy numbers whose membership functions are given by

$$A(x) = \begin{cases} \frac{x+2}{3} & -2 < x \leq 1 \\ \frac{4-x}{3} & 1 < x \leq 4 \\ 0 & \text{otherwise} \end{cases}$$

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

Find the fuzzy number MAX (A, B).

6

Seat
No.Set **S****S.E. (IT) (Part – II) (CGPA) Examination, 2016
APPLIED MATHEMATICS – II**Day and Date : Monday, 21-11-2016
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) Use of scientific calculator is **allowed**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) For the fuzzy set defined by the membership function $A(x) = \frac{2x}{x+5}$ $x \in \{0, 1, 2, 3, 4, 5\}$ then $|A|$ is
a) 0.5436 b) 3.5436 c) 2.5436 d) None
- 2) Consider the fuzzy set $A(x) = \frac{x}{x+1} - \infty < x < \infty$ then the level set of the fuzzy set is
a) $[0, 1)$ b) $[1, 1]$ c) $(0, 1)$ d) $(0, 1]$
- 3) Consider the fuzzy proposition
P : temperature (v) is high (f) is called
a) Conditional and qualified proposition
b) Conditional and unqualified proposition
c) Unconditional and qualified proposition
d) Unconditional and unqualified proposition
- 4) If A is fuzzy set defined on X
 $A = \frac{0.2}{x_1} + \frac{0.4}{x_2} + \frac{0.6}{x_3} + \frac{0.8}{x_4} + \frac{1}{x_5}$ then 0.8^A is
a) $\frac{0.8}{x_4} + \frac{0.8}{x_5}$ b) $\frac{1}{x_4} + \frac{1}{x_5}$ c) $\frac{0.6}{x_3} + \frac{0.8}{x_2} + \frac{1}{x_5}$ d) none

P.T.O.



5) Consider

$$\begin{array}{ll} \text{i) } A(x) = x & 0 \leq x \leq 1 \\ & 0 \text{ otherwise} \end{array} \quad \begin{array}{ll} \text{ii) } B(x) = \min \{1, x\} & x \geq 0 \\ & 0 \quad x < 0 \end{array}$$

then the fuzzy numbers are

- a) Both i) and ii) b) Only ii) c) Only i) d) Neither i) nor ii)
- 6) The method which involves repeated use of intermediate value property is
 a) Bisection method b) Regula Falsi method
 c) Both a) and b) d) Neither a) nor b)
- 7) This method has quadratic convergence
 a) Newton-Raphson b) Regula-Falsi
 c) Bisection d) All the above
- 8) The coefficient matrix is transformed to _____ form in Gauss-elimination method.
 a) diagonal b) upper triangular
 c) lower triangular d) none of a, b, c
- 9) For Gauss-Seidal iterative method to converge the coefficient matrix must be
 a) lower triangular b) upper triangular
 c) symmetric d) diagonally dominant
- 10) By substituting $n = 2$ in Newton-Cote's quadrature formula, we obtain
 a) Trapezoidal rule b) Weddles rule
 c) Simpson's $\frac{1}{3}$ rd rule d) Simpson's $\frac{3}{8}$ th rule
- 11) While applying Weddles rule, the number of sub-intervals in which range of integration must be divided into should be
 a) Multiple of 2 b) Multiple of 3 c) Multiple of 4 d) Multiple of 6
- 12) Truncation error in Simpson's rule is of the order
 a) h^4 b) h^3 c) h^2 d) h
- 13) The fuzzy cardinality of fuzzy set is
 a) fuzzy set b) a real number c) fuzzy number d) none
- 14) For the fuzzy sets defined below

Elements :	x_1	x_2	x_3	x_4	x_5	x_6
A(x)	: 0.1	0.6	0.8	0.9	0.7	0.1
B(x)	: 0.9	0.7	0.5	0.2	0.1	0

The set $0.2_{A \cap B}$ is

- a) $\frac{0.9}{x_1} + \frac{0.4}{x_2} + \frac{0.2}{x_3}$ b) $\frac{1}{x_1} + \frac{1}{x_2}$
- c) $\frac{0.9}{x_1} + \frac{0.7}{x_2} + \frac{0.5}{x_3}$ d) $\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3}$



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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
APPLIED MATHEMATICS – II**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 56

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

SECTION – I

2. a) Perform 7 iterations of Bisection method to find a negative root of the equation $x^3 - 4x + 9 = 0$. 5
- b) Find a real root of the equation $2^x - x - 3 = 0$ which lies between $(-3, -2)$. Perform three iterations of method of false position. 4

OR

- b) Find the smallest positive root of the equation $2x - \tan x = 0$, correct to three decimal places using Newton-Raphson method. Do not forget to put calculator on radian mode. 4
3. a) Solve by Gauss-Seidal iterative method, take initial solution vector as $(0, 0, 0)^T$
 $8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$. 3

- b) Find the largest eigen value and the corresponding eigen vector for the matrix

$$A = \begin{pmatrix} 25 & 1 & 2 \\ 1 & 3 & 0 \\ 2 & 0 & -4 \end{pmatrix}. \text{ Perform three iterations of power method, take initial vector}$$

$$X^{(0)} = [1, 0, 0]^T. \span style="float: right;">3$$

- c) Apply Gauss-elimination method to find solution of the system of equations
 $6x - y + z = 13, x + y + z = 9, 10x + y - z = 19$. 3

Set S



4 a) Evaluate using Trapezoidal rule and Simpson's $\frac{1}{3}$ rule $\int_0^{\pi/2} \int_0^{\pi/2} \sin(x+y) dx dy$.

Take $h = k = \frac{\pi}{4}$. Also evaluate directly and compare the error.

4

b) Evaluate $\int_0^{\pi/2} e^{\sin x} dx$ by Trapezoidal rule, take $h = \frac{\pi}{6}$.

2

c) Evaluate $\int_0^1 \frac{dx}{1+x}$ using Romberg's method. Take h as 0.5, 0.25 and 0.125

respectively. Hence obtain approximate value of \log_e^2 .

4

5. a) Evaluate $\int_2^3 \frac{\cos 2x}{1+\sin x} dx$ using three point Gaussian quadrature rule.

4

b) Perform two iterations of Muller's method to find an approximate root of the equation $x^3 - 2x - 5$. It is known that a root lies in the interval (2, 3).

5

SECTION – II

6. a) If A, B are two fuzzy sets defined on $X = \{0, 1, 2, 3, 4, 5\}$ and given by membership function $A(x) = \frac{x}{x+3}$ and $B(x) = \frac{x}{x+5}$ then verify Demorgan's laws.

6

b) Find fuzzy cardinality of fuzzy set $A = \frac{0.7}{0} + \frac{0.2}{1} + \frac{0.9}{2} + \frac{0.6}{3} + \frac{0.8}{4} + \frac{1}{5}$
 $X = \{0, 1, 2, 3, 4, 5\}$.

3

7. a) Find α -cut and strong α -cut for the following fuzzy set $A = \frac{1}{1+10x}$
 $x \in X = \{0, 1, 2, 3, 4, 5\}$ when $\alpha = 0.04, 0.02$.

3

b) Solve the fuzzy equation $A + X = B$ where

6

$$A(x) = \begin{cases} 0 & x \leq 3, x \geq 5 \\ x-3 & 3 < x \leq 4 \\ 5-x & 4 < x \leq 5 \end{cases}$$

$$B(x) = \begin{cases} 0 & x \leq 12, x > 32 \\ \frac{x-12}{8} & 12 < x \leq 20 \\ \frac{32-x}{12} & 20 < x \leq 32 \end{cases}$$



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

$$A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$$

$$B = \frac{0.5}{2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{2}$$

and let f such that $f : X \times X \rightarrow X$ be a crisp function given by $f(x_1, x_2) = x_1 + x_2 \forall x_1, x_2 \in X$. Then by using extension principle find $f(A, B)$.

5

b) Let A and B are two fuzzy numbers with membership function given by

5

$$A(x) = \begin{cases} x - 4 & \text{for } 4 < x \leq 5 \\ 6 - x & \text{for } 5 < x \leq 6 \\ 0 & \text{otherwise} \end{cases}$$

$$B(x) = \begin{cases} \frac{x - 10}{10} & \text{for } 10 < x \leq 20 \\ \frac{35 - x}{15} & \text{for } 20 < x \leq 35 \\ 0 & \text{otherwise} \end{cases}$$

calculate fuzzy number $A - B$.

OR

b) Explain the concept of fuzzy quantifiers and their types.

5

9. a) Calculate the following fuzzy operations on the intervals

3

i) $[-1, 2] - [1, 3]$

ii) $\frac{[-4, 6]}{[2, 4]}$

iii) $[-3, 4] \cdot [-3, 5]$

OR



a) For the given fuzzy binary relation

x	:	1	1	2	2	3	3	4	4
y	:	1	3	2	3	1	4	3	4
R(x, y) :		0.7	0.3	0.7	1	0.9	1	0.8	0.5

represent the information using

- i) Membership matrix
- ii) Sagittal diagram
- iii) Simple diagram.

b) Let A and B be two fuzzy numbers whose membership functions are given by

$$A(x) = \begin{cases} \frac{x+2}{3} & -2 < x \leq 1 \\ \frac{4-x}{3} & 1 < x \leq 4 \\ 0 & \text{otherwise} \end{cases}$$

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

Find the fuzzy number MAX (A, B).

6



Seat No.	
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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
THEORY OF COMPUTATION**

Day and Date : Tuesday, 22-11-2016
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.**

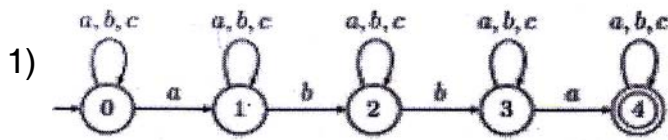
MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14



- Which of the following statements about A are correct for above DFA ?
- The automaton A is a Deterministic Finite Automaton (DFA)
 - $Q \in L(A)$
 - $bacabca \in L(A)$
 - $bbaacbabcac \in L(A)$
- The language accepted by finite automata is
 - context free
 - regular
 - non-regular
 - none of these
 - baa^*c denotes the set
 - $\{b^n a^m c^p | n, m, p \geq 1\}$
 - $\{ba^n c | n \geq 0\}$
 - $\{ba^n c | n \geq 1\}$
 - $\{w | w \text{ is a string of } a, b, c\}$
 - $L = \{00, 01, 10, 11\}^*$ gives string of length
 - 0
 - even
 - both
 - odd
 - 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 intersection of two context free languages is context free
 - The union of two context free languages is context free
 - The complement of a context free language is context free

P.T.O.



- 6) A language is represented by a regular expression $(a)^* (a + ba)$. Which of the following string does not belong to the regular set represented by the above expression ?
- a) aaa b) aba c) ababad d) aa
- 7) Write the regular expression to denote the language L over $\Sigma = \{a, b\}$ such that all the string do not contain the substring "ab"
- a) a^*b^* b) b^*a^* c) $(ab)^*$ d) $(ba)^*$
- 8) 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
- 9) The language $\{a^m b^n c^{m+n} \mid m, n \geq 1\}$ is
- a) Regular b) Context free but not regular
c) Both d) None
- 10) All strings having equal number of a and b can be recognized by
- a) Turing machine b) DFA
c) NDFFA d) All of the above
- 11) PDA is the machine format of
- a) Type 0 language b) Type 1 language
c) Type 2 language d) Type 3 language
- 12) Which is true for mechanical diagram of 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) Turing machine is more powerful than
- a) Finite automata b) Push down automata
c) Both a) and b) d) None of these
- 14) Γ is a finite set of _____, $\Sigma \subseteq \Gamma$.
- a) Tape symbols b) Input tape
c) Set of characters d) None



Seat No.	
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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
THEORY OF COMPUTATION**

Day and Date : Tuesday, 22-11-2016

Marks : 56

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

SECTION – I

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

- 1) Draw DFA for regular expression $(1) 01 (0 + 1)^* 10$.
- 2) Define \wedge NFA with example.
- 3) Compare between NFA and DFA.
- 4) Define Context Free Grammar. Give Context Free Grammar that generates that following Languages :
 $L = \{a^n u \mid u \in \{a, b\}^* \text{ and } |u| = n, n \geq 0\}$.

3. Attempt **any two** : **(2×8=16)**

- 1) Prove that any regular expression can be accepted by finite automata. (Kleen's ther).
- 2) Systematically construct an NFA for the regular expression $a((\epsilon + b))^* (c + d)$.
- 3) Obtain FA accepting the language $(L1 - L2)$.

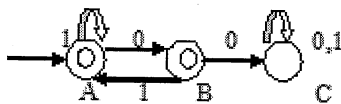


Fig. L1

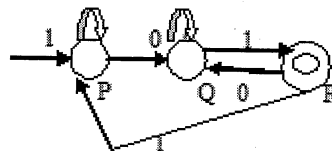


Fig. L2



SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) What is PDA ? Explain with example.
 - 2) State and explain pumping lemma for regular language.
 - 3) Obtain a TM to accept the language containing string of 0's and 1's and ending with 011.
 - 4) Explain briefly the Turing machine Halting problem.
5. Answer **any two** : **(2×8=16)**
- 1) Design a Turing Machine to accept the language $L = \{a^n b^n \mid n \geq 1\}$. Show an ID for the string 'aaabbb' with tape symbols 2.
 - 2) Use the Pumping Lemma to show that $L = \{a^n b^{2^n} \mid n \geq 0\}$ is not regular.
 - 3) Construct a PDA to accept a given language L by empty stack and final state both where $L = \{WCW^R \mid W \in (a, b)^*\}$ with transition and string "abaaCaaba".
-



SLR-EP – 210

Seat No.	
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Set	Q
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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
THEORY OF COMPUTATION**

Day and Date : Tuesday, 22-11-2016
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) 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
- 2) The language $\{a^m b^n c^{m+n} \mid m, n \geq 1\}$ is
 - a) Regular
 - b) Context free but not regular
 - c) Both
 - d) None
- 3) All strings having equal number of a and b can be recognized by
 - a) Turing machine
 - b) DFA
 - c) NDFA
 - d) All of the above
- 4) PDA is the machine format of
 - a) Type 0 language
 - b) Type 1 language
 - c) Type 2 language
 - d) Type 3 language
- 5) Which is true for mechanical diagram of 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
- 6) Turing machine is more powerful than
 - a) Finite automata
 - b) Push down automata
 - c) Both a) and b)
 - d) None of these

P.T.O.



Seat No.	
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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
THEORY OF COMPUTATION**

Day and Date : Tuesday, 22-11-2016

Marks : 56

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

SECTION – I

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

- 1) Draw DFA for regular expression $(1) 01 (0 + 1)^* 10$.
- 2) Define \wedge NFA with example.
- 3) Compare between NFA and DFA.
- 4) Define Context Free Grammar. Give Context Free Grammar that generates that following Languages :
 $L = \{a^n u \mid u \in \{a, b\}^* \text{ and } |u| = n, n \geq 0\}$.

3. Attempt **any two** : **(2×8=16)**

- 1) Prove that any regular expression can be accepted by finite automata. (Kleen's ther).
- 2) Systematically construct an NFA for the regular expression $(a((\epsilon + b))^* (c + d))$.
- 3) Obtain FA accepting the language $(L1 - L2)$.

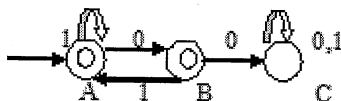


Fig. L1

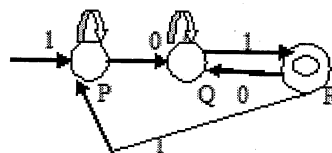


Fig. L2



SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) What is PDA ? Explain with example.
 - 2) State and explain pumping lemma for regular language.
 - 3) Obtain a TM to accept the language containing string of 0's and 1's and ending with 011.
 - 4) Explain briefly the Turing machine Halting problem.
5. Answer **any two** : **(2×8=16)**
- 1) Design a Turing Machine to accept the language $L = \{a^n b^n \mid n \geq 1\}$. Show an ID for the string 'aaabbb' with tape symbols 2.
 - 2) Use the Pumping Lemma to show that $L = \{a^n b^{2^n} \mid n \geq 0\}$ is not regular.
 - 3) Construct a PDA to accept a given language L by empty stack and final state both where $L = \{WCW^R \mid W \in (a, b)^*\}$ with transition and string "abaaCaaba".
-



SLR-EP – 210

Seat No.	
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Set	R
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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
THEORY OF COMPUTATION**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : 14
- 1) Which of the following statements is true ?
 - a) If a language is context free it can always be accepted by a deterministic push-down automaton
 - b) The intersection of two context free languages is context free
 - c) The union of two context free languages is context free
 - d) The complement of a context free language is context free
 - 2) A language is represented by a regular expression $(a)^*(a + ba)$. Which of the following string does not belong to the regular set represented by the above expression ?
 - a) aaa
 - b) aba
 - c) ababad
 - d) aa
 - 3) Write the regular expression to denote the language L over $\Sigma = \{a, b\}$ such that all the string do not contain the substring "ab"
 - a) a^*b^*
 - b) b^*a^*
 - c) $(ab)^*$
 - d) $(ba)^*$
 - 4) 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
 - 5) The language $\{a^m b^n c^{m+n} \mid m, n \geq 1\}$ is
 - a) Regular
 - b) Context free but not regular
 - c) Both
 - d) None

P.T.O.



Seat No.	
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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
THEORY OF COMPUTATION**

Day and Date : Tuesday, 22-11-2016

Marks : 56

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

SECTION – I

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

- 1) Draw DFA for regular expression $(1) 01 (0 + 1)^* 10$.
- 2) Define \wedge NFA with example.
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- 4) Define Context Free Grammar. Give Context Free Grammar that generates that following Languages :
 $L = \{a^n u \mid u \in \{a, b\}^* \text{ and } |u| = n, n \geq 0\}$.

3. Attempt **any two** : **(2×8=16)**

- 1) Prove that any regular expression can be accepted by finite automata. (Kleen's ther).
- 2) Systematically construct an NFA for the regular expression $a((\epsilon + b))^* (c + d)$.
- 3) Obtain FA accepting the language $(L1 - L2)$.

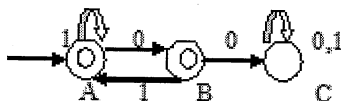


Fig. L1

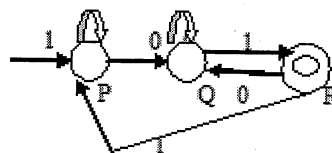


Fig. L2



SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) What is PDA ? Explain with example.
 - 2) State and explain pumping lemma for regular language.
 - 3) Obtain a TM to accept the language containing string of 0's and 1's and ending with 011.
 - 4) Explain briefly the Turing machine Halting problem.
5. Answer **any two** : **(2×8=16)**
- 1) Design a Turing Machine to accept the language $L = \{a^n b^n \mid n \geq 1\}$. Show an ID for the string 'aaabbb' with tape symbols 2.
 - 2) Use the Pumping Lemma to show that $L = \{a^n b^{2^n} \mid n \geq 0\}$ is not regular.
 - 3) Construct a PDA to accept a given language L by empty stack and final state both where $L = \{WCW^R \mid W \in (a, b)^*\}$ with transition and string "abaaCaaba".
-



SLR-EP – 210

Seat No.	
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Set	S
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S.E. (IT) (Part – II) (CGPA) Examination, 2016
THEORY OF COMPUTATION

Day and Date : Tuesday, 22-11-2016

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

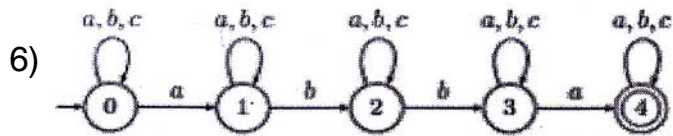
Marks : 14

1. Choose the correct answer :

14

- 1) All strings having equal number of a and b can be recognized by
 - a) Turing machine
 - b) DFA
 - c) NDFA
 - d) All of the above
- 2) PDA is the machine format of
 - a) Type 0 language
 - b) Type 1 language
 - c) Type 2 language
 - d) Type 3 language
- 3) Which is true for mechanical diagram of 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
- 4) Turing machine is more powerful than
 - a) Finite automata
 - b) Push down automata
 - c) Both a) and b)
 - d) None of these
- 5) Γ is a finite set of _____, $\Sigma \subseteq \Gamma$.
 - a) Tape symbols
 - b) Input tape
 - c) Set of characters
 - d) None

P.T.O.



Which of the following statements about A are correct for above DFA ?

- a) The automaton A is a Deterministic Finite Automaton (DFA)
 b) $Q \in L(A)$
 c) $bacabca \in L(A)$
 d) $bbaacbabcac \in L(A)$
- 7) The language accepted by finite automata is
 a) context free b) regular c) non-regular d) none of these
- 8) baa^*c denotes the set
 a) $\{b^n a^m c^p \mid n, m, p \geq 1\}$ b) $\{ba^n c \mid n \geq 0\}$
 c) $\{ba^n c \mid n \geq 1\}$ d) $\{w \mid w \text{ is a string of } a, b, c\}$
- 9) $L = \{00, 01, 10, 11\}^*$ gives string of length
 a) 0 b) even c) both d) odd
- 10) Which of the following statements is true ?
 a) If a language is context free it can always be accepted by a deterministic push-down automaton
 b) The intersection of two context free languages is context free
 c) The union of two context free languages is context free
 d) The complement of a context free language is context free
- 11) A language is represented by a regular expression $(a)^* (a + ba)$. Which of the following string does not belong to the regular set represented by the above expression ?
 a) aaa b) aba c) ababad d) aa
- 12) Write the regular expression to denote the language L over $\Sigma = \{a, b\}$ such that all the string do not contain the substring "ab"
 a) a^*b^* b) b^*a^* c) $(ab)^*$ d) $(ba)^*$
- 13) 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
- 14) The language $\{a^m b^n c^{m+n} \mid m, n \geq 1\}$ is
 a) Regular b) Context free but not regular
 c) Both d) None



Seat No.	
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**S.E. (IT) (Part – II) (CGPA) Examination, 2016
THEORY OF COMPUTATION**

Day and Date : Tuesday, 22-11-2016

Marks : 56

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

SECTION – I

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

- 1) Draw DFA for regular expression $(1) 01 (0 + 1)^* 10$.
- 2) Define \wedge NFA with example.
- 3) Compare between NFA and DFA.
- 4) Define Context Free Grammar. Give Context Free Grammar that generates that following Languages :
 $L = \{a^n u \mid u \in \{a, b\}^* \text{ and } |u| = n, n \geq 0\}$.

3. Attempt **any two** : **(2×8=16)**

- 1) Prove that any regular expression can be accepted by finite automata. (Kleen's ther).
- 2) Systematically construct an NFA for the regular expression $(a((\epsilon + b))^* (c + d))$.
- 3) Obtain FA accepting the language $(L1 - L2)$.

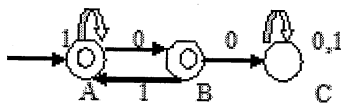


Fig. L1

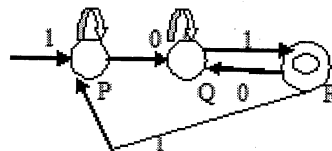


Fig. L2



SECTION – II

4. Solve **any three** : **(3×4=12)**
- 1) What is PDA ? Explain with example.
 - 2) State and explain pumping lemma for regular language.
 - 3) Obtain a TM to accept the language containing string of 0's and 1's and ending with 011.
 - 4) Explain briefly the Turing machine Halting problem.
5. Answer **any two** : **(2×8=16)**
- 1) Design a Turing Machine to accept the language $L = \{a^n b^n \mid n \geq 1\}$. Show an ID for the string 'aaabbb' with tape symbols 2.
 - 2) Use the Pumping Lemma to show that $L = \{a^n b^{2^n} \mid n \geq 0\}$ is not regular.
 - 3) Construct a PDA to accept a given language L by empty stack and final state both where $L = \{WCW^R \mid W \in (a, b)^*\}$ with transition and string "abaaCaaba".
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SLR-EP – 211

Seat No.	
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Set	P
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**S.E. (Information Technology) (Part – II) (CGPA) Examination, 2016
MICROPROCESSORS**

Day and Date : Wednesday, 23-11-2016
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) One of the following addressing modes is not possible in 8085.
 - a) Indexed addressing
 - b) Indirect addressing
 - c) Direct addressing
 - d) Indirect register address
- 2) Instruction that sets the carry flag
 - a) CY set
 - b) STR
 - c) STC
 - d) Set CY
- 3) How many T-states are required for LHLD address instruction ?
 - a) 16
 - b) 14
 - c) 18
 - d) 10
- 4) The instruction which can load either 16 bit data or 16 bit address in to the register pair is _____
 - a) LXI Rp, 16 bit data
 - b) LDA 9000H
 - c) STA 4500H
 - d) LDAX Rp
- 5) If the 8085 adds 87H and 79H, specify the status of the S, Z and CY flag ?
 - a) S = 0, Z = 1, CY = 1
 - b) S = 1, Z = 0, CY = 1
 - c) S = 0, Z = 0, CY = 1
 - d) S = 0, Z = 0, CY = 0
- 6) _____ interrupt is a Asynchronous event.
 - a) Hardware
 - b) Software
 - c) Enable
 - d) Disable
- 7) _____ interrupt has Lower Priority.
 - a) Maskable
 - b) Non-Maskable
 - c) RST
 - d) None of these

P.T.O.



Seat No.	
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**S.E. (Information Technology) (Part – II) (CGPA) Examination, 2016
MICROPROCESSORS**

Day and Date : Wednesday, 23-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(4×3=12)**
- a) How are address and data lines multiplexed in 8085 ?
 - b) Explain the different addressing modes 8085 MP with suitable example.
 - c) Describe the execution of PUSH, POP, LDAX B, RAL instructions of 8085 MP.
 - d) What are the different machine cycles in 8085 ? Draw the timing diagram of the instruction STA address.
 - e) Explain 8085 HOLD. State with neat diagram.
3. Attempt **any two** : **(8×2=16)**
- a) Mention features of 8085 MP, with neat diagram explain internal architecture of 8085.
 - b) With block diagram, explain I/O interfacing in memory mapped I/O.
 - c) Explain various branch instructions with examples.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
- a) Draw and explain RIM instruction bit format for serial communication.
 - b) Explain I/O modes control word format of 8255 programmable peripheral interface.



- c) Write a set of instructions to perform the following :
- 1) Initialise port A as input
 - 2) Initialise port B as output
 - 3) Initialise port C upper as output and port C lower as input.
 - 4) Use Mode 0 for group A and Mode 0 for group B.
- d) Describe Mode Word Format – Asynchronous mode of 8251 control word.
- e) List the major features of the 80286 processor.

5. Attempt **any two** :

(8×2=16)

- a) Draw and explain interrupt structure of 8085.
 - b) Explain features and functional block diagram of DMA Controller 8257.
 - c) Draw the logical block diagram of the 8086 processor and explain each part in brief.
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SLR-EP – 211

Seat No.	
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Set	Q
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**S.E. (Information Technology) (Part – II) (CGPA) Examination, 2016
MICROPROCESSORS**

Day and Date : Wednesday, 23-11-2016
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 of the following are compulsory Initialization Command Word ?
 - a) ICW1 and ICW3
 - b) ICW2 and ICW3
 - c) OCW3
 - d) ICW1 and ICW2
- 2) In BSR mode, only port C can be used to
 - a) set individual ports
 - b) reset individual ports
 - c) set and reset individual ports
 - d) programmable I/O ports
- 3) In 8257 (DMA), each of the four channels has
 - a) a pair of two 8-bit registers
 - b) a pair of two 16-bit registers
 - c) One 16-bit register
 - d) one 8-bit register
- 4) The maximum number of I/O devices which can be interfaced in memory mapped I/O technique are
 - a) 256
 - b) 128
 - c) 65536
 - d) 32768
- 5) In 8251A, the pin that controls the rate at which the character is to be transmitted is
 - a) TxC(active low)
 - b) TxC(active high)
 - c) TxD(active low)
 - d) RxC(active low)
- 6) 8086 as _____ of segment registers.
 - a) 3
 - b) 5
 - c) 4
 - d) 2

P.T.O.



- 7) Which of the following is true for segment base ?
- a) It is a starting address of segment
 - b) It is any valid 8086 address
 - c) It is stored in any register
 - d) All of the above
- 8) One of the following addressing modes is not possible in 8085.
- a) Indexed addressing
 - b) Indirect addressing
 - c) Direct addressing
 - d) Indirect register address
- 9) Instruction that sets the carry flag
- a) CY set
 - b) STR
 - c) STC
 - d) Set CY
- 10) How many T-states are required for LHLD address instruction ?
- a) 16
 - b) 14
 - c) 18
 - d) 10
- 11) The instruction which can load either 16 bit data or 16 bit address in to the register pair is _____
- a) LXI Rp, 16 bit data
 - b) LDA 9000H
 - c) STA 4500H
 - d) LDAX Rp
- 12) If the 8085 adds 87H and 79H, specify the status of the S, Z and CY flag ?
- a) S = 0, Z = 1, CY = 1
 - b) S = 1, Z = 0, CY = 1
 - c) S = 0, Z = 0, CY = 1
 - d) S = 0, Z = 0, CY = 0
- 13) _____ interrupt is a Asynchronous event.
- a) Hardware
 - b) Software
 - c) Enable
 - d) Disable
- 14) _____ interrupt has Lower Priority.
- a) Maskable
 - b) Non-Maskable
 - c) RST
 - d) None of these
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Seat No.	
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**S.E. (Information Technology) (Part – II) (CGPA) Examination, 2016
MICROPROCESSORS**

Day and Date : Wednesday, 23-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(4×3=12)**
- a) How are address and data lines multiplexed in 8085 ?
 - b) Explain the different addressing modes 8085 MP with suitable example.
 - c) Describe the execution of PUSH, POP, LDAX B, RAL instructions of 8085 MP.
 - d) What are the different machine cycles in 8085 ? Draw the timing diagram of the instruction STA address.
 - e) Explain 8085 HOLD. State with neat diagram.
3. Attempt **any two** : **(8×2=16)**
- a) Mention features of 8085 MP, with neat diagram explain internal architecture of 8085.
 - b) With block diagram, explain I/O interfacing in memory mapped I/O.
 - c) Explain various branch instructions with examples.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
- a) Draw and explain RIM instruction bit format for serial communication.
 - b) Explain I/O modes control word format of 8255 programmable peripheral interface.



- c) Write a set of instructions to perform the following :
- 1) Initialise port A as input
 - 2) Initialise port B as output
 - 3) Initialise port C upper as output and port C lower as input.
 - 4) Use Mode 0 for group A and Mode 0 for group B.
- d) Describe Mode Word Format – Asynchronous mode of 8251 control word.
- e) List the major features of the 80286 processor.

5. Attempt **any two** :

(8×2=16)

- a) Draw and explain interrupt structure of 8085.
 - b) Explain features and functional block diagram of DMA Controller 8257.
 - c) Draw the logical block diagram of the 8086 processor and explain each part in brief.
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SLR-EP – 211

Seat No.	
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Set	R
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**S.E. (Information Technology) (Part – II) (CGPA) Examination, 2016
MICROPROCESSORS**

Day and Date : Wednesday, 23-11-2016
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) If the 8085 adds 87H and 79H, specify the status of the S, Z and CY flag ?

- a) S = 0, Z = 1, CY = 1 b) S = 1, Z = 0, CY = 1
c) S = 0, Z = 0, CY = 1 d) S = 0, Z = 0, CY = 0

2) _____ interrupt is a Asynchronous event.

- a) Hardware b) Software c) Enable d) Disable

3) _____ interrupt has Lower Priority.

- a) Maskable b) Non-Maskable
c) RST d) None of these

4) Which of the following are compulsory Initialization Command Word ?

- a) ICW1 and ICW3 b) ICW2 and ICW3
c) OCW3 d) ICW1 and ICW2

5) In BSR mode, only port C can be used to

- a) set individual ports b) reset individual ports
c) set and reset individual ports d) programmable I/O ports

6) In 8257 (DMA), each of the four channels has

- a) a pair of two 8-bit registers b) a pair of two 16-bit registers
c) One 16-bit register d) one 8-bit register

7) The maximum number of I/O devices which can be interfaced in memory mapped I/O technique are

- a) 256 b) 128 c) 65536 d) 32768

P.T.O.



- 8) In 8251A, the pin that controls the rate at which the character is to be transmitted is
- a) TxC(active low)
 - b) TxC(active high)
 - c) TxD(active low)
 - d) RxC(active low)
- 9) 8086 as _____ of segment registers.
- a) 3
 - b) 5
 - c) 4
 - d) 2
- 10) Which of the following is true for segment base ?
- a) It is a starting address of segment
 - b) It is any valid 8086 address
 - c) It is stored in any register
 - d) All of the above
- 11) One of the following addressing modes is not possible in 8085.
- a) Indexed addressing
 - b) Indirect addressing
 - c) Direct addressing
 - d) Indirect register address
- 12) Instruction that sets the carry flag
- a) CY set
 - b) STR
 - c) STC
 - d) Set CY
- 13) How many T-states are required for LHLD address instruction ?
- a) 16
 - b) 14
 - c) 18
 - d) 10
- 14) The instruction which can load either 16 bit data or 16 bit address in to the register pair is _____
- a) LXI Rp, 16 bit data
 - b) LDA 9000H
 - c) STA 4500H
 - d) LDAX Rp
-



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**S.E. (Information Technology) (Part – II) (CGPA) Examination, 2016
MICROPROCESSORS**

Day and Date : Wednesday, 23-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(4×3=12)**
- a) How are address and data lines multiplexed in 8085 ?
 - b) Explain the different addressing modes 8085 MP with suitable example.
 - c) Describe the execution of PUSH, POP, LDAX B, RAL instructions of 8085 MP.
 - d) What are the different machine cycles in 8085 ? Draw the timing diagram of the instruction STA address.
 - e) Explain 8085 HOLD. State with neat diagram.
3. Attempt **any two** : **(8×2=16)**
- a) Mention features of 8085 MP, with neat diagram explain internal architecture of 8085.
 - b) With block diagram, explain I/O interfacing in memory mapped I/O.
 - c) Explain various branch instructions with examples.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
- a) Draw and explain RIM instruction bit format for serial communication.
 - b) Explain I/O modes control word format of 8255 programmable peripheral interface.



- c) Write a set of instructions to perform the following :
- 1) Initialise port A as input
 - 2) Initialise port B as output
 - 3) Initialise port C upper as output and port C lower as input.
 - 4) Use Mode 0 for group A and Mode 0 for group B.
- d) Describe Mode Word Format – Asynchronous mode of 8251 control word.
- e) List the major features of the 80286 processor.

5. Attempt **any two** :

(8×2=16)

- a) Draw and explain interrupt structure of 8085.
 - b) Explain features and functional block diagram of DMA Controller 8257.
 - c) Draw the logical block diagram of the 8086 processor and explain each part in brief.
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Set	S
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**S.E. (Information Technology) (Part – II) (CGPA) Examination, 2016
MICROPROCESSORS**

Day and Date : Wednesday, 23-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

(1×14=14)

- 1) In 8257 (DMA), each of the four channels has
 - a) a pair of two 8-bit registers
 - b) a pair of two 16-bit registers
 - c) One 16-bit register
 - d) one 8-bit register
- 2) The maximum number of I/O devices which can be interfaced in memory mapped I/O technique are
 - a) 256
 - b) 128
 - c) 65536
 - d) 32768
- 3) In 8251A, the pin that controls the rate at which the character is to be transmitted is
 - a) TxC(active low)
 - b) TxC(active high)
 - c) TxD(active low)
 - d) RxC(active low)
- 4) 8086 as _____ of segment registers.
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 - c) 4
 - d) 2
- 5) Which of the following is true for segment base ?
 - a) It is a starting address of segment
 - b) It is any valid 8086 address
 - c) It is stored in any register
 - d) All of the above

P.T.O.



- 6) One of the following addressing modes is not possible in 8085.
- a) Indexed addressing
 - b) Indirect addressing
 - c) Direct addressing
 - d) Indirect register address
- 7) Instruction that sets the carry flag
- a) CY set
 - b) STR
 - c) STC
 - d) Set CY
- 8) How many T-states are required for LHLD address instruction ?
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 - c) STA 4500H
 - d) LDAX Rp
- 10) If the 8085 adds 87H and 79H, specify the status of the S, Z and CY flag ?
- a) S = 0, Z = 1, CY = 1
 - b) S = 1, Z = 0, CY = 1
 - c) S = 0, Z = 0, CY = 1
 - d) S = 0, Z = 0, CY = 0
- 11) _____ interrupt is a Asynchronous event.
- a) Hardware
 - b) Software
 - c) Enable
 - d) Disable
- 12) _____ interrupt has Lower Priority.
- a) Maskable
 - b) Non-Maskable
 - c) RST
 - d) None of these
- 13) Which of the following are compulsory Initialization Command Word ?
- a) ICW1 and ICW3
 - b) ICW2 and ICW3
 - c) OCW3
 - d) ICW1 and ICW2
- 14) In BSR mode, only port C can be used to
- a) set individual ports
 - b) reset individual ports
 - c) set and reset individual ports
 - d) programmable I/O ports
-



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**S.E. (Information Technology) (Part – II) (CGPA) Examination, 2016
MICROPROCESSORS**

Day and Date : Wednesday, 23-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(4×3=12)**
- a) How are address and data lines multiplexed in 8085 ?
 - b) Explain the different addressing modes 8085 MP with suitable example.
 - c) Describe the execution of PUSH, POP, LDAX B, RAL instructions of 8085 MP.
 - d) What are the different machine cycles in 8085 ? Draw the timing diagram of the instruction STA address.
 - e) Explain 8085 HOLD. State with neat diagram.
3. Attempt **any two** : **(8×2=16)**
- a) Mention features of 8085 MP, with neat diagram explain internal architecture of 8085.
 - b) With block diagram, explain I/O interfacing in memory mapped I/O.
 - c) Explain various branch instructions with examples.

SECTION – II

4. Attempt **any three** : **(4×3=12)**
- a) Draw and explain RIM instruction bit format for serial communication.
 - b) Explain I/O modes control word format of 8255 programmable peripheral interface.



- c) Write a set of instructions to perform the following :
- 1) Initialise port A as input
 - 2) Initialise port B as output
 - 3) Initialise port C upper as output and port C lower as input.
 - 4) Use Mode 0 for group A and Mode 0 for group B.
- d) Describe Mode Word Format – Asynchronous mode of 8251 control word.
- e) List the major features of the 80286 processor.

5. Attempt **any two** :

(8×2=16)

- a) Draw and explain interrupt structure of 8085.
 - b) Explain features and functional block diagram of DMA Controller 8257.
 - c) Draw the logical block diagram of the 8086 processor and explain each part in brief.
-



- 6) For an undirected graph G with n vertices and e edges, the sum of the degrees of each vertex is
- A) Ne B) $2n$ C) $2e$ D) e^n
- 7) A full binary tree with $2n + 1$ nodes contain
- A) n leaf nodes B) n non-leaf nodes
C) $n - 1$ leaf nodes D) $n - 1$ non-leaf nodes
- 8) If a node in a BST has two children, then its inorder predecessor has
- A) no left child B) no right child
C) two children D) no child
- 9) A BST is traversed in the following order recursively : Right, root, left
The output sequence will be in
- A) Ascending order B) Descending order
C) Bitomic sequence D) No specific order
- 10) A binary tree of depth “ d ” is an almost complete binary tree if
- A) Each leaf in the tree is either at level “ d ” or at level “ $d - 1$ ”
B) For any node “ n ” in the tree with a right descendent at level “ d ” all the left descendents of “ n ” that are leaves, are also at level “ d ”
C) Both A) and B)
D) None of the above
- 11) An adjacency matrix representation of a graph cannot contain information of
- A) Nodes B) Edges
C) Direction of edges D) Parallel edges
- 12) Which of the following is useful in traversing a given graph by breadth first search ?
- A) Stack B) Set C) List D) Queue
- 13) The number of binary trees with 3 nodes which when traversed in post order gives the sequence A, B, C is
- A) 3 B) 9 C) 7 D) 5
- 14) A vertex of degree one is called
- A) padent B) isolated vertex
C) null vertex D) colored vertex
-



Seat No.	
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**S.E. (I.T.) (Part – II) (CGPA) Examination, 2016
DATA STRUCTURES**

Day and Date : Thursday, 24-11-2016

Marks : 56

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

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

SECTION – I

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

- 1) Define and explain stack operations diagrammatically with the help of an example.
- 2) Write a note on circular queue with example.
- 3) Write a c function to insert a node at beginning of the node.
- 4) Evaluate $(A + B) * (C - D)$ infix to postfix with stack values.
- 5) Write a note on doubly linked list.
- 6) Write a c function insert a node in Binary search tree.

3. Attempt **any one** : **(8×1=8)**

- 1) Write a c program for addition of two polynomials.
- 2) What is binary tree ? Explain types of binary tree ? With the help of example describe the process of various traversal of binary tree.



SECTION – II

4. Attempt **any five** : **(5×4=20)**

- 1) What is multiway tree ? What are features of multiway trees ? Give any two drawbacks of multiway tree.
- 2) Draw a B-tree of order 3 for the following key values ;
1, 5, 6, 2, 8, 11, 13, 18, 20, 7, 9.
- 3) What is Height balanced tree ? Explain single and double rotation of AVL tree.
- 4) What is graph ? Explain representation of graph with example.
- 5) Explain topological sorting with example.
- 6) What are the drawbacks of B tree ? How B + trees are unique features than B tree.

5. Attempt **any one** : **(8×1=8)**

- 1) Define AVL tree ? Explain different rotations in AVL trees. Show stepwise how AVL tree is created for following keys.
BOLD, FAST, INTEND, NARRATOR, LOVELY, POLITE, JEWEL, ABLE,
HARVEST, DEBIT.

OR

- 1) Write a c function for BFS and DFS traversal of graph.
-



Seat No.	
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Set	Q
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S.E. (I.T.) (Part – II) (CGPA) Examination, 2016
DATA STRUCTURES

Day and Date : Thursday, 24-11-2016
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) Figures to the **right** indicate **full** marks.
 - 4) **Assume data if necessary.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **14**
- 1) If a node in a BST has two children, then its inorder predecessor has
 - A) no left child
 - B) no right child
 - C) two children
 - D) no child
 - 2) A BST is traversed in the following order recursively : Right, root, left
The output sequence will be in
 - A) Ascending order
 - B) Descending order
 - C) Bitomic sequence
 - D) No specific order
 - 3) A binary tree of depth "d" is an almost complete binary tree if
 - A) Each leaf in the tree is either at level "d" or at level "d – 1"
 - B) For any node "n" in the tree with a right descendent at level "d" all the left descendents of "n" that are leaves, are also at level "d"
 - C) Both A) and B)
 - D) None of the above
 - 4) An adjacency matrix representation of a graph cannot contain information of
 - A) Nodes
 - B) Edges
 - C) Direction of edges
 - D) Parallel edges



- 5) Which of the following is useful in traversing a given graph by breadth first search ?
A) Stack B) Set C) List D) Queue
- 6) The number of binary trees with 3 nodes which when traversed in post order gives the sequence A, B, C is
A) 3 B) 9 C) 7 D) 5
- 7) A vertex of degree one is called
A) parent B) isolated vertex
C) null vertex D) colored vertex
- 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) One of the major drawback of B-Tree is the difficulty of traversing the keys sequentially.
A) True B) False
- 10) Breadth First Search of Graph, which of the following data structure is used ?
A) Stack B) Queue
C) Linked List D) None of the above
- 11) How many nodes in a tree have no ancestors ?
A) 0 B) 1 C) 2 D) n
- 12) In binary search, average number of comparison required for searching an element in a list if n numbers is
A) $\log_2 n$ B) $n/2$ C) n D) $n - 1$
- 13) For an undirected graph G with n vertices and e edges, the sum of the degrees of each vertex is
A) Ne B) 2n C) 2e D) e^n
- 14) A full binary tree with $2n + 1$ nodes contain
A) n leaf nodes B) n non-leaf nodes
C) $n - 1$ leaf nodes D) $n - 1$ non-leaf nodes
-



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**S.E. (I.T.) (Part – II) (CGPA) Examination, 2016
DATA STRUCTURES**

Day and Date : Thursday, 24-11-2016

Marks : 56

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

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

SECTION – I

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

- 1) Define and explain stack operations diagrammatically with the help of an example.
- 2) Write a note on circular queue with example.
- 3) Write a c function to insert a node at beginning of the node.
- 4) Evaluate $(A + B) * (C - D)$ infix to postfix with stack values.
- 5) Write a note on doubly linked list.
- 6) Write a c function insert a node in Binary search tree.

3. Attempt **any one** : **(8×1=8)**

- 1) Write a c program for addition of two polynomials.
- 2) What is binary tree ? Explain types of binary tree ? With the help of example describe the process of various traversal of binary tree.



SECTION – II

4. Attempt **any five** : **(5×4=20)**

- 1) What is multiway tree ? What are features of multiway trees ? Give any two drawbacks of multiway tree.
- 2) Draw a B-tree of order 3 for the following key values ;
1, 5, 6, 2, 8, 11, 13, 18, 20, 7, 9.
- 3) What is Height balanced tree ? Explain single and double rotation of AVL tree.
- 4) What is graph ? Explain representation of graph with example.
- 5) Explain topological sorting with example.
- 6) What are the drawbacks of B tree ? How B + trees are unique features than B tree.

5. Attempt **any one** : **(8×1=8)**

- 1) Define AVL tree ? Explain different rotations in AVL trees. Show stepwise how AVL tree is created for following keys.
BOLD, FAST, INTEND, NARRATOR, LOVELY, POLITE, JEWEL, ABLE,
HARVEST, DEBIT.

OR

- 1) Write a c function for BFS and DFS traversal of graph.
-



Seat No.	
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S.E. (I.T.) (Part – II) (CGPA) Examination, 2016
DATA STRUCTURES

Day and Date : Thursday, 24-11-2016
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) Figures to the **right** indicate **full** marks.
4) **Assume data if necessary.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer : **14**
- 1) In binary search, average number of comparison required for searching an element in a list if n numbers is
A) $\log_2 n$ B) $n/2$ C) n D) $n - 1$
 - 2) For an undirected graph G with n vertices and e edges, the sum of the degrees of each vertex is
A) Ne B) $2n$ C) $2e$ D) e^n
 - 3) A full binary tree with $2n + 1$ nodes contain
A) n leaf nodes B) n non-leaf nodes
C) $n - 1$ leaf nodes D) $n - 1$ non-leaf nodes
 - 4) If a node in a BST has two children, then its inorder predecessor has
A) no left child B) no right child
C) two children D) no child
 - 5) A BST is traversed in the following order recursively : Right, root, left
The output sequence will be in
A) Ascending order B) Descending order
C) Bitomic sequence D) No specific order



- 6) A binary tree of depth “d” is an almost complete binary tree if
- A) Each leaf in the tree is either at level “d” or at level “d – 1”
 - B) For any node “n” in the tree with a right descendent at level “d” all the left descendents of “n” that are leaves, are also at level “d”
 - C) Both A) and B)
 - D) None of the above
- 7) An adjacency matrix representation of a graph cannot contain information of
- A) Nodes
 - B) Edges
 - C) Direction of edges
 - D) Parallel edges
- 8) Which of the following is useful in traversing a given graph by breadth first search ?
- A) Stack
 - B) Set
 - C) List
 - D) Queue
- 9) The number of binary trees with 3 nodes which when traversed in post order gives the sequence A, B, C is
- A) 3
 - B) 9
 - C) 7
 - D) 5
- 10) A vertex of degree one is called
- A) parent
 - B) isolated vertex
 - C) null vertex
 - D) colored vertex
- 11) 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
- 12) One of the major drawback of B-Tree is the difficulty of traversing the keys sequentially.
- A) True
 - B) False
- 13) Breadth First Search of Graph, which of the following data structure is used ?
- A) Stack
 - B) Queue
 - C) Linked List
 - D) None of the above
- 14) How many nodes in a tree have no ancestors ?
- A) 0
 - B) 1
 - C) 2
 - D) n
-



Seat No.	
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**S.E. (I.T.) (Part – II) (CGPA) Examination, 2016
DATA STRUCTURES**

Day and Date : Thursday, 24-11-2016

Marks : 56

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

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

SECTION – I

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

- 1) Define and explain stack operations diagrammatically with the help of an example.
- 2) Write a note on circular queue with example.
- 3) Write a c function to insert a node at beginning of the node.
- 4) Evaluate $(A + B) * (C - D)$ infix to postfix with stack values.
- 5) Write a note on doubly linked list.
- 6) Write a c function insert a node in Binary search tree.

3. Attempt **any one** : **(8×1=8)**

- 1) Write a c program for addition of two polynomials.
- 2) What is binary tree ? Explain types of binary tree ? With the help of example describe the process of various traversal of binary tree.



SECTION – II

4. Attempt **any five** : **(5×4=20)**

- 1) What is multiway tree ? What are features of multiway trees ? Give any two drawbacks of multiway tree.
- 2) Draw a B-tree of order 3 for the following key values ;
1, 5, 6, 2, 8, 11, 13, 18, 20, 7, 9.
- 3) What is Height balanced tree ? Explain single and double rotation of AVL tree.
- 4) What is graph ? Explain representation of graph with example.
- 5) Explain topological sorting with example.
- 6) What are the drawbacks of B tree ? How B + trees are unique features than B tree.

5. Attempt **any one** : **(8×1=8)**

- 1) Define AVL tree ? Explain different rotations in AVL trees. Show stepwise how AVL tree is created for following keys.
BOLD, FAST, INTEND, NARRATOR, LOVELY, POLITE, JEWEL, ABLE,
HARVEST, DEBIT.

OR

- 1) Write a c function for BFS and DFS traversal of graph.
-



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S.E. (I.T.) (Part – II) (CGPA) Examination, 2016
DATA STRUCTURES

Day and Date : Thursday, 24-11-2016

Total Marks : 70

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

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) A binary tree of depth "d" is an almost complete binary tree if
 - A) Each leaf in the tree is either at level "d" or at level "d – 1"
 - B) For any node "n" in the tree with a right descendent at level "d" all the left descendents of "n" that are leaves, are also at level "d"
 - C) Both A) and B)
 - D) None of the above
- 2) An adjacency matrix representation of a graph cannot contain information of
 - A) Nodes
 - B) Edges
 - C) Direction of edges
 - D) Parallel edges
- 3) Which of the following is useful in traversing a given graph by breadth first search ?
 - A) Stack
 - B) Set
 - C) List
 - D) Queue
- 4) The number of binary trees with 3 nodes which when traversed in post order gives the sequence A, B, C is
 - A) 3
 - B) 9
 - C) 7
 - D) 5

P.T.O.



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**S.E. (I.T.) (Part – II) (CGPA) Examination, 2016
DATA STRUCTURES**

Day and Date : Thursday, 24-11-2016

Marks : 56

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

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

SECTION – I

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

- 1) Define and explain stack operations diagrammatically with the help of an example.
- 2) Write a note on circular queue with example.
- 3) Write a c function to insert a node at beginning of the node.
- 4) Evaluate $(A + B) * (C - D)$ infix to postfix with stack values.
- 5) Write a note on doubly linked list.
- 6) Write a c function insert a node in Binary search tree.

3. Attempt **any one** : **(8×1=8)**

- 1) Write a c program for addition of two polynomials.
- 2) What is binary tree ? Explain types of binary tree ? With the help of example describe the process of various traversal of binary tree.



SECTION – II

4. Attempt **any five** : **(5×4=20)**

- 1) What is multiway tree ? What are features of multiway trees ? Give any two drawbacks of multiway tree.
- 2) Draw a B-tree of order 3 for the following key values ;
1, 5, 6, 2, 8, 11, 13, 18, 20, 7, 9.
- 3) What is Height balanced tree ? Explain single and double rotation of AVL tree.
- 4) What is graph ? Explain representation of graph with example.
- 5) Explain topological sorting with example.
- 6) What are the drawbacks of B tree ? How B + trees are unique features than B tree.

5. Attempt **any one** : **(8×1=8)**

- 1) Define AVL tree ? Explain different rotations in AVL trees. Show stepwise how AVL tree is created for following keys.

BOLD, FAST, INTEND, NARRATOR, LOVELY, POLITE, JEWEL, ABLE,
HARVEST, DEBIT.

OR

- 1) Write a c function for BFS and DFS traversal of graph.
-



SLR-EP – 213

Seat No.	
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**S.E. (Part – II) (Information Technology) (CGPA) Examination, 2016
DATA COMMUNICATION**

Day and Date : Friday, 25-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) The _____ is a circuit switched network while the _____ is a packet switched network.
 - a) Telephone, ATM
 - b) SONET, FDDI
 - c) Satellite, Telephone
 - d) None of these
- 2) In a frame transmission CRC stands for,
 - a) Code Renewable check
 - b) Cyclic Redundancy Code
 - c) Cyclic Redundancy check
 - d) None of these
- 3) In a LAN network every node is defined by,
 - a) Name
 - b) MAC address
 - c) IP address
 - d) None of these
- 4) Ethernet 10 base 2 is an example of _____ network topology.
 - a) Bus
 - b) Ring
 - c) Star
 - d) Mesh
- 5) Network layer is used for,
 - a) Breaking up data in frames for transmission
 - b) Deal with error correction
 - c) Automatic recovery procedure
 - d) Physical Architecture
- 6) IN DLE STX AND DLE ETX the DLE stands for,
 - a) Data Link Escape
 - b) Data Link Enable
 - c) Data Link Energy
 - d) None of these

P.T.O.



- 7) Which of the following is not a function of Data Link Layer ?
- a) Cyclic redundancy check
 - b) Checksum
 - c) Hamming code
 - d) None of these
- 8) A Bit map protocol is also known as
- a) Collision free protocol
 - b) Reservation protocol
 - c) Limited contention protocol
 - d) None
- 9) How many bytes are reserved for data field of IEEE 802.3 std. ?
- a) 32 Bytes
 - b) 1500 Bytes
 - c) 8182 Bytes
 - d) 16 Bytes
- 10) Algorithm in which Route from source to destination is already computed in advanced ?
- a) Adaptive routing algorithm
 - b) Non-Adaptive routing algorithm
 - c) Both a) and b)
 - d) None of above
- 11) Flooding routing algorithm is
- a) Static routing algorithm
 - b) Dynamic routing algorithm
 - c) Both a) and b)
 - d) None of above
- 12) Looping problem is occur in which type of bridge ?
- a) Spanning tree bridge
 - b) Source routing bridge
 - c) Remote bridge
 - d) Transparent bridge
- 13) Find the class of address 123.12.14.87
- a) A
 - b) B
 - c) C
 - d) D
- 14) Host id of class A reserve _____ bits.
- a) 32 bits
 - b) 16 bits
 - c) 8 bits
 - d) 24 bits
-



Seat No.	
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**S.E. (Part – II) (Information Technology) (CGPA) Examination, 2016
DATA COMMUNICATION**

Day and Date : Friday, 25-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any four (each carries 4 marks)** : **16**
- a) List and explain various types of noise.
 - b) Explain Manchester and Differential Manchester encoding techniques.
 - c) Explain 1-bit sliding window protocol.
 - d) Describe connection oriented and connectionless services.
 - e) Using hamming code method, find out the transmitted data for a message of 1010101011.
3. a) Explain Fibre Optic transmission media along with its physical description, characteristics and application. **6**

OR

- b) Explain the various methods used for framing of data with detail explanation of each method.
4. Write a short note on (**each carries 3 marks**) : **6**
- a) List out the various network topologies with a suitable diagram of each.
 - b) List out the 7 layers in OSI model with a suitable diagram.

SECTION – II

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

Set P



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



SLR-EP – 213

Seat No.	
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Set **Q**

**S.E. (Part – II) (Information Technology) (CGPA) Examination, 2016
DATA COMMUNICATION**

Day and Date : Friday, 25-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) A Bit map protocol is also known as
 - a) Collision free protocol
 - b) Reservation protocol
 - c) Limited contention protocol
 - d) None
- 2) How many bytes are reserved for data field of IEEE 802.3 std. ?
 - a) 32 Bytes
 - b) 1500 Bytes
 - c) 8182 Bytes
 - d) 16 Bytes
- 3) Algorithm in which Route from source to destination is already computed in advanced ?
 - a) Adaptive routing algorithm
 - b) Non-Adaptive routing algorithm
 - c) Both a) and b)
 - d) None of above
- 4) Flooding routing algorithm is
 - a) Static routing algorithm
 - b) Dynamic routing algorithm
 - c) Both a) and b)
 - d) None of above
- 5) Looping problem is occur in which type of bridge ?
 - a) Spanning tree bridge
 - b) Source routing bridge
 - c) Remote bridge
 - d) Transparent bridge
- 6) Find the class of address 123.12.14.87
 - a) A
 - b) B
 - c) C
 - d) D
- 7) Host id of class A reserve _____ bits.
 - a) 32 bits
 - b) 16 bits
 - c) 8 bits
 - d) 24 bits

P.T.O.



Seat No.	
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**S.E. (Part – II) (Information Technology) (CGPA) Examination, 2016
DATA COMMUNICATION**

Day and Date : Friday, 25-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any four (each carries 4 marks)** : **16**
- a) List and explain various types of noise.
 - b) Explain Manchester and Differential Manchester encoding techniques.
 - c) Explain 1-bit sliding window protocol.
 - d) Describe connection oriented and connectionless services.
 - e) Using hamming code method, find out the transmitted data for a message of 1010101011.
3. a) Explain Fibre Optic transmission media along with its physical description, characteristics and application. **6**

OR

- b) Explain the various methods used for framing of data with detail explanation of each method.
4. Write a short note on (**each carries 3 marks**) : **6**
- a) List out the various network topologies with a suitable diagram of each.
 - b) List out the 7 layers in OSI model with a suitable diagram.

SECTION – II

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

Set Q



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



SLR-EP – 213

Seat No.	
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Set **R**

**S.E. (Part – II) (Information Technology) (CGPA) Examination, 2016
DATA COMMUNICATION**

Day and Date : Friday, 25-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) Network layer is used for,
 - a) Breaking up data in frames for transmission
 - b) Deal with error correction
 - c) Automatic recovery procedure
 - d) Physical Architecture
- 2) IN DLE STX AND DLE ETX the DLE stands for,
 - a) Data Link Escape
 - b) Data Link Enable
 - c) Data Link Energy
 - d) None of these
- 3) Which of the following is not a function of Data Link Layer ?
 - a) Cyclic redundancy check
 - b) Checksum
 - c) Hamming code
 - d) None of these
- 4) A Bit map protocol is also known as
 - a) Collision free protocol
 - b) Reservation protocol
 - c) Limited contention protocol
 - d) None
- 5) How many bytes are reserved for data field of IEEE 802.3 std. ?
 - a) 32 Bytes
 - b) 1500 Bytes
 - c) 8182 Bytes
 - d) 16 Bytes
- 6) Algorithm in which Route from source to destination is already computed in advanced ?
 - a) Adaptive routing algorithm
 - b) Non-Adaptive routing algorithm
 - c) Both a) and b)
 - d) None of above

P.T.O.



- 7) Flooding routing algorithm is
- a) Static routing algorithm
 - b) Dynamic routing algorithm
 - c) Both a) and b)
 - d) None of above
- 8) Looping problem is occur in which type of bridge ?
- a) Spanning tree bridge
 - b) Source routing bridge
 - c) Remote bridge
 - d) Transparent bridge
- 9) Find the class of address 123.12.14.87
- a) A
 - b) B
 - c) C
 - d) D
- 10) Host id of class A reserve _____ bits.
- a) 32 bits
 - b) 16 bits
 - c) 8 bits
 - d) 24 bits
- 11) The _____ is a circuit switched network while the _____ is a packet switched network.
- a) Telephone, ATM
 - b) SONET, FDDI
 - c) Satellite, Telephone
 - d) None of these
- 12) In a frame transmission CRC stands for,
- a) Code Renewable check
 - b) Cyclic Redundancy Code
 - c) Cyclic Redundancy check
 - d) None of these
- 13) In a LAN network every node is defined by,
- a) Name
 - b) MAC address
 - c) IP address
 - d) None of these
- 14) Ethernet 10 base 2 is an example of _____ network topology.
- a) Bus
 - b) Ring
 - c) Star
 - d) Mesh
- _____



Seat No.	
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**S.E. (Part – II) (Information Technology) (CGPA) Examination, 2016
DATA COMMUNICATION**

Day and Date : Friday, 25-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any four (each carries 4 marks)** : **16**
- a) List and explain various types of noise.
 - b) Explain Manchester and Differential Manchester encoding techniques.
 - c) Explain 1-bit sliding window protocol.
 - d) Describe connection oriented and connectionless services.
 - e) Using hamming code method, find out the transmitted data for a message of 1010101011.
3. a) Explain Fibre Optic transmission media along with its physical description, characteristics and application. **6**

OR

- b) Explain the various methods used for framing of data with detail explanation of each method.
4. Write a short note on (**each carries 3 marks**) : **6**
- a) List out the various network topologies with a suitable diagram of each.
 - b) List out the 7 layers in OSI model with a suitable diagram.

SECTION – II

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

Set R



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



SLR-EP – 213

Seat No.	
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Set **S**

**S.E. (Part – II) (Information Technology) (CGPA) Examination, 2016
DATA COMMUNICATION**

Day and Date : Friday, 25-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) Algorithm in which Route from source to destination is already computed in advanced ?
 - a) Adaptive routing algorithm
 - b) Non-Adaptive routing algorithm
 - c) Both a) and b)
 - d) None of above
- 2) Flooding routing algorithm is
 - a) Static routing algorithm
 - b) Dynamic routing algorithm
 - c) Both a) and b)
 - d) None of above
- 3) Looping problem is occur in which type of bridge ?
 - a) Spanning tree bridge
 - b) Source routing bridge
 - c) Remote bridge
 - d) Transparent bridge
- 4) Find the class of address 123.12.14.87
 - a) A
 - b) B
 - c) C
 - d) D
- 5) Host id of class A reserve _____ bits.
 - a) 32 bits
 - b) 16 bits
 - c) 8 bits
 - d) 24 bits
- 6) The _____ is a circuit switched network while the _____ is a packet switched network.
 - a) Telephone, ATM
 - b) SONET, FDDI
 - c) Satellite, Telephone
 - d) None of these

P.T.O.



- 7) In a frame transmission CRC stands for,
a) Code Renewable check b) Cyclic Redundancy Code
c) Cyclic Redundancy check d) None of these
- 8) In a LAN network every node is defined by,
a) Name b) MAC address c) IP address d) None of these
- 9) Ethernet 10 base 2 is an example of _____ network topology.
a) Bus b) Ring c) Star d) Mesh
- 10) Network layer is used for,
a) Breaking up data in frames for transmission
b) Deal with error correction
c) Automatic recovery procedure
d) Physical Architecture
- 11) IN DLE STX AND DLE ETX the DLE stands for,
a) Data Link Escape b) Data Link Enable
c) Data Link Energy d) None of these
- 12) Which of the following is not a function of Data Link Layer ?
a) Cyclic redundancy check b) Checksum
c) Hamming code d) None of these
- 13) A Bit map protocol is also known as
a) Collision free protocol b) Reservation protocol
c) Limited contention protocol d) None
- 14) How many bytes are reserved for data field of IEEE 802.3 std. ?
a) 32 Bytes b) 1500 Bytes c) 8182 Bytes d) 16 Bytes
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Seat No.	
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**S.E. (Part – II) (Information Technology) (CGPA) Examination, 2016
DATA COMMUNICATION**

Day and Date : Friday, 25-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 56

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any four (each carries 4 marks)** : **16**
- a) List and explain various types of noise.
 - b) Explain Manchester and Differential Manchester encoding techniques.
 - c) Explain 1-bit sliding window protocol.
 - d) Describe connection oriented and connectionless services.
 - e) Using hamming code method, find out the transmitted data for a message of 1010101011.
3. a) Explain Fibre Optic transmission media along with its physical description, characteristics and application. **6**

OR

- b) Explain the various methods used for framing of data with detail explanation of each method.
4. Write a short note on (**each carries 3 marks**) : **6**
- a) List out the various network topologies with a suitable diagram of each.
 - b) List out the 7 layers in OSI model with a suitable diagram.

SECTION – II

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



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



Seat No.	
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Set	P
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**S.E. (I.T.) (Part – II) Examination, 2016
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 16-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct option : 20
- 1) The memory address of the first element of an array is called
 - a) Floor address
 - b) Foundation address
 - c) First address
 - d) Base address
 - 2) The memory address of fifth element of an array can be calculated by the formula
 - a) $LOC(\text{Array}[5]) = \text{Base}(\text{Array}) + w(5 - \text{lower bound})$, where w is the number of words per memory cell for the array
 - b) $LOC(\text{Array}[5]) = \text{Base}(\text{Array}[5]) + (5 - \text{lower bound})$, where w is the number of words per memory cell for the array
 - c) $LOC(\text{Array}[5]) = \text{Base}(\text{Array}[4]) + (5 - \text{upper bound})$, where w is the number of words per memory cell for the array
 - d) None of the above
 - 3) Which of the following data structures are indexed structures ?
 - a) Linear arrays
 - b) Linked lists
 - c) Both of the above
 - d) None of the above
 - 4) Which of the following is not the required condition for binary search algorithm ?
 - a) The list must be sorted
 - b) There should be the direct access to the middle element in any sublist
 - c) There must be mechanism to delete and/or insert elements in list
 - d) None of the above
 - 5) Which of the following is not a limitation of binary search algorithm ?
 - a) Must use a sorted array
 - b) Requirement of sorted array is expensive when a lot of insertion and deletions are needed
 - c) There must be a mechanism to access middle element directly
 - d) Binary search algorithm is not efficient when the data elements are more than 1000
 - 6) Two dimensional arrays are also called
 - a) Tables arrays
 - b) Matrix arrays
 - c) Both of the above
 - d) None of the above

P.T.O.



- 7) A variable P is called pointer if
- P contains the address of an element in DATA
 - P points to the address of first element in DATA
 - P can store only memory addresses
 - P contain the DATA and the address of DATA
- 8) Which of the following data structure can't store the non-homogeneous data elements ?
- Arrays
 - Records
 - Pointers
 - None
- 9) Which of the following data structure store the homogeneous data elements ?
- Arrays
 - Records
 - Pointers
 - None
- 10) Each data item in a record may be a group item composed of sub-items ; those items which are indecomposable are called
- Elementary items
 - Atoms
 - Scalars
 - All of the above
- 11) The difference between linear array and a record is
- An array is suitable for homogeneous data but the data items in a record may have different data type
 - In a record, there may not be a natural ordering in opposed to linear array
 - A record form a hierarchical structure but a linear array does not
 - All of the above
- 12) Which of the following statement is false ?
- Arrays are dense lists and static data structure
 - Data elements in linked list need not be stored in adjacent space in memory
 - Pointers store the next data element of a list
 - Linked lists are collection of the nodes that contain information part and next pointer
- 13) Binary search algorithm can not be applied to
- Sorted linked list
 - Sorted binary trees
 - Sorted linear array
 - Pointer array
- 14) When new data are to be inserted into a data structure, but there is no available space ; this situation is usually called
- Underflow
 - Overflow
 - Housefull
 - Saturated
- 15) The situation when in a linked list START = NULL is
- Underflow
 - Overflow
 - Housefull
 - Saturated
- 16) Which of the following is two way list ?
- Grounded header list
 - Circular header list
 - Linked list with header and trailer nodes
 - None of the above
- 17) Which of the following name does not relate to stacks ?
- FIFO list
 - LIFO list
 - Piles
 - Push-down lists
- 18) The term "push" and "pop" is related to the
- Array
 - Lists
 - Stacks
 - All of the above
- 19) A data structure where elements can be added or removed at either end but not in the middle
- Linked lists
 - Stacks
 - Queues
 - Deque
- 20) When inorder traversing a tree resulted EACKFH DBG ; the preorder traversal would return
- FAEKDBHG
 - EAFKHDCBG
 - FAEKCDHGB
 - FEAKDCHBG



Seat No.	
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**S.E. (I.T.) (Part – II) Examination, 2016
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 16-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** of the following : **(5×4=20)**
- a) Explain asymptotic notation in detail.
 - b) Give an algorithm for binary search and discuss the time complexity for various cases of inputs.
 - c) Write an algorithm for bubble-sort, selection sort.
 - d) Give an algorithm for insertion sort and find out its time complexity for various cases of the input.
 - e) What is hashing ? What is the need of hashing ?
 - f) Explain open addressing technique to resolve hash clashes.
3. Arrange the following list of elements in sorted order using bubble sort.
Show the required passes of the above sort. Find the complexity of the bubble sort algorithm.
44, 55, 33, 88, 77, 22, 11, 66 **10**
4. Define hashing and hash function. Discuss the structure of closed hash table.
Discuss how double hashing is used as collision resolution strategy. **10**

SECTION – II

5. Attempt **any four** of the following : **(5×4=20)**
- a) Differentiate between Binary Tree, B Tree and B+ Tree.
 - b) Write recursive algorithm for the following tree traversals.
 - i) Inorder
 - ii) Preorder
 - c) Write and explain Shortest Path Algorithm.
 - d) What is the advantage of using sequential representation for almost complete binary tree ?
 - e) Define graph and its terminologies.
 - f) Write down the property of a Binary search tree.
6. Explain the process of threading of a binary tree for inorder traversal with atleast two examples. **10**
7. What is a Binary Search Tree (BST) ? Make a BST for the following sequence of numbers.
45, 36, 76, 23, 89, 115, 98, 39, 41, 56, 69, 48
Traverse the tree in Preorder, Inorder and Postorder. **10**

Set P



Seat No.	
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Set	Q
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**S.E. (I.T.) (Part – II) Examination, 2016
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 16-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct option :

20

- 1) Which 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 the above
- 2) Which of the following name does not relate to stacks ?
 - a) FIFO list
 - b) LIFO list
 - c) Piles
 - d) Push-down lists
- 3) The term “push” and “pop” is related to the
 - a) Array
 - b) Lists
 - c) Stacks
 - d) All of the above
- 4) A data structure where elements can be added or removed at either end but not in the middle
 - a) Linked lists
 - b) Stacks
 - c) Queues
 - d) Deque
- 5) When inorder traversing a tree resulted EACKFH DBG ; the preorder traversal would return
 - a) FAEKCDBHG
 - b) EAFKHDCBG
 - c) FAEKCDHGB
 - d) FEAKDCHBG
- 6) The memory address of the first element of an array is called
 - a) Floor address
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 - c) First address
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- 7) The memory address of fifth element of an array can be calculated by the formula
 - a) $LOC(\text{Array}[5]) = \text{Base}(\text{Array}) + w(5 - \text{lower bound})$, where w is the number of words per memory cell for the array
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 - d) None of the above
- 8) Which of the following data structures are indexed structures ?
 - a) Linear arrays
 - b) Linked lists
 - c) Both of the above
 - d) None of the above

P.T.O.



- 9) Which of the following is not the required condition for binary search algorithm ?
- The list must be sorted
 - There should be the direct access to the middle element in any sublist
 - There must be mechanism to delete and/or insert elements in list
 - None of the above
- 10) Which of the following is not a limitation of binary search algorithm ?
- Must use a sorted array
 - Requirement of sorted array is expensive when a lot of insertion and deletions are needed
 - There must be a mechanism to access middle element directly
 - Binary search algorithm is not efficient when the data elements are more than 1000
- 11) Two dimensional arrays are also called
- Tables arrays
 - Matrix arrays
 - Both of the above
 - None of the above
- 12) A variable P is called pointer if
- P contains the address of an element in DATA
 - P points to the address of first element in DATA
 - P can store only memory addresses
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- 13) Which of the following data structure can't store the non-homogeneous data elements ?
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- Arrays
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- 15) Each data item in a record may be a group item composed of sub-items ; those items which are indecomposable are called
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 - Atoms
 - Scalars
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- 16) The difference between linear array and a record is
- An array is suitable for homogeneous data but the data items in a record may have different data type
 - In a record, there may not be a natural ordering in opposed to linear array
 - A record form a hierarchical structure but a linear array does not
 - All of the above
- 17) Which of the following statement is false ?
- Arrays are dense lists and static data structure
 - Data elements in linked list need not be stored in adjacent space in memory
 - Pointers store the next data element of a list
 - Linked lists are collection of the nodes that contain information part and next pointer
- 18) Binary search algorithm can not be applied to
- Sorted linked list
 - Sorted binary trees
 - Sorted linear array
 - Pointer array
- 19) When new data are to be inserted into a data structure, but there is no available space ; this situation is usually called
- Underflow
 - Overflow
 - Housefull
 - Saturated
- 20) The situation when in a linked list START = NULL is
- Underflow
 - Overflow
 - Housefull
 - Saturated



Seat No.	
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**S.E. (I.T.) (Part – II) Examination, 2016
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 16-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** of the following : **(5×4=20)**
- a) Explain asymptotic notation in detail.
 - b) Give an algorithm for binary search and discuss the time complexity for various cases of inputs.
 - c) Write an algorithm for bubble-sort, selection sort.
 - d) Give an algorithm for insertion sort and find out its time complexity for various cases of the input.
 - e) What is hashing ? What is the need of hashing ?
 - f) Explain open addressing technique to resolve hash clashes.
3. Arrange the following list of elements in sorted order using bubble sort.
Show the required passes of the above sort. Find the complexity of the bubble sort algorithm.
44, 55, 33, 88, 77, 22, 11, 66 **10**
4. Define hashing and hash function. Discuss the structure of closed hash table.
Discuss how double hashing is used as collision resolution strategy. **10**

SECTION – II

5. Attempt **any four** of the following : **(5×4=20)**
- a) Differentiate between Binary Tree, B Tree and B+ Tree.
 - b) Write recursive algorithm for the following tree traversals.
 - i) Inorder
 - ii) Preorder
 - c) Write and explain Shortest Path Algorithm.
 - d) What is the advantage of using sequential representation for almost complete binary tree ?
 - e) Define graph and its terminologies.
 - f) Write down the property of a Binary search tree.
6. Explain the process of threading of a binary tree for inorder traversal with atleast two examples. **10**
7. What is a Binary Search Tree (BST) ? Make a BST for the following sequence of numbers.
45, 36, 76, 23, 89, 115, 98, 39, 41, 56, 69, 48
Traverse the tree in Preorder, Inorder and Postorder. **10**

Set Q



SLR-EP – 214

Seat No.	
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Set	R
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**S.E. (I.T.) (Part – II) Examination, 2016
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 16-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct option : 20

- 1) The difference between linear array and a record is
 - a) An array is suitable for homogeneous data but the data items in a record may have different data type
 - b) In a record, there may not be a natural ordering in opposed to linear array
 - c) A record form a hierarchical structure but a linear array does not
 - d) All of the above
- 2) Which of the following statement is false ?
 - a) Arrays are dense lists and static data structure
 - b) Data elements in linked list need not be stored in adjacent space in memory
 - c) Pointers store the next data element of a list
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- 3) Binary search algorithm can not be applied to
 - a) Sorted linked list
 - b) Sorted binary trees
 - c) Sorted linear array
 - d) Pointer array
- 4) When new data are to be inserted into a data structure, but there is no available space ; this situation is usually called
 - a) Underflow
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 - c) Housefull
 - d) Saturated
- 5) The situation when in a linked list START = NULL is
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- 6) Which of the following is two way list ?
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 - c) Linked list with header and trailer nodes
 - d) None of the above
- 7) Which of the following name does not relate to stacks ?
 - a) FIFO list
 - b) LIFO list
 - c) Piles
 - d) Push-down lists
- 8) The term “push” and “pop” is related to the
 - a) Array
 - b) Lists
 - c) Stacks
 - d) All of the above

P.T.O.



- 9) A data structure where elements can be added or removed at either end but not in the middle
a) Linked lists b) Stacks c) Queues d) Deque
- 10) When inorder traversing a tree resulted EACKFH DBG ; the preorder traversal would return
a) FAEKCDBHG b) EAFKHDCBG c) FAEKCDHGB d) FEAKDCHBG
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c) First address d) Base address
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- 13) Which of the following data structures are indexed structures ?
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- 14) Which of the following is not the required condition for binary search algorithm ?
a) The list must be sorted
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d) Binary search algorithm is not efficient when the data elements are more than 1000
- 16) Two dimensional arrays are also called
a) Tables arrays b) Matrix arrays
c) Both of the above d) None of the above
- 17) A variable P is called pointer if
a) P contains the address of an element in DATA
b) P points to the address of first element in DATA
c) P can store only memory addresses
d) P contain the DATA and the address of DATA
- 18) Which of the following data structure can't store the non-homogeneous data elements ?
a) Arrays b) Records c) Pointers d) None
- 19) Which of the following data structure store the homogeneous data elements ?
a) Arrays b) Records c) Pointers d) None
- 20) Each data item in a record may be a group item composed of sub-items ; those items which are indecomposable are called
a) Elementary items b) Atoms c) Scalars d) All of the above



Seat No.	
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**S.E. (I.T.) (Part – II) Examination, 2016
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 16-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** of the following : **(5×4=20)**
- a) Explain asymptotic notation in detail.
 - b) Give an algorithm for binary search and discuss the time complexity for various cases of inputs.
 - c) Write an algorithm for bubble-sort, selection sort.
 - d) Give an algorithm for insertion sort and find out its time complexity for various cases of the input.
 - e) What is hashing ? What is the need of hashing ?
 - f) Explain open addressing technique to resolve hash clashes.
3. Arrange the following list of elements in sorted order using bubble sort.
Show the required passes of the above sort. Find the complexity of the bubble sort algorithm.
44, 55, 33, 88, 77, 22, 11, 66 **10**
4. Define hashing and hash function. Discuss the structure of closed hash table.
Discuss how double hashing is used as collision resolution strategy. **10**

SECTION – II

5. Attempt **any four** of the following : **(5×4=20)**
- a) Differentiate between Binary Tree, B Tree and B+ Tree.
 - b) Write recursive algorithm for the following tree traversals.
 - i) Inorder
 - ii) Preorder
 - c) Write and explain Shortest Path Algorithm.
 - d) What is the advantage of using sequential representation for almost complete binary tree ?
 - e) Define graph and its terminologies.
 - f) Write down the property of a Binary search tree.
6. Explain the process of threading of a binary tree for inorder traversal with atleast two examples. **10**
7. What is a Binary Search Tree (BST) ? Make a BST for the following sequence of numbers.
45, 36, 76, 23, 89, 115, 98, 39, 41, 56, 69, 48
Traverse the tree in Preorder, Inorder and Postorder. **10**

Set R



Seat No.	
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Set	S
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**S.E. (I.T.) (Part – II) Examination, 2016
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 16-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct option : 20
- 1) Two dimensional arrays are also called
 - a) Tables arrays
 - b) Matrix arrays
 - c) Both of the above
 - d) None of the above
 - 2) A variable P is called pointer if
 - a) P contains the address of an element in DATA
 - b) P points to the address of first element in DATA
 - c) P can store only memory addresses
 - d) P contain the DATA and the address of DATA
 - 3) Which of the following data structure can't store the non-homogeneous data elements ?
 - a) Arrays
 - b) Records
 - c) Pointers
 - d) None
 - 4) Which of the following data structure store the homogeneous data elements ?
 - a) Arrays
 - b) Records
 - c) Pointers
 - d) None
 - 5) Each data item in a record may be a group item composed of sub-items ; those items which are indecomposable are called
 - a) Elementary items
 - b) Atoms
 - c) Scalars
 - d) All of the above
 - 6) The difference between linear array and a record is
 - a) An array is suitable for homogeneous data but the data items in a record may have different data type
 - b) In a record, there may not be a natural ordering in opposed to linear array
 - c) A record form a hierarchical structure but a linear array does not
 - d) All of the above
 - 7) Which of the following statement is false ?
 - a) Arrays are dense lists and static data structure
 - b) Data elements in linked list need not be stored in adjacent space in memory
 - c) Pointers store the next data element of a list
 - d) Linked lists are collection of the nodes that contain information part and next pointer



- 8) Binary search algorithm can not be applied to
- a) Sorted linked list
 - b) Sorted binary trees
 - c) Sorted linear array
 - d) Pointer array
- 9) When new data are to be inserted into a data structure, but there is no available space ; this situation is usually called
- a) Underflow
 - b) Overflow
 - c) Housefull
 - d) Saturated
- 10) The situation when in a linked list START = NULL is
- a) Underflow
 - b) Overflow
 - c) Housefull
 - d) Saturated
- 11) Which of the following is two way list ?
- a) Grounded header list
 - b) Circular header list
 - c) Linked list with header and trailer nodes
 - d) None of the above
- 12) Which of the following name does not relate to stacks ?
- a) FIFO list
 - b) LIFO list
 - c) Piles
 - d) Push-down lists
- 13) The term “push” and “pop” is related to the
- a) Array
 - b) Lists
 - c) Stacks
 - d) All of the above
- 14) A data structure where elements can be added or removed at either end but not in the middle
- a) Linked lists
 - b) Stacks
 - c) Queues
 - d) Deque
- 15) When inorder traversing a tree resulted EACKFH DBG ; the preorder traversal would return
- a) FAEKCDBHG
 - b) EAFKHDCBG
 - c) FAEKCDHGB
 - d) FEAKDCHBG
- 16) The memory address of the first element of an array is called
- a) Floor address
 - b) Foundation address
 - c) First address
 - d) Base address
- 17) The memory address of fifth element of an array can be calculated by the formula
- a) $LOC(\text{Array}[5]) = \text{Base}(\text{Array}) + w(5 - \text{lower bound})$, where w is the number of words per memory cell for the array
 - b) $LOC(\text{Array}[5]) = \text{Base}(\text{Array}[5]) + (5 - \text{lower bound})$, where w is the number of words per memory cell for the array
 - c) $LOC(\text{Array}[5]) = \text{Base}(\text{Array}[4]) + (5 - \text{upper bound})$, where w is the number of words per memory cell for the array
 - d) None of the above
- 18) Which of the following data structures are indexed structures ?
- a) Linear arrays
 - b) Linked lists
 - c) Both of the above
 - d) None of the above
- 19) Which of the following is not the required condition for binary search algorithm ?
- a) The list must be sorted
 - b) There should be the direct access to the middle element in any sublist
 - c) There must be mechanism to delete and/or insert elements in list
 - d) None of the above
- 20) Which of the following is not a limitation of binary search algorithm ?
- a) Must use a sorted array
 - b) Requirement of sorted array is expensive when a lot of insertion and deletions are needed
 - c) There must be a mechanism to access middle element directly
 - d) Binary search algorithm is not efficient when the data elements are more than 1000



Seat No.	
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**S.E. (I.T.) (Part – II) Examination, 2016
DATA STRUCTURE – II (Old)**

Day and Date : Friday, 16-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** of the following : **(5×4=20)**
- a) Explain asymptotic notation in detail.
 - b) Give an algorithm for binary search and discuss the time complexity for various cases of inputs.
 - c) Write an algorithm for bubble-sort, selection sort.
 - d) Give an algorithm for insertion sort and find out its time complexity for various cases of the input.
 - e) What is hashing ? What is the need of hashing ?
 - f) Explain open addressing technique to resolve hash clashes.
3. Arrange the following list of elements in sorted order using bubble sort.
Show the required passes of the above sort. Find the complexity of the bubble sort algorithm.
44, 55, 33, 88, 77, 22, 11, 66 **10**
4. Define hashing and hash function. Discuss the structure of closed hash table.
Discuss how double hashing is used as collision resolution strategy. **10**

SECTION – II

5. Attempt **any four** of the following : **(5×4=20)**
- a) Differentiate between Binary Tree, B Tree and B+ Tree.
 - b) Write recursive algorithm for the following tree traversals.
 - i) Inorder
 - ii) Preorder
 - c) Write and explain Shortest Path Algorithm.
 - d) What is the advantage of using sequential representation for almost complete binary tree ?
 - e) Define graph and its terminologies.
 - f) Write down the property of a Binary search tree.
6. Explain the process of threading of a binary tree for inorder traversal with atleast two examples. **10**
7. What is a Binary Search Tree (BST) ? Make a BST for the following sequence of numbers.
45, 36, 76, 23, 89, 115, 98, 39, 41, 56, 69, 48
Traverse the tree in Preorder, Inorder and Postorder. **10**

Set S



Seat No.	
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Set	P
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**S.E. (IT) (Part – II) (Old) Examination, 2016
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 19-12-2016
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) Following grammar
S -> bS
S -> b
S -> aA
A -> bA
a) Type 0 grammar
b) Type 1 grammar
c) Type 2 grammar
d) Type 3 grammar
- 2) The language accepted by finite automata is
a) Context free b) Regular c) Non regular d) None
- 3) Finite state machine _____ recognize palindromes.
a) can b) cannot c) may d) may not
- 4) Which one of the following statement is false ?
a) Context-free languages are closed under union
b) Context-free languages are closed under concatenation
c) Context-free languages are closed under intersection
d) Context-free languages are closed under Kleene closure
- 5) If two finite state machines are equivalent they should have the same number of
a) States b) Edges c) States and edges d) None
- 6) Regular sets are closed under union, concatenation and kleene closure.
a) True b) False
c) Depends on regular set d) Can't say
- 7) Complement of a DFA can be obtained by
a) Making starting state as final state
b) Nontrivial method
c) Making final states non-final and non-final to final
d) Make final as a starting state



- 8) Complement of regular sets are
a) Regular b) CFG c) CFL d) RE
- 9) If L1 is regular L 2 is unknown but L1-L 2 is regular , then L 2 must be
a) Empty set b) CFG c) Decidable d) Regular
- 10) Which of the following statement is false ?
a) The context free language can be converted into Chomsky normal form
b) The context free language can be converted into Greibach normal form
c) The context free language is accepted by pushdown automata
d) None of these
- 11) PDA is the machine format of
a) Type 0 language b) Type 1 language
c) Type 2 language d) Type 3 language
- 12) Which is not true for mechanical diagram of 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) All strings having equal number of a and b can be recognized by
a) DFA b) NDFA c) PDA d) All above
- 15) CFL is not closed under
a) Union b) Star c) Concatenation d) Intersection
- 16) A PDA chooses the next move based on
a) Current state b) Next input symbol
c) Both a) and b) d) None of these
- 17) Which of the following conversion is not possible (algorithmically) ?
a) Regular grammar to context-free grammar
b) Nondeterministic FSA to deterministic FSA
c) Nondeterministic PDA to deterministic PDA
d) Nondeterministic TM to deterministic TM
- 18) R1 and R2 are regular sets. Which of the following is not true ?
a) $R1 \cap R2$ need not be regular b) $\Sigma^* - R1$ is regular
c) $R1 \cup R2$ is regular d) is
- 19) 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
- 20) The language $L = \{0^m 1^m 0^m \mid m \geq 1\}$ is a
a) Regular language b) Context free language
c) Both a) and b) d) None of these



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**S.E. (IT) (Part – II) (Old) Examination, 2016
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 19-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** :

(4×5=20)

1) Find the language generated by : $S \rightarrow 0S1 \mid 0A \mid 0 \mid 1B \mid 1$

$A \rightarrow 0A \mid 0, B \rightarrow 1B \mid 1$

2) Compare NPDA and DPDA.

3) What is a formal language ?

4) Define:

i) Finite Automaton (FA)

ii) Transition Diagram

5) Construct a grammar for the language L which has all the strings which are all palindromes over $\Sigma = \{a, b\}$.

3. Answer **any one** :

10

1) Convert CFG to CNF

$S \rightarrow AACD \mid C$

$A \rightarrow aAb \mid \Lambda$

$C \rightarrow aC \mid a$

$D \rightarrow aDa \mid bDb \mid aa \mid bb$

2) What is ambiguous grammar ? How to eliminate ambiguous grammar ? Explain with example.

4. Prove that regular sets are closed under union, concatenation and Kleen closure.

10

Set P



SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) What is PDA ? Explain with example.
 - 2) What is a multi head TM ?
 - 3) Compare NFA and PDA.
 - 4) Define Turing machine.
 - 5) What are the closure properties of CFL ?
6. Answer **any one** : **10**
- 1) Design a TM that recognizes a string containing aba as a substring.
 - 2) Write formal definition of PDA. Explain its elements. What are different types of PDA ?
What are the applications of PDA ?
7. Write short notes on : **10**
- 1) Universal Turing Machine
 - 2) Multi-tape Turing Machine.
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Set	Q
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**S.E. (IT) (Part – II) (Old) Examination, 2016
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 19-12-2016
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

(20×1=20)

1. Choose the correct answer :

- 1) A PDA chooses the next move based on
 - a) Current state
 - b) Next input symbol
 - c) Both a) and b)
 - d) None of these
- 2) Which of the following conversion is not possible (algorithmically) ?
 - a) Regular grammar to context-free grammar
 - b) Nondeterministic FSA to deterministic FSA
 - c) Nondeterministic PDA to deterministic PDA
 - d) Nondeterministic TM to deterministic TM
- 3) R1 and R2 are regular sets. Which of the following is not true ?
 - a) $R1 \cap R2$ need not be regular
 - b) $\Sigma^* - R1$ is regular
 - c) $R1 \cup R2$ is regular
 - d) is
- 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) The language $L = \{0^m 1^m 0^m \mid m \geq 1\}$ is a
 - a) Regular language
 - b) Context free language
 - c) Both a) and b)
 - d) None of these
- 6) Following grammar
 - S \rightarrow bS
 - S \rightarrow b
 - S \rightarrow aA
 - A \rightarrow bA
 - a) Type 0 grammar
 - b) Type 1 grammar
 - c) Type 2 grammar
 - d) Type 3 grammar



- 7) The language accepted by finite automata is
a) Context free b) Regular c) Non regular d) None
- 8) Finite state machine _____ recognize palindromes.
a) can b) cannot c) may d) may not
- 9) Which one of the following statement is false ?
a) Context-free languages are closed under union
b) Context-free languages are closed under concatenation
c) Context-free languages are closed under intersection
d) Context-free languages are closed under Kleene closure
- 10) If two finite state machines are equivalent they should have the same number of
a) States b) Edges c) States and edges d) None
- 11) Regular sets are closed under union, concatenation and kleene closure.
a) True b) False
c) Depends on regular set d) Can't say
- 12) Complement of a DFA can be obtained by
a) Making starting state as final state
b) Nontrivial method
c) Making final states non-final and non-final to final
d) Make final as a starting state
- 13) Complement of regular sets are
a) Regular b) CFG c) CFL d) RE
- 14) If L1 is regular L 2 is unknown but L1-L 2 is regular , then L 2 must be
a) Empty set b) CFG c) Decidable d) Regular
- 15) Which of the following statement is false ?
a) The context free language can be converted into Chomsky normal form
b) The context free language can be converted into Greibach normal form
c) The context free language is accepted by pushdown automata
d) None of these
- 16) PDA is the machine format of
a) Type 0 language b) Type 1 language
c) Type 2 language d) Type 3 language
- 17) Which is not true for mechanical diagram of PDA ?
a) PDA contains a stack
b) The head reads as well as writes
c) The head moves from left to right
d) Input string is surrounded by infinite number of blank in both side
- 18) The difference between finite automata and PDA is in
a) Reading head b) Input tape c) Finite control d) Stack
- 19) All strings having equal number of a and b can be recognized by
a) DFA b) NDFA c) PDA d) All above
- 20) CFL is not closed under
a) Union b) Star c) Concatenation d) Intersection



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**S.E. (IT) (Part – II) (Old) Examination, 2016
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 19-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** :

(4×5=20)

1) Find the language generated by : $S \rightarrow 0S1 \mid 0A \mid 0 \mid 1B \mid 1$

$A \rightarrow 0A \mid 0, B \rightarrow 1B \mid 1$

2) Compare NPDA and DPDA.

3) What is a formal language ?

4) Define:

i) Finite Automaton (FA)

ii) Transition Diagram

5) Construct a grammar for the language L which has all the strings which are all palindromes over $\Sigma = \{a, b\}$.

3. Answer **any one** :

10

1) Convert CFG to CNF

$S \rightarrow AACD \mid C$

$A \rightarrow aAb \mid \Lambda$

$C \rightarrow aC \mid a$

$D \rightarrow aDa \mid bDb \mid aa \mid bb$

2) What is ambiguous grammar ? How to eliminate ambiguous grammar ? Explain with example.

4. Prove that regular sets are closed under union, concatenation and Kleen closure.

10

Set Q



SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) What is PDA ? Explain with example.
 - 2) What is a multi head TM ?
 - 3) Compare NFA and PDA.
 - 4) Define Turing machine.
 - 5) What are the closure properties of CFL ?
6. Answer **any one** : **10**
- 1) Design a TM that recognizes a string containing aba as a substring.
 - 2) Write formal definition of PDA. Explain its elements. What are different types of PDA ?
What are the applications of PDA ?
7. Write short notes on : **10**
- 1) Universal Turing Machine
 - 2) Multi-tape Turing Machine.
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Seat No.	
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Set	R
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S.E. (IT) (Part – II) (Old) Examination, 2016
FORMAL SYSTEM AND AUTOMATA

Day and Date : Monday, 19-12-2016
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
(20×1=20)

1. Choose the correct answer :

- 1) PDA is the machine format of
 - a) Type 0 language
 - b) Type 1 language
 - c) Type 2 language
 - d) Type 3 language
- 2) Which is not true for mechanical diagram of 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) All strings having equal number of a and b can be recognized by
 - a) DFA
 - b) NDFA
 - c) PDA
 - d) All above
- 5) CFL is not closed under
 - a) Union
 - b) Star
 - c) Concatenation
 - d) Intersection
- 6) A PDA chooses the next move based on
 - a) Current state
 - b) Next input symbol
 - c) Both a) and b)
 - d) None of these
- 7) Which of the following conversion is not possible (algorithmically) ?
 - a) Regular grammar to context-free grammar
 - b) Nondeterministic FSA to deterministic FSA
 - c) Nondeterministic PDA to deterministic PDA
 - d) Nondeterministic TM to deterministic TM
- 8) R1 and R2 are regular sets. Which of the following is not true ?
 - a) $R1 \cap R2$ need not be regular
 - b) $\Sigma^* - R1$ is regular
 - c) $R1 \cup R2$ is regular
 - d) is
- 9) In one move the turing machine
 - a) May change its state
 - b) Write a symbol on the cell being scanned
 - c) Move the head one position left or right
 - d) All of the above

P.T.O.



- 10) The language $L = \{0^m 1^m 0^m \mid m \geq 1\}$ is a
- a) Regular language
 - b) Context free language
 - c) Both a) and b)
 - d) None of these
- 11) Following grammar
- S \rightarrow bS
S \rightarrow b
S \rightarrow aA
A \rightarrow bA
- a) Type 0 grammar
 - b) Type 1 grammar
 - c) Type 2 grammar
 - d) Type 3 grammar
- 12) The language accepted by finite automata is
- a) Context free
 - b) Regular
 - c) Non regular
 - d) None
- 13) Finite state machine _____ recognize palindromes.
- a) can
 - b) cannot
 - c) may
 - d) may not
- 14) Which one of the following statement is false ?
- a) Context-free languages are closed under union
 - b) Context-free languages are closed under concatenation
 - c) Context-free languages are closed under intersection
 - d) Context-free languages are closed under Kleene closure
- 15) If two finite state machines are equivalent they should have the same number of
- a) States
 - b) Edges
 - c) States and edges
 - d) None
- 16) Regular sets are closed under union, concatenation and kleene closure.
- a) True
 - b) False
 - c) Depends on regular set
 - d) Can't say
- 17) Complement of a DFA can be obtained by
- a) Making starting state as final state
 - b) Nontrivial method
 - c) Making final states non-final and non-final to final
 - d) Make final as a starting state
- 18) Complement of regular sets are
- a) Regular
 - b) CFG
 - c) CFL
 - d) RE
- 19) If L1 is regular L2 is unknown but L1-L2 is regular , then L2 must be
- a) Empty set
 - b) CFG
 - c) Decidable
 - d) Regular
- 20) Which of the following statement is false ?
- a) The context free language can be converted into Chomsky normal form
 - b) The context free language can be converted into Greibach normal form
 - c) The context free language is accepted by pushdown automata
 - d) None of these
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Seat No.	
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**S.E. (IT) (Part – II) (Old) Examination, 2016
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 19-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** :

(4×5=20)

1) Find the language generated by : $S \rightarrow 0S1 \mid 0A \mid 0 \mid 1B \mid 1$

$A \rightarrow 0A \mid 0, B \rightarrow 1B \mid 1$

2) Compare NPDA and DPDA.

3) What is a formal language ?

4) Define:

i) Finite Automaton (FA)

ii) Transition Diagram

5) Construct a grammar for the language L which has all the strings which are all palindromes over $\Sigma = \{a, b\}$.

3. Answer **any one** :

10

1) Convert CFG to CNF

$S \rightarrow AACD \mid C$

$A \rightarrow aAb \mid \epsilon$

$C \rightarrow aC \mid a$

$D \rightarrow aDa \mid bDb \mid aa \mid bb$

2) What is ambiguous grammar ? How to eliminate ambiguous grammar ? Explain with example.

4. Prove that regular sets are closed under union, concatenation and Kleen closure.

10

Set R



SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) What is PDA ? Explain with example.
 - 2) What is a multi head TM ?
 - 3) Compare NFA and PDA.
 - 4) Define Turing machine.
 - 5) What are the closure properties of CFL ?
6. Answer **any one** : **10**
- 1) Design a TM that recognizes a string containing aba as a substring.
 - 2) Write formal definition of PDA. Explain its elements. What are different types of PDA ?
What are the applications of PDA ?
7. Write short notes on : **10**
- 1) Universal Turing Machine
 - 2) Multi-tape Turing Machine.
-



Seat No.	
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Set	S
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**S.E. (IT) (Part – II) (Old) Examination, 2016
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 19-12-2016
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) Regular sets are closed under union, concatenation and kleene closure.
 - a) True
 - b) False
 - c) Depends on regular set
 - d) Can't say
- 2) Complement of a DFA can be obtained by
 - a) Making starting state as final state
 - b) Nontrivial method
 - c) Making final states non-final and non-final to final
 - d) Make final as a starting state
- 3) Complement of regular sets are
 - a) Regular
 - b) CFG
 - c) CFL
 - d) RE
- 4) If L1 is regular L2 is unknown but L1-L2 is regular , then L2 must be
 - a) Empty set
 - b) CFG
 - c) Decidable
 - d) Regular
- 5) Which of the following statement is false ?
 - a) The context free language can be converted into Chomsky normal form
 - b) The context free language can be converted into Greibach normal form
 - c) The context free language is accepted by pushdown automata
 - d) None of these
- 6) PDA is the machine format of
 - a) Type 0 language
 - b) Type 1 language
 - c) Type 2 language
 - d) Type 3 language
- 7) Which is not true for mechanical diagram of 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) All strings having equal number of a and b can be recognized by
 a) DFA b) NDFA c) PDA d) All above
- 10) CFL is not closed under
 a) Union b) Star c) Concatenation d) Intersection
- 11) A PDA chooses the next move based on
 a) Current state b) Next input symbol
 c) Both a) and b) d) None of these
- 12) Which of the following conversion is not possible (algorithmically) ?
 a) Regular grammar to context-free grammar
 b) Nondeterministic FSA to deterministic FSA
 c) Nondeterministic PDA to deterministic PDA
 d) Nondeterministic TM to deterministic TM
- 13) R_1 and R_2 are regular sets. Which of the following is not true ?
 a) $R_1 \cap R_2$ need not be regular b) $\Sigma^* - R_1$ is regular
 c) $R_1 \cup R_2$ is regular d) is
- 14) In one move the turing machine
 a) May change its state
 b) Write a symbol on the cell being scanned
 c) Move the head one position left or right
 d) All of the above
- 15) The language $L = \{0^m 1^m 0^m \mid m \geq 1\}$ is a
 a) Regular language b) Context free language
 c) Both a) and b) d) None of these
- 16) Following grammar
 $S \rightarrow bS$
 $S \rightarrow b$
 $S \rightarrow aA$
 $A \rightarrow bA$
 a) Type 0 grammar b) Type 1 grammar
 c) Type 2 grammar d) Type 3 grammar
- 17) The language accepted by finite automata is
 a) Context free b) Regular c) Non regular d) None
- 18) Finite state machine _____ recognize palindromes.
 a) can b) cannot c) may d) may not
- 19) Which one of the following statement is false ?
 a) Context-free languages are closed under union
 b) Context-free languages are closed under concatenation
 c) Context-free languages are closed under intersection
 d) Context-free languages are closed under Kleene closure
- 20) If two finite state machines are equivalent they should have the same number of
 a) States b) Edges c) States and edges d) None



Seat No.	
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**S.E. (IT) (Part – II) (Old) Examination, 2016
FORMAL SYSTEM AND AUTOMATA**

Day and Date : Monday, 19-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Solve **any four** :

(4×5=20)

1) Find the language generated by : $S \rightarrow 0S1 \mid 0A \mid 0 \mid 1B \mid 1$

$A \rightarrow 0A \mid 0, B \rightarrow 1B \mid 1$

2) Compare NPDA and DPDA.

3) What is a formal language ?

4) Define:

i) Finite Automaton (FA)

ii) Transition Diagram

5) Construct a grammar for the language L which has all the strings which are all palindromes over $\Sigma = \{a, b\}$.

3. Answer **any one** :

10

1) Convert CFG to CNF

$S \rightarrow AACD \mid C$

$A \rightarrow aAb \mid \Lambda$

$C \rightarrow aC \mid a$

$D \rightarrow aDa \mid bDb \mid aa \mid bb$

2) What is ambiguous grammar ? How to eliminate ambiguous grammar ? Explain with example.

4. Prove that regular sets are closed under union, concatenation and Kleen closure.

10

Set S



SECTION – II

5. Solve **any four** : **(4×5=20)**
- 1) What is PDA ? Explain with example.
 - 2) What is a multi head TM ?
 - 3) Compare NFA and PDA.
 - 4) Define Turing machine.
 - 5) What are the closure properties of CFL ?
6. Answer **any one** : **10**
- 1) Design a TM that recognizes a string containing aba as a substring.
 - 2) Write formal definition of PDA. Explain its elements. What are different types of PDA ?
What are the applications of PDA ?
7. Write short notes on : **10**
- 1) Universal Turing Machine
 - 2) Multi-tape Turing Machine.
-



SLR-EP – 216

Seat No.	
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Set

P

**S.E. (Information Technology) (Part – II) (Old) Examination, 2016
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 21-12-2016

Total Marks : 100

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

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- I) Which of the following is the simplest error detection method ?
A) Parity Check
B) Longitudinal Redundancy Checking
C) Checksum Checking
D) Cyclic Redundancy Checking
- II) Which of the following cables can transmit data at high speeds ?
A) Co axial cables
B) Optical fibre cables
C) UTP
D) Twisted pair cable
- III) 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) To avoid transmission error a check figure is calculated by the
A) Receiving computer
B) Transmitting computer
C) Both A) and B)
D) None of above
- V) In cyclic redundancy checking CRC is the
A) Divisor
B) Quotient
C) Dividend
D) Remainder
- VI) Which of the following performs modulation and demodulation ?
A) fiber optics
B) satellite
C) coaxial cable
D) modem
- VII) The process of converting analog signals into digital signals so they can be processed by a receiving computer is referred to as
A) modulation
B) demodulation
C) synchronizing
D) digitising
- 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

P.T.O.



- 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) Start and stop bits are used in serial communication for
A) Error detection B) Error correction
C) Synchronization D) Slowing down the communication
- 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) Start and stop bits are used in serial communication for
A) Error detection B) Error correction
C) Synchronization D) Slowing down the communication
- XIX) Which protocol is used to convert MAC addresses to Ip address ?
A) IP B) RARP C) In ARP D) ARP
- XX) Which of the following has the smallest default maximum physical receive packet size ?
A) ARCnet B) Ethernet
C) Token ring[4 Mbps] D) Token ring[16 Mbps]



Seat No.	
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**S.E. (Information Technology) (Part – II) (Old) Examination, 2016
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 21-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions. **20**
- A) Explain Nyquist and Shannon channel capacity.
 - B) Explain Attenuation Distortion, Delay, Distortion, Noise.
 - C) Explain Simplex, Half duplex and Full duplex transmission with example.
 - D) Write a note on STOP and WAIT sliding window protocol.
 - E) Write a short note on network layer and presentation layer of OSI model.
3. Explain Cyclic Redundancy Check (CRC) technique with an example. **10**

OR

3. Explain GO-BACK-N and selective repeat sliding window protocol.
4. Write short note on (**any two**) : **10**
- A) ATM reference model
 - B) DLL design issues
 - C) TCP.

SECTION – II

5. Attempt **any four** questions. **20**
- A) Explain CSMA/CD multiple access protocol.
 - B) Compare Bridges and switches.
 - C) Explain different network layer design issues.
 - D) Write a note on ALOHA.
 - E) Differentiate IPv4 and IPv6.

Set P



6. Explain shorted path routing protocol in detail.

10

OR

6. Explain hierarchical routing algorithm with example.

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

10

A) Distance vector routing algorithm

B) Link state routing algorithm

C) IEEE standard 802.4.



Seat No.	
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Set	Q
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**S.E. (Information Technology) (Part – II) (Old) Examination, 2016
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 21-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- I) 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) Start and stop bits are used in serial communication for
A) Error detection
B) Error correction
C) Synchronization
D) Slowing down the communication
- IV) Which protocol is used to convert MAC addresses to Ip address ?
A) IP
B) RARP
C) In ARP
D) ARP
- V) Which of the following has the smallest default maximum physical receive packet size ?
A) ARCnet
B) Ethernet
C) Token ring[4 Mbps)
D) Token ring[16 Mbps]
- VI) Which of the following is the simplest error detection method ?
A) Parity Check
B) Longitudinal Redundancy Checking
C) Checksum Checking
D) Cyclic Redundancy Checking
- VII) Which of the following cables can transmit data at high speeds ?
A) Co axial cables
B) Optical fibre cables
C) UTP
D) Twisted pair cable
- VIII) 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

P.T.O.



- IX) To avoid transmission error a check figure is calculated by the
A) Receiving computer B) Transmitting computer
C) Both A) and B) D) None of above
- X) In cyclic redundancy checking CRC is the
A) Divisor B) Quotient C) Dividend D) Remainder
- XI) Which of the following performs modulation and demodulation ?
A) fiber optics B) satellite C) coaxial cable D) modem
- XII) The process of converting analog signals into digital signals so they can be processed by a receiving computer is referred to as
A) modulation B) demodulation C) synchronizing D) digitising
- 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 ?
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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
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A) Transport B) Network C) Logical link D) Physical
-



Seat No.	
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**S.E. (Information Technology) (Part – II) (Old) Examination, 2016
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 21-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions. **20**
- A) Explain Nyquist and Shannon channel capacity.
 - B) Explain Attenuation Distortion, Delay, Distortion, Noise.
 - C) Explain Simplex, Half duplex and Full duplex transmission with example.
 - D) Write a note on STOP and WAIT sliding window protocol.
 - E) Write a short note on network layer and presentation layer of OSI model.
3. Explain Cyclic Redundancy Check (CRC) technique with an example. **10**

OR

3. Explain GO-BACK-N and selective repeat sliding window protocol.
4. Write short note on (**any two**) : **10**
- A) ATM reference model
 - B) DLL design issues
 - C) TCP.

SECTION – II

5. Attempt **any four** questions. **20**
- A) Explain CSMA/CD multiple access protocol.
 - B) Compare Bridges and switches.
 - C) Explain different network layer design issues.
 - D) Write a note on ALOHA.
 - E) Differentiate IPv4 and IPv6.

Set Q



6. Explain shorted path routing protocol in detail.

10

OR

6. Explain hierarchical routing algorithm with example.

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

10

A) Distance vector routing algorithm

B) Link state routing algorithm

C) IEEE standard 802.4.



- IX) Which protocol is used to convert MAC addresses to Ip address ?
A) IP B) RARP C) In ARP D) ARP
- X) Which of the following has the smallest default maximum physical receive packet size ?
A) ARCnet B) Ethernet
C) Token ring[4 Mbps] D) Token ring[16 Mbps]
- XI) Which of the following is the simplest error detection method ?
A) Parity Check B) Longitudinal Redundancy Checking
C) Checksum Checking D) Cyclic Redundancy Checking
- XII) Which of the following cables can transmit data at high speeds ?
A) Co axial cables B) Optical fibre cables
C) UTP D) Twisted pair cable
- XIII) 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) To avoid transmission error a check figure is calculated by the
A) Receiving computer B) Transmitting computer
C) Both A) and B) D) None of above
- XV) In cyclic redundancy checking CRC is the
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- XIX) A network that contains multiple hubs is most likely configured in which topology ?
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- 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 No.	
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**S.E. (Information Technology) (Part – II) (Old) Examination, 2016
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 21-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions. **20**
- A) Explain Nyquist and Shannon channel capacity.
 - B) Explain Attenuation Distortion, Delay, Distortion, Noise.
 - C) Explain Simplex, Half duplex and Full duplex transmission with example.
 - D) Write a note on STOP and WAIT sliding window protocol.
 - E) Write a short note on network layer and presentation layer of OSI model.
3. Explain Cyclic Redundancy Check (CRC) technique with an example. **10**

OR

3. Explain GO-BACK-N and selective repeat sliding window protocol.
4. Write short note on (**any two**) : **10**
- A) ATM reference model
 - B) DLL design issues
 - C) TCP.

SECTION – II

5. Attempt **any four** questions. **20**
- A) Explain CSMA/CD multiple access protocol.
 - B) Compare Bridges and switches.
 - C) Explain different network layer design issues.
 - D) Write a note on ALOHA.
 - E) Differentiate IPv4 and IPv6.

Set R



6. Explain shorted path routing protocol in detail.

10

OR

6. Explain hierarchical routing algorithm with example.

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

10

A) Distance vector routing algorithm

B) Link state routing algorithm

C) IEEE standard 802.4.



SLR-EP – 216

Seat No.	
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Set

S

**S.E. (Information Technology) (Part – II) (Old) Examination, 2016
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 21-12-2016

Total Marks : 100

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

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- I) Which of the following performs modulation and demodulation ?
A) fiber optics B) satellite C) coaxial cable D) modem
- II) The process of converting analog signals into digital signals so they can be processed by a receiving computer is referred to as
A) modulation B) demodulation C) synchronizing D) digitising
- 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 ?
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- 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) Start and stop bits are used in serial communication for
A) Error detection B) Error correction
C) Synchronization D) Slowing down the communication
- 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
- VIII) In TCP, a unique sequence number assigned to each
A) Byte B) Word C) Segment D) Message

P.T.O.



- 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
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C) Circuit switching D) Data gram switching
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C) Token ring[4 Mbps] D) Token ring[16 Mbps]
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C) Checksum Checking D) Cyclic Redundancy Checking
- XVII) Which of the following cables can transmit data at high speeds ?
A) Co axial cables B) Optical fibre cables
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- XVIII) Which of the following is a product of LLC sublayer ?
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C) PDU (Protocol Data Unit) D) Preamble
- XIX) To avoid transmission error a check figure is calculated by the
A) Receiving computer B) Transmitting computer
C) Both A) and B) D) None of above
- XX) In cyclic redundancy checking CRC is the
A) Divisor B) Quotient C) Dividend D) Remainder
-



Seat No.	
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**S.E. (Information Technology) (Part – II) (Old) Examination, 2016
COMPUTER NETWORKS – I**

Day and Date : Wednesday, 21-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** questions. **20**
- A) Explain Nyquist and Shannon channel capacity.
 - B) Explain Attenuation Distortion, Delay, Distortion, Noise.
 - C) Explain Simplex, Half duplex and Full duplex transmission with example.
 - D) Write a note on STOP and WAIT sliding window protocol.
 - E) Write a short note on network layer and presentation layer of OSI model.
3. Explain Cyclic Redundancy Check (CRC) technique with an example. **10**

OR

3. Explain GO-BACK-N and selective repeat sliding window protocol.
4. Write short note on (**any two**) : **10**
- A) ATM reference model
 - B) DLL design issues
 - C) TCP.

SECTION – II

5. Attempt **any four** questions. **20**
- A) Explain CSMA/CD multiple access protocol.
 - B) Compare Bridges and switches.
 - C) Explain different network layer design issues.
 - D) Write a note on ALOHA.
 - E) Differentiate IPv4 and IPv6.

Set S



6. Explain shorted path routing protocol in detail. 10

OR

6. Explain hierarchical routing algorithm with example.

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

A) Distance vector routing algorithm

B) Link state routing algorithm

C) IEEE standard 802.4.



SLR-EP – 217

Seat No.	
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Set	P
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**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
NETWORK MANAGEMENT**

Day and Date : Monday, 28-11-2016
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. Write the correct answer from the options given below (Objective) : **(14×1=14)**
- 1) 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
 - 2) A DNS client is called
 - a) DNS updater
 - b) DNS resolver
 - c) DNS handler
 - d) None of the mentioned
 - 3) Servers handle requests for other domains
 - a) Directly
 - b) By contacting remote DNS server
 - c) It is not possible
 - d) None of the mentioned
 - 4) DNS database contains
 - a) Name server records
 - b) Hostname-to-address records
 - c) Hostname aliases
 - d) All of the mentioned
 - 5) TCP checksum used to
 - a) Communicate destination
 - b) Protect TCP from mis delivery from IP
 - c) Calculate remote IP
 - d) None

P.T.O.



- 6) How can you connect to a server xyz.com over port number 1234 ?
- a) Telnet 1234 xyz.com b) Telnet xyz.com 1234
c) Connect xyz.com 1234 d) Connect 1234 xyz.com
- 7) When displaying a web page, the application layer uses the
- a) HTTP protocol b) FTP protocol
c) SMTP protocol d) None of the mentioned
- 8) To name objects globally, SMI uses an object identifier, which is a hierarchical identifier based on a _____ structure.
- a) Linear b) Tree c) Graph d) None of these
- 9) _____ runs the SNMP client program _____ runs the SNMP server program.
- a) A manager ; a manager b) An agent ; an agent
c) A manager ; an agent d) An manager ; a manager
- 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.	
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T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
NETWORK MANAGEMENT

Day and Date : Monday, 28-11-2016

Marks : 56

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

- Instructions :** 1) **All questions are compulsory.**
2) Figure in **right** indicates **full** marks.
3) **Draw neat and labelled sketches wherever required.**

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- a) What is SMTP architecture ?
 - b) How can you connect to a server xyz.com over port number 1234 ?
 - c) What is need of DHCP ? Explain.
 - d) List out in detail the three steps of FTP.
3. Answer **any two** of the following : **(8×2=16)**
- a) Explain connection oriented concurrent server with suitable diagram.
 - b) Explain the terms related to WWW like browser, server URL and cookies.
 - c) Explain TELNET in detail.



SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) Explain the interface sub layers with figure.
 - b) Explain with figure IP forwarding table.
 - c) Explain GetRequest PDU and GetNextRequest PDU operations with figure.
 - d) Draw and explain the SNMP access policy.
5. Attempt **any two** : **(2×8=16)**
- a) Explain SNMP operations which comprise the message from manager to agent and agent to manager.
 - b) What is the advantage of firewall in the managed network ? Explain with figure primary techniques of controlling undesigned traffic.
 - c) What is SMI ? Explain all the data types of its object type.
-



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Seat No.	
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Set	Q
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**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
NETWORK MANAGEMENT**

Day and Date : Monday, 28-11-2016
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. Write the correct answer from the options given below (Objective) : **(14×1=14)**
- To name objects globally, SMI uses an object identifier, which is a hierarchical identifier based on a _____ structure.
a) Linear b) Tree c) Graph d) None of these
 - _____ runs the SNMP client program _____ runs the SNMP server program.
a) A manager ; a manager b) An agent ; an agent
c) A manager ; an agent d) An manager ; a manager
 - _____ 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
 - 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
 - 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

P.T.O.



- 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
- 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 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
- 9) A DNS client is called
- a) DNS updater
 - b) DNS resolver
 - c) DNS handler
 - d) None of the mentioned
- 10) Servers handle requests for other domains
- a) Directly
 - b) By contacting remote DNS server
 - c) It is not possible
 - d) None of the mentioned
- 11) DNS database contains
- a) Name server records
 - b) Hostname-to-address records
 - c) Hostname aliases
 - d) All of the mentioned
- 12) TCP checksum used to
- a) Communicate destination
 - b) Protect TCP from mis delivery from IP
 - c) Calculate remote IP
 - d) None
- 13) How can you connect to a server xyz.com over port number 1234 ?
- a) Telnet 1234 xyz.com
 - b) Telnet xyz.com 1234
 - c) Connect xyz.com 1234
 - d) Connect 1234 xyz.com
- 14) When displaying a web page, the application layer uses the
- a) HTTP protocol
 - b) FTP protocol
 - c) SMTP protocol
 - d) None of the mentioned



Seat No.	
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T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
NETWORK MANAGEMENT

Day and Date : Monday, 28-11-2016

Marks : 56

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

- Instructions :** 1) **All** questions are **compulsory**.
2) Figure in **right** indicates **full** marks.
3) **Draw** neat and labelled sketches **wherever** required.

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- a) What is SMTP architecture ?
 - b) How can you connect to a server xyz.com over port number 1234 ?
 - c) What is need of DHCP ? Explain.
 - d) List out in detail the three steps of FTP.
3. Answer **any two** of the following : **(8×2=16)**
- a) Explain connection oriented concurrent server with suitable diagram.
 - b) Explain the terms related to WWW like browser, server URL and cookies.
 - c) Explain TELNET in detail.



SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) Explain the interface sub layers with figure.
 - b) Explain with figure IP forwarding table.
 - c) Explain GetRequest PDU and GetNextRequest PDU operations with figure.
 - d) Draw and explain the SNMP access policy.
5. Attempt **any two** : **(2×8=16)**
- a) Explain SNMP operations which comprise the message from manager to agent and agent to manager.
 - b) What is the advantage of firewall in the managed network ? Explain with figure primary techniques of controlling undesigned traffic.
 - c) What is SMI ? Explain all the data types of its object type.
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SLR-EP – 217

Seat No.	
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Set	R
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**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
NETWORK MANAGEMENT**

Day and Date : Monday, 28-11-2016
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. Write the correct answer from the options given below (Objective) : **(14×1=14)**
- 1) TCP checksum used to
 - a) Communicate destination
 - b) Protect TCP from mis delivery from IP
 - c) Calculate remote IP
 - d) None
 - 2) How can you connect to a server xyz.com over port number 1234 ?
 - a) Telnet 1234 xyz.com
 - b) Telnet xyz.com 1234
 - c) Connect xyz.com 1234
 - d) Connect 1234 xyz.com
 - 3) When displaying a web page, the application layer uses the
 - a) HTTP protocol
 - b) FTP protocol
 - c) SMTP protocol
 - d) None of the mentioned
 - 4) To name objects globally, SMI uses an object identifier, which is a hierarchical identifier based on a _____ structure.
 - a) Linear
 - b) Tree
 - c) Graph
 - d) None of these
 - 5) _____ runs the SNMP client program _____ runs the SNMP server program.
 - a) A manager ; a manager
 - b) An agent ; an agent
 - c) A manager ; an agent
 - d) An manager ; a manager

P.T.O.



- 6) _____ 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
- 7) 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
- 8) 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
- 9) 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
- 10) 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
- 11) 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
- 12) A DNS client is called
a) DNS updater b) DNS resolver
c) DNS handler d) None of the mentioned
- 13) Servers handle requests for other domains
a) Directly
b) By contacting remote DNS server
c) It is not possible
d) None of the mentioned
- 14) DNS database contains
a) Name server records b) Hostname-to-address records
c) Hostname aliases d) All of the mentioned



Seat No.	
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T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
NETWORK MANAGEMENT

Day and Date : Monday, 28-11-2016

Marks : 56

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

- Instructions :** 1) *All questions are compulsory.*
2) *Figure in **right** indicates **full** marks.*
3) ***Draw** neat and labelled sketches **wherever** required.*

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- a) What is SMTP architecture ?
 - b) How can you connect to a server xyz.com over port number 1234 ?
 - c) What is need of DHCP ? Explain.
 - d) List out in detail the three steps of FTP.
3. Answer **any two** of the following : **(8×2=16)**
- a) Explain connection oriented concurrent server with suitable diagram.
 - b) Explain the terms related to WWW like browser, server URL and cookies.
 - c) Explain TELNET in detail.



SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) Explain the interface sub layers with figure.
 - b) Explain with figure IP forwarding table.
 - c) Explain GetRequest PDU and GetNextRequest PDU operations with figure.
 - d) Draw and explain the SNMP access policy.
5. Attempt **any two** : **(2×8=16)**
- a) Explain SNMP operations which comprise the message from manager to agent and agent to manager.
 - b) What is the advantage of firewall in the managed network ? Explain with figure primary techniques of controlling undesigned traffic.
 - c) What is SMI ? Explain all the data types of its object type.
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SLR-EP – 217

Seat No.	
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Set	S
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**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
NETWORK MANAGEMENT**

Day and Date : Monday, 28-11-2016
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. Write the correct answer from the options given below (Objective) : **(14×1=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

P.T.O.



- 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
- 6) 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
- 7) A DNS client is called
- a) DNS updater
 - b) DNS resolver
 - c) DNS handler
 - d) None of the mentioned
- 8) Servers handle requests for other domains
- a) Directly
 - b) By contacting remote DNS server
 - c) It is not possible
 - d) None of the mentioned
- 9) DNS database contains
- a) Name server records
 - b) Hostname-to-address records
 - c) Hostname aliases
 - d) All of the mentioned
- 10) TCP checksum used to
- a) Communicate destination
 - b) Protect TCP from mis delivery from IP
 - c) Calculate remote IP
 - d) None
- 11) How can you connect to a server xyz.com over port number 1234 ?
- a) Telnet 1234 xyz.com
 - b) Telnet xyz.com 1234
 - c) Connect xyz.com 1234
 - d) Connect 1234 xyz.com
- 12) When displaying a web page, the application layer uses the
- a) HTTP protocol
 - b) FTP protocol
 - c) SMTP protocol
 - d) None of the mentioned
- 13) To name objects globally, SMI uses an object identifier, which is a hierarchical identifier based on a _____ structure.
- a) Linear
 - b) Tree
 - c) Graph
 - d) None of these
- 14) _____ runs the SNMP client program _____ runs the SNMP server program.
- a) A manager ; a manager
 - b) An agent ; an agent
 - c) A manager ; an agent
 - d) An manager ; a manager



Seat No.	
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T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
NETWORK MANAGEMENT

Day and Date : Monday, 28-11-2016

Marks : 56

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

- Instructions :** 1) **All** questions are **compulsory**.
2) Figure in **right** indicates **full** marks.
3) **Draw** neat and labelled sketches **wherever** required.

SECTION – I

2. Answer **any three** of the following : **(4×3=12)**
- a) What is SMTP architecture ?
 - b) How can you connect to a server xyz.com over port number 1234 ?
 - c) What is need of DHCP ? Explain.
 - d) List out in detail the three steps of FTP.
3. Answer **any two** of the following : **(8×2=16)**
- a) Explain connection oriented concurrent server with suitable diagram.
 - b) Explain the terms related to WWW like browser, server URL and cookies.
 - c) Explain TELNET in detail.



SECTION – II

4. Attempt **any three** : **(3×4=12)**
- a) Explain the interface sub layers with figure.
 - b) Explain with figure IP forwarding table.
 - c) Explain GetRequest PDU and GetNextRequest PDU operations with figure.
 - d) Draw and explain the SNMP access policy.
5. Attempt **any two** : **(2×8=16)**
- a) Explain SNMP operations which comprise the message from manager to agent and agent to manager.
 - b) What is the advantage of firewall in the managed network ? Explain with figure primary techniques of controlling undesigned traffic.
 - c) What is SMI ? Explain all the data types of its object type.
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Seat No.	
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Set	P
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T.E. (IT) (New CGPA) (Part – I) Examination, 2016
COMPUTER ORGANIZATION AND ARCHITECTURE

Day and Date : Wednesday, 30-11-2016
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. Chose the correct answers :

- 1) 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
- 2) The MOTOROLA 680X0 series is _____ Microprocessor Series computer.
A) RISC B) CISC
C) Both of these D) None of these
- 3) Most RISC instructions involve only _____ operations that are internal to the CPU, for fast processing.
A) Register to cache B) Register to RAM
C) Register to register D) None of these
- 4) MDR stands for _____
A) Memory Direct Register B) Memory Data Register
C) Memory Data Record D) None of these
- 5) Multi programmed computers that process many user programs concurrently and support users at interactive terminals or workstations are called _____
A) Time Sharing Systems B) Batch Processing
C) Multi Programming Systems D) None of these
- 6) CD ROMs are also called as _____
A) Magnetic Storage Device B) Semi Conductor Device
C) Optical Storage Device D) None of these
- 7) 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) 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
- 9) Let T_1 be the time taken for a single instruction on a pipelined CPU and T_2 be the time take for a single instruction on a non-pipelined but identical CPU. Comparing T_1 and T_2 we can say that
- A) $T_1 = T_2 + \text{the time taken for one instruction fetch cycle}$
 - B) $T_1 < T_2$
 - C) $T_1 \leq T_2$
 - D) $T_1 \geq T_2$
- 10) _____ 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
- 11) Every cache that has a copy of the data from a block of physical memory also has a copy of the sharing status of the block, but no centralized state is kept is called _____
- A) Snooping based protocol
 - B) Reservation stations
 - C) Directory based protocol
 - D) All of the above
- 12) _____ is a technique for allowing instructions to execute out of order when there are sufficient resources and no data dependences.
- A) Very Long Instruction Word
 - B) Score boarding
 - C) Branch delays
 - D) None of these
- 13) Snooping protocols is called a _____ because it invalidates other copies on a write.
- A) Read invalidate protocol
 - B) Write invalidate protocol
 - C) Write validate protocol
 - D) Read and write protocol
- 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
-



Seat No.	
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**T.E. (IT) (New CGPA) (Part – I) Examination, 2016
COMPUTER ORGANIZATION AND ARCHITECTURE**

Day and Date : Wednesday, 30-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain Von-Neumann model and also explain trends in the computer architecture.
 - 2) Give the salient features of five generations of computers.
 - 3) Multiply 21 and 14 using Bit pair recoding method (Modified Booth Algorithm).
 - 4) Explain the concept of Cache memory in detail.
 - 5) Represent -12.625_{10} in single precision IEEE-754 format.
3. Attempt **any two** : **(2×8=16)**
- 1) Explain instruction format and PSR format of ARC – A Risc Computer in detail.
 - 2) Perform Division of $45/8$ using Restoring division Algorithm.
 - 3) Design Hardwired control unit using sequence counter method.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) What is dependability ? Explain two main measures of dependability.
 - 2) With a neat diagram explain the classic five – stage pipeline for a RISC Processor.
 - 3) What is the purpose of Distributed Memory Multiprocessor ? Explain about the same.
 - 4) What is Snoopy bus protocol ? Explain about the same.
 - 5) Explain different techniques in reducing pipeline branch penalties.
5. Attempt **any two** : **(2×8=16)**
- 1) With a neat diagram give the basic structure of Tomasulo based MIPS-FP unit and explain the various fields of reservation stations.
 - 2) Explain Basic pipeline schedule and loop unrolling compiler techniques for exposing ILP.
 - 3) Explain the basic VLIW approach for exploiting ILP, using multiple issues.



SLR-EP – 218

Seat No.	
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Set	Q
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**T.E. (IT) (New CGPA) (Part – I) Examination, 2016
COMPUTER ORGANIZATION AND ARCHITECTURE**

Day and Date : Wednesday, 30-11-2016
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. Chose the correct answers :

- 1) 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
- 2) Let T1 be the time taken for a single instruction on a pipelined CPU and T2 be the time take for a single instruction on a non-pipelined but identical CPU. Comparing T1 and T2 we can say that
 - A) $T1 = T2 + \text{the time taken for one instruction fetch cycle}$
 - B) $T1 < t2$
 - C) $T1 \leq T2$
 - D) $T1 \geq T2$
- 3) _____ 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
- 4) Every cache that has a copy of the data from a block of physical memory also has a copy of the sharing status of the block, but no centralized state is kept is called _____.
 - A) Snooping based protocol
 - B) Reservation stations
 - C) Directory based protocol
 - D) All of the above
- 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

P.T.O.



- 6) Snooping protocols is called a _____ because it invalidates other copies on a write.
- A) Read invalidate protocol B) Write invalidate protocol
C) Write validate protocol D) Read and write protocol
- 7) 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
- 8) 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
- 9) The MOTOROLA 680X0 series is _____ Microprocessor Series computer.
- A) RISC B) CISC
C) Both of these D) None of these
- 10) Most RISC instructions involve only _____ operations that are internal to the CPU, for fast processing.
- A) Register to cache B) Register to RAM
C) Register to register D) None of these
- 11) MDR stands for _____
- A) Memory Direct Register B) Memory Data Register
C) Memory Data Record D) None of these
- 12) Multi programmed computers that process many user programs concurrently and support users at interactive terminals or workstations are called _____
- A) Time Sharing Systems B) Batch Processing
C) Multi Programming Systems 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
- _____



Seat No.	
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**T.E. (IT) (New CGPA) (Part – I) Examination, 2016
COMPUTER ORGANIZATION AND ARCHITECTURE**

Day and Date : Wednesday, 30-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain Von-Neumann model and also explain trends in the computer architecture.
 - 2) Give the salient features of five generations of computers.
 - 3) Multiply 21 and 14 using Bit pair recoding method (Modified Booth Algorithm).
 - 4) Explain the concept of Cache memory in detail.
 - 5) Represent -12.625_{10} in single precision IEEE-754 format.
3. Attempt **any two** : **(2×8=16)**
- 1) Explain instruction format and PSR format of ARC – A Risc Computer in detail.
 - 2) Perform Division of $45/8$ using Restoring division Algorithm.
 - 3) Design Hardwired control unit using sequence counter method.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) What is dependability ? Explain two main measures of dependability.
 - 2) With a neat diagram explain the classic five – stage pipeline for a RISC Processor.
 - 3) What is the purpose of Distributed Memory Multiprocessor ? Explain about the same.
 - 4) What is Snoopy bus protocol ? Explain about the same.
 - 5) Explain different techniques in reducing pipeline branch penalties.
5. Attempt **any two** : **(2×8=16)**
- 1) With a neat diagram give the basic structure of Tomasulo based MIPS-FP unit and explain the various fields of reservation stations.
 - 2) Explain Basic pipeline schedule and loop unrolling compiler techniques for exposing ILP.
 - 3) Explain the basic VLIW approach for exploiting ILP, using multiple issues.



SLR-EP – 218

Seat No.	
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Set	R
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**T.E. (IT) (New CGPA) (Part – I) Examination, 2016
COMPUTER ORGANIZATION AND ARCHITECTURE**

Day and Date : Wednesday, 30-11-2016
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. Chose the correct answers :

- 1) Multi programmed computers that process many user programs concurrently and support users at interactive terminals or workstations are called _____
A) Time Sharing Systems B) Batch Processing
C) Multi Programming Systems 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) 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
- 5) Let T1 be the time taken for a single instruction on a pipelined CPU and T2 be the time take for a single instruction on a non-pipelined but identical CPU. Comparing T1 and T2 we can say that
A) $T1 = T2 + \text{the time taken for one instruction fetch cycle}$
B) $T1 < t2$
C) $T1 \leq T2$
D) $T1 \geq T2$

P.T.O.



- 6) _____ 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
- 7) Every cache that has a copy of the data from a block of physical memory also has a copy of the sharing status of the block, but no centralized state is kept is called _____
A) Snooping based protocol B) Reservation stations
C) Directory based protocol D) All of the above
- 8) _____ is a technique for allowing instructions to execute out of order when there are sufficient resources and no data dependences.
A) Very Long Instruction Word B) Score boarding
C) Branch delays D) None of these
- 9) Snooping protocols is called a _____ because it invalidates other copies on a write.
A) Read invalidate protocol B) Write invalidate protocol
C) Write validate protocol D) Read and write protocol
- 10) 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
- 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) Most RISC instructions involve only _____ operations that are internal to the CPU, for fast processing.
A) Register to cache B) Register to RAM
C) Register to register D) None of these
- 14) MDR stands for _____
A) Memory Direct Register B) Memory Data Register
C) Memory Data Record D) None of these
-



Seat No.	
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**T.E. (IT) (New CGPA) (Part – I) Examination, 2016
COMPUTER ORGANIZATION AND ARCHITECTURE**

Day and Date : Wednesday, 30-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain Von-Neumann model and also explain trends in the computer architecture.
 - 2) Give the salient features of five generations of computers.
 - 3) Multiply 21 and 14 using Bit pair recoding method (Modified Booth Algorithm).
 - 4) Explain the concept of Cache memory in detail.
 - 5) Represent -12.625_{10} in single precision IEEE-754 format.
3. Attempt **any two** : **(2×8=16)**
- 1) Explain instruction format and PSR format of ARC – A Risc Computer in detail.
 - 2) Perform Division of $45/8$ using Restoring division Algorithm.
 - 3) Design Hardwired control unit using sequence counter method.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) What is dependability ? Explain two main measures of dependability.
 - 2) With a neat diagram explain the classic five – stage pipeline for a RISC Processor.
 - 3) What is the purpose of Distributed Memory Multiprocessor ? Explain about the same.
 - 4) What is Snoopy bus protocol ? Explain about the same.
 - 5) Explain different techniques in reducing pipeline branch penalties.
5. Attempt **any two** : **(2×8=16)**
- 1) With a neat diagram give the basic structure of Tomasulo based MIPS-FP unit and explain the various fields of reservation stations.
 - 2) Explain Basic pipeline schedule and loop unrolling compiler techniques for exposing ILP.
 - 3) Explain the basic VLIW approach for exploiting ILP, using multiple issues.



Seat No.	
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Set	S
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T.E. (IT) (New CGPA) (Part – I) Examination, 2016
COMPUTER ORGANIZATION AND ARCHITECTURE

Day and Date : Wednesday, 30-11-2016
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. Chose the correct answers :

- 1) _____ 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
- 2) Every cache that has a copy of the data from a block of physical memory also has a copy of the sharing status of the block, but no centralized state is kept is called _____.
A) Snooping based protocol B) Reservation stations
C) Directory based protocol D) All of the above
- 3) _____ is a technique for allowing instructions to execute out of order when there are sufficient resources and no data dependences.
A) Very Long Instruction Word B) Score boarding
C) Branch delays D) None of these
- 4) Snooping protocols is called a _____ because it invalidates other copies on a write.
A) Read invalidate protocol B) Write invalidate protocol
C) Write validate protocol D) Read and write protocol
- 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) 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



- 7) The MOTOROLA 680X0 series is _____ Microprocessor Series computer.
A) RISC
B) CISC
C) Both of these
D) None of these
- 8) Most RISC instructions involve only _____ operations that are internal to the CPU, for fast processing.
A) Register to cache
B) Register to RAM
C) Register to register
D) None of these
- 9) MDR stands for _____
A) Memory Direct Register
B) Memory Data Register
C) Memory Data Record
D) None of these
- 10) Multi programmed computers that process many user programs concurrently and support users at interactive terminals or workstations are called _____
A) Time Sharing Systems
B) Batch Processing
C) Multi Programming Systems
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) 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) Let T_1 be the time taken for a single instruction on a pipelined CPU and T_2 be the time take for a single instruction on a non-pipelined but identical CPU. Comparing T_1 and T_2 we can say that
A) $T_1 = T_2 +$ the time taken for one instruction fetch cycle
B) $T_1 < T_2$
C) $T_1 \leq T_2$
D) $T_1 \geq T_2$
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Seat No.	
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**T.E. (IT) (New CGPA) (Part – I) Examination, 2016
COMPUTER ORGANIZATION AND ARCHITECTURE**

Day and Date : Wednesday, 30-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

SECTION – I

2. Attempt **any three** : **(3×4=12)**
- 1) Explain Von-Neumann model and also explain trends in the computer architecture.
 - 2) Give the salient features of five generations of computers.
 - 3) Multiply 21 and 14 using Bit pair recoding method (Modified Booth Algorithm).
 - 4) Explain the concept of Cache memory in detail.
 - 5) Represent -12.625_{10} in single precision IEEE-754 format.
3. Attempt **any two** : **(2×8=16)**
- 1) Explain instruction format and PSR format of ARC – A Risc Computer in detail.
 - 2) Perform Division of $45/8$ using Restoring division Algorithm.
 - 3) Design Hardwired control unit using sequence counter method.

SECTION – II

4. Attempt **any three** : **(3×4=12)**
- 1) What is dependability ? Explain two main measures of dependability.
 - 2) With a neat diagram explain the classic five – stage pipeline for a RISC Processor.
 - 3) What is the purpose of Distributed Memory Multiprocessor ? Explain about the same.
 - 4) What is Snoopy bus protocol ? Explain about the same.
 - 5) Explain different techniques in reducing pipeline branch penalties.
5. Attempt **any two** : **(2×8=16)**
- 1) With a neat diagram give the basic structure of Tomasulo based MIPS-FP unit and explain the various fields of reservation stations.
 - 2) Explain Basic pipeline schedule and loop unrolling compiler techniques for exposing ILP.
 - 3) Explain the basic VLIW approach for exploiting ILP, using multiple issues.



SLR-EP – 219

Seat No.	
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Set

P

**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
SYSTEM SOFTWARE**

Day and Date : Friday, 2-12-2016

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 :

(1×14=14)

- 1) Analysis which determines the meaning of a statement once its grammatical structure becomes known is termed as
 - a) semantic analysis
 - b) syntax analysis
 - c) regular analysis
 - d) general analysis
- 2) Issues in lexical analysis
 - a) Code optimization
 - b) Compiler portability and efficiency
 - c) Both
 - d) None
- 3) "Less than 3" is
 - a) literal token
 - b) num token
 - c) relation token
 - d) none
- 4) A parser which is a variant of top-down parsing without backtracking
 - a) Recursive Descend
 - b) Operator Precedence
 - c) LL (1) parser
 - d) LALR Parser
- 5) An assembler is
 - a) programming language dependent
 - b) syntax dependant
 - c) machine dependant
 - d) data dependant
- 6) The translator which perform macro expansion is called a
 - a) Macro processor
 - b) Macro pre-processor
 - c) Micro pre-processor
 - d) Assembler
- 7) Load address for the first word of the program is called
 - a) linker address origin
 - b) load address origin
 - c) phase library
 - d) absolute library

P.T.O.



- 8) Which of the following statement is true ?
- a) SLR parser is more powerful than LALR
 - b) LALR parser is more powerful than canonical LR parser
 - c) canonical LR parser is more powerful than LALR parser
 - d) parser SLR, canonical CR and LALR have the same power
- 9) Which of the following is used for grouping of characteristics into tokens ?
- a) parser
 - b) code optimization
 - c) code generator
 - d) lexical analyzer
- 10) Pee hole optimization is a form of
- a) loop optimization
 - b) local optimization
 - c) constant folding
 - d) none of these
- 11) Loading come in picture at
- a) compile time
 - b) translation time
 - c) execution
 - d) none
- 12) In rightmost derivation the rightmost _____ is replaced at each step.
- a) terminal
 - b) non-terminal
 - c) both
 - d) none
- 13) Number of digits used for Opcode in m/c instruction format are
- a) 1
 - b) 2
 - c) 3
 - d) None
- 14) A linker program
- a) places the program in the memory for the purpose of execution
 - b) relocates the program to execute from the specific memory area
 - c) links the program with other programs needed for its execution
 - d) interfaces the program with the entities generating its input data
-



Seat No.	
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**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
SYSTEM SOFTWARE**

Day and Date : Friday, 2-12-2016

Marks : 56

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

Instruction : Figures to right indicates full marks.

SECTION – I

2. Answer **any three** of the following. **(4×3=12)**
- a) What are the language processor tools ?
 - b) Discuss different parameter passing methods in MACRO.
 - c) Explain START, END, ORIGIN, EQU, LTORG with example.
 - d) What is the role of lexical analyzer ?
3. Answer **any two** of the following. **(8×2=16)**
- a) Explain Different ways of parsing
 - b) Explain design of macro processor.
 - c) Write pass I algorithm of two pass assembler with its data structure and files.

SECTION – II

4. Answer **any three** of the following. **(4×3=12)**
- a) What are sources of optimization ?
 - b) Compare 3 code optimization techniques.
 - c) Explain code generation from Dags and the dynamic code generation algorithm.
 - d) With example explain linking for overlays.
5. Answer **any two** of the following. **(8×2=16)**
- e) Explain in detail Subroutine linkages in loader.
 - f) Explain self relocating program.
 - g) Explain linker for MS-DOS.



SLR-EP – 219

Seat No.	
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Set

Q

**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
SYSTEM SOFTWARE**

Day and Date : Friday, 2-12-2016

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 :

(1×14=14)

- 1) Which of the following statement is true ?
 - a) SLR parser is more powerful than LALR
 - b) LALR parser is more powerful than canonical LR parser
 - c) canonical LR parser is more powerful than LALR parser
 - d) parser SLR, canonical CR and LALR have the same power
- 2) Which of the following is used for grouping of characteristics into tokens ?
 - a) parser
 - b) code optimization
 - c) code generator
 - d) lexical analyzer
- 3) Pee hole optimization is a form of
 - a) loop optimization
 - b) local optimization
 - c) constant folding
 - d) none of these
- 4) Loading come in picture at
 - a) compile time
 - b) translation time
 - c) execution
 - d) none
- 5) In rightmost derivation the rightmost _____ is replaced at each step.
 - a) terminal
 - b) non-terminal
 - c) both
 - d) none
- 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) A linker program
- a) places the program in the memory for the purpose of execution
 - b) relocates the program to execute from the specific memory area
 - c) links the program with other programs needed for its execution
 - d) interfaces the program with the entities generating its input data
- 8) Analysis which determines the meaning of a statement once its grammatical structure becomes known is termed as
- a) semantic analysis
 - b) syntax analysis
 - c) regular analysis
 - d) general analysis
- 9) Issues in lexical analysis
- a) Code optimization
 - b) Compiler portability and efficiency
 - c) Both
 - d) None
- 10) "Less than 3" is
- a) literal token
 - b) num token
 - c) relation token
 - d) none
- 11) A parser which is a variant of top-down parsing without backtracking
- a) Recursive Descend
 - b) Operator Precedence
 - c) LL (1) parser
 - d) LALR Parser
- 12) An assembler is
- a) programming language dependent
 - b) syntax dependant
 - c) machine dependant
 - d) data dependant
- 13) The translator which perform macro expansion is called a
- a) Macro processor
 - b) Macro pre-processor
 - c) Micro pre-processor
 - d) Assembler
- 14) Load address for the first word of the program is called
- a) linker address origin
 - b) load address origin
 - c) phase library
 - d) absolute library
-



Seat No.	
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**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
SYSTEM SOFTWARE**

Day and Date : Friday, 2-12-2016

Marks : 56

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

Instruction : Figures to right indicates full marks.

SECTION – I

2. Answer **any three** of the following. **(4×3=12)**
- a) What are the language processor tools ?
 - b) Discuss different parameter passing methods in MACRO.
 - c) Explain START, END, ORIGIN, EQU, LTORG with example.
 - d) What is the role of lexical analyzer ?
3. Answer **any two** of the following. **(8×2=16)**
- a) Explain Different ways of parsing
 - b) Explain design of macro processor.
 - c) Write pass I algorithm of two pass assembler with its data structure and files.

SECTION – II

4. Answer **any three** of the following. **(4×3=12)**
- a) What are sources of optimization ?
 - b) Compare 3 code optimization techniques.
 - c) Explain code generation from Dags and the dynamic code generation algorithm.
 - d) With example explain linking for overlays.
5. Answer **any two** of the following. **(8×2=16)**
- e) Explain in detail Subroutine linkages in loader.
 - f) Explain self relocating program.
 - g) Explain linker for MS-DOS.



SLR-EP – 219

Seat No.	
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Set

R

**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
SYSTEM SOFTWARE**

Day and Date : Friday, 2-12-2016
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) An assembler is
 - a) programming language dependent
 - b) syntax dependant
 - c) machine dependant
 - d) data dependant
- 2) The translator which perform macro expansion is called a
 - a) Macro processor
 - b) Macro pre-processor
 - c) Micro pre-processor
 - d) Assembler
- 3) Load address for the first word of the program is called
 - a) linker address origin
 - b) load address origin
 - c) phase library
 - d) absolute library
- 4) Which of the following statement is true ?
 - a) SLR parser is more powerful than LALR
 - b) LALR parser is more powerful than canonical LR parser
 - c) canonical LR parser is more powerful than LALR parser
 - d) parser SLR, canonical CR and LALR have the same power
- 5) Which of the following is used for grouping of characteristics into tokens ?
 - a) parser
 - b) code optimization
 - c) code generator
 - d) lexical analyzer
- 6) Pee hole optimization is a form of
 - a) loop optimization
 - b) local optimization
 - c) constant folding
 - d) none of these

P.T.O.



- 7) Loading come in picture at
- a) compile time
 - b) translation time
 - c) execution
 - d) none
- 8) In rightmost derivation the rightmost _____ is replaced at each step.
- a) terminal
 - b) non-terminal
 - c) both
 - d) none
- 9) Number of digits used for Opcode in m/c instruction format are
- a) 1
 - b) 2
 - c) 3
 - d) None
- 10) A linker program
- a) places the program in the memory for the purpose of execution
 - b) relocates the program to execute from the specific memory area
 - c) links the program with other programs needed for its execution
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- 11) Analysis which determines the meaning of a statement once its grammatical structure becomes known is termed as
- a) semantic analysis
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 - c) regular analysis
 - d) general analysis
- 12) Issues in lexical analysis
- a) Code optimization
 - b) Compiler portability and efficiency
 - c) Both
 - d) None
- 13) “Less than 3” is
- a) literal token
 - b) num token
 - c) relation token
 - d) none
- 14) A parser which is a variant of top-down parsing without backtracking
- a) Recursive Descend
 - b) Operator Precedence
 - c) LL (1) parser
 - d) LALR Parser
-



Seat No.	
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**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
SYSTEM SOFTWARE**

Day and Date : Friday, 2-12-2016

Marks : 56

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

Instruction : Figures to right indicates full marks.

SECTION – I

2. Answer **any three** of the following. **(4×3=12)**
- a) What are the language processor tools ?
 - b) Discuss different parameter passing methods in MACRO.
 - c) Explain START, END, ORIGIN, EQU, LTORG with example.
 - d) What is the role of lexical analyzer ?
3. Answer **any two** of the following. **(8×2=16)**
- a) Explain Different ways of parsing
 - b) Explain design of macro processor.
 - c) Write pass I algorithm of two pass assembler with its data structure and files.

SECTION – II

4. Answer **any three** of the following. **(4×3=12)**
- a) What are sources of optimization ?
 - b) Compare 3 code optimization techniques.
 - c) Explain code generation from Dags and the dynamic code generation algorithm.
 - d) With example explain linking for overlays.
5. Answer **any two** of the following. **(8×2=16)**
- e) Explain in detail Subroutine linkages in loader.
 - f) Explain self relocating program.
 - g) Explain linker for MS-DOS.



SLR-EP – 219

Seat No.	
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Set

S

**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
SYSTEM SOFTWARE**

Day and Date : Friday, 2-12-2016

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 :

(1×14=14)

- 1) Pee hole optimization is a form of
 - a) loop optimization
 - b) local optimization
 - c) constant folding
 - d) none of these
- 2) Loading come in picture at
 - a) compile time
 - b) translation time
 - c) execution
 - d) none
- 3) In rightmost derivation the rightmost _____ is replaced at each step.
 - a) terminal
 - b) non-terminal
 - c) both
 - d) none
- 4) Number of digits used for Opcode in m/c instruction format are
 - a) 1
 - b) 2
 - c) 3
 - d) None
- 5) A linker program
 - a) places the program in the memory for the purpose of execution
 - b) relocates the program to execute from the specific memory area
 - c) links the program with other programs needed for its execution
 - d) interfaces the program with the entities generating its input data

P.T.O.



- 6) Analysis which determines the meaning of a statement once its grammatical structure becomes known is termed as
- a) semantic analysis
 - b) syntax analysis
 - c) regular analysis
 - d) general analysis
- 7) Issues in lexical analysis
- a) Code optimization
 - b) Compiler portability and efficiency
 - c) Both
 - d) None
- 8) "Less than 3" is
- a) literal token
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- 11) The translator which perform macro expansion is called a
- a) Macro processor
 - b) Macro pre-processor
 - c) Micro pre-processor
 - d) Assembler
- 12) Load address for the first word of the program is called
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 - b) load address origin
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- 13) Which of the following statement is true ?
- a) SLR parser is more powerful than LALR
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 - c) canonical LR parser is more powerful than LALR parser
 - d) parser SLR, canonical CR and LALR have the same power
- 14) Which of the following is used for grouping of characteristics into tokens ?
- a) parser
 - b) code optimization
 - c) code generator
 - d) lexical analyzer
-



Seat No.	
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**T.E. (Information Technology) (Part – I) (New CGPA) Examination, 2016
SYSTEM SOFTWARE**

Day and Date : Friday, 2-12-2016

Marks : 56

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

Instruction : Figures to right indicates full marks.

SECTION – I

2. Answer **any three** of the following. **(4×3=12)**
- a) What are the language processor tools ?
 - b) Discuss different parameter passing methods in MACRO.
 - c) Explain START, END, ORIGIN, EQU, LTORG with example.
 - d) What is the role of lexical analyzer ?
3. Answer **any two** of the following. **(8×2=16)**
- a) Explain Different ways of parsing
 - b) Explain design of macro processor.
 - c) Write pass I algorithm of two pass assembler with its data structure and files.

SECTION – II

4. Answer **any three** of the following. **(4×3=12)**
- a) What are sources of optimization ?
 - b) Compare 3 code optimization techniques.
 - c) Explain code generation from Dags and the dynamic code generation algorithm.
 - d) With example explain linking for overlays.
5. Answer **any two** of the following. **(8×2=16)**
- e) Explain in detail Subroutine linkages in loader.
 - f) Explain self relocating program.
 - g) Explain linker for MS-DOS.



SLR-EP – 220

Seat No.	
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Set

P

T.E. (I.T.) (Part – I) (New – CGPA) Examination, 2016
DESIGN AND ANALYSIS OF ALGORITHM

Day and Date : Monday, 5-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) Which of the following properties are necessary for an Algorithm ?
 - a) Definiteness
 - b) Correctness
 - c) Effectiveness
 - d) a) and c)
- 2) Which of the following technique is not using for solve a 0-1 knapsack problem ?
 - a) Greedy
 - b) Dynamic programming
 - c) Branch and bound
 - d) All of the above
- 3) $T(n) = 2T(n/2) + n^2$ then $T(n) = ?$
 - a) (n^3)
 - b) (n^2)
 - c) (n)
 - d) (n^4)
- 4) The depth of a complete binary tree with 'n' nodes is
 - a) $\log(n+1) - 1$
 - b) $\log n$
 - c) $\log(n-1) + 1$
 - d) $\log n + 1$
- 5) The quick sort algorithm exploits _____ design technique.
 - a) Greedy
 - b) Dynamic programming
 - c) Divide and Conquer
 - d) Backtracking
- 6) Recursive algorithms are based on
 - a) Divide and conquer approach
 - b) Top-down approach
 - c) Bottom-up approach
 - d) Hierarchical approach
- 7) Pick the correct statement(s) from the following set of statements :
 - I) In the Kruskal's algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form a forest.
 - II) In Prim's algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form an orchard.
 - III) DFS, BFS algorithms always make use of a queue and stack respectively.
 - a) Only I
 - b) Only II
 - c) Only III
 - d) Both I and III

P.T.O.



- 8) Algorithms : From the following algorithm design techniques which one is used to find all pairs shortest distances in a graph ?
- a) Backtracking b) Greedy
c) Dynamic Programming d) Divide
- 9) $O(n)$ means computing time is
- a) Linear b) Constant c) Quadratic d) Exponential
- 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) In 8-queen problem two queen at position (i, j) and (k, l) are on the same diagonal only if
- a) $|j - l| = |i - k|$ b) $|j - i| = |k - l|$
c) $|j - i| <> |k - l|$ d) None of the above
- 12) 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
- 13) A node which has been generated and all of whose children have not yet been generated is called as
- a) dead node b) live node
c) both a) and b) d) none of the above
- 14) State generation methods in which E-node remains as E-node until it is dead lead to
- a) Back tracking b) Branch and Bound
c) Answer node d) None of the above
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Seat No.	
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T.E. (I.T.) (Part – I) (New – CGPA) Examination, 2016
DESIGN AND ANALYSIS OF ALGORITHM

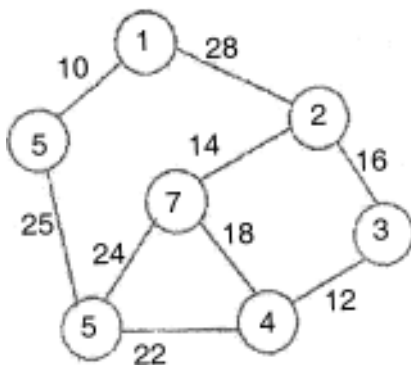
Day and Date : Monday, 5-12-2016
Time : 10.00 a.m. to 1.00 p.m.

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) What is pseudo code ? Explain the algorithm specification.
 - b) Differentiate between recursive and non-recursive algorithms.
 - c) Differentiate between Greedy method and Dynamic Programming.
 - d) Define divide and conquer method. Give recurrence relation for divide and conquer.
 - e) Explain optimal storage on tapes with example.
3. Answer **any one** of the following : 8
- a) With example and illustration, explain the procedure involved in PRIMS algorithm to find minimum spanning tree.
 - b) Consider the following instance of the knapsack problem $n = 3$, $m = 20$,
 $(p_1, p_2, p_3) = (25, 24, 15)$ and $(w_1, w_2, w_3) = (18, 15, 10)$.
Apply the algorithm to the given instance above and find the feasible solution.
4. Answer the following : 8
- Apply KRUSKALS algorithm to the following graph. Find the minimum cost.





SECTION – II

5. Answer **any three** : **(4×3=12)**
- a) Explain the principal of optimality with example.
 - b) 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.
 - c) Explain and draw the tree that is generated during backtracking using 4-queen problem.
 - d) Explain sum of subset. Explain bounding function for sum of subset.
 - e) Explain the terms :
 - i) Live node
 - ii) Answer state
 - iii) E-node
 - iv) Dead node
 - v) Solution state.
6. Solve **any one** : **8**
- a) Explain Least Cost (LC) search. Write an algorithm for LC-search.
 - b) 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 $m = 15$.
7. Solve the following : **8**
- Explain in details P, NP, NP-complete and NP-hard.
-



SLR-EP – 220

Seat No.	
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Set

Q

T.E. (I.T.) (Part – I) (New – CGPA) Examination, 2016
DESIGN AND ANALYSIS OF ALGORITHM

Day and Date : Monday, 5-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) Algorithms : From the following algorithm design techniques which one is used to find all pairs shortest distances in a graph ?
 - a) Backtracking
 - b) Greedy
 - c) Dynamic Programming
 - d) Divide
- 2) $O(n)$ means computing time is
 - a) Linear
 - b) Constant
 - c) Quadratic
 - d) Exponential
- 3) The smallest number of colors needed to color a graph G is called its _____
 - a) Face number
 - b) Chromatic number
 - c) Edges number
 - d) Vertex number
- 4) In 8-queen problem two queen at position (i, j) and (k, l) are on the same diagonal only if
 - a) $|j - l| = |i - k|$
 - b) $|j - i| = |k - l|$
 - c) $|j - i| <> |k - l|$
 - 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
- 6) A node which has been generated and all of whose children have not yet been generated is called as
 - a) dead node
 - b) live node
 - c) both a) and b)
 - d) none of the above
- 7) State generation methods in which E-node remains as E-node until it is dead lead to
 - a) Back tracking
 - b) Branch and Bound
 - c) Answer node
 - d) None of the above

P.T.O.



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T.E. (I.T.) (Part – I) (New – CGPA) Examination, 2016
DESIGN AND ANALYSIS OF ALGORITHM

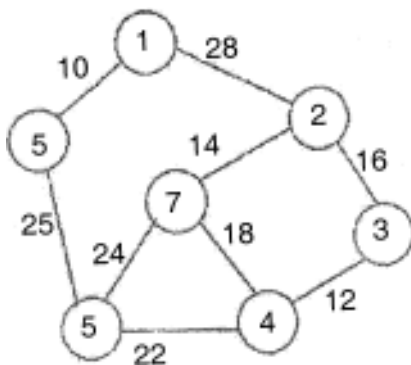
Day and Date : Monday, 5-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 56

- Instructions :** 1) **All** questions are **compulsory**.
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SECTION – I

2. Attempt **any three** of the following : 12
- a) What is pseudo code ? Explain the algorithm specification.
 - b) Differentiate between recursive and non-recursive algorithms.
 - c) Differentiate between Greedy method and Dynamic Programming.
 - d) Define divide and conquer method. Give recurrence relation for divide and conquer.
 - e) Explain optimal storage on tapes with example.
3. Answer **any one** of the following : 8
- a) With example and illustration, explain the procedure involved in PRIMS algorithm to find minimum spanning tree.
 - b) Consider the following instance of the knapsack problem $n = 3$, $m = 20$,
 $(p_1, p_2, p_3) = (25, 24, 15)$ and $(w_1, w_2, w_3) = (18, 15, 10)$.
Apply the algorithm to the given instance above and find the feasible solution.
4. Answer the following : 8
- Apply KRUSKALS algorithm to the following graph. Find the minimum cost.





SECTION – II

5. Answer **any three** : **(4×3=12)**
- a) Explain the principal of optimality with example.
 - b) 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.
 - c) Explain and draw the tree that is generated during backtracking using 4-queen problem.
 - d) Explain sum of subset. Explain bounding function for sum of subset.
 - e) Explain the terms :
 - i) Live node
 - ii) Answer state
 - iii) E-node
 - iv) Dead node
 - v) Solution state.
6. Solve **any one** : **8**
- a) Explain Least Cost (LC) search. Write an algorithm for LC-search.
 - b) 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 $m = 15$.
7. Solve the following : **8**
- Explain in details P, NP, NP-complete and NP-hard.
-



- 7) In 8-queen problem two queen at position (i, j) and (k, l) are on the same diagonal only if
- a) $|j - l| = |i - k|$
 - b) $|j - i| = |k - l|$
 - c) $|j - i| <> |k - l|$
 - d) None of the above
- 8) 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
- 9) A node which has been generated and all of whose children have not yet been generated is called as
- a) dead node
 - b) live node
 - c) both a) and b)
 - d) none of the above
- 10) State generation methods in which E-node remains as E-node until it is dead lead to
- a) Back tracking
 - b) Branch and Bound
 - c) Answer node
 - d) None of the above
- 11) Which of the following properties are necessary for an Algorithm ?
- a) Definiteness
 - b) Correctness
 - c) Effectiveness
 - d) a) and c)
- 12) Which of the following technique is not using for solve a 0-1 knapsack problem ?
- a) Greedy
 - b) Dynamic programming
 - c) Branch and bound
 - d) All of the above
- 13) $T(n) = 2T(n/2) + n^2$ then $T(n) = ?$
- a) (n^3)
 - b) (n^2)
 - c) (n)
 - d) (n^4)
- 14) The depth of a complete binary tree with 'n' nodes is
- a) $\log(n + 1) - 1$
 - b) $\log n$
 - c) $\log(n - 1) + 1$
 - d) $\log n + 1$
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T.E. (I.T.) (Part – I) (New – CGPA) Examination, 2016
DESIGN AND ANALYSIS OF ALGORITHM

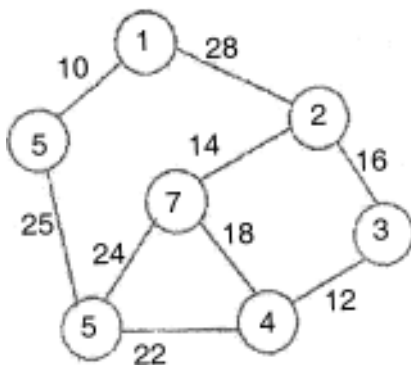
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Time : 10.00 a.m. to 1.00 p.m.

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) What is pseudo code ? Explain the algorithm specification.
 - b) Differentiate between recursive and non-recursive algorithms.
 - c) Differentiate between Greedy method and Dynamic Programming.
 - d) Define divide and conquer method. Give recurrence relation for divide and conquer.
 - e) Explain optimal storage on tapes with example.
3. Answer **any one** of the following : 8
- a) With example and illustration, explain the procedure involved in PRIMS algorithm to find minimum spanning tree.
 - b) Consider the following instance of the knapsack problem $n = 3$, $m = 20$,
 $(p_1, p_2, p_3) = (25, 24, 15)$ and $(w_1, w_2, w_3) = (18, 15, 10)$.
Apply the algorithm to the given instance above and find the feasible solution.
4. Answer the following : 8
- Apply KRUSKALS algorithm to the following graph. Find the minimum cost.





SECTION – II

5. Answer **any three** : **(4×3=12)**
- a) Explain the principal of optimality with example.
 - b) 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.
 - c) Explain and draw the tree that is generated during backtracking using 4-queen problem.
 - d) Explain sum of subset. Explain bounding function for sum of subset.
 - e) Explain the terms :
 - i) Live node
 - ii) Answer state
 - iii) E-node
 - iv) Dead node
 - v) Solution state.
6. Solve **any one** : **8**
- a) Explain Least Cost (LC) search. Write an algorithm for LC-search.
 - b) 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 $m = 15$.
7. Solve the following : **8**
- Explain in details P, NP, NP-complete and NP-hard.
-



Seat No.	
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Set **S**

T.E. (I.T.) (Part – I) (New – CGPA) Examination, 2016
DESIGN AND ANALYSIS OF ALGORITHM

Day and Date : Monday, 5-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

- 1) 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
- 2) In 8-queen problem two queen at position (i, j) and (k, l) are on the same diagonal only if
 - a) $|j - l| = |i - k|$
 - b) $|j - i| = |k - l|$
 - c) $|j - i| <> |k - l|$
 - d) None of the above
- 3) A problem is NP-Complete if the problem is
 - a) NP-Hard
 - b) P Only
 - c) NP-hard and in NP
 - d) NP-hard but not in NP
- 4) A node which has been generated and all of whose children have not yet been generated is called as
 - a) dead node
 - b) live node
 - c) both a) and b)
 - d) none of the above
- 5) State generation methods in which E-node remains as E-node until it is dead lead to
 - a) Back tracking
 - b) Branch and Bound
 - c) Answer node
 - d) None of the above
- 6) Which of the following properties are necessary for an Algorithm ?
 - a) Definiteness
 - b) Correctness
 - c) Effectiveness
 - d) a) and c)
- 7) Which of the following technique is not using for solve a 0-1 knapsack problem ?
 - a) Greedy
 - b) Dynamic programming
 - c) Branch and bound
 - d) All of the above

P.T.O.



- 8) $T(n) = 2T(n/2) + n^2$ then $T(n) = ?$
a) (n^3) b) (n^2) c) (n) d) (n^4)
- 9) The depth of a complete binary tree with 'n' nodes is
a) $\log(n+1) - 1$ b) $\log n$ c) $\log(n-1) + 1$ d) $\log n + 1$
- 10) The quick sort algorithm exploits _____ design technique.
a) Greedy b) Dynamic programming
c) Divide and Conquer d) Backtracking
- 11) Recursive algorithms are based on
a) Divide and conquer approach b) Top-down approach
c) Bottom-up approach d) Hierarchical approach
- 12) Pick the correct statement(s) from the following set of statements :
I) In the Kruskal's algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form a forest.
II) In Prim's algorithm, for the construction of minimal spanning tree for a graph, the selected edges always form an orchard.
III) DFS, BFS algorithms always make use of a queue and stack respectively.
a) Only I b) Only II c) Only III d) Both I and III
- 13) Algorithms : From the following algorithm design techniques which one is used to find all pairs shortest distances in a graph ?
a) Backtracking b) Greedy
c) Dynamic Programming d) Divide
- 14) $O(n)$ means computing time is
a) Linear b) Constant c) Quadratic d) Exponential
-



Seat No.	
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T.E. (I.T.) (Part – I) (New – CGPA) Examination, 2016
DESIGN AND ANALYSIS OF ALGORITHM

Day and Date : Monday, 5-12-2016
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

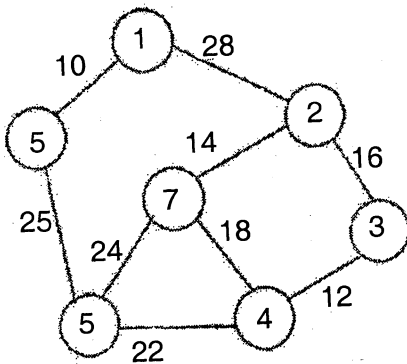
- a) What is pseudo code ? Explain the algorithm specification.
- b) Differentiate between recursive and non-recursive algorithms.
- c) Differentiate between Greedy method and Dynamic Programming.
- d) Define divide and conquer method. Give recurrence relation for divide and conquer.
- e) Explain optimal storage on tapes with example.

3. Answer **any one** of the following : 8

- a) With example and illustration, explain the procedure involved in PRIMS algorithm to find minimum spanning tree.
- b) Consider the following instance of the knapsack problem $n = 3, m = 20,$
 $(p_1, p_2, p_3) = (25, 24, 15)$ and $(w_1, w_2, w_3) = (18, 15, 10).$
Apply the algorithm to the given instance above and find the feasible solution.

4. Answer the following : 8

Apply KRUSKALS algorithm to the following graph. Find the minimum cost.





SECTION – II

5. Answer **any three** : **(4×3=12)**
- a) Explain the principal of optimality with example.
 - b) 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.
 - c) Explain and draw the tree that is generated during backtracking using 4-queen problem.
 - d) Explain sum of subset. Explain bounding function for sum of subset.
 - e) Explain the terms :
 - i) Live node
 - ii) Answer state
 - iii) E-node
 - iv) Dead node
 - v) Solution state.
6. Solve **any one** : **8**
- a) Explain Least Cost (LC) search. Write an algorithm for LC-search.
 - b) 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 $m = 15$.
7. Solve the following : **8**
- Explain in details P, NP, NP-complete and NP-hard.
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Seat No.	
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Set	P
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**T.E. (Information Technology) (Part – I) Examination, 2016
(New CGPA)**

PRINCIPLES OF OPERATING SYSTEMS

Day and Date : Wednesday, 7-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) What is the ready state of a process ?
 - A) When process is scheduled to run after some execution
 - B) When process is unable to run until some task has been completed
 - C) When process is using the CPU
 - D) None of the mentioned
- 2) Which run on computer hardware and serve as platform for other software to run on ?
 - A) Application Software
 - B) Operating System
 - C) System Software
 - D) All
- 3) The degree of multi-programming is
 - A) The number of processes executed per unit time
 - B) The number of processes in the ready queue
 - C) The number of processes in the I/O queue
 - D) The number of processes in memory
- 4) The entry of all the PCBs of the current processes is in
 - A) Process Register
 - B) Program Counter
 - C) Process Table
 - D) Process Unit
- 5) A single thread of control allows the process to perform
 - A) Only one task at a time
 - B) Multiple tasks at a time
 - C) Both
 - D) None of these
- 6) Message passing system allows processes to
 - A) Communicate with one another without resorting to shared data
 - B) Communicate with one another by resorting to shared data
 - C) Share data
 - D) Name the recipient or sender of the message

P.T.O.



- 7) In multilevel feedback scheduling algorithm
- A) A process can move to a different classified ready queue
 - B) Classification of ready queue is permanent
 - C) Processes are not classified into groups
 - D) None of the mentioned
- 8) In indirect communication between processes P and Q
- A) There is another process R to handle and pass on the messages between P and Q
 - B) There is another machine between the two processes to help communication
 - C) There is a mailbox to help communication between P and Q
 - D) None of these
- 9) A process is thrashing if
- A) It spends a lot of time executing, rather than paging
 - B) It spends a lot of time paging, than executing
 - C) It has no memory allocated to it
 - D) None of these
- 10) For LRU page replacement algorithm with 5 frames, the number of page faults is
- A) 10
 - B) 14
 - C) 8
 - D) 11
- 11) Each entry in a segment table has a
- A) Segment base and limit
 - B) Segment base and peak
 - C) Segment limit and value
 - D) Only segment value
- 12) When device A has a cable that plugs into device B and device B has a Set P Set Pcable that plugs into device C and device C plugs into a port on the computer, this arrangement is called a
- A) Port
 - B) Daisy chain
 - C) Bus
 - D) Cable
- 13) The interrupt vector contains
- A) The interrupts
 - B) The memory addresses of specialized interrupt handlers
 - C) The identifiers of interrupts
 - D) The device addresses
- 14) With relocation and limit registers, each logical address must be _____ the limit register.
- A) Less than
 - B) Equal to
 - C) Greater than
 - D) None of these



Seat No.	
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**T.E. (Information Technology) (Part – I) Examination, 2016
(New CGPA)
PRINCIPLES OF OPERATING SYSTEMS**

Day and Date : Wednesday, 7-12-2016

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

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

- a) What is Operating System ? Draw and explain Computer System structure.
- b) Define the following terms : Job scheduler, CPU scheduler, Job queue, Ready queue, Device queue.
- c) Explain spooling with diagram with the help of diagram.
- d) Describe direct and indirect communication in detail.

3. Attempt **any one** : **(1×8=8)**

- a) Write and explain an algorithm for bounded buffer producer-consumer problem in detail.
- b) Describe the following algorithms with example (assume data whenever required)
 - i) FCFS Scheduling
 - ii) Round Robin Scheduling

4. Attempt **any one** : **(1×8=8)**

- a) Explain critical section problem and Peterson's solution in detail.
- b) What is RPC ? Explain execution of RPC with diagram.

Set P



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain Swapping of two processes using a disk as a backing store.
 - b) Write short note on Thrashing.
 - c) What is deadlock problem ? Explain methods for handling deadlocks.
 - d) Explain services provided by the Kernel's I/O subsystem.
6. Attempt **any one** : **(1×8=8)**
- a) Explain any two classical problems of synchronization in detail.
 - b) Describe deadlock detection methods for single and multiple instances of resource type.
7. Attempt **any one** : **(1×8=8)**
- a) What is virtual memory ? Explain demand paging with suitable example.
 - b) Explain in detail Kernel I/O sub-system.
-



SLR-EP – 221

Seat No.	
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Set

Q

**T.E. (Information Technology) (Part – I) Examination, 2016
(New CGPA)**

PRINCIPLES OF OPERATING SYSTEMS

Day and Date : Wednesday, 7-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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3) *All questions are compulsory.*

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) In indirect communication between processes P and Q
 - A) There is another process R to handle and pass on the messages between P and Q
 - B) There is another machine between the two processes to help communication
 - C) There is a mailbox to help communication between P and Q
 - D) None of these
- 2) A process is thrashing if
 - A) It spends a lot of time executing, rather than paging
 - B) It spends a lot of time paging, than executing
 - C) It has no memory allocated to it
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- 3) For LRU page replacement algorithm with 5 frames, the number of page faults is
 - A) 10
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- 5) When device A has a cable that plugs into device B and device B has a Set P Set Pcable that plugs into device C and device C plugs into a port on the computer, this arrangement is called a
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P.T.O.



- 6) The interrupt vector contains
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 - 14) In multilevel feedback scheduling algorithm
 - A) A process can move to a different classified ready queue
 - B) Classification of ready queue is permanent
 - C) Processes are not classified into groups
 - D) None of the mentioned
-



Seat No.	
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**T.E. (Information Technology) (Part – I) Examination, 2016
(New CGPA)
PRINCIPLES OF OPERATING SYSTEMS**

Day and Date : Wednesday, 7-12-2016

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

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

- a) What is Operating System ? Draw and explain Computer System structure.
- b) Define the following terms : Job scheduler, CPU scheduler, Job queue, Ready queue, Device queue.
- c) Explain spooling with diagram with the help of diagram.
- d) Describe direct and indirect communication in detail.

3. Attempt **any one** : **(1×8=8)**

- a) Write and explain an algorithm for bounded buffer producer-consumer problem in detail.
- b) Describe the following algorithms with example (assume data whenever required)
 - i) FCFS Scheduling
 - ii) Round Robin Scheduling

4. Attempt **any one** : **(1×8=8)**

- a) Explain critical section problem and Peterson's solution in detail.
- b) What is RPC ? Explain execution of RPC with diagram.

Set Q



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain Swapping of two processes using a disk as a backing store.
 - b) Write short note on Thrashing.
 - c) What is deadlock problem ? Explain methods for handling deadlocks.
 - d) Explain services provided by the Kernel's I/O subsystem.
6. Attempt **any one** : **(1×8=8)**
- a) Explain any two classical problems of synchronization in detail.
 - b) Describe deadlock detection methods for single and multiple instances of resource type.
7. Attempt **any one** : **(1×8=8)**
- a) What is virtual memory ? Explain demand paging with suitable example.
 - b) Explain in detail Kernel I/O sub-system.
-



SLR-EP – 221

Seat No.	
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Set

R

**T.E. (Information Technology) (Part – I) Examination, 2016
(New CGPA)**

PRINCIPLES OF OPERATING SYSTEMS

Day and Date : Wednesday, 7-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) A single thread of control allows the process to perform
 - A) Only one task at a time
 - B) Multiple tasks at a time
 - C) Both
 - D) None of these
- 2) Message passing system allows processes to
 - A) Communicate with one another without resorting to shared data
 - B) Communicate with one another by resorting to shared data
 - C) Share data
 - D) Name the recipient or sender of the message
- 3) In multilevel feedback scheduling algorithm
 - A) A process can move to a different classified ready queue
 - B) Classification of ready queue is permanent
 - C) Processes are not classified into groups
 - D) None of the mentioned
- 4) In indirect communication between processes P and Q
 - A) There is another process R to handle and pass on the messages between P and Q
 - B) There is another machine between the two processes to help communication
 - C) There is a mailbox to help communication between P and Q
 - D) None of these
- 5) A process is thrashing if
 - A) It spends a lot of time executing, rather than paging
 - B) It spends a lot of time paging, than executing
 - C) It has no memory allocated to it
 - D) None of these

P.T.O.



- 6) For LRU page replacement algorithm with 5 frames, the number of page faults is
A) 10 B) 14 C) 8 D) 11
- 7) Each entry in a segment table has a
A) Segment base and limit B) Segment base and peak
C) Segment limit and value D) Only segment value
- 8) When device A has a cable that plugs into device B and device B has a Set P Set Pcable that plugs into device C and device C plugs into a port on the computer, this arrangement is called a
A) Port B) Daisy chain C) Bus D) Cable
- 9) The interrupt vector contains
A) The interrupts
B) The memory addresses of specialized interrupt handlers
C) The identifiers of interrupts
D) The device addresses
- 10) With relocation and limit registers, each logical address must be _____ the limit register.
A) Less than B) Equal to C) Greater than D) None of these
- 11) What is the ready state of a process ?
A) When process is scheduled to run after some execution
B) When process is unable to run until some task has been completed
C) When process is using the CPU
D) None of the mentioned
- 12) Which run on computer hardware and serve as platform for other software to run on ?
A) Application Software B) Operating System
C) System Software D) All
- 13) The degree of multi-programming is
A) The number of processes executed per unit time
B) The number of processes in the ready queue
C) The number of processes in the I/O queue
D) The number of processes in memory
- 14) The entry of all the PCBs of the current processes is in
A) Process Register B) Program Counter
C) Process Table D) Process Unit
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**T.E. (Information Technology) (Part – I) Examination, 2016
(New CGPA)
PRINCIPLES OF OPERATING SYSTEMS**

Day and Date : Wednesday, 7-12-2016

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

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

- a) What is Operating System ? Draw and explain Computer System structure.
- b) Define the following terms : Job scheduler, CPU scheduler, Job queue, Ready queue, Device queue.
- c) Explain spooling with diagram with the help of diagram.
- d) Describe direct and indirect communication in detail.

3. Attempt **any one** : **(1×8=8)**

- a) Write and explain an algorithm for bounded buffer producer-consumer problem in detail.
- b) Describe the following algorithms with example (assume data whenever required)
 - i) FCFS Scheduling
 - ii) Round Robin Scheduling

4. Attempt **any one** : **(1×8=8)**

- a) Explain critical section problem and Peterson's solution in detail.
- b) What is RPC ? Explain execution of RPC with diagram.

Set R



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain Swapping of two processes using a disk as a backing store.
 - b) Write short note on Thrashing.
 - c) What is deadlock problem ? Explain methods for handling deadlocks.
 - d) Explain services provided by the Kernel's I/O subsystem.
6. Attempt **any one** : **(1×8=8)**
- a) Explain any two classical problems of synchronization in detail.
 - b) Describe deadlock detection methods for single and multiple instances of resource type.
7. Attempt **any one** : **(1×8=8)**
- a) What is virtual memory ? Explain demand paging with suitable example.
 - b) Explain in detail Kernel I/O sub-system.
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Seat No.	
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Set	S
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**T.E. (Information Technology) (Part – I) Examination, 2016
(New CGPA)**

PRINCIPLES OF OPERATING SYSTEMS

Day and Date : Wednesday, 7-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 70

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 14

1. Choose the correct answer :

14

- 1) For LRU page replacement algorithm with 5 frames, the number of page faults is
A) 10 B) 14 C) 8 D) 11
- 2) Each entry in a segment table has a
A) Segment base and limit B) Segment base and peak
C) Segment limit and value D) Only segment value
- 3) When device A has a cable that plugs into device B and device B has a Set P Set Pcable that plugs into device C and device C plugs into a port on the computer, this arrangement is called a
A) Port B) Daisy chain C) Bus D) Cable
- 4) The interrupt vector contains
A) The interrupts
B) The memory addresses of specialized interrupt handlers
C) The identifiers of interrupts
D) The device addresses
- 5) With relocation and limit registers, each logical address must be _____ the limit register.
A) Less than B) Equal to C) Greater than D) None of these
- 6) What is the ready state of a process ?
A) When process is scheduled to run after some execution
B) When process is unable to run until some task has been completed
C) When process is using the CPU
D) None of the mentioned



- 7) Which run on computer hardware and serve as platform for other software to run on ?
- A) Application Software B) Operating System
C) System Software D) All
- 8) The degree of multi-programming is
- A) The number of processes executed per unit time
B) The number of processes in the ready queue
C) The number of processes in the I/O queue
D) The number of processes in memory
- 9) The entry of all the PCBs of the current processes is in
- A) Process Register B) Program Counter
C) Process Table D) Process Unit
- 10) A single thread of control allows the process to perform
- A) Only one task at a time
B) Multiple tasks at a time
C) Both
D) None of these
- 11) Message passing system allows processes to
- A) Communicate with one another without resorting to shared data
B) Communicate with one another by resorting to shared data
C) Share data
D) Name the recipient or sender of the message
- 12) In multilevel feedback scheduling algorithm
- A) A process can move to a different classified ready queue
B) Classification of ready queue is permanent
C) Processes are not classified into groups
D) None of the mentioned
- 13) In indirect communication between processes P and Q
- A) There is another process R to handle and pass on the messages between P and Q
B) There is another machine between the two processes to help communication
C) There is a mailbox to help communication between P and Q
D) None of these
- 14) A process is thrashing if
- A) It spends a lot of time executing, rather than paging
B) It spends a lot of time paging, than executing
C) It has no memory allocated to it
D) None of these



Seat No.	
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**T.E. (Information Technology) (Part – I) Examination, 2016
(New CGPA)
PRINCIPLES OF OPERATING SYSTEMS**

Day and Date : Wednesday, 7-12-2016

Marks : 56

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

N.B. : All questions are compulsory.

SECTION – I

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

- a) What is Operating System ? Draw and explain Computer System structure.
- b) Define the following terms : Job scheduler, CPU scheduler, Job queue, Ready queue, Device queue.
- c) Explain spooling with diagram with the help of diagram.
- d) Describe direct and indirect communication in detail.

3. Attempt **any one** : **(1×8=8)**

- a) Write and explain an algorithm for bounded buffer producer-consumer problem in detail.
- b) Describe the following algorithms with example (assume data whenever required)
 - i) FCFS Scheduling
 - ii) Round Robin Scheduling

4. Attempt **any one** : **(1×8=8)**

- a) Explain critical section problem and Peterson's solution in detail.
- b) What is RPC ? Explain execution of RPC with diagram.

Set S



SECTION – II

5. Attempt **any three** : **(3×4=12)**
- a) Explain Swapping of two processes using a disk as a backing store.
 - b) Write short note on Thrashing.
 - c) What is deadlock problem ? Explain methods for handling deadlocks.
 - d) Explain services provided by the Kernel's I/O subsystem.
6. Attempt **any one** : **(1×8=8)**
- a) Explain any two classical problems of synchronization in detail.
 - b) Describe deadlock detection methods for single and multiple instances of resource type.
7. Attempt **any one** : **(1×8=8)**
- a) What is virtual memory ? Explain demand paging with suitable example.
 - b) Explain in detail Kernel I/O sub-system.
-



SLR-EP – 223

Seat No.	
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Set

P

**T.E. (IT) Part – I (Old) Examination, 2016
COMPUTER ORGANIZATION**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The Motorola 680XO belongs to _____ machine.
a) RISC b) CISC c) RIDC d) None
- 2) _____ stores the data and program that are in active use.
a) Main memory b) Secondary memory
c) Virtual memory d) None
- 3) _____ memory is positioned logically between the CPU registers and main memory.
a) Cache b) Virtual c) Secondary d) None
- 4) The _____ policy selects for replacement the block that was least recently accessed by CPU.
a) FIFO b) LRU c) OPTIMAL d) None
- 5) Computer with one CPU is called as
a) Unusual processor b) Uniprocessor
c) Only processor d) None
- 6) The following is a data hazard
a) LRU b) RAVR c) RAW d) None
- 7) Any condition that causes a processor to stall is called as
a) Hazard b) Page fault c) System error d) None of the above
- 8) The situation where in the data of operands are not available is called
a) Data hazard b) Stock
c) Deadlock d) Structural hazard

P.T.O.



Seat No.	
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**T.E. (IT) Part – I (Old) Examination, 2016
COMPUTER ORGANIZATION**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

- Instructions :** 1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Draw diagram wherever necessary.*

SECTION – I

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

- 1) Explain fourth generation of computer.
- 2) What are the features of RISC processor ? Explain.
- 3) Explain the algorithm for non-resorting division.
- 4) Explain one address, two address, three address instruction.
- 5) Explain serial binary adder.

3. Attempt **any one** : **(1×10=10)**

Explain Booths algorithm for multiplication and multiply – 9 and – 9.

OR

Explain in detail about carry look ahead adder.

4. Attempt **any one** : **(1×10=10)**

Explain hardwired control unit design methods.

OR

Explain with example IEEE standard for representing the floating point numbers.

Set P



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- 1) Explain the concept of virtual memory.
 - 2) With an example explain the FIFO policy.
 - 3) Write a note on interleaved memory.
 - 4) Explain the concept of associative memory.
 - 5) Explain in short hardware approaches to achieve uniprocessor parallelism.
6. Explain in detail architecture of loosely coupled multiprocessor architecture. **(1×10=10)**
7. Define pipelining. Explain linear and non-linear pipelining with neat diagrams. **(1×10=10)**
-



SLR-EP – 223

Seat No.	
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Set

Q

**T.E. (IT) Part – I (Old) Examination, 2016
COMPUTER ORGANIZATION**

Day and Date : Saturday, 10-12-2016
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 IEEE single precision format the size of mantissa is of
 - a) 24 bits
 - b) 52 bits
 - c) 23 bits
 - d) 8 bits
- 2) Inside the computer the instructions are stored as
 - a) Alphabets
 - b) Binary words
 - c) Units
 - d) None
- 3) An approach that uses one flip flop per state is known as
 - a) One hot method
 - b) Delay method
 - c) Flip flop
 - d) None
- 4) Instruction format is variable in case of
 - a) RISC
 - b) CISC
 - c) Both a) and b)
 - d) None
- 5) _____ instructions perform operations on numerical data.
 - a) Logical
 - b) Arithmetic
 - c) Program control
 - d) None
- 6) The Motorola 680 XO belongs to _____ machine.
 - a) RISC
 - b) CISC
 - c) RIDC
 - d) None
- 7) _____ stores the data and program that are in active use.
 - a) Main memory
 - b) Secondary memory
 - c) Virtual memory
 - d) None
- 8) _____ memory is positioned logically between the CPU registers and main memory.
 - a) Cache
 - b) Virtual
 - c) Secondary
 - d) None

P.T.O.



- 9) The _____ policy selects for replacement the block that was least recently accessed by CPU.
a) FIFO b) LRU c) OPTIMAL d) None
- 10) Computer with one CPU is called as
a) Unusual processor b) Uniprocessor
c) Only processor d) None
- 11) The following is a data hazard
a) LRU b) RAVR c) RAW d) None
- 12) Any condition that causes a processor to stall is called as
a) Hazard b) Page fault c) System error d) None of the above
- 13) The situation where in the data of operands are not available is called
a) Data hazard b) Stock
c) Deadlock d) Structural hazard
- 14) The fastest data access is provided using
a) Caches b) DRAM's c) SRAM's d) Registers
- 15) The memory which is used to store the copy of data or instructions stored in larger memories, inside the CPU is called
a) Level 1 cache b) Level 2 cache c) Registers d) TLB
- 16) The techniques which move the program blocks to or from the physical memory is called as
a) Paging b) Virtual memory organization
c) Overlays d) Framing
- 17) RISC is made of
a) Reduced Instruction Sets b) Reduced Information Set
c) Clock set d) None of above
- 18) The first widely known electronic computer developed was
a) ENIAC b) System 320 c) Pentium 1 d) EDAC
- 19) An IAS instruction consists of _____ bit opcode.
a) 12 b) 8 c) 16 d) 20
- 20) _____ generation is traditionally associated with IC's.
a) 1 b) 2 c) 3 d) 4



Seat No.	
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**T.E. (IT) Part – I (Old) Examination, 2016
COMPUTER ORGANIZATION**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**
2) Figures to the **right** indicate **full** marks.
3) Draw diagram **wherever** necessary.

SECTION – I

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

- 1) Explain fourth generation of computer.
- 2) What are the features of RISC processor ? Explain.
- 3) Explain the algorithm for non-resorting division.
- 4) Explain one address, two address, three address instruction.
- 5) Explain serial binary adder.

3. Attempt **any one** : **(1×10=10)**

Explain Booths algorithm for multiplication and multiply – 9 and – 9.

OR

Explain in detail about carry look ahead adder.

4. Attempt **any one** : **(1×10=10)**

Explain hardwired control unit design methods.

OR

Explain with example IEEE standard for representing the floating point numbers.

Set Q



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- 1) Explain the concept of virtual memory.
 - 2) With an example explain the FIFO policy.
 - 3) Write a note on interleaved memory.
 - 4) Explain the concept of associative memory.
 - 5) Explain in short hardware approaches to achieve uniprocessor parallelism.
6. Explain in detail architecture of loosely coupled multiprocessor architecture. **(1×10=10)**
7. Define pipelining. Explain linear and non-linear pipelining with neat diagrams. **(1×10=10)**
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SLR-EP – 223

Seat No.	
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Set **R**

**T.E. (IT) Part – I (Old) Examination, 2016
COMPUTER ORGANIZATION**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The techniques which move the program blocks to or from the physical memory is called as
 - a) Paging
 - b) Virtual memory organization
 - c) Overlays
 - d) Framing
- 2) RISC is made of
 - a) Reduced Instruction Sets
 - b) Reduced Information Set
 - c) Clock set
 - d) None of above
- 3) The first widely known electronic computer developed was
 - a) ENIAC
 - b) System 320
 - c) Pentium 1
 - d) EDAC
- 4) An IAS instruction consists of _____ bit opcode.
 - a) 12
 - b) 8
 - c) 16
 - d) 20
- 5) _____ generation is traditionally associated with IC's.
 - a) 1
 - b) 2
 - c) 3
 - d) 4
- 6) In IEEE single precision format the size of mantissa is of
 - a) 24 bits
 - b) 52 bits
 - c) 23 bits
 - d) 8 bits
- 7) Inside the computer the instructions are stored as
 - a) Alphabets
 - b) Binary words
 - c) Units
 - d) None
- 8) An approach that uses one flip flop per state is known as
 - a) One hot method
 - b) Delay method
 - c) Flip flop
 - d) None

P.T.O.



Seat No.	
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**T.E. (IT) Part – I (Old) Examination, 2016
COMPUTER ORGANIZATION**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**
2) Figures to the **right** indicate **full** marks.
3) Draw diagram **wherever** necessary.

SECTION – I

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

- 1) Explain fourth generation of computer.
- 2) What are the features of RISC processor ? Explain.
- 3) Explain the algorithm for non-resorting division.
- 4) Explain one address, two address, three address instruction.
- 5) Explain serial binary adder.

3. Attempt **any one** : **(1×10=10)**

Explain Booths algorithm for multiplication and multiply – 9 and – 9.

OR

Explain in detail about carry look ahead adder.

4. Attempt **any one** : **(1×10=10)**

Explain hardwired control unit design methods.

OR

Explain with example IEEE standard for representing the floating point numbers.

Set R



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- 1) Explain the concept of virtual memory.
 - 2) With an example explain the FIFO policy.
 - 3) Write a note on interleaved memory.
 - 4) Explain the concept of associative memory.
 - 5) Explain in short hardware approaches to achieve uniprocessor parallelism.
6. Explain in detail architecture of loosely coupled multiprocessor architecture. **(1×10=10)**
7. Define pipelining. Explain linear and non-linear pipelining with neat diagrams. **(1×10=10)**
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SLR-EP – 223

Seat No.	
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Set

S

**T.E. (IT) Part – I (Old) Examination, 2016
COMPUTER ORGANIZATION**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The following is a data hazard
 - a) LRU
 - b) RAVR
 - c) RAW
 - d) None
- 2) Any condition that causes a processor to stall is called as
 - a) Hazard
 - b) Page fault
 - c) System error
 - d) None of the above
- 3) The situation where in the data of operands are not available is called
 - a) Data hazard
 - b) Stock
 - c) Deadlock
 - d) Structural hazard
- 4) The fastest data access is provided using
 - a) Caches
 - b) DRAM's
 - c) SRAM's
 - d) Registers
- 5) The memory which is used to store the copy of data or instructions stored in larger memories, inside the CPU is called
 - a) Level 1 cache
 - b) Level 2 cache
 - c) Registers
 - d) TLB
- 6) The techniques which move the program blocks to or from the physical memory is called as
 - a) Paging
 - b) Virtual memory organization
 - c) Overlays
 - d) Framing
- 7) RISC is made of
 - a) Reduced Instruction Sets
 - b) Reduced Information Set
 - c) Clock set
 - d) None of above

P.T.O.



- 8) The first widely known electronic computer developed was
a) ENIAC b) System 320 c) Pentium 1 d) EDAC
- 9) An IAS instruction consists of _____ bit opcode.
a) 12 b) 8 c) 16 d) 20
- 10) _____ generation is traditionally associated with IC's.
a) 1 b) 2 c) 3 d) 4
- 11) In IEEE single precision format the size of mantissa is of
a) 24 bits b) 52 bits c) 23 bits d) 8 bits
- 12) Inside the computer the instructions are stored as
a) Alphabets b) Binary words c) Units d) None
- 13) An approach that uses one flip flop per state is known as
a) One hot method b) Delay method
c) Flip flop d) None
- 14) Instruction format is variable in case of
a) RISC b) CISC
c) Both a) and b) d) None
- 15) _____ instructions perform operations on numerical data.
a) Logical b) Arithmetic
c) Program control d) None
- 16) The Motorola 680XO belongs to _____ machine.
a) RISC b) CISC c) RIDC d) None
- 17) _____ stores the data and program that are in active use.
a) Main memory b) Secondary memory
c) Virtual memory d) None
- 18) _____ memory is positioned logically between the CPU registers and main memory.
a) Cache b) Virtual c) Secondary d) None
- 19) The _____ policy selects for replacement the block that was least recently accessed by CPU.
a) FIFO b) LRU c) OPTIMAL d) None
- 20) Computer with one CPU is called as
a) Unusual processor b) Uniprocessor
c) Only processor d) None



Seat No.	
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**T.E. (IT) Part – I (Old) Examination, 2016
COMPUTER ORGANIZATION**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**
2) Figures to the **right** indicate **full** marks.
3) Draw diagram **wherever** necessary.

SECTION – I

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

- 1) Explain fourth generation of computer.
- 2) What are the features of RISC processor ? Explain.
- 3) Explain the algorithm for non-resorting division.
- 4) Explain one address, two address, three address instruction.
- 5) Explain serial binary adder.

3. Attempt **any one** : **(1×10=10)**

Explain Booths algorithm for multiplication and multiply – 9 and – 9.

OR

Explain in detail about carry look ahead adder.

4. Attempt **any one** : **(1×10=10)**

Explain hardwired control unit design methods.

OR

Explain with example IEEE standard for representing the floating point numbers.

Set S



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- 1) Explain the concept of virtual memory.
 - 2) With an example explain the FIFO policy.
 - 3) Write a note on interleaved memory.
 - 4) Explain the concept of associative memory.
 - 5) Explain in short hardware approaches to achieve uniprocessor parallelism.
6. Explain in detail architecture of loosely coupled multiprocessor architecture. **(1×10=10)**
7. Define pipelining. Explain linear and non-linear pipelining with neat diagrams. **(1×10=10)**
-



Seat No.	
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Set	P
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T.E. (Information Technology) (Part – II) Examination, 2016
DATABASE ENGINEERING

Day and Date : Monday, 21-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

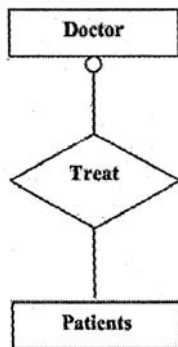
Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- I) An entity set that does not have sufficient attributes to form a primary key is a
 - a) strong entity set
 - b) weak entity set
 - c) simple entity set
 - d) primary entity set
- II) Using Relational algebra the query that finds customers, who have a balance of over 1000 is
 - a) Π Customer_name (σ balance >1000(Deposit))
 - b) σ Customer_name (Π balance >1000(Deposit))
 - c) Π Customer_name (σ balance >1000(Borrow))
 - d) σ Customer_name (Π balance >1000(Borrow))
- III) The following E-R diagram is interpreted as follows
 - a) A doctor treats upto N patients
 - b) A doctor treats exactly N patients
 - c) A doctor may treat upto N patients; Some doctors may not treat any patients
 - d) A doctor will treat patients based on some conditions



- IV) Relations are used in logical database design because
 - i) sound theory of relations facilitates systematic design of relational databases
 - ii) they are very popular
 - iii) they are flat files and easy to store and retrieve from computer's memory
 - iv) E-R diagrams allow design of relations
 - a) i and ii
 - b) i and iii
 - c) ii and iii
 - d) iii and iv
- V) Consider the join of a relation R with relation S. If R has m tuples and S has n tuples, then the maximum size of join is
 - a) mn
 - b) m + n
 - c) (m + n)/2
 - d) 2(m + n)

P.T.O.



- VI) A logical schema
- a) is the entire database
 - b) is a standard way of organizing information into accessible parts
 - c) describes how data is actually stored on disk
 - d) both (a) and (c)
- VII) Which of the following statements is not correct ?
- a) All many-to-many relationships must be converted to a set of one-to-many relationships by adding a new entity
 - b) In a one-to-one relationship between two classes, the two classes are generally described by one table in relational database model
 - c) Encapsulation provides some security and control features
 - d) Properties and functions can be protected from other areas of the applications
- VIII) The database schema written in
- a) HLL
 - b) DML
 - c) DDL
 - d) DCL
- IX) A delete command operates on _____ relation.
- a) One
 - b) Two
 - c) Several
 - d) Null
- X) Transaction processing is associated with everything below EXCEPT
- a) producing detail, summary, or exception reports
 - b) recording a business activity
 - c) confirming an action or triggering a response
 - d) maintaining data
- XI) Which of the following is correct ?
- a) a SQL query automatically eliminates duplicates
 - b) SQL permits attribute names to be repeated in the same relation
 - c) a SQL query will not work if there are no indexes on the relations
 - d) None of these
- XII) A technique for direct search is
- a) Binary Search
 - b) Linear Search
 - c) Tree Search
 - d) Hashing
- XIII) Breadth First Search is used in
- a) Binary trees
 - b) Stacks
 - c) Graphs
 - d) Both a and c above
- XIV) The recovery sheme must be also provide
- a) High availability
 - b) Low availability
 - c) High reliability
 - d) High durability
- XV) A transaction may not always complete its execution sucessfully. Such a transaction is termed
- a) Aborted
 - b) Terminated
 - c) Closed
 - d) All of the mentioned
- XVI) Each modification done in database transaction are first recorded into the
- a) Harddrive
 - b) Log
 - c) Disk
 - d) Datamart
- XVII) Which of the following is an atomic sequence of database actions ?
- a) Transaction
 - b) Concurrency
 - c) Relations
 - d) All of the mentioned
- XVIII) Which of the following are introduced to reduce the overheads caused by the log-based recovery ?
- a) Checkpoints
 - b) Indices
 - c) Deadlocks
 - d) Locks
- XIX) Which of the following protocols ensures conflict serializability and safety from deadlocks ?
- a) Two-phase locking prtocol
 - b) Time-stamp ordering protioocol
 - c) Graph based protocol
 - d) Both (a) and (b) above
- XX) The statement in SQL which allows to cahngre the definition of a table is
- a) Alter
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 - c) Creat
 - d) Select



Seat No.	
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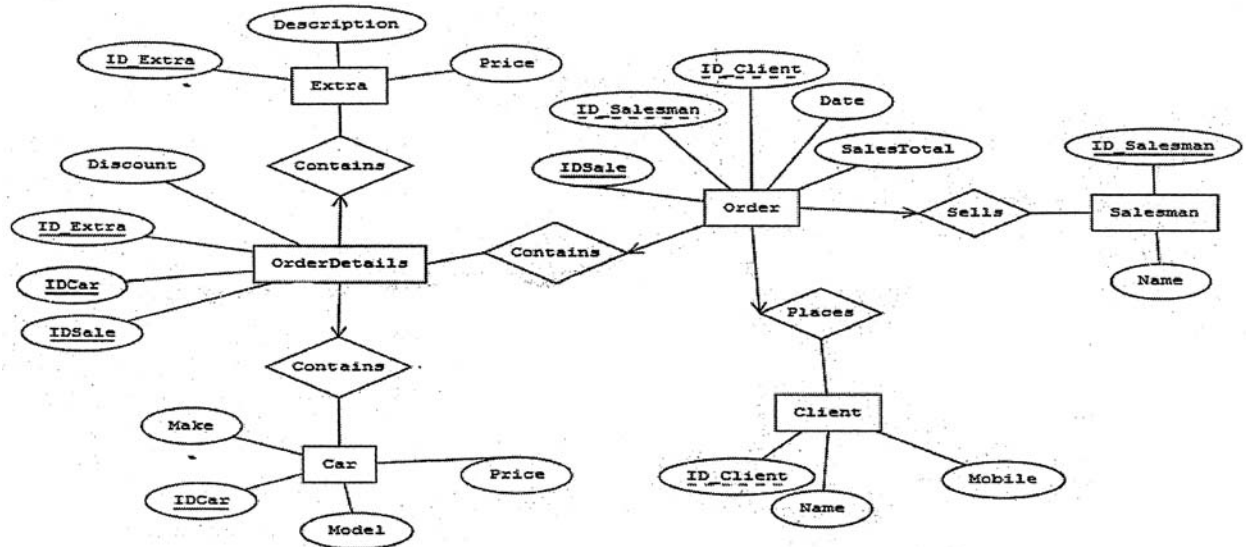
**T.E. (Information Technology) (Part – II) Examination, 2016
DATABASE ENGINEERING**

Day and Date : Monday, 21-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** : (4×5=20)
- A) Explain view of Data in DBMS.
 - B) Explain architecture of ideal DBMS.
 - C) Explain Domain Integrity, Entity Integrity, Referential Integrity.
 - D) Differentiate DDL and DML.
 - E) Define SQL update statement and delete statement.
 - F) Define join and explain different type of joins.
3. What are different types of normalization ? Explain with example. 10
4. For following ER diagram : 10



- 1) Identify the strong and weak entity.
- 2) Identify the key attributes.
- 3) How many table would be resulted after conversion to relational schema ?
- 4) How many primary and foreign keys are there in resultant relational schema ?
- 5) Identify one to one, many to one, one to many relationships.

OR

Set P



- 1) Create tables for the relational schema derived from above ER-diagram using SQL statement.
- 2) Insert values into the tables using SQL statement.
- 3) Retrieve values from the table depending upon the primary key using SQL statement.

SECTION – II

5. Attempt **any four** : **20**
- A) Differentiate Static Hashing and Dynamic Hashing technique.
 - B) What are properties of a transaction ?
 - C) What is a Database Lock ? What are the types of Database Lock ?
 - D) Draw and explain the structure of B⁺ tree.
 - E) Define deadlock with example.
 - F) Explain Shadow Paging.
6. Explain briefly about the working of two phase locking protocol using a simple transaction. **10**
7. Explain Timestamp-Based Protocols and Validation-Based Protocols with example. **10**

OR

7. Explain concurrency control mechanisms. Discuss the need with example.
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Seat No.	
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Set

Q

T.E. (Information Technology) (Part – II) Examination, 2016

DATABASE ENGINEERING

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MCQ/Objective Type Questions

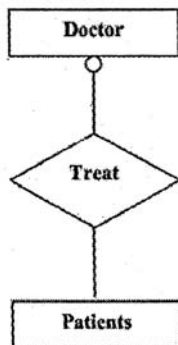
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- IX) Relations are used in logical database design because
- i) sound theory of relations facilitates systematic design of relational databases
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 - iv) E-R diagrams allow design of relations
- a) i and ii b) i and iii c) ii and iii d) iii and iv
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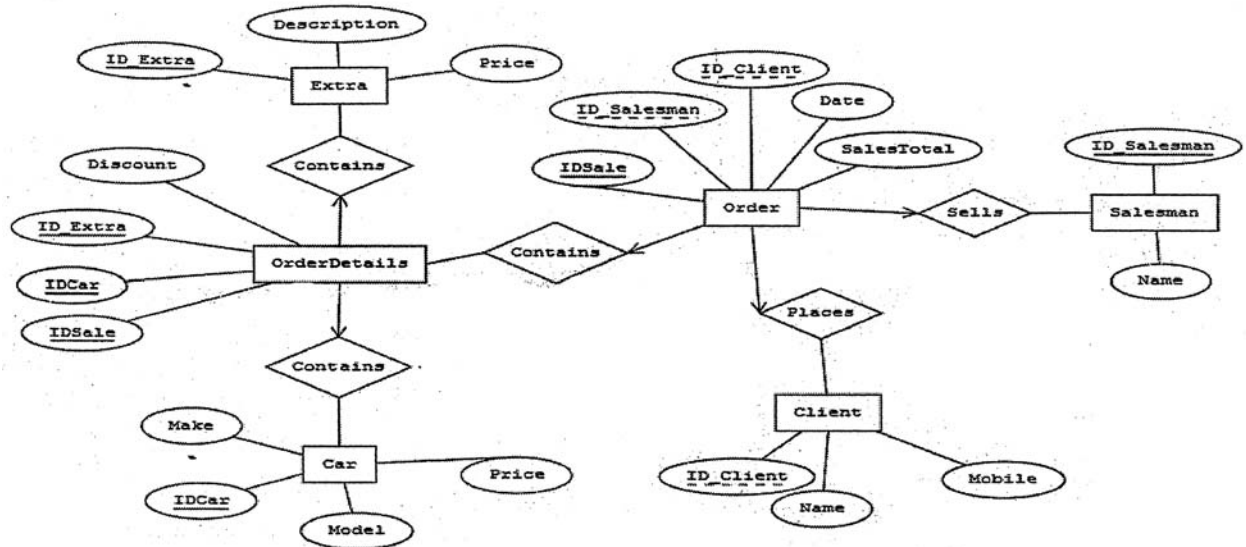
**T.E. (Information Technology) (Part – II) Examination, 2016
DATABASE ENGINEERING**

Day and Date : Monday, 21-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

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OR

Set Q



- 1) Create tables for the relational schema derived from above ER-diagram using SQL statement.
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SECTION – II

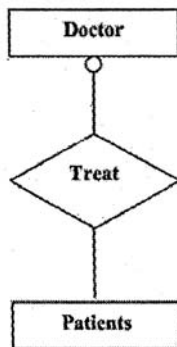
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OR

7. Explain concurrency control mechanisms. Discuss the need with example.
-



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- XX) Transaction processing is associated with everything below EXCEPT
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 - confirming an action or triggering a response
 - maintaining data



Seat No.	
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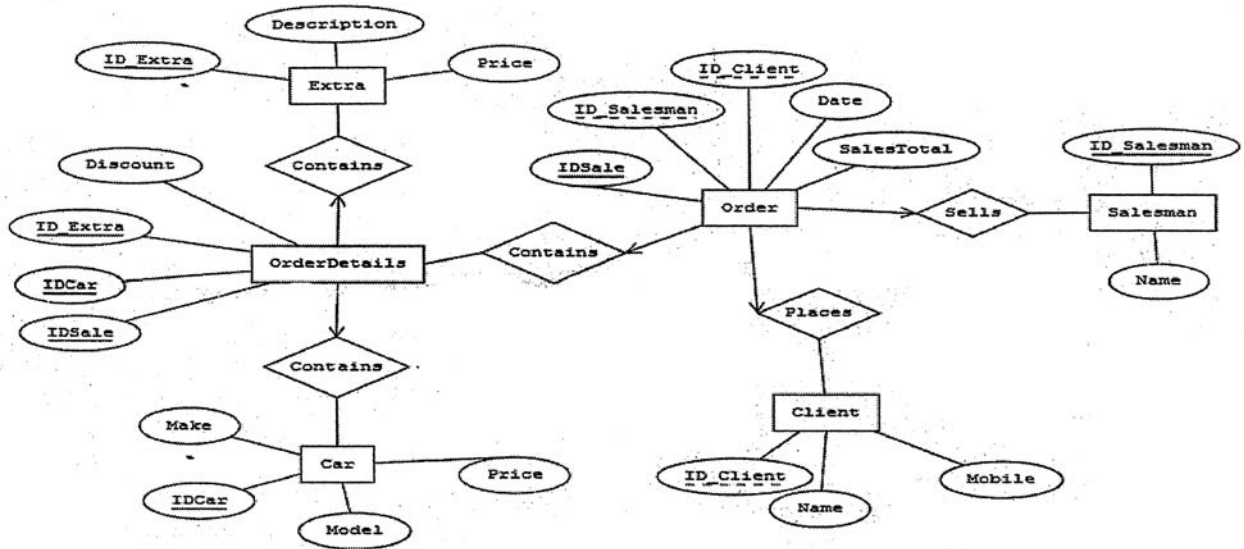
T.E. (Information Technology) (Part – II) Examination, 2016
DATABASE ENGINEERING

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SECTION – I

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OR

Set R



- 1) Create tables for the relational schema derived from above ER-diagram using SQL statement.
- 2) Insert values into the tables using SQL statement.
- 3) Retrieve values from the table depending upon the primary key using SQL statement.

SECTION – II

5. Attempt **any four** : **20**
- A) Differentiate Static Hashing and Dynamic Hashing technique.
 - B) What are properties of a transaction ?
 - C) What is a Database Lock ? What are the types of Database Lock ?
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6. Explain briefly about the working of two phase locking protocol using a simple transaction. **10**
7. Explain Timestamp-Based Protocols and Validation-Based Protocols with example. **10**

OR

7. Explain concurrency control mechanisms. Discuss the need with example.
-



Seat No.	
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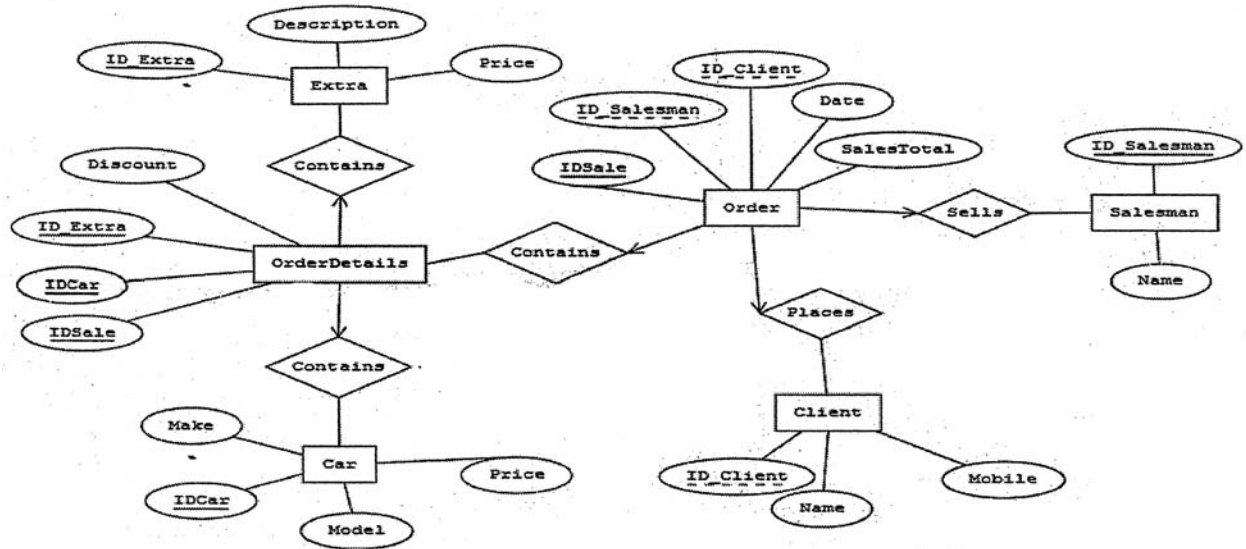
**T.E. (Information Technology) (Part – II) Examination, 2016
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Day and Date : Monday, 21-11-2016
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- 3) How many table would be resulted after conversion to relational schema ?
- 4) How many primary and foreign keys are there in resultant relational schema ?
- 5) Identify one to one, many to one, one to many relationships.

OR

Set S



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SECTION – II

5. Attempt **any four** : **20**
- A) Differentiate Static Hashing and Dynamic Hashing technique.
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OR

7. Explain concurrency control mechanisms. Discuss the need with example.
-



SLR-EP – 225

Seat No.	
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Set **P**

**T.E. (Information Technology) (Part – II) Examination, 2016
OBJECT ORIENTED MODELING AND DESIGN**

Day and Date : Tuesday, 22-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**

- 1) A single flat state diagram would require _____ states.
a) 2 b) 2^n c) $2 \cdot n$ d) $2 \cdot (n \cdot n)$
- 2) The event coins in (a amount) are written within the collecting money states.
a) True b) False c) Cannot say d) Never heard of
- 3) _____ is equivalent to expanding nested activities.
a) Generalization b) Aggregation c) Link d) Inheritance
- 4) Module is _____ construct for grouping class.
a) physical b) logical c) both a and b d) none of these
- 5) A module is logical construct for grouping
a) classes, association
b) classes, association, generalization
c) association and generalization
d) none of these
- 6) The boundaries of module are
a) arbitrary b) subjective c) both a and b d) none
- 7) A object model consist of only one module.
a) true b) false c) cannot say d) never heard of

P.T.O.



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
OBJECT ORIENTED MODELING AND DESIGN**

Day and Date : Tuesday, 22-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Develop a design for a Hotel Management System using Object Modeling technique. 20
- The design should contain
- a) Drawing the object model consisting of the object diagram and instance diagram. Drawing the dynamic model consisting of the state diagram and drawing the functional model consisting of a DFD.
 - b) Commenting on system design.
 - c) Commenting on object design.
3. Attempt **any two** : 10
- a) What are the steps followed in system design phase of OMT ?
 - b) Compare between the object model and functional model of analysis phase in OMT.
 - c) What are the basic considerations to be considered in object design phase of OMT ?
4. Attempt **any two** : 10
- a) What static and dynamic models are created in OMT ?
 - b) What are the object oriented themes ? Illustrate.
 - c) State and illustrate the basic features of object oriented languages.

Set P



SECTION – II

5. Develop a design for a Hospital Management System using UML. **20**
The design should contain
- Things consisting of structural, behavioral, grouping and annotations as required.
 - Relationships consisting of dependencies, associations, generalizations and realizations.
 - Diagrams from the nine UML diagrams required for the problem.
6. Attempt **any two** : **10**
- What are interaction diagrams? How are they different from activity diagrams?
 - Elaborate on the considerations to be taken into account while drawing State chart diagrams.
 - Compare between Component diagram and Object diagram.
7. Attempt **any two** : **10**
- What are the primitive things included in Object diagrams?
 - List and explain the static diagrams of UML.
 - What are use cases? How are they represented in UML?
-



Seat No.	
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Set	Q
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**T.E. (Information Technology) (Part – II) Examination, 2016
OBJECT ORIENTED MODELING AND DESIGN**

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MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) _____ is equivalent to concurrency of states.
a) Generalization b) Aggregation c) Both d) None
- 2) _____ transition are required to connect every state to every other state.
a) n b) n*n c) n*n*n d) 2n
- 3) _____ allows a state to be broken into orthogonal component with limited interaction among them.
a) Generalization b) Aggregation c) Both d) None
- 4) Which is the common modeling tool for the logical database design ?
a) UML instance diagram b) UML state diagram
c) UML use case diagram d) UML interaction diagram
- 5) The process of generating analysis and design documents is known as
a) Software engineering b) Software re-engineering
c) Reverse engineering d) Re-engineering
- 6) A single flat state diagram would require _____ states.
a) 2 b) 2^n c) 2*n d) 2*(n*n)
- 7) The event coins in (a mount) are written within the collecting money states.
a) True b) False c) Cannot say d) Never heard of
- 8) _____ is equivalent to expanding nested activities.
a) Generalization b) Aggregation c) Link d) Inheritance

P.T.O.



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
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3. Attempt **any two** : 10
- a) What are the steps followed in system design phase of OMT ?
 - b) Compare between the object model and functional model of analysis phase in OMT.
 - c) What are the basic considerations to be considered in object design phase of OMT ?
4. Attempt **any two** : 10
- a) What static and dynamic models are created in OMT ?
 - b) What are the object oriented themes ? Illustrate.
 - c) State and illustrate the basic features of object oriented languages.

Set Q



SECTION – II

5. Develop a design for a Hospital Management System using UML. **20**
The design should contain
- Things consisting of structural, behavioral, grouping and annotations as required.
 - Relationships consisting of dependencies, associations, generalizations and realizations.
 - Diagrams from the nine UML diagrams required for the problem.
6. Attempt **any two** : **10**
- What are interaction diagrams? How are they different from activity diagrams?
 - Elaborate on the considerations to be taken into account while drawing State chart diagrams.
 - Compare between Component diagram and Object diagram.
7. Attempt **any two** : **10**
- What are the primitive things included in Object diagrams?
 - List and explain the static diagrams of UML.
 - What are use cases? How are they represented in UML?
-



SLR-EP – 225

Seat No.	
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Set **R**

**T.E. (Information Technology) (Part – II) Examination, 2016
OBJECT ORIENTED MODELING AND DESIGN**

Day and Date : Tuesday, 22-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Does module support between external binding and internal binding.
a) true b) false c) cannot say d) never heard of
- 2) Sheet is mechanism for
a) breaking large object model down into service of pages
b) breaking small object model down into service of pages
c) no breaking large object model down into service of pages
d) no breaking small object model down into service of pages
- 3) Each panel item has
a) single event b) multiple event
c) no event require d) none of above
- 4) Complex model will fit on single piece of paper.
a) True b) False c) Cannot say d) Never heard of
- 5) Text window also known as
a) Scrolling window b) Non scrolling window
c) Vertical window d) Linear window
- 6) _____ is equivalent to concurrency of states.
a) Generalization b) Aggregation c) Both d) None
- 7) _____ transition are required to connect every state to every other state.
a) n b) n*n c) n*n*n d) 2n
- 8) _____ allows a state to be broken into orthogonal component with limited interaction among them.
a) Generalization b) Aggregation c) Both d) None

P.T.O.



- 9) Which is the common modeling tool for the logical database design ?
a) UML instance diagram b) UML state diagram
c) UML use case diagram d) UML interaction diagram
- 10) The process of generating analysis and design documents is known as
a) Software engineering b) Software re-engineering
c) Reverse engineering d) Re-engineering
- 11) A single flat state diagram would require _____ states.
a) 2 b) 2^n c) $2*n$ d) $2*(n*n)$
- 12) The event coins in (a mount) are written within the collecting money states.
a) True b) False c) Cannot say d) Never heard of
- 13) _____ is equivalent to expanding nested activities.
a) Generalization b) Aggregation c) Link d) Inheritance
- 14) Module is _____ construct for grouping class.
a) physical b) logical c) both a and b d) none of these
- 15) A module is logical construct for grouping
a) classes, association
b) classes, association, generalization
c) association and generalization
d) none of these
- 16) The boundaries of module are
a) arbitrary b) subjective c) both a and b d) none
- 17) A object model consist of only one module.
a) true b) false c) cannot say d) never heard of
- 18) Module provide an intermediate unit of
a) grafting b) packaging c) both a and b d) none
- 19) Class name and association names must be _____ within module.
a) unique b) different
c) unique and different d) none of these
- 20) Is there necessary to list a module name at top of each sheet.
a) true b) false c) cannot say d) never heard of
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Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
OBJECT ORIENTED MODELING AND DESIGN**

Day and Date : Tuesday, 22-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Develop a design for a Hotel Management System using Object Modeling technique. 20
- The design should contain
- a) Drawing the object model consisting of the object diagram and instance diagram. Drawing the dynamic model consisting of the state diagram and drawing the functional model consisting of a DFD.
 - b) Commenting on system design.
 - c) Commenting on object design.
3. Attempt **any two** : 10
- a) What are the steps followed in system design phase of OMT ?
 - b) Compare between the object model and functional model of analysis phase in OMT.
 - c) What are the basic considerations to be considered in object design phase of OMT ?
4. Attempt **any two** : 10
- a) What static and dynamic models are created in OMT ?
 - b) What are the object oriented themes ? Illustrate.
 - c) State and illustrate the basic features of object oriented languages.

Set R



SECTION – II

5. Develop a design for a Hospital Management System using UML. **20**
The design should contain
- Things consisting of structural, behavioral, grouping and annotations as required.
 - Relationships consisting of dependencies, associations, generalizations and realizations.
 - Diagrams from the nine UML diagrams required for the problem.
6. Attempt **any two** : **10**
- What are interaction diagrams? How are they different from activity diagrams?
 - Elaborate on the considerations to be taken into account while drawing State chart diagrams.
 - Compare between Component diagram and Object diagram.
7. Attempt **any two** : **10**
- What are the primitive things included in Object diagrams?
 - List and explain the static diagrams of UML.
 - What are use cases? How are they represented in UML?
-



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Seat No.	
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Set	S
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T.E. (Information Technology) (Part – II) Examination, 2016
OBJECT ORIENTED MODELING AND DESIGN

Day and Date : Tuesday, 22-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**

- 1) The boundaries of module are
a) arbitrary b) subjective c) both a and b d) none
- 2) A object model consist of only one module.
a) true b) false c) cannot say d) never heard of
- 3) Module provide an intermediate unit of
a) grafting b) packaging c) both a and b d) none
- 4) Class name and association names must be _____ within module.
a) unique b) different
c) unique and different d) none of these
- 5) Is there necessary to list a module name at top of each sheet.
a) true b) false c) cannot say d) never heard of
- 6) Does module support between external binding and internal binding.
a) true b) false c) cannot say d) never heard of
- 7) Sheet is mechanism for
a) breaking large object model down into service of pages
b) breaking small object model down into service of pages
c) no breaking large object model down into service of pages
d) no breaking small object model down into service of pages
- 8) Each panel item has
a) single event b) multiple event
c) no event require d) none of above

P.T.O.



- 9) Complex model will fit on single piece of paper.
a) True b) False c) Cannot say d) Never heard of
- 10) Text window also known as
a) Scrolling window b) Non scrolling window
c) Vertical window d) Linear window
- 11) _____ is equivalent to concurrency of states.
a) Generalization b) Aggregation c) Both d) None
- 12) _____ transition are required to connect every state to every other state.
a) n b) n*n c) n*n*n d) 2n
- 13) _____ allows a state to be broken into orthogonal component with limited interaction among them.
a) Generalization b) Aggregation c) Both d) None
- 14) Which is the common modeling tool for the logical database design ?
a) UML instance diagram b) UML state diagram
c) UML use case diagram d) UML interaction diagram
- 15) The process of generating analysis and design documents is known as
a) Software engineering b) Software re-engineering
c) Reverse engineering d) Re-engineering
- 16) A single flat state diagram would require _____ states.
a) 2 b) 2^n c) $2*n$ d) $2*(n*n)$
- 17) The event coins in (a mount) are written within the collecting money states.
a) True b) False c) Cannot say d) Never heard of
- 18) _____ is equivalent to expanding nested activities.
a) Generalization b) Aggregation c) Link d) Inheritance
- 19) Module is _____ construct for grouping class.
a) physical b) logical c) both a and b d) none of these
- 20) A module is logical construct for grouping
a) classes, association
b) classes, association, generalization
c) association and generalization
d) none of these
-



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
OBJECT ORIENTED MODELING AND DESIGN**

Day and Date : Tuesday, 22-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Develop a design for a Hotel Management System using Object Modeling technique. 20
- The design should contain
- a) Drawing the object model consisting of the object diagram and instance diagram. Drawing the dynamic model consisting of the state diagram and drawing the functional model consisting of a DFD.
 - b) Commenting on system design.
 - c) Commenting on object design.
3. Attempt **any two** : 10
- a) What are the steps followed in system design phase of OMT ?
 - b) Compare between the object model and functional model of analysis phase in OMT.
 - c) What are the basic considerations to be considered in object design phase of OMT ?
4. Attempt **any two** : 10
- a) What static and dynamic models are created in OMT ?
 - b) What are the object oriented themes ? Illustrate.
 - c) State and illustrate the basic features of object oriented languages.

Set S



SECTION – II

5. Develop a design for a Hospital Management System using UML. **20**
The design should contain
- Things consisting of structural, behavioral, grouping and annotations as required.
 - Relationships consisting of dependencies, associations, generalizations and realizations.
 - Diagrams from the nine UML diagrams required for the problem.
6. Attempt **any two** : **10**
- What are interaction diagrams? How are they different from activity diagrams?
 - Elaborate on the considerations to be taken into account while drawing State chart diagrams.
 - Compare between Component diagram and Object diagram.
7. Attempt **any two** : **10**
- What are the primitive things included in Object diagrams?
 - List and explain the static diagrams of UML.
 - What are use cases? How are they represented in UML?
-



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Seat No.	
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Set

P

**T.E. (I.T.) (Part – II) Examination, 2016
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Wednesday, 23-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) Process control subsystem is not responsible for
 - a) Process synchronization
 - b) Memory management
 - c) Interprocess communication
 - d) File handling
- 2) Kernel uses _____ algorithm to convert pathname to inode.
 - a) ialloc
 - b) iput
 - c) iname
 - d) namei
- 3) Process 0 is called as
 - a) Swapper
 - b) Init
 - c) Zombie
 - d) Kernel
- 4) H/W control is placed in
 - a) User level
 - b) Kernel level
 - c) H/W level
 - d) None of above
- 5) Kernel allows context switch only when a process moves from the state
 - a) 'Kernel running' to the state 'asleep' in memory
 - b) 'Kernel running' to the state 'User running'
 - c) 'User running' to the state 'asleep' in memory
 - d) 'User running' to the state 'Kernel running'
- 6) The kernel caches data in the buffer pool according to
 - a) FIFO algorithm
 - b) LRU algorithm
 - c) Any of a) and b)
 - d) None of a) and b)
- 7) Race for locked buffer occurs in
 - a) First Scenario
 - b) Second Scenario
 - c) Fourth Scenario
 - d) Fifth Scenario
- 8) Buffer cache is kept in between
 - a) File system and character devices
 - b) File system and device drives
 - c) File system and hardware control
 - d) File system and block devices

P.T.O.



- 9) U-area contains
 - a) Control information about process
 - b) Status information about process
 - c) Both a) and b)
 - d) None of a) and b)
 - 10) The buffer headers contain
 - a) 5
 - b) 4
 - c) 6
 - d) 3
 - 11) When a process executes a system call, it leaves a state “user running” and enters a state
 - a) Preempted
 - b) Created
 - c) Kernel running
 - d) None of these
 - 12) A pointer to the process table identifies the entry that corresponds to
 - a) a-area
 - b) u-area
 - c) sleep area
 - d) wakeup area
 - 13) The kernel allocates a new region during
 - a) fork, exec and shmat
 - b) fork, exec and attachreg
 - c) fork, exec and shmget
 - d) fork and exec
 - 14) The syntax for fork system call is
 - a) pid=fork()
 - b) pid=uid=fork()
 - c) uid=join=fork()
 - d) pdi=fork()
 - 15) Signals inform processes of the occurrences of _____ events.
 - a) Synchronous
 - b) Asymmetric
 - c) Symmetric
 - d) Asynchronous
 - 16) UNIX system terminates the processes by using the _____ system call.
 - a) stop
 - b) end
 - c) exit
 - d) none of these
 - 17) The Scheduler of the UNIX system belongs to the general class of OS schedulers known as
 - a) Round robin with single level feedback
 - b) Round robin with multilevel feedback
 - c) FCFS
 - d) All of these
 - 18) If a process attempts to access a page whose valid bit is not set then the kernel involves
 - a) Validity fault handler
 - b) Invalidity fault handler
 - c) Legal handler
 - d) Check bits handler
 - 19) DMA stands for
 - a) Disk Memory Access
 - b) Disk Main Access
 - c) Direct Memory Access
 - d) None of these
 - 20) The swap device is a block device in a configurable section of a
 - a) RAM
 - b) ROM
 - c) Cache
 - d) Disk
-



Seat No.	
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**T.E. (I.T.) (Part – II) Examination, 2016
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Wednesday, 23-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- A) Explain working of pipe() system call.
 - B) Explain advantages and disadvantages of buffer cache.
 - C) List and explain various fields of super block.
 - D) Explain working of open() system call.
 - E) Explain the reasons for popularity of UNIX.
3. A) Explain what are inodes ? Describe in-core inodes and disk inodes. **10**
- OR
- B) Describe the actions taken by the Kernel while allocating a buffer for a disk block when the Kernel cannot find the block on the hash queue and the free list of buffers is empty.
4. Explain the algorithm for creation of special file in detail. **10**

SECTION – II

5. Attempt **any four** of the following : **(4×5=20)**
- a) Explain the layout of System Memory with regards to regions.
 - b) With a neat figure explain the typical context layers of a sleeping process.
 - c) With a neat figure show and briefly explain the logical format of an executable file.
 - d) Explain the syntax for setuid system call.
 - e) What do you mean by Line discipline ? List down any five functions of a line discipline.
 - f) How do you establish a Control Terminal ?

Set P



6. Attempt **any one** of the following : **(1×10=10)**
- Explain the layout of System Memory with relevant diagram/s wherever required.
 - How does fork() creates a New Process Context ? Explain with a neat schematic.
7. Attempt **any one** of the following : **(1×10=10)**
- Write down the algorithm for reading a terminal.
 - Explain the following system calls with examples.
 - fork()
 - pipe()
 - setuid()
 - profil()
-



SLR-EP – 226

Seat No.	
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Set **Q**

**T.E. (I.T.) (Part – II) Examination, 2016
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Wednesday, 23-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**
- 1) UNIX system terminates the processes by using the _____ system call.
a) stop b) end c) exit d) none of these
 - 2) The Scheduler of the UNIX system belongs to the general class of OS schedulers known as
a) Round robin with single level feedback
b) Round robin with multilevel feedback
c) FCFS
d) All of these
 - 3) If a process attempts to access a page whose valid bit is not set then the kernel involves
a) Validity fault handler b) Invalidity fault handler
c) Legal handler d) Check bits handler
 - 4) DMA stands for
a) Disk Memory Access b) Disk Main Access
c) Direct Memory Access d) None of these
 - 5) The swap device is a block device in a configurable section of a
a) RAM b) ROM c) Cache d) Disk
 - 6) Process control subsystem is not responsible for
a) Process synchronization b) Memory management
c) Interprocess communication d) File handling
 - 7) Kernel uses _____ algorithm to convert pathname to inode.
a) ialloc b) iput c) iname d) namei

P.T.O.



- 8) Process 0 is called as
a) Swapper b) Init c) Zombie d) Kernel
- 9) H/W control is placed in
a) User level b) Kernel level c) H/W level d) None of above
- 10) Kernel allows context switch only when a process moves from the state
a) 'Kernel running' to the state 'asleep' in memory
b) 'Kernel running' to the state 'User running'
c) 'User running' to the state 'asleep' in memory
d) 'User running' to the state 'Kernel running'
- 11) The kernel caches data in the buffer pool according to
a) FIFO algorithm b) LRU algorithm
c) Any of a) and b) d) None of a) and b)
- 12) Race for locked buffer occurs in
a) First Scenario b) Second Scenario
c) Fourth Scenario d) Fifth Scenario
- 13) Buffer cache is kept in between
a) File system and character devices b) File system and device drives
c) File system and hardware control d) File system and block devices
- 14) U-area contains
a) Control information about process
b) Status information about process
c) Both a) and b)
d) None of a) and b)
- 15) The buffer headers contain
a) 5 b) 4 c) 6 d) 3
- 16) When a process executes a system call, it leaves a state "user running" and enters a state
a) Preempted b) Created c) Kernel running d) None of these
- 17) A pointer to the process table identifies the entry that corresponds to
a) a-area b) u-area c) sleep area d) wakeup area
- 18) The kernel allocates a new region during
a) fork, exec and shmat b) fork, exec and attachreg
c) fork, exec and shmget d) fork and exec
- 19) The syntax for fork system call is
a) pid=fork() b) pid=uid=fork()
c) uid=join=fork() d) pdi=fork()
- 20) Signals inform processes of the occurrences of _____ events.
a) Synchronous b) Asymmetric c) Symmetric d) Asynchronous
-



Seat No.	
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**T.E. (I.T.) (Part – II) Examination, 2016
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Wednesday, 23-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- A) Explain working of pipe() system call.
 - B) Explain advantages and disadvantages of buffer cache.
 - C) List and explain various fields of super block.
 - D) Explain working of open() system call.
 - E) Explain the reasons for popularity of UNIX.
3. A) Explain what are inodes ? Describe in-core inodes and disk inodes. **10**
- OR
- B) Describe the actions taken by the Kernel while allocating a buffer for a disk block when the Kernel cannot find the block on the hash queue and the free list of buffers is empty.
4. Explain the algorithm for creation of special file in detail. **10**

SECTION – II

5. Attempt **any four** of the following : **(4×5=20)**
- a) Explain the layout of System Memory with regards to regions.
 - b) With a neat figure explain the typical context layers of a sleeping process.
 - c) With a neat figure show and briefly explain the logical format of an executable file.
 - d) Explain the syntax for setuid system call.
 - e) What do you mean by Line discipline ? List down any five functions of a line discipline.
 - f) How do you establish a Control Terminal ?

Set Q



6. Attempt **any one** of the following : **(1×10=10)**
- Explain the layout of System Memory with relevant diagram/s wherever required.
 - How does fork() creates a New Process Context ? Explain with a neat schematic.
7. Attempt **any one** of the following : **(1×10=10)**
- Write down the algorithm for reading a terminal.
 - Explain the following system calls with examples.
 - fork()
 - pipe()
 - setuid()
 - profil()
-



SLR-EP – 226

Seat No.	
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Set **R**

**T.E. (I.T.) (Part – II) Examination, 2016
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Wednesday, 23-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **(20×1=20)**
- 1) When a process executes a system call, it leaves a state “user running” and enters a state
a) Preempted b) Created c) Kernel running d) None of these
 - 2) A pointer to the process table identifies the entry that corresponds to
a) a-area b) u-area c) sleep area d) wakeup area
 - 3) The kernel allocates a new region during
a) fork, exec and shmat b) fork, exec and attachreg
c) fork, exec and shmget d) fork and exec
 - 4) The syntax for fork system call is
a) pid=fork() b) pid=uid=fork()
c) uid=join=fork() d) pdi=fork()
 - 5) Signals inform processes of the occurrences of _____ events.
a) Synchronous b) Asymmetric c) Symmetric d) Asynchronous
 - 6) UNIX system terminates the processes by using the _____ system call.
a) stop b) end c) exit d) none of these
 - 7) The Scheduler of the UNIX system belongs to the general class of OS schedulers known as
a) Round robin with single level feedback
b) Round robin with multilevel feedback
c) FCFS
d) All of these

P.T.O.



- 8) If a process attempts to access a page whose valid bit is not set then the kernel involves
- a) Validity fault handler
 - b) Invalidity fault handler
 - c) Legal handler
 - d) Check bits handler
- 9) DMA stands for
- a) Disk Memory Access
 - b) Disk Main Access
 - c) Direct Memory Access
 - d) None of these
- 10) The swap device is a block device in a configurable section of a
- a) RAM
 - b) ROM
 - c) Cache
 - d) Disk
- 11) Process control subsystem is not responsible for
- a) Process synchronization
 - b) Memory management
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 - d) File handling
- 12) Kernel uses _____ algorithm to convert pathname to inode.
- a) ialloc
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 - d) namei
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- a) Swapper
 - b) Init
 - c) Zombie
 - d) Kernel
- 14) H/W control is placed in
- a) User level
 - b) Kernel level
 - c) H/W level
 - d) None of above
- 15) Kernel allows context switch only when a process moves from the state
- a) 'Kernel running' to the state 'asleep' in memory
 - b) 'Kernel running' to the state 'User running'
 - c) 'User running' to the state 'asleep' in memory
 - d) 'User running' to the state 'Kernel running'
- 16) The kernel caches data in the buffer pool according to
- a) FIFO algorithm
 - b) LRU algorithm
 - c) Any of a) and b)
 - d) None of a) and b)
- 17) Race for locked buffer occurs in
- a) First Scenario
 - b) Second Scenario
 - c) Fourth Scenario
 - d) Fifth Scenario
- 18) Buffer cache is kept in between
- a) File system and character devices
 - b) File system and device drives
 - c) File system and hardware control
 - d) File system and block devices
- 19) U-area contains
- a) Control information about process
 - b) Status information about process
 - c) Both a) and b)
 - d) None of a) and b)
- 20) The buffer headers contain
- a) 5
 - b) 4
 - c) 6
 - d) 3



Seat No.	
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**T.E. (I.T.) (Part – II) Examination, 2016
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Wednesday, 23-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- A) Explain working of pipe() system call.
 - B) Explain advantages and disadvantages of buffer cache.
 - C) List and explain various fields of super block.
 - D) Explain working of open() system call.
 - E) Explain the reasons for popularity of UNIX.
3. A) Explain what are inodes ? Describe in-core inodes and disk inodes. **10**
- OR
- B) Describe the actions taken by the Kernel while allocating a buffer for a disk block when the Kernel cannot find the block on the hash queue and the free list of buffers is empty.
4. Explain the algorithm for creation of special file in detail. **10**

SECTION – II

5. Attempt **any four** of the following : **(4×5=20)**
- a) Explain the layout of System Memory with regards to regions.
 - b) With a neat figure explain the typical context layers of a sleeping process.
 - c) With a neat figure show and briefly explain the logical format of an executable file.
 - d) Explain the syntax for setuid system call.
 - e) What do you mean by Line discipline ? List down any five functions of a line discipline.
 - f) How do you establish a Control Terminal ?

Set R



6. Attempt **any one** of the following : **(1×10=10)**
- a) Explain the layout of System Memory with relevant diagram/s wherever required.
 - b) How does fork() creates a New Process Context ? Explain with a neat schematic.
7. Attempt **any one** of the following : **(1×10=10)**
- a) Write down the algorithm for reading a terminal.
 - b) Explain the following system calls with examples.
 - i) fork()
 - ii) pipe()
 - iii) setuid()
 - iv) profil()
-



SLR-EP – 226

Seat No.	
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Set

S

**T.E. (I.T.) (Part – II) Examination, 2016
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Wednesday, 23-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(20×1=20)

- 1) The kernel caches data in the buffer pool according to
 - a) FIFO algorithm
 - b) LRU algorithm
 - c) Any of a) and b)
 - d) None of a) and b)
- 2) Race for locked buffer occurs in
 - a) First Scenario
 - b) Second Scenario
 - c) Fourth Scenario
 - d) Fifth Scenario
- 3) Buffer cache is kept in between
 - a) File system and character devices
 - b) File system and device drives
 - c) File system and hardware control
 - d) File system and block devices
- 4) U-area contains
 - a) Control information about process
 - b) Status information about process
 - c) Both a) and b)
 - d) None of a) and b)
- 5) The buffer headers contain
 - a) 5
 - b) 4
 - c) 6
 - d) 3
- 6) When a process executes a system call, it leaves a state "user running" and enters a state
 - a) Preempted
 - b) Created
 - c) Kernel running
 - d) None of these
- 7) A pointer to the process table identifies the entry that corresponds to
 - a) a-area
 - b) u-area
 - c) sleep area
 - d) wakeup area

P.T.O.



- 8) The kernel allocates a new region during
- a) fork, exec and shmat
 - b) fork, exec and attachreg
 - c) fork, exec and shmget
 - d) fork and exec
- 9) The syntax for fork system call is
- a) pid=fork()
 - b) pid=uid=fork()
 - c) uid=join=fork()
 - d) pdi=fork()
- 10) Signals inform processes of the occurrences of _____ events.
- a) Synchronous
 - b) Asymmetric
 - c) Symmetric
 - d) Asynchronous
- 11) UNIX system terminates the processes by using the _____ system call.
- a) stop
 - b) end
 - c) exit
 - d) none of these
- 12) The Scheduler of the UNIX system belongs to the general class of OS schedulers known as
- a) Round robin with single level feedback
 - b) Round robin with multilevel feedback
 - c) FCFS
 - d) All of these
- 13) If a process attempts to access a page whose valid bit is not set then the kernel involves
- a) Validity fault handler
 - b) Invalidity fault handler
 - c) Legal handler
 - d) Check bits handler
- 14) DMA stands for
- a) Disk Memory Access
 - b) Disk Main Access
 - c) Direct Memory Access
 - d) None of these
- 15) The swap device is a block device in a configurable section of a
- a) RAM
 - b) ROM
 - c) Cache
 - d) Disk
- 16) Process control subsystem is not responsible for
- a) Process synchronization
 - b) Memory management
 - c) Interprocess communication
 - d) File handling
- 17) Kernel uses _____ algorithm to convert pathname to inode.
- a) ialloc
 - b) iput
 - c) iname
 - d) namei
- 18) Process 0 is called as
- a) Swapper
 - b) Init
 - c) Zombie
 - d) Kernel
- 19) H/W control is placed in
- a) User level
 - b) Kernel level
 - c) H/W level
 - d) None of above
- 20) Kernel allows context switch only when a process moves from the state
- a) 'Kernel running' to the state 'asleep' in memory
 - b) 'Kernel running' to the state 'User running'
 - c) 'User running' to the state 'asleep' in memory
 - d) 'User running' to the state 'Kernel running'



Seat No.	
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**T.E. (I.T.) (Part – II) Examination, 2016
UNIX OPERATING SYSTEM CONCEPTS**

Day and Date : Wednesday, 23-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

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

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- A) Explain working of pipe() system call.
 - B) Explain advantages and disadvantages of buffer cache.
 - C) List and explain various fields of super block.
 - D) Explain working of open() system call.
 - E) Explain the reasons for popularity of UNIX.
3. A) Explain what are inodes ? Describe in-core inodes and disk inodes. **10**
- OR
- B) Describe the actions taken by the Kernel while allocating a buffer for a disk block when the Kernel cannot find the block on the hash queue and the free list of buffers is empty.
4. Explain the algorithm for creation of special file in detail. **10**

SECTION – II

5. Attempt **any four** of the following : **(4×5=20)**
- a) Explain the layout of System Memory with regards to regions.
 - b) With a neat figure explain the typical context layers of a sleeping process.
 - c) With a neat figure show and briefly explain the logical format of an executable file.
 - d) Explain the syntax for setuid system call.
 - e) What do you mean by Line discipline ? List down any five functions of a line discipline.
 - f) How do you establish a Control Terminal ?

Set S



6. Attempt **any one** of the following : **(1×10=10)**
- a) Explain the layout of System Memory with relevant diagram/s wherever required.
 - b) How does fork() creates a New Process Context ? Explain with a neat schematic.
7. Attempt **any one** of the following : **(1×10=10)**
- a) Write down the algorithm for reading a terminal.
 - b) Explain the following system calls with examples.
 - i) fork()
 - ii) pipe()
 - iii) setuid()
 - iv) profil()
-



SLR-EP – 227

Seat No.	
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Set

P

**T.E. (Information Technology) (Part – II) Examination, 2016
SOFTWARE ENGINEERING**

Day and Date : Thursday, 24-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives : (20×1=20)
- 1) The primary focus of the software industries is to produce
 - a) Quality software
 - b) Software within budget
 - c) Software in small cycle time
 - d) Quality software within budget and small cycle time
 - 2) Software engineering principles use _____ to achieve the quality goals.
 - a) Techniques
 - b) Tools
 - c) Skills and processes
 - d) All of the above
 - 3) The changes in software processes, products and projects are handled in
 - a) Process management process
 - b) Product development process
 - c) Project management process
 - d) Configuration management process
 - 4) Phased development life cycle is beneficial
 - a) To reduce product complexities
 - b) To manage product development
 - c) To ease testing activities
 - d) All of the above
 - 5) Phase containment of errors refers to the
 - a) Debugging defects during development
 - b) Detecting and removing defects earlier in the process of development
 - c) Predicting defects before development
 - d) None of the above
 - 6) Which one of the following model has the risk-driven approach ?
 - a) Agile process model
 - b) Spiral model
 - c) Waterfall model
 - d) Prototyping model
 - 7) E-R modeling is a
 - a) Data-oriented analysis tool
 - b) Object-oriented analysis tool
 - c) Structured analysis tool
 - d) Prototype analysis tool
 - 8) Object-oriented analysis is based on
 - a) Developing the application
 - b) Engineering the application
 - c) Modeling the application
 - d) Prototyping the application

P.T.O.



- 9) A SRS is the document that
 - a) Describes design details
 - b) Describes proposed software requirements
 - c) Describes development methods
 - d) Describes testing methods
- 10) Coupling is a qualitative indication of the degree to which a module
 - a) Is connected to other modules and the outside world
 - b) Focuses on just one thing
 - c) Is able to complete its function in a timely manner
 - d) Can be written more compactly
- 11) Which are the essential elements of project management ?

I. People	II. Process	III. Product	IV. Project
a) II and III	b) I, II and III	c) III and IV	d) All of the above
- 12) Project management is the application of _____ for performing the project activities in order to satisfy the expectations of the stakeholders from a project.
 - a) Knowledge
 - b) Tools and techniques
 - c) Skills
 - d) All of the above
- 13) The Postmortem analysis is performed at
 - a) Closing stage
 - b) Communication stage
 - c) Execution stage
 - d) Planning stage
- 14) Which of the following tasks is not part of software configuration management ?
 - a) Change control
 - b) Reporting
 - c) Statistical quality control
 - d) Version control
- 15) Who is responsible for prioritizing the product backlog ?
 - a) Product Owner
 - b) Project Manager
 - c) Lead Developer
 - d) Tester
- 16) Select the option that suits the Manifesto for Agile Software Development.
 - a) Individuals and interactions
 - b) Working software and Customer collaboration
 - c) Responding to change
 - d) All of the mentioned
- 17) Agile Software Development is based on
 - a) Incremental Development
 - b) Iterative Development
 - c) Both a) and b)
 - d) Waterfall Model
- 18) What is the intention of designing a set of test cases for testing ?
 - a) Prove that the program under test is incorrect
 - b) Prove that the program under test is correct
 - c) Produce a reliable product
 - d) Produce an operation system
- 19) Which testing is performed on the basis of functions or features of the software ?
 - a) White-box testing
 - b) Black-box testing
 - c) Regression testing
 - d) Performance testing
- 20) The Boundary of equivalence classes is checked in
 - a) Equivalence class partitioning
 - b) Boundary value analysis
 - c) Error guessing
 - d) None of the above



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
SOFTWARE ENGINEERING**

Day and Date : Thursday, 24-11-2016

Marks : 80

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

SECTION – I

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

- a) What are the various software engineering challenges ? Explain each challenge by giving exciting solutions.
- b) What is a prototype model ? What are the advantages of constructing a prototype model ?
- c) What are the activities of phased software life cycle ? Explain the purpose of each of these activities.
- d) Why is difficult to determine correct and complete requirements ? Identify the reasons.
- e) What are the various symbols used for constructing DFDs ? Explain the conventions for constructing a correct DFD.
- f) Define software architecture. Explain the importance of software architecture in software development.

3. Attempt **any one** : **(1×10=10)**

- a) What do you mean by the software design methodology ? Differentiate between function-oriented and object-oriented design methodologies with suitable examples.
- b) What is architectural style ? Explain the different views of architectural styles.

4. Attempt **any one** : **(1×10=10)**

- a) Explain the features of the spiral model with the help of its process diagram. How are the risks handled in this model ?
- b) What is detailed design ? Why design verification is required and mention various methods of design verification ?



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) What is Project Scheduling ? Describe the various activities of project scheduling.
 - b) What do you mean by effort estimation ? What are the various methods of effort estimation ?
 - c) What is Agile Project Management and explain its principles.
 - d) Explain the concept of Black-box testing methods.
 - e) What is software testing ? Why is it most important and serious phase in software development life cycle ?
 - f) Explain in detail the system testing.
6. Attempt **any one** : **(1×10=10)**
- a) What is CMM ? Explain the KPAs for each level in the CMM model. What is the purpose of KPAs in the CMM ?
 - b) Explain Iterative PMLC Model in Agile project management and mention when to use an iterative PMLC model.
7. Attempt **any one** : **(1×10=10)**
- a) Explain the object-oriented testing strategies.
 - b) Explain characteristics, strengths and weakness of an adaptive PMLC model and also explain any one type of adaptive PMLC model.
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SLR-EP – 227

Seat No.	
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Set **Q**

**T.E. (Information Technology) (Part – II) Examination, 2016
SOFTWARE ENGINEERING**

Day and Date : Thursday, 24-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives : (20×1=20)

- 1) Select the option that suits the Manifesto for Agile Software Development.
 - a) Individuals and interactions
 - b) Working software and Customer collaboration
 - c) Responding to change
 - d) All of the mentioned
- 2) Agile Software Development is based on
 - a) Incremental Development
 - b) Iterative Development
 - c) Both a) and b)
 - d) Waterfall Model
- 3) What is the intention of designing a set of test cases for testing ?
 - a) Prove that the program under test is incorrect
 - b) Prove that the program under test is correct
 - c) Produce a reliable product
 - d) Produce an operation system
- 4) Which testing is performed on the basis of functions or features of the software ?
 - a) White-box testing
 - b) Black-box testing
 - c) Regression testing
 - d) Performance testing
- 5) The Boundary of equivalence classes is checked in
 - a) Equivalence class partitioning
 - b) Boundary value analysis
 - c) Error guessing
 - d) None of the above
- 6) The primary focus of the software industries is to produce
 - a) Quality software
 - b) Software within budget
 - c) Software in small cycle time
 - d) Quality software within budget and small cycle time
- 7) Software engineering principles use _____ to achieve the quality goals.
 - a) Techniques
 - b) Tools
 - c) Skills and processes
 - d) All of the above
- 8) The changes in software processes, products and projects are handled in
 - a) Process management process
 - b) Product development process
 - c) Project management process
 - d) Configuration management process

P.T.O.



- 9) Phased development life cycle is beneficial
 - a) To reduce product complexities
 - b) To manage product development
 - c) To ease testing activities
 - d) All of the above
 - 10) Phase containment of errors refers to the
 - a) Debugging defects during development
 - b) Detecting and removing defects earlier in the process of development
 - c) Predicting defects before development
 - d) None of the above
 - 11) Which one of the following model has the risk-driven approach ?
 - a) Agile process model
 - b) Spiral model
 - c) Waterfall model
 - d) Prototyping model
 - 12) E-R modeling is a
 - a) Data-oriented analysis tool
 - b) Object-oriented analysis tool
 - c) Structured analysis tool
 - d) Prototype analysis tool
 - 13) Object-oriented analysis is based on
 - a) Developing the application
 - b) Engineering the application
 - c) Modeling the application
 - d) Prototyping the application
 - 14) A SRS is the document that
 - a) Describes design details
 - b) Describes proposed software requirements
 - c) Describes development methods
 - d) Describes testing methods
 - 15) Coupling is a qualitative indication of the degree to which a module
 - a) Is connected to other modules and the outside world
 - b) Focuses on just one thing
 - c) Is able to complete its function in a timely manner
 - d) Can be written more compactly
 - 16) Which are the essential elements of project management ?

I. People	II. Process	III. Product	IV. Project
a) II and III	b) I, II and III	c) III and IV	d) All of the above
 - 17) Project management is the application of _____ for performing the project activities in order to satisfy the expectations of the stakeholders from a project.
 - a) Knowledge
 - b) Tools and techniques
 - c) Skills
 - d) All of the above
 - 18) The Postmortem analysis is performed at
 - a) Closing stage
 - b) Communication stage
 - c) Execution stage
 - d) Planning stage
 - 19) Which of the following tasks is not part of software configuration management ?
 - a) Change control
 - b) Reporting
 - c) Statistical quality control
 - d) Version control
 - 20) Who is responsible for prioritizing the product backlog ?
 - a) Product Owner
 - b) Project Manager
 - c) Lead Developer
 - d) Tester
-



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
SOFTWARE ENGINEERING**

Day and Date : Thursday, 24-11-2016

Marks : 80

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

SECTION – I

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

- a) What are the various software engineering challenges ? Explain each challenge by giving exciting solutions.
- b) What is a prototype model ? What are the advantages of constructing a prototype model ?
- c) What are the activities of phased software life cycle ? Explain the purpose of each of these activities.
- d) Why is difficult to determine correct and complete requirements ? Identify the reasons.
- e) What are the various symbols used for constructing DFDs ? Explain the conventions for constructing a correct DFD.
- f) Define software architecture. Explain the importance of software architecture in software development.

3. Attempt **any one** : **(1×10=10)**

- a) What do you mean by the software design methodology ? Differentiate between function-oriented and object-oriented design methodologies with suitable examples.
- b) What is architectural style ? Explain the different views of architectural styles.

4. Attempt **any one** : **(1×10=10)**

- a) Explain the features of the spiral model with the help of its process diagram. How are the risks handled in this model ?
- b) What is detailed design ? Why design verification is required and mention various methods of design verification ?

Set Q



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) What is Project Scheduling ? Describe the various activities of project scheduling.
 - b) What do you mean by effort estimation ? What are the various methods of effort estimation ?
 - c) What is Agile Project Management and explain its principles.
 - d) Explain the concept of Black-box testing methods.
 - e) What is software testing ? Why is it most important and serious phase in software development life cycle ?
 - f) Explain in detail the system testing.
6. Attempt **any one** : **(1×10=10)**
- a) What is CMM ? Explain the KPAs for each level in the CMM model. What is the purpose of KPAs in the CMM ?
 - b) Explain Iterative PMLC Model in Agile project management and mention when to use an iterative PMLC model.
7. Attempt **any one** : **(1×10=10)**
- a) Explain the object-oriented testing strategies.
 - b) Explain characteristics, strengths and weakness of an adaptive PMLC model and also explain any one type of adaptive PMLC model.
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SLR-EP – 227

Seat No.	
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Set **R**

**T.E. (Information Technology) (Part – II) Examination, 2016
SOFTWARE ENGINEERING**

Day and Date : Thursday, 24-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives : (20×1=20)
- 1) Which are the essential elements of project management ?
I. People II. Process III. Product IV. Project
a) II and III b) I, II and III c) III and IV d) All of the above
 - 2) Project management is the application of _____ for performing the project activities in order to satisfy the expectations of the stakeholders from a project.
a) Knowledge b) Tools and techniques
c) Skills d) All of the above
 - 3) The Postmortem analysis is performed at
a) Closing stage b) Communication stage
c) Execution stage d) Planning stage
 - 4) Which of the following tasks is not part of software configuration management ?
a) Change control b) Reporting
c) Statistical quality control d) Version control
 - 5) Who is responsible for prioritizing the product backlog ?
a) Product Owner b) Project Manager
c) Lead Developer d) Tester
 - 6) Select the option that suits the Manifesto for Agile Software Development.
a) Individuals and interactions
b) Working software and Customer collaboration
c) Responding to change
d) All of the mentioned
 - 7) Agile Software Development is based on
a) Incremental Development b) Iterative Development
c) Both a) and b) d) Waterfall Model
 - 8) What is the intention of designing a set of test cases for testing ?
a) Prove that the program under test is incorrect
b) Prove that the program under test is correct
c) Produce a reliable product
d) Produce an operation system

P.T.O.



- 9) Which testing is performed on the basis of functions or features of the software ?
 - a) White-box testing
 - b) Black-box testing
 - c) Regression testing
 - d) Performance testing
- 10) The Boundary of equivalence classes is checked in
 - a) Equivalence class partitioning
 - b) Boundary value analysis
 - c) Error guessing
 - d) None of the above
- 11) The primary focus of the software industries is to produce
 - a) Quality software
 - b) Software within budget
 - c) Software in small cycle time
 - d) Quality software within budget and small cycle time
- 12) Software engineering principles use _____ to achieve the quality goals.
 - a) Techniques
 - b) Tools
 - c) Skills and processes
 - d) All of the above
- 13) The changes in software processes, products and projects are handled in
 - a) Process management process
 - b) Product development process
 - c) Project management process
 - d) Configuration management process
- 14) Phased development life cycle is beneficial
 - a) To reduce product complexities
 - b) To manage product development
 - c) To ease testing activities
 - d) All of the above
- 15) Phase containment of errors refers to the
 - a) Debugging defects during development
 - b) Detecting and removing defects earlier in the process of development
 - c) Predicting defects before development
 - d) None of the above
- 16) Which one of the following model has the risk-driven approach ?
 - a) Agile process model
 - b) Spiral model
 - c) Waterfall model
 - d) Prototyping model
- 17) E-R modeling is a
 - a) Data-oriented analysis tool
 - b) Object-oriented analysis tool
 - c) Structured analysis tool
 - d) Prototype analysis tool
- 18) Object-oriented analysis is based on
 - a) Developing the application
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 - c) Modeling the application
 - d) Prototyping the application
- 19) A SRS is the document that
 - a) Describes design details
 - b) Describes proposed software requirements
 - c) Describes development methods
 - d) Describes testing methods
- 20) Coupling is a qualitative indication of the degree to which a module
 - a) Is connected to other modules and the outside world
 - b) Focuses on just one thing
 - c) Is able to complete its function in a timely manner
 - d) Can be written more compactly



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
SOFTWARE ENGINEERING**

Day and Date : Thursday, 24-11-2016

Marks : 80

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

SECTION – I

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

- a) What are the various software engineering challenges ? Explain each challenge by giving exciting solutions.
- b) What is a prototype model ? What are the advantages of constructing a prototype model ?
- c) What are the activities of phased software life cycle ? Explain the purpose of each of these activities.
- d) Why is difficult to determine correct and complete requirements ? Identify the reasons.
- e) What are the various symbols used for constructing DFDs ? Explain the conventions for constructing a correct DFD.
- f) Define software architecture. Explain the importance of software architecture in software development.

3. Attempt **any one** : **(1×10=10)**

- a) What do you mean by the software design methodology ? Differentiate between function-oriented and object-oriented design methodologies with suitable examples.
- b) What is architectural style ? Explain the different views of architectural styles.

4. Attempt **any one** : **(1×10=10)**

- a) Explain the features of the spiral model with the help of its process diagram. How are the risks handled in this model ?
- b) What is detailed design ? Why design verification is required and mention various methods of design verification ?



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) What is Project Scheduling ? Describe the various activities of project scheduling.
 - b) What do you mean by effort estimation ? What are the various methods of effort estimation ?
 - c) What is Agile Project Management and explain its principles.
 - d) Explain the concept of Black-box testing methods.
 - e) What is software testing ? Why is it most important and serious phase in software development life cycle ?
 - f) Explain in detail the system testing.
6. Attempt **any one** : **(1×10=10)**
- a) What is CMM ? Explain the KPAs for each level in the CMM model. What is the purpose of KPAs in the CMM ?
 - b) Explain Iterative PMLC Model in Agile project management and mention when to use an iterative PMLC model.
7. Attempt **any one** : **(1×10=10)**
- a) Explain the object-oriented testing strategies.
 - b) Explain characteristics, strengths and weakness of an adaptive PMLC model and also explain any one type of adaptive PMLC model.
-



SLR-EP – 227

Seat No.	
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Set

S

**T.E. (Information Technology) (Part – II) Examination, 2016
SOFTWARE ENGINEERING**

Day and Date : Thursday, 24-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

(20×1=20)

- 1) Which one of the following model has the risk-driven approach ?
 - a) Agile process model
 - b) Spiral model
 - c) Waterfall model
 - d) Prototyping model
- 2) E-R modeling is a
 - a) Data-oriented analysis tool
 - b) Object-oriented analysis tool
 - c) Structured analysis tool
 - d) Prototype analysis tool
- 3) Object-oriented analysis is based on
 - a) Developing the application
 - b) Engineering the application
 - c) Modeling the application
 - d) Prototyping the application
- 4) A SRS is the document that
 - a) Describes design details
 - b) Describes proposed software requirements
 - c) Describes development methods
 - d) Describes testing methods
- 5) Coupling is a qualitative indication of the degree to which a module
 - a) Is connected to other modules and the outside world
 - b) Focuses on just one thing
 - c) Is able to complete its function in a timely manner
 - d) Can be written more compactly
- 6) Which are the essential elements of project management ?
 - I. People
 - II. Process
 - III. Product
 - IV. Project
 - a) II and III
 - b) I, II and III
 - c) III and IV
 - d) All of the above
- 7) Project management is the application of _____ for performing the project activities in order to satisfy the expectations of the stakeholders from a project.
 - a) Knowledge
 - b) Tools and techniques
 - c) Skills
 - d) All of the above
- 8) The Postmortem analysis is performed at
 - a) Closing stage
 - b) Communication stage
 - c) Execution stage
 - d) Planning stage

P.T.O.



- 9) Which of the following tasks is not part of software configuration management ?
 - a) Change control
 - b) Reporting
 - c) Statistical quality control
 - d) Version control
 - 10) Who is responsible for prioritizing the product backlog ?
 - a) Product Owner
 - b) Project Manager
 - c) Lead Developer
 - d) Tester
 - 11) Select the option that suits the Manifesto for Agile Software Development.
 - a) Individuals and interactions
 - b) Working software and Customer collaboration
 - c) Responding to change
 - d) All of the mentioned
 - 12) Agile Software Development is based on
 - a) Incremental Development
 - b) Iterative Development
 - c) Both a) and b)
 - d) Waterfall Model
 - 13) What is the intention of designing a set of test cases for testing ?
 - a) Prove that the program under test is incorrect
 - b) Prove that the program under test is correct
 - c) Produce a reliable product
 - d) Produce an operation system
 - 14) Which testing is performed on the basis of functions or features of the software ?
 - a) White-box testing
 - b) Black-box testing
 - c) Regression testing
 - d) Performance testing
 - 15) The Boundary of equivalence classes is checked in
 - a) Equivalence class partitioning
 - b) Boundary value analysis
 - c) Error guessing
 - d) None of the above
 - 16) The primary focus of the software industries is to produce
 - a) Quality software
 - b) Software within budget
 - c) Software in small cycle time
 - d) Quality software within budget and small cycle time
 - 17) Software engineering principles use _____ to achieve the quality goals.
 - a) Techniques
 - b) Tools
 - c) Skills and processes
 - d) All of the above
 - 18) The changes in software processes, products and projects are handled in
 - a) Process management process
 - b) Product development process
 - c) Project management process
 - d) Configuration management process
 - 19) Phased development life cycle is beneficial
 - a) To reduce product complexities
 - b) To manage product development
 - c) To ease testing activities
 - d) All of the above
 - 20) Phase containment of errors refers to the
 - a) Debugging defects during development
 - b) Detecting and removing defects earlier in the process of development
 - c) Predicting defects before development
 - d) None of the above
-



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
SOFTWARE ENGINEERING**

Day and Date : Thursday, 24-11-2016

Marks : 80

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

SECTION – I

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

- a) What are the various software engineering challenges ? Explain each challenge by giving exciting solutions.
- b) What is a prototype model ? What are the advantages of constructing a prototype model ?
- c) What are the activities of phased software life cycle ? Explain the purpose of each of these activities.
- d) Why is difficult to determine correct and complete requirements ? Identify the reasons.
- e) What are the various symbols used for constructing DFDs ? Explain the conventions for constructing a correct DFD.
- f) Define software architecture. Explain the importance of software architecture in software development.

3. Attempt **any one** : **(1×10=10)**

- a) What do you mean by the software design methodology ? Differentiate between function-oriented and object-oriented design methodologies with suitable examples.
- b) What is architectural style ? Explain the different views of architectural styles.

4. Attempt **any one** : **(1×10=10)**

- a) Explain the features of the spiral model with the help of its process diagram. How are the risks handled in this model ?
- b) What is detailed design ? Why design verification is required and mention various methods of design verification ?



SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) What is Project Scheduling ? Describe the various activities of project scheduling.
 - b) What do you mean by effort estimation ? What are the various methods of effort estimation ?
 - c) What is Agile Project Management and explain its principles.
 - d) Explain the concept of Black-box testing methods.
 - e) What is software testing ? Why is it most important and serious phase in software development life cycle ?
 - f) Explain in detail the system testing.
6. Attempt **any one** : **(1×10=10)**
- a) What is CMM ? Explain the KPAs for each level in the CMM model. What is the purpose of KPAs in the CMM ?
 - b) Explain Iterative PMLC Model in Agile project management and mention when to use an iterative PMLC model.
7. Attempt **any one** : **(1×10=10)**
- a) Explain the object-oriented testing strategies.
 - b) Explain characteristics, strengths and weakness of an adaptive PMLC model and also explain any one type of adaptive PMLC model.
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Seat No.	
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Set	P
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**T.E. (Information Technology) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Friday, 25-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) A [dot] dex file is an executable file that runs inside the
A) SDK B) JVM
C) DVM D) None of the choices
- 2) _____ is an auto generated file containing integer constants for all resources included in the Android project.
A) activity_main[dot]xml B) R[dot]java
C) AndroidManifest[dot]xml D) None of the choices are correct
- 3) A component that captures and responds to several announcements is called as
A) Multicast receiver B) Broadcast receiver
C) Unicast receiver D) None of these
- 4) The _____ facilitates connection and communication with devices and emulators.
A) adb B) DDMS C) DVK D) None of these
- 5) The _____ tool converts [dot] class files to [dot] dex file.
A) aapt B) dx C) ddms D) None of these
- 6) The _____ provides the core operating system infrastructure such as memory management, process management etc. and various device drivers.
A) DVM B) Kernel C) Libraries D) None
- 7) AVD stands for
A) Android Virtual Device B) Android Virtual Directory
C) Android Virtual Disk D) None

P.T.O.



Seat No.	
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T.E. (Information Technology) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT

Day and Date : Friday, 25-11-2016

Marks : 80

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

SECTION – I

2. Answer **any four** from the following questions **each** carries **5** marks. **20**
- a) Define Broadcast Receivers and state use of it.
 - b) Define AVD and its uses.
 - c) Illustrate the use of src folder in Android SDK.
 - d) What are the various components on DDMS.
 - e) What are the logical components of an Android App ?
3. Answer **any one** from the following questions carries **10** marks. **10**
- 1) Illustrate Activity Life Cycle and respective call back methods.
 - 2) Define the procedures to navigate between activities and exchange data between them.
4. Answer the following question : **10**
- With a help of neat diagram explain the complete Android Platform architecture.

SECTION – II

5. Attempt **any four** : **(5×4=20)**
- 1) Describe the importance of signing an app before publishing.
 - 2) Explain the purpose of different types of testing for a mobile app.
 - 3) Explain the purpose of motion, position and environment sensors with one real-life use case in each.
 - 4) Describe Google Play services and its significance in Android app development.
 - 5) Define media container and codec with relevant examples.



6. Illustrate the states and relevant methods of MediaPlayer API. What permissions are required to do media playback over a Wi-Fi network. **10**
7. Explain the following related to SharedPreferences : **10**
- a) What is sharedpreferences in android ?
 - b) How to initialize the sharedpreference in android ?
 - c) How to store the data in sharedpreferences ?
 - d) How to retrieve the data in sharedpreferences ?
 - e) How to delete or clear the data in sharedpreferences ?
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Seat No.	
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Set	Q
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**T.E. (Information Technology) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Friday, 25-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) Which of the following methods of the Drawable class allows the client to interact with the drawn object ?
A) getPadding() B) getState() C) copyBounds() D) getLevel()
- 2) Which of these databases is inbuilt in the Android operating system ?
A) SQLServer B) SQLite C) MySQL D) MySQL Server
- 3) Which of these methods can be used to view the user preferences in the context of the overall Android framework ?
A) getPreferences() B) getSharedPreferences()
C) getDefaultSharedPreferences() D) None of these
- 4) MediaPlayer allows you to play media stored in
A) Application resources and local files B) Streamed from a network URL
C) Content Providers D) All of the above
- 5) Which of the following ways defines and instantiates the Drawable class ?
A) Using an XML file B) Using a Java class
C) Using JUnit test case D) Using a text file
- 6) A [dot] dex file is an executable file that runs inside the
A) SDK B) JVM
C) DVM D) None of the choices
- 7) _____ is an auto generated file containing integer constants for all resources included in the Android project.
A) activity_main[dot]xml B) R[dot]java
C) AndroidManifest[dot]xml D) None of the choices are correct

P.T.O.



- 8) A component that captures and responds to several announcements is called as
- A) Multicast receiver B) Broadcast receiver
C) Unicast receiver D) None of these
- 9) The _____ facilitates connection and communication with devices and emulators.
- A) adb B) DDMS C) DVM D) None of these
- 10) The _____ tool converts [dot] class files to [dot] dex file.
- A) aapt B) dx C) ddms D) None of these
- 11) The _____ provides the core operating system infrastructure such as memory management, process management etc. and various device drivers.
- A) DVM B) Kernel C) Libraries D) None
- 12) AVD stands for
- A) Android Virtual Device B) Android Virtual Directory
C) Android Virtual Disk D) None
- 13) _____ is a layout resource that defines the blueprint of various elements appearing on the screen of the app.
- A) R.java B) activity_main.java
C) activity_main.xml D) None of the choices are correct
- 14) _____ file is the registry of several details such as list of logical components, sdk requirements and version of the app.
- A) AndroidManifest.xml B) activity_main.xml
C) Both A) and B) D) None
- 15) _____ debugs apps and monitors their behavior in verbose mode.
- A) DVM B) JDK C) DDMS D) None of these
- 16) _____ is a mechanism to inform a user about the occurrence of an event.
- A) SMS B) Notification C) Missed call D) All of the above
- 17) Shared preferences stores data in an XML file in the internal memory of the device.
- A) True B) False
- 18) The cursor contains _____ method to get the number of rows in the result set.
- A) getInt() B) getLong() C) getCount() D) None of the above
- 19) Applications that require filtering based on screen size can use the attributes.
- A) <supportmultiple-screens> B) <supports-screens>
C) <supportall-screens> D) supportevery-screen
- 20) Frame -by-frame animation also referred to as drawable animation.
- A) True B) False



Seat No.	
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T.E. (Information Technology) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT

Day and Date : Friday, 25-11-2016

Marks : 80

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

SECTION – I

2. Answer **any four** from the following questions **each** carries **5** marks. **20**
- a) Define Broadcast Receivers and state use of it.
 - b) Define AVD and its uses.
 - c) Illustrate the use of src folder in Android SDK.
 - d) What are the various components on DDMS.
 - e) What are the logical components of an Android App ?
3. Answer **any one** from the following questions carries **10** marks. **10**
- 1) Illustrate Activity Life Cycle and respective call back methods.
 - 2) Define the procedures to navigate between activities and exchange data between them.
4. Answer the following question : **10**
- With a help of neat diagram explain the complete Android Platform architecture.

SECTION – II

5. Attempt **any four** : **(5×4=20)**
- 1) Describe the importance of signing an app before publishing.
 - 2) Explain the purpose of different types of testing for a mobile app.
 - 3) Explain the purpose of motion, position and environment sensors with one real-life use case in each.
 - 4) Describe Google Play services and its significance in Android app development.
 - 5) Define media container and codec with relevant examples.

Set Q



6. Illustrate the states and relevant methods of MediaPlayer API. What permissions are required to do media playback over a Wi-Fi network. **10**
7. Explain the following related to SharedPreferences : **10**
- a) What is sharedpreferences in android ?
 - b) How to initialize the sharedpreference in android ?
 - c) How to store the data in sharedpreferences ?
 - d) How to retrieve the data in sharedpreferences ?
 - e) How to delete or clear the data in sharedpreferences ?
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Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Friday, 25-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) _____ is a mechanism to inform a user about the occurrence of an event.
A) SMS B) Notification C) Missed call D) All of the above
- 2) Shared preferences stores data in an XML file in the internal memory of the device.
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- 7) Which of these databases is inbuilt in the Android operating system ?
A) SQLServer B) SQLite C) MySQL D) MySQL Server
- 8) Which of these methods can be used to view the user preferences in the context of the overall Android framework ?
A) getPreferences() B) getSharedPreferences()
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P.T.O.



- 9) MediaPlayer allows you to play media stored in
A) Application resources and local files B) Streamed from a network URL
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- 10) Which of the following ways defines and instantiates the Drawable class ?
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- 14) The _____ facilitates connection and communication with devices and emulators.
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- 15) The _____ tool converts [dot] class files to [dot] dex file.
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- 16) The _____ provides the core operating system infrastructure such as memory management, process management etc. and various device drivers.
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- 17) AVD stands for
A) Android Virtual Device B) Android Virtual Directory
C) Android Virtual Disk D) None
- 18) _____ is a layout resource that defines the blueprint of various elements appearing on the screen of the app.
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C) activity_main.xml D) None of the choices are correct
- 19) _____ file is the registry of several details such as list of logical components, sdk requirements and version of the app.
A) AndroidManifest.xml B) activity_main.xml
C) Both A) and B) D) None
- 20) _____ debugs apps and monitors their behavior in verbose mode.
A) DVM B) JDK C) DDMS D) None of these



Seat No.	
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T.E. (Information Technology) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT

Day and Date : Friday, 25-11-2016

Marks : 80

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

SECTION – I

2. Answer **any four** from the following questions **each** carries **5** marks. **20**
- a) Define Broadcast Receivers and state use of it.
 - b) Define AVD and its uses.
 - c) Illustrate the use of src folder in Android SDK.
 - d) What are the various components on DDMS.
 - e) What are the logical components of an Android App ?
3. Answer **any one** from the following questions carries **10** marks. **10**
- 1) Illustrate Activity Life Cycle and respective call back methods.
 - 2) Define the procedures to navigate between activities and exchange data between them.
4. Answer the following question : **10**
- With a help of neat diagram explain the complete Android Platform architecture.

SECTION – II

5. Attempt **any four** : **(5×4=20)**
- 1) Describe the importance of signing an app before publishing.
 - 2) Explain the purpose of different types of testing for a mobile app.
 - 3) Explain the purpose of motion, position and environment sensors with one real-life use case in each.
 - 4) Describe Google Play services and its significance in Android app development.
 - 5) Define media container and codec with relevant examples.

Set R



6. Illustrate the states and relevant methods of MediaPlayer API. What permissions are required to do media playback over a Wi-Fi network. **10**
7. Explain the following related to SharedPreferences : **10**
- a) What is sharedpreferences in android ?
 - b) How to initialize the sharedpreference in android ?
 - c) How to store the data in sharedpreferences ?
 - d) How to retrieve the data in sharedpreferences ?
 - e) How to delete or clear the data in sharedpreferences ?
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Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT**

Day and Date : Friday, 25-11-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) The _____ provides the core operating system infrastructure such as memory management, process management etc. and various device drivers.
A) DVM B) Kernel C) Libraries D) None
- 2) AVD stands for
A) Android Virtual Device B) Android Virtual Directory
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- 3) _____ is a layout resource that defines the blueprint of various elements appearing on the screen of the app.
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C) activity_main.xml D) None of the choices are correct
- 4) _____ file is the registry of several details such as list of logical components, sdk requirements and version of the app.
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C) Both A) and B) D) None
- 5) _____ debugs apps and monitors their behavior in verbose mode.
A) DVM B) JDK C) DDMS D) None of these
- 6) _____ is a mechanism to inform a user about the occurrence of an event.
A) SMS B) Notification C) Missed call D) All of the above
- 7) Shared preferences stores data in an XML file in the internal memory of the device.
A) True B) False

P.T.O.



Seat No.	
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T.E. (Information Technology) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT

Day and Date : Friday, 25-11-2016

Marks : 80

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

SECTION – I

2. Answer **any four** from the following questions **each** carries **5** marks. **20**
- a) Define Broadcast Receivers and state use of it.
 - b) Define AVD and its uses.
 - c) Illustrate the use of src folder in Android SDK.
 - d) What are the various components on DDMS.
 - e) What are the logical components of an Android App ?
3. Answer **any one** from the following questions carries **10** marks. **10**
- 1) Illustrate Activity Life Cycle and respective call back methods.
 - 2) Define the procedures to navigate between activities and exchange data between them.
4. Answer the following question : **10**
- With a help of neat diagram explain the complete Android Platform architecture.

SECTION – II

5. Attempt **any four** : **(5×4=20)**
- 1) Describe the importance of signing an app before publishing.
 - 2) Explain the purpose of different types of testing for a mobile app.
 - 3) Explain the purpose of motion, position and environment sensors with one real-life use case in each.
 - 4) Describe Google Play services and its significance in Android app development.
 - 5) Define media container and codec with relevant examples.

Set S



6. Illustrate the states and relevant methods of MediaPlayer API. What permissions are required to do media playback over a Wi-Fi network. **10**
7. Explain the following related to SharedPreferences : **10**
- a) What is sharedpreferences in android ?
 - b) How to initialize the sharedpreference in android ?
 - c) How to store the data in sharedpreferences ?
 - d) How to retrieve the data in sharedpreferences ?
 - e) How to delete or clear the data in sharedpreferences ?
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SLR-EP – 229

Seat No.	
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Set	P
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T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning : HSS/Technical : COMPILER DEVELOPMENT TOOLS

Day and Date : Saturday, 26-11-2016

Total Marks : 50

Time : 10.00 a.m. to 12.00 noon

- 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) Input of Lex is
 - a) Set to regular expression
 - b) Statement
 - c) Numeric data
 - d) ASCII data
- 2) YACC semantic action is a sequence of
 - a) Tokens
 - b) Expression
 - c) C statement
 - d) Rules
- 3) Which of the following software tool is parser generator ?
 - a) Lex
 - b) Yacc
 - c) Both a) and b)
 - d) None of these
- 4) A Lex compiler generates
 - a) Lex object code
 - b) Transition tables
 - c) C Tokens
 - d) None of the above

P.T.O.



- 5) The lexical analyzer takes _____ as input and produces a stream of _____ as output.
- a) Source program, tokens b) Token, source program
c) Either a) or b) d) None of the above
- 6) Which of the following is used for grouping of characters into tokens ?
- a) Parser b) Code optimization
c) Code generator d) Lexical analyzer
- 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) 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
- 10) Function yywrap is called by _____ when input is exhausted.
- a) Lex b) YACC c) COMP d) PPNN
- _____



Seat No.	
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T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning : HSS/Technical : COMPILER DEVELOPMENT TOOLS

Day and Date : Saturday, 26-11-2016
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 are words recognized in LEX ? Write a LEX specification for word counting from an input file. **10**
- b) Give the Utility of the following functions : **10**
yyparse(), yyleng(), yylex(), yytext(), yywrap().

- 3. a) Compare between the tools LEX and YACC. **5**
 - b) Write a LEX specification for a Grammar of 'C' language. **15**
-



SLR-EP – 229

Seat No.	
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Set	Q
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T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning : HSS/Technical : COMPILER DEVELOPMENT TOOLS

Day and Date : Saturday, 26-11-2016
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) Function yywrap is called by _____ when input is exhausted.
a) Lex b) YACC c) COMP d) PPNN
- 3) The _____ section of LEX file defines macros and imports header files written in C.
a) Pass b) Definition c) Parse d) Pattern
- 4) YACC is a _____ parser generator, generating a parser.
a) LL b) LL(0) c) LALR d) LR(1)

P.T.O.



- 5) Input of Lex is
- a) Set to regular expression
 - b) Statement
 - c) Numeric data
 - d) ASCII data
- 6) YACC semantic action is a sequence of
- a) Tokens
 - b) Expression
 - c) C statement
 - d) Rules
- 7) Which of the following software tool is parser generator ?
- a) Lex
 - b) Yacc
 - c) Both a) and b)
 - d) None of these
- 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) Either a) or 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 analyzer
-



Seat No.	
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T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning : HSS/Technical : COMPILER DEVELOPMENT TOOLS

Day and Date : Saturday, 26-11-2016
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 are words recognized in LEX ? Write a LEX specification for word counting from an input file. **10**
- b) Give the Utility of the following functions : **10**
yyparse(), yyleng(), yylex(), yytext(), yywrap().

- 3. a) Compare between the tools LEX and YACC. **5**
- b) Write a LEX specification for a Grammar of 'C' language. **15**



SLR-EP – 229

Seat No.	
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Set	R
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T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning : HSS/Technical : COMPILER DEVELOPMENT TOOLS

Day and Date : Saturday, 26-11-2016
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) Either a) or 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 analyzer
 - 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) Function yywrap is called by _____ when input is exhausted.
a) Lex b) YACC c) COMP d) PPNN

P.T.O.



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T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning : HSS/Technical : COMPILER DEVELOPMENT TOOLS

Day and Date : Saturday, 26-11-2016
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 are words recognized in LEX ? Write a LEX specification for word counting from an input file. **10**
- b) Give the Utility of the following functions : **10**
yyparse(), yyleng(), yylex(), yytext(), yywrap().

- 3. a) Compare between the tools LEX and YACC. **5**
- b) Write a LEX specification for a Grammar of 'C' language. **15**



SLR-EP – 229

Seat No.	
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Set	S
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T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning : HSS/Technical : COMPILER DEVELOPMENT TOOLS

Day and Date : Saturday, 26-11-2016

Total Marks : 50

Time : 10.00 a.m. to 12.00 noon

- 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) Which of the following software tool is parser generator ?
 - a) Lex
 - b) Yacc
 - c) Both a) and b)
 - d) None of these
- 2) A Lex compiler generates
 - a) Lex object code
 - b) Transition tables
 - c) C Tokens
 - d) None of the above
- 3) The lexical analyzer takes _____ as input and produces a stream of _____ as output.
 - a) Source program, tokens
 - b) Token, source program
 - c) Either a) or 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 analyzer

P.T.O.



- 5) The _____ section of LEX file defines macros and imports header files written in C.
- a) Pass b) Definition c) Parse d) Pattern
- 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) Function yywrap is called by _____ when input is exhausted.
- a) Lex b) YACC c) COMP d) PPNN
- 9) Input of Lex is
- a) Set to regular expression
b) Statement
c) Numeric data
d) ASCII data
- 10) YACC semantic action is a sequence of
- a) Tokens b) Expression
c) C statement d) Rules
-



Seat No.	
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T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning : HSS/Technical : COMPILER DEVELOPMENT TOOLS

Day and Date : Saturday, 26-11-2016
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 are words recognized in LEX ? Write a LEX specification for word counting from an input file. **10**
- b) Give the Utility of the following functions : **10**
yyparse(), yyleng(), yylex(), yytext(), yywrap().

- 3. a) Compare between the tools LEX and YACC. **5**
- b) Write a LEX specification for a Grammar of 'C' language. **15**



- 5) Firewalls often have what is commonly called a DMZ. DMZ stands for
- a) DeMovement Zone
 - b) DeMaintained Zone
 - c) Data Militarized Zone
 - d) DeMilitarized Zone
- 6) The metric used by _____ is the hop count.
- a) OSPF
 - b) RIP
 - c) BGP
 - d) None of these
- 7) VLANs are typically configured via the _____ Command-Line Interpreter (CLI).
- a) CatOS
 - b) IOS
 - c) CatOS or IOS
 - d) None of these
- 8) A _____ keeps track of which devices are on which ports and forwards frames only to the devices for which they are intended.
- a) Repeater
 - b) Hub
 - c) Switch
 - d) All of these
- 9) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
- a) Unicast
 - b) Multicast
 - c) Broadcast
 - d) None of these
- 10) For purposes of routing, the Internet is divided into
- a) Wide area networks
 - b) Autonomous networks
 - c) Autonomous systems
 - d) None of these
-



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 Noon

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data **if necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. 8
 3. List the switch types. What are the benefits of fixed configuration switches ? 8
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. 8
 5. List and explain different types of routes in routing table. 8
 6. What is the function of a router ? Explain RIP in detail. 8
 7. Explain DMZ network. 8
 8. Explain in detail corporate network. 8
 9. Explain concept of Network Address Translation with suitable diagram. 8
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SLR-EP – 229 (a)

Seat No.	
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Set	Q
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T.E. (Information Technology) (Part – II) Examination, 2016
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 Noon

Max. Marks : 50

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. **Each** question carries **one** mark.
2) Write **any 5** questions from Q. No. 2 – 9.
3) Draw figures **wherever** is necessary.
4) Assume suitable data **if necessary**.
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 :

(1×10=10)

- 1) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
 - a) Unicast
 - b) Multicast
 - c) Broadcast
 - d) None of these
- 2) For purposes of routing, the Internet is divided into
 - a) Wide area networks
 - b) Autonomous networks
 - c) Autonomous systems
 - d) None of these
- 3) VLANs are typically configured via the _____ Command-Line Interpreter (CLI).
 - a) CatOS
 - b) IOS
 - c) CatOS or IOS
 - d) None of these
- 4) A _____ keeps track of which devices are on which ports and forwards frames only to the devices for which they are intended.
 - a) Repeater
 - b) Hub
 - c) Switch
 - d) All of these

P.T.O.



- 5) _____ repeats a signal.
- a) A repeater
 - b) A hub
 - c) Both a) and b)
 - d) None of these
- 6) _____ is the external gateway protocol.
- a) RIP
 - b) EIGRP
 - c) OSPF
 - d) BGP
- 7) _____ works at the layer-3 of the OSI model.
- a) A hub
 - b) A repeater
 - c) A router
 - d) None of these
- 8) An IPv6 address is _____ bits long.
- a) 32
 - b) 64
 - c) 128
 - d) None of these
- 9) Firewalls often have what is commonly called a DMZ. DMZ stands for
- a) DeMovement Zone
 - b) DeMaintained Zone
 - c) Data Militarized Zone
 - d) DeMilitarized Zone
- 10) The metric used by _____ is the hop count.
- a) OSPF
 - b) RIP
 - c) BGP
 - d) None of these
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Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 Noon

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data **if necessary**.

- 2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. 8
 - 3. List the switch types. What are the benefits of fixed configuration switches ? 8
 - 4. What is Virtual LAN ? Explain with diagram routing between VLANs. 8
 - 5. List and explain different types of routes in routing table. 8
 - 6. What is the function of a router ? Explain RIP in detail. 8
 - 7. Explain DMZ network. 8
 - 8. Explain in detail corporate network. 8
 - 9. Explain concept of Network Address Translation with suitable diagram. 8
-



SLR-EP – 229 (a)

Seat No.	
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Set	R
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**T.E. (Information Technology) (Part – II) Examination, 2016
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 Noon

Max. Marks : 50

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. **Each** question carries **one** mark.
2) Write **any 5** questions from Q. No. 2 – 9.
3) Draw figures **wherever** is necessary.
4) Assume suitable data **if necessary**.
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 :

(1×10=10)

- 1) Firewalls often have what is commonly called a DMZ. DMZ stands for
 - a) DeMovement Zone
 - b) DeMaintained Zone
 - c) Data Militarized Zone
 - d) DeMilitarized Zone
- 2) The metric used by _____ is the hop count.
 - a) OSPF
 - b) RIP
 - c) BGP
 - d) None of these
- 3) A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.
 - a) Unicast
 - b) Multicast
 - c) Broadcast
 - d) None of these
- 4) For purposes of routing, the Internet is divided into
 - a) Wide area networks
 - b) Autonomous networks
 - c) Autonomous systems
 - d) None of these

P.T.O.



- 5) _____ works at the layer-3 of the OSI model.
- a) A hub
 - b) A repeater
 - c) A router
 - d) None of these
- 6) An IPv6 address is _____ bits long.
- a) 32
 - b) 64
 - c) 128
 - d) None of these
- 7) _____ repeats a signal.
- a) A repeater
 - b) A hub
 - c) Both a) and b)
 - d) None of these
- 8) _____ is the external gateway protocol.
- a) RIP
 - b) EIGRP
 - c) OSPF
 - d) BGP
- 9) VLANs are typically configured via the _____ Command-Line Interpreter (CLI).
- a) CatOS
 - b) IOS
 - c) CatOS or IOS
 - d) None of these
- 10) A _____ keeps track of which devices are on which ports and forwards frames only to the devices for which they are intended.
- a) Repeater
 - b) Hub
 - c) Switch
 - d) All of these
-



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 Noon

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data **if necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. 8
 3. List the switch types. What are the benefits of fixed configuration switches ? 8
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. 8
 5. List and explain different types of routes in routing table. 8
 6. What is the function of a router ? Explain RIP in detail. 8
 7. Explain DMZ network. 8
 8. Explain in detail corporate network. 8
 9. Explain concept of Network Address Translation with suitable diagram. 8
-



SLR-EP – 229 (a)

Seat No.	
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Set	S
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**T.E. (Information Technology) (Part – II) Examination, 2016
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 Noon

Max. Marks : 50

- Instructions:** 1) Q. No. 1 is **compulsory**. It should be solved in Answer Book Page No. 3. **Each** question carries **one** mark.
2) Write **any 5** questions from Q. No. 2 – 9.
3) Draw figures **wherever** is necessary.
4) Assume suitable data **if necessary**.
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 :

(1×10=10)

- 1) _____ works at the layer-3 of the OSI model.
 - a) A hub
 - b) A repeater
 - c) A router
 - d) None of these
- 2) An IPv6 address is _____ bits long.
 - a) 32
 - b) 64
 - c) 128
 - d) None of these
- 3) Firewalls often have what is commonly called a DMZ. DMZ stands for
 - a) DeMovement Zone
 - b) DeMaintained Zone
 - c) Data Militarized Zone
 - d) DeMilitarized Zone
- 4) The metric used by _____ is the hop count.
 - a) OSPF
 - b) RIP
 - c) BGP
 - d) None of these

P.T.O.



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
NETWORK SETTING AND MANAGEMENT
Self Learning (HSS/Technical)**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 Noon

Marks : 40

Instructions : 1) Write **any 5** questions from Q. No. 2 – 9.
2) Draw figures **wherever** is necessary.
3) Assume suitable data **if necessary**.

2. What is a hub ? What is the function of a hub ? Explain with a suitable diagram how we can use hub to form a network. 8
 3. List the switch types. What are the benefits of fixed configuration switches ? 8
 4. What is Virtual LAN ? Explain with diagram routing between VLANs. 8
 5. List and explain different types of routes in routing table. 8
 6. What is the function of a router ? Explain RIP in detail. 8
 7. Explain DMZ network. 8
 8. Explain in detail corporate network. 8
 9. Explain concept of Network Address Translation with suitable diagram. 8
-



SLR-EP – 229(b)

Seat No.	
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Set	P
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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Total Marks : 50

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

MCQ/Objective Type Questions

Marks : 10

1. Chose the correct answer : **(1×10=10)**

- 1) The ARC instruction set consists of more than _____ most commonly used instructions.
a) 17 b) 32 c) 35 d) 24
- 2) Processor Status Register contains information about _____
a) State of the processor b) Condition codes
c) Negative value d) None of these
- 3) Data movement's instructions are
a) Load and store b) Load
c) Load, Store and Sethi d) Store and Sethi
- 4) Data Path contains 32 user-visible
a) Data registers, the program counter
b) The programs counter
c) The instruction register, the ALU
d) All of the above

P.T.O.



- 5) The ARC Tool's tool set includes the following features
 - a) A trap mechanism
 - b) A multilevel cache memory simulator
 - c) Ability to specify instruction timings
 - d) All of the above
 - 6) Which of the following are the main simulator controls ?
 - a) Reload
 - b) Assembler
 - c) Label
 - d) None of the above
 - 7) In a three-address instruction, the expression $A = B * C + D$ might be coded as
 - a) mult B, C, A and add D, A, A
 - b) mult B, A, D and add D, A, C
 - c) mult C, A, B and add B, D, A
 - d) mult B, C, A and add D, A, B
 - 8) In ARC Data formats, ARC supports _____
 - a) loads and stores of integer bytes
 - b) half words
 - c) words, signed and unsigned
 - d) all of the above
 - 9) SPARC stands for
 - a) Scalable Programmer Architecture
 - b) Scalable Processor Architecture
 - c) Scalable Point Architecture
 - d) None of these
 - 10) Which of the following are mnemonic of ARC instruction set ?
 - a) bneg
 - b) be
 - c) bvs
 - d) All of these
-



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Marks : 40

Instruction : All questions are compulsory.

2. Answer **any four** : **(5×4=20)**
- a) Which are the types of instruction sets available in RISC computer ?
 - b) Explain data and control path briefly.
 - c) Describe the assembly process.
 - d) What is the use of ARC tools ? Explain about ARC assembler.
 - e) What is the use of time model ? Explain with an example.
 - f) How to measure program performance ? Give an example.
3. Explain the architecture of RISC Computer. **10**
- OR
- Explain ARC processor and its architecture.
4. Write a subroutine to perform swap operation on 32 bit operands. **10**
- OR
- Write a program that flashes the screen every time when the user's position changes.
-



SLR-EP – 229(b)

Seat No.	
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Set	Q
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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Total Marks : 50

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

MCQ/Objective Type Questions

Marks : 10

1. Chose the correct answer :

(1×10=10)

- 1) SPARC stands for
 - a) Scalable Programmer Architecture
 - b) Scalable Processor Architecture
 - c) Scalable Point Architecture
 - d) None of these
- 2) Which of the following are mnemonic of ARC instruction set ?
 - a) bneg
 - b) be
 - c) bvs
 - d) All of these
- 3) In a three-address instruction, the expression $A = B * C + D$ might be coded as
 - a) mult B, C, A and add D, A, A
 - b) mult B, A, D and add D, A, C
 - c) mult C, A, B and add B, D, A
 - d) mult B, C, A and add D, A, B
- 4) In ARC Data formats, ARC supports _____
 - a) loads and stores of integer bytes
 - b) half words
 - c) words, signed and unsigned
 - d) all of the above

P.T.O.



- 5) The ARC instruction set consists of more than _____ most commonly used instructions.
- a) 17 b) 32 c) 35 d) 24
- 6) Processor Status Register contains information about _____
- a) State of the processor b) Condition codes
c) Negative value d) None of these
- 7) Data movement's instructions are
- a) Load and store b) Load
c) Load, Store and Sethi d) Store and Sethi
- 8) Data Path contains 32 user-visible
- a) Data registers, the program counter
b) The programs counter
c) The instruction register, the ALU
d) All of the above
- 9) The ARC Tool's tool set includes the following features
- a) A trap mechanism
b) A multilevel cache memory simulator
c) Ability to specify instruction timings
d) All of the above
- 10) Which of the following are the main simulator controls ?
- a) Reload b) Assembler c) Label d) None of the above
- _____



Seat No.	
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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Marks : 40

Instruction : All questions are compulsory.

2. Answer **any four** : **(5×4=20)**

- a) Which are the types of instruction sets available in RISC computer ?
- b) Explain data and control path briefly.
- c) Describe the assembly process.
- d) What is the use of ARC tools ? Explain about ARC assembler.
- e) What is the use of time model ? Explain with an example.
- f) How to measure program performance ? Give an example.

3. Explain the architecture of RISC Computer. **10**

OR

Explain ARC processor and its architecture.

4. Write a subroutine to perform swap operation on 32 bit operands. **10**

OR

Write a program that flashes the screen every time when the user's position changes.



SLR-EP – 229(b)

Seat No.	
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Set **R**

**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Total Marks : 50

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

MCQ/Objective Type Questions

Marks : 10

1. Chose the correct answer :

(1×10=10)

- 1) The ARC Tool's tool set includes the following features
 - a) A trap mechanism
 - b) A multilevel cache memory simulator
 - c) Ability to specify instruction timings
 - d) All of the above
- 2) Which of the following are the main simulator controls ?
 - a) Reload b) Assembler c) Label d) None of the above
- 3) SPARC stands for
 - a) Scalable Programmer Architecture
 - b) Scalable Processor Architecture
 - c) Scalable Point Architecture
 - d) None of these
- 4) Which of the following are mnemonic of ARC instruction set ?
 - a) bneg b) be c) bvs d) All of these

P.T.O.



- 5) Data movement's instructions are
- a) Load and store
 - b) Load
 - c) Load, Store and Sethi
 - d) Store and Sethi
- 6) Data Path contains 32 user-visible
- a) Data registers, the program counter
 - b) The programs counter
 - c) The instruction register, the ALU
 - d) All of the above
- 7) The ARC instruction set consists of more than _____ most commonly used instructions.
- a) 17
 - b) 32
 - c) 35
 - d) 24
- 8) Processor Status Register contains information about _____
- a) State of the processor
 - b) Condition codes
 - c) Negative value
 - d) None of these
- 9) In a three-address instruction, the expression $A = B * C + D$ might be coded as
- a) mult B, C, A and add D, A, A
 - b) mult B, A, D and add D, A, C
 - c) mult C, A, B and add B, D, A
 - d) mult B, C, A and add D, A, B
- 10) In ARC Data formats, ARC supports _____
- a) loads and stores of integer bytes
 - b) half words
 - c) words, signed and unsigned
 - d) all of the above
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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Marks : 40

Instruction : All questions are compulsory.

2. Answer **any four** : **(5×4=20)**

- a) Which are the types of instruction sets available in RISC computer ?
- b) Explain data and control path briefly.
- c) Describe the assembly process.
- d) What is the use of ARC tools ? Explain about ARC assembler.
- e) What is the use of time model ? Explain with an example.
- f) How to measure program performance ? Give an example.

3. Explain the architecture of RISC Computer. **10**

OR

Explain ARC processor and its architecture.

4. Write a subroutine to perform swap operation on 32 bit operands. **10**

OR

Write a program that flashes the screen every time when the user's position changes.



SLR-EP – 229(b)

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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Total Marks : 50

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

MCQ/Objective Type Questions

Marks : 10

1. Chose the correct answer : **(1×10=10)**

- 1) Data movement's instructions are
 - a) Load and store
 - b) Load
 - c) Load, Store and Sethi
 - d) Store and Sethi
- 2) Data Path contains 32 user-visible
 - a) Data registers, the program counter
 - b) The programs counter
 - c) The instruction register, the ALU
 - d) All of the above
- 3) The ARC Tool's tool set includes the following features
 - a) A trap mechanism
 - b) A multilevel cache memory simulator
 - c) Ability to specify instruction timings
 - d) All of the above
- 4) Which of the following are the main simulator controls ?
 - a) Reload
 - b) Assembler
 - c) Label
 - d) None of the above

P.T.O.



- 5) In a three-address instruction, the expression $A = B * C + D$ might be coded as
- a) mult B, C, A and add D, A, A
 - b) mult B, A, D and add D, A, C
 - c) mult C, A, B and add B, D, A
 - d) mult B, C, A and add D, A, B
- 6) In ARC Data formats, ARC supports _____
- a) loads and stores of integer bytes
 - b) half words
 - c) words, signed and unsigned
 - d) all of the above
- 7) SPARC stands for
- a) Scalable Programmer Architecture
 - b) Scalable Processor Architecture
 - c) Scalable Point Architecture
 - d) None of these
- 8) Which of the following are mnemonic of ARC instruction set ?
- a) bneg
 - b) be
 - c) bvs
 - d) All of these
- 9) The ARC instruction set consists of more than _____ most commonly used instructions.
- a) 17
 - b) 32
 - c) 35
 - d) 24
- 10) Processor Status Register contains information about _____
- a) State of the processor
 - b) Condition codes
 - c) Negative value
 - d) None of these
-



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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) : TOOLS FOR COMPUTER
ARCHITECTURE**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Marks : 40

Instruction : All questions are compulsory.

2. Answer **any four** : **(5×4=20)**

- a) Which are the types of instruction sets available in RISC computer ?
- b) Explain data and control path briefly.
- c) Describe the assembly process.
- d) What is the use of ARC tools ? Explain about ARC assembler.
- e) What is the use of time model ? Explain with an example.
- f) How to measure program performance ? Give an example.

3. Explain the architecture of RISC Computer. **10**

OR

Explain ARC processor and its architecture.

4. Write a subroutine to perform swap operation on 32 bit operands. **10**

OR

Write a program that flashes the screen every time when the user's position changes.



SLR-EP – 229(d)

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Set

P

**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) NETWORK SETUP AND MANAGEMENT**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Max. Marks : 50

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

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer :

(1×10=10)

- 1) _____ routing table contains information entered manually.
 - a) Static
 - b) Dynamic
 - c) Hierarchical
 - d) None
- 2) _____ are usually used to extend a connection to a remote host.
 - a) Repeater
 - b) Router
 - c) Firewall
 - d) None of these
- 3) _____ with add on functionality of filtering content by reading the MAC addresses of source and destination.
 - a) Hub
 - b) Bridge
 - c) Firewall
 - d) None of these
- 4) A _____ can be used as a connecting device between two internetworks that use different models.
 - a) Repeater
 - b) Bridge
 - c) Router
 - d) Gateway
- 5) OSPF is used for
 - a) Routing of packets
 - b) Shortest path routing of packets
 - c) Simulation of packets
 - d) None of the choices are correct

P.T.O.



- 6) To verify digital signature, we need
 - a) Sender's Private Key
 - b) Sender's Public Key
 - c) Receiver's Private Key
 - d) Receiver's Public Key
 - 7) Release of message content is
 - a) Passive attacks
 - b) Not a type of security attack
 - c) Active attack
 - d) Security service
 - 8) Diffie Hellman protocol for key exchange is insecure from
 - a) Timing attack
 - b) Man-in the-middle attack
 - c) Brute force attack
 - d) Replay attack
 - 9) Triple DES algorithm uses key size of
 - a) 56-bits
 - b) 64-bits
 - c) 168-bits
 - d) 256-bits
 - 10) The _____ cipher reorders the plaintext characters to create a ciphertext.
 - a) Substitution
 - b) Transposition
 - c) Either a) or b)
 - d) Neither a) nor b)
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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) NETWORK SETUP AND MANAGEMENT**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Marks : 40

Solve **any four** from following :

(10×4=40)

2. What is fault management ? Explain fault detection and fault location.
3. Explain in detail, event correlation techniques.
4. Discuss the functions of NIC with its selection procedure.
5. Write a short note on :
 - i) Virtual LAN
 - ii) Layer-3 switch.
6. Write a short note on :
 - i) auto discovery
 - ii) application of network management.
7. Explain with neat diagram, network management architecture.



SLR-EP – 229(d)

Seat No.	
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Set

Q

**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) NETWORK SETUP AND MANAGEMENT**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Max. Marks : 50

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

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer :

(1×10=10)

- 1) Triple DES algorithm uses key size of
 - a) 56-bits
 - b) 64-bits
 - c) 168-bits
 - d) 256-bits
- 2) The _____ cipher reorders the plaintext characters to create a ciphertext.
 - a) Substitution
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- 3) Release of message content is
 - a) Passive attacks
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 - c) Active attack
 - d) Security service
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 - a) Timing attack
 - b) Man-in-the-middle attack
 - c) Brute force attack
 - d) Replay attack
- 5) _____ routing table contains information entered manually.
 - a) Static
 - b) Dynamic
 - c) Hierarchical
 - d) None

P.T.O.



- 6) _____ are usually used to extend a connection to a remote host.
- a) Repeater
 - b) Router
 - c) Firewall
 - d) None of these
- 7) _____ with add on functionality of filtering content by reading the MAC addresses of source and destination.
- a) Hub
 - b) Bridge
 - c) Firewall
 - d) None of these
- 8) A _____ can be used as a connecting device between two internetworks that use different models.
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 - b) Bridge
 - c) Router
 - d) Gateway
- 9) OSPF is used for
- a) Routing of packets
 - b) Shortest path routing of packets
 - c) Simulation of packets
 - d) None of the choices are correct
- 10) To verify digital signature, we need
- a) Sender's Private Key
 - b) Sender's Public Key
 - c) Receiver's Private Key
 - d) Receiver's Public Key
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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) NETWORK SETUP AND MANAGEMENT**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Marks : 40

Solve **any four** from following :

(10×4=40)

2. What is fault management ? Explain fault detection and fault location.
3. Explain in detail, event correlation techniques.
4. Discuss the functions of NIC with its selection procedure.
5. Write a short note on :
 - i) Virtual LAN
 - ii) Layer-3 switch.
6. Write a short note on :
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 - ii) application of network management.
7. Explain with neat diagram, network management architecture.



SLR-EP – 229(d)

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Set

R

**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) NETWORK SETUP AND MANAGEMENT**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Max. Marks : 50

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

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer :

(1×10=10)

- 1) OSPF is used for
 - a) Routing of packets
 - b) Shortest path routing of packets
 - c) Simulation of packets
 - d) None of the choices are correct
- 2) To verify digital signature, we need
 - a) Sender's Private Key
 - b) Sender's Public Key
 - c) Receiver's Private Key
 - d) Receiver's Public Key
- 3) Triple DES algorithm uses key size of
 - a) 56-bits
 - b) 64-bits
 - c) 168-bits
 - d) 256-bits
- 4) The _____ cipher reorders the plaintext characters to create a ciphertext.
 - a) Substitution
 - b) Transposition
 - c) Either a) or b)
 - d) Neither a) nor b)
- 5) _____ with add on functionality of filtering content by reading the MAC addresses of source and destination.
 - a) Hub
 - b) Bridge
 - c) Firewall
 - d) None of these

P.T.O.



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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) NETWORK SETUP AND MANAGEMENT**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Marks : 40

Solve **any four** from following :

(10×4=40)

2. What is fault management ? Explain fault detection and fault location.
3. Explain in detail, event correlation techniques.
4. Discuss the functions of NIC with its selection procedure.
5. Write a short note on :
 - i) Virtual LAN
 - ii) Layer-3 switch.
6. Write a short note on :
 - i) auto discovery
 - ii) application of network management.
7. Explain with neat diagram, network management architecture.



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Set

S

T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) NETWORK SETUP AND MANAGEMENT

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Max. Marks : 50

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

MCQ/Objective Type Questions

Marks : 10

1. Choose the correct answer : **(1×10=10)**

- 1) _____ with add on functionality of filtering content by reading the MAC addresses of source and destination.
 - a) Hub
 - b) Bridge
 - c) Firewall
 - d) None of these
- 2) A _____ can be used as a connecting device between two internetworks that use different models.
 - a) Repeater
 - b) Bridge
 - c) Router
 - d) Gateway
- 3) OSPF is used for
 - a) Routing of packets
 - b) Shortest path routing of packets
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- 4) To verify digital signature, we need
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 - c) Receiver's Private Key
 - d) Receiver's Public Key
- 5) Release of message content is
 - a) Passive attacks
 - b) Not a type of security attack
 - c) Active attack
 - d) Security service

P.T.O.



- 6) Diffie Hellman protocol for key exchange is insecure from
 - a) Timing attack
 - b) Man-in the-middle attack
 - c) Brute force attack
 - d) Replay attack
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 - a) Static
 - b) Dynamic
 - c) Hierarchical
 - d) None
 - 10) _____ are usually used to extend a connection to a remote host.
 - a) Repeater
 - b) Router
 - c) Firewall
 - d) None of these
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**T.E. (Information Technology) (Part – II) Examination, 2016
Self Learning (HSS/Technical) NETWORK SETUP AND MANAGEMENT**

Day and Date : Saturday, 26-11-2016
Time : 10.00 a.m. to 12.00 noon

Marks : 40

Solve **any four** from following :

(10×4=40)

2. What is fault management ? Explain fault detection and fault location.
3. Explain in detail, event correlation techniques.
4. Discuss the functions of NIC with its selection procedure.
5. Write a short note on :
 - i) Virtual LAN
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6. Write a short note on :
 - i) auto discovery
 - ii) application of network management.
7. Explain with neat diagram, network management architecture.



SLR-EP – 230

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Set

P

**T.E. (IT) (Part – II) (Old) Examination, 2016
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 10-12-2016
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) _____ is used as a variable in Breadth-First search.
 - a) NODE-LIST
 - b) SUCCESSOR-LIST
 - c) CHILD-LIST
 - d) All
- 2) A _____ is an area of the search space that higher then surrounding areas and that itself has a slope.
 - a) Ridge
 - b) Plateau
 - c) Local maximum
 - d) All
- 3) _____ graphs are used in problem reduction.
 - a) NOT
 - b) AND-NOT
 - c) AND-OR
 - d) INVERSE
- 4) _____ is the task domain at AI.
 - a) Formal tasks
 - b) Informal tasks
 - c) Objective tasks
 - d) None of these
- 5) _____ rules are applied for water-jug problem.
 - a) System
 - b) Production
 - c) Symbolic
 - d) All
- 6) A _____ is a technique that improves the efficiency of a search process.
 - a) Production system
 - b) Problem system
 - c) Heuristic
 - d) None of these
- 7) All the movies from the current state and selected the best one as the next state, is called as
 - a) Steepest-ascent hill climbing
 - b) Simple hill climbing
 - c) Generate and test
 - d) None of these

P.T.O.



- 8) _____ is a search procedure that operate in a space of constraint sets.
a) Constraint validation b) Constriction verification
c) Constraint satisfaction d) None of these
- 9) “ \forall ” logical symbol means
a) there exists b) or c) note d) for all
- 10) Artificial intelligences is the study of how to make computers do things which, at the moment _____ do better.
a) Human b) People c) Machine d) All
- 11) _____ is one of the Mundane task.
a) Perception b) Games c) Mathematics d) Engineering
- 12) AI research is that _____ requires knowledge.
a) Talent b) Smartness c) Intelligence d) All
- 13) The first requirement of a good control strategy is that it causes
a) Speed b) Motion c) Failure d) None of these
- 14) _____ search requires less memory since only the nodes on the current path are stored.
a) Breadth-first b) Heuristic c) Depth-first d) None of these
- 15) _____ is a variant of generate and test in which feedback from the test procedure is used to help generator to decide which direction to move in the search space.
a) Generate and test b) Hill climbing
c) Best first search d) None of these
- 16) _____ are the truth in some relevant world.
a) Parts b) Procedures c) Facts d) None of these
- 17) The _____ level at which facts are described.
a) Knowledge b) Symbol c) Internal d) All
- 18) _____ adequacy, is one of the approach to knowledge representation.
a) Exterior b) Complex c) Inferential d) All
- 19) “ \exists ” logic symbol means
a) For all b) There exists
c) Not d) Material implication
- 20) The second requirement of a good control strategy is that it be
a) Systematic b) Prefect c) Sequential d) All



Seat No.	
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**T.E. (IT) (Part – II) (Old) Examination, 2016
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four**. **(4×5=20)**

- a) What is Artificial Intelligence ? Explain all task domains of AI in briefly.
- b) Explain level of model in AI with example.
- c) Explain about criteria for success in AI along with example.
- d) Explain problem is defined as state space search with suitable example.
- e) Explain blind search techniques with their algorithms.
- f) What are different problem characteristics ?

3. a) What is AI Technique ? Explain the algorithms of three programs to play Tic-Tac-Toe problem. **10**

OR

b) Explain water-jug problem along with its all production rules and solution of it. **10**

4. Write short note on : **10**

- 1) AI problems
- 2) Production system
- 3) Breadth first search algorithm.

Set P



SECTION – II

5. Attempt **any four**. **(4×5=20)**
- a) Explain heuristic search technique in AI.
 - b) Explain Mean-End analysis algorithm.
 - c) Explain Depth-First search algorithm.
 - d) Describe in detail mapping between facts and representation in knowledge representation.
 - e) Explain procedural knowledge and declarative knowledge in detail with example.
 - f) Describe in detail with different example, representation of simple facts in predicate logic.
6. a) Explain AO* algorithm in detail. **10**
- OR
- b) Explain constraint satisfaction algorithm. **10**
7. What are different approaches to knowledge representation in AI ? Explain with suitable example. **10**
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Set

Q

**T.E. (IT) (Part – II) (Old) Examination, 2016
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 10-12-2016
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) _____ are the truth in some relevant world.
a) Parts b) Procedures c) Facts d) None of these
- 2) The _____ level at which facts are described.
a) Knowledge b) Symbol c) Internal d) All
- 3) _____ adequacy, is one of the approach to knowledge representation.
a) Exterior b) Complex c) Inferential d) All
- 4) “ \exists ” logic symbol means
a) For all b) There exists
c) Not d) Material implication
- 5) The second requirement of a good control strategy is that it be
a) Systematic b) Prefect c) Sequential d) All
- 6) _____ is used as a variable in Breadth-First search.
a) NODE-LIST b) SUCCESSOR-LIST
c) CHILD-LIST d) All
- 7) A _____ is an area of the search space that higher then surrounding areas and that itself has a slope.
a) Ridge b) Plateau
c) Local maximum d) All
- 8) _____ graphs are used in problem reduction.
a) NOT b) AND-NOT c) AND-OR d) INVERSE

P.T.O.



Seat No.	
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**T.E. (IT) (Part – II) (Old) Examination, 2016
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four**. **(4×5=20)**

- a) What is Artificial Intelligence ? Explain all task domains of AI in briefly.
- b) Explain level of model in AI with example.
- c) Explain about criteria for success in AI along with example.
- d) Explain problem is defined as state space search with suitable example.
- e) Explain blind search techniques with their algorithms.
- f) What are different problem characteristics ?

3. a) What is AI Technique ? Explain the algorithms of three programs to play Tic-Tac-Toe problem. **10**

OR

b) Explain water-jug problem along with its all production rules and solution of it. **10**

4. Write short note on : **10**

- 1) AI problems
- 2) Production system
- 3) Breadth first search algorithm.

Set Q



SECTION – II

5. Attempt **any four**. **(4×5=20)**
- a) Explain heuristic search technique in AI.
 - b) Explain Mean-End analysis algorithm.
 - c) Explain Depth-First search algorithm.
 - d) Describe in detail mapping between facts and representation in knowledge representation.
 - e) Explain procedural knowledge and declarative knowledge in detail with example.
 - f) Describe in detail with different example, representation of simple facts in predicate logic.
6. a) Explain AO* algorithm in detail. **10**
- OR
- b) Explain constraint satisfaction algorithm. **10**
7. What are different approaches to knowledge representation in AI ? Explain with suitable example. **10**
-



SLR-EP – 230

Seat No.	
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Set

R

**T.E. (IT) (Part – II) (Old) Examination, 2016
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 10-12-2016
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) _____ is one of the Mundane task.
a) Perception b) Games c) Mathematics d) Engineering
- 2) AI research is that _____ requires knowledge.
a) Talent b) Smartness c) Intelligence d) All
- 3) The first requirement of a good control strategy is that it causes
a) Speed b) Motion c) Failure d) None of these
- 4) _____ search requires less memory since only the nodes on the current path are stored.
a) Breadth-first b) Heuristic c) Depth-first d) None of these
- 5) _____ is a variant of generate and test in which feedback from the test procedure is used to help generator to decide which direction to move in the search space.
a) Generate and test b) Hill climbing
c) Best first search d) None of these
- 6) _____ are the truth in some relevant world.
a) Parts b) Procedures c) Facts d) None of these
- 7) The _____ level at which facts are described.
a) Knowledge b) Symbol c) Internal d) All
- 8) _____ adequacy, is one of the approach to knowledge representation.
a) Exterior b) Complex c) Inferential d) All
- 9) “ \exists ” logic symbol means
a) For all b) There exists
c) Not d) Material implication

P.T.O.



- 10) The second requirement of a good control strategy is that it be
a) Systematic b) Prefect c) Sequential d) All
- 11) _____ is used as a variable in Breadth-First search.
a) NODE-LIST b) SUCCESSOR-LIST
c) CHILD-LIST d) All
- 12) A _____ is an area of the search space that higher then surrounding areas and that itself has a slope.
a) Ridge b) Plateau
c) Local maximum d) All
- 13) _____ graphs are used in problem reduction.
a) NOT b) AND-NOT c) AND-OR d) INVERSE
- 14) _____ is the task domain at AI.
a) Formal tasks b) Informal tasks
c) Objective tasks d) None of these
- 15) _____ rules are applied for water-jug problem.
a) System b) Production c) Symbolic d) All
- 16) A _____ is a technique that improves the efficiency of a search process.
a) Production system b) Problem system
c) Heuristic d) None of these
- 17) All the movies from the current state and selected the best one as the next state, is called as
a) Steepest-ascent hill climbing b) Simple hill climbing
c) Generate and test d) None of these
- 18) _____ is a search procedure that operate in a space of constraint sets.
a) Constraint validation b) Constriction verification
c) Constraint satisfaction d) None of these
- 19) “ \forall ” logical symbol means
a) there exists b) or c) note d) for all
- 20) Artificial intelligences is the study of how to make computers do things which, at the moment _____ do better.
a) Human b) People c) Machine d) All



Seat No.	
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**T.E. (IT) (Part – II) (Old) Examination, 2016
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four**. **(4×5=20)**

- a) What is Artificial Intelligence ? Explain all task domains of AI in briefly.
- b) Explain level of model in AI with example.
- c) Explain about criteria for success in AI along with example.
- d) Explain problem is defined as state space search with suitable example.
- e) Explain blind search techniques with their algorithms.
- f) What are different problem characteristics ?

3. a) What is AI Technique ? Explain the algorithms of three programs to play Tic-Tac-Toe problem. **10**

OR

b) Explain water-jug problem along with its all production rules and solution of it. **10**

4. Write short note on : **10**

- 1) AI problems
- 2) Production system
- 3) Breadth first search algorithm.

Set R



SECTION – II

5. Attempt **any four**. **(4×5=20)**
- a) Explain heuristic search technique in AI.
 - b) Explain Mean-End analysis algorithm.
 - c) Explain Depth-First search algorithm.
 - d) Describe in detail mapping between facts and representation in knowledge representation.
 - e) Explain procedural knowledge and declarative knowledge in detail with example.
 - f) Describe in detail with different example, representation of simple facts in predicate logic.
6. a) Explain AO* algorithm in detail. **10**
- OR
- b) Explain constraint satisfaction algorithm. **10**
7. What are different approaches to knowledge representation in AI ? Explain with suitable example. **10**
-



SLR-EP – 230

Seat No.	
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Set

S

**T.E. (IT) (Part – II) (Old) Examination, 2016
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 10-12-2016
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) A _____ is a technique that improves the efficiency of a search process.
 - a) Production system
 - b) Problem system
 - c) Heuristic
 - d) None of these
- 2) All the movies from the current state and selected the best one as the next state, is called as
 - a) Steepest-ascent hill climbing
 - b) Simple hill climbing
 - c) Generate and test
 - d) None of these
- 3) _____ is a search procedure that operate in a space of constraint sets.
 - a) Constraint validation
 - b) Constriction verification
 - c) Constraint satisfaction
 - d) None of these
- 4) “ \forall ” logical symbol means
 - a) there exists
 - b) or
 - c) note
 - d) for all
- 5) Artificial intelligences is the study of how to make computers do things which, at the moment _____ do better.
 - a) Human
 - b) People
 - c) Machine
 - d) All
- 6) _____ is one of the Mundane task.
 - a) Perception
 - b) Games
 - c) Mathematics
 - d) Engineering
- 7) AI research is that _____ requires knowledge.
 - a) Talent
 - b) Smartness
 - c) Intelligence
 - d) All
- 8) The first requirement of a good control strategy is that it causes
 - a) Speed
 - b) Motion
 - c) Failure
 - d) None of these

P.T.O.



- 9) _____ search requires less memory since only the nodes on the current path are stored.
a) Breadth-first b) Heuristic c) Depth-first d) None of these
- 10) _____ is a variant of generate and test in which feedback from the test procedure is used to help generator to decide which direction to move in the search space.
a) Generate and test b) Hill climbing
c) Best first search d) None of these
- 11) _____ are the truth in some relevant world.
a) Parts b) Procedures c) Facts d) None of these
- 12) The _____ level at which facts are described.
a) Knowledge b) Symbol c) Internal d) All
- 13) _____ adequacy, is one of the approach to knowledge representation.
a) Exterior b) Complex c) Inferential d) All
- 14) “ \exists ” logic symbol means
a) For all b) There exists
c) Not d) Material implication
- 15) The second requirement of a good control strategy is that it be
a) Systematic b) Prefect c) Sequential d) All
- 16) _____ is used as a variable in Breadth-First search.
a) NODE-LIST b) SUCCESSOR-LIST
c) CHILD-LIST d) All
- 17) A _____ is an area of the search space that higher then surrounding areas and that itself has a slope.
a) Ridge b) Plateau
c) Local maximum d) All
- 18) _____ graphs are used in problem reduction.
a) NOT b) AND-NOT c) AND-OR d) INVERSE
- 19) _____ is the task domain at AI.
a) Formal tasks b) Informal tasks
c) Objective tasks d) None of these
- 20) _____ rules are applied for water-jug problem.
a) System b) Production c) Symbolic d) All



Seat No.	
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**T.E. (IT) (Part – II) (Old) Examination, 2016
ARTIFICIAL INTELLIGENCE**

Day and Date : Saturday, 10-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four**. **(4×5=20)**

- a) What is Artificial Intelligence ? Explain all task domains of AI in briefly.
- b) Explain level of model in AI with example.
- c) Explain about criteria for success in AI along with example.
- d) Explain problem is defined as state space search with suitable example.
- e) Explain blind search techniques with their algorithms.
- f) What are different problem characteristics ?

3. a) What is AI Technique ? Explain the algorithms of three programs to play Tic-Tac-Toe problem. **10**

OR

b) Explain water-jug problem along with its all production rules and solution of it. **10**

4. Write short note on : **10**

- 1) AI problems
- 2) Production system
- 3) Breadth first search algorithm.

Set S



SECTION – II

5. Attempt **any four**. **(4×5=20)**
- a) Explain heuristic search technique in AI.
 - b) Explain Mean-End analysis algorithm.
 - c) Explain Depth-First search algorithm.
 - d) Describe in detail mapping between facts and representation in knowledge representation.
 - e) Explain procedural knowledge and declarative knowledge in detail with example.
 - f) Describe in detail with different example, representation of simple facts in predicate logic.
6. a) Explain AO* algorithm in detail. **10**
- OR
- b) Explain constraint satisfaction algorithm. **10**
7. What are different approaches to knowledge representation in AI ? Explain with suitable example. **10**
-



SLR-EP – 231

Seat No.	
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Set

P

**T.E. (IT) (Part – II) (Old) Examination, 2016
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(20×1=20)

- 1) Lexical analyzer generates
 - a) Tokens
 - b) Patterns
 - c) Lexeme
 - d) Regular expression
- 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) None of the above
- 4) fail() function in the implementation of transition diagram
 - a) Backtracks to the beginning of the tokens
 - b) Fails the lexical analysis
 - c) Stops lexical analysis
 - d) Undo the stop state
- 5) The ambiguous grammar produces one or more
 - a) Left most derivation
 - b) Right most derivation
 - c) Both
 - d) None
- 6) Which of the following is a bottom-up parser ?
 - a) CLR
 - b) SLR
 - c) Shift-reduce
 - d) All
- 7) Which of the following is the left-recursive grammar ?
 - a) $E \rightarrow E + E$
 - b) $E \rightarrow F + E$
 - c) $E \rightarrow F + F$
 - d) All

P.T.O.



Seat No.	
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**T.E. (IT) (Part – II) (Old) Examination, 2016
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Write short notes. (Attempt **any 4**) : **20**
- a) Compiler construction tools.
 - b) L-attributed definition.
 - c) Sentinels.
 - d) Algorithm of NFA to DFA conversion.
 - e) LALR parsing.

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.

$$E \rightarrow TE'$$

$$E' \rightarrow + TE' \mid \varepsilon$$

$$T \rightarrow FT'$$

$$T' \rightarrow *FT' \mid \varepsilon$$

$$F \rightarrow (E) \mid id$$

OR

How the SLR parsing table is constructed ? Explain with example.

4. Elaborate shift-reduce parser with its conflicts and examples. **10**



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Control stack.
 - b) Static allocation strategy.
 - c) Heap allocation strategy.
 - d) Types of three address code statements.
 - e) Backpatching.

6. Attempt **any one** : **10**
What is code generation ? List and explain the issues in the design of a code generator.

OR

Brief out register descriptor and address descriptor. Write the code sequence for the statements

$d := (a - b) + (a - c) + (a - c)$ using register descriptor and address descriptor.

7. What is optimization ? Explain optimization of basic blocks with example. **10**
-



SLR-EP – 231

Seat No.	
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Set

Q

**T.E. (IT) (Part – II) (Old) Examination, 2016
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(20×1=20)

- 1) A dangling reference is a pointer pointing to
 - a) Storage which is freed
 - b) Nothing
 - c) Storage which is still in use
 - d) Un-initialized storage
- 2) Which of the following information is not required in code generation ?
 - a) Flowgraphs
 - b) Next-use info
 - c) Register descriptor
 - d) Parameter descriptor
- 3) Which of the following is the parameter passing method ?
 - a) Copy-restore
 - b) Call by value
 - c) Call by reference
 - d) All
- 4) Quadruple for the statement $t1 = a + b$ is
 - a) $a, +, b, t1$
 - b) $+, a, b, t1$
 - c) $t1, +, a, b$
 - d) $a, b, +, t1$
- 5) A pictorial representation of the value computed by each statement in the basic block is
 - a) Tree
 - b) Graph
 - c) DAG
 - d) Syntax tree
- 6) Lexical analyzer generates
 - a) Tokens
 - b) Patterns
 - c) Lexeme
 - d) Regular expression
- 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

P.T.O.



Seat No.	
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**T.E. (IT) (Part – II) (Old) Examination, 2016
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Write short notes. (Attempt **any 4**) : **20**
- a) Compiler construction tools.
 - b) L-attributed definition.
 - c) Sentinels.
 - d) Algorithm of NFA to DFA conversion.
 - e) LALR parsing.

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

How the SLR parsing table is constructed ? Explain with example.

4. Elaborate shift-reduce parser with its conflicts and examples. **10**



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Control stack.
 - b) Static allocation strategy.
 - c) Heap allocation strategy.
 - d) Types of three address code statements.
 - e) Backpatching.

6. Attempt **any one** : **10**
- What is code generation ? List and explain the issues in the design of a code generator.

OR

Brief out register descriptor and address descriptor. Write the code sequence for the statements

$d := (a - b) + (a - c) + (a - c)$ using register descriptor and address descriptor.

7. What is optimization ? Explain optimization of basic blocks with example. **10**
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SLR-EP – 231

Seat No.	
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Set **R**

**T.E. (IT) (Part – II) (Old) Examination, 2016
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(20×1=20)

- 1) Which of the following conflicts cannot arise in LR parsing ?
 - a) Shift-reduce
 - b) Reduce-reduce
 - c) Shift-shift
 - d) All
- 2) 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) $L.i = n(M.i)$
- 3) A basic block is a block of
 - a) Non consecutive statements
 - b) Consecutive statements which may be entered at the beginning and when entered are executed in sequence without halt
 - c) Consecutive statements which may be entered at the beginning and when entered are executed in sequence with halt
 - d) All
- 4) Which of the following is not a loop optimization ?
 - a) Induction variable elimination
 - b) Loop unrolling
 - c) Loop jamming
 - d) None
- 5) Which of the following is not three address code ?
 - a) $x := op y$
 - b) $x := y$
 - c) $x[i] := y$
 - d) $\&a := \&b$
- 6) A dangling reference is a pointer pointing to
 - a) Storage which is freed
 - b) Nothing
 - c) Storage which is still in use
 - d) Un-initialized storage
- 7) Which of the following information is not required in code generation ?
 - a) Flowgraphs
 - b) Next-use info
 - c) Register descriptor
 - d) Parameter descriptor

P.T.O.



Seat No.	
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**T.E. (IT) (Part – II) (Old) Examination, 2016
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Write short notes. (Attempt **any 4**) : **20**
- a) Compiler construction tools.
 - b) L-attributed definition.
 - c) Sentinels.
 - d) Algorithm of NFA to DFA conversion.
 - e) LALR parsing.

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.

$$E \rightarrow TE'$$

$$E' \rightarrow + TE' \mid \varepsilon$$

$$T \rightarrow FT'$$

$$T' \rightarrow *FT' \mid \varepsilon$$

$$F \rightarrow (E) \mid id$$

OR

How the SLR parsing table is constructed ? Explain with example.

4. Elaborate shift-reduce parser with its conflicts and examples. **10**



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Control stack.
 - b) Static allocation strategy.
 - c) Heap allocation strategy.
 - d) Types of three address code statements.
 - e) Backpatching.

6. Attempt **any one** : **10**
- What is code generation ? List and explain the issues in the design of a code generator.

OR

Brief out register descriptor and address descriptor. Write the code sequence for the statements

$d := (a - b) + (a - c) + (a - c)$ using register descriptor and address descriptor.

7. What is optimization ? Explain optimization of basic blocks with example. **10**
-



SLR-EP – 231

Seat No.	
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Set

S

**T.E. (IT) (Part – II) (Old) Examination, 2016
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 14-12-2016
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
(20×1=20)

1. Choose the correct alternative :

- 1) Which of the following is a bottom-up parser ?
a) CLR b) SLR c) Shift-reduce d) All
- 2) Which of the following is the left-recursive grammar ?
a) $E \rightarrow E + E$ b) $E \rightarrow F + E$ c) $E \rightarrow F + F$ d) All
- 3) Backtracking is used in
a) Predictive parser b) LR Parser
c) Recursive-descent parser d) LALR Parser
- 4) In which storage allocation strategy size is required at compile time ?
a) Static b) Dynamic c) Stack d) Heap
- 5) Which of the following phase of the compilation is an optional phase ?
a) Lexical b) Semantic
c) Code optimization d) Code generation
- 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 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) $L.i = n(M.i)$
- 8) A basic block is a block of
a) Non consecutive statements
b) Consecutive statements which may be entered at the beginning and when entered are executed in sequence without halt
c) Consecutive statements which may be entered at the beginning and when entered are executed in sequence with halt
d) All

P.T.O.



- 9) Which of the following is not a loop optimization ?
a) Induction variable elimination b) Loop unrolling
c) Loop jamming d) None
- 10) Which of the following is not three address code ?
a) $x := op\ y$ b) $x := y$ c) $x[i] := y$ d) $\&a := \&b$
- 11) A dangling reference is a pointer pointing to
a) Storage which is freed b) Nothing
c) Storage which is still in use d) Un-initialized storage
- 12) Which of the following information is not required in code generation ?
a) Flowgraphs b) Next-use info
c) Register descriptor d) Parameter descriptor
- 13) Which of the following is the parameter passing method ?
a) Copy-restore b) Call by value
c) Call by reference d) All
- 14) Quadruple for the statement $t1 = a + b$ is
a) $a, +, b, t1$ b) $+, a, b, t1$ c) $t1, +, a, b$ d) $a, b, +, t1$
- 15) A pictorial representation of the value computed by each statement in the basic block is
a) Tree b) Graph c) DAG d) Syntax tree
- 16) Lexical analyzer generates
a) Tokens b) Patterns
c) Lexeme d) Regular expression
- 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) None of the above
- 19) fail() function in the implementation of transition diagram
a) Backtracks to the beginning of the tokens
b) Fails the lexical analysis
c) Stops lexical analysis
d) Undo the stop state
- 20) The ambiguous grammar produces one or more
a) Left most derivation b) Right most derivation
c) Both d) None



Seat No.	
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**T.E. (IT) (Part – II) (Old) Examination, 2016
COMPILER CONSTRUCTION**

Day and Date : Wednesday, 14-12-2016
Time : 10.00 a.m. to 1.00 p.m.

Marks : 80

SECTION – I

2. Write short notes. (Attempt **any 4**) : **20**
- a) Compiler construction tools.
 - b) L-attributed definition.
 - c) Sentinels.
 - d) Algorithm of NFA to DFA conversion.
 - e) LALR parsing.

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.

$$E \rightarrow TE'$$

$$E' \rightarrow + TE' \mid \varepsilon$$

$$T \rightarrow FT'$$

$$T' \rightarrow *FT' \mid \varepsilon$$

$$F \rightarrow (E) \mid id$$

OR

How the SLR parsing table is constructed ? Explain with example.

4. Elaborate shift-reduce parser with its conflicts and examples. **10**



SECTION – II

5. Write short notes (Attempt **any 4**) : **20**
- a) Control stack.
 - b) Static allocation strategy.
 - c) Heap allocation strategy.
 - d) Types of three address code statements.
 - e) Backpatching.

6. Attempt **any one** : **10**
- What is code generation ? List and explain the issues in the design of a code generator.

OR

Brief out register descriptor and address descriptor. Write the code sequence for the statements

$d := (a - b) + (a - c) + (a - c)$ using register descriptor and address descriptor.

7. What is optimization ? Explain optimization of basic blocks with example. **10**
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SLR-EP – 232

Seat No.	
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Set	P
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**B.E. (IT) (Part – I) Examination, 2016
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 29-11-2016
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=20)

- 1) Which of the following is example of paradigm shift ?
 - a) Channel processing
 - b) Data processing
 - c) Time sharing
 - d) Micro-controller processing
- 2) In virtual reality which of the senses cannot currently be portrayed ?
 - a) Touch
 - b) Hearing
 - c) Sight
 - d) Smell
- 3) Scenarios are _____ for design.
 - a) Samples
 - b) Prototype
 - c) Stories
 - d) Models
- 4) The most abstract design rule are general
 - a) Guidelines
 - b) Standards
 - c) Principles
 - d) Rules
- 5) Which one of these is a good reason to include sounds in an HCI ?
 - a) User react more quickly to sound than to visual signals
 - b) User react more slowly to sound than visual signals
 - c) There is no preference people just like sound
 - d) The computer reacts to sound in the same way as human
- 6) Which of the following is programming paradigm ?
 - a) Read evaluation loop
 - b) Notification based programming paradigm
 - c) Both a) and b)
 - d) None of above
- 7) What is design ?
 - a) Achieving goods within constraints
 - b) Achieving goals within constraints
 - c) Arriving goals within constraints
 - d) Arriving goals within common

P.T.O.



- 8) People build their own theories to understand the casual behaviour of system, these have been termed
a) Dental models b) Pent model c) Rental model d) Mental model
- 9) _____ evolution is method for structuring the critique of system using a set of sample guidelines.
a) Heuristic b) General c) Structural d) Computational
- 10) These are two types of long term memory
a) Episodic memory and semantic memory
b) Episodic memory and programmatic memory
c) Segmented memory and semantic memory
d) Episodic memory and segmented memory
- 11) Which of the following fields is not an influence on HCI ?
a) Ergonomics b) Cognitive psychology
c) Computer science d) All of above
- 12) Conventional wisdom says that _____ tell the user when he has made some mistake.
a) Program crash b) System stuck c) Error messages d) Metadata
- 13) We perform speech acts when we offer an
a) Apology b) Greeting c) Request d) All of above
- 14) Which one of these is NOT normally associated with qualitative data ?
a) Words b) Narrative c) Pie charts d) Images
- 15) _____ is usually numeric and can be easily analyzed using statistical techniques and _____ is non-numeric and is difficult to analyze.
a) Subjective, Objective
b) Laboratory, Field studies
c) Quantitative measurement, Qualitative measurements
d) Design, Implementation
- 16) Feedback can come in the form of
a) Non-verbal communication only
b) Verbal and non-verbal listener responses
c) Verbal communication only
d) Environment noise
- 17) _____ technique can be useful in eliciting detail of user's view of a system.
a) Asking b) Query c) General d) Scalar
- 18) Which of the following are styles of evaluation ?
a) Laboratory studies and field studies
b) Self studies and analysis studies
c) Experimental studies
d) Formal studies and informal studies
- 19) _____ is the primary consideration in designing knowledge-based AI systems.
a) Analogy b) Efficiency c) Efficacy d) Acquisition
- 20) An example of communication channels is
a) Face to face conversation b) Noise
c) Context d) Feedback



Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 29-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain different types of human memory in detail
 - b) Explain reasoning and problem solving techniques in brief.
 - c) How emotion plays important role in human performance ?
 - d) Explain design rationale and it's type with example.
 - e) Explain human input output channels in detail.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Explain the various interaction styles with their drawbacks and benefits.
 - b) Explain :
 - 1) Language verses action
 - 2) Hypertext.
 - c) Explain which devices are used for virtual reality and 3D interaction.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What is evolution through expert analysis ?
 - b) Explain soft system methodology.
 - c) Explain PIE model of interaction.
 - d) Write short note on knowledge based analysis.
 - e) Explain UIMS as a conceptual architecture.
5. Attempt **any two** of the following : **(8×2=16)**
- a) What are different models used for capturing requirements ?
 - b) Explain low intention and sensor based interaction.
 - c) Explain different linguistic models :
 - a) BNF (Backus Nour Form)
 - b) Task action grammar.



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Seat No.	
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Set	Q
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**B.E. (IT) (Part – I) Examination, 2016
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 29-11-2016
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=20)

- 1) Feedback can come in the form of
 - a) Non-verbal communication only
 - b) Verbal and non-verbal listener responses
 - c) Verbal communication only
 - d) Environment noise
- 2) _____ technique can be useful in eliciting detail of user's view of a system.
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- 6) Which of the following is example of paradigm shift ?
 - a) Channel processing
 - b) Data processing
 - c) Time sharing
 - d) Micro-controller processing
- 7) In virtual reality which of the senses cannot currently be portrayed ?
 - a) Touch
 - b) Hearing
 - c) Sight
 - d) Smell
- 8) Scenarios are _____ for design.
 - a) Samples
 - b) Prototype
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- 9) The most abstract design rule are general
 - a) Guidelines
 - b) Standards
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 - d) Rules

P.T.O.



- 10) Which one of these is a good reason to include sounds in an HCI ?
 - a) User react more quickly to sound than to visual signals
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 - c) Both a) and b)
 - d) None of above
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 - b) Achieving goals within constraints
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 - d) Episodic memory and segmented memory
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- 20) _____ is usually numeric and can be easily analyzed using statistical techniques and _____ is non-numeric and is difficult to analyze.
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**B.E. (IT) (Part – I) Examination, 2016
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 29-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction: All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain different types of human memory in detail
 - b) Explain reasoning and problem solving techniques in brief.
 - c) How emotion plays important role in human performance ?
 - d) Explain design rationale and it's type with example.
 - e) Explain human input output channels in detail.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Explain the various interaction styles with their drawbacks and benefits.
 - b) Explain :
 - 1) Language verses action
 - 2) Hypertext.
 - c) Explain which devices are used for virtual reality and 3D interaction.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What is evolution through expert analysis ?
 - b) Explain soft system methodology.
 - c) Explain PIE model of interaction.
 - d) Write short note on knowledge based analysis.
 - e) Explain UIMS as a conceptual architecture.
5. Attempt **any two** of the following : **(8×2=16)**
- a) What are different models used for capturing requirements ?
 - b) Explain low intention and sensor based interaction.
 - c) Explain different linguistic models :
 - a) BNF (Backus Nour Form)
 - b) Task action grammar.



- 9) _____ is the primary consideration in designing knowledge-based AI systems.
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c) Segmented memory and semantic memory
d) Episodic memory and segmented memory



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**B.E. (IT) (Part – I) Examination, 2016
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 29-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain different types of human memory in detail
 - b) Explain reasoning and problem solving techniques in brief.
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SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What is evolution through expert analysis ?
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 - c) Explain different linguistic models :
 - a) BNF (Backus Nour Form)
 - b) Task action grammar.



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**B.E. (IT) (Part – I) Examination, 2016
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 29-11-2016
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=20)

- 1) Which of the following is programming paradigm ?
 - a) Read evaluation loop
 - b) Notification based programming paradigm
 - c) Both a) and b)
 - d) None of above
- 2) What is design ?
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 - b) Achieving goals within constraints
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 - d) Metadata

P.T.O.



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a) Apology b) Greeting c) Request d) All of above
- 9) Which one of these is NOT normally associated with qualitative data ?
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- 19) The most abstract design rule are general
a) Guidelines b) Standards c) Principles d) Rules
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b) User react more slowly to sound than visual signals
c) There is no preference people just like sound
d) The computer reacts to sound in the same way as human



Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
HUMAN COMPUTER INTERACTION**

Day and Date : Tuesday, 29-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : All questions are compulsory.

SECTION – I

2. Attempt **any four** of the following : **(6×4=24)**
- a) Explain different types of human memory in detail
 - b) Explain reasoning and problem solving techniques in brief.
 - c) How emotion plays important role in human performance ?
 - d) Explain design rationale and it's type with example.
 - e) Explain human input output channels in detail.
3. Attempt **any two** of the following : **(8×2=16)**
- a) Explain the various interaction styles with their drawbacks and benefits.
 - b) Explain :
 - 1) Language verses action
 - 2) Hypertext.
 - c) Explain which devices are used for virtual reality and 3D interaction.

SECTION – II

4. Attempt **any four** of the following : **(6×4=24)**
- a) What is evolution through expert analysis ?
 - b) Explain soft system methodology.
 - c) Explain PIE model of interaction.
 - d) Write short note on knowledge based analysis.
 - e) Explain UIMS as a conceptual architecture.
5. Attempt **any two** of the following : **(8×2=16)**
- a) What are different models used for capturing requirements ?
 - b) Explain low intention and sensor based interaction.
 - c) Explain different linguistic models :
 - a) BNF (Backus Nour Form)
 - b) Task action grammar.



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Seat No.	
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Set	P
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**B.E. (IT) (Part – I) Examination, 2016
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 1-12-2016
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 :

- 1) 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
- 2) Which business function is responsible for providing customer service support ?
 - a) Sales and marketing
 - b) Commerce
 - c) Business
 - d) Manufacturing
- 3) Which type of system produces reports on a regular schedule in a predetermined format ?
 - a) MIS
 - b) ESS
 - c) USS
 - d) MMS
- 4) Which type of system is most often used for analyzing data ?
 - a) MIS
 - b) DSS
 - c) OSS
 - d) GIS
- 5) These systems address non routine decisions requiring judgement, evaluation and insight because there is no agreed-on procedure for arriving at a solution.
 - a) MIS
 - b) ESS
 - c) USS
 - d) MMS
- 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

P.T.O.



- 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) 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
- 10) In post industrial societies, authority increasingly relied on
- a) Human b) People
c) Machine d) Knowledge and competence
- 11) This individual is credited with the development of the five forces competitive model
- a) Isaac Newton b) Michael Porter
c) Galileo d) Mathew Smith
- 12) Google are using information technology to pursue this generic strategy.
- a) Market niche b) Product differentiation
c) Intelligence d) Competence
- 13) 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
- 14) 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
- 15) In a database, the smallest unit of data a computer can handle is a
- a) Byte b) Nibble c) Bit d) Word
- 16) The process of creating small, stable, yet flexible and adaptive data structures from complex groups of data is called
- a) Parts b) Normalization c) Facts d) Constraint
- 17) Changes in the industry and society at large that may affect the long-term and near-term future of the firm is mainly concentrated at this management level
- a) Knowledge b) Senior c) Internal d) Middle
- 18) Which type of decision is one for which there may be several “right” answers and there is no precise way to get a right answer ?
- a) Unstructured b) Complex c) Structured d) Simple
- 19) In data mining, events that are linked over time are referred to as
- a) Sequences b) Links c) Associations d) Implications
- 20) The results of “what-if” questions asked repeatedly to determine the impact of changes in one or more factors on the outcomes are called
- a) Systematic b) Sensitivity c) Sequential d) Hypothetical



Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 1-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

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

SECTION – I

2. Answer the following in brief : 20
- a) What changes has technology brought into information systems ?
 - b) What are ESS ? Who use them ?
 - c) What are the contemporary approaches to IS ?
 - d) What is a supply chain management system ?
 - e) What are the five morale dimensions of the information age ?
3. Answer **any one** of the following : 10
- 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.
4. Answer **any one** of the following : 10
- a) What are the components of IT infrastructure ? Elaborate on each component.
 - b) How are RFID and wireless sensor networks valuable for business ?

SECTION – II

5. Answer the following in brief : 20
- a) What is E-Commerce ? Changes has technology brought into information systems ?
 - 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.

6. Answer **any one** of the following : **10**

- a) How do supply chain management systems coordinate planning, production and logistics with supplies ?
- b) How has the internet changed business models ?

7. Answer **any one** of the following : **10**

- a) What are the major types of knowledge work systems and how do they provide value to firms ?
 - b) How do information systems support the activities of managers and management decision making ?
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Seat No.	
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Set	Q
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**B.E. (IT) (Part – I) Examination, 2016
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 1-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) The process of creating small, stable, yet flexible and adaptive data structures from complex groups of data is called
a) Parts b) Normalization c) Facts d) Constraint
- 2) Changes in the industry and society at large that may affect the long-term and near-term future of the firm is mainly concentrated at this management level
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P.T.O.



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a) Synergies b) Heuristics c) Switching d) None of these
- 20) In a database, the smallest unit of data a computer can handle is a
a) Byte b) Nibble c) Bit d) Word



Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 1-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

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

SECTION – I

2. Answer the following in brief : **20**
- a) What changes has technology brought into information systems ?
 - b) What are ESS ? Who use them ?
 - c) What are the contemporary approaches to IS ?
 - d) What is a supply chain management system ?
 - e) What are the five morale dimensions of the information age ?
3. Answer **any one** of the following : **10**
- 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.
4. Answer **any one** of the following : **10**
- a) What are the components of IT infrastructure ? Elaborate on each component.
 - b) How are RFID and wireless sensor networks valuable for business ?

SECTION – II

5. Answer the following in brief : **20**
- a) What is E-Commerce ? Changes has technology brought into information systems ?
 - 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.

6. Answer **any one** of the following : **10**

- a) How do supply chain management systems coordinate planning, production and logistics with supplies ?
- b) How has the internet changed business models ?

7. Answer **any one** of the following : **10**

- a) What are the major types of knowledge work systems and how do they provide value to firms ?
 - b) How do information systems support the activities of managers and management decision making ?
-



SLR-EP – 233

Seat No.	
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Set	R
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**B.E. (IT) (Part – I) Examination, 2016
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 1-12-2016
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 :

- 1) This individual is credited with the development of the five forces competitive model
 - a) Isaac Newton
 - b) Michael Porter
 - c) Galileo
 - d) Mathew Smith
- 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) In a database, the smallest unit of data a computer can handle is a
 - a) Byte
 - b) Nibble
 - c) Bit
 - d) Word
- 6) The process of creating small, stable, yet flexible and adaptive data structures from complex groups of data is called
 - a) Parts
 - b) Normalization
 - c) Facts
 - d) Constraint
- 7) Changes in the industry and society at large that may affect the long-term and near-term future of the firm is mainly concentrated at this management level
 - a) Knowledge
 - b) Senior
 - c) Internal
 - d) Middle
- 8) Which type of decision is one for which there may be several "right" answers and there is no precise way to get a right answer ?
 - a) Unstructured
 - b) Complex
 - c) Structured
 - d) Simple

P.T.O.



- 9) In data mining, events that are linked over time are referred to as
a) Sequences b) Links c) Associations d) Implications
- 10) The results of “what-if” questions asked repeatedly to determine the impact of changes in one or more factors on the outcomes are called
a) Systematic b) Sensitivity c) Sequential d) Hypothetical
- 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) Which type of system produces reports on a regular schedule in a predetermined format ?
a) MIS b) ESS c) USS d) MMS
- 14) Which type of system is most often used for analyzing data ?
a) MIS b) DSS c) OSS d) GIS
- 15) These systems address non routine decisions requiring judgement, evaluation and insight because there is no agreed-on procedure for arriving at a solution.
a) MIS b) ESS c) USS d) MMS
- 16) 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
- 17) 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
- 18) 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
- 19) 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
- 20) In post industrial societies, authority increasingly relied on
a) Human b) People
c) Machine d) Knowledge and competence



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**B.E. (IT) (Part – I) Examination, 2016
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 1-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**
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SECTION – I

2. Answer the following in brief : **20**
- a) What changes has technology brought into information systems ?
 - b) What are ESS ? Who use them ?
 - c) What are the contemporary approaches to IS ?
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 - b) Elaborate on the Potter's competitive forces model to show a competitive advantage.
4. Answer **any one** of the following : **10**
- a) What are the components of IT infrastructure ? Elaborate on each component.
 - b) How are RFID and wireless sensor networks valuable for business ?

SECTION – II

5. Answer the following in brief : **20**
- a) What is E-Commerce ? Changes has technology brought into information systems ?
 - 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.

6. Answer **any one** of the following : **10**

- a) How do supply chain management systems coordinate planning, production and logistics with supplies ?
- b) How has the internet changed business models ?

7. Answer **any one** of the following : **10**

- a) What are the major types of knowledge work systems and how do they provide value to firms ?
 - b) How do information systems support the activities of managers and management decision making ?
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SLR-EP – 233

Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 1-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
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MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

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 - 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
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- 4) 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
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- 6) This individual is credited with the development of the five forces competitive model
 - a) Isaac Newton
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P.T.O.



- 7) Google are using information technology to pursue this generic strategy.
 - a) Market niche
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 - d) Word
- 11) The process of creating small, stable, yet flexible and adaptive data structures from complex groups of data is called
 - a) Parts
 - b) Normalization
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 - d) Constraint
- 12) Changes in the industry and society at large that may affect the long-term and near-term future of the firm is mainly concentrated at this management level
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- 13) Which type of decision is one for which there may be several “right” answers and there is no precise way to get a right answer ?
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 - d) Simple
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- 15) The results of “what-if” questions asked repeatedly to determine the impact of changes in one or more factors on the outcomes are called
 - a) Systematic
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 - c) USS
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 - c) OSS
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 - b) ESS
 - c) USS
 - d) MMS



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**B.E. (IT) (Part – I) Examination, 2016
MANAGEMENT INFORMATION SYSTEMS**

Day and Date : Thursday, 1-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

- Instructions :** 1) **All questions are compulsory.**
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SECTION – I

2. Answer the following in brief : 20
- a) What changes has technology brought into information systems ?
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 - c) What are the contemporary approaches to IS ?
 - d) What is a supply chain management system ?
 - e) What are the five morale dimensions of the information age ?
3. Answer **any one** of the following : 10
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 - b) Elaborate on the Potter's competitive forces model to show a competitive advantage.
4. Answer **any one** of the following : 10
- a) What are the components of IT infrastructure ? Elaborate on each component.
 - b) How are RFID and wireless sensor networks valuable for business ?

SECTION – II

5. Answer the following in brief : 20
- a) What is E-Commerce ? Changes has technology brought into information systems ?
 - 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.

6. Answer **any one** of the following : **10**

- a) How do supply chain management systems coordinate planning, production and logistics with supplies ?
- b) How has the internet changed business models ?

7. Answer **any one** of the following : **10**

- a) What are the major types of knowledge work systems and how do they provide value to firms ?
 - b) How do information systems support the activities of managers and management decision making ?
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Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
ADVANCED DATABASE SYSTEMS**

Day and Date : Saturday, 3-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) Data that exists even after the program has terminated is called
 - a) Static data
 - b) Persistent data
 - c) Temporary data
 - d) Virtual data
- 2) Shared-memory of transaction-server process structure contains
 - a) Log writer process
 - b) Lock manager process
 - c) Buffer pool
 - d) All
- 3) If a relation r is fragmented and divided in to a number of fragments as r_1, r_2, \dots, r_n then it is
 - a) Horizontal fragmentation
 - b) Vertical fragmentation
 - c) Both
 - d) Cannot say
- 4) Which of the following message is generated in phase 1 of a 2PC protocol ?
 - a) <ready T>
 - b) <abort T>
 - c) <commit T>
 - d) all
- 5) Site reintegration in distributed database is nothing but
 - a) Separating a failed site from a network
 - b) Selecting a new coordinator
 - c) Rejoining of a failed site after its recovery
 - d) Connecting the whole network after the failure of its server
- 6) Point queries and range queries are complicated to process in _____ partitioning technique.
 - a) Round Robin
 - b) Hash
 - c) Range
 - d) All
- 7) In parallel database, if query processing occurs only in one or few partitions and other partitions are not in use then it is named as
 - a) Attribute value skew
 - b) Partition skew
 - c) Execution skew
 - d) Data skew



- 8) If the three sites are independently executing the three queries as SELECT, UPDATE and JOIN on 3 different relations then it is called _____ parallelism.
 a) interquery b) interoperation c) intraoperation d) global
- 9) Nesting is the
 a) Inverse process of 1 NF relation into a nested relation
 b) Process of 4 NF to 1 NF
 c) Process of 1 NF to 4 NF
 d) Process creating nested relations
- 10) In persistent programming language, data stored is
 a) Temporary b) Permanent c) Virtual d) Static
- 11) In OODB, *final* and *not final* indicates the
 a) Structure type creation b) Subtype creation
 c) Object creation d) Complex type creation
- 12) OLAP is an
 a) Online Analytical Processing
 b) Online Analyzing Process Management
 c) Online Analysis Program
 d) One thread Analysis of a Program
- 13) In a cube operation instead of null if it is replaced by all then _____ function is used.
 a) decode b) percent c) rollup d) groupby
- 14) Choose the classification parameters in datamining
 a) Population b) Support c) Confidence d) All
- 15) Arrange the following query processing steps according to the processing order :
 I) Translation II) Evaluation III) Execution IV) Optimization
 a) I, IV, II, III b) I, IV, III, II c) I, II, IV, III d) I, II, III, IV
- 16) In query processing for selection operation A3, A4 and A5 algorithms are
 a) basic algorithms b) using indices
 c) complex selections d) comparison selections
- 17) $\sigma_{\theta_1} \cap \theta_1(E) =$
 a) $\sigma_{\theta_1}(E) \cap \theta_1(E)$ b) $\sigma_{\theta_1}(E) \cup \theta_1(E)$ c) $\sigma_{\theta_1}(\sigma_{\theta_2}(E))$ d) All
- 18) Duplication elimination, projection, set operations can be done by
 a) sorting b) hashing c) both d) none
- 19) Large volumes of data are processed by Hadoop by
 a) using a lot of machines in parallel. This optimizes data processing
 b) shifting the code to the data instead of sending the data to the code
 c) using sophisticated caching techniques on namenode to speed processing of data
 d) All of the above
- 20) No SQL is
 a) schema free b) easy to scale c) uses sharing d) all



Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
ADVANCED DATABASE SYSTEMS**

Day and Date : Saturday, 3-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (attempt **any 4**) : **20**
- a) Transaction server process structure
 - b) Three phase commit protocol
 - c) Interquery parallelism
 - d) Datacube operations
 - e) Data mining.

3. Attempt **any one** : **10**
- What is 2PC protocol ? Where it is used ? Illustrate its phases with failure handling.

OR

Explain the following terms in datamining.

Ranking, windowing, association and clustering.

4. What is interoperation parallelism ? Illustrate its techniques with examples. **10**

SECTION – II

5. Write short notes (attempt **any 4**) : **20**
- a) Complex datatypes
 - b) Unnesting
 - c) Complex selection algorithms for conjunction
 - d) Query transaction
 - e) Name node and data node.

Set P



6. Attempt **any one** : **10**

What is persistent programming language ? Explain persistence of objects and object identity with respect to PPL.

OR

Differentiate between SQL, NoSQL and New SQL with example and use.

7. Elaborate query processing of hash join with its cost complexity. **10**



Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
ADVANCED DATABASE SYSTEMS**

Day and Date : Saturday, 3-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) In query processing for selection operation A3, A4 and A5 algorithms are
 - a) basic algorithms
 - b) using indices
 - c) complex selections
 - d) comparison selections
- 2) $\sigma_{\theta_1} \cap \theta_1(E) =$
 - a) $\sigma_{\theta_1}(E) \cap \theta_1(E)$
 - b) $\sigma_{\theta_1}(E) \cup \theta_1(E)$
 - c) $\sigma_{\theta_1}(\sigma_{\theta_2}(E))$
 - d) All
- 3) Duplication elimination, projection, set operations can be done by
 - a) sorting
 - b) hashing
 - c) both
 - d) none
- 4) Large volumes of data are processed by Hadoop by
 - a) using a lot of machines in parallel. This optimizes data processing
 - b) shifting the code to the data instead of sending the data to the code
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- 6) Data that exists even after the program has terminated is called
 - a) Static data
 - b) Persistent data
 - c) Temporary data
 - d) Virtual data
- 7) Shared-memory of transaction-server process structure contains
 - a) Log writer process
 - b) Lock manager process
 - c) Buffer pool
 - d) All
- 8) If a relation r is fragmented and divided in to a number of fragments as r_1, r_2, \dots, r_n then it is
 - a) Horizontal fragmentation
 - b) Vertical fragmentation
 - c) Both
 - d) Cannot say

P.T.O.



Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
ADVANCED DATABASE SYSTEMS**

Day and Date : Saturday, 3-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (attempt **any 4**) : **20**
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 - c) Interquery parallelism
 - d) Datacube operations
 - e) Data mining.

3. Attempt **any one** : **10**
- What is 2PC protocol ? Where it is used ? Illustrate its phases with failure handling.

OR

Explain the following terms in datamining.

Ranking, windowing, association and clustering.

4. What is interoperation parallelism ? Illustrate its techniques with examples. **10**

SECTION – II

5. Write short notes (attempt **any 4**) : **20**
- a) Complex datatypes
 - b) Unnesting
 - c) Complex selection algorithms for conjunction
 - d) Query transaction
 - e) Name node and data node.

Set Q



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What is persistent programming language ? Explain persistence of objects and object identity with respect to PPL.

OR

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7. Elaborate query processing of hash join with its cost complexity. **10**



Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
ADVANCED DATABASE SYSTEMS**

Day and Date : Saturday, 3-12-2016
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MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) In OODB, *final* and *not final* indicates the
 - a) Structure type creation
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 - c) Object creation
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- 2) OLAP is an
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- 3) In a cube operation instead of null if it is replaced by all then _____ function is used.
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 - b) percent
 - c) rollup
 - d) groupby
- 4) Choose the classification parameters in datamining
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- 5) Arrange the following query processing steps according to the processing order :
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 - III) Execution
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 - Rejoining of a failed site after its recovery
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- 16) Point queries and range queries are complicated to process in _____ partitioning technique.
- Round Robin
 - Hash
 - Range
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- 17) In parallel database, if query processing occurs only in one or few partitions and other partitions are not in use then it is named as
- Attribute value skew
 - Partition skew
 - Execution skew
 - Data skew
- 18) If the three sites are independently executing the three queries as SELECT, UPDATE and JOIN on 3 different relations then it is called _____ parallelism.
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 - interoperation
 - intraoperation
 - global
- 19) Nesting is the
- Inverse process of 1 NF relation into a nested relation
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 - Virtual
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Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
ADVANCED DATABASE SYSTEMS**

Day and Date : Saturday, 3-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (attempt **any 4**) : **20**
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OR

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4. What is interoperation parallelism ? Illustrate its techniques with examples. **10**

SECTION – II

5. Write short notes (attempt **any 4**) : **20**
- a) Complex datatypes
 - b) Unnesting
 - c) Complex selection algorithms for conjunction
 - d) Query transaction
 - e) Name node and data node.

Set R



6. Attempt **any one** : **10**

What is persistent programming language ? Explain persistence of objects and object identity with respect to PPL.

OR

Differentiate between SQL, NoSQL and New SQL with example and use.

7. Elaborate query processing of hash join with its cost complexity. **10**



Seat No.	
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Set	S
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**B.E. (IT) (Part – I) Examination, 2016
ADVANCED DATABASE SYSTEMS**

Day and Date : Saturday, 3-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : **20**
- 1) Point queries and range queries are complicated to process in _____ partitioning technique.
a) Round Robin b) Hash c) Range d) All
 - 2) In parallel database, if query processing occurs only in one or few partitions and other partitions are not in use then it is named as
a) Attribute value skew b) Partition skew
c) Execution skew d) Data skew
 - 3) If the three sites are independently executing the three queries as SELECT, UPDATE and JOIN on 3 different relations then it is called _____ parallelism.
a) interquery b) interoperation c) intraoperation d) global
 - 4) Nesting is the
a) Inverse process of 1 NF relation into a nested relation
b) Process of 4 NF to 1 NF
c) Process of 1 NF to 4 NF
d) Process creating nested relations
 - 5) In persistent programming language, data stored is
a) Temporary b) Permanent c) Virtual d) Static
 - 6) In OODB, *final* and *not final* indicates the
a) Structure type creation b) Subtype creation
c) Object creation d) Complex type creation
 - 7) OLAP is an
a) Online Analytical Processing
b) Online Analyzing Process Management
c) Online Analysis Program
d) One thread Analysis of a Program



- 8) In a cube operation instead of null if it is replaced by all then _____ function is used.
a) decode b) percent c) rollup d) groupby
- 9) Choose the classification parameters in datamining
a) Population b) Support c) Confidence d) All
- 10) Arrange the following query processing steps according to the processing order :
I) Translation II) Evaluation III) Execution IV) Optimization
a) I, IV, II, III b) I, IV, III, II c) I, II, IV, III d) I, II, III, IV
- 11) In query processing for selection operation A3, A4 and A5 algorithms are
a) basic algorithms b) using indices
c) complex selections d) comparison selections
- 12) $\sigma_{\theta_1} \cap \theta_1(E) =$
a) $\sigma_{\theta_1}(E) \cap \theta_1(E)$ b) $\sigma_{\theta_1}(E) \cup \theta_1(E)$ c) $\sigma_{\theta_1}(\sigma_{\theta_2}(E))$ d) All
- 13) Duplication elimination, projection, set operations can be done by
a) sorting b) hashing c) both d) none
- 14) Large volumes of data are processed by Hadoop by
a) using a lot of machines in parallel. This optimizes data processing
b) shifting the code to the data instead of sending the data to the code
c) using sophisticated caching techniques on namenode to speed processing of data
d) All of the above
- 15) No SQL is
a) schema free b) easy to scale c) uses sharing d) all
- 16) Data that exists even after the program has terminated is called
a) Static data b) Persistent data
c) Temporary data d) Virtual data
- 17) Shared-memory of transaction-server process structure contains
a) Log writer process b) Lock manager process
c) Buffer pool d) All
- 18) If a relation r is fragmented and divided in to a number of fragments as r_1, r_2, \dots, r_n then it is
a) Horizontal fragmentation b) Vertical fragmentation
c) Both d) Cannot say
- 19) Which of the following message is generated in phase 1 of a 2PC protocol ?
a) <ready T> b) <abort T> c) <commit T> d) all
- 20) Site reintegration in distributed database is nothing but
a) Separating a failed site from a network
b) Selecting a new coordinator
c) Rejoining of a failed site after its recovery
d) Connecting the whole network after the failure of its server



Seat No.	
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**B.E. (IT) (Part – I) Examination, 2016
ADVANCED DATABASE SYSTEMS**

Day and Date : Saturday, 3-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Write short notes (attempt **any 4**) : **20**
- a) Transaction server process structure
 - b) Three phase commit protocol
 - c) Interquery parallelism
 - d) Datacube operations
 - e) Data mining.

3. Attempt **any one** : **10**
- What is 2PC protocol ? Where it is used ? Illustrate its phases with failure handling.

OR

Explain the following terms in datamining.

Ranking, windowing, association and clustering.

4. What is interoperation parallelism ? Illustrate its techniques with examples. **10**

SECTION – II

5. Write short notes (attempt **any 4**) : **20**
- a) Complex datatypes
 - b) Unnesting
 - c) Complex selection algorithms for conjunction
 - d) Query transaction
 - e) Name node and data node.

Set S



6. Attempt **any one** : **10**

What is persistent programming language ? Explain persistence of objects and object identity with respect to PPL.

OR

Differentiate between SQL, NoSQL and New SQL with example and use.

7. Elaborate query processing of hash join with its cost complexity. **10**



Seat No.	
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Set	P
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**B.E. (Information Technology) (Part – I) Examination, 2016
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Tuesday, 6-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) **Draw figure wherever is necessary.**
 - 3) **Assume suitable data if necessary.**
 - 4) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer book Page No. 3. Each question carries one mark.**
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : (1×20=20)
- 1) Which of the following would NOT normally form part of a test plan ?
A) Features to be tested
B) Incident reports
C) Risks
D) Schedule
 - 2) A test manager wants to use the resources available for the automated testing of a web application. The best choice is
A) Test automater, web specialist, DBA, test lead
B) Tester, test automater, web specialist, DBA
C) Tester, test lead, test automater, DBA
D) Tester, web specialist, test lead, test automater
 - 3) A project manager has been transferred to a major software development project that is in the implementation phase. The highest priority for this project manager should be to
A) Establish a relationship with the customer
B) Learn the project objectives and the existing project plan
C) Modify the project's organizational structure to meet the manager's management style
D) Ensure that the project proceeds at its current pace
 - 4) Which of the following is a major task of test planning ?
A) Determining the test approach
B) Preparing test specifications
C) Evaluating exit criteria and reporting
D) Measuring and analyzing results
 - 5) Which of the following is the main purpose of the integration strategy for integration testing in the small ?
A) To ensure that all of the small modules are tested adequately
B) To ensure that the system interfaces to other systems and networks
C) To specify which modules to combine when and how many at once
D) To ensure that the integration testing can be performed by a small team
 - 6) Which of the following test activities can be automated ?
i. Reviews and inspections
ii. Metrics gathering
iii. Test planning
iv. Test execution
v. Data generation
A) i, iii, iv
B) i, ii, iii
C) ii, iv, v
D) ii, iii, v



- 7) Non-functional system testing includes
 - A) Testing to see where the system does not function properly
 - B) Testing quality attributes of the system including performance and usability
 - C) Testing a system feature using only the software required for that action
 - D) Testing a system feature using only the software required for that function
- 8) Which of the following is not a major task of Exit criteria ?
 - A) Checking test logs against the exit criteria specified in test planning
 - B) Logging the outcome of test execution
 - C) Assessing if more tests are needed
 - D) Writing a test summary report for stakeholders
- 9) The user must assign the criteria the software must meet to be deemed acceptable. Ideally, this is included in the
 - A) Software requirements specifications
 - B) Project plan
 - C) Use cases
 - D) Both A) and B)
- 10) Retesting the entire application after a change has been made called as
 - A) Full regression testing
 - B) Unit regression testing
 - C) Regional regression
 - D) Retesting
- 11) System testing should investigate
 - A) Non-functional requirements only not functional requirements
 - B) Functional requirements only not non-functional requirements
 - C) Non-functional requirements and functional requirements
 - D) Non-functional requirements or functional requirements
- 12) Which of the following is/are white box technique ?
 - A) Statement testing
 - B) Decision testing
 - C) Condition coverage
 - D) All of these
- 13) _____ technique can be used to achieve input and output coverage.
 - A) Boundary value analysis
 - B) Equivalence partitioning
 - C) Decision table testing
 - D) State transition testing
- 14) A type of functional testing, which investigates the functions relating to detection of threats, such as virus from malicious outsiders.
 - A) Security Testing
 - B) Recovery Testing
 - C) Performance Testing
 - D) Functionality Testing
- 15) The approach/document used to make sure all the requirements are covered when writing test cases
 - A) Test Matrix
 - B) Checklist
 - C) Test bed
 - D) Traceability Matrix
- 16) Boundary value testing
 - A) Is the same as equivalence partitioning tests
 - B) Test boundary conditions on, below and above the edges of input and output equivalence classes
 - C) Tests combinations of input circumstances
 - D) Is used in white box testing strategy
- 17) It measures the quality of processes used to create a quality product. It is a system of management activities, it is a preventive process, it applies for entire life cycle and deals with process.
 - A) Validation
 - B) Verification
 - C) Quality Assurance
 - D) Quality Control
- 18) Which is the non-functional testing ?
 - A) Performance testing
 - B) Unit testing
 - C) Regression testing
 - D) Sanity testing
- 19) What is the main purpose of impact analysis for testers ?
 - A) To determine the programming effort needed to make the changes
 - B) To determine what proportion of the changes need to be tested
 - C) To determine how much the planned changes will affect users
 - D) To determine how the existing system may be affected by changes
- 20) Which of the following should NOT normally be an objective for a test ?
 - A) To find faults in the software
 - B) To assess whether the software is ready for release
 - C) To demonstrate that the software doesn't work
 - D) To prove that the software is correct



Seat No.	
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B.E. (Information Technology) (Part – I) Examination, 2016
SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Tuesday, 6-12-2016

Marks : 80

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

- 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) What are the objectives of acceptance testing ? Explain different types of acceptance testing.
 - b) Explain with example gamma testing. What are its advantages and disadvantages ?
 - c) What are the challenges in testing also explain the test team approach ?
 - d) Explain in detail the levels of testing.
 - e) Explain the total defect classification in software testing.
3. Explain the following with example (**any two**) : **(2×5=10)**
- a) Developing testing methodologies.
 - b) Data and code coverage.
 - c) System testing.
4. Write note on (**any two**) : **(2×5=10)**
- a) Adhoc testing.
 - b) Big Bang testing.
 - c) Installation and regression testing.

Set P



SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) Explain few techniques for isolating and reproducing a bug.
 - b) Explain in detail the open source testing tools.
 - c) State and explain the issues in software quality assurance.
 - d) What is test plan ? Explain the purpose of test plan with example.
 - e) Explain the process of tracking and reporting bugs.
6. Attempt **any two** : **(2×5=10)**
- a) Explain in detail software quality dilemma.
 - b) State and explain the formal approaches to SQA.
 - c) Explain with example software test automation.
7. Write note on (**any two**) : **(2×5=10)**
- a) ISO-9000 and CMM.
 - b) Elements of SQA.
 - c) Isolating and reproducing bugs.
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Seat No.	
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Set	Q
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**B.E. (Information Technology) (Part – I) Examination, 2016
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Tuesday, 6-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) **Draw figure wherever is necessary.**
 - 3) **Assume suitable data if necessary.**
 - 4) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer book Page No. 3. Each question carries one mark.**
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : (1×20=20)
- 1) Boundary value testing
 - A) Is the same as equivalence partitioning tests
 - B) Test boundary conditions on, below and above the edges of input and output equivalence classes
 - C) Tests combinations of input circumstances
 - D) Is used in white box testing strategy
 - 2) It measures the quality of processes used to create a quality product. It is a system of management activities, it is a preventive process, it applies for entire life cycle and deals with process.
 - A) Validation
 - B) Verification
 - C) Quality Assurance
 - D) Quality Control
 - 3) Which is the non-functional testing ?
 - A) Performance testing
 - B) Unit testing
 - C) Regression testing
 - D) Sanity testing
 - 4) What is the main purpose of impact analysis for testers ?
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 - 5) Which of the following should NOT normally be an objective for a test ?
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 - 6) Which of the following would NOT normally form part of a test plan ?
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 - D) Schedule
 - 7) A test manager wants to use the resources available for the automated testing of a web application. The best choice is
 - A) Test automater, web specialist, DBA, test lead
 - B) Tester, test automater, web specialist, DBA
 - C) Tester, test lead, test automater, DBA
 - D) Tester, web specialist, test lead, test automater



- 8) A project manager has been transferred to a major software development project that is in the implementation phase. The highest priority for this project manager should be to
- A) Establish a relationship with the customer
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- A) i, iii, iv
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 - C) ii, iv, v
 - D) ii, iii, v
- 12) Non-functional system testing includes
- A) Testing to see where the system does not function properly
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 - D) Testing a system feature using only the software required for that function
- 13) Which of the following is not a major task of Exit criteria ?
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- 17) Which of the following is/are white box technique ?
- A) Statement testing
 - B) Decision testing
 - C) Condition coverage
 - D) All of these
- 18) _____ technique can be used to achieve input and output coverage.
- A) Boundary value analysis
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 - C) Decision table testing
 - D) State transition testing
- 19) A type of functional testing, which investigates the functions relating to detection of threats, such as virus from malicious outsiders.
- A) Security Testing
 - B) Recovery Testing
 - C) Performance Testing
 - D) Functionality Testing
- 20) The approach/document used to make sure all the requirements are covered when writing test cases
- A) Test Matrix
 - B) Checklist
 - C) Test bed
 - D) Traceability Matrix



Seat No.	
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B.E. (Information Technology) (Part – I) Examination, 2016
SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Tuesday, 6-12-2016

Marks : 80

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

- 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) What are the objectives of acceptance testing ? Explain different types of acceptance testing.
 - b) Explain with example gamma testing. What are its advantages and disadvantages ?
 - c) What are the challenges in testing also explain the test team approach ?
 - d) Explain in detail the levels of testing.
 - e) Explain the total defect classification in software testing.
3. Explain the following with example (**any two**) : **(2×5=10)**
- a) Developing testing methodologies.
 - b) Data and code coverage.
 - c) System testing.
4. Write note on (**any two**) : **(2×5=10)**
- a) Adhoc testing.
 - b) Big Bang testing.
 - c) Installation and regression testing.

Set Q



SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) Explain few techniques for isolating and reproducing a bug.
 - b) Explain in detail the open source testing tools.
 - c) State and explain the issues in software quality assurance.
 - d) What is test plan ? Explain the purpose of test plan with example.
 - e) Explain the process of tracking and reporting bugs.
6. Attempt **any two** : **(2×5=10)**
- a) Explain in detail software quality dilemma.
 - b) State and explain the formal approaches to SQA.
 - c) Explain with example software test automation.
7. Write note on (**any two**) : **(2×5=10)**
- a) ISO-9000 and CMM.
 - b) Elements of SQA.
 - c) Isolating and reproducing bugs.
-



Seat No.	
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**B.E. (Information Technology) (Part – I) Examination, 2016
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Tuesday, 6-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : (1×20=20)
- 1) System testing should investigate
 - A) Non-functional requirements only not functional requirements
 - B) Functional requirements only not non-functional requirements
 - C) Non-functional requirements and functional requirements
 - D) Non-functional requirements or functional requirements
 - 2) Which of the following is/are white box technique ?
 - A) Statement testing
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 - 3) _____ technique can be used to achieve input and output coverage.
 - A) Boundary value analysis
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 - 7) It measures the quality of processes used to create a quality product. It is a system of management activities, it is a preventive process, it applies for entire life cycle and deals with process.
 - A) Validation
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- 10) Which of the following should NOT normally be an objective for a test ?
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 - D) Schedule
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- A) Test automater, web specialist, DBA, test lead
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 - v. Data generation
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- 19) The user must assign the criteria the software must meet to be deemed acceptable. Ideally, this is included in the
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 - B) Project plan
 - C) Use cases
 - D) Both A) and B)
- 20) Retesting the entire application after a change has been made called as
- A) Full regression testing
 - B) Unit regression testing
 - C) Regional regression
 - D) Retesting



Seat No.	
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B.E. (Information Technology) (Part – I) Examination, 2016
SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Tuesday, 6-12-2016

Marks : 80

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

- 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) What are the objectives of acceptance testing ? Explain different types of acceptance testing.
 - b) Explain with example gamma testing. What are its advantages and disadvantages ?
 - c) What are the challenges in testing also explain the test team approach ?
 - d) Explain in detail the levels of testing.
 - e) Explain the total defect classification in software testing.
3. Explain the following with example (**any two**) : **(2×5=10)**
- a) Developing testing methodologies.
 - b) Data and code coverage.
 - c) System testing.
4. Write note on (**any two**) : **(2×5=10)**
- a) Adhoc testing.
 - b) Big Bang testing.
 - c) Installation and regression testing.

Set R



SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) Explain few techniques for isolating and reproducing a bug.
 - b) Explain in detail the open source testing tools.
 - c) State and explain the issues in software quality assurance.
 - d) What is test plan ? Explain the purpose of test plan with example.
 - e) Explain the process of tracking and reporting bugs.
6. Attempt **any two** : **(2×5=10)**
- a) Explain in detail software quality dilemma.
 - b) State and explain the formal approaches to SQA.
 - c) Explain with example software test automation.
7. Write note on (**any two**) : **(2×5=10)**
- a) ISO-9000 and CMM.
 - b) Elements of SQA.
 - c) Isolating and reproducing bugs.
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**B.E. (Information Technology) (Part – I) Examination, 2016
SOFTWARE TESTING AND QUALITY ASSURANCE**

Day and Date : Tuesday, 6-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) **Draw figure wherever is necessary.**
 - 3) **Assume suitable data if necessary.**
 - 4) **Q. No. 1 is compulsory. It should be solved in first 30 minutes in Answer book Page No. 3. Each question carries one mark.**
 - 5) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer : (1×20=20)
- 1) Which of the following test activities can be automated ?
 - i. Reviews and inspections
 - ii. Metrics gathering
 - iii. Test planning
 - iv. Test execution
 - v. Data generationA) i, iii, iv B) i, ii, iii C) ii, iv, v D) ii, iii, v
 - 2) Non-functional system testing includes
 - A) Testing to see where the system does not function properly
 - B) Testing quality attributes of the system including performance and usability
 - C) Testing a system feature using only the software required for that action
 - D) Testing a system feature using only the software required for that function
 - 3) Which of the following is not a major task of Exit criteria ?
 - A) Checking test logs against the exit criteria specified in test planning
 - B) Logging the outcome of test execution
 - C) Assessing if more tests are needed
 - D) Writing a test summary report for stakeholders
 - 4) The user must assign the criteria the software must meet to be deemed acceptable. Ideally, this is included in the
 - A) Software requirements specifications
 - B) Project plan
 - C) Use cases
 - D) Both A) and B)
 - 5) Retesting the entire application after a change has been made called as
 - A) Full regression testing
 - B) Unit regression testing
 - C) Regional regression
 - D) Retesting
 - 6) System testing should investigate
 - A) Non-functional requirements only not functional requirements
 - B) Functional requirements only not non-functional requirements
 - C) Non-functional requirements and functional requirements
 - D) Non-functional requirements or functional requirements
 - 7) Which of the following is/are white box technique ?
 - A) Statement testing
 - B) Decision testing
 - C) Condition coverage
 - D) All of these



- 8) _____ technique can be used to achieve input and output coverage.
- A) Boundary value analysis B) Equivalence partitioning
C) Decision table testing D) State transition testing
- 9) A type of functional testing, which investigates the functions relating to detection of threats, such as virus from malicious outsiders.
- A) Security Testing B) Recovery Testing
C) Performance Testing D) Functionality Testing
- 10) The approach/document used to make sure all the requirements are covered when writing test cases
- A) Test Matrix B) Checklist C) Test bed D) Traceability Matrix
- 11) Boundary value testing
- A) Is the same as equivalence partitioning tests
B) Test boundary conditions on, below and above the edges of input and output equivalence classes
C) Tests combinations of input circumstances
D) Is used in white box testing strategy
- 12) It measures the quality of processes used to create a quality product. It is a system of management activities, it is a preventive process, it applies for entire life cycle and deals with process.
- A) Validation B) Verification C) Quality Assurance D) Quality Control
- 13) Which is the non-functional testing ?
- A) Performance testing B) Unit testing C) Regression testing D) Sanity testing
- 14) What is the main purpose of impact analysis for testers ?
- A) To determine the programming effort needed to make the changes
B) To determine what proportion of the changes need to be tested
C) To determine how much the planned changes will affect users
D) To determine how the existing system may be affected by changes
- 15) Which of the following should NOT normally be an objective for a test ?
- A) To find faults in the software
B) To assess whether the software is ready for release
C) To demonstrate that the software doesn't work
D) To prove that the software is correct
- 16) Which of the following would NOT normally form part of a test plan ?
- A) Features to be tested B) Incident reports
C) Risks D) Schedule
- 17) A test manager wants to use the resources available for the automated testing of a web application. The best choice is
- A) Test automater, web specialist, DBA, test lead
B) Tester, test automater, web specialist, DBA
C) Tester, test lead, test automater, DBA
D) Tester, web specialist, test lead, test automater
- 18) A project manager has been transferred to a major software development project that is in the implementation phase. The highest priority for this project manager should be to
- A) Establish a relationship with the customer
B) Learn the project objectives and the existing project plan
C) Modify the project's organizational structure to meet the manager's management style
D) Ensure that the project proceeds at its current pace
- 19) Which of the following is a major task of test planning ?
- A) Determining the test approach B) Preparing test specifications
C) Evaluating exit criteria and reporting D) Measuring and analyzing results
- 20) Which of the following is the main purpose of the integration strategy for integration testing in the small ?
- A) To ensure that all of the small modules are tested adequately
B) To ensure that the system interfaces to other systems and networks
C) To specify which modules to combine when and how many at once
D) To ensure that the integration testing can be performed by a small team



Seat No.	
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B.E. (Information Technology) (Part – I) Examination, 2016
SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Tuesday, 6-12-2016

Marks : 80

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

- 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) What are the objectives of acceptance testing ? Explain different types of acceptance testing.
 - b) Explain with example gamma testing. What are its advantages and disadvantages ?
 - c) What are the challenges in testing also explain the test team approach ?
 - d) Explain in detail the levels of testing.
 - e) Explain the total defect classification in software testing.
3. Explain the following with example (**any two**) : **(2×5=10)**
- a) Developing testing methodologies.
 - b) Data and code coverage.
 - c) System testing.
4. Write note on (**any two**) : **(2×5=10)**
- a) Adhoc testing.
 - b) Big Bang testing.
 - c) Installation and regression testing.

Set S



SECTION – II

5. Solve **any four** : **(4×5=20)**
- a) Explain few techniques for isolating and reproducing a bug.
 - b) Explain in detail the open source testing tools.
 - c) State and explain the issues in software quality assurance.
 - d) What is test plan ? Explain the purpose of test plan with example.
 - e) Explain the process of tracking and reporting bugs.
6. Attempt **any two** : **(2×5=10)**
- a) Explain in detail software quality dilemma.
 - b) State and explain the formal approaches to SQA.
 - c) Explain with example software test automation.
7. Write note on (**any two**) : **(2×5=10)**
- a) ISO-9000 and CMM.
 - b) Elements of SQA.
 - c) Isolating and reproducing bugs.
-



SLR-EP – 237

Seat No.	
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Set

P

**B.E. (IT) (Part – II) Examination, 2016
INFORMATION RETRIEVAL (Old)**

Day and Date : Monday, 21-11-2016
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) _____ is a sequence of single word queries.
a) Context b) Phrase c) Fuzzy d) Ranking
- 2) A _____ is a set of syntactic features that must occur in a text segment.
a) Pattern b) Phrase c) Proximity d) Precision
- 3) Most documents and text collections have associated with them what is known as _____
a) index b) region c) metadata d) node
- 4) RTF stands for _____
a) Reach Text Format b) Rich Text Format
c) Real Time Format d) Real Tool Formula
- 5) SGML stands for _____
a) Standard Graphics Makeup Language
b) Static General Makeup Language
c) Single Generalized Markup Language
d) Standard Generalized Markup Language
- 6) XML stands for _____
a) eXtensible Markup Language b) eXtensible Makeup Language
c) eXternal Markup Language d) eXtemper Makeup Language

P.T.O.



- 7) Hy Time is an _____ architecture that specifies the generic hypermedia structure of documents.
a) HTML b) DHTML c) XML d) SGML
- 8) The inverted file structure is composed of two elements : the vocabulary and the _____.
a) Holocaust b) Occurrences c) Query d) Index
- 9) An _____ is a word oriented mechanism for indexing a text collection in order to speedup the searching task.
a) indirect searching b) internal list
c) inverted file d) incomplete document
- 10) A suffix tree for a text of n characters can be built in _____ time.
a) $O(n^2)$ b) $O(n)$ c) $O(n \log n)$ d) $O(n/2)$
- 11) MULTOS stands for _____.
a) Multidimensional Operating System
b) Multidimensional Office Server
c) Multimedia Offline Service
d) Multimedia Office Server
- 12) Retrieval models which combine information on text content with information on the document structure are called _____ model.
a) Boolean b) Vector
c) Classical d) Structured Text Retrieval
- 13) Crawler is NOT called as _____.
a) Knowbots b) Spiders c) Clusters d) Wanderers
- 14) _____ are Web servers that send a given query to several search engines, Web directories and other databases, collect the answers and unify them.
a) MetaLogic b) Crawlers c) Multimedia d) Metasearchers
- 15) CSS stands for _____.
a) Cascade Style Sheets b) Cascade Scroll Software
c) Cascade Steal Sheets d) Cascade Sound System

State the following statements are **True** or **False** :

- 16) OCR stands for Optical Cable Recognition.
- 17) GIF is bad for black and white picture.
- 18) BMP images contain animation.
- 19) The crawler runs on a local system and sends request to remote web server.
- 20) HTML documents cannot have other media embedded within them.



Seat No.	
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**B.E. (IT) (Part – II) Examination, 2016
INFORMATION RETRIEVAL (Old)**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction: Answer the following.

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

- 1) Explain shift-OR algorithm w.r.t pattern 'survey'.
- 2) Explain hierarchical structure in structural queries.
- 3) Write a short note on text and its formats.
- 4) Explain searching algorithm on an inverted index.
- 5) Explain Brute force in sequential searching.
- 6) Explain challenges in searching the web.

3. Attempt the following (**any 1**) : **10**

- 1) Explain two main tasks related to multimedia data modeling.
- 2) Explain structured text retrieval models.

4. Explain inverted files with diagram. **10**



5. Attempt the following (**any 4**): **(4×5=20)**
- 1) Explain vector model in classic information retrieval.
 - 2) Write a short note on Crawler.
 - 3) Write a short note on HyTime.
 - 4) Explain uncertainty, proximity and weights in query expressions.
 - 5) Explain Boolean queries in Indexing and Searching.
 - 6) Explain textual images in Multimedia.
6. Attempt the following (**any 1**): **10**
- 1) Explain Data Modeling and Data Retrieval with their types in Multimedia IR.
 - 2) Explain Web directories in Browsing.
7. Explain distributed collection in digital libraries. **10**
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Seat No.	
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Set Q

**B.E. (IT) (Part – II) Examination, 2016
INFORMATION RETRIEVAL (Old)**

Day and Date : Monday, 21-11-2016
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) XML stands for _____
 - a) eXtensible Markup Language
 - b) eXtensible Makeup Language
 - c) eXternal Markup Language
 - d) eXtemper Makeup Language
- 2) Hy Time is an _____ architecture that specifies the generic hypermedia structure of documents.
 - a) HTML
 - b) DHTML
 - c) XML
 - d) SGML
- 3) The inverted file structure is composed of two elements : the vocabulary and the _____.
 - a) Holocaust
 - b) Occurrences
 - c) Query
 - d) Index
- 4) An _____ is a word oriented mechanism for indexing a text collection in order to speedup the searching task.
 - a) indirect searching
 - b) internal list
 - c) inverted file
 - d) incomplete document
- 5) A suffix tree for a text of n characters can be built in _____ time.
 - a) $O(n^2)$
 - b) $O(n)$
 - c) $O(n \log n)$
 - d) $O(n/2)$
- 6) MULTOS stands for _____.
 - a) Multidimensional Operating System
 - b) Multidimensional Office Server
 - c) Multimedia Offline Service
 - d) Multimedia Office Server
- 7) Retrieval models which combine information on text content with information on the document structure are called _____ model.
 - a) Boolean
 - b) Vector
 - c) Classical
 - d) Structured Text Retrieval



- 8) Crawler is NOT called as _____
a) Knowbots b) Spiders c) Clusters d) Wanderers
- 9) _____ are Web servers that send a given query to several search engines, Web directories and other databases, collect the answers and unify them.
a) MetaLogic b) Crawlers c) Multimedia d) Metasearchers
- 10) CSS stands for _____
a) Cascade Style Sheets b) Cascade Scroll Software
c) Cascade Steal Sheets d) Cascade Sound System
- 11) _____ is a sequence of single word queries.
a) Context b) Phrase c) Fuzzy d) Ranking
- 12) A _____ is a set of syntactic features that must occur in a text segment.
a) Pattern b) Phrase c) Proximity d) Precision
- 13) Most documents and text collections have associated with them what is known as _____
a) index b) region c) metadata d) node
- 14) RTF stands for _____
a) Reach Text Format b) Rich Text Format
c) Real Time Format d) Real Tool Formula
- 15) SGML stands for _____
a) Standard Graphics Makeup Language
b) Static General Makeup Language
c) Single Generalized Markup Language
d) Standard Generalized Markup Language

State the following statements are **True** or **False** :

- 16) GIF is bad for black and white picture.
- 17) BMP images contain animation.
- 18) The crawler runs on a local system and sends request to remote web server.
- 19) HTML documents cannot have other media embedded within them.
- 20) OCR stands for Optical Cable Recognition.
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Seat No.	
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**B.E. (IT) (Part – II) Examination, 2016
INFORMATION RETRIEVAL (Old)**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction: Answer the following.

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

- 1) Explain shift-OR algorithm w.r.t pattern 'survey'.
- 2) Explain hierarchical structure in structural queries.
- 3) Write a short note on text and its formats.
- 4) Explain searching algorithm on an inverted index.
- 5) Explain Brute force in sequential searching.
- 6) Explain challenges in searching the web.

3. Attempt the following (**any 1**) : **10**

- 1) Explain two main tasks related to multimedia data modeling.
- 2) Explain structured text retrieval models.

4. Explain inverted files with diagram. **10**

Set Q



5. Attempt the following (**any 4**): **(4×5=20)**
- 1) Explain vector model in classic information retrieval.
 - 2) Write a short note on Crawler.
 - 3) Write a short note on HyTime.
 - 4) Explain uncertainty, proximity and weights in query expressions.
 - 5) Explain Boolean queries in Indexing and Searching.
 - 6) Explain textual images in Multimedia.
6. Attempt the following (**any 1**): **10**
- 1) Explain Data Modeling and Data Retrieval with their types in Multimedia IR.
 - 2) Explain Web directories in Browsing.
7. Explain distributed collection in digital libraries. **10**
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Seat No.	
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Set **R**

**B.E. (IT) (Part – II) Examination, 2016
INFORMATION RETRIEVAL (Old)**

Day and Date : Monday, 21-11-2016
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) MULTOS stands for _____
 - a) Multidimensional Operating System
 - b) Multidimensional Office Server
 - c) Multimedia Offline Service
 - d) Multimedia Office Server
- 2) Retrieval models which combine information on text content with information on the document structure are called _____ model.
 - a) Boolean
 - b) Vector
 - c) Classical
 - d) Structured Text Retrieval
- 3) Crawler is NOT called as _____
 - a) Knowbots
 - b) Spiders
 - c) Clusters
 - d) Wanderers
- 4) _____ are Web servers that send a given query to several search engines, Web directories and other databases, collect the answers and unify them.
 - a) MetaLogic
 - b) Crawlers
 - c) Multimedia
 - d) Metasearchers
- 5) CSS stands for _____
 - a) Cascade Style Sheets
 - b) Cascade Scroll Software
 - c) Cascade Steal Sheets
 - d) Cascade Sound System
- 6) _____ is a sequence of single word queries.
 - a) Context
 - b) Phrase
 - c) Fuzzy
 - d) Ranking

P.T.O.



- 7) A _____ is a set of syntactic features that must occur in a text segment.
a) Pattern b) Phrase c) Proximity d) Precision
- 8) Most documents and text collections have associated with them what is known as _____
a) index b) region c) metadata d) node
- 9) RTF stands for _____
a) Reach Text Format b) Rich Text Format
c) Real Time Format d) Real Tool Formula
- 10) SGML stands for _____
a) Standard Graphics Madeup Language
b) Static General Makeup Language
c) Single Generalized Markup Language
d) Standard Generalized Markup Language
- 11) XML stands for _____
a) eXtensible Markup Language b) eXtensible Makeup Language
c) eXternal Markup Language d) eXtemper Makeup Language
- 12) Hy Time is an _____ architecture that specifies the generic hypermedia structure of documents.
a) HTML b) DHTML c) XML d) SGML
- 13) The inverted file structure is composed of two elements : the vocabulary and the _____
a) Holocaust b) Occurrences c) Query d) Index
- 14) An _____ is a word oriented mechanism for indexing a text collection in order to speedup the searching task.
a) indirect searching b) internal list
c) inverted file d) incomplete document
- 15) A suffix tree for a text of n characters can be built in _____ time.
a) $O(n^2)$ b) $O(n)$ c) $O(n \log n)$ d) $O(n/2)$

State the following statements are **True** or **False** :

- 16) BMP images contain animation.
- 17) The crawler runs on a local system and sends request to remote web server.
- 18) HTML documents cannot have other media embedded within them.
- 19) OCR stands for Optical Cable Recognition.
- 20) GIF is bad for black and white picture.



Seat No.	
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**B.E. (IT) (Part – II) Examination, 2016
INFORMATION RETRIEVAL (Old)**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction: Answer the following.

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

- 1) Explain shift-OR algorithm w.r.t pattern 'survey'.
- 2) Explain hierarchical structure in structural queries.
- 3) Write a short note on text and its formats.
- 4) Explain searching algorithm on an inverted index.
- 5) Explain Brute force in sequential searching.
- 6) Explain challenges in searching the web.

3. Attempt the following (**any 1**) : **10**

- 1) Explain two main tasks related to multimedia data modeling.
- 2) Explain structured text retrieval models.

4. Explain inverted files with diagram. **10**

Set R



5. Attempt the following (**any 4**): **(4×5=20)**
- 1) Explain vector model in classic information retrieval.
 - 2) Write a short note on Crawler.
 - 3) Write a short note on HyTime.
 - 4) Explain uncertainty, proximity and weights in query expressions.
 - 5) Explain Boolean queries in Indexing and Searching.
 - 6) Explain textual images in Multimedia.
6. Attempt the following (**any 1**): **10**
- 1) Explain Data Modeling and Data Retrieval with their types in Multimedia IR.
 - 2) Explain Web directories in Browsing.
7. Explain distributed collection in digital libraries. **10**
-



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Seat No.	
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Set	S
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**B.E. (IT) (Part – II) Examination, 2016
INFORMATION RETRIEVAL (Old)**

Day and Date : Monday, 21-11-2016
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) Most documents and text collections have associated with them what is known as _____
a) index b) region c) metadata d) node
- 2) RTF stands for _____
a) Reach Text Format b) Rich Text Format
c) Real Time Format d) Real Tool Formula
- 3) SGML stands for _____
a) Standard Graphics Makeup Language
b) Static General Makeup Language
c) Single Generalized Markup Language
d) Standard Generalized Markup Language
- 4) _____ is a sequence of single word queries.
a) Context b) Phrase c) Fuzzy d) Ranking
- 5) A _____ is a set of syntactic features that must occur in a text segment.
a) Pattern b) Phrase c) Proximity d) Precision
- 6) The inverted file structure is composed of two elements : the vocabulary and the _____
a) Holocaust b) Occurrences c) Query d) Index
- 7) An _____ is a word oriented mechanism for indexing a text collection in order to speedup the searching task.
a) indirect searching b) internal list
c) inverted file d) incomplete document

P.T.O.



- 8) A suffix tree for a text of n characters can be built in _____ time.
a) $O(n^2)$ b) $O(n)$ c) $O(n \log n)$ d) $O(n/2)$
- 9) XML stands for _____
a) eXtensible Markup Language b) eXtensible Makeup Language
c) eXternal Markup Language d) eXtemper Makeup Language
- 10) Hy Time is an _____ architecture that specifies the generic hypermedia structure of documents.
a) HTML b) DHTML c) XML d) SGML
- 11) Crawler is NOT called as _____
a) Knowbots b) Spiders c) Clusters d) Wanderers
- 12) _____ are Web servers that send a given query to several search engines, Web directories and other databases, collect the answers and unify them.
a) MetaLogic b) Crawlers c) Multimedia d) Metasearchers
- 13) CSS stands for _____
a) Cascade Style Sheets b) Cascade Scroll Software
c) Cascade Steal Sheets d) Cascade Sound System
- 14) MULTOS stands for _____
a) Multidimensional Operating System
b) Multidimensional Office Server
c) Multimedia Offline Service
d) Multimedia Office Server
- 15) Retrieval models which combine information on text content with information on the document structure are called _____ model.
a) Boolean b) Vector
c) Classical d) Structured Text Retrieval

State the following statements are **True** or **False** :

- 16) The crawler runs on a local system and sends request to remote web server.
- 17) HTML documents cannot have other media embedded within them.
- 18) OCR stands for Optical Cable Recognition.
- 19) GIF is bad for black and white picture.
- 20) BMP images contain animation.
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Seat No.	
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**B.E. (IT) (Part – II) Examination, 2016
INFORMATION RETRIEVAL (Old)**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction: Answer the following.

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

- 1) Explain shift-OR algorithm w.r.t pattern 'survey'.
- 2) Explain hierarchical structure in structural queries.
- 3) Write a short note on text and its formats.
- 4) Explain searching algorithm on an inverted index.
- 5) Explain Brute force in sequential searching.
- 6) Explain challenges in searching the web.

3. Attempt the following (**any 1**) : **10**

- 1) Explain two main tasks related to multimedia data modeling.
- 2) Explain structured text retrieval models.

4. Explain inverted files with diagram. **10**

Set S



5. Attempt the following (**any 4**): **(4×5=20)**
- 1) Explain vector model in classic information retrieval.
 - 2) Write a short note on Crawler.
 - 3) Write a short note on HyTime.
 - 4) Explain uncertainty, proximity and weights in query expressions.
 - 5) Explain Boolean queries in Indexing and Searching.
 - 6) Explain textual images in Multimedia.
6. Attempt the following (**any 1**): **10**
- 1) Explain Data Modeling and Data Retrieval with their types in Multimedia IR.
 - 2) Explain Web directories in Browsing.
7. Explain distributed collection in digital libraries. **10**
-



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Seat No.	
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Set	P
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
MOBILE COMPUTING**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) In cellular system _____ multiplexing allows reuse of frequency.
a) Space b) Frequency c) Both d) None
- 2) _____ antenna type has multiple antennas in wireless radiation.
a) Omni direction b) Sectorized c) Directed d) Shadowing
- 3) In signal propagation following is not true
a) Within certain radius transmission is possible
b) Transmission signal can mix up with noise in detection range
c) Interference range is larger than detection range
d) None
- 4) Signal propagation not contain _____ range.
a) Transmission b) Detection c) Interference d) Receiving
- 5) Following is not multipath propagation effect
a) Delay b) Intersymbol interference
c) Short term fading d) Mid term fading
- 6) _____ is multiplexing type.
a) Space b) Amplitude c) Phase d) None
- 7) _____ spread spectrum not performs XOR with user bits.
a) Direct sequence b) Frequency hopping
c) Both d) None

P.T.O.



- 8) In GSM cellular system _____ channel allocation is used.
a) Fixed b) Dynamic c) Both d) None
- 9) _____ interface contains mechanism for wireless like TDMA, CDMA etc.
a) Um b) Abis c) Both d) None
- 10) Authentication is task of _____ within BSS.
a) BTS b) BSC c) Both d) None
- 11) COA provides IP address of _____
a) Foreign agent b) Home agent c) Both d) None
- 12) Binding request in network layer is send to know _____
a) Current location of MN b) Home network of MN
c) Both d) None
- 13) Indirect TCP and M-TCP use _____ mechanism.
a) Freeze b) Snoop c) Split d) None
- 14) _____ TCP has bad isolation problem.
a) Indirect b) M-TCP c) Both d) None
- 15) Snooping TCP has problem of
a) Security b) Latency c) Handover d) None
- 16) _____ technology uses radio signals.
a) Bluetooth b) Infrared c) X-ray d) None
- 17) _____ wireless networks do not need infrastructure.
a) Mobile b) Ad hoc c) Both d) None
- 18) WLAN offers _____ quality than wired LAN.
a) Lower b) Better c) Same d) None
- 19) One of the following is not true about Infrared transmission.
a) Simple and cheap b) Penetrate wall
c) Reflects wall d) None
- 20) PLCP in 802.11 protocol is
a) Physical Layer Connecting Protocol
b) Physical Layer Convergence Protocol
c) Parallel Layer Convergence Protocol
d) None
-



Seat No.	
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
MOBILE COMPUTING**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : Figures to ***right*** indicates ***full*** marks.

SECTION – I

2. Answer **any two** of the following : **14**
- a) Explain Omni direction and sectorized antenna. Can omni direction replaced by sectorized one ?
 - b) Explain in wireless transmission signal propagation.
 - c) Explain in wireless transmission in space multiplexing. Explain in wireless transmission spread spectrum.
3. Answer **any two** of the following : **14**
- a) Explain in detail the ALOHA random access protocols used in wireless systems.
 - b) How CDMA is efficient than other multiple access method.
 - c) What are the different mobile services ?
4. Answer the following : **12**
- a) GSM Security
 - b) GSM protocols.



SECTION – II

5. Answer **any two** of the following : **14**
- a) What do you mean by ad hoc networks ? How is an ad hoc network different from cellular network ?
 - b) Explain the Bluetooth with architecture.
 - c) Compare Wireless LAN and Wired LAN in detail.
6. Attempt **any two** of the following : **14**
- a) Explain IP packet delivery in the network layer.
 - b) How DHCP works in mobile network ?
 - c) How IP in IP encapsulation functions ?
7. Write short note : **12**
- a) Indirect TCP
 - b) Transaction oriented TCP.
-



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Seat No.	
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Set	Q
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
MOBILE COMPUTING**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) _____ technology uses radio signals.
a) Bluetooth b) Infrared c) X-ray d) None
- 2) _____ wireless networks do not need infrastructure.
a) Mobile b) Ad hoc c) Both d) None
- 3) WLAN offers _____ quality than wired LAN.
a) Lower b) Better c) Same d) None
- 4) One of the following is not true about Infrared transmission.
a) Simple and cheap b) Penetrate wall
c) Reflects wall d) None
- 5) PLCP in 802.11 protocol is
a) Physical Layer Connecting Protocol
b) Physical Layer Convergence Protocol
c) Parallel Layer Convergence Protocol
d) None
- 6) In cellular system _____ multiplexing allows reuse of frequency.
a) Space b) Frequency c) Both d) None
- 7) _____ antenna type has multiple antennas in wireless radiation.
a) Omni direction b) Sectorized c) Directed d) Shadowing

P.T.O.



- 8) In signal propagation following is not true
- a) Within certain radius transmission is possible
 - b) Transmission signal can mix up with noise in detection range
 - c) Interference range is larger than detection range
 - d) None
- 9) Signal propagation not contain _____ range.
- a) Transmission b) Detection c) Interference d) Receiving
- 10) Following is not multipath propagation effect
- a) Delay b) Intersymbol interference
 - c) Short term fading d) Mid term fading
- 11) _____ is multiplexing type.
- a) Space b) Amplitude c) Phase d) None
- 12) _____ spread spectrum not performs XOR with user bits.
- a) Direct sequence b) Frequency hopping
 - c) Both d) None
- 13) In GSM cellular system _____ channel allocation is used.
- a) Fixed b) Dynamic c) Both d) None
- 14) _____ interface contains mechanism for wireless like TDMA, CDMA etc.
- a) Um b) Abis c) Both d) None
- 15) Authentication is task of _____ within BSS.
- a) BTS b) BSC c) Both d) None
- 16) COA provides IP address of _____
- a) Foreign agent b) Home agent c) Both d) None
- 17) Binding request in network layer is send to know _____
- a) Current location of MN b) Home network of MN
 - c) Both d) None
- 18) Indirect TCP and M-TCP use _____ mechanism.
- a) Freeze b) Snoop c) Split d) None
- 19) _____ TCP has bad isolation problem.
- a) Indirect b) M-TCP c) Both d) None
- 20) Snooping TCP has problem of
- a) Security b) Latency c) Handover d) None



Seat No.	
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
MOBILE COMPUTING**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : Figures to ***right*** indicates ***full*** marks.

SECTION – I

2. Answer **any two** of the following : **14**
- a) Explain Omni direction and sectorized antenna. Can omni direction replaced by sectorized one ?
 - b) Explain in wireless transmission signal propagation.
 - c) Explain in wireless transmission in space multiplexing. Explain in wireless transmission spread spectrum.
3. Answer **any two** of the following : **14**
- a) Explain in detail the ALOHA random access protocols used in wireless systems.
 - b) How CDMA is efficient than other multiple access method.
 - c) What are the different mobile services ?
4. Answer the following : **12**
- a) GSM Security
 - b) GSM protocols.



SECTION – II

5. Answer **any two** of the following : **14**
- a) What do you mean by ad hoc networks ? How is an ad hoc network different from cellular network ?
 - b) Explain the Bluetooth with architecture.
 - c) Compare Wireless LAN and Wired LAN in detail.
6. Attempt **any two** of the following : **14**
- a) Explain IP packet delivery in the network layer.
 - b) How DHCP works in mobile network ?
 - c) How IP in IP encapsulation functions ?
7. Write short note : **12**
- a) Indirect TCP
 - b) Transaction oriented TCP.
-



SLR-EP – 238

Seat No.	
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Set	R
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
MOBILE COMPUTING**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) COA provides IP address of _____
a) Foreign agent b) Home agent c) Both d) None
- 2) Binding request in network layer is send to know _____
a) Current location of MN b) Home network of MN
c) Both d) None
- 3) Indirect TCP and M-TCP use _____ mechanism.
a) Freeze b) Snoop c) Split d) None
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a) Security b) Latency c) Handover d) None
- 6) _____ technology uses radio signals.
a) Bluetooth b) Infrared c) X-ray d) None
- 7) _____ wireless networks do not need infrastructure.
a) Mobile b) Ad hoc c) Both d) None
- 8) WLAN offers _____ quality than wired LAN.
a) Lower b) Better c) Same d) None

P.T.O.



- 9) One of the following is not true about Infrared transmission.
- a) Simple and cheap
 - b) Penetrate wall
 - c) Reflects wall
 - d) None
- 10) PLCP in 802.11 protocol is
- a) Physical Layer Connecting Protocol
 - b) Physical Layer Convergence Protocol
 - c) Parallel Layer Convergence Protocol
 - d) None
- 11) In cellular system _____ multiplexing allows reuse of frequency.
- a) Space
 - b) Frequency
 - c) Both
 - d) None
- 12) _____ antenna type has multiple antennas in wireless radiation.
- a) Omni direction
 - b) Sectorized
 - c) Directed
 - d) Shadowing
- 13) In signal propagation following is not true
- a) Within certain radius transmission is possible
 - b) Transmission signal can mix up with noise in detection range
 - c) Interference range is larger than detection range
 - d) None
- 14) Signal propagation not contain _____ range.
- a) Transmission
 - b) Detection
 - c) Interference
 - d) Receiving
- 15) Following is not multipath propagation effect
- a) Delay
 - b) Intersymbol interference
 - c) Short term fading
 - d) Mid term fading
- 16) _____ is multiplexing type.
- a) Space
 - b) Amplitude
 - c) Phase
 - d) None
- 17) _____ spread spectrum not performs XOR with user bits.
- a) Direct sequence
 - b) Frequency hopping
 - c) Both
 - d) None
- 18) In GSM cellular system _____ channel allocation is used.
- a) Fixed
 - b) Dynamic
 - c) Both
 - d) None
- 19) _____ interface contains mechanism for wireless like TDMA, CDMA etc.
- a) Um
 - b) Abis
 - c) Both
 - d) None
- 20) Authentication is task of _____ within BSS.
- a) BTS
 - b) BSC
 - c) Both
 - d) None



Seat No.	
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
MOBILE COMPUTING**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : Figures to ***right*** indicates ***full*** marks.

SECTION – I

2. Answer **any two** of the following : **14**
- a) Explain Omni direction and sectorized antenna. Can omni direction replaced by sectorized one ?
 - b) Explain in wireless transmission signal propagation.
 - c) Explain in wireless transmission in space multiplexing. Explain in wireless transmission spread spectrum.
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 - b) How CDMA is efficient than other multiple access method.
 - c) What are the different mobile services ?
4. Answer the following : **12**
- a) GSM Security
 - b) GSM protocols.



SECTION – II

5. Answer **any two** of the following : **14**
- a) What do you mean by ad hoc networks ? How is an ad hoc network different from cellular network ?
 - b) Explain the Bluetooth with architecture.
 - c) Compare Wireless LAN and Wired LAN in detail.
6. Attempt **any two** of the following : **14**
- a) Explain IP packet delivery in the network layer.
 - b) How DHCP works in mobile network ?
 - c) How IP in IP encapsulation functions ?
7. Write short note : **12**
- a) Indirect TCP
 - b) Transaction oriented TCP.
-



SLR-EP – 238

Seat No.	
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Set	S
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
MOBILE COMPUTING**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

2) **Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q.P. Set (P/Q/R/S) on Top of Page.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) _____ is multiplexing type.
a) Space b) Amplitude c) Phase d) None
- 2) _____ spread spectrum not performs XOR with user bits.
a) Direct sequence b) Frequency hopping
c) Both d) None
- 3) In GSM cellular system _____ channel allocation is used.
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a) Freeze b) Snoop c) Split d) None

P.T.O.



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a) Indirect b) M-TCP c) Both d) None
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a) Security b) Latency c) Handover d) None
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a) Bluetooth b) Infrared c) X-ray d) None
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a) Lower b) Better c) Same d) None
- 14) One of the following is not true about Infrared transmission.
a) Simple and cheap b) Penetrate wall
c) Reflects wall d) None
- 15) PLCP in 802.11 protocol is
a) Physical Layer Connecting Protocol
b) Physical Layer Convergence Protocol
c) Parallel Layer Convergence Protocol
d) None
- 16) In cellular system _____ multiplexing allows reuse of frequency.
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a) Omni direction b) Sectorized c) Directed d) Shadowing
- 18) In signal propagation following is not true
a) Within certain radius transmission is possible
b) Transmission signal can mix up with noise in detection range
c) Interference range is larger than detection range
d) None
- 19) Signal propagation not contain _____ range.
a) Transmission b) Detection c) Interference d) Receiving
- 20) Following is not multipath propagation effect
a) Delay b) Intersymbol interference
c) Short term fading d) Mid term fading



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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
MOBILE COMPUTING**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

Instruction : Figures to ***right*** indicates ***full*** marks.

SECTION – I

2. Answer **any two** of the following : **14**
- a) Explain Omni direction and sectorized antenna. Can omni direction replaced by sectorized one ?
 - b) Explain in wireless transmission signal propagation.
 - c) Explain in wireless transmission in space multiplexing. Explain in wireless transmission spread spectrum.
3. Answer **any two** of the following : **14**
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 - b) How CDMA is efficient than other multiple access method.
 - c) What are the different mobile services ?
4. Answer the following : **12**
- a) GSM Security
 - b) GSM protocols.



SECTION – II

5. Answer **any two** of the following : **14**
- a) What do you mean by ad hoc networks ? How is an ad hoc network different from cellular network ?
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 - b) How DHCP works in mobile network ?
 - c) How IP in IP encapsulation functions ?
7. Write short note : **12**
- a) Indirect TCP
 - b) Transaction oriented TCP.
-



Seat No.	
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Set	P
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**B.E. (I.T.) (Part – II) Examination, 2016
NETWORK SECURITY (Old)**

Day and Date : Wednesday, 23-11-2016
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) Public key system is useful because
 - a) it uses two keys
 - b) there is no key distribution problem as public key can be kept in a commonly accessible database
 - c) private key can be kept secret
 - d) it is a symmetric key system
- 2) One security protocol for the e-mail system is
 - a) IPSec
 - b) SSL
 - c) PGP
 - d) None of the above
- 3) Message _____ means that the receiver is ensured that the message is coming from the intended sender, not an imposter.
 - a) Confidentiality
 - b) Integrity
 - c) Authentication
 - d) None of the above
- 4) Kerberos is an encryption-based system that uses
 - a) Secret key encryption
 - b) Public key encryption
 - c) Both (a) and (d)
 - d) Data key encryption
- 5) A (n) _____ function creates a message digest out of a message.
 - a) encryption
 - b) decryption
 - c) hash
 - d) none of the above
- 6) A program that fills a computer system with self-replicating information thus clogging the system is called a
 - a) virus
 - b) worm
 - c) denial-of-service attack
 - d) damage
- 7) _____ provide security at the transport layer.
 - a) SSL
 - b) TLS
 - c) Either (a) or (b)
 - d) Both (a) and (b)
- 8) Which one of the following algorithm is not used in asymmetric-key cryptography ?
 - a) RSA algorithm
 - b) Diffie-Hellman algorithm
 - c) Electronic code book algorithm
 - d) None of the mentioned

P.T.O.



Seat No.	
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**B.E. (I.T.) (Part – II) Examination, 2016
NETWORK SECURITY (Old)**

Day and Date : Wednesday, 23-11-2016
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. Write short notes (**any four**) : **20**
- a) Digital Signature
 - b) Block Modes of Operation
 - c) Differential and Linear cryptanalysis
 - d) Security Services (X.800)
 - e) Network Attacks and its types
 - f) Network Security Model.
3. Explain Feistel Cipher structure in detail. Which parameters and design choices determine the actual algorithm of a Feistel Cipher ? **10**

OR

What is DES Encryption ? Explain its general depiction with its strengths and weakness.

4. Explain Diffie-Hellman key exchange algorithm with example. **10**

Set P



SECTION – II

5. Write short notes (**any four**) : **20**
- a) Honey Pots
 - b) Kerberos 4 Vs Kerberos 5
 - c) Tunnel Mode Vs Transport Mode Encryption
 - d) PGP Services
 - e) IP Security Services and Associations.

6. What is Firewall ? State the characteristics of Firewall and its types with diagram. **10**

OR

What is X.509 authentication service ? Explain in detail X.509 certificate.

7. Explain in detail with diagram : **10**
- a) SSL Architecture
 - b) SSL Record Protocol and its Operation.
-



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Q

**B.E. (I.T.) (Part – II) Examination, 2016
NETWORK SECURITY (Old)**

Day and Date : Wednesday, 23-11-2016
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) ECB and CBC are what type of ciphers ?
a) Block b) Ream c) Field d) None of the above
- 2) A program that migrates through networks and operating systems and attaches itself to different programs and databases is a
a) virus b) worm
c) denial-of-service attack d) damage
- 3) _____ was invented by Phil Zimmerman.
a) IPsec b) SSL c) PGP d) None of the above
- 4) _____ is the science and art of transforming messages to make them secure and immune to attacks.
a) Cryptography b) Crypto analysis
c) Either (a) or (b) d) Neither (a) nor (b)
- 5) A firewall may be implemented in
a) routers which connect intranet to internet
b) bridges used in an intranet
c) expensive modem
d) user's application programs
- 6) Public key system is useful because
a) it uses two keys
b) there is no key distribution problem as public key can be kept in a commonly accessible database
c) private key can be kept secret
d) it is a symmetric key system
- 7) One security protocol for the e-mail system is
a) IPsec b) SSL c) PGP d) None of the above



Seat No.	
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**B.E. (I.T.) (Part – II) Examination, 2016
NETWORK SECURITY (Old)**

Day and Date : Wednesday, 23-11-2016
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. Write short notes (**any four**) : **20**
- a) Digital Signature
 - b) Block Modes of Operation
 - c) Differential and Linear cryptanalysis
 - d) Security Services (X.800)
 - e) Network Attacks and its types
 - f) Network Security Model.
3. Explain Feistel Cipher structure in detail. Which parameters and design choices determine the actual algorithm of a Feistel Cipher ? **10**

OR

What is DES Encryption ? Explain its general depiction with its strengths and weakness.

4. Explain Diffie-Hellman key exchange algorithm with example. **10**

Set Q



SECTION – II

5. Write short notes (**any four**) : **20**
- a) Honey Pots
 - b) Kerberos 4 Vs Kerberos 5
 - c) Tunnel Mode Vs Transport Mode Encryption
 - d) PGP Services
 - e) IP Security Services and Associations.

6. What is Firewall ? State the characteristics of Firewall and its types with diagram. **10**

OR

What is X.509 authentication service ? Explain in detail X.509 certificate.

7. Explain in detail with diagram : **10**
- a) SSL Architecture
 - b) SSL Record Protocol and its Operation.
-



Seat No.	
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Set	R
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**B.E. (I.T.) (Part – II) Examination, 2016
NETWORK SECURITY (Old)**

Day and Date : Wednesday, 23-11-2016
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) The _____ is a number or a set of numbers on which the cipher operates.
a) cipher b) secret c) key d) none of the above
- 2) Programs that come into a computer system disguised as something else are called
a) spoofers b) loggers c) defacers d) trojan horse
- 3) SSL provides
a) Message integrity b) Confidentiality
c) Compression d) All of the above
- 4) In public key encryption if A wants to send an encrypted message
a) A encrypts message using his private key
b) A encrypts message using B's private key
c) A encrypts message using B's public key
d) A encrypts message using his public key
- 5) The _____ method provides a one-time session key for two parties.
a) Deffie-Hellman b) RSA c) DES d) AES
- 6) ECB and CBC are what type of ciphers ?
a) Block b) Ream c) Field d) None of the above
- 7) A program that migrates through networks and operating systems and attaches itself to different programs and databases is a
a) virus b) worm
c) denial-of-service attack d) damage
- 8) _____ was invented by Phil Zimmerman.
a) IPsec b) SSL c) PGP d) None of the above
- 9) _____ is the science and art of transforming messages to make them secure and immune to attacks.
a) Cryptography b) Crypto analysis
c) Either (a) or (b) d) Neither (a) nor (b)

P.T.O.



- 10) A firewall may be implemented in
- routers which connect intranet to internet
 - bridges used in an intranet
 - expensive modem
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- 11) Public key system is useful because
- it uses two keys
 - there is no key distribution problem as public key can be kept in a commonly accessible database
 - private key can be kept secret
 - it is a symmetric key system
- 12) One security protocol for the e-mail system is
- IPSec
 - SSL
 - PGP
 - None of the above
- 13) Message _____ means that the receiver is ensured that the message is coming from the intended sender, not an imposter.
- Confidentiality
 - Integrity
 - Authentication
 - None of the above
- 14) Kerberos is an encryption-based system that uses
- Secret key encryption
 - Public key encryption
 - Both (a) and (d)
 - Data key encryption
- 15) A (n) _____ function creates a message digest out of a message.
- encryption
 - decryption
 - hash
 - none of the above
- 16) A program that fills a computer system with self-replicating information thus clogging the system is called a
- virus
 - worm
 - denial-of-service attack
 - damage
- 17) _____ provide security at the transport layer.
- SSL
 - TLS
 - Either (a) or (b)
 - Both (a) and (b)
- 18) Which one of the following algorithm is not used in asymmetric-key cryptography ?
- RSA algorithm
 - Diffie-Hellman algorithm
 - Electronic code book algorithm
 - None of the mentioned
- 19) The following cipher text was received. The plaintext was permuted using permutation (34152) and substitution. Substitute character by character + 3 (A ->D, etc.). The plain text after decryption is : Cipher text : PDLJDLXHVQC
- MAIGAIUESNZ
 - IAMAGENIUSZ
 - LDPDJHPLXVZ
 - IAMAGENIUSC
- 20) The _____ cipher reorders the plaintext characters to create a ciphertexts.
- Substitution
 - Transposition
 - Either (a) or (b)
 - Neither (a) nor (b)



Seat No.	
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**B.E. (I.T.) (Part – II) Examination, 2016
NETWORK SECURITY (Old)**

Day and Date : Wednesday, 23-11-2016
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. Write short notes (**any four**) : **20**
- a) Digital Signature
 - b) Block Modes of Operation
 - c) Differential and Linear cryptanalysis
 - d) Security Services (X.800)
 - e) Network Attacks and its types
 - f) Network Security Model.
3. Explain Feistel Cipher structure in detail. Which parameters and design choices determine the actual algorithm of a Feistel Cipher ? **10**

OR

What is DES Encryption ? Explain its general depiction with its strengths and weakness.

4. Explain Diffie-Hellman key exchange algorithm with example. **10**

Set R



SECTION – II

5. Write short notes (**any four**) : **20**
- a) Honey Pots
 - b) Kerberos 4 Vs Kerberos 5
 - c) Tunnel Mode Vs Transport Mode Encryption
 - d) PGP Services
 - e) IP Security Services and Associations.

6. What is Firewall ? State the characteristics of Firewall and its types with diagram. **10**

OR

What is X.509 authentication service ? Explain in detail X.509 certificate.

7. Explain in detail with diagram : **10**
- a) SSL Architecture
 - b) SSL Record Protocol and its Operation.
-



- 9) In public key encryption if A wants to send an encrypted message
- a) A encrypts message using his private key
 - b) A encrypts message using B's private key
 - c) A encrypts message using B's public key
 - d) A encrypts message using his public key
- 10) The _____ method provides a one-time session key for two parties.
- a) Diffie-Hellman
 - b) RSA
 - c) DES
 - d) AES
- 11) ECB and CBC are what type of ciphers ?
- a) Block
 - b) Ream
 - c) Field
 - d) None of the above
- 12) A program that migrates through networks and operating systems and attaches itself to different programs and databases is a
- a) virus
 - b) worm
 - c) denial-of-service attack
 - d) damage
- 13) _____ was invented by Phil Zimmerman.
- a) IPSec
 - b) SSL
 - c) PGP
 - d) None of the above
- 14) _____ is the science and art of transforming messages to make them secure and immune to attacks.
- a) Cryptography
 - b) Crypto analysis
 - c) Either (a) or (b)
 - d) Neither (a) nor (b)
- 15) A firewall may be implemented in
- a) routers which connect intranet to internet
 - b) bridges used in an intranet
 - c) expensive modem
 - d) user's application programs
- 16) Public key system is useful because
- a) it uses two keys
 - b) there is no key distribution problem as public key can be kept in a commonly accessible database
 - c) private key can be kept secret
 - d) it is a symmetric key system
- 17) One security protocol for the e-mail system is
- a) IPSec
 - b) SSL
 - c) PGP
 - d) None of the above
- 18) Message _____ means that the receiver is ensured that the message is coming from the intended sender, not an imposter.
- a) Confidentiality
 - b) Integrity
 - c) Authentication
 - d) None of the above
- 19) Kerberos is an encryption-based system that uses
- a) Secret key encryption
 - b) Public key encryption
 - c) Both (a) and (d)
 - d) Data key encryption
- 20) A (n) _____ function creates a message digest out of a message.
- a) encryption
 - b) decryption
 - c) hash
 - d) none of the above



Seat No.	
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**B.E. (I.T.) (Part – II) Examination, 2016
NETWORK SECURITY (Old)**

Day and Date : Wednesday, 23-11-2016
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. Write short notes (**any four**) : **20**
- a) Digital Signature
 - b) Block Modes of Operation
 - c) Differential and Linear cryptanalysis
 - d) Security Services (X.800)
 - e) Network Attacks and its types
 - f) Network Security Model.
3. Explain Feistel Cipher structure in detail. Which parameters and design choices determine the actual algorithm of a Feistel Cipher ? **10**

OR

What is DES Encryption ? Explain its general depiction with its strengths and weakness.

4. Explain Diffie-Hellman key exchange algorithm with example. **10**

Set S



SECTION – II

5. Write short notes (**any four**) : **20**
- a) Honey Pots
 - b) Kerberos 4 Vs Kerberos 5
 - c) Tunnel Mode Vs Transport Mode Encryption
 - d) PGP Services
 - e) IP Security Services and Associations.

6. What is Firewall ? State the characteristics of Firewall and its types with diagram. **10**

OR

What is X.509 authentication service ? Explain in detail X.509 certificate.

7. Explain in detail with diagram : **10**
- a) SSL Architecture
 - b) SSL Record Protocol and its Operation.
-



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Seat No.	
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Set	P
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**B.E. (Information Technology) (New) (Part – II) Examination, 2016
INFORMATION RETRIEVAL**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions:** 1) **All questions are compulsory.**
2) **Figures to the right indicate marks to a question.**
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. A) Choose correct alternative (s) : **10**
- 1) If query is 'Information Retrieval' and system retrieves all pages containing information, retrieval or both. This is example of _____ retrieval.
a) Data b) Information c) Multimedia d) None of these
 - 2) If relevant set of documents with respect to query q has 80 documents and answer set to query has retrieved 60 documents. If the fifth document in answer set is first relevant then we have precision of _____ .
a) 10% b) 9% c) 100% d) 20%
 - 3) A word which is appearing every document in the collection of thousand documents can be considered as index term.
a) Yes b) No
 - 4) In skewed energy spectrum $O(F^{-b})$ _____ noise represents successfully stock movements and exchange rates.
a) Brown b) Black c) Pink d) White
 - 5) _____ provides indexing mechanism and query interface to the data.
a) Gatherer b) Broker
c) Object Cache d) Replication Manager
 - 6) Regular expression 'pro(blem|tein) (s|ε) (0|1|2)*' will match word _____
a) problem012 b) problems1102
c) protein11222 d) all of them

P.T.O.



- 7) _____ ranking algorithm depends on query and pages in answer set.
- a) HITS b) Pagerank c) Webquery d) Most Cited
- 8) In Shift-OR algorithm, state of search is kept in a machine word $D = d_m \dots d_1$. A match is reported whenever _____
- a) d_m bit is set to 1 b) d_m bit is set to 0
c) d_1 bit is set to 1 d) d_1 bit is set to 0
- 9) In Brute force approach, if text is having 90 characters and pattern is having 10 characters, how many search comparisons will be required at worst case ?
- a) 9 b) 10 c) 90 d) 900
- 10) _____ evaluation allows the application to control when to do work of obtaining new results.
- a) Full b) Lazy

B) Match correctly :

5

- | | |
|---------------|---|
| 1) Fuzzy | a) Find objects containing apple |
| 2) Attribute | b) Find objects containing word OFFICE |
| 3) Content | c) Find objects similar to car |
| 4) Structural | d) Find objects having red color |
| 5) Semantic | e) Find objects containing a video clip |

C) State whether the following statement is **true** or **false** :

5

- 1) Browsing and searching are the same tasks.
 - 2) The range between words 'held' and 'hold' will retrieve hoax.
 - 3) In vector model, greater the angle between document vector and query vector, they are closer.
 - 4) False dismissal means query should not miss any qualifying object.
 - 5) Web pages retrieved by search engine in response to a user query are ranked, usually using statistics related to terms in the query.
-



Seat No.	
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**B.E. (Information Technology) (New) (Part – II) Examination, 2016
INFORMATION RETRIEVAL**

Day and Date : Monday, 21-11-2016

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 structured retrieval model based on proximal nodes.

2) How Boolean queries are evaluated ?

Explain lazy evaluation in detail for the query : retrieval and (information or data)

If resulting documents for each word are (1, 3, 4), (2, 4, 6), (2, 3, 7).

3) Construct nondeterministic finite automaton for pattern 'course' with at most 2 errors and find whether word 'court' is accepted or not.

4) Explain context queries with example.

5) Discuss the scenarios when sequential searching or data structures are preferred.

6) Why recall and precision are not appropriate measures ?



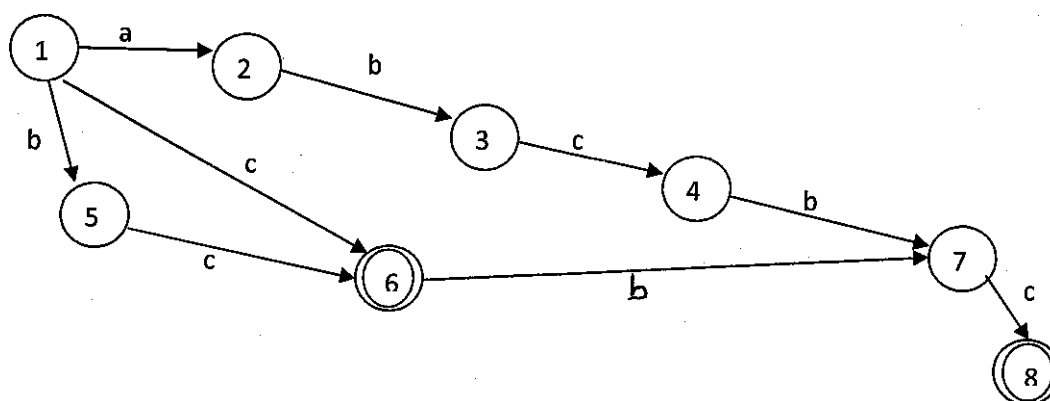
3. Attempt **any one** : 10

1) Why single value summaries are required in performance evaluation? Explain different methods for finding precision as single value summary.

2) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.

Pattern : cbcba

Text : aabacbacbcba.



4. How to construct signature files ? How to search word and context queries using signature file ? 10

SECTION – II

5. Attempt **any four** : 20

1) Explain how multimedia is represented inside the system ?

2) Explain different techniques of crawling web.

3) Explain architectural issues in digital library.

4) Discuss the problems related to web data.

5) Explain steps of data retrieval in multimedia retrieval.

6) How to specify different conditions on multimedia data ?

6. Attempt **any one** : 10

1) Define conceptual structure of type Generic Letter and Business_product_letter.

2) Why GEMINI approach is preferred ? Explain dimensionality curse and cross talk problem with example.

7. What is ranking ? Explain HITS and Pagerank algorithm. 10



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Seat No.	
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Set	Q
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**B.E. (Information Technology) (New) (Part – II) Examination, 2016
INFORMATION RETRIEVAL**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions:** 1) **All questions are compulsory.**
2) Figures to the **right** indicate marks to a question.
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. A) Match correctly :

5

- | | |
|---------------|---|
| 1) Fuzzy | a) Find objects containing apple |
| 2) Attribute | b) Find objects containing word OFFICE |
| 3) Content | c) Find objects similar to car |
| 4) Structural | d) Find objects having red color |
| 5) Semantic | e) Find objects containing a video clip |

B) State whether the following statement is **true** or **false** :

5

- 1) Browsing and searching are the same tasks.
- 2) The range between words 'held' and 'hold' will retrieve hoax.
- 3) In vector model, greater the angle between document vector and query vector, they are closer.
- 4) False dismissal means query should not miss any qualifying object.
- 5) Web pages retrieved by search engine in response to a user query are ranked, usually using statistics related to terms in the query.

C) Choose correct alternative (s) :

10

- 1) If query is 'Information Retrieval' and system retrieves all pages containing information, retrieval or both. This is example of _____ retrieval.
a) Data b) Information c) Multimedia d) None of these
- 2) If relevant set of documents with respect to query q has 80 documents and answer set to query has retrieved 60 documents. If the fifth document in answer set is first relevant then we have precision of _____ .
a) 10% b) 9% c) 100% d) 20%

P.T.O.



Seat No.	
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**B.E. (Information Technology) (New) (Part – II) Examination, 2016
INFORMATION RETRIEVAL**

Day and Date : Monday, 21-11-2016

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 structured retrieval model based on proximal nodes.

2) How Boolean queries are evaluated ?

Explain lazy evaluation in detail for the query : retrieval and (information or data)

If resulting documents for each word are (1, 3, 4), (2, 4, 6), (2, 3, 7).

3) Construct nondeterministic finite automaton for pattern 'course' with at most 2 errors and find whether word 'court' is accepted or not.

4) Explain context queries with example.

5) Discuss the scenarios when sequential searching or data structures are preferred.

6) Why recall and precision are not appropriate measures ?

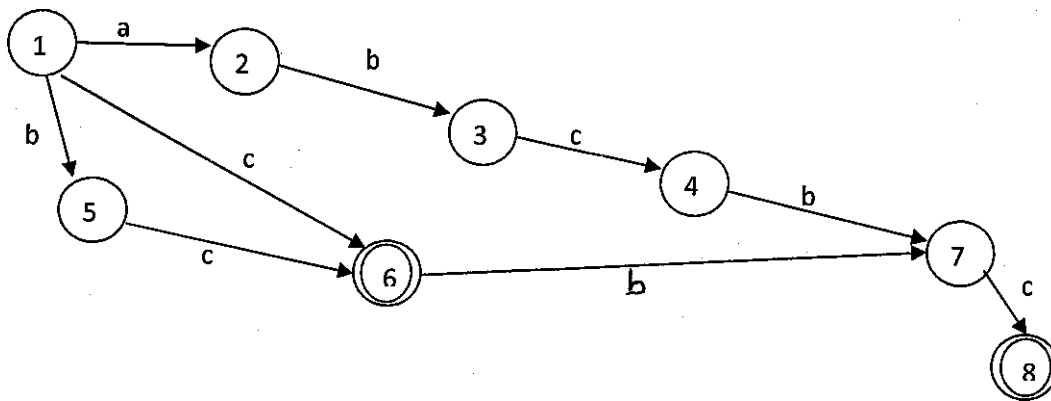


3. Attempt **any one** : 10

- 1) Why single value summaries are required in performance evaluation? Explain different methods for finding precision as single value summary.
- 2) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.

Pattern : cbcba

Text : aabacbacbcba.



4. How to construct signature files ? How to search word and context queries using signature file ? 10

SECTION – II

5. Attempt **any four** : 20

- 1) Explain how multimedia is represented inside the system ?
- 2) Explain different techniques of crawling web.
- 3) Explain architectural issues in digital library.
- 4) Discuss the problems related to web data.
- 5) Explain steps of data retrieval in multimedia retrieval.
- 6) How to specify different conditions on multimedia data ?

6. Attempt **any one** : 10

- 1) Define conceptual structure of type Generic Letter and Business_product_letter.
- 2) Why GEMINI approach is preferred ? Explain dimensionality curse and cross talk problem with example.

7. What is ranking ? Explain HITS and Pagerank algorithm. 10



Seat No.	
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Set	R
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**B.E. (Information Technology) (New) (Part – II) Examination, 2016
INFORMATION RETRIEVAL**

Day and Date : Monday, 21-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :**
- 1) **All questions are compulsory.**
 - 2) **Figures to the right indicate marks to a question.**
 - 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. A) Choose correct alternative (s) : 10
- 1) Regular expression 'pro(blem|tein) (s| ϵ) (0|1|2)*' will match word _____
a) problem012
b) problems1102
c) protein11222
d) all of them
 - 2) _____ ranking algorithm depends on query and pages in answer set.
a) HITS
b) Pagerank
c) Webquery
d) Most Cited
 - 3) In Shift-OR algorithm, state of search is kept in a machine word $D = d_m \dots d_1$. A match is reported whenever _____
a) d_m bit is set to 1
b) d_m bit is set to 0
c) d_1 bit is set to 1
d) d_1 bit is set to 0
 - 4) In Brute force approach, if text is having 90 characters and pattern is having 10 characters, how many search comparisons will be required at worst case ?
a) 9
b) 10
c) 90
d) 900
 - 5) _____ evaluation allows the application to control when to do work of obtaining new results.
a) Full
b) Lazy
 - 6) If query is 'Information Retrieval' and system retrieves all pages containing information, retrieval or both. This is example of _____ retrieval.
a) Data
b) Information
c) Multimedia
d) None of these

P.T.O.



- 7) If relevant set of documents with respect to query q has 80 documents and answer set to query has retrieved 60 documents. If the fifth document in answer set is first relevant then we have precision of _____ .
a) 10% b) 9% c) 100% d) 20%
- 8) A word which is appearing every document in the collection of thousand documents can be considered as index term.
a) Yes b) No
- 9) In skewed energy spectrum $O(F^{-b})$ _____ noise represents successfully stock movements and exchange rates.
a) Brown b) Black c) Pink d) White
- 10) _____ provides indexing mechanism and query interface to the data.
a) Gatherer b) Broker
c) Object Cache d) Replication Manager

B) Match correctly :

5

- | | |
|---------------|---|
| 1) Fuzzy | a) Find objects containing apple |
| 2) Attribute | b) Find objects containing word OFFICE |
| 3) Content | c) Find objects similar to car |
| 4) Structural | d) Find objects having red color |
| 5) Semantic | e) Find objects containing a video clip |

C) State whether the following statement is **true** or **false** :

5

- 1) Browsing and searching are the same tasks.
- 2) The range between words 'held' and 'hold' will retrieve hoax.
- 3) In vector model, greater the angle between document vector and query vector, they are closer.
- 4) False dismissal means query should not miss any qualifying object.
- 5) Web pages retrieved by search engine in response to a user query are ranked, usually using statistics related to terms in the query.



Seat No.	
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**B.E. (Information Technology) (New) (Part – II) Examination, 2016
INFORMATION RETRIEVAL**

Day and Date : Monday, 21-11-2016

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 structured retrieval model based on proximal nodes.

2) How Boolean queries are evaluated ?

Explain lazy evaluation in detail for the query : retrieval and (information or data)

If resulting documents for each word are (1, 3, 4), (2, 4, 6), (2, 3, 7).

3) Construct nondeterministic finite automaton for pattern 'course' with at most 2 errors and find whether word 'court' is accepted or not.

4) Explain context queries with example.

5) Discuss the scenarios when sequential searching or data structures are preferred.

6) Why recall and precision are not appropriate measures ?

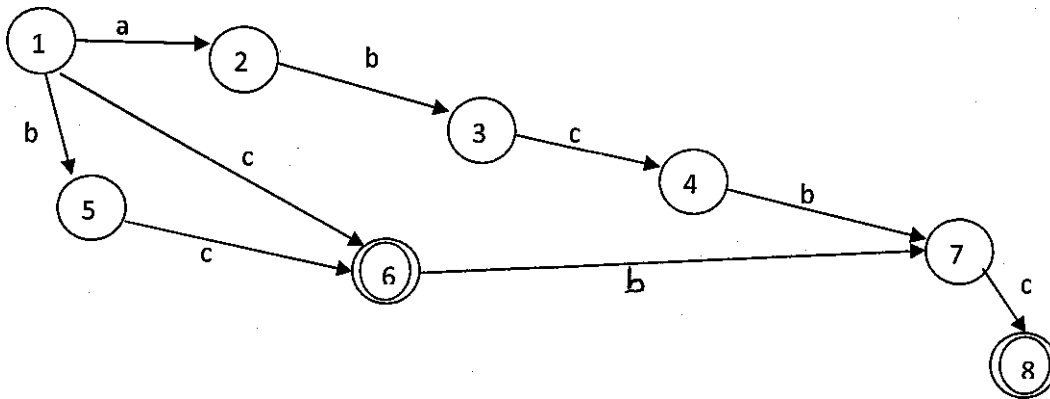


3. Attempt **any one** : 10

- 1) Why single value summaries are required in performance evaluation? Explain different methods for finding precision as single value summary.
- 2) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.

Pattern : cbcba

Text : aabacbacbcba.



4. How to construct signature files ? How to search word and context queries using signature file ? 10

SECTION – II

5. Attempt **any four** : 20

- 1) Explain how multimedia is represented inside the system ?
- 2) Explain different techniques of crawling web.
- 3) Explain architectural issues in digital library.
- 4) Discuss the problems related to web data.
- 5) Explain steps of data retrieval in multimedia retrieval.
- 6) How to specify different conditions on multimedia data ?

6. Attempt **any one** : 10

- 1) Define conceptual structure of type Generic Letter and Business_product_letter.
- 2) Why GEMINI approach is preferred ? Explain dimensionality curse and cross talk problem with example.

7. What is ranking ? Explain HITS and Pagerank algorithm. 10



Seat No.	
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**B.E. (Information Technology) (New) (Part – II) Examination, 2016
INFORMATION RETRIEVAL**

Day and Date : Monday, 21-11-2016

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 structured retrieval model based on proximal nodes.

2) How Boolean queries are evaluated ?

Explain lazy evaluation in detail for the query : retrieval and (information or data)

If resulting documents for each word are (1, 3, 4), (2, 4, 6), (2, 3, 7).

3) Construct nondeterministic finite automaton for pattern 'course' with at most 2 errors and find whether word 'court' is accepted or not.

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5) Discuss the scenarios when sequential searching or data structures are preferred.

6) Why recall and precision are not appropriate measures ?

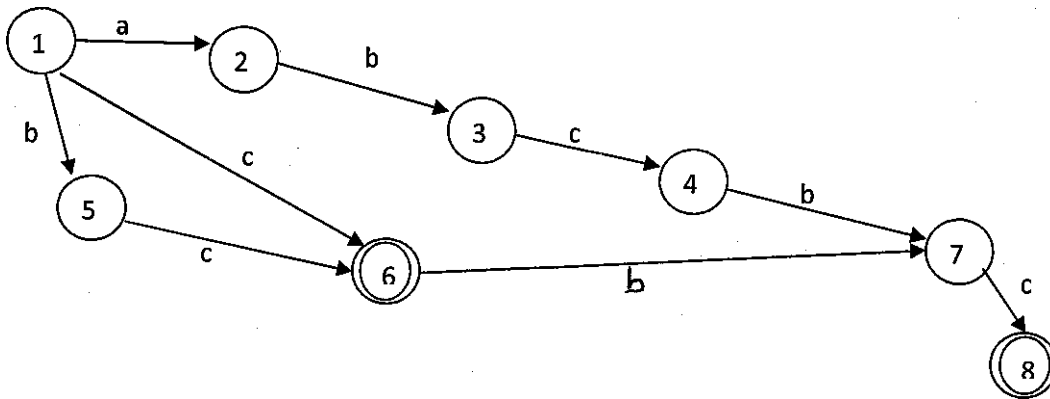


3. Attempt **any one** : 10

- 1) Why single value summaries are required in performance evaluation? Explain different methods for finding precision as single value summary.
- 2) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.

Pattern : cbcba

Text : aabacbacbcba.



4. How to construct signature files ? How to search word and context queries using signature file ? 10

SECTION – II

5. Attempt **any four** : 20

- 1) Explain how multimedia is represented inside the system ?
- 2) Explain different techniques of crawling web.
- 3) Explain architectural issues in digital library.
- 4) Discuss the problems related to web data.
- 5) Explain steps of data retrieval in multimedia retrieval.
- 6) How to specify different conditions on multimedia data ?

6. Attempt **any one** : 10

- 1) Define conceptual structure of type Generic Letter and Business_product_letter.
- 2) Why GEMINI approach is preferred ? Explain dimensionality curse and cross talk problem with example.

7. What is ranking ? Explain HITS and Pagerank algorithm. 10



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Seat No.	
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Set	P
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**B.E. (Information Technology) (Part – II) (New) Examination, 2016
MOBILE COMPUTING AND APPLICATION**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives : **(20×1=20)**
- 1) The type of access used in GSM technology is
a) FDMA / TDMA b) CDMA c) OFDMA d) None of the above
 - 2) Which of these is not true for TDD ?
a) TDD uses different time slots for transmission and reception paths
b) Single radio frequency can be used
c) Duplexer is required
d) It increases the battery life of mobile phones
 - 3) The connectivity from exchange to customer premises is termed as
a) Data network b) Access Network or Local Loop
c) Bridge network d) None of the above
 - 4) The coverage and capacity of CDMA system is more than that of GSM system
a) True b) False c) Equal d) None of the above
 - 5) The type of access technology which can enhance the battery life is
a) CDMA b) TDMA c) OFDMA d) None of the above
 - 6) The core concept used in Cellular technology is
a) TDM b) Frequency reuse
c) Code reuse d) None of the above
 - 7) The uplink frequency of GSM-900 is
a) 1850-1910 MHz b) 1710-1785 MHz
c) 890-915 MHz d) None of the above

P.T.O.



- 8) 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
- 9) It is a distortion formed if SSB is used where the information bandwidth is greater than half of the carrier frequency
a) Near-far effect
b) Hauffman effect
c) Kendall effect
d) Herringbone effect
- 10) Different frequencies are used for send and receive paths and hence there will be a forward band and reverse band, what is this called ?
a) FDD
b) Frequency multiplexing
c) Fading
d) None of the above
- 11) The cell having the same number in the adjacent cluster using the same set of RF channels are termed as
a) Adjacent cell
b) Co channel cell
c) Macro cell
d) Selective cell
- 12) The processes that keep track of all mobile hosts visiting the area is
a) Home agent
b) Mobile agent
c) Foreign agent
d) User agent
- 13) The terminal is under observation from the network for the possible problems. Under which list will this belong in EIR ?
a) White List
b) Grey List
c) Black List
d) None of the above
- 14) The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by
a) BTS
b) BSC
c) MSC
d) MS
- 15) Modulation technique used in DECT is
a) GFSK
b) QPSK
c) BPSK
d) None of the above
- 16) The broad spectrum of the transmitted signal gives rise to
a) Fading
b) Noise
c) Spread Spectrum
d) All of the above
- 17) This Handles IWF (Interworking Function) for interworking with public data network for data call service
a) BTS
b) BSC
c) MSC
d) GPS
- 18) A-interface is mainly used to transmit the following information
a) BSS management information
b) Call processing
c) Mobility management information
d) All of the above
- 19) 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
- 20) The Home Location Register (HLR) is a database used for storing and managing subscriptions
a) True
b) False



**B.E. (Information Technology) (Part – II) (New) Examination, 2016
MOBILE COMPUTING AND APPLICATION**

Day and Date : Tuesday, 22-11-2016
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 GPRS architecture with GPRS transmission plane protocol reference model.
 - c) Explain the comparison between SDMA, TDMA, FDMA and CDMA.
 - d) Explain the cellular system in detail.
 - e) State and explain the different types of antennas with path loss and radio signals.
3. A) What is spread spectrum ? How spreading is achieved also explain the following **10**
- 1) DSS
 - 2) FHSS

OR

- B) Draw and explain the functional architecture of GSM, also explain the handover and types of handover.
4. Write note on **any two** : **(2×5=10)**
- a) Tunnelling and encapsulation.
 - b) WiMAX and LTE
 - c) Benefits of wireless networks and mobile communication.

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 the design goals to be taken into account for WLAN to ensure their commercial success.
 - c) Explain with figure the power management in IEEE802.11 in infrastructure and adhoc networks.
 - d) State and explain the several requirements of location management.
 - e) Explain the term MANET and mobile IP.
6. Solve **any two** : **(2×5=10)**
- a) Explain with figure wireless media access techniques.
 - b) Explain in detail mobile routing protocol.
 - c) Explain with figure IEEE802.11 a packet format.
7. Write note on **any two** : **(2×5=10)**
- a) Issues and challenges of wireless networks.
 - b) Snooping TCP.
 - c) Mobile and wireless networks using network simulator.
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Seat No.	
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Set	Q
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**B.E. (Information Technology) (Part – II) (New) Examination, 2016
MOBILE COMPUTING AND APPLICATION**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives : (20×1=20)
- 1) The broad spectrum of the transmitted signal gives rise to
a) Fading b) Noise c) Spread Spectrum d) All of the above
 - 2) This Handles IWF (Interworking Function) for interworking with public data network for data call service
a) BTS b) BSC c) MSC d) GPS
 - 3) A-interface is mainly used to transmit the following information
a) BSS management information b) Call processing
c) Mobility management information d) All of the above
 - 4) 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
 - 5) The Home Location Register (HLR) is a database used for storing and managing subscriptions
a) True b) False
 - 6) The type of access used in GSM technology is
a) FDMA / TDMA b) CDMA c) OFDMA d) None of the above
 - 7) Which of these is not true for TDD ?
a) TDD uses different time slots for transmission and reception paths
b) Single radio frequency can be used
c) Duplexer is required
d) It increases the battery life of mobile phones

P.T.O.



**B.E. (Information Technology) (Part – II) (New) Examination, 2016
MOBILE COMPUTING AND APPLICATION**

Day and Date : Tuesday, 22-11-2016
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 GPRS architecture with GPRS transmission plane protocol reference model.
- c) Explain the comparison between SDMA, TDMA, FDMA and CDMA.
- d) Explain the cellular system in detail.
- e) State and explain the different types of antennas with path loss and radio signals.

3. A) What is spread spectrum ? How spreading is achieved also explain the following **10**

- 1) DSS
- 2) FHSS

OR

B) Draw and explain the functional architecture of GSM, also explain the handover and types of handover.

4. Write note on **any two** : **(2×5=10)**

- a) Tunnelling and encapsulation.
- b) WiMAX and LTE
- c) Benefits of wireless networks and mobile communication.

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 the design goals to be taken into account for WLAN to ensure their commercial success.
 - c) Explain with figure the power management in IEEE802.11 in infrastructure and adhoc networks.
 - d) State and explain the several requirements of location management.
 - e) Explain the term MANET and mobile IP.
6. Solve **any two** : **(2×5=10)**
- a) Explain with figure wireless media access techniques.
 - b) Explain in detail mobile routing protocol.
 - c) Explain with figure IEEE802.11 a packet format.
7. Write note on **any two** : **(2×5=10)**
- a) Issues and challenges of wireless networks.
 - b) Snooping TCP.
 - c) Mobile and wireless networks using network simulator.
-



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Seat No.	
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Set	R
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**B.E. (Information Technology) (Part – II) (New) Examination, 2016
MOBILE COMPUTING AND APPLICATION**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives : (20×1=20)
- 1) The cell having the same number in the adjacent cluster using the same set of RF channels are termed as
 - a) Adjacent cell
 - b) Co channel cell
 - c) Macro cell
 - d) Selective cell
 - 2) The processes that keep track of all mobile hosts visiting the area is
 - a) Home agent
 - b) Mobile agent
 - c) Foreign agent
 - d) User agent
 - 3) The terminal is under observation from the network for the possible problems. Under which list will this belong in EIR ?
 - a) White List
 - b) Grey List
 - c) Black List
 - d) None of the above
 - 4) The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by
 - a) BTS
 - b) BSC
 - c) MSC
 - d) MS
 - 5) Modulation technique used in DECT is
 - a) GFSK
 - b) QPSK
 - c) BPSK
 - d) None of the above
 - 6) The broad spectrum of the transmitted signal gives rise to
 - a) Fading
 - b) Noise
 - c) Spread Spectrum
 - d) All of the above
 - 7) This Handles IWF (Interworking Function) for interworking with public data network for data call service
 - a) BTS
 - b) BSC
 - c) MSC
 - d) GPS
 - 8) A-interface is mainly used to transmit the following information
 - a) BSS management information
 - b) Call processing
 - c) Mobility management information
 - d) All of the above

P.T.O.



- 9) Modulation refers to
- The distance between the uplink and downlink frequencies
 - The separation between adjacent carrier frequencies
 - The process of changing the characteristics of a carrier frequency
 - The number of cycles per unit of time
- 10) The Home Location Register (HLR) is a database used for storing and managing subscriptions
- True
 - False
- 11) The type of access used in GSM technology is
- FDMA / TDMA
 - CDMA
 - OFDMA
 - None of the above
- 12) Which of these is not true for TDD ?
- TDD uses different time slots for transmission and reception paths
 - Single radio frequency can be used
 - Duplexer is required
 - It increases the battery life of mobile phones
- 13) The connectivity from exchange to customer premises is termed as
- Data network
 - Access Network or Local Loop
 - Bridge network
 - None of the above
- 14) The coverage and capacity of CDMA system is more than that of GSM system
- True
 - False
 - Equal
 - None of the above
- 15) The type of access technology which can enhance the battery life is
- CDMA
 - TDMA
 - OFDMA
 - None of the above
- 16) The core concept used in Cellular technology is
- TDM
 - Frequency reuse
 - Code reuse
 - None of the above
- 17) The uplink frequency of GSM-900 is
- 1850-1910 MHz
 - 1710-1785 MHz
 - 890-915 MHz
 - None of the above
- 18) The technique adopted to increase the system capacity and reduce co-chl interference is
- High power BTS
 - By installing the Omni directional antenna
 - Sectorisation
 - None of the above
- 19) It is a distortion formed if SSB is used where the information bandwidth is greater than half of the carrier frequency
- Near-far effect
 - Hauffman effect
 - Kendall effect
 - Herringbone effect
- 20) Different frequencies are used for send and receive paths and hence there will be a forward band and reverse band, what is this called ?
- FDD
 - Frequency multiplexing
 - Fading
 - None of the above



**B.E. (Information Technology) (Part – II) (New) Examination, 2016
MOBILE COMPUTING AND APPLICATION**

Day and Date : Tuesday, 22-11-2016
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 GPRS architecture with GPRS transmission plane protocol reference model.
- c) Explain the comparison between SDMA, TDMA, FDMA and CDMA.
- d) Explain the cellular system in detail.
- e) State and explain the different types of antennas with path loss and radio signals.

3. A) What is spread spectrum ? How spreading is achieved also explain the following **10**

- 1) DSS
- 2) FHSS

OR

B) Draw and explain the functional architecture of GSM, also explain the handover and types of handover.

4. Write note on **any two** : **(2×5=10)**

- a) Tunnelling and encapsulation.
- b) WiMAX and LTE
- c) Benefits of wireless networks and mobile communication.

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 the design goals to be taken into account for WLAN to ensure their commercial success.
 - c) Explain with figure the power management in IEEE802.11 in infrastructure and adhoc networks.
 - d) State and explain the several requirements of location management.
 - e) Explain the term MANET and mobile IP.
6. Solve **any two** : **(2×5=10)**
- a) Explain with figure wireless media access techniques.
 - b) Explain in detail mobile routing protocol.
 - c) Explain with figure IEEE802.11 a packet format.
7. Write note on **any two** : **(2×5=10)**
- a) Issues and challenges of wireless networks.
 - b) Snooping TCP.
 - c) Mobile and wireless networks using network simulator.
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SLR-EP – 242

Seat No.	
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Set	S
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**B.E. (Information Technology) (Part – II) (New) Examination, 2016
MOBILE COMPUTING AND APPLICATION**

Day and Date : Tuesday, 22-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternatives :

(20×1=20)

- 1) The core concept used in Cellular technology is
 - a) TDM
 - b) Frequency reuse
 - c) Code reuse
 - d) None of the above
- 2) The uplink frequency of GSM-900 is
 - a) 1850-1910 MHz
 - b) 1710-1785 MHz
 - c) 890-915 MHz
 - d) None of the above
- 3) 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
- 4) It is a distortion formed if SSB is used where the information bandwidth is greater than half of the carrier frequency
 - a) Near-far effect
 - b) Hauffman effect
 - c) Kendall effect
 - d) Herringbone effect
- 5) Different frequencies are used for send and receive paths and hence there will be a forward band and reverse band, what is this called ?
 - a) FDD
 - b) Frequency multiplexing
 - c) Fading
 - d) None of the above
- 6) The cell having the same number in the adjacent cluster using the same set of RF channels are termed as
 - a) Adjacent cell
 - b) Co channel cell
 - c) Macro cell
 - d) Selective cell

P.T.O.



- 7) The processes that keep track of all mobile hosts visiting the area is
a) Home agent b) Mobile agent c) Foreign agent d) User agent
- 8) The terminal is under observation from the network for the possible problems. Under which list will this belong in EIR ?
a) White List b) Grey List c) Black List d) None of the above
- 9) The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by
a) BTS b) BSC c) MSC d) MS
- 10) Modulation technique used in DECT is
a) GFSK b) QPSK c) BPSK d) None of the above
- 11) The broad spectrum of the transmitted signal gives rise to
a) Fading b) Noise c) Spread Spectrum d) All of the above
- 12) This Handles IWF (Interworking Function) for interworking with public data network for data call service
a) BTS b) BSC c) MSC d) GPS
- 13) A-interface is mainly used to transmit the following information
a) BSS management information b) Call processing
c) Mobility management information d) All of the above
- 14) 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
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a) True b) False
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a) FDMA / TDMA b) CDMA c) OFDMA d) None of the above
- 17) Which of these is not true for TDD ?
a) TDD uses different time slots for transmission and reception paths
b) Single radio frequency can be used
c) Duplexer is required
d) It increases the battery life of mobile phones
- 18) The connectivity from exchange to customer premises is termed as
a) Data network b) Access Network or Local Loop
c) Bridge network d) None of the above
- 19) The coverage and capacity of CDMA system is more than that of GSM system
a) True b) False c) Equal d) None of the above
- 20) The type of access technology which can enhance the battery life is
a) CDMA b) TDMA c) OFDMA d) None of the above



**B.E. (Information Technology) (Part – II) (New) Examination, 2016
MOBILE COMPUTING AND APPLICATION**

Day and Date : Tuesday, 22-11-2016
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 GPRS architecture with GPRS transmission plane protocol reference model.
 - c) Explain the comparison between SDMA, TDMA, FDMA and CDMA.
 - d) Explain the cellular system in detail.
 - e) State and explain the different types of antennas with path loss and radio signals.
3. A) What is spread spectrum ? How spreading is achieved also explain the following **10**
- 1) DSS
 - 2) FHSS

OR

- B) Draw and explain the functional architecture of GSM, also explain the handover and types of handover.
4. Write note on **any two** : **(2×5=10)**
- a) Tunnelling and encapsulation.
 - b) WiMAX and LTE
 - c) Benefits of wireless networks and mobile communication.

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 the design goals to be taken into account for WLAN to ensure their commercial success.
 - c) Explain with figure the power management in IEEE802.11 in infrastructure and adhoc networks.
 - d) State and explain the several requirements of location management.
 - e) Explain the term MANET and mobile IP.
6. Solve **any two** : **(2×5=10)**
- a) Explain with figure wireless media access techniques.
 - b) Explain in detail mobile routing protocol.
 - c) Explain with figure IEEE802.11 a packet format.
7. Write note on **any two** : **(2×5=10)**
- a) Issues and challenges of wireless networks.
 - b) Snooping TCP.
 - c) Mobile and wireless networks using network simulator.
-



Seat No.	
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Set	P
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Wednesday, 23-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

- 1) _____ is the science and art of transforming messages to make them secure and immune to attacks.
a) Cryptography b) Crypto analysis c) Either a) or b) d) Neither a) nor b)
- 2) By symmetric key encryption we mean
a) One private key is used for both encryption and decryption
b) Private and public key used are symmetric
c) Only public keys are used for encryption
d) Only symmetric key is used for encryption
- 3) A firewall may be implemented in
a) Routers which connect intranet to internet b) Bridges used in an intranet
c) Expensive modem d) User's application programs
- 4) Digital signature cannot provide _____ for the message.
a) Integrity b) Confidentiality
c) Non Repudiation d) Authentication
e) Product Composition
- 5) _____ was invented by Phil Zimmerman.
a) IPsec b) SSL c) PGP d) None of the above
- 6) The _____ method provides a one-time session key for two parties.
a) Diffie-Hellman b) RSA c) DES d) AES
- 7) A security _____ is designed to detect, prevent or recover from a security attack.
a) Attack b) Mechanism c) Service d) All of the above
- 8) _____ 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



Seat No.	
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Wednesday, 23-11-2016

Marks : 80

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

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

SECTION – I

2. Write short notes (**any four**) : **20**
- a) Network Security Model
 - b) Differential and Linear cryptanalysis
 - c) Tunnel Mode Vs Transport Mode Encryption
 - d) Types of active attacks with diagram
 - e) Digital Signature.
3. Explain in detail with diagram : **10**
- a) SSL Architecture
 - b) SSL Record Protocol and its operation.

OR

What is DES Encryption ? Explain its general depiction with its strengths and weakness.

4. Explain Feistel Cipher structure in detail. Which parameters and design choices determine the actual algorithm of a Feistel Cipher. **10**

Set P



SECTION – II

5. Answer the following (**any four**) : **20**
- a) Short note on “Indian Legal Perspective on Cybercrime”.
 - b) What is Intrusion Detection system ? Explain Statistical anomaly detection and Rule Based detection.
 - c) Short notes :
 Password Sniffing and Email Spoofing and Spamming.
 - d) Explain Phishing and how it works.
 - e) Short note on Steganography.
6. State ISO 27001 certification process with diagram and list the benefits of ISO 27001 certification. **10**

OR

What is Firewall ? State the characteristics of Firewall and its types with diagram.

7. Explain the following types of viruses in detail : **10**
- i) Boot Sector Virus
 - ii) Program Virus
 - iii) Stealth Virus
 - iv) Polymorphic Virus
 - v) Multipartite Virus.
-



Seat No.	
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Set	Q
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Wednesday, 23-11-2016
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) _____ provides security services between TCP and applications that use TCP.
a) IPSec b) SSL c) PGP d) SET
- 2) The classes of intruders identified by Anderson are
1) Masquerader 2) Criminal 3) Misfeasor 4) Culprit 5) Clandestine User
a) 1, 3, 4, 5 b) 1, 2, 3 c) 1, 3, 5 d) All of the above
- 3) _____ involves an attempt to define a set of rules that can be used to decide that a given behavior is that of an intruder.
a) Threshold based detection b) Rule Based detection
c) Statistical anomaly detection d) Abnormal threshold detection
- 4) A fundamental tool for intrusion detection is the
a) Audit Record b) Access control c) Sniffing d) Key loggers
- 5) _____ 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
- 6) _____ is the science and art of transforming messages to make them secure and immune to attacks.
a) Cryptography b) Crypto analysis c) Either a) or b) d) Neither a) nor b)
- 7) By symmetric key encryption we mean
a) One private key is used for both encryption and decryption
b) Private and public key used are symmetric
c) Only public keys are used for encryption
d) Only symmetric key is used for encryption
- 8) A firewall may be implemented in
a) Routers which connect intranet to internet b) Bridges used in an intranet
c) Expensive modem d) User's application programs

P.T.O.



- 9) Digital signature cannot provide _____ for the message.
- a) Integrity
 - b) Confidentiality
 - c) Non Repudiation
 - d) Authentication
 - e) Product Composition
- 10) _____ was invented by Phil Zimmerman.
- a) IPsec
 - b) SSL
 - c) PGP
 - d) None of the above
- 11) The _____ method provides a one-time session key for two parties.
- a) Diffie-Hellman
 - b) RSA
 - c) DES
 - d) AES
- 12) A security _____ is designed to detect, prevent or recover from a security attack.
- a) Attack
 - b) Mechanism
 - c) Service
 - d) All of the above
- 13) _____ 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
- 14) Encipherment, Digital signature Notarization, Traffic Padding are Pervasive Security Mechanisms incorporated into the appropriate protocol layer in order to provide some of the OSI Security services.
- a) True
 - b) False
- 15) A _____ cipher process the input elements continuously producing output one element at a time.
- a) Block
 - b) Product
 - c) Stream
 - d) Chain
- 16) The block mode of operation in which plaintext is handled 64 bits at a time and each block of plaintext is encrypted using the same key is
- a) Cipher Block Chaining Mode
 - b) Cipher Feedback mode
 - c) Output Feedback Mode
 - d) Electronic Codebook
- 17) 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
- 18) Public-Key encryption was first proposed by _____ and _____
- a) Horst an Shamir
 - b) Diffie and Hellman
 - c) Hellman and Ron Rivest
 - d) Diffie and Fiestel
- 19) IP Level security encompasses three functional areas _____, _____ and _____
- a) Authentication, confidentiality and integrity
 - b) Confidentiality, integrity and Peer Authentication
 - c) Authentication, confidentiality and Key Management
 - d) Access control, Resource availability and Key management
- 20) IPSec Services provided by Authentication Header are
- 1) Access Control
 - 2) Connection less integrity
 - 3) Data Origin authentication
 - 4) Rejection of replayed packets
 - 5) Confidentiality
- a) 1, 3, 4 and 5
 - b) 2, 3 and 5
 - c) 1, 2, 3 and 4
 - d) All of the above



Seat No.	
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Wednesday, 23-11-2016

Marks : 80

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

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

SECTION – I

2. Write short notes (**any four**) : **20**
- a) Network Security Model
 - b) Differential and Linear cryptanalysis
 - c) Tunnel Mode Vs Transport Mode Encryption
 - d) Types of active attacks with diagram
 - e) Digital Signature.
3. Explain in detail with diagram : **10**
- a) SSL Architecture
 - b) SSL Record Protocol and its operation.

OR

What is DES Encryption ? Explain its general depiction with its strengths and weakness.

4. Explain Feistel Cipher structure in detail. Which parameters and design choices determine the actual algorithm of a Feistel Cipher. **10**

Set Q



SECTION – II

5. Answer the following (**any four**) : **20**
- a) Short note on “Indian Legal Perspective on Cybercrime”.
 - b) What is Intrusion Detection system ? Explain Statistical anomaly detection and Rule Based detection.
 - c) Short notes :
 Password Sniffing and Email Spoofing and Spamming.
 - d) Explain Phishing and how it works.
 - e) Short note on Steganography.
6. State ISO 27001 certification process with diagram and list the benefits of ISO 27001 certification. **10**

OR

What is Firewall ? State the characteristics of Firewall and its types with diagram.

7. Explain the following types of viruses in detail : **10**
- i) Boot Sector Virus
 - ii) Program Virus
 - iii) Stealth Virus
 - iv) Polymorphic Virus
 - v) Multipartite Virus.
-



Seat No.	
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Set	R
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Wednesday, 23-11-2016
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 block mode of operation in which plaintext is handled 64 bits at a time and each block of plaintext is encrypted using the same key is
 - a) Cipher Block Chaining Mode
 - b) Cipher Feedback mode
 - c) Output Feedback Mode
 - d) Electronic Codebook
- 2) 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
- 3) Public-Key encryption was first proposed by _____ and _____.
 - a) Horst an Shamir
 - b) Diffie and Hellman
 - c) Hellman and Ron Rivest
 - d) Diffie and Fiestel
- 4) IP Level security encompasses three functional areas _____, _____ and _____.
 - a) Authentication, confidentiality and integrity
 - b) Confidentiality, integrity and Peer Authentication
 - c) Authentication, confidentiality and Key Management
 - d) Access control, Resource availability and Key management
- 5) IPSec Services provided by Authentication Header are
 - 1) Access Control
 - 2) Connection less integrity
 - 3) Data Origin authentication
 - 4) Rejection of replayed packets
 - 5) Confidentiality
 - a) 1, 3, 4 and 5
 - b) 2, 3 and 5
 - c) 1, 2, 3 and 4
 - d) All of the above
- 6) _____ provides security services between TCP and applications that use TCP.
 - a) IPSec
 - b) SSL
 - c) PGP
 - d) SET
- 7) The classes of intruders identified by Anderson are
 - 1) Masquerader
 - 2) Criminal
 - 3) Misfeasor
 - 4) Culprit
 - 5) Clandestine User
 - a) 1, 3, 4, 5
 - b) 1, 2, 3
 - c) 1, 3, 5
 - d) All of the above

P.T.O.



- 8) _____ involves an attempt to define a set of rules that can be used to decide that a given behavior is that of an intruder.
- a) Threshold based detection b) Rule Based detection
c) Statistical anomaly detection d) Abnormal threshold detection
- 9) A fundamental tool for intrusion detection is the
- a) Audit Record b) Access control c) Sniffing d) Key loggers
- 10) _____ 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
- 11) _____ is the science and art of transforming messages to make them secure and immune to attacks.
- a) Cryptography b) Crypto analysis c) Either a) or b) d) Neither a) nor b)
- 12) By symmetric key encryption we mean
- a) One private key is used for both encryption and decryption
b) Private and public key used are symmetric
c) Only public keys are used for encryption
d) Only symmetric key is used for encryption
- 13) A firewall may be implemented in
- a) Routers which connect intranet to internet b) Bridges used in an intranet
c) Expensive modem d) User's application programs
- 14) Digital signature cannot provide _____ for the message.
- a) Integrity b) Confidentiality
c) Non Repudiation d) Authentication
e) Product Composition
- 15) _____ was invented by Phil Zimmerman.
- a) IPSec b) SSL c) PGP d) None of the above
- 16) The _____ method provides a one-time session key for two parties.
- a) Diffie-Hellman b) RSA c) DES d) AES
- 17) A security _____ is designed to detect, prevent or recover from a security attack.
- a) Attack b) Mechanism c) Service d) All of the above
- 18) _____ 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
- 19) Encipherment, Digital signature Notarization, Traffic Padding are Pervasive Security Mechanisms incorporated into the appropriate protocol layer in order to provide some of the OSI Security services.
- a) True b) False
- 20) A _____ cipher process the input elements continuously producing output one element at a time.
- a) Block b) Product c) Stream d) Chain



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**B.E. (I.T.) (Part – II) (New) Examination, 2016
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Wednesday, 23-11-2016

Marks : 80

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

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

SECTION – I

2. Write short notes (**any four**) : **20**
- a) Network Security Model
 - b) Differential and Linear cryptanalysis
 - c) Tunnel Mode Vs Transport Mode Encryption
 - d) Types of active attacks with diagram
 - e) Digital Signature.
3. Explain in detail with diagram : **10**
- a) SSL Architecture
 - b) SSL Record Protocol and its operation.

OR

What is DES Encryption ? Explain its general depiction with its strengths and weakness.

4. Explain Feistel Cipher structure in detail. Which parameters and design choices determine the actual algorithm of a Feistel Cipher. **10**

Set R



SECTION – II

5. Answer the following (**any four**) : **20**
- a) Short note on “Indian Legal Perspective on Cybercrime”.
 - b) What is Intrusion Detection system ? Explain Statistical anomaly detection and Rule Based detection.
 - c) Short notes :
 Password Sniffing and Email Spoofing and Spamming.
 - d) Explain Phishing and how it works.
 - e) Short note on Steganography.
6. State ISO 27001 certification process with diagram and list the benefits of ISO 27001 certification. **10**

OR

What is Firewall ? State the characteristics of Firewall and its types with diagram.

7. Explain the following types of viruses in detail : **10**
- i) Boot Sector Virus
 - ii) Program Virus
 - iii) Stealth Virus
 - iv) Polymorphic Virus
 - v) Multipartite Virus.
-



Seat No.	
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Wednesday, 23-11-2016
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 _____ method provides a one-time session key for two parties.
a) Diffie-Hellman b) RSA c) DES d) AES
- 2) A security _____ is designed to detect, prevent or recover from a security attack.
a) Attack b) Mechanism c) Service d) All of the above
- 3) _____ 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
- 4) Encipherment, Digital signature Notarization, Traffic Padding are Pervasive Security Mechanisms incorporated into the appropriate protocol layer in order to provide some of the OSI Security services.
a) True b) False
- 5) A _____ cipher process the input elements continuously producing output one element at a time.
a) Block b) Product c) Stream d) Chain
- 6) The block mode of operation in which plaintext is handled 64 bits at a time and each block of plaintext is encrypted using the same key is
a) Cipher Block Chaining Mode b) Cipher Feedback mode
c) Output Feedback Mode d) Electronic Codebook
- 7) 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
- 8) Public-Key encryption was first proposed by _____ and _____.
a) Horst an Shamir b) Diffie and Hellman
c) Hellman and Ron Rivest d) Diffie and Fiestel



- 9) IP Level security encompasses three functional areas _____, _____ and _____
- Authentication, confidentiality and integrity
 - Confidentiality, integrity and Peer Authentication
 - Authentication, confidentiality and Key Management
 - Access control, Resource availability and Key management
- 10) IPSec Services provided by Authentication Header are
- Access Control
 - Connection less integrity
 - Data Origin authentication
 - Rejection of replayed packets
 - Confidentiality
- 1, 3, 4 and 5
 - 2, 3 and 5
 - 1, 2, 3 and 4
 - All of the above
- 11) _____ provides security services between TCP and applications that use TCP.
- IPSec
 - SSL
 - PGP
 - SET
- 12) The classes of intruders identified by Anderson are
- Masquerader
 - Criminal
 - Misfeasor
 - Culprit
 - Clandestine User
- 1, 3, 4, 5
 - 1, 2, 3
 - 1, 3, 5
 - All of the above
- 13) _____ involves an attempt to define a set of rules that can be used to decide that a given behavior is that of an intruder.
- Threshold based detection
 - Rule Based detection
 - Statistical anomaly detection
 - Abnormal threshold detection
- 14) A fundamental tool for intrusion detection is the
- Audit Record
 - Access control
 - Sniffing
 - Key loggers
- 15) _____ is a computer on a network which acts as an intermediary for connections with other computers on that network.
- Hot Spot
 - Proxy Server
 - Host machine
 - Main Server machine
- 16) _____ is the science and art of transforming messages to make them secure and immune to attacks.
- Cryptography
 - Crypto analysis
 - Either a) or b)
 - Neither a) nor b)
- 17) By symmetric key encryption we mean
- One private key is used for both encryption and decryption
 - Private and public key used are symmetric
 - Only public keys are used for encryption
 - Only symmetric key is used for encryption
- 18) A firewall may be implemented in
- Routers which connect intranet to internet
 - Bridges used in an intranet
 - Expensive modem
 - User's application programs
- 19) Digital signature cannot provide _____ for the message.
- Integrity
 - Confidentiality
 - Non Repudiation
 - Authentication
 - Product Composition
- 20) _____ was invented by Phil Zimmerman.
- IPSec
 - SSL
 - PGP
 - None of the above



Seat No.	
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
INFORMATION ASSURANCE AND SECURITY**

Day and Date : Wednesday, 23-11-2016

Marks : 80

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

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

SECTION – I

2. Write short notes (**any four**) : **20**
- a) Network Security Model
 - b) Differential and Linear cryptanalysis
 - c) Tunnel Mode Vs Transport Mode Encryption
 - d) Types of active attacks with diagram
 - e) Digital Signature.
3. Explain in detail with diagram : **10**
- a) SSL Architecture
 - b) SSL Record Protocol and its operation.

OR

What is DES Encryption ? Explain its general depiction with its strengths and weakness.

4. Explain Feistel Cipher structure in detail. Which parameters and design choices determine the actual algorithm of a Feistel Cipher. **10**

Set S



SECTION – II

5. Answer the following (**any four**) : **20**
- a) Short note on “Indian Legal Perspective on Cybercrime”.
 - b) What is Intrusion Detection system ? Explain Statistical anomaly detection and Rule Based detection.
 - c) Short notes :
 Password Sniffing and Email Spoofing and Spamming.
 - d) Explain Phishing and how it works.
 - e) Short note on Steganography.
6. State ISO 27001 certification process with diagram and list the benefits of ISO 27001 certification. **10**

OR

What is Firewall ? State the characteristics of Firewall and its types with diagram.

7. Explain the following types of viruses in detail : **10**
- i) Boot Sector Virus
 - ii) Program Virus
 - iii) Stealth Virus
 - iv) Polymorphic Virus
 - v) Multipartite Virus.
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Seat No.	
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Tuesday, 13-12-2016
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 from the options given below :

- 1) _____ is an implementation technique whereby multiple instructions are overlapped in execution. 1
a) Multiprocessor b) Pipelining c) Compiler d) None
- 2) _____ architecture is MIPS. 1
a) CISC b) RISC c) Both d) None
- 3) The sum called the effective address of the contents of _____ and the sign-extended offset is used as a memory address the base. 1
a) Base register b) Reference register
c) Relative address d) None
- 4) Consider the unpipelined processor in the previous section. Assume that it has a 1 ns clock cycle and that it uses 4 cycles for ALU operations and branches and 5 cycles for memory operations. Assume that the relative frequencies of these operations are 40%, 20% and 40% respectively. Suppose that due to clock skew and setup, pipelining the processor adds 0.2 ns of overhead to the clock. Find average instruction execution time. 2
a) 4.1 ns b) 4.4 ns
c) 5 ns d) None
- 5) _____ arise from resource conflicts when the hardware cannot support all possible combinations of instructions simultaneously in overlapped execution. 1
a) Structural hazards b) Data hazards
c) Control hazards d) None
- 6) _____ can be generalized to include passing a result directly to the functional unit that requires it. 1
a) Forwarding method b) Software Compiler method
c) Both d) None



- 7) Register renaming can eliminate hazard based on 1
 a) WAR b) WAW c) Both d) None
- 8) Loop unrolling 1
 a) Increase the number of instruction related to loop
 b) Reduce overhead
 c) Replicate the loop
 d) All of the above
- 9) Start up code and wind up code is overlapped in 1
 a) Software pipeline b) Tomasulo
 c) Forward d) None
- 10) Loosely coupled multiprocessor do not encounter _____ conflict. 1
 a) Processor b) Memory c) I/O d) None
- 11) Loosely coupled multiprocessor are efficient when 1
 a) Interaction between tasks are minimal
 b) Interaction between tasks are maximum
 c) Both
 d) None
- 12) Kmap processor responsible for 1
 a) Routing data b) Mapping address
 c) Synchronization d) All of above
- 13) Arbitrer switch in multiprocessor responsible for 1
 a) One of the simultaneous request
 b) Communication by exchanging message
 c) Both
 d) None
- 14) PMIN, ISIN, IOPIN units consist in 1
 a) Loosely coupled multiprocessor b) Tightly coupled multiprocessor
 c) Both d) None
- 15) In tightly coupled processor to direct interrupt to any processor _____ is used. 1
 a) ISIN b) IOPIN c) PMIN d) None
- 16) Interconnection network type 1
 a) Time shared b) Crossbar switch
 c) Multistage network d) All above
- 17) The concepts of control flow and data flow computing is based on 1
 a) Control of algorithmic sequences b) Control of computation sequences
 c) Control of logical sequences d) Control of turing sequences
- 18) Deterministic schedules are usually displayed with timing diagrams called 1
 a) Pie charts b) Flow charts
 c) Cartogram charts d) Gantt charts
- 19) Dead lock detection algorithm uses the information contents in a _____ of the 1
 system to decide whether or not a dead lock exists.
 a) Path b) Link c) State d) Output



Seat No.	
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Tuesday, 13-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Answer **any two** of the following : 14
- a) Explain with suitable example various levels of pipelining.
 - b) Discuss various pipeline hazards. Give hazard detection and resolution techniques.
 - c) Explain limitations of multiple issue machine.
3. Answer **any two** of the following : 14
- a) Explain following advanced pipelining techniques in detail.
 - i) Loop unrolling.
 - ii) Trace scheduling.
 - b) How do you deal with nonadjacent elements in vectors that reside in memory ?
 - c) Explain the basic structure of a vector-register architecture.
4. Answer the following : 12
- a) Explain three stages of Tomasulo Algorithm.
 - b) Differentiate Tomasulo Algorithm Vs. Scoreboard.

SECTION – II

5. Answer **any two** of the following : 14
- a) What is cross point in crossbar ? Explain with block diagram.
 - b) Compare multiprocessor with time shared bus with multiport memory.
 - c) Draw and explain a CM* architecture of loosely coupled.
6. Attempt **any two** of the following : 14
- a) Explain ring structure data flow.
 - b) Compare static and dynamic dataflow architectures.
 - c) What are the different dataflow operators ?
7. Write short notes : 12
- a) Centralised shared memory multiprocessor architecture.
 - b) Distributed shared memory multiprocessor architecture.



Seat No.	
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Set	Q
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Tuesday, 13-12-2016
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 from the options given below :

- 1) In tightly coupled processor to direct interrupt to any processor _____ is used. **1**
a) ISIN b) IOPIN c) PMIN d) None
- 2) Interconnection network type **1**
a) Time shared b) Crossbar switch
c) Multistage network d) All above
- 3) The concepts of control flow and data flow computing is based on **1**
a) Control of algorithmic sequences b) Control of computation sequences
c) Control of logical sequences d) Control of turing sequences
- 4) Deterministic schedules are usually displayed with timing diagrams called **1**
a) Pie charts b) Flow charts
c) Cartogram charts d) Gantt charts
- 5) Dead lock detection algorithm uses the information contents in a _____ of the system to decide whether or not a dead lock exists. **1**
a) Path b) Link c) State d) Output
- 6) _____ is an implementation technique whereby multiple instructions are overlapped in execution. **1**
a) Multiprocessor b) Pipelining c) Compiler d) None
- 7) _____ architecture is MIPS. **1**
a) CISC b) RISC
c) Both d) None
- 8) The sum called the effective address of the contents of _____ and the sign-extended offset is used as a memory address the base. **1**
a) Base register b) Reference register
c) Relative address d) None



Seat No.	
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Tuesday, 13-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Answer **any two** of the following : 14
- a) Explain with suitable example various levels of pipelining.
 - b) Discuss various pipeline hazards. Give hazard detection and resolution techniques.
 - c) Explain limitations of multiple issue machine.
3. Answer **any two** of the following : 14
- a) Explain following advanced pipelining techniques in detail.
 - i) Loop unrolling.
 - ii) Trace scheduling.
 - b) How do you deal with nonadjacent elements in vectors that reside in memory ?
 - c) Explain the basic structure of a vector-register architecture.
4. Answer the following : 12
- a) Explain three stages of Tomasulo Algorithm.
 - b) Differentiate Tomasulo Algorithm Vs. Scoreboard.

SECTION – II

5. Answer **any two** of the following : 14
- a) What is cross point in crossbar ? Explain with block diagram.
 - b) Compare multiprocessor with time shared bus with multiport memory.
 - c) Draw and explain a CM* architecture of loosely coupled.
6. Attempt **any two** of the following : 14
- a) Explain ring structure data flow.
 - b) Compare static and dynamic dataflow architectures.
 - c) What are the different dataflow operators ?
7. Write short notes : 12
- a) Centralised shared memory multiprocessor architecture.
 - b) Distributed shared memory multiprocessor architecture.



SLR-EP – 369

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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Tuesday, 13-12-2016
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 from the options given below :

- 1) Loosely coupled multiprocessor do not encounter _____ conflict. 1
a) Processor b) Memory c) I/O d) None
- 2) Loosely coupled multiprocessor are efficient when 1
a) Interaction between tasks are minimal
b) Interaction between tasks are maximum
c) Both
d) None
- 3) Kmap processor responsible for 1
a) Routing data b) Mapping address
c) Synchronization d) All of above
- 4) Arbiter switch in multiprocessor responsible for 1
a) One of the simultaneous request
b) Communication by exchanging message
c) Both
d) None
- 5) PMIN, ISIN, IOPIN units consist in 1
a) Loosely coupled multiprocessor b) Tightly coupled multiprocessor
c) Both d) None
- 6) In tightly coupled processor to direct interrupt to any processor _____ is used. 1
a) ISIN b) IOPIN c) PMIN d) None
- 7) Interconnection network type 1
a) Time shared b) Crossbar switch
c) Multistage network d) All above
- 8) The concepts of control flow and data flow computing is based on 1
a) Control of algorithmic sequences b) Control of computation sequences
c) Control of logical sequences d) Control of turing sequences

P.T.O.



Seat No.	
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Tuesday, 13-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Answer **any two** of the following : 14
a) Explain with suitable example various levels of pipelining.
b) Discuss various pipeline hazards. Give hazard detection and resolution techniques.
c) Explain limitations of multiple issue machine.
3. Answer **any two** of the following : 14
a) Explain following advanced pipelining techniques in detail.
i) Loop unrolling.
ii) Trace scheduling.
b) How do you deal with nonadjacent elements in vectors that reside in memory ?
c) Explain the basic structure of a vector-register architecture.
4. Answer the following : 12
a) Explain three stages of Tomasulo Algorithm.
b) Differentiate Tomasulo Algorithm Vs. Scoreboard.

SECTION – II

5. Answer **any two** of the following : 14
a) What is cross point in crossbar ? Explain with block diagram.
b) Compare multiprocessor with time shared bus with multiport memory.
c) Draw and explain a CM* architecture of loosely coupled.
6. Attempt **any two** of the following : 14
a) Explain ring structure data flow.
b) Compare static and dynamic dataflow architectures.
c) What are the different dataflow operators ?
7. Write short notes : 12
a) Centralised shared memory multiprocessor architecture.
b) Distributed shared memory multiprocessor architecture.



Seat No.	
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**B.E. (Information Technology) (Part – I) (Old) Examination, 2016
ADVANCED COMPUTER ARCHITECTURE**

Day and Date : Tuesday, 13-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Answer **any two** of the following : 14
- a) Explain with suitable example various levels of pipelining.
 - b) Discuss various pipeline hazards. Give hazard detection and resolution techniques.
 - c) Explain limitations of multiple issue machine.
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 - i) Loop unrolling.
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 - b) How do you deal with nonadjacent elements in vectors that reside in memory ?
 - c) Explain the basic structure of a vector-register architecture.
4. Answer the following : 12
- a) Explain three stages of Tomasulo Algorithm.
 - b) Differentiate Tomasulo Algorithm Vs. Scoreboard.

SECTION – II

5. Answer **any two** of the following : 14
- a) What is cross point in crossbar ? Explain with block diagram.
 - b) Compare multiprocessor with time shared bus with multiport memory.
 - c) Draw and explain a CM* architecture of loosely coupled.
6. Attempt **any two** of the following : 14
- a) Explain ring structure data flow.
 - b) Compare static and dynamic dataflow architectures.
 - c) What are the different dataflow operators ?
7. Write short notes : 12
- a) Centralised shared memory multiprocessor architecture.
 - b) Distributed shared memory multiprocessor architecture.



Seat No.	
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Set	P
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**B.E. (Information Technology) (Part – I) Examination, 2016
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Thursday, 8-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(1×20=20)

- 1) In time stamps if two events are same, then the events are
 - a) concurrent
 - b) non-concurrent
 - c) monotonic
 - d) non-monotonic
- 2) Choose the important features of network operating system and DOS are
 - a) System image
 - b) Autonomy
 - c) Fault tolerance capability
 - d) All of these
- 3) The capability of a system to adopt service load refers to
 - a) Scalability
 - b) Flexibility
 - c) Redundancy
 - d) None of these
- 4) _____ is the method to test primitives provide to allow the receiver to check the buffer status
 - a) Polling
 - b) Interrupt
 - c) Timeout
 - d) None of these
- 5) The amount of _____ to be allocated in the bounded buffer strategy is a matter of implementation.
 - a) Buffer Space
 - b) Synchronization
 - c) Null buffer
 - d) None of these
- 6) An _____ value loses its meaning when transferred from one process address to another
 - a) Absolute pointer
 - b) Encoding of message
 - c) Storage space
 - d) None of these
- 7) In case of failure, a new transaction coordinator can be elected by
 - a) bully algorithm
 - b) ring algorithm
 - c) both a) and b)
 - d) none of the mentioned
- 8) In distributed systems, election algorithms assumes that
 - a) a unique priority number is associated with each active process in system
 - b) there is no priority number associated with any process
 - c) priority of the processes is not required
 - d) none of the mentioned

P.T.O.



Seat No.	
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B.E. (Information Technology) (Part – I) Examination, 2016
Elective – I : DISTRIBUTED COMPUTING

Day and Date : Thursday, 8-12-2016

Marks : 80

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

- Instructions:** 1) *All questions are compulsory.*
2) *Draw figure wherever is necessary.*
3) *Assume suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain in detail stub generation and RPC messages.
 - b) With typical message structure explain the issues in IPC by message passing.
 - c) What is multidatagram message also explain encoding and decoding of message data ?
 - d) Explain the flexible reliability in multicast communication and atomic multicast.
 - e) Explain the marshalling arguments and results.
3. Elaborate the popularity of distributed systems with its features in detail. **10**

OR

How duplicate request messages are handled ? Explain with figure and example of Idempotency.

4. Write note on **(any two)** : **(2×5=10)**
- a) The two basic IPC paradigm
 - b) Tightly and loosely coupled system
 - c) Client server binding.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain the centralized and distributed approach w.r.t. mutual exclusion.
 - b) Explain the clock synchronization issues and algorithm.
 - c) Explain with example event ordering.

Set P



- d) Explain the ways for recovery from deadlock also explain the issues in deadlock.
- e) Explain in detail clock synchronization.

6. Provide in detail different conceptual models of a file with example. **10**

OR

What is mutual exclusion ? Elaborate with example.

7. Write note on **(any two)** : **(2×5=10)**
- a) Deadlock detection.
 - b) Cache validation scheme.
 - c) Process migration in heterogeneous system.
-



Seat No.	
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Set	Q
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B.E. (Information Technology) (Part – I) Examination, 2016
Elective – I : DISTRIBUTED COMPUTING

Day and Date : Thursday, 8-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(1×20=20)

- 1) The file once created cannot be changed is called
 - a) immutable file
 - b) mutex file
 - c) mutable file
 - d) none of the mentioned
- 2) What concept used in DOS to achieve process management ?
 - a) Processor allocation
 - b) Process migration
 - c) Threads
 - d) All of these
- 3) In this method the address space is transferred while the whole process is still running on the source code
 - a) Total freezing
 - b) Transfer on reference
 - c) Retransferring
 - d) None of these
- 4) _____ scheduling scheme used for better performance on a multiprocessor system.
 - a) Affinity
 - b) Handoff
 - c) Flexibility
 - d) None of these
- 5) The _____ attempts to reduce the amount of network traffic by taking of the locality feature found in file accesses
 - a) Data cache model
 - b) Remote service model
 - c) Unit data transfer
 - d) None of these
- 6) In time stamps if two events are same, then the events are
 - a) concurrent
 - b) non-concurrent
 - c) monotonic
 - d) non-monotonic
- 7) Choose the important features of network operating system and DOS are
 - a) System image
 - b) Autonomy
 - c) Fault tolerance capability
 - d) All of these
- 8) The capability of a system to adopt service load refers to
 - a) Scalability
 - b) Flexibility
 - c) Redundancy
 - d) None of these



- 9) _____ is the method to test primitives provide to allow the receiver to check the buffer status
a) Polling b) Interrupt c) Timeout d) None of these
- 10) The amount of _____ to be allocated in the bounded buffer strategy is a matter of implementation.
a) Buffer Space b) Synchronization
c) Null buffer d) None of these
- 11) An _____ value loses its meaning when transferred from one process address to another
a) Absolute pointer b) Encoding of message
c) Storage space d) None of these
- 12) In case of failure, a new transaction coordinator can be elected by
a) bully algorithm b) ring algorithm
c) both a) and b) d) none of the mentioned
- 13) In distributed systems, election algorithms assumes that
a) a unique priority number is associated with each active process in system
b) there is no priority number associated with any process
c) priority of the processes is not required
d) none of the mentioned
- 14) According to the ring algorithm, links between processes are
a) bidirectional b) unidirectional
c) both a) and b) d) none of the mentioned
- 15) On some networks it is possible to create a special network address to which multiple machines can listen, such a network address is called
a) Unicast address b) Multicast address
c) Network address d) None of these
- 16) _____ means that a remote procedure call should have exactly the same syntax as a local procedure call.
a) Syntactic transparency b) Semantic transparency
c) Migration transparency d) None of these
- 17) The _____ handles transmission of messages across the network between client and server machines
a) Client stub b) Server stub c) RPCRuntime d) None of these
- 18) A call message normally have the field like
a) Sequence Number b) Message type field
c) Client identification field d) All of these
- 19) What are the characteristics of atomicity ?
a) All operations associated are executed to completion or none are performed
b) One processor as coordinator which handles all requests
c) When responses are received from all processes, then process can enter its critical section
d) Use communication links
- 20) A distributed file system exhibits location transparency if
a) The name of a file indicates exactly where the file can be found
b) The name of a file does not indicate where the file can be found
c) The name of a file does not need to be changed when the location of the file changes
d) The name of a file is not adequate for finding the file



Seat No.	
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**B.E. (Information Technology) (Part – I) Examination, 2016
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Thursday, 8-12-2016

Marks : 80

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

- Instructions:** 1) *All questions are compulsory.*
2) *Draw figure wherever is necessary.*
3) *Assume suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain in detail stub generation and RPC messages.
 - b) With typical message structure explain the issues in IPC by message passing.
 - c) What is multidatagram message also explain encoding and decoding of message data ?
 - d) Explain the flexible reliability in multicast communication and atomic multicast.
 - e) Explain the marshalling arguments and results.
3. Elaborate the popularity of distributed systems with its features in detail. **10**

OR

How duplicate request messages are handled ? Explain with figure and example of Idempotency.

4. Write note on **(any two)** : **(2×5=10)**
- a) The two basic IPC paradigm
 - b) Tightly and loosely coupled system
 - c) Client server binding.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain the centralized and distributed approach w.r.t. mutual exclusion.
 - b) Explain the clock synchronization issues and algorithm.
 - c) Explain with example event ordering.

Set Q



- d) Explain the ways for recovery from deadlock also explain the issues in deadlock.
- e) Explain in detail clock synchronization.

6. Provide in detail different conceptual models of a file with example. **10**

OR

What is mutual exclusion ? Elaborate with example.

7. Write note on **(any two)** : **(2×5=10)**

- a) Deadlock detection.
 - b) Cache validation scheme.
 - c) Process migration in heterogeneous system.
-



SLR-EP – 497

Seat No.	
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Set	R
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B.E. (Information Technology) (Part – I) Examination, 2016
Elective – I : DISTRIBUTED COMPUTING

Day and Date : Thursday, 8-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(1×20=20)

- 1) _____ means that a remote procedure call should have exactly the same syntax as a local procedure call.
 - a) Syntactic transparency
 - b) Semantic transparency
 - c) Migration transparency
 - d) None of these
- 2) The _____ handles transmission of messages across the network between client and server machines
 - a) Client stub
 - b) Server stub
 - c) RPCRuntime
 - d) None of these
- 3) A call message normally have the field like
 - a) Sequence Number
 - b) Message type field
 - c) Client identification field
 - d) All of these
- 4) What are the characteristics of atomicity ?
 - a) All operations associated are executed to completion or none are performed
 - b) One processor as coordinator which handles all requests
 - c) When responses are received from all processes, then process can enter its critical section
 - d) Use communication links
- 5) A distributed file system exhibits location transparency if
 - a) The name of a file indicates exactly where the file can be found
 - b) The name of a file does not indicate where the file can be found
 - c) The name of a file does not need to be changed when the location of the file changes
 - d) The name of a file is not adequate for finding the file
- 6) The file once created cannot be changed is called
 - a) immutable file
 - b) mutex file
 - c) mutable file
 - d) none of the mentioned

P.T.O.



- 7) What concept used in DOS to achieve process management ?
 - a) Processor allocation
 - b) Process migration
 - c) Threads
 - d) All of these
- 8) In this method the address space is transferred while the whole process is still running on the source code
 - a) Total freezing
 - b) Transfer on reference
 - c) Retransferring
 - d) None of these
- 9) _____ scheduling scheme used for better performance on a multiprocessor system.
 - a) Affinity
 - b) Handoff
 - c) Flexibility
 - d) None of these
- 10) The _____ attempts to reduce the amount of network traffic by taking of the locality feature found in file accesses
 - a) Data cache model
 - b) Remote service model
 - c) Unit data transfer
 - d) None of these
- 11) In time stamps if two events are same, then the events are
 - a) concurrent
 - b) non-concurrent
 - c) monotonic
 - d) non-monotonic
- 12) Choose the important features of network operating system and DOS are
 - a) System image
 - b) Autonomy
 - c) Fault tolerance capability
 - d) All of these
- 13) The capability of a system to adopt service load refers to
 - a) Scalability
 - b) Flexibility
 - c) Redundancy
 - d) None of these
- 14) _____ is the method to test primitives provide to allow the receiver to check the buffer status
 - a) Polling
 - b) Interrupt
 - c) Timeout
 - d) None of these
- 15) The amount of _____ to be allocated in the bounded buffer strategy is a matter of implementation.
 - a) Buffer Space
 - b) Synchronization
 - c) Null buffer
 - d) None of these
- 16) An _____ value loses its meaning when transferred from one process address to another
 - a) Absolute pointer
 - b) Encoding of message
 - c) Storage space
 - d) None of these
- 17) In case of failure, a new transaction coordinator can be elected by
 - a) bully algorithm
 - b) ring algorithm
 - c) both a) and b)
 - d) none of the mentioned
- 18) In distributed systems, election algorithms assumes that
 - a) a unique priority number is associated with each active process in system
 - b) there is no priority number associated with any process
 - c) priority of the processes is not required
 - d) none of the mentioned
- 19) According to the ring algorithm, links between processes are
 - a) bidirectional
 - b) unidirectional
 - c) both a) and b)
 - d) none of the mentioned
- 20) On some networks it is possible to create a special network address to which multiple machines can listen, such a network address is called
 - a) Unicast address
 - b) Multicast address
 - c) Network address
 - d) None of these



Seat No.	
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**B.E. (Information Technology) (Part – I) Examination, 2016
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Thursday, 8-12-2016

Marks : 80

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

- Instructions:** 1) *All questions are compulsory.*
2) *Draw figure wherever is necessary.*
3) *Assume suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain in detail stub generation and RPC messages.
 - b) With typical message structure explain the issues in IPC by message passing.
 - c) What is multidatagram message also explain encoding and decoding of message data ?
 - d) Explain the flexible reliability in multicast communication and atomic multicast.
 - e) Explain the marshalling arguments and results.
3. Elaborate the popularity of distributed systems with its features in detail. **10**

OR

How duplicate request messages are handled ? Explain with figure and example of Idempotency.

4. Write note on **(any two)** : **(2×5=10)**
- a) The two basic IPC paradigm
 - b) Tightly and loosely coupled system
 - c) Client server binding.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain the centralized and distributed approach w.r.t. mutual exclusion.
 - b) Explain the clock synchronization issues and algorithm.
 - c) Explain with example event ordering.

Set R



- d) Explain the ways for recovery from deadlock also explain the issues in deadlock.
- e) Explain in detail clock synchronization.

6. Provide in detail different conceptual models of a file with example. **10**

OR

What is mutual exclusion ? Elaborate with example.

7. Write note on **(any two)** : **(2×5=10)**
- a) Deadlock detection.
 - b) Cache validation scheme.
 - c) Process migration in heterogeneous system.
-



Seat No.	
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Set	S
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B.E. (Information Technology) (Part – I) Examination, 2016
Elective – I : DISTRIBUTED COMPUTING

Day and Date : Thursday, 8-12-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

(1×20=20)

- 1) An _____ value loses its meaning when transferred from one process address to another
 - a) Absolute pointer
 - b) Encoding of message
 - c) Storage space
 - d) None of these
- 2) In case of failure, a new transaction coordinator can be elected by
 - a) bully algorithm
 - b) ring algorithm
 - c) both a) and b)
 - d) none of the mentioned
- 3) In distributed systems, election algorithms assumes that
 - a) a unique priority number is associated with each active process in system
 - b) there is no priority number associated with any process
 - c) priority of the processes is not required
 - d) none of the mentioned
- 4) According to the ring algorithm, links between processes are
 - a) bidirectional
 - b) unidirectional
 - c) both a) and b)
 - d) none of the mentioned
- 5) On some networks it is possible to create a special network address to which multiple machines can listen, such a network address is called
 - a) Unicast address
 - b) Multicast address
 - c) Network address
 - d) None of these
- 6) _____ means that a remote procedure call should have exactly the same syntax as a local procedure call.
 - a) Syntactic transparency
 - b) Semantic transparency
 - c) Migration transparency
 - d) None of these
- 7) The _____ handles transmission of messages across the network between client and server machines
 - a) Client stub
 - b) Server stub
 - c) RPCRuntime
 - d) None of these

P.T.O.



- 8) A call message normally have the field like
- a) Sequence Number
 - b) Message type field
 - c) Client identification field
 - d) All of these
- 9) What are the characteristics of atomicity ?
- a) All operations associated are executed to completion or none are performed
 - b) One processor as coordinator which handles all requests
 - c) When responses are received from all processes, then process can enter its critical section
 - d) Use communication links
- 10) A distributed file system exhibits location transparency if
- a) The name of a file indicates exactly where the file can be found
 - b) The name of a file does not indicate where the file can be found
 - c) The name of a file does not need to be changed when the location of the file changes
 - d) The name of a file is not adequate for finding the file
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- a) immutable file
 - b) mutex file
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 - d) none of the mentioned
- 12) What concept used in DOS to achieve process management ?
- a) Processor allocation
 - b) Process migration
 - c) Threads
 - d) All of these
- 13) In this method the address space is transferred while the whole process is still running on the source code
- a) Total freezing
 - b) Transfer on reference
 - c) Retransferring
 - d) None of these
- 14) _____ scheduling scheme used for better performance on a multiprocessor system.
- a) Affinity
 - b) Handoff
 - c) Flexibility
 - d) None of these
- 15) The _____ attempts to reduce the amount of network traffic by taking of the locality feature found in file accesses
- a) Data cache model
 - b) Remote service model
 - c) Unit data transfer
 - d) None of these
- 16) In time stamps if two events are same, then the events are
- a) concurrent
 - b) non-concurrent
 - c) monotonic
 - d) non-monotonic
- 17) Choose the important features of network operating system and DOS are
- a) System image
 - b) Autonomy
 - c) Fault tolerance capability
 - d) All of these
- 18) The capability of a system to adopt service load refers to
- a) Scalability
 - b) Flexibility
 - c) Redundancy
 - d) None of these
- 19) _____ is the method to test primitives provide to allow the receiver to check the buffer status
- a) Polling
 - b) Interrupt
 - c) Timeout
 - d) None of these
- 20) The amount of _____ to be allocated in the bounded buffer strategy is a matter of implementation.
- a) Buffer Space
 - b) Synchronization
 - c) Null buffer
 - d) None of these



Seat No.	
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**B.E. (Information Technology) (Part – I) Examination, 2016
Elective – I : DISTRIBUTED COMPUTING**

Day and Date : Thursday, 8-12-2016

Marks : 80

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

- Instructions:** 1) *All questions are compulsory.*
2) *Draw figure wherever is necessary.*
3) *Assume suitable data if necessary.*

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Explain in detail stub generation and RPC messages.
 - b) With typical message structure explain the issues in IPC by message passing.
 - c) What is multidatagram message also explain encoding and decoding of message data ?
 - d) Explain the flexible reliability in multicast communication and atomic multicast.
 - e) Explain the marshalling arguments and results.
3. Elaborate the popularity of distributed systems with its features in detail. **10**

OR

How duplicate request messages are handled ? Explain with figure and example of Idempotency.

4. Write note on **(any two)** : **(2×5=10)**
- a) The two basic IPC paradigm
 - b) Tightly and loosely coupled system
 - c) Client server binding.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain the centralized and distributed approach w.r.t. mutual exclusion.
 - b) Explain the clock synchronization issues and algorithm.
 - c) Explain with example event ordering.

Set S



- d) Explain the ways for recovery from deadlock also explain the issues in deadlock.
- e) Explain in detail clock synchronization.

6. Provide in detail different conceptual models of a file with example. **10**

OR

What is mutual exclusion ? Elaborate with example.

7. Write note on **(any two)** : **(2×5=10)**

- a) Deadlock detection.
 - b) Cache validation scheme.
 - c) Process migration in heterogeneous system.
-



SLR-EP – 500

Seat No.	
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Set	P
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B.E. (I.T.) (Part – II) (Old) Examination, 2016
Elective – II : SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Thursday, 24-11-2016
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.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) The approach /document used to make sure all the requirements are covered when writing test cases
 - a) Test matrix
 - b) Check list
 - c) Test bed
 - d) Traceability matrix
- 2) Executing the same test case by giving the number of inputs on same build called as
 - a) Regression Testing
 - b) Re Testing
 - c) Ad hoc Testing
 - d) Sanity Testing
- 3) Control charts is a statistical technique to assess, monitor and maintain the stability of a process
 - a) True
 - b) False
- 4) To check whether we are developing the right product according to the customer requirements are not. It is a static process
 - a) Validation
 - b) Verification
 - c) Quality Assurance
 - d) Quality Control
- 5) To check whether we have developed the product according to the customer requirements or not. It is a dynamic process
 - a) Validation
 - b) Verification
 - c) Quality Assurance
 - d) Quality Control
- 6) Staff development plan describes how the skills and experience of the project team members will be developed
 - a) True
 - b) False
- 7) Validation plan describes the approach, resources and schedule used for system validation
 - a) True
 - b) False
- 8) A Non-functional Software testing done to check if the user interface is easy to use and understand
 - a) Usability Testing
 - b) Security Testing
 - c) Unit Testing
 - d) Black Box Testing

P.T.O.



- 9) The review and approved document (i.e. Test plan, System Requirement Specification's) is called as
- a) Delivery Document
 - b) Baseline Document
 - c) Check List
 - d) None of the above
- 10) What are the Testing Levels ?
- a) Unit Testing
 - b) Integration Testing
 - c) System Testing and Acceptance Testing
 - d) All the above
- 11) Cost of Quality = Prevention Cost + Appraisal Cost + Failure Cost
- a) True
 - b) False
- 12) This testing technique examines the basic program structure and it derives the test data from the program logic; ensuring that all statements and conditions executed at least once. It is called as
- a) Black Box Testing
 - b) White Box Testing
 - c) Grey Box Testing
 - d) Closed Box Testing
- 13) It measures the quality of processes used to create a quality product
It is a system of management activities,
It is a preventive process, it applied for entire life cycle and deals with process
- a) Validation
 - b) Verification
 - c) Quality Assurance
 - d) Quality Control
- 14) Variance from product specifications is called
- a) Report
 - b) Requirement
 - c) Defects
 - d) Risk
- 15) Verification is
- a) Process based
 - b) Product based
 - c) Both a and b
 - d) None of the above
- 16) Use cases form the basis for
- a) Design
 - b) Test cases
 - c) GUI design
 - d) All of the above
- 17) Which is Black-Box Testing method ?
- a) equivalence partitioning
 - b) code coverage
 - c) fault injection
 - d) none of the above
- 18) Software testing is nothing else but
- a) Verification only
 - b) Validation only
 - c) Both (a) and (b)
 - d) None of the above
- 19) Requirement and Analysis, Design, Development or Coding, Testing and Maintenance is called as Software Development Life Cycle (SDLC)
- a) True
 - b) False
- 20) The testing which is done by going thro' the code is known as
- a) Unit Testing
 - b) Black Box Testing
 - c) White Box Testing
 - d) Regression Testing
-



Seat No.	
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B.E. (I.T.) (Part – II) (Old) Examination, 2016
Elective – II : SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Thursday, 24-11-2016
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.

SECTION – I

2. Answer briefly : **(2×10=20)**
- 1) What is flow graph ? What it is used for ?
 - 2) What is a test case ?
 - 3) What is a scatter plot ?
 - 4) What is verification and validation ?
 - 5) What is test plan ?
 - 6) What is fault, failure, error and defect ?
 - 7) What are the measurement in software engineering ?
 - 8) What is control flow structure ?
 - 9) What are the central issues in testing ?
 - 10) What is box plot ?
3. Explain in detail object oriented metrics. **8**
4. Write short notes on : **12**
- a) Quality revolution
 - b) Test levels
 - c) Overview of statistical test.

SECTION – II

5. Explain the following : **(2×10=20)**
- 1) What is domain testing ?
 - 2) What is data-flow based testing ?
 - 3) What is functional testing ?

Set P



- 4) What is Jelinski Moranda model ?
 - 5) What is the objective of unit testing ?
 - 6) What is 'Software Quality Assurance' ?
 - 7) List McCalls Quality Factors.
 - 8) What are the factors influencing of software reliability ?
 - 9) How do we apply system test execution with example ?
 - 10) What are the views of software quality ?
6. Explain in detail ISO 9126 quality characteristics. **10**
7. What is Unit Testing ? What are various approaches to unit testing ? Explain them with their advantages and limitations. **10**
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Seat No.	
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Set	Q
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B.E. (I.T.) (Part – II) (Old) Examination, 2016
Elective – II : SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Thursday, 24-11-2016
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.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) Use cases form the basis for
a) Design b) Test cases c) GUI design d) All of the above
- 2) Which is Black-Box Testing method ?
a) equivalence partitioning b) code coverage
c) fault injection d) none of the above
- 3) Software testing is nothing else but
a) Verification only b) Validation only
c) Both (a) and (b) d) None of the above
- 4) Requirement and Analysis, Design, Development or Coding, Testing and Maintenance is called as Software Development Life Cycle (SDLC)
a) True b) False
- 5) The testing which is done by going thro' the code is known as
a) Unit Testing b) Black Box Testing
c) White Box Testing d) Regression Testing
- 6) The approach /document used to make sure all the requirements are covered when writing test cases
a) Test matrix b) Check list
c) Test bed d) Traceability matrix
- 7) Executing the same test case by giving the number of inputs on same build called as
a) Regression Testing b) Re Testing
c) Ad hoc Testing d) Sanity Testing
- 8) Control charts is a statistical technique to assess, monitor and maintain the stability of a process
a) True b) False



- 9) To check whether we are developing the right product according to the customer requirements are not. It is a static process
- a) Validation
 - b) Verification
 - c) Quality Assurance
 - d) Quality Control
- 10) To check whether we have developed the product according to the customer requirements or not. It is a dynamic process
- a) Validation
 - b) Verification
 - c) Quality Assurance
 - d) Quality Control
- 11) Staff development plan describes how the skills and experience of the project team members will be developed
- a) True
 - b) False
- 12) Validation plan describes the approach, resources and schedule used for system validation
- a) True
 - b) False
- 13) A Non-functional Software testing done to check if the user interface is easy to use and understand
- a) Usability Testing
 - b) Security Testing
 - c) Unit Testing
 - d) Black Box Testing
- 14) The review and approved document (i.e. Test plan, System Requirement Specification's) is called as
- a) Delivery Document
 - b) Baseline Document
 - c) Check List
 - d) None of the above
- 15) What are the Testing Levels ?
- a) Unit Testing
 - b) Integration Testing
 - c) System Testing and Acceptance Testing
 - d) All the above
- 16) Cost of Quality = Prevention Cost + Appraisal Cost + Failure Cost
- a) True
 - b) False
- 17) This testing technique examines the basic program structure and it derives the test data from the program logic; ensuring that all statements and conditions executed at least once. It is called as
- a) Black Box Testing
 - b) White Box Testing
 - c) Grey Box Testing
 - d) Closed Box Testing
- 18) It measures the quality of processes used to create a quality product
It is a system of management activities,
It is a preventive process, it applied for entire life cycle and deals with process
- a) Validation
 - b) Verification
 - c) Quality Assurance
 - d) Quality Control
- 19) Variance from product specifications is called
- a) Report
 - b) Requirement
 - c) Defects
 - d) Risk
- 20) Verification is
- a) Process based
 - b) Product based
 - c) Both a and b
 - d) None of the above



Seat No.	
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B.E. (I.T.) (Part – II) (Old) Examination, 2016
Elective – II : SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Thursday, 24-11-2016
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.

SECTION – I

2. Answer briefly : **(2×10=20)**
- 1) What is flow graph ? What it is used for ?
 - 2) What is a test case ?
 - 3) What is a scatter plot ?
 - 4) What is verification and validation ?
 - 5) What is test plan ?
 - 6) What is fault, failure, error and defect ?
 - 7) What are the measurement in software engineering ?
 - 8) What is control flow structure ?
 - 9) What are the central issues in testing ?
 - 10) What is box plot ?
3. Explain in detail object oriented metrics. **8**
4. Write short notes on : **12**
- a) Quality revolution
 - b) Test levels
 - c) Overview of statistical test.

SECTION – II

5. Explain the following : **(2×10=20)**
- 1) What is domain testing ?
 - 2) What is data-flow based testing ?
 - 3) What is functional testing ?

Set Q



- 4) What is Jelinski Moranda model ?
 - 5) What is the objective of unit testing ?
 - 6) What is 'Software Quality Assurance' ?
 - 7) List McCalls Quality Factors.
 - 8) What are the factors influencing of software reliability ?
 - 9) How do we apply system test execution with example ?
 - 10) What are the views of software quality ?
6. Explain in detail ISO 9126 quality characteristics. **10**
7. What is Unit Testing ? What are various approaches to unit testing ? Explain them with their advantages and limitations. **10**
-



Seat No.	
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B.E. (I.T.) (Part – II) (Old) Examination, 2016
Elective – II : SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Thursday, 24-11-2016
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.

SECTION – I

2. Answer briefly : **(2×10=20)**
- 1) What is flow graph ? What it is used for ?
 - 2) What is a test case ?
 - 3) What is a scatter plot ?
 - 4) What is verification and validation ?
 - 5) What is test plan ?
 - 6) What is fault, failure, error and defect ?
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 - 8) What is control flow structure ?
 - 9) What are the central issues in testing ?
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- a) Quality revolution
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 - c) Overview of statistical test.

SECTION – II

5. Explain the following : **(2×10=20)**
- 1) What is domain testing ?
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Set R



- 4) What is Jelinski Moranda model ?
 - 5) What is the objective of unit testing ?
 - 6) What is 'Software Quality Assurance' ?
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 - 9) How do we apply system test execution with example ?
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6. Explain in detail ISO 9126 quality characteristics. **10**
7. What is Unit Testing ? What are various approaches to unit testing ? Explain them with their advantages and limitations. **10**
-



SLR-EP – 500

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B.E. (I.T.) (Part – II) (Old) Examination, 2016
Elective – II : SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Thursday, 24-11-2016
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.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) Staff development plan describes how the skills and experience of the project team members will be developed
 - a) True
 - b) False
- 2) Validation plan describes the approach, resources and schedule used for system validation
 - a) True
 - b) False
- 3) A Non-functional Software testing done to check if the user interface is easy to use and understand
 - a) Usability Testing
 - b) Security Testing
 - c) Unit Testing
 - d) Black Box Testing
- 4) The review and approved document (i.e. Test plan, System Requirement Specification's) is called as
 - a) Delivery Document
 - b) Baseline Document
 - c) Check List
 - d) None of the above
- 5) What are the Testing Levels ?
 - a) Unit Testing
 - b) Integration Testing
 - c) System Testing and Acceptance Testing
 - d) All the above
- 6) Cost of Quality = Prevention Cost + Appraisal Cost + Failure Cost
 - a) True
 - b) False
- 7) This testing technique examines the basic program structure and it derives the test data from the program logic; ensuring that all statements and conditions executed at least once. It is called as
 - a) Black Box Testing
 - b) White Box Testing
 - c) Grey Box Testing
 - d) Closed Box Testing

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B.E. (I.T.) (Part – II) (Old) Examination, 2016
Elective – II : SOFTWARE TESTING AND QUALITY ASSURANCE

Day and Date : Thursday, 24-11-2016
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.

SECTION – I

2. Answer briefly : **(2×10=20)**
- 1) What is flow graph ? What it is used for ?
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 - 4) What is verification and validation ?
 - 5) What is test plan ?
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 - 9) What are the central issues in testing ?
 - 10) What is box plot ?
3. Explain in detail object oriented metrics. **8**
4. Write short notes on : **12**
- a) Quality revolution
 - b) Test levels
 - c) Overview of statistical test.

SECTION – II

5. Explain the following : **(2×10=20)**
- 1) What is domain testing ?
 - 2) What is data-flow based testing ?
 - 3) What is functional testing ?

Set S



- 4) What is Jelinski Moranda model ?
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 - 6) What is 'Software Quality Assurance' ?
 - 7) List McCalls Quality Factors.
 - 8) What are the factors influencing of software reliability ?
 - 9) How do we apply system test execution with example ?
 - 10) What are the views of software quality ?
6. Explain in detail ISO 9126 quality characteristics. **10**
7. What is Unit Testing ? What are various approaches to unit testing ? Explain them with their advantages and limitations. **10**
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SLR-EP – 501

Seat No.	
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B.E. (IT) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) ADT generates .apk (android application package) in _____ directory of Project directory structure.
a) res b) assets c) bin d) lib
- 2) _____ displays messages generated during running of app on emulator or a connected device in ADT.
a) Output view b) Package explorer view
c) LogCat view d) Project explorer view
- 3) Which of the following is not a Android Platform tool ?
a) DDMS b) adb c) aapt d) dx
- 4) During transition form Paused state to Stopped state _____ callback method is called.
a) onResume() b) onStop() c) onDestroy() d) onStart()
- 5) Upon creating a layout resource, Android framework generates a unique id for it in the _____ file.
a) R.java b) AndroidManifest.xml
c) strings.xml d) In Activity java file corresponding to the Main activity of an app.
- 6) Each view in Android is an
a) Event listener b) Event source
c) Event handler d) Event Object
- 7) A Bundle object stores values in form of
a) List b) Array c) Key-value pairs d) Tree
- 8) Android mandates that the UI of an app should be updated in the
a) Worker Thread only b) Daemon Thread only
c) Main Thread only d) None of the above

P.T.O.



Seat No.	
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**B.E. (IT) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT (Elective – II) (Old)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four (Each question carries 5 marks)** : **20**
- a) State and explain features and characteristics of Android Operating System.
 - b) What are hardware requirements for Android OS considering version Gingerbread version ?
 - c) Illustrate three approaches to develop a mobile app along with the scenarios where we need to apply these approaches.
 - d) Explain the purpose of AndroidManifest.xml.
 - e) Define layouts with examples.
3. What are logical components of an Android app also explain their purpose ? **10**

OR

- Illustrate Activity life-cycle states and respective callback methods. **10**
4. Illustrate the benefits of AsyncTask over Threads for implementing long-running tasks. **10**

SECTION – II

5. Attempt **any four (Each question carries 5 marks)** : **20**
- a) Write a short note on Shared Preferences in Android.
 - b) Explain following terms in Android :
 - 1) Drawable Animation
 - 2) View Animation.
 - c) Write a short note on Google Play Store.
 - d) Compare Internal Storage and External Storage in Android.
 - e) Write a short note on SQLite in Android.

Set P



6. Explain the purpose of different types of testing for a mobile app. **10**

OR

Briefly discuss following common device sensors : **10**

- 1) Accelerometer
- 2) Gyroscope
- 3) Proximity sensor
- 4) Magnetometer
- 5) Light Sensor.

7. Enlist various mechanisms of data persistence and access in mobile apps. Highlight the pros and cons of each mechanism. **10**



Seat No.	
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B.E. (IT) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) Usability testing of an app is a _____ to ensure that the app is easy to understand and use.
 - a) White box testing
 - b) Black box testing
 - c) Unit testing
 - d) Quality testing
- 2) Before distributing an app online, it has to be signed by the developer/organization to ensure its
 - a) integrity
 - b) credibility
 - c) authenticity
 - d) originality
- 3) In app Audio Video Playback is achieved with help of _____ API.
 - a) MediaPlayer
 - b) MediaRecorder
 - c) MultimediaPlayer
 - d) None of the above
- 4) If application's Main thread takes more than _____ seconds to respond, then ANR is popped up.
 - a) 3 sec.
 - b) 5 sec.
 - c) 7 sec.
 - d) 10 sec.
- 5) MoneyTalk automates _____ testing of an app.
 - a) Quality
 - b) Unit
 - c) Functionality
 - d) None of the above
- 6) ADT generates .apk (android application package) in _____ directory of Project directory structure.
 - a) res
 - b) assets
 - c) bin
 - d) lib
- 7) _____ displays messages generated during running of app on emulator or a connected device in ADT.
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 - c) aapt
 - d) dx



- 9) During transition from Paused state to Stopped state _____ callback method is called.
a) onResume() b) onStop() c) onDestroy() d) onStart()
- 10) Upon creating a layout resource, Android framework generates a unique id for it in the _____ file.
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- 12) A Bundle object stores values in form of
a) List b) Array c) Key-value pairs d) Tree
- 13) Android mandates that the UI of an app should be updated in the
a) Worker Thread only b) Daemon Thread only
c) Main Thread only d) None of the above
- 14) Long running background tasks are written in _____ method of AsyncTask.
a) onProgressUpdate b) doInBackground
c) onPostExecute d) None of the above
- 15) Which of the following is not a state in Life cycle of Service ?
a) Running b) Paused c) Destroyed d) None of the above
- 16) Which Storage is always available for storing and retrieval in context of Android device ?
a) External Storage b) Internal storage
c) Network storage d) None of the above
- 17) Shared preferences stores data in an _____ file in the internal memory of the device.
a) Java b) Text c) DAT d) XML
- 18) Which of the following is not a Category for Sensors in Android ?
a) Position b) Motion c) Environment d) Atmospheric
- 19) Which class lets you access device's sensors ?
a) Sensor b) SensorEvent
c) SensorManager d) SensorEventListener
- 20) Android JUnit framework is used to perform _____ testing of android apps.
a) Unit testing b) Functional testing
c) Black box testing d) White box testing
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Seat No.	
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**B.E. (IT) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT (Elective – II) (Old)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four (Each question carries 5 marks)** : **20**
- a) State and explain features and characteristics of Android Operating System.
 - b) What are hardware requirements for Android OS considering version Gingerbread version ?
 - c) Illustrate three approaches to develop a mobile app along with the scenarios where we need to apply these approaches.
 - d) Explain the purpose of AndroidManifest.xml.
 - e) Define layouts with examples.
3. What are logical components of an Android app also explain their purpose ? **10**

OR

- Illustrate Activity life-cycle states and respective callback methods. **10**
4. Illustrate the benefits of AsyncTask over Threads for implementing long-running tasks. **10**

SECTION – II

5. Attempt **any four (Each question carries 5 marks)** : **20**
- a) Write a short note on Shared Preferences in Android.
 - b) Explain following terms in Android :
 - 1) Drawable Animation
 - 2) View Animation.
 - c) Write a short note on Google Play Store.
 - d) Compare Internal Storage and External Storage in Android.
 - e) Write a short note on SQLite in Android.

Set Q



6. Explain the purpose of different types of testing for a mobile app. **10**

OR

Briefly discuss following common device sensors : **10**

- 1) Accelerometer
- 2) Gyroscope
- 3) Proximity sensor
- 4) Magnetometer
- 5) Light Sensor.

7. Enlist various mechanisms of data persistence and access in mobile apps. Highlight the pros and cons of each mechanism. **10**



- 9) If application's Main thread takes more than _____ seconds to respond, then ANR is popped up.
a) 3 sec. b) 5 sec. c) 7 sec. d) 10 sec.
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a) Quality b) Unit c) Functionality d) None of the above
- 11) ADT generates .apk (android application package) in _____ directory of Project directory structure.
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Seat No.	
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**B.E. (IT) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT (Elective – II) (Old)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four (Each question carries 5 marks)** : **20**
- a) State and explain features and characteristics of Android Operating System.
 - b) What are hardware requirements for Android OS considering version Gingerbread version ?
 - c) Illustrate three approaches to develop a mobile app along with the scenarios where we need to apply these approaches.
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3. What are logical components of an Android app also explain their purpose ? **10**

OR

- Illustrate Activity life-cycle states and respective callback methods. **10**
4. Illustrate the benefits of AsyncTask over Threads for implementing long-running tasks. **10**

SECTION – II

5. Attempt **any four (Each question carries 5 marks)** : **20**
- a) Write a short note on Shared Preferences in Android.
 - b) Explain following terms in Android :
 - 1) Drawable Animation
 - 2) View Animation.
 - c) Write a short note on Google Play Store.
 - d) Compare Internal Storage and External Storage in Android.
 - e) Write a short note on SQLite in Android.



6. Explain the purpose of different types of testing for a mobile app. **10**

OR

Briefly discuss following common device sensors : **10**

- 1) Accelerometer
- 2) Gyroscope
- 3) Proximity sensor
- 4) Magnetometer
- 5) Light Sensor.

7. Enlist various mechanisms of data persistence and access in mobile apps. Highlight the pros and cons of each mechanism. **10**



SLR-EP – 501

Seat No.	
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B.E. (IT) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT (Elective – II) (Old)

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct answer :

20

- 1) Each view in Android is an
 - a) Event listener
 - b) Event source
 - c) Event handler
 - d) Event Object
- 2) A Bundle object stores values in form of
 - a) List
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 - c) Key-value pairs
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 - d) SensorEventListener

P.T.O.



Seat No.	
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**B.E. (IT) (Part – II) Examination, 2016
MOBILE APPLICATION DEVELOPMENT (Elective – II) (Old)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

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SECTION – II

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- 3) Proximity sensor
- 4) Magnetometer
- 5) Light Sensor.

7. Enlist various mechanisms of data persistence and access in mobile apps. Highlight the pros and cons of each mechanism. **10**



- 8) The full form of KDD is
A) Knowledge database
B) Knowledge discovery database
C) Knowledge data house
D) Knowledge data definition
- 9) The output of KDD is
A) Data
B) Information
C) Query
D) Useful information
- 10) 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
- 11) A goal of data mining includes which of the following ?
A) To explain some observed event or condition
B) To conform that data exists
C) To analyze data for expected relationship
D) To create a new data warehouse
- 12) An OLAP tool provides for
A) Multidimensional analysis
B) Roll-up and drill-down
C) Slicing and dicing
D) Rotation
- 13) _____ is the application of data mining techniques to discover patterns from the web.
A) Text mining
B) Multimedia mining
C) Web mining
D) Link mining
- 14) Which of the following employees data mining techniques to analyze the intent of a user query, provided additional generalized or associated information relevant to the query ?
A) Iceberg query method
B) Data analyzer
C) Intelligent query answering
D) DBA
- 15) Association rules mining is based on _____
A) Clustering and employing rules for classification
B) Data warehouse roadmap
C) Object oriented extended module interface
D) None of the above
- 16) In decision tree internal nodes are denoted by ovals and leaf nodes are denoted by rectangles.
A) True
B) False
- 17) Special to non special dimension of database in which primitive level data are spatial but generalization becomes non spatial.
A) True
B) False
- 18) Classification is
A) A subdivision of a set of examples into a number of classes
B) A means of the accuracy of the classification of a concept that is given by certain theory
C) The task of assigning a classification to a set of examples
D) None of these
- 19) The generic two-level data warehouse architecture includes which of the following ?
A) At least one data mart
B) Data that can extracted from numerous internal and external sources
C) Near real-time updates
D) All of the above
- 20) The decision tree can be used either as a part of the selection criteria, or to support the use and selection of specific data within the overall structure.
A) True
B) False



Seat No.	
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
(Elective – II:1) DATA MINING AND WAREHOUSING**

Day and Date : Thursday, 24-11-2016
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** : **(5x4=20)**
- a) What are the basic elements of data warehousing ?
 - b) How are transactions modeled ?
 - c) How are keys created and maintained in a data model for data warehousing ?
 - d) Explain the terms Support and Confidence w.r.t. ARM.
 - e) How is data of interest selected ?
3. Attempt **any one** : **10**
- a) How is information extracted using neural networks ?
 - b) State and compare between the types of data warehousing methodologies.
4. Attempt **any one** : **10**
- a) Explain the components of an OLAP system.
 - b) Elaborate on how tree based classifiers are used in decision making.

SECTION – II

5. Attempt **any four** : **(5x4=20)**
- a) What is web content mining ?
 - b) How is multimedia material compressed ?
 - c) List some applications of data mining.
 - d) What is research prototype ? Illustrate.
 - e) How are web pages classified ?
6. Attempt **any one** : **10**
- a) Compare between Web Structure and Web Usage Mining Schemes.
 - b) How is a GUI designed based on a Data Mining Query language ?
7. Attempt **any one** : **10**
- a) How is knowledge extracted from the web ? Illustrate.
 - b) What are the components in architecture of a data mining technique ?



Seat No.	
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Set	Q
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B.E. (I.T.) (Part – II) (New) Examination, 2016
(Elective – II:1) DATA MINING AND WAREHOUSING

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

(20×1=20)

1. Choose the correct answer :

- 1) In decision tree internal nodes are denoted by ovals and leaf nodes are denoted by rectangles.
A) True B) False
- 2) Special to non special dimension of database in which primitive level data are spatial but generalization becomes non spatial.
A) True B) False
- 3) Classification is
A) A subdivision of a set of examples into a number of classes
B) A means of the accuracy of the classification of a concept that is given by certain theory
C) The task of assigning a classification to a set of examples
D) None of these
- 4) The generic two-level data warehouse architecture includes which of the following ?
A) At least one data mart
B) Data that can extracted from numerous internal and external sources
C) Near real-time updates
D) All of the above
- 5) The decision tree can be used either as a part of the selection criteria, or to support the use and selection of specific data within the overall structure.
A) True B) False
- 6) Data mining can also applied to other forms such as
i) Data streams
ii) Sequence data
iii) Networked data
iv) Text data
v) Spatial data
A) i), ii), iii) and v) only B) ii), iii), iv) and v) only
C) i), iii), iv) and v) only D) All i), ii), iii), iv) and v)
- 7) Which of the following is not a data mining functionality ?
A) Characterization and discrimination B) Classification and regression
C) Selection and interpretation D) Clustering and analysis



Seat No.	
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
(Elective – II:1) DATA MINING AND WAREHOUSING**

Day and Date : Thursday, 24-11-2016
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** : **(5x4=20)**
- a) What are the basic elements of data warehousing ?
 - b) How are transactions modeled ?
 - c) How are keys created and maintained in a data model for data warehousing ?
 - d) Explain the terms Support and Confidence w.r.t. ARM.
 - e) How is data of interest selected ?
3. Attempt **any one** : **10**
- a) How is information extracted using neural networks ?
 - b) State and compare between the types of data warehousing methodologies.
4. Attempt **any one** : **10**
- a) Explain the components of an OLAP system.
 - b) Elaborate on how tree based classifiers are used in decision making.

SECTION – II

5. Attempt **any four** : **(5x4=20)**
- a) What is web content mining ?
 - b) How is multimedia material compressed ?
 - c) List some applications of data mining.
 - d) What is research prototype ? Illustrate.
 - e) How are web pages classified ?
6. Attempt **any one** : **10**
- a) Compare between Web Structure and Web Usage Mining Schemes.
 - b) How is a GUI designed based on a Data Mining Query language ?
7. Attempt **any one** : **10**
- a) How is knowledge extracted from the web ? Illustrate.
 - b) What are the components in architecture of a data mining technique ?



SLR-EP – 502

Seat No.	
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Set	R
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
(Elective – II:1) DATA MINING AND WAREHOUSING**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

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

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20
(20×1=20)

1. Choose the correct answer :

- 1) A goal of data mining includes which of the following ?
A) To explain some observed event or condition
B) To conform that data exists
C) To analyze data for expected relationship
D) To create a new data warehouse
- 2) An OLAP tool provides for
A) Multidimensional analysis
B) Roll-up and drill-down
C) Slicing and dicing
D) Rotation
- 3) _____ is the application of data mining techniques to discover patterns from the web.
A) Text mining B) Multimedia mining C) Web mining D) Link mining
- 4) Which of the following employees data mining techniques to analyze the intent of a user query, provided additional generalized or associated information relevant to the query ?
A) Iceberg query method B) Data analyzer
C) Intelligent query answering D) DBA
- 5) Association rules mining is based on _____
A) Clustering and employing rules for classification
B) Data warehouse roadmap
C) Object oriented extended module interface
D) None of the above
- 6) In decision tree internal nodes are denoted by ovals and leaf nodes are denoted by rectangles.
A) True B) False
- 7) Special to non special dimension of database in which primitive level data are spatial but generalization becomes non spatial.
A) True B) False
- 8) Classification is
A) A subdivision of a set of examples into a number of classes
B) A means of the accuracy of the classification of a concept that is given by certain theory
C) The task of assigning a classification to a set of examples
D) None of these

P.T.O.



- 9) 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) All of the above
- 10) The decision tree can be used either as a part of the selection criteria, or to support the use and selection of specific data within the overall structure.
- A) True
 - B) False
- 11) Data mining can also be applied to other forms such as
- i) Data streams
 - ii) Sequence data
 - iii) Networked data
 - iv) Text data
 - v) Spatial data
- A) i), ii), iii) and v) only
 - B) ii), iii), iv) and v) only
 - C) i), iii), iv) and v) only
 - D) All i), ii), iii), iv) and v)
- 12) Which of the following is not a data mining functionality ?
- A) Characterization and discrimination
 - B) Classification and regression
 - C) Selection and interpretation
 - D) Clustering and analysis
- 13) _____ is a summarization of the general characteristics or features of a target class of data.
- A) Data characterization
 - B) Data classification
 - C) Data discrimination
 - D) Data selection
- 14) _____ is a comparison of the general features of the target class data objects against the general features of objects from one or multiple contrasting classes.
- A) Data characterization
 - B) Data classification
 - C) Data discrimination
 - D) Data selection
- 15) Strategic value of data mining is
- A) Cost-sensitive
 - B) Work-sensitive
 - C) Time-sensitive
 - D) Technical-sensitive
- 16) _____ is the process of finding a model that describes and distinguishes data classes or concepts.
- A) Data characterization
 - B) Data classification
 - C) Data discrimination
 - D) Data selection
- 17) The various aspects of data mining methodologies is/are
- i) Mining various and new kinds of knowledge
 - ii) Mining knowledge in multidimensional space
 - iii) Pattern evaluation and pattern or constraint-guided mining
 - iv) Handling uncertainty, noise, or incompleteness of data
- A) i), ii) and iv) only
 - B) ii), iii) and iv) only
 - C) i), ii), and iii) only
 - D) All i), ii), iii) and iv)
- 18) The full form of KDD is
- A) Knowledge database
 - B) Knowledge discovery database
 - C) Knowledge data house
 - D) Knowledge data definition
- 19) The output of KDD is
- A) Data
 - B) Information
 - C) Query
 - D) Useful information
- 20) 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



Seat No.	
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
(Elective – II:1) DATA MINING AND WAREHOUSING**

Day and Date : Thursday, 24-11-2016
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** : **(5x4=20)**
- a) What are the basic elements of data warehousing ?
 - b) How are transactions modeled ?
 - c) How are keys created and maintained in a data model for data warehousing ?
 - d) Explain the terms Support and Confidence w.r.t. ARM.
 - e) How is data of interest selected ?
3. Attempt **any one** : **10**
- a) How is information extracted using neural networks ?
 - b) State and compare between the types of data warehousing methodologies.
4. Attempt **any one** : **10**
- a) Explain the components of an OLAP system.
 - b) Elaborate on how tree based classifiers are used in decision making.

SECTION – II

5. Attempt **any four** : **(5x4=20)**
- a) What is web content mining ?
 - b) How is multimedia material compressed ?
 - c) List some applications of data mining.
 - d) What is research prototype ? Illustrate.
 - e) How are web pages classified ?
6. Attempt **any one** : **10**
- a) Compare between Web Structure and Web Usage Mining Schemes.
 - b) How is a GUI designed based on a Data Mining Query language ?
7. Attempt **any one** : **10**
- a) How is knowledge extracted from the web ? Illustrate.
 - b) What are the components in architecture of a data mining technique ?



- 9) Which of the following employees data mining techniques to analyze the intent of a user query, provided additional generalized or associated information relevant to the query ?
- A) Iceberg query method
B) Data analyzer
C) Intelligent query answering
D) DBA
- 10) Association rules mining is based on _____
- A) Clustering and employing rules for classification
B) Data warehouse roadmap
C) Object oriented extended module interface
D) None of the above
- 11) In decision tree internal nodes are denoted by ovals and leaf nodes are denoted by rectangles.
- A) True
B) False
- 12) Special to non special dimension of database in which primitive level data are spatial but generalization becomes non spatial.
- A) True
B) False
- 13) Classification is
- A) A subdivision of a set of examples into a number of classes
B) A means of the accuracy of the classification of a concept that is given by certain theory
C) The task of assigning a classification to a set of examples
D) None of these
- 14) The generic two-level data warehouse architecture includes which of the following ?
- A) At least one data mart
B) Data that can extracted from numerous internal and external sources
C) Near real-time updates
D) All of the above
- 15) The decision tree can be used either as a part of the selection criteria, or to support the use and selection of specific data within the overall structure.
- A) True
B) False
- 16) Data mining can also applied to other forms such as
- i) Data streams
ii) Sequence data
iii) Networked data
iv) Text data
v) Spatial data
- A) i), ii), iii) and v) only
B) ii), iii), iv) and v) only
C) i), iii), iv) and v) only
D) All i), ii), iii), iv) and v)
- 17) Which of the following is not a data mining functionality ?
- A) Characterization and discrimination
B) Classification and regression
C) Selection and interpretation
D) Clustering and analysis
- 18) _____ is a summarization of the general characteristics or features of a target class of data.
- A) Data characterization
B) Data classification
C) Data discrimination
D) Data selection
- 19) _____ is a comparison of the general features of the target class data objects against the general features of objects from one or multiple contrasting classes.
- A) Data characterization
B) Data classification
C) Data discrimination
D) Data selection
- 20) Strategic value of data mining is
- A) Cost-sensitive
B) Work-sensitive
C) Time-sensitive
D) Technical-sensitive



Seat No.	
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**B.E. (I.T.) (Part – II) (New) Examination, 2016
(Elective – II:1) DATA MINING AND WAREHOUSING**

Day and Date : Thursday, 24-11-2016
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** : **(5x4=20)**
- a) What are the basic elements of data warehousing ?
 - b) How are transactions modeled ?
 - c) How are keys created and maintained in a data model for data warehousing ?
 - d) Explain the terms Support and Confidence w.r.t. ARM.
 - e) How is data of interest selected ?
3. Attempt **any one** : **10**
- a) How is information extracted using neural networks ?
 - b) State and compare between the types of data warehousing methodologies.
4. Attempt **any one** : **10**
- a) Explain the components of an OLAP system.
 - b) Elaborate on how tree based classifiers are used in decision making.

SECTION – II

5. Attempt **any four** : **(5x4=20)**
- a) What is web content mining ?
 - b) How is multimedia material compressed ?
 - c) List some applications of data mining.
 - d) What is research prototype ? Illustrate.
 - e) How are web pages classified ?
6. Attempt **any one** : **10**
- a) Compare between Web Structure and Web Usage Mining Schemes.
 - b) How is a GUI designed based on a Data Mining Query language ?
7. Attempt **any one** : **10**
- a) How is knowledge extracted from the web ? Illustrate.
 - b) What are the components in architecture of a data mining technique ?



SLR-EP – 503

Seat No.	
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Set **P**

**B.E. (Information Technology) (Part – II) Examination, 2016
Elective – II : PATTERN RECOGNITION (New)**

Day and Date : Thursday, 24-11-2016
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 alternatives :

(20×1=20)

- 1) _____ is a process that taking in raw data and making an action based on the category of the pattern.
 - a) Data Mine
 - b) Information Retrieval
 - c) Pattern recognition
 - d) None of these
- 2) Two unsupervised learning approaches that embody more general measures of feature vector similarity and do not require H are known as
 - a) Hierarchical clustering
 - b) Partitional clustering
 - c) Both a) and b)
 - d) None of these
- 3) _____ will work satisfactorily under the condition of nearly perfect pattern samples.
 - a) Membership-roster approach
 - b) Common-property concept
 - c) Both a) and b)
 - d) None of the above
- 4) Which are the different basic design concepts for automatic pattern recognition ?
 - a) Heuristic
 - b) Mathematical
 - c) Linguistic or syntactic
 - d) All the above
- 5) For every point in weight space there is a corresponding hyperplane in
 - a) Weight space
 - b) Pattern space
 - c) Both a) and b)
 - d) None of these
- 6) A parameter strategy based on known functional forms for underlying class-conditioned distributions, which involves _____ and parameter estimation.
 - a) Clustering
 - b) Combined classification
 - c) Hierarchy
 - d) None of these
- 7) Post-processing in Pattern Recognition Systems has
 - a) Evaluation of confidence in decisions
 - b) Exploitation of context to improve performance
 - c) Combination of experts
 - d) All of these
- 8) Bayesian Decision theory – a fundamental _____ to the problem of pattern classification.
 - a) Dynamic approach
 - b) Statistical approach
 - c) Parallel approach
 - d) None of these

P.T.O.



- 9) The most successful model of this type in the context of pattern recognition is the feed-forward neural network, also known as the
- a) Single layer perceptron
 - b) Multilayer perceptron
 - c) Hierarchy layer
 - d) None of these
- 10) Using features and learned models to assign a pattern to a category is called
- a) Model learning and estimation
 - b) Post-processing
 - c) Prioritizing
 - d) Classification
- 11) A classifier that uses linear discriminant functions is called
- a) A linear machine
 - b) A non linear machine
 - c) A classification
 - d) All of the above
- 12) _____ are a family of iterative stochastic optimization algorithms that attempt to find zeros or extrema of functions which cannot be computed directly, but only estimated via noisy observations.
- a) Stochastic approximation methods
 - b) Stochastic normal methods
 - c) Stochastic hybrid methods
 - d) None of these
- 13) The main reasons to reduce the number of features in Feature Selection.
- a) Computational complexity
 - b) Generalization properties
 - c) Performance evaluation stage
 - d) All of the above
- 14) A feature selection algorithm can be seen as the combination of a search technique for proposing new feature subsets, along with an _____ which scores the different feature subsets.
- a) Proxy measure
 - b) Evaluation measure
 - c) Both a) and b)
 - d) None of these
- 15) _____ can be used to create a definition of the structure of each pattern class.
- a) Grammars
 - b) Syntax
 - c) Both a) and b)
 - d) None of these
- 16) The second source of classification error with practical classifiers is that the probabilistic model for the problem is incorrect. This is termed
- a) True error
 - b) Model error
 - c) Both a) and b)
 - d) None of these
- 17) The language used to describe the structure of the patterns in terms of sets of pattern primitives is called the
- a) Pattern Recognition
 - b) Pattern description language
 - c) High level description language
 - d) None of these
- 18) Grammar induction, also known as
- a) Grammatical inference
 - b) Syntactic pattern recognition
 - c) Both a) and b)
 - d) None of these
- 19) The _____ is widely used in pattern recognition and statistics.
- a) Multivariate normal distribution
 - b) Single normal distribution
 - c) Both a) and b)
 - d) None of these
- 20) The most simple method for the numerical minimization is the _____, which is well applicable in Perceptron Algorithm.
- a) Deepest descent method
 - b) Normal descent method
 - c) Steepest descent method
 - d) None of the above
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Seat No.	
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**B.E. (Information Technology) (Part – II) Examination, 2016
Elective – II : PATTERN RECOGNITION (New)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Define Pattern recognition. State various applications of pattern recognition.
 - b) Explain the Membership-roster concept of pattern recognition.
 - c) Explain the concept of decision function.
 - d) Compare supervised and unsupervised pattern recognition.
 - e) Explain various parameter estimation method of pattern classification.
3. Attempt **any one** : **(1×10=10)**
- a) Write a short note on following :
 - i) Decision Region Type of Decision functions.
 - ii) Pair-wise separation.
 - b) Write a short note on minimum error rate classification.
4. Attempt **any one** : **(1×10=10)**
- a) Define Bayes rule. What is probability density function ? Define minimum error rate classification.
 - b) Explain the uni-variate and multivariate normal density functions with examples.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain A Least-Mean-Square-Error Algorithm.
 - b) Describe Potential Function Approach of Deterministic Approach.
 - c) Explain the estimation of optimum decision functions by Stochastic Approximation Method.
 - d) Explain feature selection through orthogonal expansions.
 - e) Explain learning and grammatical inference with example.
6. Attempt **any one** : **(1×10=10)**
- a) Explain two major tasks in Pattern Preprocessing.
 - b) Explain block diagram of Syntactic Pattern Recognition System.
7. Attempt **any one** : **(1×10=10)**
- a) Write a short note on Perceptron Approach in a Trainable Pattern Classifiers.
 - b) Explain the concept of Formal Language Theory in Syntactic pattern recognition.

Set P



Seat No.	
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Set	Q
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**B.E. (Information Technology) (Part – II) Examination, 2016
Elective – II : PATTERN RECOGNITION (New)**

Day and Date : Thursday, 24-11-2016
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 alternatives : **(20×1=20)**

- 1) The second source of classification error with practical classifiers is that the probabilistic model for the problem is incorrect. This is termed
a) True error b) Model error c) Both a) and b) d) None of these
- 2) The language used to describe the structure of the patterns in terms of sets of pattern primitives is called the
a) Pattern Recognition b) Pattern description language
c) High level description language d) None of these
- 3) Grammar induction, also known as
a) Grammatical inference b) Syntactic pattern recognition
c) Both a) and b) d) None of these
- 4) The _____ is widely used in pattern recognition and statistics.
a) Multivariate normal distribution b) Single normal distribution
c) Both a) and b) d) None of these
- 5) The most simple method for the numerical minimization is the _____ , which is well applicable in Perceptron Algorithm.
a) Deepest descent method b) Normal descent method
c) Steepest descent method d) None of the above
- 6) _____ is a process that taking in raw data and making an action based on the category of the pattern.
a) Data Mine b) Information Retrieval
c) Pattern recognition d) None of these
- 7) Two unsupervised learning approaches that embody more general measures of feature vector similarity and do not require H are known as
a) Hierarchical clustering b) Partitional clustering
c) Both a) and b) d) None of these
- 8) _____ will work satisfactorily under the condition of nearly perfect pattern samples.
a) Membership-roster approach b) Common-property concept
c) Both a) and b) d) None of the above

P.T.O.



Seat No.	
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**B.E. (Information Technology) (Part – II) Examination, 2016
Elective – II : PATTERN RECOGNITION (New)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Define Pattern recognition. State various applications of pattern recognition.
 - b) Explain the Membership-roster concept of pattern recognition.
 - c) Explain the concept of decision function.
 - d) Compare supervised and unsupervised pattern recognition.
 - e) Explain various parameter estimation method of pattern classification.
3. Attempt **any one** : **(1×10=10)**
- a) Write a short note on following :
 - i) Decision Region Type of Decision functions.
 - ii) Pair-wise separation.
 - b) Write a short note on minimum error rate classification.
4. Attempt **any one** : **(1×10=10)**
- a) Define Bayes rule. What is probability density function ? Define minimum error rate classification.
 - b) Explain the uni-variate and multivariate normal density functions with examples.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain A Least-Mean-Square-Error Algorithm.
 - b) Describe Potential Function Approach of Deterministic Approach.
 - c) Explain the estimation of optimum decision functions by Stochastic Approximation Method.
 - d) Explain feature selection through orthogonal expansions.
 - e) Explain learning and grammatical inference with example.
6. Attempt **any one** : **(1×10=10)**
- a) Explain two major tasks in Pattern Preprocessing.
 - b) Explain block diagram of Syntactic Pattern Recognition System.
7. Attempt **any one** : **(1×10=10)**
- a) Write a short note on Perceptron Approach in a Trainable Pattern Classifiers.
 - b) Explain the concept of Formal Language Theory in Syntactic pattern recognition.

Set Q



Seat No.	
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Set	R
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B.E. (Information Technology) (Part – II) Examination, 2016
Elective – II : PATTERN RECOGNITION (New)

Day and Date : Thursday, 24-11-2016
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 alternatives :

(20×1=20)

- 1) A classifier that uses linear discriminant functions is called
 - a) A linear machine
 - b) A non linear machine
 - c) A classification
 - d) All of the above
- 2) _____ are a family of iterative stochastic optimization algorithms that attempt to find zeros or extrema of functions which cannot be computed directly, but only estimated via noisy observations.
 - a) Stochastic approximation methods
 - b) Stochastic normal methods
 - c) Stochastic hybrid methods
 - d) None of these
- 3) The main reasons to reduce the number of features in Feature Selection.
 - a) Computational complexity
 - b) Generalization properties
 - c) Performance evaluation stage
 - d) All of the above
- 4) A feature selection algorithm can be seen as the combination of a search technique for proposing new feature subsets, along with an _____ which scores the different feature subsets.
 - a) Proxy measure
 - b) Evaluation measure
 - c) Both a) and b)
 - d) None of these
- 5) _____ can be used to create a definition of the structure of each pattern class.
 - a) Grammars
 - b) Syntax
 - c) Both a) and b)
 - d) None of these
- 6) The second source of classification error with practical classifiers is that the probabilistic model for the problem is incorrect. This is termed
 - a) True error
 - b) Model error
 - c) Both a) and b)
 - d) None of these
- 7) The language used to describe the structure of the patterns in terms of sets of pattern primitives is called the
 - a) Pattern Recognition
 - b) Pattern description language
 - c) High level description language
 - d) None of these
- 8) Grammar induction, also known as
 - a) Grammatical inference
 - b) Syntactic pattern recognition
 - c) Both a) and b)
 - d) None of these



- 9) The _____ is widely used in pattern recognition and statistics.
- a) Multivariate normal distribution
 - b) Single normal distribution
 - c) Both a) and b)
 - d) None of these
- 10) The most simple method for the numerical minimization is the _____, which is well applicable in Perceptron Algorithm.
- a) Deepest descent method
 - b) Normal descent method
 - c) Steepest descent method
 - d) None of the above
- 11) _____ is a process that taking in raw data and making an action based on the category of the pattern.
- a) Data Mine
 - b) Information Retrieval
 - c) Pattern recognition
 - d) None of these
- 12) Two unsupervised learning approaches that embody more general measures of feature vector similarity and do not require H are known as
- a) Hierarchical clustering
 - b) Partitional clustering
 - c) Both a) and b)
 - d) None of these
- 13) _____ will work satisfactorily under the condition of nearly perfect pattern samples.
- a) Membership-roster approach
 - b) Common-property concept
 - c) Both a) and b)
 - d) None of the above
- 14) Which are the different basic design concepts for automatic pattern recognition ?
- a) Heuristic
 - b) Mathematical
 - c) Linguistic or syntactic
 - d) All the above
- 15) For every point in weight space there is a corresponding hyperplane in
- a) Weight space
 - b) Pattern space
 - c) Both a) and b)
 - d) None of these
- 16) A parameter strategy based on known functional forms for underlying class-conditioned distributions, which involves _____ and parameter estimation.
- a) Clustering
 - b) Combined classification
 - c) Hierarchy
 - d) None of these
- 17) Post-processing in Pattern Recognition Systems has
- a) Evaluation of confidence in decisions
 - b) Exploitation of context to improve performance
 - c) Combination of experts
 - d) All of these
- 18) Bayesian Decision theory – a fundamental _____ to the problem of pattern classification.
- a) Dynamic approach
 - b) Statistical approach
 - c) Parallel approach
 - d) None of these
- 19) The most successful model of this type in the context of pattern recognition is the feed-forward neural network, also known as the
- a) Single layer perceptron
 - b) Multilayer perceptron
 - c) Hierarchy layer
 - d) None of these
- 20) Using features and learned models to assign a pattern to a category is called
- a) Model learning and estimation
 - b) Post-processing
 - c) Prioritizing
 - d) Classification
-



Seat No.	
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**B.E. (Information Technology) (Part – II) Examination, 2016
Elective – II : PATTERN RECOGNITION (New)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Define Pattern recognition. State various applications of pattern recognition.
 - b) Explain the Membership-roster concept of pattern recognition.
 - c) Explain the concept of decision function.
 - d) Compare supervised and unsupervised pattern recognition.
 - e) Explain various parameter estimation method of pattern classification.
3. Attempt **any one** : **(1×10=10)**
- a) Write a short note on following :
 - i) Decision Region Type of Decision functions.
 - ii) Pair-wise separation.
 - b) Write a short note on minimum error rate classification.
4. Attempt **any one** : **(1×10=10)**
- a) Define Bayes rule. What is probability density function ? Define minimum error rate classification.
 - b) Explain the uni-variate and multivariate normal density functions with examples.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain A Least-Mean-Square-Error Algorithm.
 - b) Describe Potential Function Approach of Deterministic Approach.
 - c) Explain the estimation of optimum decision functions by Stochastic Approximation Method.
 - d) Explain feature selection through orthogonal expansions.
 - e) Explain learning and grammatical inference with example.
6. Attempt **any one** : **(1×10=10)**
- a) Explain two major tasks in Pattern Preprocessing.
 - b) Explain block diagram of Syntactic Pattern Recognition System.
7. Attempt **any one** : **(1×10=10)**
- a) Write a short note on Perceptron Approach in a Trainable Pattern Classifiers.
 - b) Explain the concept of Formal Language Theory in Syntactic pattern recognition.

Set R



SLR-EP – 503

Seat No.	
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Set **S**

**B.E. (Information Technology) (Part – II) Examination, 2016
Elective – II : PATTERN RECOGNITION (New)**

Day and Date : Thursday, 24-11-2016
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 alternatives : **(20×1=20)**
- 1) A parameter strategy based on known functional forms for underlying class-conditioned distributions, which involves _____ and parameter estimation.
a) Clustering
b) Combined classification
c) Hierarchy
d) None of these
 - 2) Post-processing in Pattern Recognition Systems has
a) Evaluation of confidence in decisions
b) Exploitation of context to improve performance
c) Combination of experts
d) All of these
 - 3) Bayesian Decision theory – a fundamental _____ to the problem of pattern classification.
a) Dynamic approach
b) Statistical approach
c) Parallel approach
d) None of these
 - 4) The most successful model of this type in the context of pattern recognition is the feed-forward neural network, also known as the
a) Single layer perceptron
b) Multilayer perceptron
c) Hierarchy layer
d) None of these
 - 5) Using features and learned models to assign a pattern to a category is called
a) Model learning and estimation
b) Post-processing
c) Prioritizing
d) Classification
 - 6) A classifier that uses linear discriminant functions is called
a) A linear machine
b) A non linear machine
c) A classification
d) All of the above
 - 7) _____ are a family of iterative stochastic optimization algorithms that attempt to find zeros or extrema of functions which cannot be computed directly, but only estimated via noisy observations.
a) Stochastic approximation methods
b) Stochastic normal methods
c) Stochastic hybrid methods
d) None of these

P.T.O.



- 8) The main reasons to reduce the number of features in Feature Selection.
- a) Computational complexity
 - b) Generalization properties
 - c) Performance evaluation stage
 - d) All of the above
- 9) A feature selection algorithm can be seen as the combination of a search technique for proposing new feature subsets, along with an _____ which scores the different feature subsets.
- a) Proxy measure
 - b) Evaluation measure
 - c) Both a) and b)
 - d) None of these
- 10) _____ can be used to create a definition of the structure of each pattern class.
- a) Grammars
 - b) Syntax
 - c) Both a) and b)
 - d) None of these
- 11) The second source of classification error with practical classifiers is that the probabilistic model for the problem is incorrect. This is termed
- a) True error
 - b) Model error
 - c) Both a) and b)
 - d) None of these
- 12) The language used to describe the structure of the patterns in terms of sets of pattern primitives is called the
- a) Pattern Recognition
 - b) Pattern description language
 - c) High level description language
 - d) None of these
- 13) Grammar induction, also known as
- a) Grammatical inference
 - b) Syntactic pattern recognition
 - c) Both a) and b)
 - d) None of these
- 14) The _____ is widely used in pattern recognition and statistics.
- a) Multivariate normal distribution
 - b) Single normal distribution
 - c) Both a) and b)
 - d) None of these
- 15) The most simple method for the numerical minimization is the _____, which is well applicable in Perceptron Algorithm.
- a) Deepest descent method
 - b) Normal descent method
 - c) Steepest descent method
 - d) None of the above
- 16) _____ is a process that taking in raw data and making an action based on the category of the pattern.
- a) Data Mine
 - b) Information Retrieval
 - c) Pattern recognition
 - d) None of these
- 17) Two unsupervised learning approaches that embody more general measures of feature vector similarity and do not require H are known as
- a) Hierarchical clustering
 - b) Partitional clustering
 - c) Both a) and b)
 - d) None of these
- 18) _____ will work satisfactorily under the condition of nearly perfect pattern samples.
- a) Membership-roster approach
 - b) Common-property concept
 - c) Both a) and b)
 - d) None of the above
- 19) Which are the different basic design concepts for automatic pattern recognition ?
- a) Heuristic
 - b) Mathematical
 - c) Linguistic or syntactic
 - d) All the above
- 20) For every point in weight space there is a corresponding hyperplane in
- a) Weight space
 - b) Pattern space
 - c) Both a) and b)
 - d) None of these



Seat No.	
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**B.E. (Information Technology) (Part – II) Examination, 2016
Elective – II : PATTERN RECOGNITION (New)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- a) Define Pattern recognition. State various applications of pattern recognition.
 - b) Explain the Membership-roster concept of pattern recognition.
 - c) Explain the concept of decision function.
 - d) Compare supervised and unsupervised pattern recognition.
 - e) Explain various parameter estimation method of pattern classification.
3. Attempt **any one** : **(1×10=10)**
- a) Write a short note on following :
 - i) Decision Region Type of Decision functions.
 - ii) Pair-wise separation.
 - b) Write a short note on minimum error rate classification.
4. Attempt **any one** : **(1×10=10)**
- a) Define Bayes rule. What is probability density function ? Define minimum error rate classification.
 - b) Explain the uni-variate and multivariate normal density functions with examples.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- a) Explain A Least-Mean-Square-Error Algorithm.
 - b) Describe Potential Function Approach of Deterministic Approach.
 - c) Explain the estimation of optimum decision functions by Stochastic Approximation Method.
 - d) Explain feature selection through orthogonal expansions.
 - e) Explain learning and grammatical inference with example.
6. Attempt **any one** : **(1×10=10)**
- a) Explain two major tasks in Pattern Preprocessing.
 - b) Explain block diagram of Syntactic Pattern Recognition System.
7. Attempt **any one** : **(1×10=10)**
- a) Write a short note on Perceptron Approach in a Trainable Pattern Classifiers.
 - b) Explain the concept of Formal Language Theory in Syntactic pattern recognition.

Set S



SLR-EP – 504

Seat No.	
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Set

P

**B.E. (IT) (Part – II) (New) Examination, 2016
(Elective – II) BUSINESS INTELLIGENCE**

Day and Date : Thursday, 24-11-2016
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) _____ represent a structured codification of single primary entities.
a) Data b) Information c) Knowledge d) Analysis
 - 2) Information is transformed in to _____ when it is used to make decisions.
a) data b) knowledge
c) mathematical models d) algorithm
 - 3) _____ tools are used to transform data from sources to warehouse.
a) Analysis tools b) Mathematical tools
c) ETL tools d) OLAP tools
 - 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) Select the types of decision
a) strategic b) tactical c) operational d) all
 - 7) Which of the following type of decision is not categorized by their scope ?
a) strategic b) structured c) tactical d) operational
 - 8) In semi-structured decisions most decisions are faced by knowledge workers
(State true/false)
a) True b) False

P.T.O.



- 9) Which is not the part of extended structure of DSS ?
a) data management b) knowledge management
c) model management d) memory management
- 10) Datamining extracts
a) Mathematical model b) Information and knowledge
c) ETL tools d) Data model
- 11) Extraction of details and aggregate totals from data is called
a) OLAP b) Statistics c) Datamining d) Database
- 12) Identification of patterns and recurrences in data is called
a) Analysis b) Statistics c) Datamining d) Data extraction
- 13) Which of the following are the categories of attributes ?
a) Categorical b) Numerical c) Both d) None
- 14) Mean, median, mode, midrange and geometric mean are the measures of
a) Central Tendency b) Dispersion
c) Relative location d) None
- 15) Choose the measures of relative location for numerical attributes.
a) Mean b) Variance c) Qualities d) Range
- 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) The Hat matrix H has the properties of
a) Symmetric b) Idempotent
c) Symmetric and idempotent d) Asymmetric
- 19) What are the measures of evaluation of Time Series models ?
a) Dispersion measures b) Tracking signals
c) Distortion measures d) All
- 20) Classification rules are used to
a) To categorize attributes b) Identify numbers
c) Predict the class of attributes d) Get knowledge



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**B.E. (IT) (Part – II) (New) Examination, 2016
(Elective – II) BUSINESS INTELLIGENCE**

Day and Date : Thursday, 24-11-2016
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) Definition of data ware house.
 - c) Abstract representation of DSS.
 - d) Representation of input data.
 - e) Data transformation.
3. Attempt **any one** : **10**
- What is DSS ? Explain its extended structure with a diagram.
- OR
- What is data exploration ? Elaborate Univariate analysis. **10**
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) Definition of Time series with examples.
 - c) Neural networks.
 - d) Classification trees.
 - e) Market basket analysis and web mining.



6. Attempt **any one** : **10**

What are classification problems ? Explain the taxonomy of classification models.

OR

What is relational marketing in BI applications ? Discuss its motivation, objective and components. **10**

7. How the regression models are validated ? Explain any two evaluations in detail. **10**



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Set **Q**

**B.E. (IT) (Part – II) (New) Examination, 2016
(Elective – II) BUSINESS INTELLIGENCE**

Day and Date : Thursday, 24-11-2016
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) The Hat matrix H has the properties of
a) Symmetric b) Idempotent
c) Symmetric and idempotent d) Asymmetric
- 4) What are the measures of evaluation of Time Series models ?
a) Dispersion measures b) Tracking signals
c) Distortion measures d) All
- 5) Classification rules are used to
a) To categorize attributes b) Identify numbers
c) Predict the class of attributes d) Get knowledge
- 6) _____ represent a structured codification of single primary entities.
a) Data b) Information c) Knowledge d) Analysis
- 7) Information is transformed in to _____ when it is used to make decisions.
a) data b) knowledge
c) mathematical models d) algorithm

P.T.O.



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**B.E. (IT) (Part – II) (New) Examination, 2016
(Elective – II) BUSINESS INTELLIGENCE**

Day and Date : Thursday, 24-11-2016
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) Definition of data ware house.
 - c) Abstract representation of DSS.
 - d) Representation of input data.
 - e) Data transformation.
3. Attempt **any one** : **10**
- What is DSS ? Explain its extended structure with a diagram.
- OR
- What is data exploration ? Elaborate Univariate analysis. **10**
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) Definition of Time series with examples.
 - c) Neural networks.
 - d) Classification trees.
 - e) Market basket analysis and web mining.

Set Q



6. Attempt **any one** : **10**

What are classification problems ? Explain the taxonomy of classification models.

OR

What is relational marketing in BI applications ? Discuss its motivation, objective and components. **10**

7. How the regression models are validated ? Explain any two evaluations in detail. **10**



SLR-EP – 504

Seat No.	
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Set **R**

**B.E. (IT) (Part – II) (New) Examination, 2016
(Elective – II) BUSINESS INTELLIGENCE**

Day and Date : Thursday, 24-11-2016
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) Extraction of details and aggregate totals from data is called
a) OLAP b) Statistics c) Datamining d) Database
 - 2) Identification of patterns and recurrences in data is called
a) Analysis b) Statistics c) Datamining d) Data extraction
 - 3) Which of the following are the categories of attributes ?
a) Categorical b) Numerical c) Both d) None
 - 4) Mean, median, mode, midrange and geometric mean are the measures of
a) Central Tendency b) Dispersion
c) Relative location d) None
 - 5) Choose the measures of relative location for numerical attributes.
a) Mean b) Variance c) Qualities d) Range
 - 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) The Hat matrix H has the properties of
a) Symmetric b) Idempotent
c) Symmetric and idempotent d) Asymmetric

P.T.O.



- 9) What are the measures of evaluation of Time Series models ?
a) Dispersion measures b) Tracking signals
c) Distortion measures d) All
- 10) Classification rules are used to
a) To categorize attributes b) Identify numbers
c) Predict the class of attributes d) Get knowledge
- 11) _____ represent a structured codification of single primary entities.
a) Data b) Information c) Knowledge d) Analysis
- 12) Information is transformed in to _____ when it is used to make decisions.
a) data b) knowledge
c) mathematical models d) algorithm
- 13) _____ tools are used to transform data from sources to warehouse.
a) Analysis tools b) Mathematical tools
c) ETL tools d) OLAP tools
- 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) Select the types of decision
a) strategic b) tactical c) operational d) all
- 17) Which of the following type of decision is not categorized by their scope ?
a) strategic b) structured c) tactical d) operational
- 18) In semi-structured decisions most decisions are faced by knowledge workers
(State true/false)
a) True b) False
- 19) Which is not the part of extended structure of DSS ?
a) data management b) knowledge management
c) model management d) memory management
- 20) Datamining extracts
a) Mathematical model b) Information and knowledge
c) ETL tools d) Data model



Seat No.	
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**B.E. (IT) (Part – II) (New) Examination, 2016
(Elective – II) BUSINESS INTELLIGENCE**

Day and Date : Thursday, 24-11-2016
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) Definition of data ware house.
 - c) Abstract representation of DSS.
 - d) Representation of input data.
 - e) Data transformation.
3. Attempt **any one** : **10**
- What is DSS ? Explain its extended structure with a diagram.
- OR
- What is data exploration ? Elaborate Univariate analysis. **10**
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) Definition of Time series with examples.
 - c) Neural networks.
 - d) Classification trees.
 - e) Market basket analysis and web mining.

Set R



6. Attempt **any one** : **10**

What are classification problems ? Explain the taxonomy of classification models.

OR

What is relational marketing in BI applications ? Discuss its motivation, objective and components. **10**

7. How the regression models are validated ? Explain any two evaluations in detail. **10**



SLR-EP – 504

Seat No.	
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Set **S**

**B.E. (IT) (Part – II) (New) Examination, 2016
(Elective – II) BUSINESS INTELLIGENCE**

Day and Date : Thursday, 24-11-2016
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) Select the types of decision
a) strategic b) tactical c) operational d) all
 - 2) Which of the following type of decision is not categorized by their scope ?
a) strategic b) structured c) tactical d) operational
 - 3) In semi-structured decisions most decisions are faced by knowledge workers (State true/false)
a) True b) False
 - 4) Which is not the part of extended structure of DSS ?
a) data management b) knowledge management
c) model management d) memory management
 - 5) Datamining extracts
a) Mathematical model b) Information and knowledge
c) ETL tools d) Data model
 - 6) Extraction of details and aggregate totals from data is called
a) OLAP b) Statistics c) Datamining d) Database
 - 7) Identification of patterns and recurrences in data is called
a) Analysis b) Statistics c) Datamining d) Data extraction
 - 8) Which of the following are the categories of attributes ?
a) Categorical b) Numerical c) Both d) None

P.T.O.



- 9) Mean, median, mode, midrange and geometric mean are the measures of
- a) Central Tendency
 - b) Dispersion
 - c) Relative location
 - d) None
- 10) Choose the measures of relative location for numerical attributes.
- a) Mean
 - b) Variance
 - c) Qualities
 - d) Range
- 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) The Hat matrix H has the properties of
- a) Symmetric
 - b) Idempotent
 - c) Symmetric and idempotent
 - d) Asymmetric
- 14) What are the measures of evaluation of Time Series models ?
- a) Dispersion measures
 - b) Tracking signals
 - c) Distortion measures
 - d) All
- 15) Classification rules are used to
- a) To categorize attributes
 - b) Identify numbers
 - c) Predict the class of attributes
 - d) Get knowledge
- 16) _____ represent a structured codification of single primary entities.
- a) Data
 - b) Information
 - c) Knowledge
 - d) Analysis
- 17) Information is transformed in to _____ when it is used to make decisions.
- a) data
 - b) knowledge
 - c) mathematical models
 - d) algorithm
- 18) _____ tools are used to transform data from sources to warehouse.
- a) Analysis tools
 - b) Mathematical tools
 - c) ETL tools
 - d) OLAP tools
- 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.	
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**B.E. (IT) (Part – II) (New) Examination, 2016
(Elective – II) BUSINESS INTELLIGENCE**

Day and Date : Thursday, 24-11-2016
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) Definition of data ware house.
 - c) Abstract representation of DSS.
 - d) Representation of input data.
 - e) Data transformation.
3. Attempt **any one** : **10**
- What is DSS ? Explain its extended structure with a diagram.
- OR
- What is data exploration ? Elaborate Univariate analysis. **10**
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) Definition of Time series with examples.
 - c) Neural networks.
 - d) Classification trees.
 - e) Market basket analysis and web mining.

Set S



6. Attempt **any one** : **10**

What are classification problems ? Explain the taxonomy of classification models.

OR

What is relational marketing in BI applications ? Discuss its motivation, objective and components. **10**

7. How the regression models are validated ? Explain any two evaluations in detail. **10**



Seat No.	
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Set	P
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B.E. (Information Technology) (Part – II) (New) Examination, 2016
CLOUD COMPUTING (Elective – II)

Day and Date : Thursday, 24-11-2016
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 cloud computing is defined by using _____ attribute.
A) Multitenancy B) Security C) Virtualization D) Cost-savings
 - 2) _____ describes a distribution model in which applications are hosted by a service provider and made available to users.
A) Infrastructure-as-a-Service (IaaS) B) Platform-as-a-Service (PaaS)
C) Software-as-a-Service (SaaS) D) Cloud service
 - 3) _____ describes a cloud service that can only be accessed by a limited amount of people.
A) Data center B) Private cloud
C) Virtualization D) Public cloud
 - 4) Which delivery model is an example of a cloud computing environment that provides users with a web based email service ?
A) Software as a Service B) Platform as a Service
C) Computing as a Service D) Infrastructure as a Service
 - 5) An Internet connection is necessary for cloud computing interaction
A) True B) False
 - 6) Which delivery model is an example of a cloud computing environment that provides users access to virtual machines ?
A) Platform as a Service B) Software as a Service
C) Application as a Service D) Infrastructure as a Service
 - 7) What is an advantage of a multitenancy cloud environment over a single tenancy environment ?
A) Cost savings B) Easy to customize
C) Faster performance D) Higher data security
 - 8) Which of the following is cloud deployment model ?
A) Public B) Private C) Hybrid D) All
 - 9) IAM stands for
A) Identity and Access Management
B) Identity and Authentication Management
C) Identity and Auditing Management
D) None of these



- 10) _____ is the process of verifying the identity of a user or system.
A) Authorization B) Auditing C) Authentication D) All
- 11) Which of the following service provider provides the least amount of built in security ?
A) SaaS B) PaaS
C) IaaS D) All of the mentioned
- 12) Which of the following services that need to be negotiated in Service Level Agreements ?
A) Logging B) Auditing
C) Regulatory compliance D) All of the mentioned
- 13) Point out the wrong statement
A) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage
B) Any distributed application has a much greater attack surface than an application that is closely held on a Local Area Network
C) Cloud computing don't have vulnerabilities associated with Internet applications
D) All of the mentioned
- 14) Which of the following is not a OASIS standard for SOA Security ?
A) Security Assertion Markup Language
B) Synchronized Multimedia Integration Language
C) WS-Secure Conversation
D) All of the mentioned
- 15) Which of the following is provided by ownership dimension of Cloud Cube Model ?
A) Proprietary B) Owner
C) C.P D) All of the mentioned
- 16) Point out the wrong statement
A) Public cloud may be managed by the constituent organization(s) or by a third party
B) A community cloud may be managed by the constituent organization(s) or by a third party
C) Private clouds may be either on-or off-premises
D) None of the mentioned
- 17) The role of CSP in cloud computing is
A) As a Cloud Security Provider B) As a Cloud Server Provider
C) As a Cloud Service Provider D) None of these
- 18) Point out the wrong statement
A) Google App Engine allows a developer to scale an application immediately
B) The Customer relationship management provider Salesforce.com has a development platform called Force.com that is a IaaS offering
C) A cloud computing provider can become a hub master at the center of many ISV's offerings
D) None of the mentioned
- 19) ASP stands for
A) Application Server Provider B) Application Service Provider
C) Application Security Provider D) Both A and B
- 20) GRC approach helps a CSP to
A) Reduce risks through a structured risk management approach
B) Improve monitoring of IT compliance
C) Improve security
D) All of above



Seat No.	
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**B.E. (Information Technology) (Part – II) (New) Examination, 2016
CLOUD COMPUTING (Elective – II)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- 1) Define cloud computing with its attributes.
 - 2) Explain the SPI framework for cloud computing with neat diagram.
 - 3) Explain cloud deployment models with diagram.
 - 4) Explain the Infrastructure security at network level with its risk factors.
 - 5) Define IAM with its basic concepts.
 - 6) List and explain the application of cloud computing.
3. Explain the cloud service delivery model in detail with neat diagram. **10**

OR

Explain the impact of cloud computing on different types of user's with suitable examples.

4. Explain information security concerns associated with data stored in the cloud by using following aspects. **10**
- a) Confidentiality
 - b) Integrity
 - c) Availability

OR

Explain IAM architecture with neat diagram. Also explain its operational activities in detail.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- 1) What is privacy ? Explain KPMG data life cycle.
 - 2) Explain various security threats in cloud computing.
 - 3) Define trusted cloud computing and explain cloud service provider Risks.
 - 4) What is identity management ? Explain issues in implementing identity management.
 - 5) Why Cloud computing brings new threats ? Any 3 reasons.
 - 6) Explain Quality of Service (QoS) monitoring in cloud computing environment.

Set P



6. Why Cloud Computing brings new threats ? Explain security issue from virtualization, Vulnerability in virtualization and risk prevention in VMM. **10**

OR

Enlist and explain the Quality of Service (QoS) issues that are to be addressed while designing a real time application over cloud platform.

7. Explain CSP life cycle approach and stages in CSP life cycle with neat diagram. **10**

OR

What is the impact of cloud computing on the IT audit function ?



Seat No.	
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Set	Q
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**B.E. (Information Technology) (Part – II) (New) Examination, 2016
CLOUD COMPUTING (Elective – II)**

Day and Date : Thursday, 24-11-2016
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) Point out the wrong statement
 - A) Public cloud may be managed by the constituent organization(s) or by a third party
 - B) A community cloud may be managed by the constituent organization(s) or by a third party
 - C) Private clouds may be either on-or off-premises
 - D) None of the mentioned
- 2) The role of CSP in cloud computing is
 - A) As a Cloud Security Provider
 - B) As a Cloud Server Provider
 - C) As a Cloud Service Provider
 - D) None of these
- 3) Point out the wrong statement
 - A) Google App Engine allows a developer to scale an application immediately
 - B) The Customer relationship management provider Salesforce.com has a development platform called Force.com that is a IaaS offering
 - C) A cloud computing provider can become a hub master at the center of many ISV's offerings
 - D) None of the mentioned
- 4) ASP stands for
 - A) Application Server Provider
 - B) Application Service Provider
 - C) Application Security Provider
 - D) Both A and B
- 5) GRC approach helps a CSP to
 - A) Reduce risks through a structured risk management approach
 - B) Improve monitoring of IT compliance
 - C) Improve security
 - D) All of above
- 6) The cloud computing is defined by using _____ attribute.
 - A) Multitenancy
 - B) Security
 - C) Virtualization
 - D) Cost-savings
- 7) _____ describes a distribution model in which applications are hosted by a service provider and made available to users.
 - A) Infrastructure-as-a-Service (IaaS)
 - B) Platform-as-a-Service (PaaS)
 - C) Software-as-a-Service (SaaS)
 - D) Cloud service
- 8) _____ describes a cloud service that can only be accessed by a limited amount of people.
 - A) Data center
 - B) Private cloud
 - C) Virtualization
 - D) Public cloud

P.T.O.



- 9) Which delivery model is an example of a cloud computing environment that provides users with a web based email service ?
A) Software as a Service B) Platform as a Service
C) Computing as a Service D) Infrastructure as a Service
- 10) An Internet connection is necessary for cloud computing interaction
A) True B) False
- 11) Which delivery model is an example of a cloud computing environment that provides users access to virtual machines ?
A) Platform as a Service B) Software as a Service
C) Application as a Service D) Infrastructure as a Service
- 12) What is an advantage of a multitenancy cloud environment over a single tenancy environment ?
A) Cost savings B) Easy to customize
C) Faster performance D) Higher data security
- 13) Which of the following is cloud deployment model ?
A) Public B) Private C) Hybrid D) All
- 14) IAM stands for
A) Identity and Access Management
B) Identity and Authentication Management
C) Identity and Auditing Management
D) None of these
- 15) _____ is the process of verifying the identity of a user or system.
A) Authorization B) Auditing C) Authentication D) All
- 16) Which of the following service provider provides the least amount of built in security ?
A) SaaS B) PaaS
C) IaaS D) All of the mentioned
- 17) Which of the following services that need to be negotiated in Service Level Agreements ?
A) Logging B) Auditing
C) Regulatory compliance D) All of the mentioned
- 18) Point out the wrong statement
A) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage
B) Any distributed application has a much greater attack surface than an application that is closely held on a Local Area Network
C) Cloud computing don't have vulnerabilities associated with Internet applications
D) All of the mentioned
- 19) Which of the following is not a OASIS standard for SOA Security ?
A) Security Assertion Markup Language
B) Synchronized Multimedia Integration Language
C) WS-Secure Conversation
D) All of the mentioned
- 20) Which of the following is provided by ownership dimension of Cloud Cube Model ?
A) Proprietary B) Owner
C) C.P D) All of the mentioned



Seat No.	
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**B.E. (Information Technology) (Part – II) (New) Examination, 2016
CLOUD COMPUTING (Elective – II)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- 1) Define cloud computing with its attributes.
 - 2) Explain the SPI framework for cloud computing with neat diagram.
 - 3) Explain cloud deployment models with diagram.
 - 4) Explain the Infrastructure security at network level with its risk factors.
 - 5) Define IAM with its basic concepts.
 - 6) List and explain the application of cloud computing.
3. Explain the cloud service delivery model in detail with neat diagram. **10**

OR

Explain the impact of cloud computing on different types of user's with suitable examples.

4. Explain information security concerns associated with data stored in the cloud by using following aspects. **10**
- a) Confidentiality
 - b) Integrity
 - c) Availability

OR

Explain IAM architecture with neat diagram. Also explain its operational activities in detail.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- 1) What is privacy ? Explain KPMG data life cycle.
 - 2) Explain various security threats in cloud computing.
 - 3) Define trusted cloud computing and explain cloud service provider Risks.
 - 4) What is identity management ? Explain issues in implementing identity management.
 - 5) Why Cloud computing brings new threats ? Any 3 reasons.
 - 6) Explain Quality of Service (QoS) monitoring in cloud computing environment.

Set Q



6. Why Cloud Computing brings new threats ? Explain security issue from virtualization, Vulnerability in virtualization and risk prevention in VMM. **10**

OR

Enlist and explain the Quality of Service (QoS) issues that are to be addressed while designing a real time application over cloud platform.

7. Explain CSP life cycle approach and stages in CSP life cycle with neat diagram. **10**

OR

What is the impact of cloud computing on the IT audit function ?



Seat No.	
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Set	R
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B.E. (Information Technology) (Part – II) (New) Examination, 2016
CLOUD COMPUTING (Elective – II)

Day and Date : Thursday, 24-11-2016
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 service provider provides the least amount of built in security ?
A) SaaS
B) PaaS
C) IaaS
D) All of the mentioned
 - 2) Which of the following services that need to be negotiated in Service Level Agreements ?
A) Logging
B) Auditing
C) Regulatory compliance
D) All of the mentioned
 - 3) Point out the wrong statement
A) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage
B) Any distributed application has a much greater attack surface than an application that is closely held on a Local Area Network
C) Cloud computing don't have vulnerabilities associated with Internet applications
D) All of the mentioned
 - 4) Which of the following is not a OASIS standard for SOA Security ?
A) Security Assertion Markup Language
B) Synchronized Multimedia Integration Language
C) WS-Secure Conversation
D) All of the mentioned
 - 5) Which of the following is provided by ownership dimension of Cloud Cube Model ?
A) Proprietary
B) Owner
C) C.P
D) All of the mentioned
 - 6) Point out the wrong statement
A) Public cloud may be managed by the constituent organization(s) or by a third party
B) A community cloud may be managed by the constituent organization(s) or by a third party
C) Private clouds may be either on-or off-premises
D) None of the mentioned
 - 7) The role of CSP in cloud computing is
A) As a Cloud Security Provider
B) As a Cloud Server Provider
C) As a Cloud Service Provider
D) None of these



- 8) Point out the wrong statement
- A) Google App Engine allows a developer to scale an application immediately
 - B) The Customer relationship management provider Salesforce.com has a development platform called Force.com that is a IaaS offering
 - C) A cloud computing provider can become a hub master at the center of many ISV's offerings
 - D) None of the mentioned
- 9) ASP stands for
- A) Application Server Provider
 - B) Application Service Provider
 - C) Application Security Provider
 - D) Both A and B
- 10) GRC approach helps a CSP to
- A) Reduce risks through a structured risk management approach
 - B) Improve monitoring of IT compliance
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 - D) All of above
- 11) The cloud computing is defined by using _____ attribute.
- A) Multitenancy
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 - C) Virtualization
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- 12) _____ describes a distribution model in which applications are hosted by a service provider and made available to users.
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 - D) Cloud service
- 13) _____ describes a cloud service that can only be accessed by a limited amount of people.
- A) Data center
 - B) Private cloud
 - C) Virtualization
 - D) Public cloud
- 14) Which delivery model is an example of a cloud computing environment that provides users with a web based email service ?
- A) Software as a Service
 - B) Platform as a Service
 - C) Computing as a Service
 - D) Infrastructure as a Service
- 15) An Internet connection is necessary for cloud computing interaction
- A) True
 - B) False
- 16) Which delivery model is an example of a cloud computing environment that provides users access to virtual machines ?
- A) Platform as a Service
 - B) Software as a Service
 - C) Application as a Service
 - D) Infrastructure as a Service
- 17) What is an advantage of a multitenancy cloud environment over a single tenancy environment ?
- A) Cost savings
 - B) Easy to customize
 - C) Faster performance
 - D) Higher data security
- 18) Which of the following is cloud deployment model ?
- A) Public
 - B) Private
 - C) Hybrid
 - D) All
- 19) IAM stands for
- A) Identity and Access Management
 - B) Identity and Authentication Management
 - C) Identity and Auditing Management
 - D) None of these
- 20) _____ is the process of verifying the identity of a user or system.
- A) Authorization
 - B) Auditing
 - C) Authentication
 - D) All



Seat No.	
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**B.E. (Information Technology) (Part – II) (New) Examination, 2016
CLOUD COMPUTING (Elective – II)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- 1) Define cloud computing with its attributes.
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 - 4) Explain the Infrastructure security at network level with its risk factors.
 - 5) Define IAM with its basic concepts.
 - 6) List and explain the application of cloud computing.
3. Explain the cloud service delivery model in detail with neat diagram. **10**

OR

Explain the impact of cloud computing on different types of user's with suitable examples.

4. Explain information security concerns associated with data stored in the cloud by using following aspects. **10**
- a) Confidentiality
 - b) Integrity
 - c) Availability

OR

Explain IAM architecture with neat diagram. Also explain its operational activities in detail.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- 1) What is privacy ? Explain KPMG data life cycle.
 - 2) Explain various security threats in cloud computing.
 - 3) Define trusted cloud computing and explain cloud service provider Risks.
 - 4) What is identity management ? Explain issues in implementing identity management.
 - 5) Why Cloud computing brings new threats ? Any 3 reasons.
 - 6) Explain Quality of Service (QoS) monitoring in cloud computing environment.

Set R



6. Why Cloud Computing brings new threats ? Explain security issue from virtualization, Vulnerability in virtualization and risk prevention in VMM. **10**

OR

Enlist and explain the Quality of Service (QoS) issues that are to be addressed while designing a real time application over cloud platform.

7. Explain CSP life cycle approach and stages in CSP life cycle with neat diagram. **10**

OR

What is the impact of cloud computing on the IT audit function ?



- 9) Which of the following is not a OASIS standard for SOA Security ?
A) Security Assertion Markup Language
B) Synchronized Multimedia Integration Language
C) WS-Secure Conversion
D) All of the mentioned
- 10) Which of the following is provided by ownership dimension of Cloud Cube Model ?
A) Proprietary
B) Owner
C) C.P
D) All of the mentioned
- 11) Point out the wrong statement
A) Public cloud may be managed by the constituent organization(s) or by a third party
B) A community cloud may be managed by the constituent organization(s) or by a third party
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A) As a Cloud Security Provider
B) As a Cloud Server Provider
C) As a Cloud Service Provider
D) None of these
- 13) Point out the wrong statement
A) Google App Engine allows a developer to scale an application immediately
B) The Customer relationship management provider Salesforce.com has a development platform called Force.com that is a IaaS offering
C) A cloud computing provider can become a hub master at the center of many ISV's offerings
D) None of the mentioned
- 14) ASP stands for
A) Application Server Provider
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C) Application Security Provider
D) Both A and B
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A) Reduce risks through a structured risk management approach
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C) Improve security
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- 16) The cloud computing is defined by using _____ attribute.
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B) Security
C) Virtualization
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- 17) _____ describes a distribution model in which applications are hosted by a service provider and made available to users.
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- 18) _____ describes a cloud service that can only be accessed by a limited amount of people.
A) Data center
B) Private cloud
C) Virtualization
D) Public cloud
- 19) Which delivery model is an example of a cloud computing environment that provides users with a web based email service ?
A) Software as a Service
B) Platform as a Service
C) Computing as a Service
D) Infrastructure as a Service
- 20) An Internet connection is necessary for cloud computing interaction
A) True
B) False



Seat No.	
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**B.E. (Information Technology) (Part – II) (New) Examination, 2016
CLOUD COMPUTING (Elective – II)**

Day and Date : Thursday, 24-11-2016
Time : 3.00 p.m. to 6.00 p.m.

Marks : 80

SECTION – I

2. Attempt **any four** : **(4×5=20)**
- 1) Define cloud computing with its attributes.
 - 2) Explain the SPI framework for cloud computing with neat diagram.
 - 3) Explain cloud deployment models with diagram.
 - 4) Explain the Infrastructure security at network level with its risk factors.
 - 5) Define IAM with its basic concepts.
 - 6) List and explain the application of cloud computing.
3. Explain the cloud service delivery model in detail with neat diagram. **10**

OR

Explain the impact of cloud computing on different types of user's with suitable examples.

4. Explain information security concerns associated with data stored in the cloud by using following aspects. **10**
- a) Confidentiality
 - b) Integrity
 - c) Availability

OR

Explain IAM architecture with neat diagram. Also explain its operational activities in detail.

SECTION – II

5. Attempt **any four** : **(4×5=20)**
- 1) What is privacy ? Explain KPMG data life cycle.
 - 2) Explain various security threats in cloud computing.
 - 3) Define trusted cloud computing and explain cloud service provider Risks.
 - 4) What is identity management ? Explain issues in implementing identity management.
 - 5) Why Cloud computing brings new threats ? Any 3 reasons.
 - 6) Explain Quality of Service (QoS) monitoring in cloud computing environment.

Set S



6. Why Cloud Computing brings new threats ? Explain security issue from virtualization, Vulnerability in virtualization and risk prevention in VMM. **10**

OR

Enlist and explain the Quality of Service (QoS) issues that are to be addressed while designing a real time application over cloud platform.

7. Explain CSP life cycle approach and stages in CSP life cycle with neat diagram. **10**

OR

What is the impact of cloud computing on the IT audit function ?
