

**Seat
No.**

Max. Marks: 70

3) Use of calculator is allowed.

Marks: 14

d) 0.0517

- [illegible]

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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – I

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

Max. Marks: 56

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

Q.2 Solve any three of the following questions. 09

- Solve $(D^2 + 9)y = \cos 2x \cos x$
- Solve $(D^2 - 2D + 5)y = e^{2t} \sin t$
- Find the inverse Laplace transform of $\frac{s+2}{s^2(s+3)}$
- Find the Laplace transform of $t e^{-2t} \sin 4t$
- Find $Z\{e^{-ak} \sin bk\}$

Q.3 Solve any three of the following questions. 09

- Solve $(D^3 - 8)y = x^3 + x$
- Find the inverse Laplace transform of

$$\text{Log} \left[\sqrt{\frac{s^2 + 1}{s^2 + 4}} \right]$$

- Express the following function in terms of unit step function and find Laplace transform $f(t) = \begin{cases} \cos t, & 0 < t < \pi \\ \sin t, & t > \pi \end{cases}$.
- Find Inverse z-transform of $\frac{1}{(z-5)^3}, |z| > 5$.
- Find the z-transform of $\sin(3k + 5)$.

Q.4 Solve any two of the following questions. 10

- Solve $(D^2 + 3D + 2)y = e^{e^x} + 2$.
- Solve $y''' + 2y'' - y' - 2y = 0$ given $y(0) = y'(0) = 0$ and $y''(0) = 6$ by using Laplace transform method.
- Obtain $Z^{-1} \left\{ \frac{1}{(z - 1/2)(z - 1/3)} \right\}$ When
 - $\frac{1}{3} < |z| < \frac{1}{2}$
 - $\frac{1}{2} < |z|$

Section – II

Q.5 Solve any three of the following questions. 09

- Find half range sine series for $f(x)$ where

$$f(x) = \begin{cases} x, & 0 < x \leq \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$$

Hence, deduce that $\frac{\pi^2}{8} = \frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \dots$

- b) The life of army shoes is normally distributed with mean 8 months and standard deviation 2 months. If 5000 pairs are issued, how many pairs would be expected to need replacement after 2 months.

[Given: Area from $z = 0$ to $z = 2$ is 0.4772]

- c) For the data

x :	1	2	3	4	5	6	7	8	9
y :	9	8	10	12	11	13	14	16	15

Find the correlation coefficient

- d) The two regression equations are given by $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$ then find mean values of x and y and the coefficient of correlation between x and y .
- e) Find Fourier expansion of $f(x) = \sqrt{1 - \cos x}$ in $(-\pi, \pi)$

Q.6 Solve any three of the following questions.

09

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

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

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

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

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

x :	1	3	5	7	9
y :	15	18	21	23	22

Estimate maintenance cost for a 4 year old car.

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

Q.7 Solve any two of the following questions.

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

- b) Obtain a fourier series for $f(x)$ where

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

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

$$\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots$$

- c) Customers arrive at a clinic according to a poisson process with mean interval of 25 min. The physician needs on an average 20 min for a patient to examine.
- Find the expected number of patients at the clinic and in the queue.
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a) 0 b) $\frac{2}{\pi}$
c) $\frac{2\sqrt{2}}{\pi}$ d) $\frac{4}{\pi}$

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Set Q

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- b) The life of army shoes is normally distributed with mean 8 months and standard deviation 2 months. If 5000 pairs are issued, how many pairs would be expected to need replacement after 2 months.

[Given: Area from $z = 0$ to $z = 2$ is 0.4772]

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

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

$$\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots$$

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**Seat
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Set	R
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MCQ/Objective Type Questions

Marks: 14

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

- 1) $L^{-1} \left\{ \frac{s-4}{(s-4)^2+25} \right\} = \underline{\hspace{2cm}}.$
 - a) $e^{4t} \sin 4t$
 - b) $e^{-4t} \sin 5t$
 - c) $e^{-4t} \cos 4t$
 - d) $e^{4t} \cos 4t$
- 2) $Z\{3^k\}, k \geq 0$, is $\underline{\hspace{2cm}}.$
 - a) $\frac{1}{Z-3}$
 - b) $Z(Z-3)$
 - c) $\frac{Z}{Z-3}$
 - d) None of these
- 3) The inverse z-transform of $\frac{Z}{Z+a}, |Z| > a, k \geq 0$ is $\underline{\hspace{2cm}}.$
 - a) a^k
 - b) a^{k+1}
 - c) $(-a)^{k+1}$
 - d) $(-a)^k$
- 4) If $\sum XY = 9.7, \sum X^2 = 21.62$ & $\sum Y^2 = 16.28$ then the value of r is $\underline{\hspace{2cm}}.$
 - a) 0.02
 - b) 0.2
 - c) 0.5170
 - d) 0.0517
- 5) If average arrival rate in a queue is 6 per hour and the average service rate is 10 per hour, which one of the following is the average number of customers in the line including the customer being served?
 - a) 0.3
 - b) 0.6
 - c) 1.2
 - d) 1.5
- 6) For a certain data the regression equations are $3x + 2y - 26 = 0$ & $6x + y - 31 = 0$ then the value of 'r' is, $\underline{\hspace{2cm}}.$
 - a) 0.5
 - b) -0.5
 - c) 0.2
 - d) -0.2
- 7) If x is poisson variate such that $p(x = 1) = P(x = 2)$ then the poissons parameter is $\underline{\hspace{2cm}}.$
 - a) 1
 - b) 2
 - c) 3
 - d) 4
- 8) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k = \underline{\hspace{2cm}}.$
 - a) 2
 - b) 3
 - c) 5
 - d) 6

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Seat No.	
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Set **R**

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a) 0.5 b) -0.5
c) 0.2 d) -0.2
- 2) If x is poisson variate such that $p(x = 1) = P(x = 2)$ then the poissons parameter is _____.
a) 1 b) 2
c) 3 d) 4
- 3) A continuous random variable has the following probability density function $f(x) = kx(1 - x), 0 \leq x \leq 1$ then $k =$ _____.
a) 2 b) 3
c) 5 d) 6
- 4) If $f(x) = x^2$ is expanded as cosine series in $(0, \pi)$ then constant term is _____.
a) $\frac{\pi^2}{3}$ b) $\frac{\pi^3}{3}$
c) $\frac{2\pi^2}{3}$ d) $\frac{3\pi^2}{2}$
- 5) If $f(x) = \sqrt{1 - \cos x}$ then the fourier coefficient b_n in the interval $(0, 2\pi)$ is _____.
a) 0 b) $\frac{2}{\pi}$
c) $\frac{2\sqrt{2}}{\pi}$ d) $\frac{4}{\pi}$
- 6) The particular integral of $(D^3 - 3D^2 + 4)y = e^{2x}$ is _____.
a) $\frac{x^2}{6}e^{2x}$ b) $\frac{x}{12}e^{2x}$
c) $\frac{x^3}{6}e^{2x}$ d) $\frac{e^{2x}}{12}$
- 7) The complete solution of $(D^4 + 2D^3 + D^2)y = 0$ is _____.
a) $y = (C_1 + C_2x + C_3x^2 + C_4x^3)e^{-x}$
b) $y = (C_1 + C_2x) + (C_3 + C_4x)e^{-x}$
c) $y = (C_1 + C_2x)e^x + (C_3 + C_4x)e^{-x}$
d) None of these

- 8) The Laplace transform of $t \cosh t$ is _____.
 a) $\frac{s^2-1}{(s^2+1)^2}$ b) $-\frac{s^2-1}{(s^2+1)^2}$
 c) $\frac{s^2+1}{(s^2-1)^2}$ d) $-\frac{s^2+1}{(s^2-1)^2}$
- 9) $L^{-1} \left\{ \frac{s+s^2}{s^3} \right\} =$ _____.
 a) $t + t^2$ b) $t + 1$
 c) $t^2 + 1$ d) $t^2 - 1$
- 10) $L^{-1} \left\{ \frac{s-4}{(s-4)^2+25} \right\} =$ _____.
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- 11) $Z\{3^k\}, k \geq 0$, is _____.
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$$f(x) = \begin{cases} k \cdot x e^{-4x^2}, & x > 0 \\ 0, & x \leq 0 \end{cases}$$

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

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

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

x :	1	3	5	7	9
y :	15	18	21	23	22

Estimate maintenance cost for a 4 year old car.

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

Q.7 Solve any two of the following questions.

10

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

- b) Obtain a fourier series for $f(x)$ where

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

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

$$\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots$$

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

Seat No.	
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Day & Date: Tuesday,10-12-2019
Time: 10.00 AM To 01.00 PM

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

MCQ/Objective Type Questions

Marks: 14

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

- Page 1 of 16

- 10) Join operation is denoted by the symbol _____.
a) $+$
b) \cup
c) \wedge
d) Both a and b
- 11) Absorption law is defined as _____.
a) $a * (a * b) = b$
b) $a * (a \oplus b) = b$
c) $a * (a \oplus b) = b$
d) $a * (a \oplus b) = a$
- 12) Pick the correct prefix _____.
a) $\rightarrow P \vee Q R \neg S$
b) $\rightarrow P \vee QRS$
c) $\rightarrow \rightarrow P Q \rightarrow \rightarrow QR \rightarrow PR$
d) $\rightarrow P \vee Q \neg QSP$
- 13) Every finite subset of lattice has _____.
a) An LUB and GLB
b) Many LUB and a GLB
c) Many LUBs and Many GLBs
d) Either some LUBs or some GLBs
- 14) A self-complemented, distributive lattice is called as _____.
a) Boolean Algebra
b) Modular Lattice
c) Complemented lattice
d) Complete Lattice

Seat No.	
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Set	P
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S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISCRETE MATHEMATICAL STRUCTURES

Day & Date: Tuesday, 10-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 56

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

Section – I

Q.2 Answer the following questions. (Any Three) 12

- State and explain Duality law with example.
- Show the following Tautological implication
 $((P \vee \sim P) \rightarrow Q) \rightarrow ((P \vee \sim P) \rightarrow R) \Rightarrow (Q \rightarrow R)$
- Define Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
- Draw the Hasse diagram of the given sets under partial ordering which satisfy "divides" and indicate which set is totally ordered
 - $\{2, 6, 12, 24\}$
 - $\{1, 2, 3, 6, 12\}$

Q.3 Answer the following questions. (Any One) 08

- Define Relation and explain the Properties of relation with example.
- Define and explain the following with suitable example.
 - Ordered pair & order - n- type
 - Equivalence Relation

Q.4 Obtain PDNF and PCNF of the following 08

- $(\neg p \rightarrow \neg q) \rightarrow (p \leftrightarrow \neg q)$
- $p \vee (\neg p \rightarrow (q \vee (\neg q \rightarrow r)))$

Section – II

Q.5 Answer the following questions. (Any Three) 12

- Let $X = \{1, 2, 3, 4\}$ Define function f from X to X such that $f \neq I_x$ and it is one to one onto find
 - $f \circ f = f^2$
 - $f \circ f^2 = f^3$
 - f^{-1}
 - $f \circ f^{-1}$
- Define Semi group & Monoid with example.
- What is Permutation Group? Define order of Permutation Group and Degree of Permutation Group.
- Define with example
 - upper bound
 - lower bound
 - LUB
 - GLB

08

Q.6 Answer the following questions. (Any One)**a)** Obtain the sum of product of canonical form of following Boolean algebra

i) $X_1 \oplus X_2$

ii) $X_1 \oplus [X_2^0 * X_3^1]$

b) Let Z_4 be the set of equivalence classes generated so that $Z_4 = \{[0], [1], [2], [3]\}$.Let $+_4$ on Z_4 is given by $[i] +_4 [j] = [(i + j) \bmod 4]$ determine an algebraic System & list out the properties which are applicable on algebraic system

08

Q.7 Composition table for $\langle G, * \rangle$ and $\langle S, \diamond \rangle$ are given below show that they are groups and they are isomorphic

$*$	p1	p2	p3	p4	\diamond	q1	q2	q3	q4
p1	p1	p2	p3	p4	q1	q3	q4	q1	q2
p2	p2	p1	p4	p3	q2	q4	q3	q2	q1
p3	p3	p4	p1	p2	q3	q1	q2	q3	q4
p4	p4	p3	p2	p1	q4	q2	q1	q4	q3

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Day & Date: Tuesday,10-12-2019
Time: 10.00 AM To 01.00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.
2) Figures to the right indicate full marks.

Duration: 30 Minutes

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

- Page 5 of 16

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Set

Q

S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISCRETE MATHEMATICAL STRUCTURES

Day & Date: Tuesday, 10-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 56

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

Section – I

Q.2 Answer the following questions. (Any Three) **12**

- State and explain Duality law with example.
- Show the following Tautological implication
 $((P \vee \sim P) \rightarrow Q) \rightarrow ((P \vee \sim P) \rightarrow R) \Rightarrow (Q \rightarrow R)$
- Defined Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
- Draw the Hasse diagram of the given sets under partial ordering which satisfy "divides" and indicate which set is totally ordered
 - $\{2, 6, 12, 24\}$
 - $\{1, 2, 3, 6, 12\}$

Q.3 Answer the following questions. (Any One) **08**

- Define Relation and explain the Properties of relation with example.
- Define and explain the following with suitable example.
 - Ordered pair & order - n- type
 - Equivalence Relation

Q.4 Obtain PDNF and PCNF of the following **08**

- $(\neg p \rightarrow \neg q) \rightarrow (p \leftrightarrow \neg q)$
- $p \vee (\neg p \rightarrow (q \vee (\neg q \rightarrow r)))$

Section – II

Q.5 Answer the following questions. (Any Three) **12**

- Let $X = \{1, 2, 3, 4\}$ Define function f from X to X such that $f \neq I_x$ and it is one to one onto find
 - $f \circ f = f^2$
 - $f \circ f^2 = f^3$
 - f^{-1}
 - $f \circ f^{-1}$
- Define Semi group & Monoid with example.
- What is Permutation Group? Define order of Permutation Group and Degree of Permutation Group.
- Define with example
 - upper bound
 - lower bound
 - LUB
 - GLB

08

Q.6 Answer the following questions. (Any One)**a)** Obtain the sum of product of canonical form of following Boolean algebra

i) $X_1 \oplus X_2$

ii) $X_1 \oplus [X_2^0 * X_3^1]$

b) Let Z_4 be the set of equivalence classes generated so that $Z_4 = \{[0], [1], [2], [3]\}$.Let $+_4$ on Z_4 is given by $[i] +_4 [j] = [(i + j) \bmod 4]$ determine an algebraic System & list out the properties which are applicable on algebraic system**Q.7** Composition table for $\langle G, * \rangle$ and $\langle S, \diamond \rangle$ are given below show that they are groups and they are isomorphic

08

$*$	p1	p2	p3	p4	\diamond	q1	q2	q3	q4
p1	p1	p2	p3	p4	q1	q3	q4	q1	q2
p2	p2	p1	p4	p3	q2	q4	q3	q2	q1
p3	p3	p4	p1	p2	q3	q1	q2	q3	q4
p4	p4	p3	p2	p1	q4	q2	q1	q4	q3

Seat No.	
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Set **R**

S.E. (Part -I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISCRETE MATHEMATICAL STRUCTURES

Day & Date: Tuesday, 10-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) A group is said to _____ if there exist an element $a \in G$ such that every element of G can be written as some power of a
 - a) Acyclic
 - b) Cyclic
 - c) Abelian
 - d) Angular
- 2) Which of the following is partition of the set $S = \{4, 5, 6, 7, 8, 9\}$?
 - a) $\{\{4, 5, 6\}, \{7, 4\}, \{8, 6\}\}$
 - b) $\{\{4, 5\}, \{8\}, \{6, 7\}\}$
 - c) $\{\{4, 5\}, \{8, 9\}, \{6, 7\}\}$
 - d) $\{\{4, 5, 6, 7, 8, 9\}, \{9\}\}$
- 3) The possible number of relation from $A = \{a, b, c\}$ to $B = \{1, 2, 3, 4\}$ is _____.
 - a) 12
 - b) 144
 - c) 4096
 - d) 128
- 4) The number of possible function from set of m elements to set of n elements are _____.
 - a) $m + n$
 - b) m^n
 - c) n^m
 - d) $m * n$
- 5) Hasse diagram are drawn for _____.
 - a) POSET
 - b) Lattice
 - c) Boolean algebra
 - d) POSET which is not lattice
- 6) Join operation is denoted by the symbol _____.
 - a) $+$
 - b) \cup
 - c) \wedge
 - d) Both a and b
- 7) Absorption law is defined as _____.
 - a) $a * (a * b) = b$
 - b) $a * (a \oplus b) = b$
 - c) $a * (a \oplus b) = b$
 - d) $a * (a \oplus b) = a$
- 8) Pick the correct prefix _____.
 - a) $\rightarrow P \vee Q \neg S$
 - b) $\rightarrow P \vee QRS$
 - c) $\rightarrow \rightarrow P Q \rightarrow \rightarrow QR \rightarrow PR$
 - d) $\rightarrow P \vee Q \neg QSP$
- 9) Every finite subset of lattice has _____.
 - a) An LUB and GLB
 - b) Many LUB and a GLB
 - c) Many LUBs and Many GLBs
 - d) Either some LUBs or some GLBs

Seat No.	
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Set

R

S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISCRETE MATHEMATICAL STRUCTURES

Day & Date: Tuesday, 10-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 56

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

Section – I

Q.2 Answer the following questions. (Any Three) 12

- State and explain Duality law with example.
- Show the following Tautological implication
 $((P \vee \sim P) \rightarrow Q) \rightarrow ((P \vee \sim P) \rightarrow R) \Rightarrow (Q \rightarrow R)$
- Defined Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
- Draw the Hasse diagram of the given sets under partial ordering which satisfy "divides" and indicate which set is totally ordered
 - $\{2, 6, 12, 24\}$
 - $\{1, 2, 3, 6, 12\}$

Q.3 Answer the following questions. (Any One) 08

- Define Relation and explain the Properties of relation with example.
- Define and explain the following with suitable example.
 - Ordered pair & order - n- type
 - Equivalence Relation

Q.4 Obtain PDNF and PCNF of the following 08

- $(\neg p \rightarrow \neg q) \rightarrow (p \leftrightarrow \neg q)$
- $p \vee (\neg p \rightarrow (q \vee (\neg q \rightarrow r)))$

Section – II

Q.5 Answer the following questions. (Any Three) 12

- Let $X = \{1, 2, 3, 4\}$ Define function f from X to X such that $f \neq I_x$ and it is one to one onto find
 - $f \circ f = f^2$
 - $f \circ f^2 = f^3$
 - f^{-1}
 - $f \circ f^{-1}$
- Define Semi group & Monoid with example.
- What is Permutation Group? Define order of Permutation Group and Degree of Permutation Group.
- Define with example
 - upper bound
 - lower bound
 - LUB
 - GLB

08

Q.6 Answer the following questions. (Any One)**a)** Obtain the sum of product of canonical form of following Boolean algebra

i) $X_1 \oplus X_2$

ii) $X_1 \oplus [X_2^0 * X_3^1]$

b) Let Z_4 be the set of equivalence classes generated so that $Z_4 = \{[0], [1], [2], [3]\}$.Let $+_4$ on Z_4 is given by $[i] +_4 [j] = [(i + j) \bmod 4]$ determine an algebraic System & list out the properties which are applicable on algebraic system

08

Q.7 Composition table for $\langle G, * \rangle$ and $\langle S, \diamond \rangle$ are given below show that they are groups and they are isomorphic

$*$	p1	p2	p3	p4	\diamond	q1	q2	q3	q4
p1	p1	p2	p3	p4	q1	q3	q4	q1	q2
p2	p2	p1	p4	p3	q2	q4	q3	q2	q1
p3	p3	p4	p1	p2	q3	q1	q2	q3	q4
p4	p4	p3	p2	p1	q4	q2	q1	q4	q3

Seat No.	
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- 10) A group is said to _____ if there exist an element $a \in G$ such that every element of G can be written as some power of a
 - a) Acyclic
 - b) Cyclic
 - c) Abelian
 - d) Angular
- 11) Which of the following is partition of the set $S = \{4, 5, 6, 7, 8, 9\}$?
 - a) $\{\{4, 5, 6\}, \{7, 4\}, \{8, 6\}\}$
 - b) $\{\{4, 5\}, \{8\}, \{6, 7\}\}$
 - c) $\{\{4, 5\}, \{8, 9\}, \{6, 7\}\}$
 - d) $\{\{4, 5, 6, 7, 8, 9\}, \{9\}\}$
- 12) The possible number of relation from $A = \{a, b, c\}$ to $B = \{1, 2, 3, 4\}$ is _____.
 - a) 12
 - b) 144
 - c) 4096
 - d) 128
- 13) The number of possible function from set of m elements to set of n elements are _____.
 - a) $m + n$
 - b) m^n
 - c) n^m
 - d) $m * n$
- 14) Hasse diagram are drawn for _____.
 - a) POSET
 - b) Lattice
 - c) Boolean algebra
 - d) POSET which is not lattice

Seat No.	
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Set **S**

S.E. (Part - I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISCRETE MATHEMATICAL STRUCTURES

Day & Date: Tuesday, 10-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 56

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

Section – I

Q.2 Answer the following questions. (Any Three) 12

- State and explain Duality law with example.
- Show the following Tautological implication
 $((P \vee \sim P) \rightarrow Q) \rightarrow ((P \vee \sim P) \rightarrow R) \Rightarrow (Q \rightarrow R)$
- Define Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
- Draw the Hasse diagram of the given sets under partial ordering which satisfy "divides" and indicate which set is totally ordered
 - $\{2, 6, 12, 24\}$
 - $\{1, 2, 3, 6, 12\}$

Q.3 Answer the following questions. (Any One) 08

- Define Relation and explain the Properties of relation with example.
- Define and explain the following with suitable example.
 - Ordered pair & order - n- type
 - Equivalence Relation

Q.4 Obtain PDNF and PCNF of the following 08

- $(\neg p \rightarrow \neg q) \rightarrow (p \leftrightarrow \neg q)$
- $p \vee (\neg p \rightarrow (q \vee (\neg q \rightarrow r)))$

Section – II

Q.5 Answer the following questions. (Any Three) 12

- Let $X = \{1, 2, 3, 4\}$ Define function f from X to X such that $f \neq I_x$ and it is one to one onto find
 - $f \circ f = f^2$
 - $f \circ f^2 = f^3$
 - f^{-1}
 - $f \circ f^{-1}$
- Define Semi group & Monoid with example.
- What is Permutation Group? Define order of Permutation Group and Degree of Permutation Group.
- Define with example
 - upper bound
 - lower bound
 - LUB
 - GLB

08

Q.6 Answer the following questions. (Any One)**a)** Obtain the sum of product of canonical form of following Boolean algebra

i) $X_1 \oplus X_2$

ii) $X_1 \oplus [X_2^0 * X_3^1]$

b) Let Z_4 be the set of equivalence classes generated so that $Z_4 = \{[0], [1], [2], [3]\}$.Let $+_4$ on Z_4 is given by $[i] +_4 [j] = [(i + j) \bmod 4]$ determine an algebraic System & list out the properties which are applicable on algebraic system

08

Q.7 Composition table for $\langle G, * \rangle$ and $\langle S, \diamond \rangle$ are given below show that they are groups and they are isomorphic

$*$	p1	p2	p3	p4	\diamond	q1	q2	q3	q4
p1	p1	p2	p3	p4	q1	q3	q4	q1	q2
p2	p2	p1	p4	p3	q2	q4	q3	q2	q1
p3	p3	p4	p1	p2	q3	q1	q2	q3	q4
p4	p4	p3	p2	p1	q4	q2	q1	q4	q3

**Seat
No.**

Set	P
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Day & Date: Thursday, 12-12-2019
Time: 10.00 AM To 01.00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) All questions are compulsory.
3) Assume the suitable data whenever necessary and state them clearly.

Duration: 30 Minutes

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

- 1) DNS and SMTP is function of _____ layer.
a) Application b) Presentation
c) Session d) None
- 2) Framing is task of _____ layer.
a) Data link b) Transport
c) Application d) Presentation
- 3) _____ is method is used to detect as well as to correct the error.
a) CRC b) Hamming code
c) Parity check d) none of this
- 4) The transmission that is used without the timing signal is called _____.
a) Synchronous b) Asynchronous
c) Parallel d) Isochronous
- 5) _____ cable is used for a long distance transmission.
a) Fiber optics b) Twisted pair
c) Co-axial d) None
- 6) In the OSI model, encryption and decryption are functions of the _____ layer.
a) Application b) Presentation
c) Data link d) Physical
- 7) Topology in which all the Node are connected to central device are called as _____.
a) Mesh b) Ring
c) Star d) Bus
- 8) In IEEE std.802.3, 10 Base 5 cabling is called _____.
a) Ethernet b) Thick Ethernet
c) Thin Ethernet d) none of this
- 9) _____ is collision free protocol.
a) Basic bit map b) Binary countdown
c) both a & b d) none of this

- 10) Which of the following is a static channel allocation method?
- | | |
|------------|------------|
| a) CSMA | b) TDM |
| c) CSMA/CD | d) Bit-map |
- 11) What is the purpose of preamble bits in an Ethernet frame?
- | | |
|---------------------|------------------------|
| a) Pre-bit counting | b) Synchronization |
| c) Error checking | d) Destination address |
- 12) Congestion occurs due to _____.
a) Slow processors
b) Insufficient memory to store arriving packets
c) Both a & b
d) None
- 13) The technique in which incoming packet is sent on those lines that are going approximately in the right direction is _____.
a) Flooding
b) Flow-based routing
c) Selective flooding
d) Symmetric flooding
- 14) _____ uses DQDB.
a) LAN
b) MAN
c) WAN
d) None of above

Seat No.	
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S.E. (Part -I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA COMMUNICATION

Day & Date: Thursday, 12-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
 2) Assume the suitable data if necessary and state them clearly.

Section – I

- Q.2 Attempt any Four:** **16**
- Write differences between Parallel and Serial transmission.
 - Explain CRC with suitable example.
 - Write a function of Data link layer and Presentation layer.
 - Write difference between LAN, MAN and WAN.
 - Define Noise. Explain Different types of Noise.
- Q.3 Attempt any One:** **06**
- Explain GO-Back N Protocol with Example.
 - Explain twisted pair cable and its types.
- Q.4 Attempt the following.** **06**
- Explain TCP/IP Reference Model.

Section – II

- Q.5 Attempt any Four.** **16**
- Give two example computer application for which connection oriented Service as appropriate and two example for which connectionless service is best.
 - Explain Binary count down protocol.
 - Explain IEEE std.802.4.
 - Write differences between Leaky Bucket and Token Bucket algorithm.
 - Explain static channel allocation problem.
- Q.6 Attempt any One.** **06**
- Compare the different connecting Devices like Hub, Bridge and Switch.
 - Explain IEEE std. 802.3 with frame format.
- Q.7 Attempt the following.** **06**
- Explain distance vector algorithm with example. Discuss count to infinity problem.

- 10) _____ is method is used to detect as well as to correct the error.
- a) CRC
 - b) Hamming code
 - c) Parity check
 - d) none of this
- 11) The transmission that is used without the timing signal is called _____.
- a) Synchronous
 - b) Asynchronous
 - c) Parallel
 - d) Isochronous
- 12) _____ cable is used for a long distance transmission.
- a) Fiber optics
 - b) Twisted pair
 - c) Co-axial
 - d) None
- 13) In the OSI model, encryption and decryption are functions of the _____ layer.
- a) Application
 - b) Presentation
 - c) Data link
 - d) Physical
- 14) Topology in which all the Node are connected to central device are called as _____.
- a) Mesh
 - b) Ring
 - c) Star
 - d) Bus

Seat No.	
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Set Q

S.E. (Part -I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA COMMUNICATION

Day & Date: Thursday, 12-12-2019
Time: 10.00 AM To 01.00 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
2) Assume the suitable data if necessary and state them clearly.

Section – I

- Q.2 Attempt any Four:** **16**
- a) Write differences between Parallel and Serial transmission.
 - b) Explain CRC with suitable example.
 - c) Write a function of Data link layer and Presentation layer.
 - d) Write difference between LAN, MAN and WAN.
 - e) Define Noise. Explain Different types of Noise.
- Q.3 Attempt any One:** **06**
- a) Explain GO-Back N Protocol with Example.
 - b) Explain twisted pair cable and its types.
- Q.4 Attempt the following.** **06**
- Explain TCP/IP Reference Model.

Section – II

- Q.5 Attempt any Four.** **16**
- a) Give two example computer application for which connection oriented Service as appropriate and two example for which connectionless service is best.
 - b) Explain Binary count down protocol.
 - c) Explain IEEE std.802.4.
 - d) Write differences between Leaky Bucket and Token Bucket algorithm.
 - e) Explain static channel allocation problem.
- Q.6 Attempt any One.** **06**
- a) Compare the different connecting Devices like Hub, Bridge and Switch.
 - b) Explain IEEE std. 802.3 with frame format.
- Q.7 Attempt the following.** **06**
- Explain distance vector algorithm with example. Discuss count to infinity problem.

**Seat
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Day & Date: Thursday,12-12-2019
Time: 10.00 AM To 01.00 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) All questions are compulsory.
3) Assume the suitable data whenever necessary and state them clearly.

Duration: 30 Minutes

Marks: 14

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

- 1) _____ cable is used for a long distance transmission.
a) Fiber optics b) Twisted pair
c) Co-axial d) None
- 2) In the OSI model, encryption and decryption are functions of the _____.
a) Application b) Presentation
c) Data link d) Physical
- 3) Topology in which all the Node are connected to central device are called as _____.
a) Mesh b) Ring
c) Star d) Bus
- 4) In IEEE std.802.3, 10 Base 5 cabling is called _____.
a) Ethernet b) Thick Ethernet
c) Thin Ethernet d) none of this
- 5) _____ is collision free protocol.
a) Basic bit map b) Binary countdown
c) both a & b d) none of this
- 6) Which of the following is a static channel allocation method?
a) CSMA b) TDM
c) CSMA/CD d) Bit-map
- 7) What is the purpose of preamble bits in an Ethernet frame?
a) Pre-bit counting b) Synchronization
c) Error checking d) Destination adder
- 8) Congestion occurs due to _____.
a) Slow processors
b) Insufficient memory to store arriving packets
c) Both a & b
d) None

- Page 8 of 12

Seat No.	
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Set **R**

S.E. (Part -I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA COMMUNICATION

Day & Date: Thursday, 12-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
 2) Assume the suitable data if necessary and state them clearly.

Section – I

Q.2 Attempt any Four: **16**

- a) Write differences between Parallel and Serial transmission.
- b) Explain CRC with suitable example.
- c) Write a function of Data link layer and Presentation layer.
- d) Write difference between LAN, MAN and WAN.
- e) Define Noise. Explain Different types of Noise.

Q.3 Attempt any One: **06**

- a) Explain GO-Back N Protocol with Example.
- b) Explain twisted pair cable and its types.

Q.4 Attempt the following. **06**

Explain TCP/IP Reference Model.

Section – II

Q.5 Attempt any Four. **16**

- a) Give two example computer application for which connection oriented Service as appropriate and two example for which connectionless service is best.
- b) Explain Binary count down protocol.
- c) Explain IEEE std.802.4.
- d) Write differences between Leaky Bucket and Token Bucket algorithm.
- e) Explain static channel allocation problem.

Q.6 Attempt any One. **06**

- a) Compare the different connecting Devices like Hub, Bridge and Switch.
- b) Explain IEEE std. 802.3 with frame format.

Q.7 Attempt the following. **06**

Explain distance vector algorithm with example. Discuss count to infinity problem.

**Seat
No.**

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Day & Date: Thursday,12-12-2019
Time: 10.00 AM To 01.00 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) All questions are compulsory.
3) Assume the suitable data whenever necessary and state them clearly.

Duration: 30 Minutes

Marks: 14

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

- 1) Which of the following is a static channel allocation method?
 - a) CSMA
 - b) TDM
 - c) CSMA/CD
 - d) Bit-map
- 2) What is the purpose of preamble bits in an Ethernet frame?
 - a) Pre-bit counting
 - b) Synchronization
 - c) Error checking
 - d) Destination address
- 3) Congestion occurs due to _____.
 - a) Slow processors
 - b) Insufficient memory to store arriving packets
 - c) Both a & b
 - d) None
- 4) The technique in which incoming packet is sent on those links that are going approximately in the right direction is _____.
 - a) Flooding
 - b) Flow-based routing
 - c) Selective flooding
 - d) Symmetric flooding
- 5) _____ uses DQDB.
 - a) LAN
 - b) MAN
 - c) WAN
 - d) None of above
- 6) DNS and SMTP is function of _____ layer.
 - a) Application
 - b) Presentation
 - c) Session
 - d) None
- 7) Framing is task of _____ layer.
 - a) Data link
 - b) Transport
 - c) Application
 - d) Presentation
- 8) _____ is method used to detect as well as to correct the error.
 - a) CRC
 - b) Hamming code
 - c) Parity check
 - d) none of this
- 9) The transmission that is used without the timing signal is called _____.
 - a) Synchronous
 - b) Asynchronous
 - c) Parallel
 - d) Isochronous

- 10) _____ cable is used for a long distance transmission.
- | | |
|-----------------|-----------------|
| a) Fiber optics | b) Twisted pair |
| c) Co-axial | d) None |
- 11) In the OSI model, encryption and decryption are functions of the _____ layer.
- | | |
|----------------|-----------------|
| a) Application | b) Presentation |
| c) Data link | d) Physical |
- 12) Topology in which all the Node are connected to central device are called as _____.
- | | |
|---------|---------|
| a) Mesh | b) Ring |
| c) Star | d) Bus |
- 13) In IEEE std.802.3, 10 Base 5 cabling is called _____.
- | | |
|------------------|-------------------|
| a) Ethernet | b) Thick Ethernet |
| c) Thin Ethernet | d) none of this |
- 14) _____ is collision free protocol.
- | | |
|------------------|---------------------|
| a) Basic bit map | b) Binary countdown |
| c) both a & b | d) none of this |

Seat No.	
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Set **S**

S.E. (Part -I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA COMMUNICATION

Day & Date: Thursday, 12-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
 2) Assume the suitable data if necessary and state them clearly.

Section – I

- Q.2 Attempt any Four:** **16**
- Write differences between Parallel and Serial transmission.
 - Explain CRC with suitable example.
 - Write a function of Data link layer and Presentation layer.
 - Write difference between LAN, MAN and WAN.
 - Define Noise. Explain Different types of Noise.
- Q.3 Attempt any One:** **06**
- Explain GO-Back N Protocol with Example.
 - Explain twisted pair cable and its types.
- Q.4 Attempt the following.** **06**
- Explain TCP/IP Reference Model.

Section – II

- Q.5 Attempt any Four.** **16**
- Give two example computer application for which connection oriented Service as appropriate and two example for which connectionless service is best.
 - Explain Binary count down protocol.
 - Explain IEEE std.802.4.
 - Write differences between Leaky Bucket and Token Bucket algorithm.
 - Explain static channel allocation problem.
- Q.6 Attempt any One.** **06**
- Compare the different connecting Devices like Hub, Bridge and Switch.
 - Explain IEEE std. 802.3 with frame format.
- Q.7 Attempt the following.** **06**
- Explain distance vector algorithm with example. Discuss count to infinity problem.

Seat No.	
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Set	P
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
 2) Figures to the right indicates full marks.
 3) Illustrate your answers with sketches wherever necessary.
 4) Assume suitable data if necessary.

MCQ/Objective Type Questions

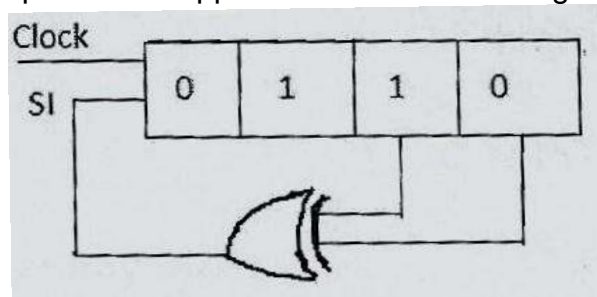
Duration: 30 Minutes

Marks: 14

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

- 1) Which statement below best describes a Karnaugh map?
 - a) A Karnaugh map can be used to replace Boolean rules
 - b) The Karnaugh map eliminates the need for using NAND and NOR gates
 - c) Variable complements can be eliminated by using Karnaugh maps
 - d) Karnaugh maps provide a visual approach to simplifying Boolean expressions
- 2) The Boolean equation for the exclusive-OR function is _____.
 - a) $X = \overline{A}\overline{B} + AB$
 - b) $X = \overline{A}B + \overline{A}\overline{B}$
 - c) $X = \overline{A}\overline{B} + AB$
 - d) $X = \overline{A}B + \overline{A}\overline{B}$
- 3) A full-adder adds _____.
 - a) two single bits and one carry bit
 - b) two 2-bit binary numbers
 - c) two 4-bit binary numbers
 - d) two 2-bit numbers and one carry bit
- 4) A 4-variable AND-OR circuit produces a 1 at its Y output. Which combination of inputs is correct?
 - a) $A = 0, B = 0, C = 0, D = 0$
 - b) $A = 0, B = 1, C = 1, D = 0$
 - c) $A = 1, B = 1, C = 0, D = 0$
 - d) $A = 1, B = 0, C = 0, D = 0$
- 5) What is a multiplexer?
 - a) It is a type of decoder which decodes several inputs and gives one output
 - b) A multiplexer is a device which converts many signals into one
 - c) It takes one input and results into many output
 - d) None of the Mentioned
- 6) The output of an exclusive-NOR gate is 1. Which input combination is correct?
 - a) $A = 1, B = 0$
 - b) $A = 0, B = 1$
 - c) $A = 0, B = 0$
 - d) none of the above

- 7) How many inputs of a four-input AND gate must be HIGH in order for the output of the logic gate to go HIGH?
- any one of the inputs
 - any two of the inputs
 - any three of the inputs
 - all four inputs
- 8) “#100 \$finish” indicate _____.
 - end of simulation time
 - end of simulation at 100 time unit
 - suspend the simulation at 100 time unit
 - None
- 9) IC 7490 is _____.
 - MOD 5 followed by MOD 2 synchronous counter
 - MOD 5 followed by MOD 2 Asynchronous counter
 - MOD 2 followed by MOD 5 synchronous counter
 - MOD 2 followed by MOD 5 Asynchronous counter
- 10) A MOD 12 and MOD 10 counters are cascaded. Determine the output frequency if input frequency is of 60 MHz.
 - 1500 KHz
 - 6 MHz
 - 500 KHz
 - 5 MHz
- 11) In initial content of 4 bit SIPO, right shift, shift register shown in figure is 0110. After three clock pulses are applied contents of shift register will be _____.



- 0101
 - 1010
 - 0011
 - 1011
- 12) Flip is also called as _____ Device.
 - Astable
 - Bistable
 - Monostable
 - Metastable
- 13) Which Flip flop is free from Race around condition?
 - SR flip flop
 - JK flip flop
 - MS JK flip flop
 - D Flip flop
- 14) What is the system task to suspend simulation?
 - \$Stop
 - \$finish
 - \$monitor
 - \$hold

Seat No.	
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Set

P

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
 2) Figures to the right indicates full marks.
 3) Illustrate your answers with sketches wherever necessary.
 4) Assume suitable data if necessary.

Section – I

Q.2 Solve any three. **12**

- a) Given

$$Y = A\bar{B} + \bar{B}\bar{C} + \bar{A}C$$
 Implement the logical expression using NAND and NOR gates.
- b) Minimize the following Boolean expression using K – map.

$$Y = \sum (m1, m3, m5, m7, m10, m11, m14, m15).$$
- c) Design 16:1 multiplexer using 4:1 multiplexers only.
- d) Short Note on :
 1) Arithmetic and Logic Unit
 or
 2) IC 74151

Q.3 Solve any two. **16**

- a) Simplify the Boolean Function:
 $F(w, x, y, z) = \sum(1, 3, 7, 11, 15)$, the Don't care conditions $d(w, x, y, z) = \sum(0, 2, 5)$
 and Implement using NAND gates.
- b) Design a 8 to 1 multiplexer by using the four variable function given by
 $F(A, B, C, D) = \sum m(0, 1, 3, 4, 8, 9, 15).$
- c) State and prove De'Morgan's Theorems with the help of truth tables.

Section – II

Q.4 Attempt any three. **12**

- a) Draw and explain SIPO shift register with waveform.
- b) Write the verilog code for JK flip flop using behavioral modeling.
- c) Design 3 bit asynchronous down counter with waveform in detail.
- d) Write the verilog code for full adder.

Q.5 Attempt any two. **16**

- a) Write a Verilog code for 3 line to 8 line decoder using behavioral modeling.
- b) Design synchronous counter which counts following sequence
 ---1-2-3-4-5-6-7-8-0-1-2--- using JK flip flop
- c) Explain the IC 7490. Also design MOD 9 counter using IC 7490 in detail.

Seat No.	
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Set Q

S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

2) Figures to the right indicates full marks.

3) Illustrate your answers with sketches wherever necessary.

4) Assume suitable data if necessary.

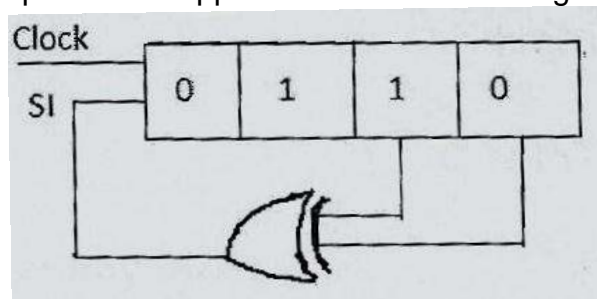
MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) “#100 \$finish” indicate _____.
 a) end of simulation time
 b) end of simulation at 100 time unit
 c) suspend the simulation at 100 time unit
 d) None
- 2) IC 7490 is _____.
 a) MOD 5 followed by MOD 2 synchronous counter
 b) MOD 5 followed by MOD 2 Asynchronous counter
 c) MOD 2 followed by MOD 5 synchronous counter
 d) MOD 2 followed by MOD 5 Asynchronous counter
- 3) A MOD 12 and MOD 10 counters are cascaded. Determine the output frequency if input frequency is of 60 MHz.
 a) 1500 KHz
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 c) 500 KHz
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- 4) In initial content of 4 bit SIPO, right shift, shift register shown in figure is 0110. After three clock pulses are applied contents of shift register will be ____.



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 b) 1010
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- 5) Flip is also called as _____ Device.
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 c) Monostable
 d) Metastable

- 6) Which Flip flop is free from Race around condition?
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 - b) JK flip flop
 - c) MS JK flip flop
 - d) D Flip flop
- 7) What is the system task to suspend simulation?
 - a) \$Stop
 - b) \$finish
 - c) \$monitor
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 - c) $X = \overline{A} \overline{B} + AB$
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 - c) $A = 0, B = 0$
 - d) none of the above
- 14) How many inputs of a four-input AND gate must be HIGH in order for the output of the logic gate to go HIGH?
 - a) any one of the inputs
 - b) any two of the inputs
 - c) any three of the inputs
 - d) all four inputs

Seat No.	
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Set	Q
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
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Section – I

Q.2 Solve any three. **12**

- a) Given

$$Y = A\bar{B} + \bar{B}\bar{C} + \bar{A}C$$
 Implement the logical expression using NAND and NOR gates.
- b) Minimize the following Boolean expression using K – map.

$$Y = \sum (m1, m3, m5, m7, m10, m11, m14, m15).$$
- c) Design 16:1 multiplexer using 4:1 multiplexers only.
- d) Short Note on :
 1) Arithmetic and Logic Unit
 or
 2) IC 74151

Q.3 Solve any two. **16**

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 $F(w, x, y, z) = \sum(1, 3, 7, 11, 15)$, the Don't care conditions $d(w, x, y, z) = \sum(0, 2, 5)$
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 $F(A, B, C, D) = \sum m(0, 1, 3, 4, 8, 9, 15).$
- c) State and prove De'Morgan's Theorems with the help of truth tables.

Section – II

Q.4 Attempt any three. **12**

- a) Draw and explain SIPO shift register with waveform.
- b) Write the verilog code for JK flip flop using behavioral modeling.
- c) Design 3 bit asynchronous down counter with waveform in detail.
- d) Write the verilog code for full adder.

Q.5 Attempt any two. **16**

- a) Write a Verilog code for 3 line to 8 line decoder using behavioral modeling.
- b) Design synchronous counter which counts following sequence
 ---1-2-3-4-5-6-7-8-0-1-2--- using JK flip flop
- c) Explain the IC 7490. Also design MOD 9 counter using IC 7490 in detail.

Seat No.	
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Set	R
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
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 4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) What is a multiplexer?
 - a) It is a type of decoder which decodes several inputs and gives one output
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- 2) The output of an exclusive-NOR gate is 1. Which input combination is correct?
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- 3) How many inputs of a four-input AND gate must be HIGH in order for the output of the logic gate to go HIGH?
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 - b) end of simulation at 100 time unit
 - c) suspend the simulation at 100 time unit
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 - c) MOD 2 followed by MOD 5 synchronous counter
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- 6) A MOD 12 and MOD 10 counters are cascaded. Determine the output frequency if input frequency is of 60 MHz.
 - a) 1500 KHz
 - b) 6 MHz
 - c) 500 KHz
 - d) 5 MHz

-
- Timing diagram for a 4-bit shift register. The Clock signal is a square wave. The SI (Serial Input) signal is a sequence of bits: 0, 1, 1, 0. The output of the shift register is shown as a 4-bit register with these values. An AND gate is connected to the SI input and the output of the 3rd bit of the register.

- Page 8 of 12

Seat No.	
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Set	R
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
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Section – I

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- a) Given

$$Y = A\bar{B} + \bar{B}\bar{C} + \bar{A}C$$
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- b) Minimize the following Boolean expression using K – map.

$$Y = \sum (m1, m3, m5, m7, m10, m11, m14, m15).$$
- c) Design 16:1 multiplexer using 4:1 multiplexers only.
- d) Short Note on :
 1) Arithmetic and Logic Unit
 or
 2) IC 74151

Q.3 Solve any two. **16**

- a) Simplify the Boolean Function:
 $F(w, x, y, z) = \sum(1, 3, 7, 11, 15)$, the Don't care conditions $d(w, x, y, z) = \sum(0, 2, 5)$
 and Implement using NAND gates.
- b) Design a 8 to 1 multiplexer by using the four variable function given by
 $F(A, B, C, D) = \sum m(0, 1, 3, 4, 8, 9, 15).$
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Section – II

Q.4 Attempt any three. **12**

- a) Draw and explain SIPO shift register with waveform.
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Q.5 Attempt any two. **16**

- a) Write a Verilog code for 3 line to 8 line decoder using behavioral modeling.
- b) Design synchronous counter which counts following sequence
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**Seat
No.**

Max. Marks: 70

- 2) Figures to the right indicates full marks.
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- 4) Assume suitable data if necessary.

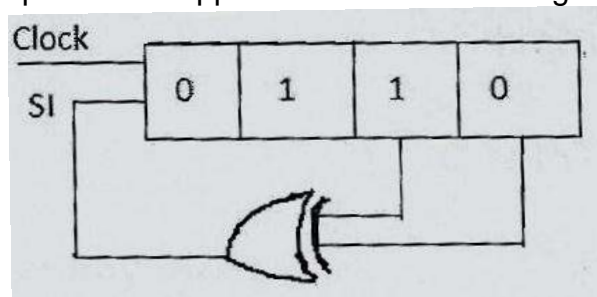
MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) A MOD 12 and MOD 10 counters are cascaded. Determine the output frequency if input frequency is of 60 MHz.
 - a) 1500 KHz
 - b) 6 MHz
 - c) 500 KHz
 - d) 5 MHz
- 2) In initial content of 4 bit SIPO, right shift, shift register shown in figure is 0110. After three clock pulses are applied contents of shift register will be _____.



- a) 0101 b) 1010
 - c) 0011 d) 1011
- 3) Flip is also called as _____ Device.
- a) Astable b) Bistable
 - c) Monostable d) Metastable
- 4) Which Flip flop is free from Race around condition?
- a) SR flip flop b) JK flip flop
 - c) MS JK flip flop d) D Flip flop
- 5) What is the system task to suspend simulation?
- a) \$Stop b) \$finish
 - c) \$monitor d) \$hold
- 6) Which statement below best describes a Karnaugh map?
- a) A Karnaugh map can be used to replace Boolean rules
 - b) The Karnaugh map eliminates the need for using NAND and NOR gates
 - c) Variable complements can be eliminated by using Karnaugh maps
 - d) Karnaugh maps provide a visual approach to simplifying Boolean expressions

Seat No.	
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Set	S
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
 2) Figures to the right indicates full marks.
 3) Illustrate your answers with sketches wherever necessary.
 4) Assume suitable data if necessary.

Section – I

Q.2 Solve any three. **12**

- a) Given

$$Y = A\bar{B} + \bar{B}\bar{C} + \bar{A}C$$
 Implement the logical expression using NAND and NOR gates.
- b) Minimize the following Boolean expression using K – map.

$$Y = \sum (m1, m3, m5, m7, m10, m11, m14, m15).$$
- c) Design 16:1 multiplexer using 4:1 multiplexers only.
- d) Short Note on :
 1) Arithmetic and Logic Unit
 or
 2) IC 74151

Q.3 Solve any two. **16**

- a) Simplify the Boolean Function:
 $F(w, x, y, z) = \sum(1, 3, 7, 11, 15)$, the Don't care conditions $d(w, x, y, z) = \sum(0, 2, 5)$
 and Implement using NAND gates.
- b) Design a 8 to 1 multiplexer by using the four variable function given by
 $F(A, B, C, D) = \sum m(0, 1, 3, 4, 8, 9, 15).$
- c) State and prove De'Morgan's Theorems with the help of truth tables.

Section – II

Q.4 Attempt any three. **12**

- a) Draw and explain SIPO shift register with waveform.
- b) Write the verilog code for JK flip flop using behavioral modeling.
- c) Design 3 bit asynchronous down counter with waveform in detail.
- d) Write the verilog code for full adder.

Q.5 Attempt any two. **16**

- a) Write a Verilog code for 3 line to 8 line decoder using behavioral modeling.
- b) Design synchronous counter which counts following sequence
 ---1-2-3-4-5-6-7-8-0-1-2--- using JK flip flop
- c) Explain the IC 7490. Also design MOD 9 counter using IC 7490 in detail.

Seat No.	
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Set	P
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 70

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

2) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) The property that adjacent pixels on a scan line are likely to have same characteristics is called _____.
 a) spatial coherence b) area coherence
 c) coherence d) pixel coherence
- 2) The process of changing the sizes, orientations or positions of any object by a mathematical operation is called as _____.
 a) Rotation b) Scaling
 c) Transformation d) None of these
- 3) A pixel from where we start filling is known as _____.
 a) PEL b) Root
 c) Seed d) None of the above
- 4) Distance between the actual line and nearest grid location is _____.
 a) Error term b) Rasterization
 c) Resolution d) Intensity
- 5) In _____ Scaling, always $S_x = S_y$.
 a) Uniform b) Non uniform
 c) Complex d) None of these
- 6) Touch panels are _____ in nature.
 a) Electrical b) Optical
 c) Acoustic d) All of the above
- 7) Reflection matrix $\begin{vmatrix} 0 & 1 \\ 1 & 0 \end{vmatrix}$ is used for _____.
 a) $Y = X$ b) $Y = -X$
 c) $X = 0$ d) $Y = 0$
- 8) The line segment is, visible if both end points codes are _____.
 a) 0000 b) 1111
 c) 0101 d) 1010
- 9) The Bezier curve is contained with the _____ hull of defining polygon.
 a) Concave b) Convex
 c) Elliptical d) All

- 10) In programmatic curve each co-ordinate of a point on a curve is represented as _____ of a single parameter.
- | | |
|--------------|-------------|
| a) precision | b) method |
| c) procedure | d) function |
- 11) The window co-ordinates are called as _____ Co-ordinates.
- | | |
|-----------|-----------|
| a) World | b) Screen |
| c) Normal | d) Scalar |
- 12) _____ is a unit of display file.
- | | |
|------------|------------------|
| a) Segment | b) Byte |
| c) LOC | d) None of these |
- 13) _____ algorithm is used for clipping the line.
- | | |
|---------------------|--------------------|
| a) Sutherland-Cohen | b) DDA |
| c) Bresenham's | d) Iran-Sutherland |
- 14) Z-Buffer algorithm consists of frame buffer & _____.
- | | |
|-----------------|------------------|
| a) pixel buffer | b) depth buffer |
| c) image buffer | d) none of these |

Seat No.	
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Set	P
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three **12**

- a) Draw and explain refresh CRT.
- b) Explain fence fill algorithm.
- c) Describe 2D shearing with diagram.
- d) Describe 3D rotation about axis parallel to co-ordinate axis.

Q.3 Consider an object ABC with co-ordinates A(1,1) b(10, 0) and c(5, 5). Perform following transformation on the object in given order. **08**

- 1) Translate object by 3 and 2 factors in X and Y direction respectively
- 2) Compress the object by 65%
- 3) Reflect the object about Y-axis

OR

What is an error term? Write and explain generalized Bresenham's line drawing algorithm and plot intermediate points for line from (0, 0) to (-5, -4).

Q.4 Explain 2D rotation about an arbitrary point with example. **08**

Section – II

Q.5 Attempt any three **12**

- a) Explain display file compilation in detail.
- b) Explain parametric curves in detail.
- c) Explain midpoint sub division algo in detail.
- d) State advantages and disadvantages of Z-Buffer.

Q.6 What is segment? Explain segmented display files in detail with all its functions. **08**

OR

Explain antialiasing & half toning techniques in detail.

Q.7 Write a note on. **08**

- a) Back face removal algorithm
- b) Painter's algorithm

Seat No.	
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- 11) Distance between the actual line and nearest grid location is _____.
 - a) Error term
 - b) Rasterization
 - c) Resolution
 - d) Intensity
- 12) In _____ Scaling, always $S_x=S_y$.
 - a) Uniform
 - b) Non uniform
 - c) Complex
 - d) None of these
- 13) Touch panels are _____ in nature.
 - a) Electrical
 - b) Optical
 - c) Acoustic
 - d) All of the above
- 14) Reflection matrix $\begin{vmatrix} 0 & 1 \\ 1 & 0 \end{vmatrix}$ is used for _____.
 - a) $Y = X$
 - b) $Y = -X$
 - c) $X = 0$
 - d) $Y = 0$

Seat No.	
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Set	Q
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three **12**

- a) Draw and explain refresh CRT.
- b) Explain fence fill algorithm.
- c) Describe 2D shearing with diagram.
- d) Describe 3D rotation about axis parallel to co-ordinate axis.

Q.3 Consider an object ABC with co-ordinates A(1,1) b(10, 0) and c(5, 5). Perform following transformation on the object in given order. **08**

- 1) Translate object by 3 and 2 factors in X and Y direction respectively
- 2) Compress the object by 65%
- 3) Reflect the object about Y-axis

OR

What is an error term? Write and explain generalized Bresenham's line drawing algorithm and plot intermediate points for line from (0, 0) to (-5, -4).

Q.4 Explain 2D rotation about an arbitrary point with example. **08**

Section – II

Q.5 Attempt any three **12**

- a) Explain display file compilation in detail.
- b) Explain parametric curves in detail.
- c) Explain midpoint sub division algo in detail.
- d) State advantages and disadvantages of Z-Buffer.

Q.6 What is segment? Explain segmented display files in detail with all its functions. **08**

OR

Explain antialiasing & half toning techniques in detail.

Q.7 Write a note on. **08**

- a) Back face removal algorithm
- b) Painter's algorithm

Seat No.	
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Set	R
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 70

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

2) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) In _____ Scaling, always $S_x = S_y$.
 - a) Uniform
 - b) Non uniform
 - c) Complex
 - d) None of these
- 2) Touch panels are _____ in nature.
 - a) Electrical
 - b) Optical
 - c) Acoustic
 - d) All of the above
- 3) Reflection matrix $\begin{vmatrix} 0 & 1 \\ 1 & 0 \end{vmatrix}$ is used for _____.
 - a) $Y = X$
 - b) $Y = -X$
 - c) $X = 0$
 - d) $Y = 0$
- 4) The line segment is, visible if both end points codes are _____.
 - a) 0000
 - b) 1111
 - c) 0101
 - d) 1010
- 5) The Bezier curve is contained with the _____ hull of defining polygon.
 - a) Concave
 - b) Convex
 - c) Elliptical
 - d) All
- 6) In programmatic curve each co-ordinate of a point on a curve is represented as _____ of a single parameter.
 - a) precision
 - b) method
 - c) procedure
 - d) function
- 7) The window co-ordinates are called as _____ Co-ordinates.
 - a) World
 - b) Screen
 - c) Normal
 - d) Scalar
- 8) _____ is a unit of display file.
 - a) Segment
 - b) Byte
 - c) LOC
 - d) None of these
- 9) _____ algorithm is used for clipping the line.
 - a) Sutherland-Cohen
 - b) DDA
 - c) Bresenham's
 - d) Iran-Sutherland
- 10) Z-Buffer algorithm consists of frame buffer & _____.
 - a) pixel buffer
 - b) depth buffer
 - c) image buffer
 - d) none of these

- 11) The property that adjacent pixels on a scan line are likely to have same characteristics is called _____.
a) spatial coherence b) area coherence
c) coherence d) pixel coherence
- 12) The process of changing the sizes, orientations or positions of any object by a mathematical operation is called as _____.
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c) Transformation d) None of these
- 13) A pixel from where we start filling is known as _____.
a) PEL b) Root
c) Seed d) None of the above
- 14) Distance between the actual line and nearest grid location is _____.
a) Error term b) Rasterization
c) Resolution d) Intensity

Seat No.	
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Set	R
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three **12**

- a) Draw and explain refresh CRT.
- b) Explain fence fill algorithm.
- c) Describe 2D shearing with diagram.
- d) Describe 3D rotation about axis parallel to co-ordinate axis.

Q.3 Consider an object ABC with co-ordinates A(1,1) b(10, 0) and c(5, 5). Perform following transformation on the object in given order. **08**

- 1) Translate object by 3 and 2 factors in X and Y direction respectively
- 2) Compress the object by 65%
- 3) Reflect the object about Y-axis

OR

What is an error term? Write and explain generalized Bresenham's line drawing algorithm and plot intermediate points for line from (0, 0) to (-5, -4).

Q.4 Explain 2D rotation about an arbitrary point with example. **08**

Section – II

Q.5 Attempt any three **12**

- a) Explain display file compilation in detail.
- b) Explain parametric curves in detail.
- c) Explain midpoint sub division algo in detail.
- d) State advantages and disadvantages of Z-Buffer.

Q.6 What is segment? Explain segmented display files in detail with all its functions. **08**

OR

Explain antialiasing & half toning techniques in detail.

Q.7 Write a note on. **08**

- a) Back face removal algorithm
- b) Painter's algorithm

Seat No.	
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Set	S
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 70

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

2) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) In programmatic curve each co-ordinate of a point on a curve is represented as _____ of a single parameter.
 - a) precision
 - b) method
 - c) procedure
 - d) function
- 2) The window co-ordinates are called as _____ Co-ordinates.
 - a) World
 - b) Screen
 - c) Normal
 - d) Scalar
- 3) _____ is a unit of display file.
 - a) Segment
 - b) Byte
 - c) LOC
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 - b) DDA
 - c) Bresenham's
 - d) Iran-Sutherland
- 5) Z-Buffer algorithm consists of frame buffer & _____.
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 - b) depth buffer
 - c) image buffer
 - d) none of these
- 6) The property that adjacent pixels on a scan line are likely to have same characteristics is called _____.
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 - b) area coherence
 - c) coherence
 - d) pixel coherence
- 7) The process of changing the sizes, orientations or positions of any object by a mathematical operation is called as _____.
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 - b) Scaling
 - c) Transformation
 - d) None of these
- 8) A pixel from where we start filling is known as _____.
 - a) PEL
 - b) Root
 - c) Seed
 - d) None of the above
- 9) Distance between the actual line and nearest grid location is _____.
 - a) Error term
 - b) Rasterization
 - c) Resolution
 - d) Intensity
- 10) In _____ Scaling, always $S_x = S_y$.
 - a) Uniform
 - b) Non uniform
 - c) Complex
 - d) None of these

- 11) Touch panels are _____ in nature.
- | | |
|---------------|---------------------|
| a) Electrical | b) Optical |
| c) Acoustic | d) All of the above |
- 12) Reflection matrix $\begin{vmatrix} 0 & 1 \\ 1 & 0 \end{vmatrix}$ is used for _____.
- | | |
|------------|-------------|
| a) $Y = X$ | b) $Y = -X$ |
| c) $X = 0$ | d) $Y = 0$ |
- 13) The line segment is, visible if both end points codes are _____.
- | | |
|---------|---------|
| a) 0000 | b) 1111 |
| c) 0101 | d) 1010 |
- 14) The Bezier curve is contained with the _____ hull of defining polygon.
- | | |
|---------------|-----------|
| a) Concave | b) Convex |
| c) Elliptical | d) All |

Seat No.	
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Set	S
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S.E. (Part – I) (New/Old) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three **12**

- a) Draw and explain refresh CRT.
- b) Explain fence fill algorithm.
- c) Describe 2D shearing with diagram.
- d) Describe 3D rotation about axis parallel to co-ordinate axis.

Q.3 Consider an object ABC with co-ordinates A(1,1) b(10, 0) and c(5, 5). Perform following transformation on the object in given order. **08**

- 1) Translate object by 3 and 2 factors in X and Y direction respectively
- 2) Compress the object by 65%
- 3) Reflect the object about Y-axis

OR

What is an error term? Write and explain generalized Bresenham's line drawing algorithm and plot intermediate points for line from (0, 0) to (-5, -4).

Q.4 Explain 2D rotation about an arbitrary point with example. **08**

Section – II

Q.5 Attempt any three **12**

- a) Explain display file compilation in detail.
- b) Explain parametric curves in detail.
- c) Explain midpoint sub division algo in detail.
- d) State advantages and disadvantages of Z-Buffer.

Q.6 What is segment? Explain segmented display files in detail with all its functions. **08**

OR

Explain antialiasing & half toning techniques in detail.

Q.7 Write a note on. **08**

- a) Back face removal algorithm
- b) Painter's algorithm

Seat No.	
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Day & Date: Friday,22-11-2019
Time: 02:30 PM To 05:30 PM

Instructions:

- 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.
- 2) Answer MCQ / objective type questions on page no 3 only. Don't forget to mention, Q. P. Set (P/Q/R/S) on Top of page.
- 3) Figures to the right indicates full marks.
- 4) Use of non-programmable calculator is allowed.

Marks: 14

14

- 1) The first approximation to real root of the equation $x - \cos x = 0$ by Regula falsi method is _____.
a) 0.6851 b) 1.6851
c) 0.6581 d) 0.8651
- 2) Identify, which of the following method has quadratic convergence?
a) Regula falsi method b) Newton - Raphson method
c) Both a and b d) Romberg's method
- 3) The number of strips required in Weddel's rule is _____.
a) A Multiple of 6 b) A multiple of 10
c) A Multiple of 3 d) A multiple of 2
- 4) Identify the method of solving simultaneous linear equations in which the coefficient matrix is expressed as the product of a lower and upper triangular matrices.
a) Gauss-Jacobi's method b) Gauss-Jordan method
c) Gauss-Elimination method d) Factorization method
- 5) For the data

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

The value of $\int_0^2 f(t)dt$ by Simpson's $\frac{1}{3}$ rule is _____.

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

- Page 2 of 20

Seat No.	
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Set **P**

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – II

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three.

09

- a) Find a real root of the equation $e^x = x^3 + \cos 25x$ take $x_0 = 4.5$ by using Newton – Raphson method correct to 3 decimal places.
- b) Find positive root of the equation $x \log_{10} x = 1.2$ by using false-position method correct to 3 decimal places.
- c) Solve the system of equations by using Gauss-Jacobi method.
 $x - y + z = 1, \quad -3x + 2y - 3z = -6, \quad 2x - 5y + 4z = 5$
- d) Solve the system of equations by using Gauss-Jacobi method.
 $8x - 3y + 2z = 20, \quad 4x + 11y - z = 33, \quad 6x + 3y + 12z = 35$
- e) Using Power method find eigen values and corresponding eigen vectors.
 $A = \begin{bmatrix} 5 & 0 & 1 \\ 0 & -2 & 0 \\ 1 & 0 & 5 \end{bmatrix} \quad \text{Take } x_0 = [1 \ 0 \ 0]^T$
 Perform 5 iterations.

Q.3 Attempt any three.

09

- a) Solve the system of equations by using Gauss-Seidal method (perform 3 iterations)
 $83x + 11y - 4z = 95, \quad 7x + 52y + 13z = 104, \quad 3x + 8y + 29z = 71$
- b) Evaluate $\int_4^{5.2} \log_e x \, dx$ by using Trapezoidal rule take $n = 6$.
- c) Evaluate $\int_0^{1/2} \int_0^{1/2} \frac{\sin xy}{1+xy} \, dx \, dy$
 By using Simpson's rule with $h = k = \frac{1}{4}$
- d) By using Weddel's rule find
 $\int_0^{0.6} e^{-x^2} \, dx$ by taking $n = 6$
- e) Find the double root of the equation $x^3 - x^2 - x + 1 = 0$ Choosing $x_0 = 0.8$ by using generalized Newton-Raphson method.

Q.4 Attempt any two.

10

- a) Apply factorization method to solve the equations.
 $3x + 2y + 7z = 4, \quad 2x + 3y + z = 5, \quad 3x + 4y + z = 7$
- b) Perform two iterations of Newton-Raphson method to find a solution of the system.
 $x^2 + xy = 6, \quad x^2 - y^2 = 3$ Take $x_0 = y_0 = 1$
- c) Evaluate by using Romberg's method.
 $I = \int_0^1 \frac{dx}{1+x^2}$ Take $h = 0.5, 0.25, 0.125$ respectively.

Section – II

09

Q.5 Attempt any three from the following

- a) Let A, B be fuzzy sets defined on universal set $X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3\}$ as

$$A = \frac{1}{-5} + \frac{0.75}{-4} + \frac{0.20}{-3} + \frac{0.8}{-2} + \frac{0.32}{-1} + \frac{0.28}{0} + \frac{0.9}{1} + \frac{0.65}{2} + \frac{1}{3}$$

$$B = \frac{0}{-5} + \frac{0.80}{-4} + \frac{0.20}{-3} + \frac{0.70}{-2} + \frac{0.20}{-1} + \frac{0.15}{0} + \frac{1}{1} + \frac{0.60}{2} + \frac{1}{3}$$

Find $S(A, B)$, $S(B, A)$

- b) Find strong α – cuts of the fuzzy set A defined by the membership function.

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

For $\alpha = 0, 0.3, 0.9$

- c) Verify which of the following fuzzy sets are fuzzy numbers.

i) $A = \frac{1}{1} + \frac{0.5}{2} + \frac{0.6}{3} + \frac{0.7}{4} + \frac{0.8}{5}$

ii) $B(x) = \log x, x \in [1, 2.72]$

iii) Customer Relationship Management (CRM).

- d) Let A be a Fuzzy set defined on universal set $X = \{-3, -2, -1, 0, 1, 2, 3\}$ by the membership function.

$$A(x) = \frac{x+3}{10}, \forall x \in X \text{ and } f \text{ be a function defined on } X \text{ as } f(x) = 2x^2 + 10.$$

Then find $f(A)$.

- e) Solve $\text{Max } Z = 3x_1 + 4x_2$ subject to constraints

$$x_1 - x_2 \leq 1, -x_1 + x_2 \leq 2, x_1, x_2 \geq 0$$

Q.6 Attempt any three from the following

09

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

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

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

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

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

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

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

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

Find:

- i) Boundary of A.
- ii) Core of A.

Q.7 Attempt any two from the following

10

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

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

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

Find $MAX(A, B)$

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

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

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

Find a fuzzy number $A.B$

Seat No.	
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Set Q

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – II

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.
 2) Answer MCQ / objective type questions on page no 3 only. Don't forget to mention, Q. P. Set (P/Q/R/S) on Top of page.
 3) Figures to the right indicates full marks.
 4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

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

- 8) The first approximation to real root of the equation $x - \cos x = 0$ by Regula falsi method is _____.
 - a) 0.6851
 - b) 1.6851
 - c) 0.6581
 - d) 0.8651
- 9) Identify, which of the following method has quadratic convergence?
 - a) Regula falsi method
 - b) Newton - Raphson method
 - c) Both a and b
 - d) Romberg's method
- 10) The number of strips required in Weddel's rule is _____.
 - a) A Multiple of 6
 - b) A multiple of 10
 - c) A Multiple of 3
 - d) A multiple of 2
- 11) Identify the method of solving simultaneous linear equations in which the coefficient matrix is expressed as the product of a lower and upper triangular matrices.
 - a) Gauss-Jacobi's method
 - b) Gauss-Jordan method
 - c) Gauss-Elimination method
 - d) Factorization method

- 12) For the data

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

- The value of $\int_0^2 f(t)dt$ by Simpson's $\frac{1^{rd}}{3}$ rule is _____.
 a) 2.66668 b) 2.66667
 c) 2.66669 d) None
- 13) If I_1 and I_2 denotes approximate value of $I = \int_a^b f(x)dx$ in the Romberg's method then $I =$ _____.
 a) $I_2 - \left[\frac{I_2 - I_1}{3} \right]$ b) $I_2 + \left[\frac{I_1 + I_2}{3} \right]$
 c) $\frac{1}{4}[3I_2 - I_1]$ d) None
- 14) The dominant eigen value of the matrix $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ is _____.
 a) 0.3722 b) -5.3723
 c) 5.3723 d) 10.7445

Seat No.	
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Set	Q
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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – II

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three.

09

- Find a real root of the equation $e^x = x^3 + \cos 25x$ take $x_0 = 4.5$ by using Newton – Raphson method correct to 3 decimal places.
- Find positive root of the equation $x \log_{10} x = 1.2$ by using false-position method correct to 3 decimal places.
- Solve the system of equations by using Gauss-Jacobi method.

$$x - y + z = 1, \quad -3x + 2y - 3z = -6, \quad 2x - 5y + 4z = 5$$
- Solve the system of equations by using Gauss-Jacobi method.

$$8x - 3y + 2z = 20, \quad 4x + 11y - z = 33, \quad 6x + 3y + 12z = 35$$
- Using Power method find eigen values and corresponding eigen vectors.

$$A = \begin{bmatrix} 5 & 0 & 1 \\ 0 & -2 & 0 \\ 1 & 0 & 5 \end{bmatrix} \quad \text{Take } x_0 = [1 \ 0 \ 0]^T$$

 Perform 5 iterations.

Q.3 Attempt any three.

09

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

$$83x + 11y - 4z = 95, \quad 7x + 52y + 13z = 104, \quad 3x + 8y + 29z = 71$$
- Evaluate $\int_4^{5.2} \log_e x \, dx$ by using Trapezoidal rule take $n = 6$.
- Evaluate $\int_0^{1/2} \int_0^{1/2} \frac{\sin xy}{1+xy} \, dx \, dy$
 By using Simpson's rule with $h = k = \frac{1}{4}$
- By using Weddel's rule find
 $\int_0^{0.6} e^{-x^2} \, dx$ by taking $n = 6$
- Find the double root of the equation $x^3 - x^2 - x + 1 = 0$ Choosing $x_0 = 0.8$ by using generalized Newton-Raphson method.

Q.4 Attempt any two.

10

- Apply factorization method to solve the equations.

$$3x + 2y + 7z = 4, \quad 2x + 3y + z = 5, \quad 3x + 4y + z = 7$$
- Perform two iterations of Newton-Raphson method to find a solution of the system.

$$x^2 + xy = 6, \quad x^2 - y^2 = 3 \quad \text{Take } x_0 = y_0 = 1$$
- Evaluate by using Romberg's method.

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

Section – II

09

Q.5 Attempt any three from the following

- a) Let A, B be fuzzy sets defined on universal set $X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3\}$ as

$$A = \frac{1}{-5} + \frac{0.75}{-4} + \frac{0.20}{-3} + \frac{0.8}{-2} + \frac{0.32}{-1} + \frac{0.28}{0} + \frac{0.9}{1} + \frac{0.65}{2} + \frac{1}{3}$$

$$B = \frac{0}{-5} + \frac{0.80}{-4} + \frac{0.20}{-3} + \frac{0.70}{-2} + \frac{0.20}{-1} + \frac{0.15}{0} + \frac{1}{1} + \frac{0.60}{2} + \frac{1}{3}$$

Find $S(A, B)$, $S(B, A)$

- b) Find strong α – cuts of the fuzzy set A defined by the membership function.

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

For $\alpha = 0, 0.3, 0.9$

- c) Verify which of the following fuzzy sets are fuzzy numbers.

i) $A = \frac{1}{1} + \frac{0.5}{2} + \frac{0.6}{3} + \frac{0.7}{4} + \frac{0.8}{5}$

ii) $B(x) = \log x, x \in [1, 2.72]$

iii) Customer Relationship Management (CRM).

- d) Let A be a Fuzzy set defined on universal set

$X = \{-3, -2, -1, 0, 1, 2, 3\}$ by the membership function.

$$A(x) = \frac{x+3}{10}, \forall x \in X \text{ and } f \text{ be a function defined on } X \text{ as } f(x) = 2x^2 + 10.$$

Then find $f(A)$.

- e) Solve $\text{Max } Z = 3x_1 + 4x_2$ subject to constraints

$$x_1 - x_2 \leq 1, -x_1 + x_2 \leq 2, x_1, x_2 \geq 0$$

Q.6 Attempt any three from the following

09

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

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

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

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

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

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

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

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

Find:

- i) Boundary of A.
- ii) Core of A.

Q.7 Attempt any two from the following

10

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

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

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

Find $MAX(A, B)$

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

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

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

Find a fuzzy number $A.B$

**Seat
No.**

Max. Marks: 70

Seat No.	
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Set	R
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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – II

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three.

09

- Find a real root of the equation $e^x = x^3 + \cos 25x$ take $x_0 = 4.5$ by using Newton – Raphson method correct to 3 decimal places.
- Find positive root of the equation $x \log_{10} x = 1.2$ by using false-position method correct to 3 decimal places.
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$$A = \begin{bmatrix} 5 & 0 & 1 \\ 0 & -2 & 0 \\ 1 & 0 & 5 \end{bmatrix} \quad \text{Take } x_0 = [1 \ 0 \ 0]^T$$

 Perform 5 iterations.

Q.3 Attempt any three.

09

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

$$83x + 11y - 4z = 95, \quad 7x + 52y + 13z = 104, \quad 3x + 8y + 29z = 71$$
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 $\int_0^{0.6} e^{-x^2} \, dx$ by taking $n = 6$
- Find the double root of the equation $x^3 - x^2 - x + 1 = 0$ Choosing $x_0 = 0.8$ by using generalized Newton-Raphson method.

Q.4 Attempt any two.

10

- Apply factorization method to solve the equations.

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- Evaluate by using Romberg's method.

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

Section – II

09

Q.5 Attempt any three from the following

- a) Let A, B be fuzzy sets defined on universal set $X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3\}$ as

$$A = \frac{1}{-5} + \frac{0.75}{-4} + \frac{0.20}{-3} + \frac{0.8}{-2} + \frac{0.32}{-1} + \frac{0.28}{0} + \frac{0.9}{1} + \frac{0.65}{2} + \frac{1}{3}$$

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09

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

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- a) Solve $Max Z = 3x_1 + 5x_2 + 4x_3$ subject to constraints
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Find $MAX(A, B)$

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

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

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Find a fuzzy number $A.B$

Seat No.	
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Day & Date: Friday,22-11-2019
Time: 02:30 PM To 05:30 PM

Instructions:

- 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.
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- 4) Use of non-programmable calculator is allowed.

Marks: 14

14

- Page 16 of 20

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

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

- 10) For the data

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

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

a) 2.66668 b) 2.66667
c) 2.66669 d) None

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

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

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

a) 0.3722 b) -5.3723
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- 13) Which of the following is true for fuzzy sets?

a) $\overline{A \cup B} = \bar{A} \cup \bar{B}$ b) $\overline{A \cap B} = \bar{A} \cup \bar{B}$
c) $\bar{A} \subseteq A$ d) $A \subseteq \bar{A}$

- 14) The scalar cardinality of fuzzy set A defined by the membership function $A(x) = 1 + \frac{x}{10}, x \in \{0, -1, -2, -3, -4\}$ is _____.

a) 3 b) 3.5
c) 4 d) 4.5

Seat No.	
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Set	S
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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – II

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

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three.

09

- a) Find a real root of the equation $e^x = x^3 + \cos 25x$ take $x_0 = 4.5$ by using Newton – Raphson method correct to 3 decimal places.
- b) Find positive root of the equation $x \log_{10} x = 1.2$ by using false-position method correct to 3 decimal places.
- c) Solve the system of equations by using Gauss-Jacobi method.
 $x - y + z = 1, \quad -3x + 2y - 3z = -6, \quad 2x - 5y + 4z = 5$
- d) Solve the system of equations by using Gauss-Jacobi method.
 $8x - 3y + 2z = 20, \quad 4x + 11y - z = 33, \quad 6x + 3y + 12z = 35$
- e) Using Power method find eigen values and corresponding eigen vectors.
 $A = \begin{bmatrix} 5 & 0 & 1 \\ 0 & -2 & 0 \\ 1 & 0 & 5 \end{bmatrix} \quad \text{Take } x_0 = [1 \ 0 \ 0]^T$
 Perform 5 iterations.

Q.3 Attempt any three.

09

- a) Solve the system of equations by using Gauss-Seidal method (perform 3 iterations)
 $83x + 11y - 4z = 95, \quad 7x + 52y + 13z = 104, \quad 3x + 8y + 29z = 71$
- b) Evaluate $\int_4^{5.2} \log_e x \, dx$ by using Trapezoidal rule take $n = 6$.
- c) Evaluate $\int_0^{1/2} \int_0^{1/2} \frac{\sin xy}{1+xy} \, dx \, dy$
 By using Simpson's rule with $h = k = \frac{1}{4}$
- d) By using Weddel's rule find
 $\int_0^{0.6} e^{-x^2} \, dx$ by taking $n = 6$
- e) Find the double root of the equation $x^3 - x^2 - x + 1 = 0$ Choosing $x_0 = 0.8$ by using generalized Newton-Raphson method.

Q.4 Attempt any two.

10

- a) Apply factorization method to solve the equations.
 $3x + 2y + 7z = 4, \quad 2x + 3y + z = 5, \quad 3x + 4y + z = 7$
- b) Perform two iterations of Newton-Raphson method to find a solution of the system.
 $x^2 + xy = 6, \quad x^2 - y^2 = 3 \quad \text{Take } x_0 = y_0 = 1$
- c) Evaluate by using Romberg's method.
 $I = \int_0^1 \frac{dx}{1+x^2}$ Take $h = 0.5, 0.25, 0.125$ respectively.

Section – II

09

Q.5 Attempt any three from the following

- a) Let A, B be fuzzy sets defined on universal set $X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3\}$ as

$$A = \frac{1}{-5} + \frac{0.75}{-4} + \frac{0.20}{-3} + \frac{0.8}{-2} + \frac{0.32}{-1} + \frac{0.28}{0} + \frac{0.9}{1} + \frac{0.65}{2} + \frac{1}{3}$$

$$B = \frac{0}{-5} + \frac{0.80}{-4} + \frac{0.20}{-3} + \frac{0.70}{-2} + \frac{0.20}{-1} + \frac{0.15}{0} + \frac{1}{1} + \frac{0.60}{2} + \frac{1}{3}$$

Find $S(A, B)$, $S(B, A)$

- b) Find strong α – cuts of the fuzzy set A defined by the membership function.

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

For $\alpha = 0, 0.3, 0.9$

- c) Verify which of the following fuzzy sets are fuzzy numbers.

i) $A = \frac{1}{1} + \frac{0.5}{2} + \frac{0.6}{3} + \frac{0.7}{4} + \frac{0.8}{5}$

ii) $B(x) = \log x, x \in [1, 2.72]$

iii) Customer Relationship Management (CRM).

- d) Let A be a Fuzzy set defined on universal set $X = \{-3, -2, -1, 0, 1, 2, 3\}$ by the membership function.

$$A(x) = \frac{x+3}{10}, \forall x \in X \text{ and } f \text{ be a function defined on } X \text{ as } f(x) = 2x^2 + 10.$$

Then find $f(A)$.

- e) Solve $\text{Max } Z = 3x_1 + 4x_2$ subject to constraints

$$x_1 - x_2 \leq 1, -x_1 + x_2 \leq 2, x_1, x_2 \geq 0$$

Q.6 Attempt any three from the following

09

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

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

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

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

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

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

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

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

Find:

- i) Boundary of A.
- ii) Core of A.

Q.7 Attempt any two from the following

10

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

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

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

Find $MAX(A, B)$

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

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

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

Find a fuzzy number $A.B$

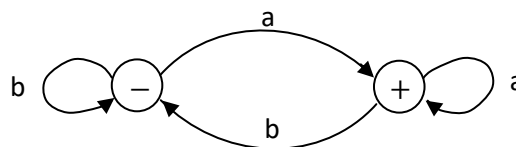
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No.**

Max. Marks: 70

Marks: 14

14

- 1) The basic limitation of FSM is that _____.
 - a) It can't remember arbitrary large amount of information.
 - b) It sometimes fails to recognize grammars that are not regular.
 - c) It sometimes fails to recognize grammars that are regular.
 - d) All of these
- 2) The string 1101 does not belong to the set represented by _____.
 - a) $110^*(0+1)$
 - b) $1(0+1)^*101$
 - c) $(00+(11)^*0)^*1$
 - d) $(10)^*(01)^*(00+11)^*$
- 3) What is the regular expression for the language generated by
 $S \rightarrow as|bA, A \rightarrow d|ccA$
 - a) a^*bd
 - b) $a^*(bd)(bcc)^*d$
 - c) $a^*b(cc)^*d$
 - d) None of these
- 4) Consider the FA shown in the figure given below, where " – " is the start and " + " is the ending state.
The language accepted by the FA is,



- Page 1 of 14

- 6) L_1 has the following grammar.
 $S \rightarrow aB|BA$
 $A \rightarrow bAA|aS|a$
 $B \rightarrow b|bs|aBB$
 L_2 has the following grammar.
 $S \rightarrow sba|a$
 Which of the following statement is true about?
 $L_3 = L_1 \cap L_2$ and $L_4 = L_1 \cdot L_2^*$?
- a) Both L_3 and L_4 are not context free
 b) L_3 is context free but L_4 is not
 c) Both L_3 and L_4 are context free
 d) L_4 is context free, but not L_3
- 7) What is regular expression corresponding to the language of strings of even length over the alphabet of $\{a, b\}$.
 a) $(aa + bb + ba + ab)^*$ b) $(aa + bb)^*$
 c) $(ab + bb + ba)^*$ d) $a^*b^*a^*b^*$
- 8) What is the addition in pushdown automata as compare to finite state automata?
 a) Stack memory b) f/p tape
 c) Head d) None of these
- 9) CFLS are not closed under
 a) Union b) Kleene star
 c) Complementation d) Product
- 10) Consider grammar G
 $S \rightarrow AB, A \rightarrow aAA|^{\wedge}, B \rightarrow bBB|^{\wedge}$
 Find the nullable symbols in the given grammar.
 a) A b) B
 c) A, B and S d) A and B
- 11) Consider the transition table of a TM given below. Here "b" represents the blank symbol.
 The given turing machine accept

δ	0	1	b
$\rightarrow q_0$	$q_0, 0, R$	$q_1, 0, R$	$q_2, 0, R$
q_1	$q_1, 0, R$	$q_0, 0, R$	-
$\odot q_2$	-	-	-

- a) Set of all even palindromes over $\{0,1\}$
 b) Strings over $\{0,1\}$ containing even number of 1's
 c) String over $\{0,1\}$ containing even no. of 1's & odd number of 0's
 d) Strings over $\{0,1\}$ string with zero.
- 12) Pumping Lemma is used to prove _____.
 a) Given language is not regular
 b) Given language is not context free
 c) Both (a) and (b)
 d) None of these

- 13) Language generated by type 2 grammar is _____.
a) Regular language b) Context free language
c) Context sensitive language d) Turing recognizable language
- 14) Let $L_1 = \{a^n b^n c^n | n \geq 0\}$
 $L_2 = \{a^{2n} b^{2n} c^{2n} | n \geq 0\}$
 $L_3 = \{a^{2n} b^{2n} c^n | n \geq 0\}$
a) $L_1 \subseteq L_2$ and $L_3 \subseteq L_2$ b) $L_2 \subseteq L_1$ and $L_2 \subseteq L_3$
c) $L_2 \subseteq L_1$ and $L_2 \not\subseteq L_3$ d) $L_1 \subseteq L_2$ and $L_2 \subseteq L_3$

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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
THEORY OF COMPUTATION

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

Max. Marks: 56

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

Section – I

Q.2 Solve any four. **16**

- a) Define DFA with suitable example.
- b) Define Moore Machine with example.
- a) Obtain a DFA to accept the lang. of 0's & 1's ending with 011.
- d) Convert CFG to CNF.
 $S \rightarrow 0A|1B$
 $A \rightarrow 0AA|1S|1$
 $B \rightarrow 1BB|0S|0$
- e) Define the Regular Expression and find R.E. for
 - 1) Strings of a's & b's having even length.
 - 2) Strings of a's & b's whose second symbol from right end is a.

Q.3 Solve any one. **06**

- a) What is NFA – Λ ? Give the algorithm to convert NFA – Λ to NFA. Give example.
- b) Give the steps to simplify CFG.
 - 1) Eliminating useless symbols
 - 2) Eliminating null- productions
 - 3) Eliminating unit- productions

Q.4 Convert the following CFG to CNF. **06**

$S \rightarrow bA|aB$
 $A \rightarrow bAA|aS|a\Lambda$
 $B \rightarrow aBB|bS|b\Lambda$

Section – II

Q.5 Solve any four: **16**

- a) State and explain pumping lemma for CFL.
- b) Show that $L = \{a^n b^n | n \geq 1\}$ is not regular.
- c) What is PDA? Explain with an example.
- d) Obtain a TM to accept the language
 $L = \{w | w \leftarrow (0 + 1)^*\}$ containing the sub string 001
- e) Construct a PDA to accept the language. $L = \{a^n b^n | n \geq 1\}$

Q.6 Solve any one. **06**

- a) Obtain a PDA to accept the language
 $L(M) = \{w | w \leftarrow (a + b)^* \text{ and } n_a(w) = n_b(w)\}$ by a final state.
- b) Explain different types of variations in TM.

Q.7 State and explain the block diagram of TM and construct a TM to accept the language. **06**
 $L(M) = \{a^n b^n c^n | n \geq 1\}$

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Set Q

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
THEORY OF COMPUTATION

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book. Each question carries one mark.
 2) Answer MCQ/Objective type Question on page No.03 only. Don't Forget to mention, Q.P. set (P/Q/R/S) on top of the page.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

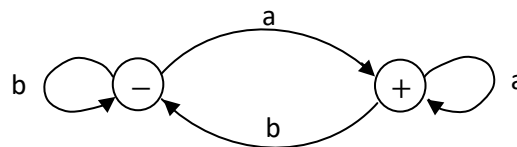
Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) What is the addition in pushdown automata as compare to finite state automata?
 - a) Stack memory
 - b) f/p tape
 - c) Head
 - d) None of these
- 2) CFLS are not closed under
 - a) Union
 - b) Kleene star
 - c) Complementation
 - d) Product
- 3) Consider grammar G
 $S \rightarrow AB, A \rightarrow aAA|^{\wedge}, B \rightarrow bBB|^{\wedge}$
 Find the nullable symbols in the given grammar.
 - a) A
 - b) B
 - c) A, B and S
 - d) A and B
- 4) Consider the transition table of a TM given below. Here "b" represents the blank symbol.
 The given turing machine accept

δ	0	1	b
$\rightarrow q_0$	$q_0, 0, R$	$q_1, 0, R$	$q_2, 0, R$
q_1	$q_1, 0, R$	$q_0, 0, R$	-
$\odot q_2$	-	-	-

- a) Set of all even palindromes over $\{0,1\}$
 - b) Strings over $\{0,1\}$ containing even number of 1's
 - c) String over $\{0,1\}$ containing even no. of 1's & odd number of 0's
 - d) Strings over $\{0,1\}$ string with zero.
- 5) Pumping Lemma is used to prove _____.
 - a) Given language is not regular
 - b) Given language is not context free
 - c) Both (a) and (b)
 - d) None of these

- 6) Language generated by type 2 grammar is _____.
 a) Regular language b) Context free language
 c) Context sensitive language d) Turing recognizable language
- 7) Let $L_1 = \{a^n b^n c^n | n \geq 0\}$
 $L_2 = \{a^{2n} b^{2n} c^{2n} | n \geq 0\}$
 $L_3 = \{a^{2n} b^{2n} c^n | n \geq 0\}$
 a) $L_1 \subseteq L_2$ and $L_3 \subseteq L_2$ b) $L_2 \subseteq L_1$ and $L_2 \subseteq L_3$
 c) $L_2 \subseteq L_1$ and $L_2 \not\subseteq L_3$ d) $L_1 \subseteq L_2$ and $L_2 \subseteq L_3$
- 8) The basic limitation of FSM is that _____.
 a) It can't remember arbitrary large amount of information.
 b) It sometimes fails to recognize grammars that are not regular.
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 a) $110^*(0+1)$ b) $1(0+1)^*101$
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- 10) What is the regular expression for the language generated by
 $S \rightarrow as|bA, A \rightarrow d|ccA$
 a) a^*bd b) $a^*(bd)(bcc)^*d$
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- 11) Consider the FA shown in the figure given below, where " − " is the start and " + " is the ending state.
 The language accepted by the FA is,



- a) $(a + b)^*b$ b) $(a + b)^*a$
 c) a^*b d) a^*b^*
- 12) Consider the grammar 'G' as follows $S \rightarrow aA, A \rightarrow bbA, A \rightarrow c$ $L(G) = ?$
 a) $L(G) = \{abbc\}$ b) $L(G) = \{ab^n c | n \geq 0\}$
 c) $L(G) = \{ab^{2n} c | n > 0\}$ d) $L(G) = \{ab^{2n} c | n \geq 0\}$
- 13) L_1 has the following grammar.
 $S \rightarrow aB|BA$
 $A \rightarrow bAA|aS|a$
 $B \rightarrow b|bs|aBB$
 L_2 has the following grammar.
 $S \rightarrow sba|a$
 Which of the following statement is true about?
 $L_3 = L_1 \cap L_2$ and $L_4 = L_1 \cdot L_2^*$
 a) Both L_3 and L_4 are not context free
 b) L_3 is context free but L_4 is not
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- 14) What is regular expression corresponding to the language of strings of even length over the alphabet of $\{a, b\}$.
- | | |
|----------------------------|-------------------|
| a) $(aa + bb + ba + ab)^*$ | b) $(aa + bb)^*$ |
| c) $(ab + bb + ba)^*$ | d) $a^*b^*a^*b^*$ |

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Q

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
THEORY OF COMPUTATION

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

Max. Marks: 56

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

Section – I**Q.2 Solve any four. 16**

- Define DFA with suitable example.
- Define Moore Machine with example.
- Obtain a DFA to accept the lang. of 0's & 1's ending with 011.
- Convert CFG to CNF.
 $S \rightarrow 0A|1B$
 $A \rightarrow 0AA|1S|1$
 $B \rightarrow 1BB|0S|0$
- Define the Regular Expression and find R.E. for
 - Strings of a's & b's having even length.
 - Strings of a's & b's whose second symbol from right end is a.

Q.3 Solve any one. 06

- What is NFA – Λ ? Give the algorithm to convert NFA – Λ to NFA. Give example.
- Give the steps to simplify CFG.
 - Eliminating useless symbols
 - Eliminating null- productions
 - Eliminating unit- productions

Q.4 Convert the following CFG to CNF. 06

$S \rightarrow bA|aB$
 $A \rightarrow bAA|aS|a\Lambda$
 $B \rightarrow aBB|bS|b\Lambda$

Section – II**Q.5 Solve any four: 16**

- State and explain pumping lemma for CFL.
- Show that $L = \{a^n b^n | n \geq 1\}$ is not regular.
- What is PDA? Explain with an example.
- Obtain a TM to accept the language
 $L = \{w | w \leftarrow (0 + 1)^*\}$ containing the sub string 001
- Construct a PDA to accept the language. $L = \{a^n b^n | n \geq 1\}$

Q.6 Solve any one. 06

- Obtain a PDA to accept the language
 $L(M) = \{w | w \leftarrow (a + b)^* \text{ and } n_a(w) = n_b(w)\}$ by a final state.
- Explain different types of variations in TM.

Q.7 State and explain the block diagram of TM and construct a TM to accept the language. $L(M) = \{a^n b^n c^n | n \geq 1\}$ 06

Seat
No.

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
THEORY OF COMPUTATION

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

Max. Marks: 70

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 2) Answer MCQ/Objective type Question on page No.03 only. Don't Forget to mention, Q.P. set (P/Q/R/S) on top of the page.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Consider the grammar 'G' as follows $S \rightarrow aA, A \rightarrow bbA, A \rightarrow c$ $L(G) = ?$
 - a) $L(G) = \{abbc\}$
 - b) $L(G) = \{ab^n c | n \geq 0\}$
 - c) $L(G) = \{ab^{2n} c | n > 0\}$
 - d) $L(G) = \{ab^{2n} c | n \geq 0\}$

- 2) L_1 has the following grammar.
 $S \rightarrow aB | BA$
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 L_2 has the following grammar.
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- 3) What is regular expression corresponding to the language of strings of even length over the alphabet of $\{a, b\}$.
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- 4) What is the addition in pushdown automata as compare to finite state automata?
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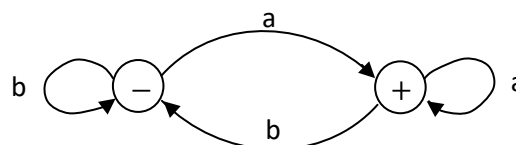
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 - a) Union
 - b) Kleene star
 - c) Complementation
 - d) Product

- 6) Consider grammar G
 $S \rightarrow AB, A \rightarrow aAA | ^, B \rightarrow bBB | ^$
 Find the nullable symbols in the given grammar.
 - a) A
 - b) B
 - c) A, B and S
 - d) A and B

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The given turing machine accept

δ	0	1	b
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q_1	$q_1, 0, R$	$q_0, 0, R$	-
$\textcircled{q_2}$	-	-	-

- a) Set of all even palindromes over $\{0,1\}$
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- 10) Let $L_1 = \{a^n b^n c^n | n \geq 0\}$
 $L_2 = \{a^{2^n} b^{2^n} c^{2^n} | n \geq 0\}$
 $L_3 = \{a^{2^n} b^{2^n} c^n | n \geq 0\}$
 a) $L_1 \subseteq L_2$ and $L_3 \subseteq L_2$
 b) $L_2 \subseteq L_1$ and $L_2 \subseteq L_3$
 c) $L_2 \subseteq L_1$ and $L_2 \not\subseteq L_3$
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 $S \rightarrow as|bA, A \rightarrow d|ccA$
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 b) $a^*(bd)(bcc)^*d$
 c) $a^*b(cc)^*d$
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- 14) Consider the FA shown in the figure given below, where " - " is the start and " + " is the ending state.
 The language accepted by the FA is,



- a) $(a + b)^*b$
 b) $(a + b)^*a$
 c) a^*b
 d) a^*b^*

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Set **R**

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
THEORY OF COMPUTATION

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

Max. Marks: 56

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

Section – I**Q.2 Solve any four. 16**

- a) Define DFA with suitable example.
- b) Define Moore Machine with example.
- a) Obtain a DFA to accept the lang. of 0's & 1's ending with 011.
- d) Convert CFG to CNF.
 $S \rightarrow 0A|1B$
 $A \rightarrow 0AA|1S|1$
 $B \rightarrow 1BB|0S|0$
- e) Define the Regular Expression and find R.E. for
 - 1) Strings of a's & b's having even length.
 - 2) Strings of a's & b's whose second symbol from right end is a.

Q.3 Solve any one. 06

- a) What is NFA – Λ ? Give the algorithm to convert NFA – Λ to NFA. Give example.
- b) Give the steps to simplify CFG.
 - 1) Eliminating useless symbols
 - 2) Eliminating null- productions
 - 3) Eliminating unit- productions

Q.4 Convert the following CFG to CNF. 06

$S \rightarrow bA|aB$
 $A \rightarrow bAA|aS|a\Lambda$
 $B \rightarrow aBB|bS|b\Lambda$

Section – II**Q.5 Solve any four: 16**

- a) State and explain pumping lemma for CFL.
- b) Show that $L = \{a^n b^n | n \geq 1\}$ is not regular.
- c) What is PDA? Explain with an example.
- d) Obtain a TM to accept the language
 $L = \{w | w \leftarrow (0 + 1)^*\}$ containing the sub string 001
- e) Construct a PDA to accept the language. $L = \{a^n b^n | n \geq 1\}$

Q.6 Solve any one. 06

- a) Obtain a PDA to accept the language
 $L(M) = \{w | w \leftarrow (a + b)^* \text{ and } n_a(w) = n_b(w)\}$ by a final state.
- b) Explain different types of variations in TM.

Q.7 State and explain the block diagram of TM and construct a TM to accept the language. $L(M) = \{a^n b^n c^n | n \geq 1\}$ 06

**Seat
No.**

Max. Marks: 70

Marks: 14

14

- Page 12 of 14

Seat No.	
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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
THEORY OF COMPUTATION

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

Max. Marks: 56

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

Section – I

Q.2 Solve any four. **16**

- a) Define DFA with suitable example.
- b) Define Moore Machine with example.
- a) Obtain a DFA to accept the lang. of 0's & 1's ending with 011.
- d) Convert CFG to CNF.
 $S \rightarrow 0A|1B$
 $A \rightarrow 0AA|1S|1$
 $B \rightarrow 1BB|0S|0$
- e) Define the Regular Expression and find R.E. for
 - 1) Strings of a's & b's having even length.
 - 2) Strings of a's & b's whose second symbol from right end is a.

Q.3 Solve any one. **06**

- a) What is NFA – Λ ? Give the algorithm to convert NFA – Λ to NFA. Give example.
- b) Give the steps to simplify CFG.
 - 1) Eliminating useless symbols
 - 2) Eliminating null- productions
 - 3) Eliminating unit- productions

Q.4 Convert the following CFG to CNF. **06**

$S \rightarrow bA|aB$
 $A \rightarrow bAA|aS|a\Lambda$
 $B \rightarrow aBB|bS|b\Lambda$

Section – II

Q.5 Solve any four: **16**

- a) State and explain pumping lemma for CFL.
- b) Show that $L = \{a^n b^n | n \geq 1\}$ is not regular.
- c) What is PDA? Explain with an example.
- d) Obtain a TM to accept the language
 $L = \{w | w \leftarrow (0 + 1)^*\}$ containing the sub string 001
- e) Construct a PDA to accept the language. $L = \{a^n b^n | n \geq 1\}$

Q.6 Solve any one. **06**

- a) Obtain a PDA to accept the language
 $L(M) = \{w | w \leftarrow (a + b)^* \text{ and } n_a(w) = n_b(w)\}$ by a final state.
- b) Explain different types of variations in TM.

Q.7 State and explain the block diagram of TM and construct a TM to accept the language. **06**
 $L(M) = \{a^n b^n c^n | n \geq 1\}$

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S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MICROPROCESSORS

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

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

2) Figures to the right indicate full marks.

3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) What is the purpose of using ALE signal high?
 - a) To latch low order address from bus to separate A0- A7
 - b) To latch data D0- D7 from bus to separate data bus
 - c) To disable data bus latch
 - d) None of the above
- 2) How many I/O ports can 8085 access?
 - a) 16
 - b) 256
 - c) 1024
 - d) 8
- 3) Which of the following bus is multiplexed in 8085?
 - a) Address bus
 - b) Data bus
 - c) Control bus
 - d) None of these
- 4) What is the addressing mode used in instruction MOV M, C?
 - a) Direct
 - b) Indirect
 - c) Immediate
 - d) None of the above
- 5) Microprocessor 8086 provide signal like _____ to indicate read operation.
 - a) LOW
 - b) MCMW
 - c) MCMR
 - d) MCMWR
- 6) In 8086 microprocessor, the address bus is _____ bit wide.
 - a) 12 bit
 - b) 10 bit
 - c) 16 bit
 - d) 20 bit
- 7) MPU stands for _____.
 - a) multi-processing unit
 - b) micro-processing unit
 - c) mega-processing unit
 - d) major-processing unit
- 8) HOLD and HLDA are of the following type of signals.
 - a) Dead signal
 - b) Serial I/O signal
 - c) DMA signal
 - d) Status
- 9) The term PSW stands for _____.
 - a) Accumulator & flag register
 - b) H and L register
 - c) Accumulator & instruction register
 - d) B & C register
- 10) How many instruction 8085 can support _____.
 - a) 74
 - b) 84
 - c) 94
 - d) 32

- 11) The width of program counter of 8085 is _____.
a) 8bit b) 16bit
c) 32bit d) 64bit
- 12) How many port are there in 8255?
a) Two port b) Four port
c) Three port d) No port
- 13) The work of EV in 8086 is _____.
a) Encoding b) Decoding
c) Processing d) Calculation
- 14) Which of these are non-maskable interrupt?
a) RST 7.5 b) RST 6.5
c) RST 5.5 d) TRAP

Seat No.	
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Set	P
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S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MICROPROCESSORS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three **12**

- a) Explain fictional pins of 8085 microprocessor. Indicate their activation status.
 - 1) RST 7.5
 - 2) ALE
 - 3) Ready
 - 4) IO/ \bar{m}
 - 5) Reset
- b) Explain condition flags and control flags of 8086.
- c) Define the term Directive. Explain in detail STRUCTURE & RECORD directive.
- d) Write an assembly language program to multiply two hexadecimal number (8 bit signal/unsigned) using 8086

Q.3 Attempt any two **16**

- a) Explain in detail with neat diagram the architecture of 8086 microprocessor.
- b) Draw and explain addressing mode of 8086.
- c) Explain the following instruction of 8086 with example.
 - 1) IN AL, port_add
 - 2) LEA reg 16, memptr
 - 3) LDS reg 16, memptr
 - 4) LAHF
 - 5) SAHF

Section – II

Q.4 Attempt any three **12**

- a) Comment on Interrupt Priority of 8086.
- b) Explain status register of 8087 coprocessor in detail.
- c) Explain 8087 coprocessor stack in detail.
- d) Draw block diagram of 8255 PPI.

Q.5 Attempt any two **16**

- a) Draw and explain Block diagram of DMA Controller 8257.
- b) Explain different mode of operation of 8255 PPI.
- c) Draw and explain 80486 architecture.

Seat No.	
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Set	Q
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S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MICROPROCESSORS

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

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

2) Figures to the right indicate full marks.

3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) HOLD and HLDA are of the following type of signals.

a) Dead signal	b) Serial I/O signal
c) DMA signal	d) Status
- 2) The term PSW stands for _____.

a) Accumulator & flag register	b) H and L register
c) Accumulator & instruction register	d) B & C register
- 3) How many instruction 8085 can support _____.

a) 74	b) 84
c) 94	d) 32
- 4) The width of program counter of 8085 is _____.

a) 8bit	b) 16bit
c) 32bit	d) 64bit
- 5) How many port are these in 8255?

a) Two port	b) Four port
c) Three port	d) No port
- 6) The work of EV in 8086 is _____.

a) Encoding	b) Decoding
c) Processing	d) Calculation
- 7) Which of these are non-maskable interrupt?

a) RST 7.5	b) RST 6.5
c) RST 5.5	d) TRAP
- 8) What is the purpose of using ALE signal high?

a) To latch low order address from bus to separate A0- A7
b) To latch data D0- D7 from bus to separate data bus
c) To disable data bus latch
d) None of the above
- 9) How many I/O ports can 8085 access?

a) 16	b) 256
c) 1024	d) 8

Seat No.	
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Set	Q
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S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MICROPROCESSORS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three **12**

- a) Explain fictional pins of 8085 microprocessor. Indicate their activation status.
 - 1) RST 7.5
 - 2) ALE
 - 3) Ready
 - 4) IO/ \bar{m}
 - 5) Reset
- b) Explain condition flags and control flags of 8086.
- c) Define the term Directive. Explain in detail STRUCTURE & RECORD directive.
- d) Write an assembly language program to multiply two hexadecimal number (8 bit signal/unsigned) using 8086

Q.3 Attempt any two **16**

- a) Explain in detail with neat diagram the architecture of 8086 microprocessor.
- b) Draw and explain addressing mode of 8086.
- c) Explain the following instruction of 8086 with example.
 - 1) IN AL, port_add
 - 2) LEA reg 16, memptr
 - 3) LDS reg 16, memptr
 - 4) LAHF
 - 5) SAHF

Section – II

Q.4 Attempt any three **12**

- a) Comment on Interrupt Priority of 8086.
- b) Explain status register of 8087 coprocessor in detail.
- c) Explain 8087 coprocessor stack in detail.
- d) Draw block diagram of 8255 PPI.

Q.5 Attempt any two **16**

- a) Draw and explain Block diagram of DMA Controller 8257.
- b) Explain different mode of operation of 8255 PPI.
- c) Draw and explain 80486 architecture.

Seat No.	
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Set	R
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S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MICROPROCESSORS

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

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

2) Figures to the right indicate full marks.

3) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Microprocessor 8086 provide signal like _____ to indicate read operation.

a) LOW	b) MCMW
c) MCMR	d) MCMWR
- 2) In 8086 microprocessor, the address bus is _____ bit wide.

a) 12 bit	b) 10 bit
c) 16 bit	d) 20 bit
- 3) MPU stands for _____.

a) multi-processing unit	b) micro-processing unit
c) mega-processing unit	d) major-processing unit
- 4) HOLD and HLDA are of the following type of signals.

a) Dead signal	b) Serial I/O signal
c) DMA signal	d) Status
- 5) The term PSW stands for _____.

a) Accumulator & flag register	b) H and L register
c) Accumulator & instruction register	d) B & C register
- 6) How many instruction 8085 can support _____.

a) 74	b) 84
c) 94	d) 32
- 7) The width of program counter of 8085 is _____.

a) 8bit	b) 16bit
c) 32bit	d) 64bit
- 8) How many port are these in 8255?

a) Two port	b) Four port
c) Three port	d) No port
- 9) The work of EV in 8086 is _____.

a) Encoding	b) Decoding
c) Processing	d) Calculation
- 10) Which of these are non-maskable interrupt?

a) RST 7.5	b) RST 6.5
c) RST 5.5	d) TRAP

- 11) What is the purpose of using ALE signal high?
- a) To latch low order address from bus to separate A0- A7
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 - c) To disable data bus latch
 - d) None of the above
- 12) How many I/O ports can 8085 access?
- a) 16
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 - c) 1024
 - d) 8
- 13) Which of the following bus is multiplexed in 8085?
- a) Address bus
 - b) Data bus
 - c) Control bus
 - d) None of these
- 14) What is the addressing mode used in instruction MOV M, C?
- a) Direct
 - b) Indirect
 - c) Immediate
 - d) None of the above

Seat No.	
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S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MICROPROCESSORS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three **12**

- a) Explain fictional pins of 8085 microprocessor. Indicate their activation status.
 - 1) RST 7.5
 - 2) ALE
 - 3) Ready
 - 4) IO/ \bar{m}
 - 5) Reset
- b) Explain condition flags and control flags of 8086.
- c) Define the term Directive. Explain in detail STRUCTURE & RECORD directive.
- d) Write an assembly language program to multiply two hexadecimal number (8 bit signal/unsigned) using 8086

Q.3 Attempt any two **16**

- a) Explain in detail with neat diagram the architecture of 8086 microprocessor.
- b) Draw and explain addressing mode of 8086.
- c) Explain the following instruction of 8086 with example.
 - 1) IN AL, port_add
 - 2) LEA reg 16, memptr
 - 3) LDS reg 16, memptr
 - 4) LAHF
 - 5) SAHF

Section – II

Q.4 Attempt any three **12**

- a) Comment on Interrupt Priority of 8086.
- b) Explain status register of 8087 coprocessor in detail.
- c) Explain 8087 coprocessor stack in detail.
- d) Draw block diagram of 8255 PPI.

Q.5 Attempt any two **16**

- a) Draw and explain Block diagram of DMA Controller 8257.
- b) Explain different mode of operation of 8255 PPI.
- c) Draw and explain 80486 architecture.

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S.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MICROPROCESSORS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three **12**

- a) Explain fictional pins of 8085 microprocessor. Indicate their activation status.
 - 1) RST 7.5
 - 2) ALE
 - 3) Ready
 - 4) IO/ \bar{m}
 - 5) Reset
- b) Explain condition flags and control flags of 8086.
- c) Define the term Directive. Explain in detail STRUCTURE & RECORD directive.
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 - 3) LDS reg 16, memptr
 - 4) LAHF
 - 5) SAHF

Section – II

Q.4 Attempt any three **12**

- a) Comment on Interrupt Priority of 8086.
- b) Explain status register of 8087 coprocessor in detail.
- c) Explain 8087 coprocessor stack in detail.
- d) Draw block diagram of 8255 PPI.

Q.5 Attempt any two **16**

- a) Draw and explain Block diagram of DMA Controller 8257.
- b) Explain different mode of operation of 8255 PPI.
- c) Draw and explain 80486 architecture.

Seat No.	
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Day & Date: Tuesday, 26-11-2019
Time: 02:30 PM To 05:30 PM

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

2) Figures to the right indicate full marks.

Duration: 30 Minutes

Marks: 14

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

- Which of the following is non-linear data structure?
 - Trees
 - Stacks
 - Array
 - Linked List
- If the MAX_SIZE is the size of the array used in the implementation of circular queue. How is rear manipulated while inserting an element in the queue?
 - $\text{rear} = (\text{rear}\%1) + \text{MAX_SIZE}$
 - $\text{rear} = \text{rear}\%(\text{MAX_SIZE} + 1)$
 - $\text{rear} = (\text{rear}+1)\%\text{MAX_SIZE}$
 - $\text{rear} = \text{rear}+(1\%\text{MAX_SIZE})$
- If the sequence of operations - push (1), push (2), pop, push (1), push (2), pop, pop, pop, push (2), pop are performed on a stack, the sequence of popped out values _____.
 - 2,2,1,1,2
 - 2,2,1,2,2
 - 2,1,2,2,1
 - 2,1,2,2,2
- In polynomial manipulation, nodes consists of three field representing _____.
 - Coefficient, exponential and link
 - Previous item link, data item, next item link
 - Coefficient, data item and link
 - None of the option
- A BST is traversed in the following order recursively: Right, root, left
The output sequence will be in _____.
 - Ascending order
 - Descending order
 - Bitomic sequence
 - No specific order
- A complete binary tree of level 5 has how many nodes?
 - 15
 - 25
 - 63
 - 30
- If the inorder and preorder traversal of a binary tree are D,B,F,E,G,H,A,C and A,B,D,E,F,G,H,C respectively then the postorder traversal of that tree is _____.
 - D,F,G,A,B,C,H,E
 - F,H,D,G,E,B,C,A
 - C,G,H,F,E,D,B,A
 - D,F,H,G,E,B,C,A
- A multi-way search tree has n items. The number of external nodes is _____.
 - n²
 - log n
 - n
 - n + 1

- 9) Most widely used structure for index structures, is known to be _____.
a) B+-trees structure b) Balanced tree structure
c) Unbalanced tree structure d) Sequential tree structure
- 10) What is the maximum height of any AVL-tree with 7 nodes? Assume that the height of tree with a single node is 0.
a) 2 b) 3
c) 4 d) 5
- 11) For an undirected graph G with n vertices and e edges, the sum of the degree of each vertex is _____.
a) ne b) 2n
c) 2e d) e^n
- 12) A balance factor in AVL tree is used to check _____.
a) what rotation to make
b) if all child nodes are at same level
c) when the last rotation occurred
d) if the tree is unbalanced
- 13) Graphs are represented using _____.
a) Adjacency tree b) Adjacency linked list
c) Adjacency graph d) Adjacency queue
- 14) If locality is a concern, you can use _____ to traverse the graph.
a) Breadth First Search b) Depth First Search
c) Either BFS or DFS d) None of these

Seat No.	
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Set**P**

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
DATA STRUCTURES

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

Max. Marks: 56

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

Section - I

Q.2 Attempt any four. **16**

- a) Define data structure. Explain its types along with example.
- b) Define queue. Explain its operations using array.
- c) Explain in detail how stack is used to evaluate postfix expression.
- d) Write C code for insertion of Node at the end in Singly Linked List.
 (State all required variables and parameters)
- e) Write a short note on Threaded Binary Tree.
- f) Construct a Binary tree with following given orders.
 Preorder= ABDGHEICFJK
 InOrder= GDHBEIACJFK
 (Write explanation to every step)

Q.3 Attempt any two. **12**

- a) Write a program to implement Stack using Linked List.
- b) Explain with example addition of polynomial using linked list.
- c) Explain in detail Types of Binary tree traversal techniques. With example.
- d) Write menu driven C code to implement Circular Queue using array.

Section - II

Q.4 Attempt any four. **16**

- a) Compare B tree with B+ Tree.
- b) Give a brief summary of M-way search tree.
- c) Write a note on Rotation types in AVL trees.
- d) Explain the procedure to delete a node from AVL tree.
- e) Explain how graph is represented with Adjaency Matrix.
- f) Define following terminologies in Graph
 - 1) neighbors
 - 2) degree of a node
 - 3) regular graph
 - 4) path

Q.5 Attempt any two. **12**

- a) Create a AVL tree for following values in given order.
 63,9,19,27,18,108,99,81. Delete 19.
- b) Create a B-Tree of Order 5 by inserting following Keys.
 3,14,7,1,8,5,11,17,13,6,23,12,20,26,4,16,18,24,25,19.
- c) Explain Dijkstra's algorithm to find shortest path.

**Seat
No.**

Page 4 of 12

- 9) If the MAX_SIZE is the size of the array used in the implementation of circular queue. How is rear manipulated while inserting an element in the queue?
- a) $\text{rear} = (\text{rear} \% 1) + \text{MAX_SIZE}$ b) $\text{rear} = \text{rear} \% (\text{MAX_SIZE} + 1)$
c) $\text{rear} = (\text{rear} + 1) \% \text{MAX_SIZE}$ d) $\text{rear} = \text{rear} + (1 \% \text{MAX_SIZE})$
- 10) If the sequence of operations - push (1), push (2), pop, push (1), push (2), pop, pop, pop, push (2), pop are performed on a stack, the sequence of popped out values ____.
- a) 2,2,1,1,2 b) 2,2,1,2,2
c) 2,1,2,2,1 d) 2,1,2,2,2
- 11) In polynomial manipulation, nodes consists of three field representing ____.
- a) Coefficient, exponential and link
b) Previous item link, data item, next item link
c) Coefficient, data item and link
d) None of the option
- 12) 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
- 13) A complete binary tree of level 5 has how many nodes?
- a) 15 b) 25
c) 63 d) 30
- 14) If the inorder and preorder traversal of a binary tree are D,B,F,E,G,H,A,C and A,B,D,E,F,G,H,C respectively then the postorder traversal of that tree is ____.
- a) D,F,G,A,B,C,H,E b) F,H,D,G,E,B,C,A
c) C,G,H,F,E,D,B,A d) D,F,H,G,E,B,C,A

Seat No.	
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Set Q

S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
DATA STRUCTURES

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

Max. Marks: 56

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

Section - I

Q.2 Attempt any four. **16**

- Define data structure. Explain its types along with example.
- Define queue. Explain its operations using array.
- Explain in detail how stack is used to evaluate postfix expression.
- Write C code for insertion of Node at the end in Singly Linked List.
 (State all required variables and parameters)
- Write a short note on Threaded Binary Tree.
- Construct a Binary tree with following given orders.
 Preorder= ABDGHEICFJK
 InOrder= GDHBEIACJFK
 (Write explanation to every step)

Q.3 Attempt any two. **12**

- Write a program to implement Stack using Linked List.
- Explain with example addition of polynomial using linked list.
- Explain in detail Types of Binary tree traversal techniques. With example.
- Write menu driven C code to implement Circular Queue using array.

Section - II

Q.4 Attempt any four. **16**

- Compare B tree with B+ Tree.
- Give a brief summary of M-way search tree.
- Write a note on Rotation types in AVL trees.
- Explain the procedure to delete a node from AVL tree.
- Explain how graph is represented with Adjacency Matrix.
- Define following terminologies in Graph
 - neighbors
 - degree of a node
 - regular graph
 - path

Q.5 Attempt any two. **12**

- Create a AVL tree for following values in given order.
 63,9,19,27,18,108,99,81. Delete 19.
- Create a B-Tree of Order 5 by inserting following Keys.
 3,14,7,1,8,5,11,17,13,6,23,12,20,26,4,16,18,24,25,19.
- Explain Dijkstra's algorithm to find shortest path.

Seat No.	
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Set	R
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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
DATA STRUCTURES

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

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) 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
- 2) A complete binary tree of level 5 has how many nodes?
 a) 15 b) 25
 c) 63 d) 30
- 3) If the inorder and preorder traversal of a binary tree are D,B,F,E,G,H,A,C
 and A,B,D,E,F,G,H,C respectively then the postorder traversal of that tree
 is _____.
 a) D,F,G,A,B,C,H,E b) F,H,D,G,E,B,C,A
 c) C,G,H,F,E,D,B,A d) D,F,H,G,E,B,C,A
- 4) A multi-way search tree has n items. The number of external nodes is _____.
 a) n^2 b) $\log n$
 c) n d) $n + 1$
- 5) Most widely used structure for index structures, is known to be _____.
 a) B+-trees structure b) Balanced tree structure
 c) Unbalanced tree structure d) Sequential tree structure
- 6) What is the maximum height of any AVL-tree with 7 nodes? Assume that
 the height of tree with a single node is 0.
 a) 2 b) 3
 c) 4 d) 5
- 7) For an undirected graph G with n vertices and e edges, the sum of the
 degree of each vertex is _____.
 a) ne b) $2n$
 c) $2e$ d) e^n
- 8) A balance factor in AVL tree is used to check _____.
 a) what rotation to make
 b) if all child nodes are at same level
 c) when the last rotation occurred
 d) if the tree is unbalanced

- 9) Graphs are represented using _____.
a) Adjacency tree b) Adjacency linked list
c) Adjacency graph d) Adjacency queue
- 10) If locality is a concern, you can use _____ to traverse the graph.
a) Breadth First Search b) Depth First Search
c) Either BFS or DFS d) None of these
- 11) Which of the following is non-linear data structure?
a) Trees b) Stacks
c) Array d) Linked List
- 12) If the MAX_SIZE is the size of the array used in the implementation of circular queue. How is rear manipulated while inserting an element in the queue?
a) $\text{rear} = (\text{rear} \% 1) + \text{MAX_SIZE}$ b) $\text{rear} = \text{rear} \% (\text{MAX_SIZE} + 1)$
c) $\text{rear} = (\text{rear} + 1) \% \text{MAX_SIZE}$ d) $\text{rear} = \text{rear} + (1 \% \text{MAX_SIZE})$
- 13) If the sequence of operations - push (1), push (2), pop, push (1), push (2), pop, pop, pop, push (2), pop are performed on a stack, the sequence of popped out values _____.
a) 2,2,1,1,2 b) 2,2,1,2,2
c) 2,1,2,2,1 d) 2,1,2,2,2
- 14) In polynomial manipulation, nodes consists of three field representing _____.
a) Coefficient, exponential and link
b) Previous item link, data item, next item link
c) Coefficient, data item and link
d) None of the option

Seat No.	
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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
DATA STRUCTURES

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

Max. Marks: 56

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

Section - I

Q.2 Attempt any four. **16**

- a) Define data structure. Explain its types along with example.
- b) Define queue. Explain its operations using array.
- c) Explain in detail how stack is used to evaluate postfix expression.
- d) Write C code for insertion of Node at the end in Singly Linked List.
 (State all required variables and parameters)
- e) Write a short note on Threaded Binary Tree.
- f) Construct a Binary tree with following given orders.
 Preorder= ABDGHEICFJK
 InOrder= GDHBEIACJFK
 (Write explanation to every step)

Q.3 Attempt any two. **12**

- a) Write a program to implement Stack using Linked List.
- b) Explain with example addition of polynomial using linked list.
- c) Explain in detail Types of Binary tree traversal techniques. With example.
- d) Write menu driven C code to implement Circular Queue using array.

Section - II

Q.4 Attempt any four. **16**

- a) Compare B tree with B+ Tree.
- b) Give a brief summary of M-way search tree.
- c) Write a note on Rotation types in AVL trees.
- d) Explain the procedure to delete a node from AVL tree.
- e) Explain how graph is represented with Adjaency Matrix.
- f) Define following terminologies in Graph
 - 1) neighbors
 - 2) degree of a node
 - 3) regular graph
 - 4) path

Q.5 Attempt any two. **12**

- a) Create a AVL tree for following values in given order.
 63,9,19,27,18,108,99,81. Delete 19.
- b) Create a B-Tree of Order 5 by inserting following Keys.
 3,14,7,1,8,5,11,17,13,6,23,12,20,26,4,16,18,24,25,19.
- c) Explain Dijkstra's algorithm to find shortest path.

- 9) In polynomial manipulation, nodes consists of three field representing _____.
a) Coefficient, exponential and link
b) Previous item link, data item, next item link
c) Coefficient, data item and link
d) None of the option
- 10) 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
- 11) A complete binary tree of level 5 has how many nodes?
a) 15
b) 25
c) 63
d) 30
- 12) If the inorder and preorder traversal of a binary tree are D,B,F,E,G,H,A,C
and A,B,D,E,F,G,H,C respectively then the postorder traversal of that tree
is _____.
a) D,F,G,A,B,C,H,E
b) F,H,D,G,E,B,C,A
c) C,G,H,F,E,D,B,A
d) D,F,H,G,E,B,C,A
- 13) A multi-way search tree has n items. The number of external nodes is _____.
a) n^2
b) $\log n$
c) n
d) $n + 1$
- 14) Most widely used structure for index structures, is known to be _____.
a) B+-trees structure
b) Balanced tree structure
c) Unbalanced tree structure
d) Sequential tree structure

Seat No.	
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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
DATA STRUCTURES

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

Max. Marks: 56

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

Section - I

Q.2 Attempt any four. **16**

- a) Define data structure. Explain its types along with example.
- b) Define queue. Explain its operations using array.
- c) Explain in detail how stack is used to evaluate postfix expression.
- d) Write C code for insertion of Node at the end in Singly Linked List.
 (State all required variables and parameters)
- e) Write a short note on Threaded Binary Tree.
- f) Construct a Binary tree with following given orders.
 Preorder= ABDGHEICFJK
 InOrder= GDHBEIACJFK
 (Write explanation to every step)

Q.3 Attempt any two. **12**

- a) Write a program to implement Stack using Linked List.
- b) Explain with example addition of polynomial using linked list.
- c) Explain in detail Types of Binary tree traversal techniques. With example.
- d) Write menu driven C code to implement Circular Queue using array.

Section - II

Q.4 Attempt any four. **16**

- a) Compare B tree with B+ Tree.
- b) Give a brief summary of M-way search tree.
- c) Write a note on Rotation types in AVL trees.
- d) Explain the procedure to delete a node from AVL tree.
- e) Explain how graph is represented with Adjaency Matrix.
- f) Define following terminologies in Graph
 - 1) neighbors
 - 2) degree of a node
 - 3) regular graph
 - 4) path

Q.5 Attempt any two. **12**

- a) Create a AVL tree for following values in given order.
 63,9,19,27,18,108,99,81. Delete 19.
- b) Create a B-Tree of Order 5 by inserting following Keys.
 3,14,7,1,8,5,11,17,13,6,23,12,20,26,4,16,18,24,25,19.
- c) Explain Dijkstra's algorithm to find shortest path.

Seat No.	
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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

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

Max. Marks: 70

- Instructions:** 1) Q 1 is of MCQ/ Objective type must be solved in 30 minutes and answer key should be written on page no. 3 in the answer book.
 2) All questions are compulsory.
 3) Figures to the right indicate full marks for that question.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) IPv4 address is _____ bit long.

a) 64	b) 128
c) 32	d) 48
- 2) For outgoing traffic NAT box converts private IP address to company's public IP address.

a) TRUE	b) Can't say
c) FALSE	d) None of the above
- 3) UDP uses the _____ to handle incoming user datagrams that go to different process on the same host.

a) Queuing	b) Multiplexing
c) All	d) Demultiplexing
- 4) In TCP, one end can stop sending data while still receiving data. This is called a _____.

a) Half-close	b) One way termination
c) Half-open	d) None of the above
- 5) SCTP is reliable _____ oriented protocol.

a) Character	b) Byte
c) Number	d) Message
- 6) Network programming needs data and other pieces of information to be stored in byte order which is _____.

a) Little-endian	b) Both A and C
c) Big-endian	d) None of the above
- 7) TCP uses _____ type socket for connection oriented communication with application layer.

a) Stream	b) Datagram
c) Raw	d) All above
- 8) DHCP server issues a passive open command on it's UDP port number _____ and waits for a client.

a) 65	b) 66
c) 67	d) 68

- 9) DNS has two types of message : _____ and _____.
a) Request and reply b) Query and response
c) Question and answer d) True and false
- 10) The _____ translates data and commands from NVT form into the form acceptable by remote computer.
a) Terminal driver b) Client TELNET
c) Server TELNET d) Pseduterminal driver
- 11) SSH _____ mechanism is sometimes referred to as SSH tunneling.
a) Encapsulation b) port forwarding
c) Multiplexing d) Numbering
- 12) FTP uses two well-known TCP ports: port 20 is used for the _____ connection.
a) Control b) Data
c) Error d) All above
- 13) TFTP uses the services of _____ on the well known port 69.
a) UDP b) SMTP
c) TCP d) HTTP
- 14) _____ is more powerful and more complex message access protocol.
a) POP3 b) IMAP4
c) SMTP d) PGP

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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

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

Max. Marks: 56

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

Section – I

- Q.2 Write answer any three of the following questions. 12**
- Shortly describe with diagram and examples the four levels of addresses that are used in an internet employing the TCP/IP protocols.
 - Write a short note on the multiplexing and demultiplexing service provided by UDP.
 - Write a short note on the TCP timers.
 - Shortly describe with diagram the concept of multihoming service offered by SCTP.
 - Explain with diagram the structure of IPv4 socket address.

- Q.3 Write any two of the following questions. 16**
- An organization is granted the block 194.122.13.0. The administrator wants to create 8 fixed length subnets. Find the subnet mask, Find the number of addresses in each subnet and Find the first and last address of the each subnet.
 - What is silly window syndrome? Explain syndrome created by the receiver. Describe the Clark's solution to prevent the silly window syndrome.
 - Describe with diagram the connectionless iterative server.

Section – II

- Q.4 Write any three of the following questions. 12**
- What is DHCP? Describe the DHCP operation when client and server are on the same network.
 - With diagram describe the concept of remote login facilitated by TELNET.
 - What is TFTP? List the names of five types of TFTP messages, draw and briefly describe TFTP ACK message format.
 - Explain with diagram the concept of out-of-band signaling by TELNET.
 - Explain with diagram the second scenario of electronic mail architecture.

- Q.5 Write any two of the following questions. 16**
- With diagram describe the concept of recursive type name-address resolution by DNS.
 - Draw the diagram of SSH packet format and briefly describe it's fields.
 - With time line diagram describe an example of FTP usage for retrieving a list of items in a directory.

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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

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

Max. Marks: 70

- Instructions:** 1) Q 1 is of MCQ/ Objective type must be solved in 30 minutes and answer key should be written on page no. 3 in the answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) DHCP server issues a passive open command on it's UDP port number _____ and waits for a client.

a) 65	b) 66
c) 67	d) 68
- 2) DNS has two types of message : _____ and _____.

a) Request and reply	b) Query and response
c) Question and answer	d) True and false
- 3) The _____ translates data and commands from NVT form into the form acceptable by remote computer.

a) Terminal driver	b) Client TELNET
c) Server TELNET	d) Pseduterminal driver
- 4) SSH _____ mechanism is sometimes referred to as SSH tunneling.

a) Encapsulation	b) port forwarding
c) Multiplexing	d) Numbering
- 5) FTP uses two well-known TCP ports: port 20 is used for the _____ connection.

a) Control	b) Data
c) Error	d) All above
- 6) TFTP uses the services of _____ on the well known port 69.

a) UDP	b) SMTP
c) TCP	d) HTTP
- 7) _____ is more powerful and more complex message access protocol.

a) POP3	b) IMAP4
c) SMTP	d) PGP
- 8) IPv4 address is _____ bit long.

a) 64	b) 128
c) 32	d) 48
- 9) For outgoing traffic NAT box converts private IP address to company's public IP address.

a) TRUE	b) Can't say
c) FALSE	d) None of the above

- 10) UDP uses the _____ to handle incoming user datagrams that go to different process on the same host.
- a) Queuing
 - b) Multiplexing
 - c) All
 - d) Demultiplexing
- 11) In TCP, one end can stop sending data while still receiving data. This is called a _____.
- a) Half-close
 - b) One way termination
 - c) Half-open
 - d) None of the above
- 12) SCTP is reliable _____ oriented protocol.
- a) Character
 - b) Byte
 - c) Number
 - d) Message
- 13) Network programming needs data and other pieces of information to be stored in byte order which is _____.
- a) Little-endian
 - b) Both A and C
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 - d) None of the above
- 14) TCP uses _____ type socket for connection oriented communication with application layer.
- a) Stream
 - b) Datagram
 - c) Raw
 - d) All above

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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

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

Max. Marks: 56

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

Section – I

- Q.2 Write answer any three of the following questions. 12**
- Shortly describe with diagram and examples the four levels of addresses that are used in an internet employing the TCP/IP protocols.
 - Write a short note on the multiplexing and demultiplexing service provided by UDP.
 - Write a short note on the TCP timers.
 - Shortly describe with diagram the concept of multihoming service offered by SCTP.
 - Explain with diagram the structure of IPv4 socket address.

- Q.3 Write any two of the following questions. 16**
- An organization is granted the block 194.122.13.0. The administrator wants to create 8 fixed length subnets. Find the subnet mask, Find the number of addresses in each subnet and Find the first and last address of the each subnet.
 - What is silly window syndrome? Explain syndrome created by the receiver. Describe the Clark's solution to prevent the silly window syndrome.
 - Describe with diagram the connectionless iterative server.

Section – II

- Q.4 Write any three of the following questions. 12**
- What is DHCP? Describe the DHCP operation when client and server are on the same network.
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 - What is TFTP? List the names of five types of TFTP messages, draw and briefly describe TFTP ACK message format.
 - Explain with diagram the concept of out-of-band signaling by TELNET.
 - Explain with diagram the second scenario of electronic mail architecture.

- Q.5 Write any two of the following questions. 16**
- With diagram describe the concept of recursive type name-address resolution by DNS.
 - Draw the diagram of SSH packet format and briefly describe it's fields.
 - With time line diagram describe an example of FTP usage for retrieving a list of items in a directory.

Seat No.	
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- 10) _____ is more powerful and more complex message access protocol.
- | | |
|---------|----------|
| a) POP3 | b) IMAP4 |
| c) SMTP | d) PGP |
- 11) IPv4 address is _____ bit long.
- | | |
|-------|--------|
| a) 64 | b) 128 |
| c) 32 | d) 48 |
- 12) For outgoing traffic NAT box converts private IP address to company's public IP address.
- | | |
|----------|----------------------|
| a) TRUE | b) Can't say |
| c) FALSE | d) None of the above |
- 13) UDP uses the _____ to handle incoming user datagrams that go to different process on the same host.
- | | |
|------------|-------------------|
| a) Queuing | b) Multiplexing |
| c) All | d) Demultiplexing |
- 14) In TCP, one end can stop sending data while still receiving data. This is called a _____.
- | | |
|---------------|------------------------|
| a) Half-close | b) One way termination |
| c) Half-open | d) None of the above |

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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

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

Max. Marks: 56

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

Section – I

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Section – II

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 - Explain with diagram the concept of out-of-band signaling by TELNET.
 - Explain with diagram the second scenario of electronic mail architecture.

- Q.5 Write any two of the following questions. 16**
- With diagram describe the concept of recursive type name-address resolution by DNS.
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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

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

Max. Marks: 70

- Instructions:** 1) Q 1 is of MCQ/ Objective type must be solved in 30 minutes and answer key should be written on page no. 3 in the answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The _____ translates data and commands from NVT form into the form acceptable by remote computer.

a) Terminal driver	b) Client TELNET
c) Server TELNET	d) Pseduterminal driver
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a) Encapsulation	b) port forwarding
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c) Error	d) All above
- 4) TFTP uses the services of _____ on the well known port 69.

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- 5) _____ is more powerful and more complex message access protocol.

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- 8) UDP uses the _____ to handle incoming user datagrams that go to different process on the same host.

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c) All	d) Demultiplexing
- 9) In TCP, one end can stop sending data while still receiving data. This is called a _____.

a) Half-close	b) One way termination
c) Half-open	d) None of the above

- Page 11 of 12

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S.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

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

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section – I

- Q.2 Write answer any three of the following questions. 12**
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 - Describe with diagram the connectionless iterative server.

Section – II

- Q.4 Write any three of the following questions. 12**
- What is DHCP? Describe the DHCP operation when client and server are on the same network.
 - With diagram describe the concept of remote login facilitated by TELNET.
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 - Explain with diagram the second scenario of electronic mail architecture.

- Q.5 Write any two of the following questions. 16**
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 - With time line diagram describe an example of FTP usage for retrieving a list of items in a directory.

Seat No.	
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Day & Date: Friday, 06-12-2019
Time: 02:30 PM To 05:30 PM

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

Marks: 14

1) The address of the next instruction to be executed by the current process is provided by the _____.

- Page 1 of 12

- 7) FCFS algorithm is non-preemptive in nature, that is, once CPU time has been allocated to a process, other processes can get CPU time only after the current process has finished. This property of FCFS scheduling leads to the situation called _____.
a) Convoy Effect b) Common Effect
c) Belady's Effect d) Aging effect
- 8) Which of the following is the deadlock avoidance algorithm?
a) Banker's Algorithm b) Bakery Algorithm
c) RR Algorithm d) Peterson's Algorithm
- 9) The number of processes completed per unit time is known as _____.
a) Output b) Throughput
c) Efficiency d) Capacity
- 10) Which of the following is the address generated by CPU?
a) Physical address b) Absolute address
c) Logical Address d) None of the above
- 11) Mutual exclusion can be provided by the _____.
a) mutex locks
b) binary semaphores
c) both mutex locks and binary semaphores
d) none of the mentioned
- 12) The disadvantage of a process being allocated all its resources before beginning its execution is _____.
a) Low CPU utilization b) Low resource utilization
c) Very high resource utilization d) None of these
- 13) Effective access time is directly proportional to _____.
a) page-fault rate b) hit ratio
c) memory access time d) none of the mentioned
- 14) A _____ a set of wires and a rigidly defined protocol that specifies a set of messages that can be sent on the wires.
a) port b) Node
c) bus d) none of these

Seat No.	
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Set	P
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any Three. **12**

- a) What is spooling? Explain with example.
- b) Explain PCB With example.
- c) Explain Process Life Cycle with an example.
- d) Explain peterson's algorithm (Algorithm -3) for two process synchronization.
- e) Define:
 - 1) Throughput
 - 2) Response time
 - 3) Race Condition
 - 4) Waiting time

Q.3 Attempt any Two. **16**

- a) What is Process? Explain Shortest Remaining Time first and Round Robin Scheduling algorithm with example. (Use at least 4 Process)
- b) Describe the difference between Short term Scheduling, Long term scheduling and medium term scheduling
- c) Explain classical problems of Synchronization in terms of Dining Philosopher problem.

Section – II

Q.4 Attempt any Three. **12**

- a) Explain the steps process to perform DMA transfer.
- b) Explain overlay with an example.
- c) Explain the steps for page fault handling.
- d) Given five memory partitions of 100Kb, 500Kb, 200Kb, 300Kb, 600Kb (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212 Kb, 417 Kb, 112 Kb, and 426 Kb (in order)? Which algorithm makes the most efficient use of memory?

Q.5 Attempt any Two. **16**

- a) Explain Paging in detail.
- b) Prove Belady's Anomaly with an example. (Draw graph)
- c) Explain Banker's algorithm with suitable example.

Seat No.	
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Set Q

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

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

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Which of the following is the deadlock avoidance algorithm?
a) Banker's Algorithm b) Bakery Algorithm
c) RR Algorithm d) Peterson's Algorithm
- 2) The number of processes completed per unit time is known as _____.
a) Output b) Throughput
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- 3) Which of the following is the address generated by CPU?
a) Physical address b) Absolute address
c) Logical Address d) None of the above
- 4) Mutual exclusion can be provided by the _____.
a) mutex locks
b) binary semaphores
c) both mutex locks and binary semaphores
d) none of the mentioned
- 5) The disadvantage of a process being allocated all its resources before beginning its execution is _____.
a) Low CPU utilization b) Low resource utilization
c) Very high resource utilization d) None of these
- 6) Effective access time is directly proportional to _____.
a) page-fault rate b) hit ratio
c) memory access time d) none of the mentioned
- 7) A _____ a set of wires and a rigidly defined protocol that specifies a set of messages that can be sent on the wires.
a) port b) Node
c) bus d) none of these
- 8) The address of the next instruction to be executed by the current process is provided by the _____.
a) CPU registers b) Program counter
c) Process stack d) Pipe

- 9) Which one of the following error will be handle by the operating system?
 - a) power failure
 - b) lack of paper in printer
 - c) connection failure in the network
 - d) all of the mentioned
- 10) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called _____.
 - a) job queue
 - b) ready queue
 - c) execution queue
 - d) process queue
- 11) There are 10 different processes running on a workstation. Idle processes are waiting for an input event in the input queue. Busy processes are scheduled with the Round-Robin time sharing method. Which out of the following quantum times (t_Q) is the best value for small response times, if the processes have a short runtime, e.g. less than 10ms?
 - a) $t_Q = 15\text{ms}$
 - b) $t_Q = 40\text{ms}$
 - c) $t_Q = 45\text{ms}$
 - d) $t_Q = 50\text{ms}$
- 12) The segment of code in which the process may change common variables, update tables, write into files is known as _____.
 - a) Entry Section
 - b) Critical section
 - c) Exit section
 - d) Remainder Section
- 13) If all processes I/O bound, the ready queue will almost always be _____ and the Short term Scheduler will have a _____ to do.
 - a) full, little
 - b) full, lot
 - c) empty, little
 - d) empty, lot
- 14) FCFS algorithm is non-preemptive in nature, that is, once CPU time has been allocated to a process, other processes can get CPU time only after the current process has finished. This property of FCFS scheduling leads to the situation called _____.
 - a) Convoy Effect
 - b) Common Effect
 - c) Belady's Effect
 - d) Aging effect

Seat No.	
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Set	Q
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any Three. **12**

- a) What is spooling? Explain with example.
- b) Explain PCB With example.
- c) Explain Process Life Cycle with an example.
- d) Explain peterson's algorithm (Algorithm -3) for two process synchronization.
- e) Define:
 - 1) Throughput
 - 2) Response time
 - 3) Race Condition
 - 4) Waiting time

Q.3 Attempt any Two. **16**

- a) What is Process? Explain Shortest Remaining Time first and Round Robin Scheduling algorithm with example. (Use at least 4 Process)
- b) Describe the difference between Short term Scheduling, Long term scheduling and medium term scheduling
- c) Explain classical problems of Synchronization in terms of Dining Philosopher problem.

Section – II

Q.4 Attempt any Three. **12**

- a) Explain the steps process to perform DMA transfer.
- b) Explain overlay with an example.
- c) Explain the steps for page fault handling.
- d) Given five memory partitions of 100Kb, 500Kb, 200Kb, 300Kb, 600Kb (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212 Kb, 417 Kb, 112 Kb, and 426 Kb (in order)? Which algorithm makes the most efficient use of memory?

Q.5 Attempt any Two. **16**

- a) Explain Paging in detail.
- b) Prove Belady's Anomaly with an example. (Draw graph)
- c) Explain Banker's algorithm with suitable example.

Seat No.	
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Day & Date: Friday, 06-12-2019
Time: 02:30 PM To 05:30 PM

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

MCQ/Objective Type Questions

Marks: 14

1) The segment of code in which the process may change common variables, update tables, write into files is known as _____.

- Page 7 of 12

- 9) Effective access time is directly proportional to _____.
a) page-fault rate b) hit ratio
c) memory access time d) none of the mentioned
- 10) A _____ a set of wires and a rigidly defined protocol that specifies a set of messages that can be sent on the wires.
a) port b) Node
c) bus d) none of these
- 11) The address of the next instruction to be executed by the current process is provided by the _____.
a) CPU registers b) Program counter
c) Process stack d) Pipe
- 12) Which one of the following error will be handle by the operating system?
a) power failure
b) lack of paper in printer
c) connection failure in the network
d) all of the mentioned
- 13) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called _____.
a) job queue b) ready queue
c) execution queue d) process queue
- 14) There are 10 different processes running on a workstation. Idle processes are waiting for an input event in the input queue. Busy processes are scheduled with the Round-Robin time sharing method. Which out of the following quantum times (tQ) is the best value for small response times, if the processes have a short runtime, e.g. less than 10ms?
a) tQ = 15ms b) tQ = 40ms
c) tQ = 45ms d) tQ = 50ms

Seat No.	
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Set	R
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any Three. **12**

- a) What is spooling? Explain with example.
- b) Explain PCB With example.
- c) Explain Process Life Cycle with an example.
- d) Explain peterson's algorithm (Algorithm -3) for two process synchronization.
- e) Define:
 - 1) Throughput
 - 2) Response time
 - 3) Race Condition
 - 4) Waiting time

Q.3 Attempt any Two. **16**

- a) What is Process? Explain Shortest Remaining Time first and Round Robin Scheduling algorithm with example. (Use at least 4 Process)
- b) Describe the difference between Short term Scheduling, Long term scheduling and medium term scheduling
- c) Explain classical problems of Synchronization in terms of Dining Philosopher problem.

Section – II

Q.4 Attempt any Three. **12**

- a) Explain the steps process to perform DMA transfer.
- b) Explain overlay with an example.
- c) Explain the steps for page fault handling.
- d) Given five memory partitions of 100Kb, 500Kb, 200Kb, 300Kb, 600Kb (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212 Kb, 417 Kb, 112 Kb, and 426 Kb (in order)? Which algorithm makes the most efficient use of memory?

Q.5 Attempt any Two. **16**

- a) Explain Paging in detail.
- b) Prove Belady's Anomaly with an example. (Draw graph)
- c) Explain Banker's algorithm with suitable example.

Seat No.	
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Day & Date: Friday, 06-12-2019
Time: 02:30 PM To 05:30 PM

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

Marks: 14

- 1) Which of the following is the address generated by CPU?
 - a) Physical address
 - b) Absolute address
 - c) Logical Address
 - d) None of the above
- 2) Mutual exclusion can be provided by the _____.
 - a) mutex locks
 - b) binary semaphores
 - c) both mutex locks and binary semaphores
 - d) none of the mentioned
- 3) The disadvantage of a process being allocated all its resources before beginning its execution is _____.
 - a) Low CPU utilization
 - b) Low resource utilization
 - c) Very high resource utilization
 - d) None of these
- 4) Effective access time is directly proportional to _____.
 - a) page-fault rate
 - b) hit ratio
 - c) memory access time
 - d) none of the mentioned
- 5) A _____ a set of wires and a rigidly defined protocol that specifies a set of messages that can be sent on the wires.
 - a) port
 - b) Node
 - c) bus
 - d) none of these
- 6) The address of the next instruction to be executed by the current process is provided by the _____.
 - a) CPU registers
 - b) Program counter
 - c) Process stack
 - d) Pipe
- 7) Which one of the following error will be handle by the operating system?
 - a) power failure
 - b) lack of paper in printer
 - c) connection failure in the network
 - d) all of the mentioned
- 8) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called _____.
 - a) job queue
 - b) ready queue
 - c) execution queue
 - d) process queue

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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any Three. **12**

- a) What is spooling? Explain with example.
- b) Explain PCB With example.
- c) Explain Process Life Cycle with an example.
- d) Explain peterson's algorithm (Algorithm -3) for two process synchronization.
- e) Define:
 - 1) Throughput
 - 2) Response time
 - 3) Race Condition
 - 4) Waiting time

Q.3 Attempt any Two. **16**

- a) What is Process? Explain Shortest Remaining Time first and Round Robin Scheduling algorithm with example. (Use at least 4 Process)
- b) Describe the difference between Short term Scheduling, Long term scheduling and medium term scheduling
- c) Explain classical problems of Synchronization in terms of Dining Philosopher problem.

Section – II

Q.4 Attempt any Three. **12**

- a) Explain the steps process to perform DMA transfer.
- b) Explain overlay with an example.
- c) Explain the steps for page fault handling.
- d) Given five memory partitions of 100Kb, 500Kb, 200Kb, 300Kb, 600Kb (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of 212 Kb, 417 Kb, 112 Kb, and 426 Kb (in order)? Which algorithm makes the most efficient use of memory?

Q.5 Attempt any Two. **16**

- a) Explain Paging in detail.
- b) Prove Belady's Anomaly with an example. (Draw graph)
- c) Explain Banker's algorithm with suitable example.

Seat No.	
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Set	P
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Compiler bridges the semantic gap between which domains?
 a) Application and Execution b) Application and PL
 c) PL and Execution d) None of these
- 2) Software implementation using PL introduces new domain called _____.
 a) Application Domain b) PL Domain
 c) Execution Domain d) Program Generator Domain
- 3) The assembler in first pass reads the program to collect symbols defined with offsets in a table _____.
 a) Hash table b) Symbol table
 c) Both a & b d) None of these
- 4) The part of computer system which perform the house keeping function is called _____.
 a) Interpreter b) Compiler
 c) OS d) Assembler
- 5) Running time of a program depends on _____.
 a) Addressing mode b) Order of computations
 c) The usage of machine idioms d) All of the mentioned
- 6) A model statement contains call for another macro is called as _____.
 a) Referential macro call b) Nested macro call
 c) Inbuilt macro call d) Inherited macro call
- 7) The graph that shows basic blocks and their successor relationship is called _____.
 a) DAG b) Flow Graph
 c) Control Graph d) Hamilton Graph
- 8) The identification of common sub-expression and replacement of run-time computations by compile-time computations is _____.
 a) Local optimization b) Loop optimization
 c) Constant folding d) Data flow analysis
- 9) In compiler design 'reducing the strength' refers to _____.
 a) reducing the range of values of input variables
 b) code optimization using cheaper machine instructions
 c) reducing efficiency of program
 d) None of the above

- 10) Relocation bits used by relocating loader are specified by _____.
a) Relocating loader itself b) Linker
c) Assembler d) Macro processor
- 11) Storage mapping is done by _____.
a) OS b) Compiler
c) Linker d) Loader
- 12) Linker creates a link file containing binary codes and also produces _____ containing address information on linked files.
a) Link map b) Map table
c) Symbol map d) None of these
- 13) Binary symbolic subroutine loader is example of _____.
a) Absolute loader b) Relocating Loaders
c) Compile & Go loaders d) Direct linking loader
- 14) In loaders, location & length of each address constant is maintained by _____.
a) ESD b) TXT
c) RLD d) END

Seat No.	
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Attempt any three. 12**

a) Define Language Processing. Generate the Assembly language statements for the following source statement:

percent_profit := (profit * 100) / cost_price;

- b) Explain Assembler Directives and advanced Assembler Directives.
 c) How forward references are handled in one pass and two pass assembler? Explain.
 d) Provide the design overview of the Macro preprocessor with a diagram.
 e) Explain nested macro call with example.

Q.3 Attempt any one. 08

a) Explain the advanced macro facilities: AIF, AGO, ANOP, LCL & GBL.

OR

b) Elaborate the front end of a Toy compiler with a schematic and its phases.

Q.4 What is intermediate code? Explain Variant-I and Variant-II forms with example. 08**Section – II****Q.5 Attempt any three. 12**

a) Draw an Expression tree and show the best evaluation order for operators using RR label concept for the following expression.

((a + b) + (x / y)) * ((c + d) / (m + n))

- b) Explain Absolute loader scheme with its advantages and disadvantages.
 c) What is program Relocation, explain with example.
 d) Explain Overlay structured program with example.
 e) Write a short note on “Aspects of compilation”.

Q.6 Attempt any one. 08

a) Write and explain linking algorithm with example.

OR

b) Explain the following loader schemes.

- 1) Direct Linking Loader.
- 2) Relocating Loader.

Q.7 Explain with example, following Optimizing Transformations with respect to compilers. 08

- 1) Compile time evaluation
- 2) Elimination of common sub-expression
- 3) Dead code elimination
- 4) Frequency reduction

Seat No.	
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Set	Q
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The identification of common sub-expression and replacement of run-time computations by compile-time computations is _____.
 a) Local optimization b) Loop optimization
 c) Constant folding d) Data flow analysis
- 2) In compiler design 'reducing the strength' refers to _____.
 a) reducing the range of values of input variables
 b) code optimization using cheaper machine instructions
 c) reducing efficiency of program
 d) None of the above
- 3) Relocation bits used by relocating loader are specified by _____.
 a) Relocating loader itself b) Linker
 c) Assembler d) Macro processor
- 4) Storage mapping is done by _____.
 a) OS b) Compiler
 c) Linker d) Loader
- 5) Linker creates a link file containing binary codes and also produces _____ containing address information on linked files.
 a) Link map b) Map table
 c) Symbol map d) None of these
- 6) Binary symbolic subroutine loader is example of _____.
 a) Absolute loader b) Relocating Loaders
 c) Compile & Go loaders d) Direct linking loader
- 7) In loaders, location & length of each address constant is maintained by _____.
 a) ESD b) TXT
 c) RLD d) END
- 8) Compiler bridges the semantic gap between which domains?
 a) Application and Execution b) Application and PL
 c) PL and Execution d) None of these
- 9) Software implementation using PL introduces new domain called _____.
 a) Application Domain b) PL Domain
 c) Execution Domain d) Program Generator Domain

- 10) The assembler in first pass reads the program to collect symbols defined with offsets in a table _____.
a) Hash table b) Symbol table
c) Both a & b d) None of these
- 11) The part of computer system which perform the house keeping function is called _____.
a) Interpreter b) Compiler
c) OS d) Assembler
- 12) Running time of a program depends on _____.
a) Addressing mode b) Order of computations
c) The usage of machine idioms d) All of the mentioned
- 13) A model statement contains call for another macro is called as _____.
a) Referential macro call b) Nested macro call
c) Inbuilt macro call d) Inherited macro call
- 14) The graph that shows basic blocks and their successor relationship is called _____.
a) DAG b) Flow Graph
c) Control Graph d) Hamilton Graph

Seat No.	
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Attempt any three. 12**

a) Define Language Processing. Generate the Assembly language statements for the following source statement:

percent_profit := (profit * 100) / cost_price;

- b) Explain Assembler Directives and advanced Assembler Directives.
 c) How forward references are handled in one pass and two pass assembler? Explain.
 d) Provide the design overview of the Macro preprocessor with a diagram.
 e) Explain nested macro call with example.

Q.3 Attempt any one. 08

a) Explain the advanced macro facilities: AIF, AGO, ANOP, LCL & GBL.

OR

b) Elaborate the front end of a Toy compiler with a schematic and its phases.

Q.4 What is intermediate code? Explain Variant-I and Variant-II forms with example. 08**Section – II****Q.5 Attempt any three. 12**

a) Draw an Expression tree and show the best evaluation order for operators using RR label concept for the following expression.

((a + b) + (x / y)) * ((c + d) / (m + n))

- b) Explain Absolute loader scheme with its advantages and disadvantages.
 c) What is program Relocation, explain with example.
 d) Explain Overlay structured program with example.
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Q.6 Attempt any one. 08

a) Write and explain linking algorithm with example.

OR

b) Explain the following loader schemes.

- 1) Direct Linking Loader.
- 2) Relocating Loader.

Q.7 Explain with example, following Optimizing Transformations with respect to compilers. 08

- 1) Compile time evaluation
- 2) Elimination of common sub-expression
- 3) Dead code elimination
- 4) Frequency reduction

Seat No.	
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Set	R
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Running time of a program depends on _____.
 a) Addressing mode b) Order of computations
 c) The usage of machine idioms d) All of the mentioned
- 2) A model statement contains call for another macro is called as _____.
 a) Referential macro call b) Nested macro call
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- 4) The identification of common sub-expression and replacement of run-time computations by compile-time computations is _____.
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- 5) In compiler design 'reducing the strength' refers to _____.
 a) reducing the range of values of input variables
 b) code optimization using cheaper machine instructions
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- 6) Relocation bits used by relocating loader are specified by _____.
 a) Relocating loader itself b) Linker
 c) Assembler d) Macro processor
- 7) Storage mapping is done by _____.
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- 8) Linker creates a link file containing binary codes and also produces _____ containing address information on linked files.
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 a) Absolute loader b) Relocating Loaders
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- 13) The assembler in first pass reads the program to collect symbols defined with offsets in a table _____.
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a) Interpreter b) Compiler
c) OS d) Assembler

Seat No.	
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Attempt any three. 12**

a) Define Language Processing. Generate the Assembly language statements for the following source statement:

percent_profit := (profit * 100) / cost_price;

- b) Explain Assembler Directives and advanced Assembler Directives.
 c) How forward references are handled in one pass and two pass assembler? Explain.
 d) Provide the design overview of the Macro preprocessor with a diagram.
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OR

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a) Draw an Expression tree and show the best evaluation order for operators using RR label concept for the following expression.

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- b) Explain Absolute loader scheme with its advantages and disadvantages.
 c) What is program Relocation, explain with example.
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Q.6 Attempt any one. 08

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- 3) Dead code elimination
- 4) Frequency reduction

Seat No.	
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Relocation bits used by relocating loader are specified by _____.
a) Relocating loader itself b) Linker
c) Assembler d) Macro processor
- 2) Storage mapping is done by _____.
a) OS b) Compiler
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c) The usage of machine idioms d) All of the mentioned
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a) DAG b) Flow Graph
c) Control Graph d) Hamilton Graph
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a) reducing the range of values of input variables
b) code optimization using cheaper machine instructions
c) reducing efficiency of program
d) None of the above

Seat No.	
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Attempt any three. 12**

a) Define Language Processing. Generate the Assembly language statements for the following source statement:

percent_profit := (profit * 100) / cost_price;

- b) Explain Assembler Directives and advanced Assembler Directives.
 c) How forward references are handled in one pass and two pass assembler? Explain.
 d) Provide the design overview of the Macro preprocessor with a diagram.
 e) Explain nested macro call with example.

Q.3 Attempt any one. 08

a) Explain the advanced macro facilities: AIF, AGO, ANOP, LCL & GBL.

OR

b) Elaborate the front end of a Toy compiler with a schematic and its phases.

Q.4 What is intermediate code? Explain Variant-I and Variant-II forms with example. 08**Section – II****Q.5 Attempt any three. 12**

a) Draw an Expression tree and show the best evaluation order for operators using RR label concept for the following expression.

((a + b) + (x / y)) * ((c + d) / (m + n))

- b) Explain Absolute loader scheme with its advantages and disadvantages.
 c) What is program Relocation, explain with example.
 d) Explain Overlay structured program with example.
 e) Write a short note on “Aspects of compilation”.

Q.6 Attempt any one. 08

a) Write and explain linking algorithm with example.

OR

b) Explain the following loader schemes.

- 1) Direct Linking Loader.
- 2) Relocating Loader.

Q.7 Explain with example, following Optimizing Transformations with respect to compilers. 08

- 1) Compile time evaluation
- 2) Elimination of common sub-expression
- 3) Dead code elimination
- 4) Frequency reduction

Seat No.	
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T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Wednesday, 11-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right indicate full marks.

3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) 'AS' clause is used in SQL for _____.
 - a) Selection operation
 - b) Rename operation
 - c) Join operation
 - d) Projection operation
- 2) The SQL DDL allows specification of following _____.
 - 1) The schema for each relation.
 - 2) The types of values associated with each attribute.
 - 3) The integrity constraints.
 - 4) The set of indices to be maintained for each relation.
 - 5) The security and authorization information for each relation.
 - a) only 1,2,3, is true
 - b) only 1,2,3,4
 - c) only 1 and 2
 - d) 1,2,3,4,5 are true
- 3) An E-R diagram can graphically represent the _____.
 - a) Physical structure
 - b) Logical structure
 - c) View structure
 - d) Virtual structure
- 4) If you were collecting and storing information about your music collection, an album would be considered a(n) _____.
 - a) Relation
 - b) Entity
 - c) Instance
 - d) Attribute
- 5) Which of the following is not a Armstrong's Axiom?
 - a) Reflexivity rule
 - b) Transitivity rule
 - c) Pseudo transitivity rule
 - d) Augmentation rule
- 6) Suppose we wish to find the ID's of the employees that are managed by people who are managed by the employee with ID 123. Here are two possible queries:
 - I) **SELECT ee.empID**
FROM Emps ee, Emps ff
WHERE ee.mgrID = ff.empID AND ff.mgrID = 123;
 - II) **SELECT empID**
FROM Emps
WHERE mgrID IN
(SELECT empID FROM Emps WHERE mgrID = 123);

Which, if any, of the two queries above will correctly get the desired set of employee ID's?

 - a) Both I and II
 - b) I only
 - c) II only
 - d) Neither I nor II

Seat No.	
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T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Wednesday, 11-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
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Section – I

Q.2 Solve any three: **12**

- What is BCNF? Explain a decomposition example.
- Explain with example Group by and Having clause.
- Give and illustrate the symbols for ER Diagram.
- What is super key, candidate key, primary key and foreign key with example.
- Explain with example Closure of Attribute Sets (F+).

Q.3 Solve any one **08**

- Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer.
teaches (ID, *course id*, *sec id*, *semester*, *year*)
takes (ID, *course id*, *sec id*, *semester*, *year*, *grade*)
prereq (course id, *prereq id*)
advisor (s ID, *i ID*)
sec course (course id, *sec id*, *semester*, *year*)
sec time slot (course id, *sec id*, *semester*, *year*, *time slot id*)
sec class (course id, *sec id*, *semester*, *year*, *building*, *room number*)
inst dept (ID, *dept name*)
stud dept (ID, *dept name*)
course dept (course id, *dept name*)
- Define the following terms with an example.
 - Functional Dependency
 - Atomic Domain
 - Lossless Decomposition
 - Armstrong Axioms

Q.4 Consider the following schema: **08**

- employee* (employee name, *street*, *city*)
works (employee name, *company name*, *salary*)
company (company name, *city*)
manages (employee name, *manager name*)
- Find the names, street addresses, and cities of residence of all employees who work for “First Bank Corporation” and earn more than \$10,000.
 - Find all employees in the database who do not work for “First Bank Corporation”.

- c) Find all employees in the database who live in the same cities as the companies for which they work.
- d) Find all employees who earn more than the average salary of all employees of their company.

Write both **SQL and Relational Algebra** query for every question.

Section – II

- | | | |
|------------|---|-----------|
| Q.5 | Solve any three: | 12 |
| | <ul style="list-style-type: none">a) Explain the concept of serializable schedule with proper example.b) Explain B+ tree with an example and how insertion works?c) Explain ACID properties with an example.d) Write a short note Storage structure.e) Explain different types of failures in transaction system. | |
| Q.6 | Solve any one: | 08 |
| | <ul style="list-style-type: none">a) Explain Following:<ul style="list-style-type: none">1) Lock Modes2) Ordered Index3) Log Records4) Thomas Write Ruleb) Explain log based recovery algorithm. | |
| Q.7 | Explain following concurrency protocols along with explanation of various terms associated with it. | 08 |
| | <ul style="list-style-type: none">a) Two phase lockingb) Time stamp | |

Seat No.	
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Set **Q**

T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Wednesday, 11-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

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3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Indexing based on a sorted order of values are called _____.
 a) Sequenced indices b) Ordered indices
 c) Hashing indices d) Structured indices
- 2) Nonleaf nodes of B+- tree structure form a _____.
 a) Multilevel clustered indices b) Sparse indices
 c) Multilevel dense indices d) Multilevel sparse indices
- 3) An integral part of database that can restore database to consistent state of before failure is called _____.
 a) Recovery, scheme b) Backup scheme
 c) Restoring scheme d) Transaction scheme
- 4) An approach named Lock timeouts is used for _____.
 a) Deadlock detection b) Deadlock elimination
 c) Deadlock recovery d) Deadlock prevention
- 5) Rigorous two-phase locking protocol permits releasing all locks at the _____.
 a) Beginning of transaction
 b) During execution of transaction
 c) End of transaction
 d) Never in the life-time of transaction
- 6) State in which transaction stays while it is executing is termed as _____.
 a) Active b) Partially committed
 c) Initial d) Waiting
- 7) Identify the correct statement(s) about the lock compatibility matrix given below _____.

	S	X
S	true	false
X	false	false

- a) X denotes an exclusive mode lock, using which data item can be both read and written.
- b) If a transaction holds an S lock on an item, other transaction will not be allowed to obtain a S lock on the same item.
- c) S denotes an shared mode lock, using which data item can only be read
- d) Both a and c

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T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Wednesday, 11-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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Section – I

Q.2 Solve any three: **12**

- What is BCNF? Explain a decomposition example.
- Explain with example Group by and Having clause.
- Give and illustrate the symbols for ER Diagram.
- What is super key, candidate key, primary key and foreign key with example.
- Explain with example Closure of Attribute Sets (F+).

Q.3 Solve any one **08**

- Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer.
teaches (ID, *course id*, *sec id*, *semester*, *year*)
takes (ID, *course id*, *sec id*, *semester*, *year*, *grade*)
prereq (*course id*, *prereq id*)
advisor (*s ID*, *i ID*)
sec course (*course id*, *sec id*, *semester*, *year*)
sec time slot (*course id*, *sec id*, *semester*, *year*, *time slot id*)
sec class (*course id*, *sec id*, *semester*, *year*, *building*, *room number*)
inst dept (ID, *dept name*)
stud dept (ID, *dept name*)
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- Define the following terms with an example.
 - Functional Dependency
 - Atomic Domain
 - Lossless Decomposition
 - Armstrong Axioms

Q.4 Consider the following schema: **08**

- employee* (*employee name*, *street*, *city*)
works (*employee name*, *company name*, *salary*)
company (*company name*, *city*)
manages (*employee name*, *manager name*)
- Find the names, street addresses, and cities of residence of all employees who work for “First Bank Corporation” and earn more than \$10,000.
 - Find all employees in the database who do not work for “First Bank Corporation”.

- c) Find all employees in the database who live in the same cities as the companies for which they work.
- d) Find all employees who earn more than the average salary of all employees of their company.

Write both **SQL and Relational Algebra** query for every question.

Section – II

- Q.5 Solve any three:** **12**
- a) Explain the concept of serializable schedule with proper example.
 - b) Explain B+ tree with an example and how insertion works?
 - c) Explain ACID properties with an example.
 - d) Write a short note Storage structure.
 - e) Explain different types of failures in transaction system.
- Q.6 Solve any one:** **08**
- a) Explain Following:
 - 1) Lock Modes
 - 2) Ordered Index
 - 3) Log Records
 - 4) Thomas Write Rule
 - b) Explain log based recovery algorithm.
- Q.7 Explain following concurrency protocols along with explanation of various terms associated with it.** **08**
- a) Two phase locking
 - b) Time stamp

Seat No.	
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T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Wednesday, 11-12-2019
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MCQ/Objective Type Questions

Duration: 30 Minutes

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

- 1) Which of the following is not a Armstrong's Axiom?

a) Reflexivity rule	b) Transitivity rule
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- 2) Suppose we wish to find the ID's of the employees that are managed by people who are managed by the employee with ID 123. Here are two possible queries:

I) **SELECT** ee.empID
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 FROM Emps
 WHERE mgrID **IN**
 (**SELECT** empID **FROM** Emps **WHERE** mgrID = 123);

Which, if any, of the two queries above will correctly get the desired set of employee ID's?

a) Both I and II	b) I only
c) II only	d) Neither I nor II

- 3) An entity set that does not have sufficient attributes to form a primary key is a _____.

a) strong entity set	b) weak entity set
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- 4) Indexing based on a sorted order of values are called _____.

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- 5) Nonleaf nodes of B+- tree structure form a _____.

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- 8) Rigorous two-phase locking protocol permits releasing all locks at the _____.
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- 11) 'AS' clause is used in SQL for _____.
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- 12) The SQL DDL allows specification of following _____.
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- 13) An E-R diagram can graphically represent the _____.
 a) Physical structure
 b) Logical structure
 c) View structure
 d) Virtual structure
- 14) If you were collecting and storing information about your music collection, an album would be considered a(n) _____.
 a) Relation
 b) Entity
 c) Instance
 d) Attribute

Seat No.	
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Set	R
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T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Wednesday, 11-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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Section – I

Q.2 Solve any three: **12**

- What is BCNF? Explain a decomposition example.
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- Explain with example Closure of Attribute Sets (F+).

Q.3 Solve any one **08**

- Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer.
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sec course (course id, sec id, semester, year)
sec time slot (course id, sec id, semester, year, time slot id)
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Q.4 Consider the following schema: **08**

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Write both **SQL and Relational Algebra** query for every question.

Section – II

- Q.5 Solve any three: 12**
- a) Explain the concept of serializable schedule with proper example.
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- Q.6 Solve any one: 08**
- a) Explain Following:
 - 1) Lock Modes
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 - 3) Log Records
 - 4) Thomas Write Rule
 - b) Explain log based recovery algorithm.
- Q.7 Explain following concurrency protocols along with explanation of various terms associated with it. 08**
- a) Two phase locking
 - b) Time stamp

Seat No.	
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T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Wednesday, 11-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) An integral part of database that can restore database to consistent state of before failure is called _____.
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T.E. (Part - I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Wednesday, 11-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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Section – I

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- What is super key, candidate key, primary key and foreign key with example.
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takes (ID, course id, sec id, semester, year, grade)
prereq (course id, prereq id)
advisor (s ID, i ID)
sec course (course id, sec id, semester, year)
sec time slot (course id, sec id, semester, year, time slot id)
sec class (course id, sec id, semester, year, building, room number)
inst dept (ID, dept name)
stud dept (ID, dept name)
course dept (course id, dept name)
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Q.4 Consider the following schema: **08**

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Section – II

- Q.5 Solve any three:** **12**
- a) Explain the concept of serializable schedule with proper example.
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- a) Explain Following:
 - 1) Lock Modes
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 - 3) Log Records
 - 4) Thomas Write Rule
 - b) Explain log based recovery algorithm.
- Q.7 Explain following concurrency protocols along with explanation of various terms associated with it.** **08**
- a) Two phase locking
 - b) Time stamp

Seat No.	
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Set	P
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Which of the following order of growth is incorrect?

a) $O(n \log n) < O(n^2)$	b) $O(\log n) < O(n \log n)$
c) $O(n) < O(1)$	d) None
- 2) What is the time complexity for following pseudocode _____.
 Algorithm Sum(n, A[])
 {
 S:=0;
 for i:1 to n do
 S:=S+A[i];
 return (S);
 }

a) $2n+3$	b) $2n+2$
c) $2n+1$	d) None
- 3) Recurrence relations for binary search using divide and conquer is _____.

a) $T(n)=T(n/2)+b$, b is a constant	b) $T(n)=2T(n/2)+b$, b is a constant
c) $T(n)=T(n/2)+\log n$	d) $T(n)=T(n/2)+n$
- 4) The Time complexity of finding max and min element if $n=2$, using divide and conquer method _____.

a) $T(n)=2T(n/2)+2$	b) $T(n)=2$
c) $T(n)=1$	d) $T(n)=0$
- 5) Using Greedy method, an object i is placed into the knapsack, the value of solution sector X_i .

a) 0 or 1	b) $0 \leq x_i \leq 1$
c) 0 and 1	d) None
- 6) While solving job sequencing problem using greedy method, requirement is _____.

a) Jobs should be arranged in ascending order of deadlines.
b) Jobs should be arranged in descending order of deadlines.
c) Jobs should be arranged in ascending order of profits
d) Jobs should be arranged in descending order of profits

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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019

Time: 02:30 PM To 05:30 PM

Max. Marks: 56

Instructions: 1) All question are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Solve any three questions****12**

- Explain Big Oh and Big Omega with the help of example.
- Find time complexity using steps count method for following code.

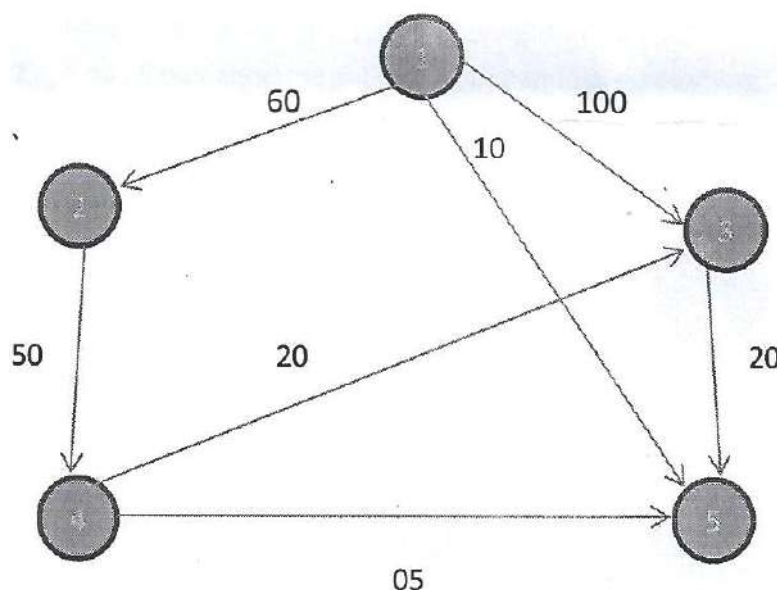
```
for (i=0;i<n;i++)
for (k=0;k<n;k++)
for (j=0;j<n;j++)
{
A=a+b;
}
```
- Prove that time complexity of merge sort is $O(n \log n)$.
- Find an optimal solution to knapsack problem using greedy method.
 $M=60, n=5$
 $(p_1, \dots, p_5) = \{30, 20, 100, 90, 160\}$ and $(w_1, \dots, w_5) = \{5, 10, 20, 30, 40\}$

Q.3 Solve any one**08**

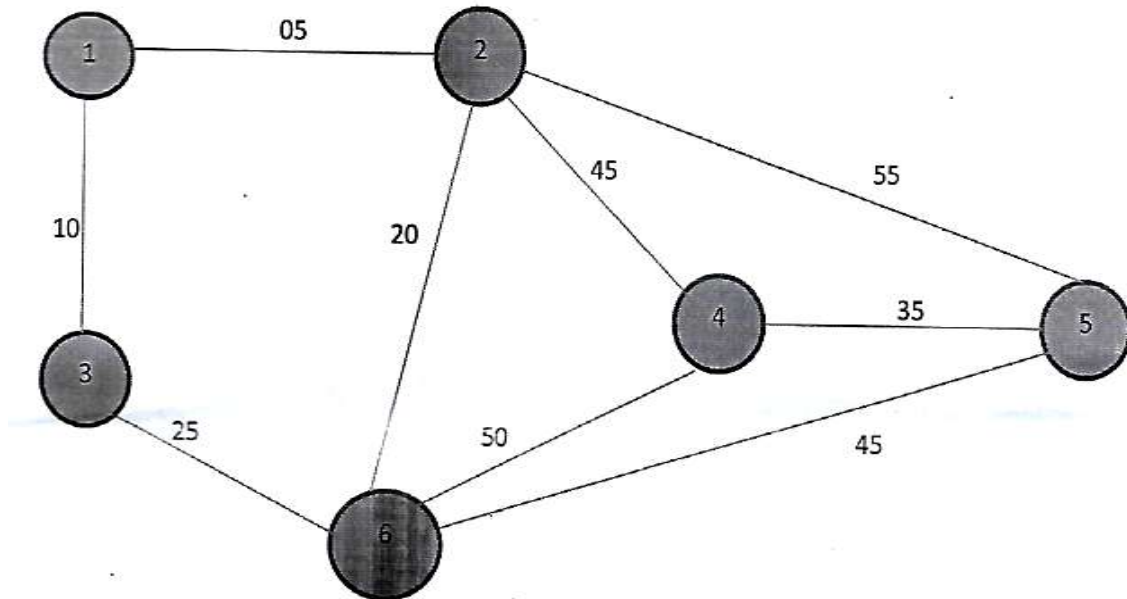
Write an algorithm based on divide and conquer methodology to find Max and Min element. Simulate the algorithm on the following nine elements.
 22, 13, -5, -8, 15, 60, 17, 31, 47

OR

Find the single source shortest path of following graph. Take vertex 1 as vertex.



Q.4 Find minimum weight /cost spanning tree using prim's algorithm.



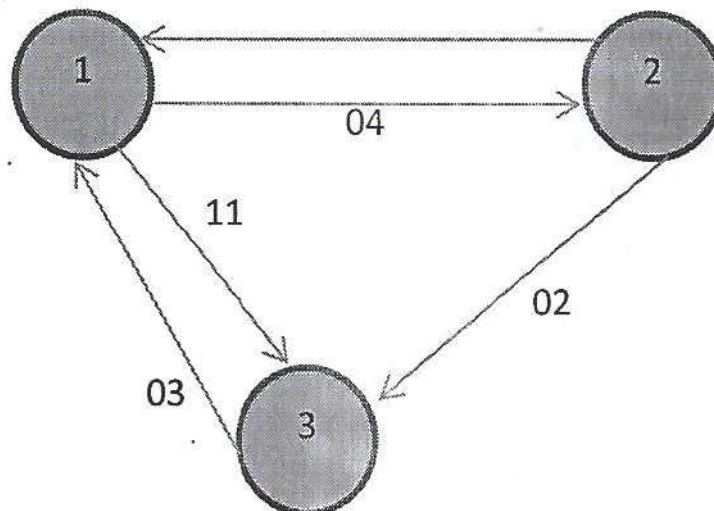
Section – II

Q.5 Solve any three questions.

12

- Solve 0/1 Knapsack problem using dynamic programming.
M=8, n=4 profit={1,2,5,6} and weight={2,3,4,5}
- Find all pair shortest path using dynamic programming.

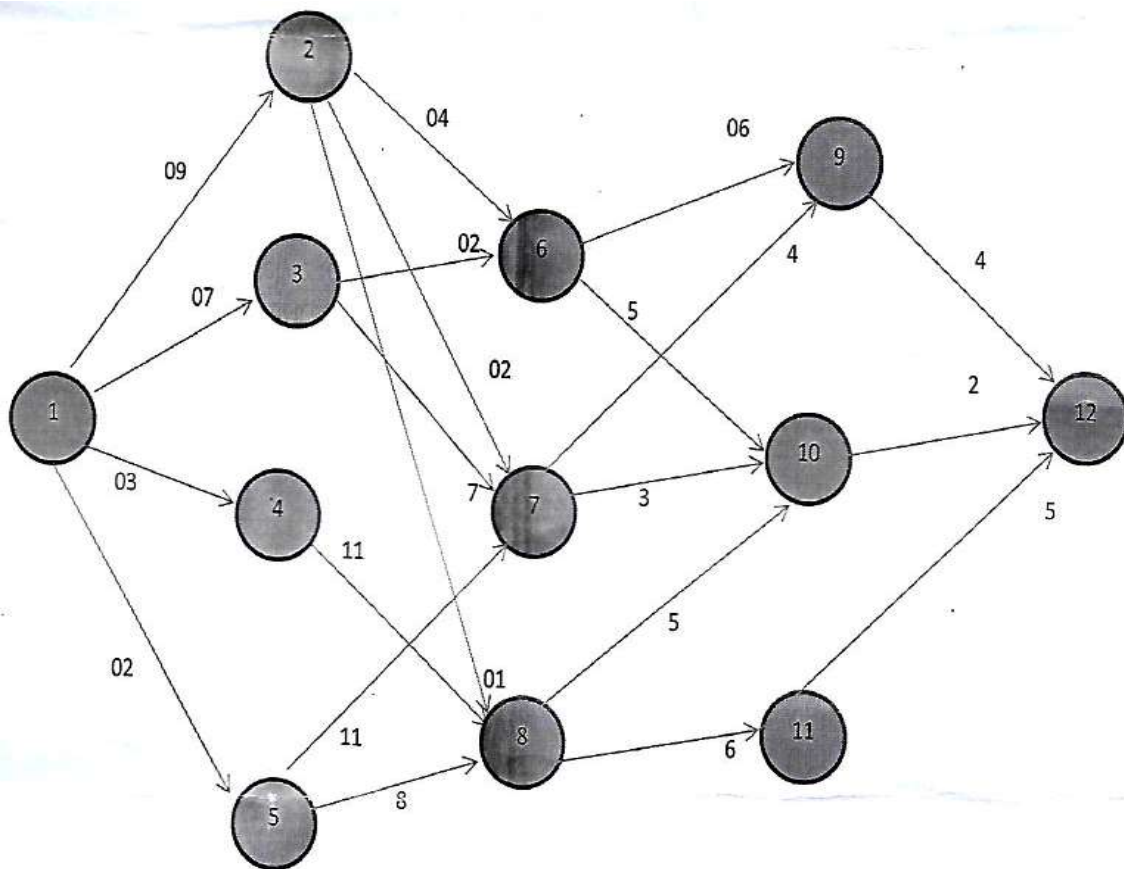
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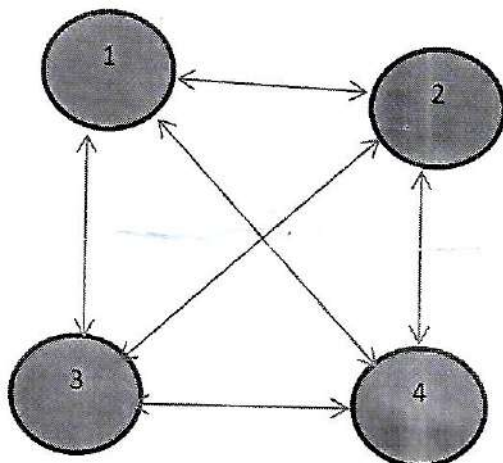
- State and explain Graph coloring problem.
- Write brief note on P, NP, NP -complete and NP – Hard problems.

Q.6 Solve any one.

Find minimum cost path from s to t multistage graph using forward approach.

**OR**

Given $W[1:6]=\{5,10,12,13,15,18\}$, $m=30$ and $n=6$. Find all possible subsets of w that sum to m . draw the portion of the state space tree that is generated.

Q.7 Consider the following directed graph and edge length are given by matrix. Find optimal tour length of travelling sales person problem.

0	10	15	20
5	0	9	10
6	13	0	12
8	8	9	0

Seat No.	
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Set Q

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The correct matching for the following pairs is _____.

A. Multistage graph	1. Greedy Method
B. Kruskal Algorithm	2. Dynamic Programming
C. Merge Sort	3. Backtracking
D. Hamilton Cycle	4. Divide and Conquer

 - a) A-3,B-2,C-4,D-1
 - b) A-4,B-3,C-1,D-2
 - c) A-2,B-1,C-4,D-3
 - d) None
- 2) In flow shop scheduling OFT stands for _____.
 - a) Optimal Find Time
 - b) Organized Finish Time
 - c) Optimal Finish Time
 - d) None
- 3) In dynamic programming 0/1 knapsack problem Purging/Dominance rule contains two pairs (P_j, W_j) and (P_k, W_k) then pair (P_j, W_k) can be discarded, iff _____.

a) $P_j \leq P_k$ and $W_j \geq W_k$	b) $P_j \geq P_k$ and $W_j \leq W_k$
c) $P_j \leq W_j$ and $P_k \geq W_k$	d) $P_j \geq W_j$ and $P_k \leq W_k$
- 4) In NXN Queens's problems, the constraints are "No Two queens are placed" at _____.

a) Same row	b) Same column
c) Same diagonal	d) All of the above
- 5) Graph coloring problem is which type of algorithm design strategy _____.

a) Dynamic Programming	b) Greedy Method
c) Backtracking	d) None
- 6) Travelling sales man problem belongs to which of the class?

a) P	b) NP
c) Linear	d) None of the mentioned
- 7) The hardest of NP problems can be _____.

a) NP-complete	b) NP-hard
c) P	d) None of the mentioned
- 8) Which of the following order of growth is incorrect?

a) $O(n \log n) < O(n^2)$	b) $O(\log n) < O(n \log n)$
c) $O(n) < O(1)$	d) None

- Page 7 of 20

Seat
No.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019

Time: 02:30 PM To 05:30 PM

Max. Marks: 56

Instructions: 1) All question are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Solve any three questions****12**

- Explain Big Oh and Big Omega with the help of example.
- Find time complexity using steps count method for following code.

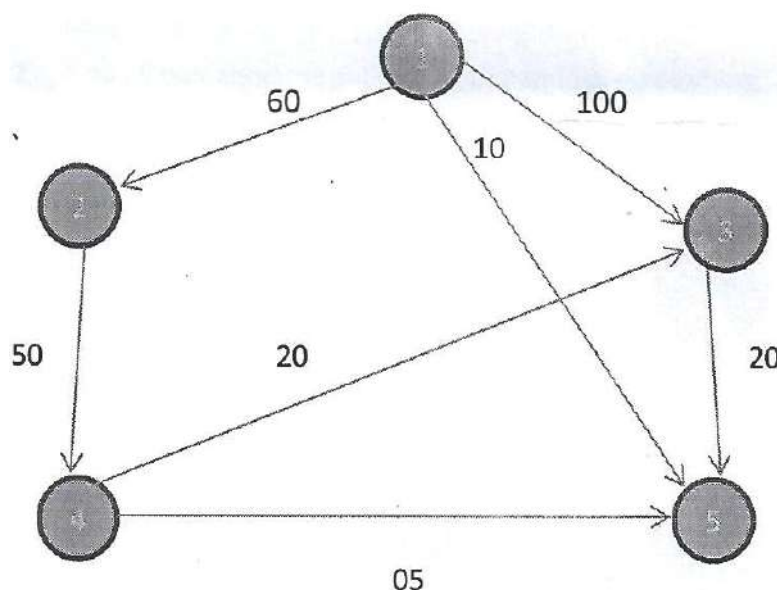
```
for (i=0;i<n;i++)
  for (k=0;k<n;k++)
    for (j=0;j<n;j++)
    {
      A=a+b;
    }
```
- Prove that time complexity of merge sort is $O(n \log n)$.
- Find an optimal solution to knapsack problem using greedy method.
 $M=60, n=5$
 $(p_1, \dots, p_5) = \{30, 20, 100, 90, 160\}$ and $(w_1, \dots, w_5) = \{5, 10, 20, 30, 40\}$

Q.3 Solve any one**08**

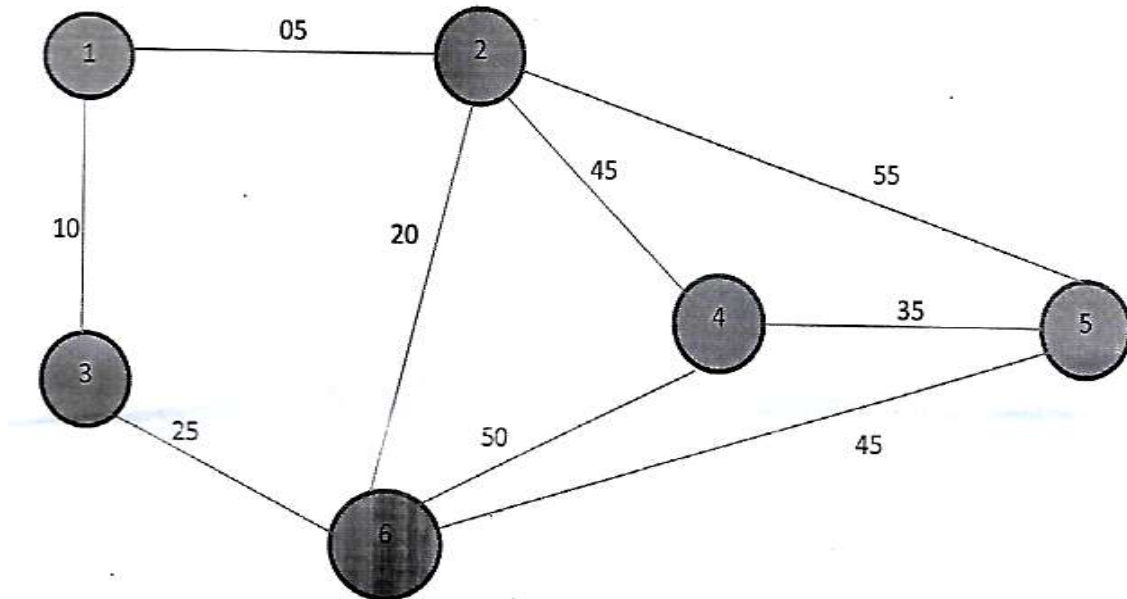
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 22, 13, -5, -8, 15, 60, 17, 31, 47

OR

Find the single source shortest path of following graph. Take vertex 1 as vertex.



Q.4 Find minimum weight /cost spanning tree using prim's algorithm.



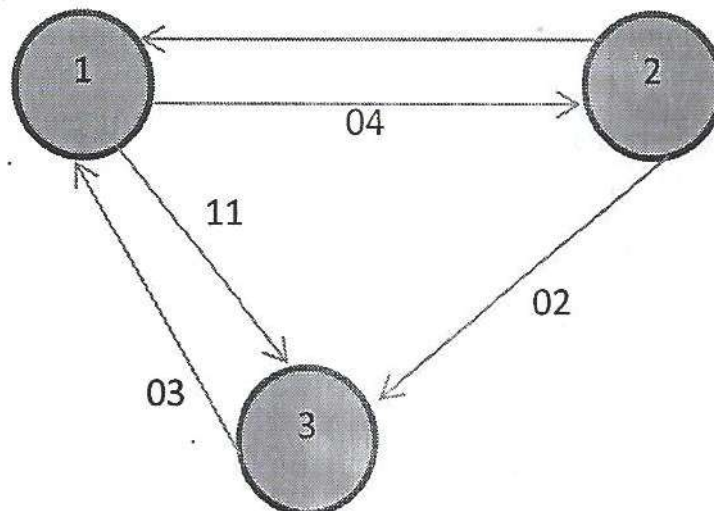
Section – II

Q.5 Solve any three questions.

12

- Solve 0/1 Knapsack problem using dynamic programming.
M=8, n=4 profit={1,2,5,6} and weight={2,3,4,5}
- Find all pair shortest path using dynamic programming.

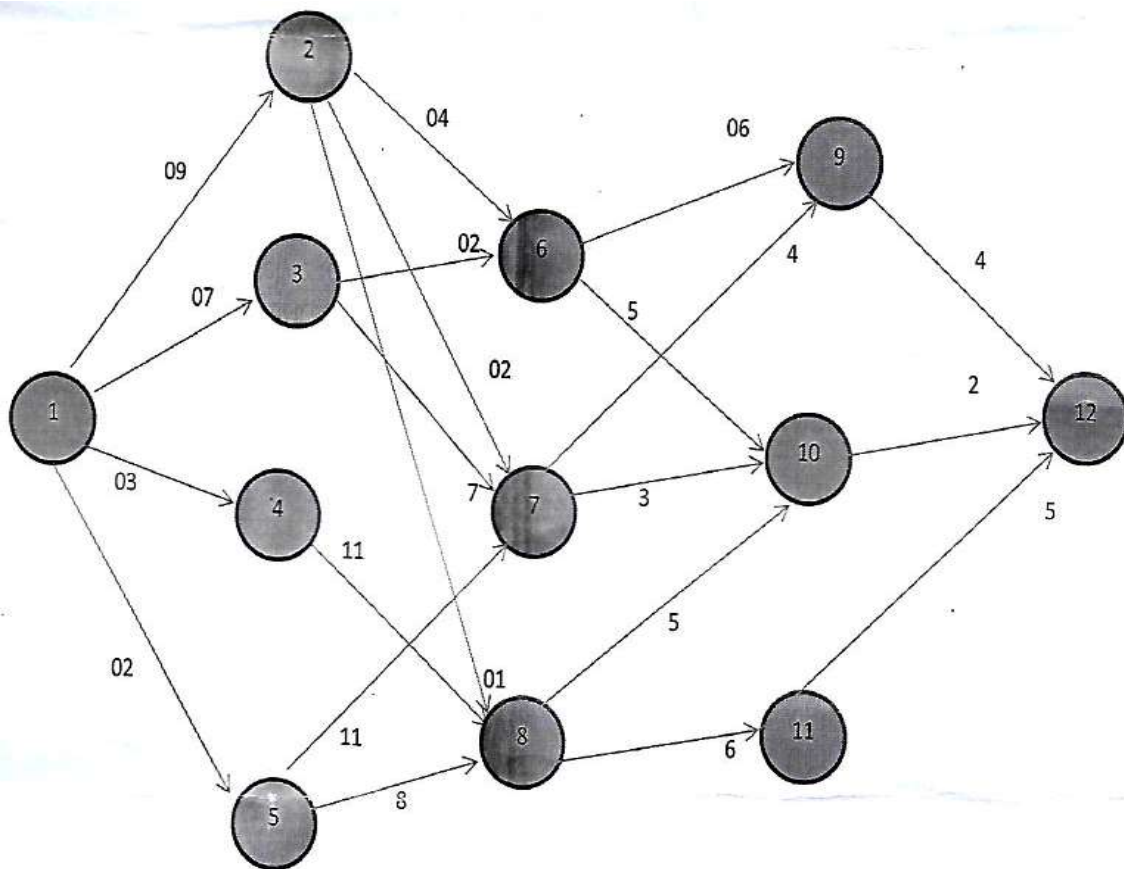
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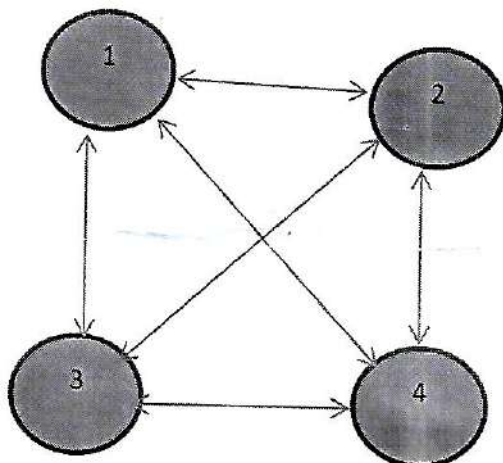
- State and explain Graph coloring problem.
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Q.6 Solve any one.

Find minimum cost path from s to t multistage graph using forward approach.

**OR**

Given $W[1:6]=\{5,10,12,13,15,18\}$, $m=30$ and $n=6$. Find all possible subsets of w that sum to m . draw the portion of the state space tree that is generated.

Q.7 Consider the following directed graph and edge length are given by matrix. Find optimal tour length of travelling sales person problem.

0	10	15	20
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6	13	0	12
8	8	9	0

Seat No.	
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Day & Date: Friday, 13-12-2019
Time: 02:30 PM To 05:30 PM

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

Marks: 14

- 1) Using Greedy method, an object i is placed into the knapsack, the value of solution sector X_i .

- Page 11 of 20

- 8) Graph coloring problem is which type of algorithm design strategy _____.
 a) Dynamic Programming b) Greedy Method
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- 9) Travelling sales man problem belongs to which of the class?
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- 12) What is the time complexity for following pseudocode _____.
 Algorithm Sum($n, A[]$)
 {
 $S := 0$;
 for $i:1$ to n do
 $S := S + A[i]$;
 return (S);
 }
 a) $2n+3$ b) $2n+2$
 c) $2n+1$ d) None
- 13) Recurrence relations for binary search using divide and conquer is _____.
 a) $T(n) = T(n/2) + b$, b is a constant b) $T(n) = 2T(n/2) + b$, b is a constant
 c) $T(n) = T(n/2) + \log n$ d) $T(n) = T(n/2) + n$
- 14) The Time complexity of finding max and min element if $n=2$, using divide and conquer method _____.
 a) $T(n) = 2T(n/2) + 2$ b) $T(n) = 2$
 c) $T(n) = 1$ d) $T(n) = 0$

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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019

Time: 02:30 PM To 05:30 PM

Max. Marks: 56

Instructions: 1) All question are compulsory.
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Section – I**Q.2 Solve any three questions****12**

- Explain Big Oh and Big Omega with the help of example.
- Find time complexity using steps count method for following code.

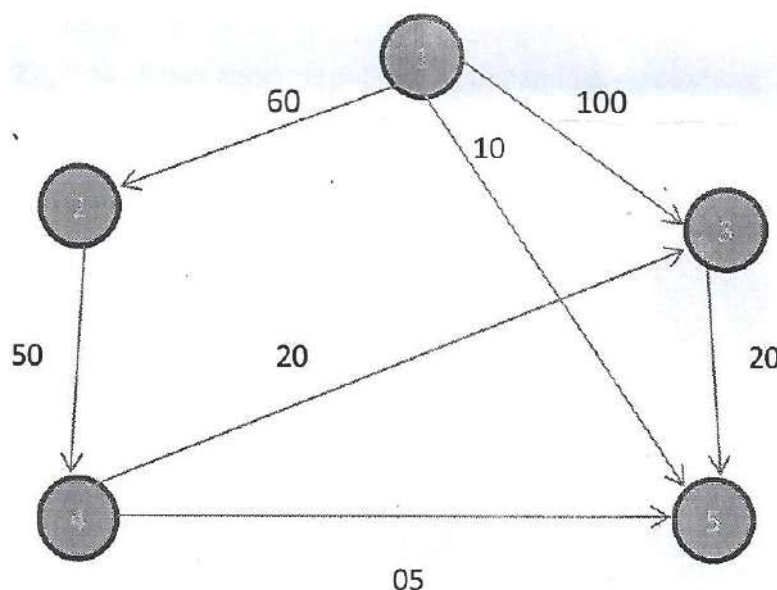
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for (i=0;i<n;i++)
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- Prove that time complexity of merge sort is $O(n \log n)$.
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 $M=60, n=5$
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Q.3 Solve any one**08**

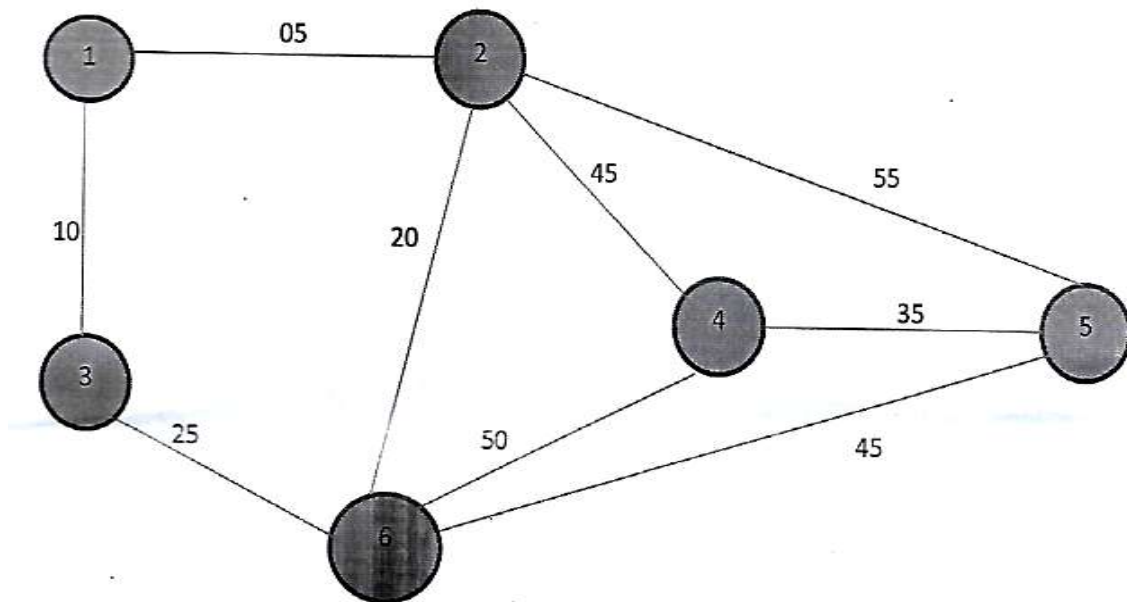
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OR

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Q.4 Find minimum weight /cost spanning tree using prim's algorithm.



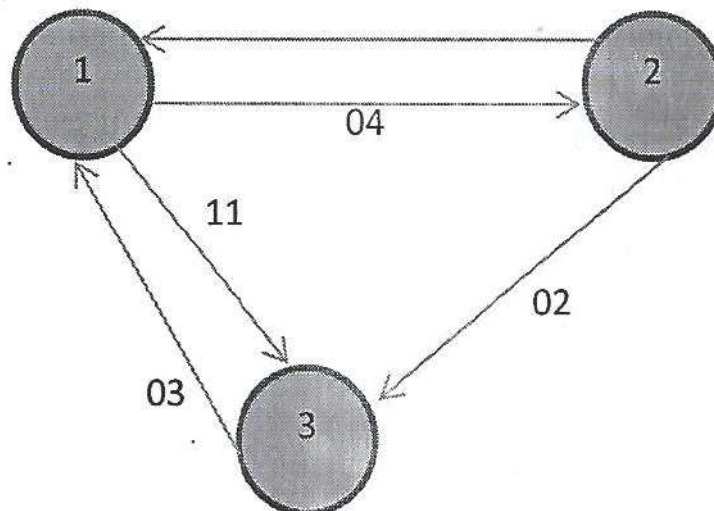
Section – II

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- Solve 0/1 Knapsack problem using dynamic programming.
M=8, n=4 profit={1,2,5,6} and weight={2,3,4,5}
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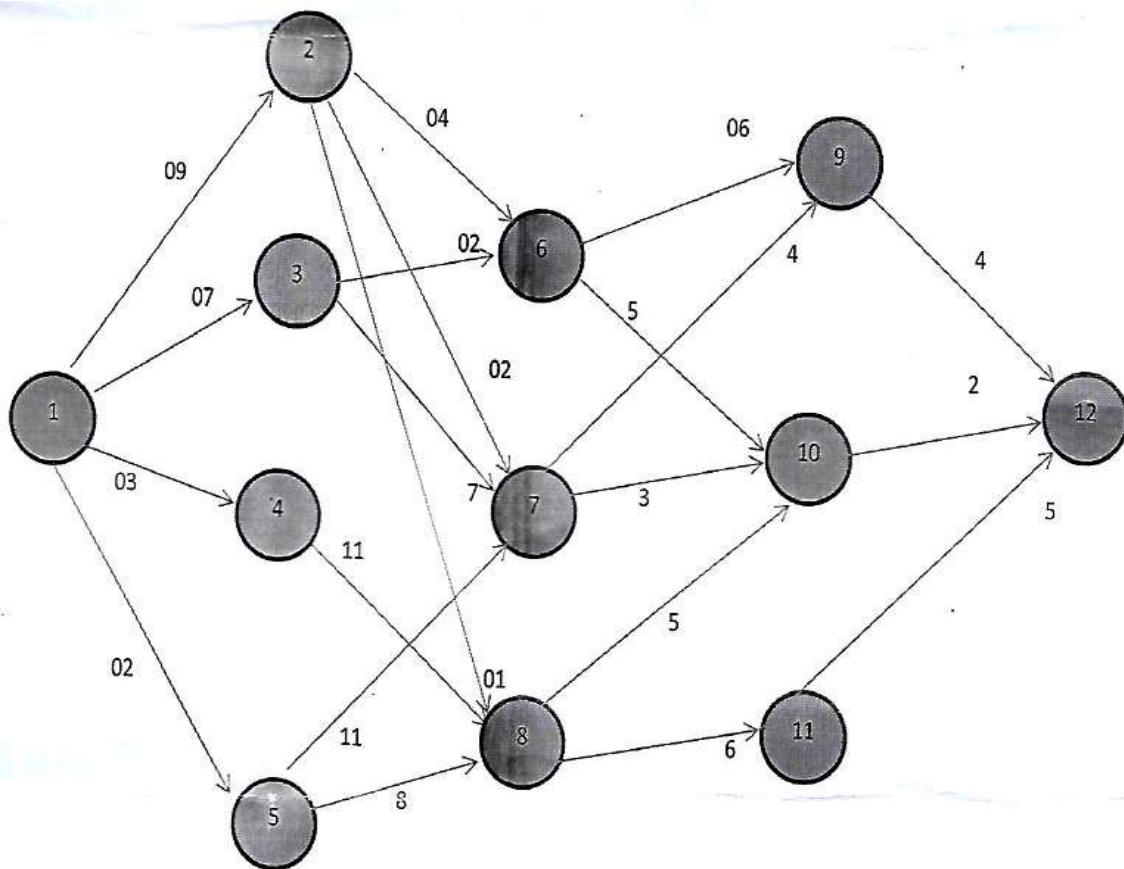
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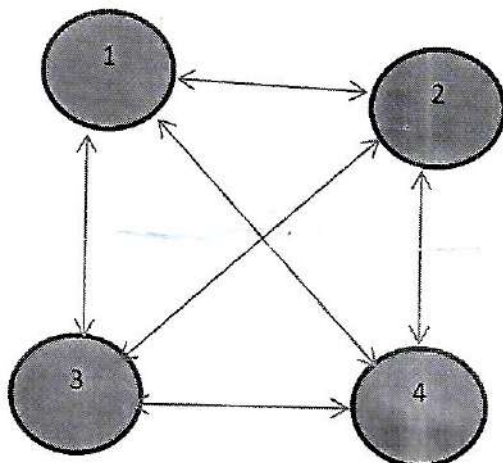
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0	10	15	20
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q.No.1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) In dynamic programming 0/1 knapsack problem Purging/Dominance rule contains two pairs (P_j, W_j) and (P_k, W_k) then pair (P_j, W_k) can be discarded, iff _____.
 a) $P_j \leq P_k$ and $W_j \geq W_k$ b) $P_j \geq P_k$ and $W_j \leq W_k$
 c) $P_j \leq W_j$ and $P_k \geq W_k$ d) $P_j \geq W_j$ and $P_k \leq W_k$
- 2) In $N \times N$ Queens's problems, the constraints are "No Two queens are placed" at _____.
 a) Same row b) Same column
 c) Same diagonal d) All of the above
- 3) Graph coloring problem is which type of algorithm design strategy _____.
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- a) $T(n)=2T(n/2)+2$ b) $T(n)=2$
 c) $T(n)=1$ d) $T(n)=0$
- 10) Using Greedy method, an object i is placed into the knapsack, the value of solution sector X_i .
- a) 0 or 1 b) $0 \leq x_i \leq 1$
 c) 0 and 1 d) None
- 11) While solving job sequencing problem using greedy method, requirement is _____.
- a) Jobs should be arranged in ascending order of deadlines.
 b) Jobs should be arranged in descending order of deadlines.
 c) Jobs should be arranged in ascending order of profits
 d) Jobs should be arranged in descending order of profits
- 12) In an optimal storage on tape problem if $(l_1, l_2, l_3) = (5, 10, 3)$ then the optimal ordering of program is _____.
- a) 1,2,3 b) 1,3,2
 c) 3,1,2 d) 3,2,1
- 13) The correct matching for the following pairs is _____.
- | | |
|----------------------|------------------------|
| A. Multistage graph | 1. Greedy Method |
| B. Kruskal Algorithm | 2. Dynamic Programming |
| C. Merge Sort | 3. Backtracking |
| D. Hamilton Cycle | 4. Divide and Conquer |
- a) A-3,B-2,C-4,D-1 b) A-4,B-3,C-1,D-2
 c) A-2,B-1,C-4,D-3 d) None
- 14) In flow shop scheduling OFT stands for _____.
- a) Optimal Find Time b) Organized Finish Time
 c) Optimal Finish Time d) None

Seat
No.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019

Time: 02:30 PM To 05:30 PM

Max. Marks: 56

Instructions: 1) All question are compulsory.
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Section – I**Q.2 Solve any three questions****12**

- Explain Big Oh and Big Omega with the help of example.
- Find time complexity using steps count method for following code.

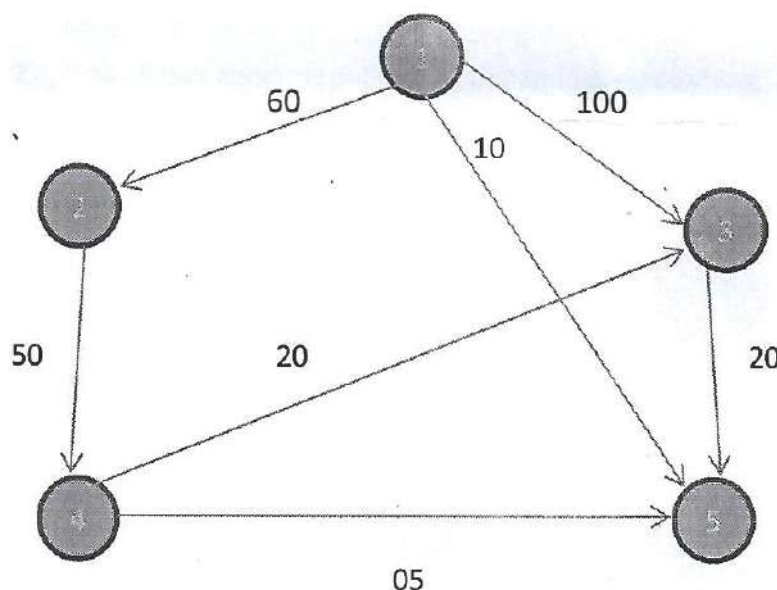
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- Prove that time complexity of merge sort is $O(n \log n)$.
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 $(p_1, \dots, p_5) = \{30, 20, 100, 90, 160\}$ and $(w_1, \dots, w_5) = \{5, 10, 20, 30, 40\}$

Q.3 Solve any one**08**

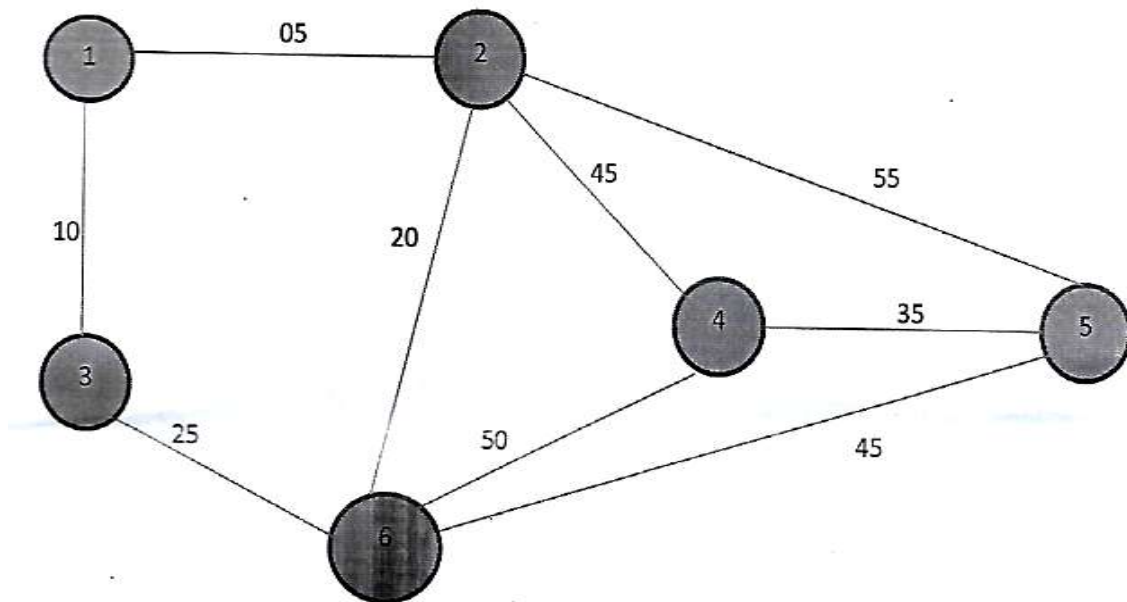
Write an algorithm based on divide and conquer methodology to find Max and Min element. Simulate the algorithm on the following nine elements.
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OR

Find the single source shortest path of following graph. Take vertex 1 as vertex.



Q.4 Find minimum weight /cost spanning tree using prim's algorithm.



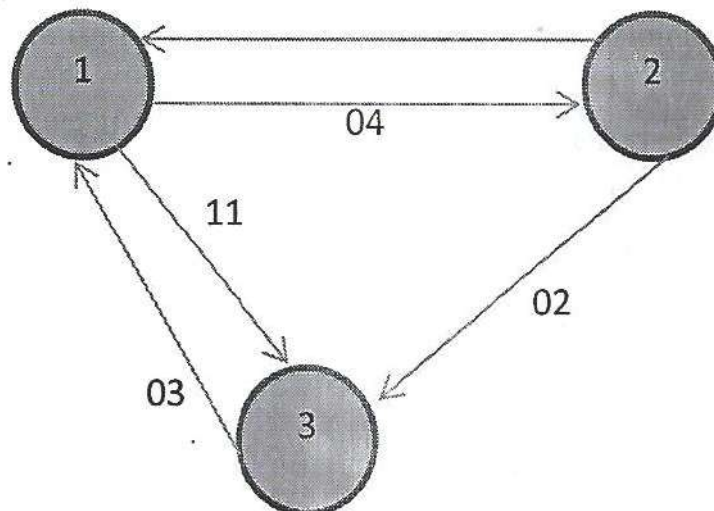
Section – II

Q.5 Solve any three questions.

12

- Solve 0/1 Knapsack problem using dynamic programming.
M=8, n=4 profit={1,2,5,6} and weight={2,3,4,5}
- Find all pair shortest path using dynamic programming.

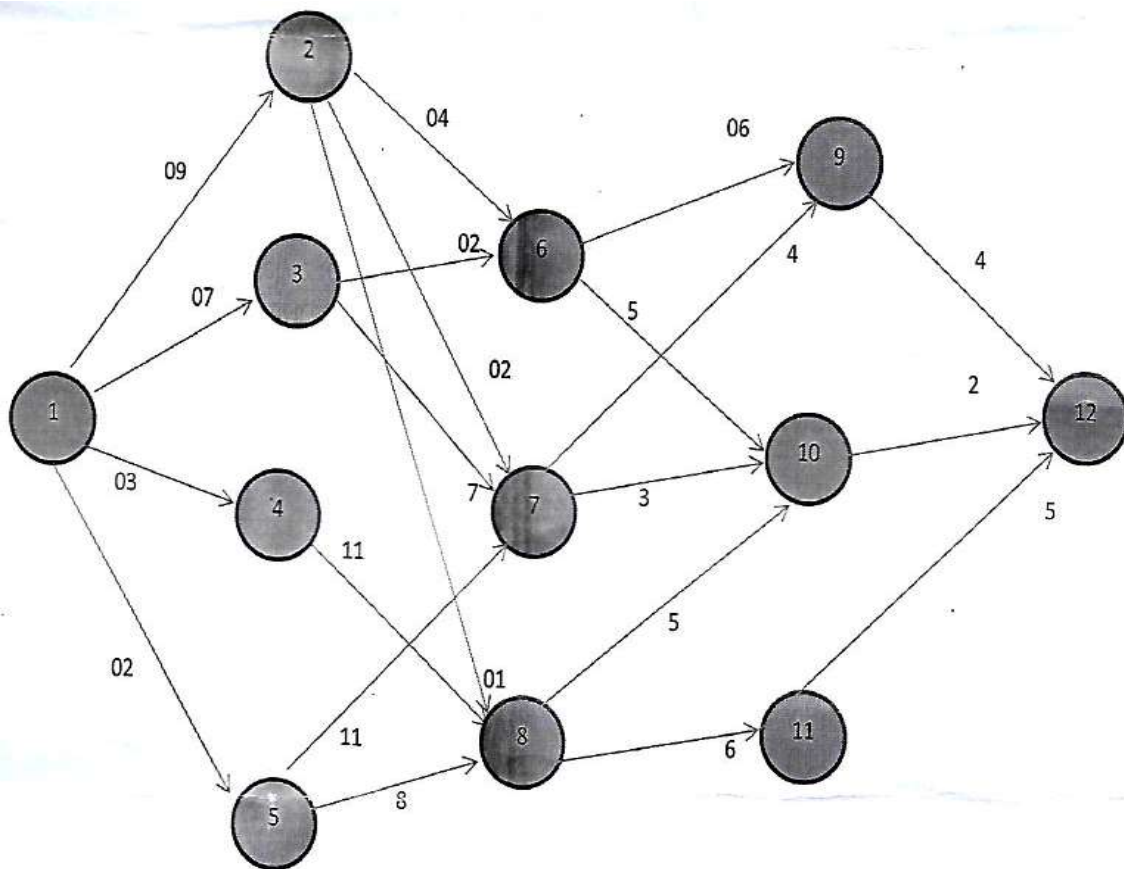
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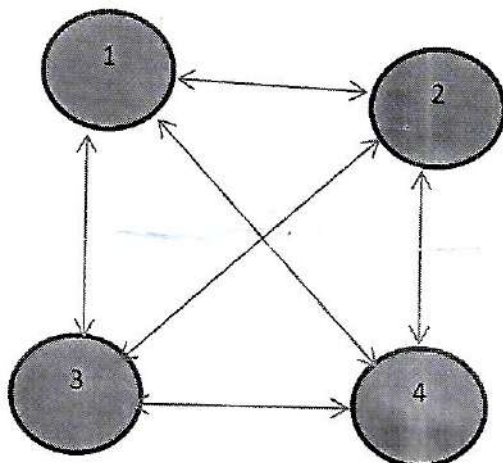
- State and explain Graph coloring problem.
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Q.7 Consider the following directed graph and edge length are given by matrix. Find optimal tour length of travelling sales person problem.

0	10	15	20
5	0	9	10
6	13	0	12
8	8	9	0

Seat No.	
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Seat No.	
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Set**P**

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Day & Date: Monday, 16-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three** **12**
- a) Explain functional units of computer.
 - b) Explain machine instruction format for assembly language instruction.
 - c) Explain half adder circuit.
 - d) Write note on SRAM & DRAM.
 - e) What is Instruction? Explain any two types of instruction.
- Q.3 Attempt any two.** **16**
- a) Explain with example IEEE floating point Standard.
 - b) $x = axb + cxc$ solve this equation by zero, one, two, three address instruction processor.
 - c) Enlist different memory mapping functions. Explain any one with neat diagram.

Section – II

- Q.4 Attempt any three** **12**
- a) Draw and explain the detailed hardwired control organization.
 - b) Define and explain interrupt with example.
 - c) Explain stages in pipelining.
 - d) List out the types of multiprocessor and explain any one.
 - e) Write a short note on I/O Channels.
- Q.5 Attempt any two.** **16**
- a) Define hazard in pipelining & Explain its types.
 - b) Explain programmed control IO with examples.
 - c) Draw and explain multiplier control unit.

Seat No.	
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Day & Date: Monday, 16-12-2019
Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary.

Duration: 30 Minutes

Marks: 14

14

- Page 4 of 12

- 9) The generation based on VLSI microprocessor _____.
 - a) 1st
 - b) 2nd
 - c) 3rd
 - d) 4th
- 10) Which of the following is not a weighted code?
 - a) Decimal Number system
 - b) Excess 3-cod
 - c) Binary number System
 - d) None of these
- 11) The idea of cache memory is based _____.
 - a) on the property of locality of reference
 - b) on the heuristic 90-10 rule
 - c) on the fact that references generally tend to cluster
 - d) all of the above
- 12) Von Neumann architecture is _____.
 - a) SISD
 - b) SIMD
 - c) MIMD
 - d) MISD
- 13) Generally Dynamic RAM is used as main memory in a computer system as it _____.
 - a) consumes less power
 - b) has higher speed
 - c) has lower cell density
 - d) needs refreshing circuitry
- 14) Virtual memory consists of _____.
 - a) Static RAM
 - b) Dynamic RAM
 - c) Magnetic memory
 - d) None of these

Seat No.	
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Set	Q
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Day & Date: Monday, 16-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

- Instructions:** 1) Answer all the questions from Section-I & Section II.
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Section – I

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- Explain functional units of computer.
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 - $x = axb + cxc$ solve this equation by zero, one, two, three address instruction processor.
 - Enlist different memory mapping functions. Explain any one with neat diagram.

Section – II

- Q.4 Attempt any three. 12**
- Draw and explain the detailed hardwired control organization.
 - Define and explain interrupt with example.
 - Explain stages in pipelining.
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Day & Date: Monday, 16-12-2019
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Marks: 14

14

- Page 7 of 12

- 9) In DMA transfers, the required signals and addresses are given by the _____.
 - a) Processor
 - b) Device drivers
 - c) DMA controllers
 - d) The program itself
- 10) The instructions which copy information from one location to another either in the processor's internal register set or in the external main memory are called _____.
 - a) Data transfer instructions
 - b) Program control instructions
 - c) Input-output instructions
 - d) Logical instructions
- 11) A term in computer terminology is a change in technology a computer is/was being used _____.
 - a) development
 - b) generation
 - c) advancement
 - d) growth
- 12) The generation based on VLSI microprocessor _____.
 - a) 1st
 - b) 2nd
 - c) 3rd
 - d) 4th
- 13) Which of the following is not a weighted code?
 - a) Decimal Number system
 - b) Excess 3-cod
 - c) Binary number System
 - d) None of these
- 14) The idea of cache memory is based _____.
 - a) on the property of locality of reference
 - b) on the heuristic 90-10 rule
 - c) on the fact that references generally tend to cluster
 - d) all of the above

Seat No.	
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Set	R
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Day & Date: Monday, 16-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three.** **12**
- a) Explain functional units of computer.
 - b) Explain machine instruction format for assembly language instruction.
 - c) Explain half adder circuit.
 - d) Write note on SRAM & DRAM.
 - e) What is Instruction? Explain any two types of instruction.
- Q.3 Attempt any two.** **16**
- a) Explain with example IEEE floating point Standard.
 - b) $x = axb + cxc$ solve this equation by zero, one, two, three address instruction processor.
 - c) Enlist different memory mapping functions. Explain any one with neat diagram.

Section – II

- Q.4 Attempt any three.** **12**
- a) Draw and explain the detailed hardwired control organization.
 - b) Define and explain interrupt with example.
 - c) Explain stages in pipelining.
 - d) List out the types of multiprocessor and explain any one.
 - e) Write a short note on I/O Channels.
- Q.5 Attempt any two.** **16**
- a) Define hazard in pipelining & Explain its types.
 - b) Explain programmed control IO with examples.
 - c) Draw and explain multiplier control unit.

T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Max. Marks: 70

2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary.

Marks: 14

14

- Page 10 of 12

- 9) The idea of cache memory is based _____.
 - a) on the property of locality of reference
 - b) on the heuristic 90-10 rule
 - c) on the fact that references generally tend to cluster
 - d) all of the above
- 10) Von Neumann architecture is _____.
 - a) SISD
 - b) SIMD
 - c) MIMD
 - d) MISD
- 11) Generally Dynamic RAM is used as main memory in a computer system as it _____.
 - a) consumes less power
 - b) has higher speed
 - c) has lower cell density
 - d) needs refreshing circuitry
- 12) Virtual memory consists of _____.
 - a) Static RAM
 - b) Dynamic RAM
 - c) Magnetic memory
 - d) None of these
- 13) A floating point number that has a 0 in the MSB of mantissa is said to have _____.
 - a) Overflow
 - b) Underflow
 - c) Important number
 - d) Undefined
- 14) An instruction pipeline can be implemented by means of _____.
 - a) LIFO buffer
 - b) FIFO buffer
 - c) Stack
 - d) None of the above

Seat No.	
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Set	S
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T.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Day & Date: Monday, 16-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three** **12**
- a) Explain functional units of computer.
 - b) Explain machine instruction format for assembly language instruction.
 - c) Explain half adder circuit.
 - d) Write note on SRAM & DRAM.
 - e) What is Instruction? Explain any two types of instruction.
- Q.3 Attempt any two.** **16**
- a) Explain with example IEEE floating point Standard.
 - b) $x = axb + cxc$ solve this equation by zero, one, two, three address instruction processor.
 - c) Enlist different memory mapping functions. Explain any one with neat diagram.

Section – II

- Q.4 Attempt any three** **12**
- a) Draw and explain the detailed hardwired control organization.
 - b) Define and explain interrupt with example.
 - c) Explain stages in pipelining.
 - d) List out the types of multiprocessor and explain any one.
 - e) Write a short note on I/O Channels.
- Q.5 Attempt any two.** **16**
- a) Define hazard in pipelining & Explain its types.
 - b) Explain programmed control IO with examples.
 - c) Draw and explain multiplier control unit.

**Seat
No.**

Max. Marks: 70

Marks: 14

14

- 9) For deciding the evaluation order from dependency graph _____ is used.
- a) Topological sort
 - b) Quick sort
 - c) Bubble sort
 - d) Heap sort
- 10) The graph that shows basic blocks and their successor relationship is called as _____.
- a) DAG
 - b) Flow graph
 - c) Control graph
 - d) Hamiltonian graph
- 11) Which of the following is method of top-down parser?
- a) LL(1) parsing
 - b) Recursive descent parsing
 - c) both a and b
 - d) None of these
- 12) Which among following is kernel item in LR parser item set _____.
- a) $E \rightarrow E + T.$
 - b) $S1 \rightarrow .S$
 - c) $E \rightarrow E. +T$
 - d) All of these
- 13) Use of control stack is for _____.
- a) Use track of executed procedures
 - b) Keep track of live procedure activations
 - c) Both a and b
 - d) None of these
- 14) Which of the following is not addressing mode?
- a) Register
 - b) Absolute
 - c) Indirect absolute
 - d) Indirect indexed

Seat No.	
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Friday, 22-11-2019

Max. Marks: 56

Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2 Answer any three: **12**

- Explain the language processing system with diagram.
- Write the algorithm for simulating a DFA and explain with example.
- Explain with example S-Attributed definition.
- Explain recursive descent parsing with example.

Q.3 Answer any one: **08**

- Explain specification and recognition of tokens.
- Write the procedure to compute FIRST and FOLLOW set. Find the FIRST and FOLLOW for the following grammar:
 $E \rightarrow TE'$, $E' \rightarrow +TE' \mid e$, $T' \rightarrow FT'$, $T' \rightarrow *FT' \mid e$, $F \rightarrow (E) \mid Id$,
 Where e stands for epsilon.

Q.4 Explain in detail the SLR parser with suitable example. **08**

Section – II

Q.5 Answer any three: **12**

- What is the Activation tree? Explain it with example.
- Explain quadruple, triple and indirect triple with example.
- Explain next-use information with example.
- Explain issue in design of code generator.

Q.6 Attempt any one: **08**

- Explain in detail the function preserving transformations.
- What is back patching? Explain back patching for Boolean expression.

Q.7 Write the partitioning algorithm for the basic blocks. Apply this algorithm for the fragment of source code shown below to create basic blocks: **08**

```

begin
    prod := 0;
    i := 1;
    do begin
        prod := prod + a[i] * b[i];
        i := i+1;
    end
    while i <= 20
end
  
```

Seat No.	
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Day & Date: Friday, 22-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct option:

14

- 1) A pictorial representation of the value computed by each statement in the basic block is _____.
a) Tree
b) DAG
c) Graph
d) None of these
- 2) For deciding the evaluation order from dependency graph _____ is used.
a) Topological sort
b) Quick sort
c) Bubble sort
d) Heap sort
- 3) The graph that shows basic blocks and their successor relationship is called as _____.
a) DAG
b) Flow graph
c) Control graph
d) Hamiltonian graph
- 4) Which of the following is method of top-down parser?
a) LL(1) parsing
b) Recursive descent parsing
c) both a and b
d) None of these
- 5) Which among following is kernel item in LR parser item set _____.
a) $E \rightarrow E + T$
b) $S1 \rightarrow S$
c) $E \rightarrow E. + T$
d) All of these
- 6) Use of control stack is for _____.
a) Use track of executed procedures
b) Keep track of live procedure activations
c) Both a and b
d) None of these
- 7) Which of the following is not addressing mode?
a) Register
b) Absolute
c) Indirect absolute
d) Indirect indexed
- 8) Syntax checking of statement is the task of _____.
a) Lexical analyzer
b) Parser
c) Semantic analyzer
d) None of these
- 9) Which of the following is used for grouping characters into tokens?
a) The lexical analyzer
b) Syntax analyzer
c) The code optimizer
d) The code generator

- 10) Three address code involves _____.
 a) Exactly three address b) At least three address
 c) No unary operators d) None of these
- 11) Given the Grammar:
 $E \rightarrow TE1$
 $E1 \rightarrow +TE1 \mid \epsilon$
 $T \rightarrow FT1$
 $T1 \rightarrow *FT1 \mid \epsilon$
 $F \rightarrow (E) \mid id$ What is Follow (F)?
 a) $\{ +, \epsilon \}$ b) $\{ +,), \$ \}$
 c) $\{ (, id \}$ d) $\{ +, *,), \$ \}$
- 12) In operator precedence parsing, precedence relations are defined _____.
 a) For all pair of non-terminals
 b) For all pair of terminals
 c) To delimit the handle
 d) Only for certain pair of terminals
- 13) YAAC builds up _____.
 a) SLR parsing table b) Canonical LR parsing table
 c) LALR parsing table d) None of these
- 14) Type checking is normally done during _____.
 a) Lexical analysis b) Syntax analysis
 c) Syntax directed translation d) Code optimization

Seat No.	
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Friday, 22-11-2019

Max. Marks: 56

Time: 10:00 AM To 01:00 PM

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

Section – I

Q.2 Answer any three: **12**

- Explain the language processing system with diagram.
- Write the algorithm for simulating a DFA and explain with example.
- Explain with example S-Attributed definition.
- Explain recursive descent parsing with example.

Q.3 Answer any one: **08**

- Explain specification and recognition of tokens.
- Write the procedure to compute FIRST and FOLLOW set. Find the FIRST and FOLLOW for the following grammar:

$$E \rightarrow TE', \quad E' \rightarrow +TE' \mid e, \quad T' \rightarrow FT', \quad T' \rightarrow *FT' \mid e, \quad F \rightarrow (E) \mid Id,$$
 Where e stands for epsilon.

Q.4 Explain in detail the SLR parser with suitable example. **08**

Section – II

Q.5 Answer any three: **12**

- What is the Activation tree? Explain it with example.
- Explain quadruple, triple and indirect triple with example.
- Explain next-use information with example.
- Explain issue in design of code generator.

Q.6 Attempt any one: **08**

- Explain in detail the function preserving transformations.
- What is back patching? Explain back patching for Boolean expression.

Q.7 Write the partitioning algorithm for the basic blocks. Apply this algorithm for the fragment of source code shown below to create basic blocks: **08**

```

begin
    prod := 0;
    i := 1;
    do begin
        prod := prod + a[i] * b[i];
        i := i+1;
    end
    while i <= 20
end
  
```


Seat No.	
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Set	R
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Friday, 22-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 2) Assume suitable data if necessary.
 3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct option:

14

- 1) In operator precedence parsing, precedence relations are defined _____.
 a) For all pair of non-terminals
 b) For all pair of terminals
 c) To delimit the handle
 d) Only for certain pair of terminals
- 2) YAAC builds up _____.
 a) SLR parsing table
 b) Canonical LR parsing table
 c) LALR parsing table
 d) None of these
- 3) Type checking is normally done during _____.
 a) Lexical analysis
 b) Syntax analysis
 c) Syntax directed translation
 d) Code optimization
- 4) A pictorial representation of the value computed by each statement in the basic block is _____.
 a) Tree
 b) DAG
 c) Graph
 d) None of these
- 5) For deciding the evaluation order from dependency graph _____ is used.
 a) Topological sort
 b) Quick sort
 c) Bubble sort
 d) Heap sort
- 6) The graph that shows basic blocks and their successor relationship is called as _____.
 a) DAG
 b) Flow graph
 c) Control graph
 d) Hamiltonian graph
- 7) Which of the following is method of top-down parser?
 a) LL(1) parsing
 b) Recursive descent parsing
 c) both a and b
 d) None of these
- 8) Which among following is kernel item in LR parser item set _____.
 a) $E \rightarrow E + T$
 b) $S1 \rightarrow .S$
 c) $E \rightarrow E . + T$
 d) All of these

- 9) Use of control stack is for _____.
 a) Use track of executed procedures
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 c) Both a and b
 d) None of these
- 10) Which of the following is not addressing mode?
 a) Register
 b) Absolute
 c) Indirect absolute
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- 11) Syntax checking of statement is the task of _____.
 a) Lexical analyzer
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 c) Semantic analyzer
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- 12) Which of the following is used for grouping characters into tokens?
 a) The lexical analyzer
 b) Syntax analyzer
 c) The code optimizer
 d) The code generator
- 13) Three address code involves _____.
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 b) At least three address
 c) No unary operators
 d) None of these
- 14) Given the Grammar:
 $E \rightarrow TE1$
 $E1 \rightarrow +TE1 \mid \epsilon$
 $T \rightarrow FT1$
 $T1 \rightarrow *FT1 \mid \epsilon$
 $F \rightarrow (E) \mid id$
- What is Follow (F)?
- a) $\{ +, \epsilon \}$
 b) $\{ +,), \$ \}$
 c) $\{ (, id \}$
 d) $\{ +, *,), \$ \}$

Seat No.	
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Friday, 22-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

Q.2 Answer any three: **12**

- Explain the language processing system with diagram.
- Write the algorithm for simulating a DFA and explain with example.
- Explain with example S-Attributed definition.
- Explain recursive descent parsing with example.

Q.3 Answer any one: **08**

- Explain specification and recognition of tokens.
- Write the procedure to compute FIRST and FOLLOW set. Find the FIRST and FOLLOW for the following grammar:

$$E \rightarrow TE', \quad E' \rightarrow +TE' \mid e, \quad T' \rightarrow FT', \quad T' \rightarrow *FT' \mid e, \quad F \rightarrow (E) \mid Id,$$
 Where e stands for epsilon.

Q.4 Explain in detail the SLR parser with suitable example. **08**

Section – II

Q.5 Answer any three: **12**

- What is the Activation tree? Explain it with example.
- Explain quadruple, triple and indirect triple with example.
- Explain next-use information with example.
- Explain issue in design of code generator.

Q.6 Attempt any one: **08**

- Explain in detail the function preserving transformations.
- What is back patching? Explain back patching for Boolean expression.

Q.7 Write the partitioning algorithm for the basic blocks. Apply this algorithm for the fragment of source code shown below to create basic blocks: **08**

```
begin
  prod := 0;
  i:= 1;
  do begin
    prod := prod + a[i] * b[i];
    i := i+1;
  end
  while i<= 20
end
```

Seat No.	
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- 9) Given the Grammar:
 $E \rightarrow TE1$
 $E1 \rightarrow +TE1 \mid \epsilon$
 $T \rightarrow FT1$
 $T1 \rightarrow *FT1 \mid \epsilon$
 $F \rightarrow (E) \mid id$ What is Follow (F)?
- a) $\{ +, \epsilon \}$ b) $\{ +,), \$ \}$
c) $\{ (, id \}$ d) $\{ +, *,), \$ \}$
- 10) In operator precedence parsing, precedence relations are defined _____.
a) For all pair of non-terminals
b) For all pair of terminals
c) To delimit the handle
d) Only for certain pair of terminals
- 11) YAAC builds up _____.
a) SLR parsing table b) Canonical LR parsing table
c) LALR parsing table d) None of these
- 12) Type checking is normally done during _____.
a) Lexical analysis b) Syntax analysis
c) Syntax directed translation d) Code optimization
- 13) A pictorial representation of the value computed by each statement in the basic block is _____.
a) Tree b) DAG
c) Graph d) None of these
- 14) For deciding the evaluation order from dependency graph _____ is used.
a) Topological sort b) Quick sort
c) Bubble sort d) Heap sort

Seat No.	
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Set	S
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Friday, 22-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

Q.2 Answer any three: **12**

- Explain the language processing system with diagram.
- Write the algorithm for simulating a DFA and explain with example.
- Explain with example S-Attributed definition.
- Explain recursive descent parsing with example.

Q.3 Answer any one: **08**

- Explain specification and recognition of tokens.
- Write the procedure to compute FIRST and FOLLOW set. Find the FIRST and FOLLOW for the following grammar:
 $E \rightarrow TE'$, $E' \rightarrow +TE' \mid e$, $T' \rightarrow FT'$, $T' \rightarrow *FT' \mid e$, $F \rightarrow (E) \mid Id$,
 Where e stands for epsilon.

Q.4 Explain in detail the SLR parser with suitable example. **08**

Section – II

Q.5 Answer any three: **12**

- What is the Activation tree? Explain it with example.
- Explain quadruple, triple and indirect triple with example.
- Explain next-use information with example.
- Explain issue in design of code generator.

Q.6 Attempt any one: **08**

- Explain in detail the function preserving transformations.
- What is back patching? Explain back patching for Boolean expression.

Q.7 Write the partitioning algorithm for the basic blocks. Apply this algorithm for the fragment of source code shown below to create basic blocks: **08**

```
begin
  prod := 0;
  i := 1;
  do begin
    prod := prod + a[i] * b[i];
    i := i+1;
  end
  while i <= 20
end
```

Seat No.	
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- 10) A kernel attaches a new region using _____.
 - a) Allocreg
 - b) Dupreg
 - c) Attachreg
 - d) all of these
- 11) When a process accesses a page that is not part of its working set, it incurs _____ page fault.
 - a) Validity
 - b) Invalid
 - c) Modification
 - d) Recent
- 12) The memory management hardware divides physical memory into set of equal sized blocks called _____.
 - a) Region
 - b) Pregion
 - c) Pages
 - d) Segments
- 13) _____ translates a file system address, consisting of a logical device number and block number, to a particular sector on a disk.
 - a) Stream
 - b) Disk driver
 - c) Strategy interface
 - d) Kernel
- 14) Consider the following statements:
S1: process in kernel mode can only access U-area
S2: Process in user mode can access u-area
S3: Process in Kernel mode can access user data structures as well as kernel data structures
 - a) All are true
 - b) Only S1 & S2 is true
 - c) Only S3 is true
 - d) Both S1 & S3 false

Seat No.	
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Set	P
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
UNIX OPERATING SYSTEM

Day & Date: Saturday, 23-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Solve any three.** **12**
- a) Draw & explain data structures of kernel related to file system and process subsystem.
 - b) Explain dup() system call.
 - c) Explain super block in detail.
 - d) Explain dupreg() system call in detail.
 - d) Describe the actions taken by Kernel while allocating a buffer for a disk block, when the kernel can not find the block on the hash queue and free list of buffers is empty.
- Q.3 Solve any two.** **16**
- a) Draw and Explain Structure of Buffer Pool system.
 - b) List scenarios for retrieval of buffers. Draw & Explain first two scenario in detail.
 - c) Write and explain ialloc algorithm in detail.
 - d) Write algorithm to read the buffer contents.

Section – II

- Q.4 Write short note on any three of the following.** **12**
- a) Swapping process out
 - b) Detachreg
 - c) Clists
 - d) Wait system call
 - e) The shell
- Q.5 Solve any two.** **16**
- a) Explain Demand Paging system.
 - b) With a neat figure explain process state transition diagram.
 - c) What is context of process? Explain different types of context of process with the help of diagram.
 - d) Explain Swapping system.

**Seat
No.**

Max. Marks: 70

2) Figures to the right indicate full marks.

Marks: 14

a) First Scenario b) Second Scenario
c) Fifth Scenario d) Fourth Scenario

- 9) H/W control is placed in _____.
 - a) User level
 - b) Kernel level
 - c) H/W level
 - d) None of above
- 10) In case of _____ algo. kernel raises processor execution level.
 - a) Brelse
 - b) bread
 - c) Bwrite
 - d) none of above
- 11) The kernel uses _____ algorithm to free a disk Inode.
 - a) Ifree
 - b) dealloc
 - c) Free
 - d) namei
- 12) Which process is called **init** process?
 - a) Process 0
 - b) Process 1
 - c) User Process
 - d) Swapper Process
- 13) Identify the correct sequence of interrupt levels according to increasing priority.
 - a) machine error, clock, disk, network devices, terminal, s/w interrupts
 - b) s/w interrupts, terminal, network devices, disk, clock, machine error
 - c) machine errors, network devices, terminal, s/w interrupts, clock, disk
 - d) network devices, s/w interrupts, disk, clock, machine error, terminal
- 14) _____ symbol is used to redirect standard output to a file.
 - a) >
 - b) <
 - c) |
 - d) 2>

Seat No.	
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Set	Q
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
UNIX OPERATING SYSTEM

Day & Date: Saturday, 23-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Solve any three.** **12**
- a) Draw & explain data structures of kernel related to file system and process subsystem.
 - b) Explain dup() system call.
 - c) Explain super block in detail.
 - d) Explain dupreg() system call in detail.
 - d) Describe the actions taken by Kernel while allocating a buffer for a disk block, when the kernel can not find the block on the hash queue and free list of buffers is empty.
- Q.3 Solve any two.** **16**
- a) Draw and Explain Structure of Buffer Pool system.
 - b) List scenarios for retrieval of buffers. Draw & Explain first two scenario in detail.
 - c) Write and explain ialloc algorithm in detail.
 - d) Write algorithm to read the buffer contents.

Section – II

- Q.4 Write short note on any three of the following.** **12**
- a) Swapping process out
 - b) detachreg
 - c) Clists
 - d) Wait system call
 - e) The shell
- Q.5 Solve any two.** **16**
- a) Explain Demand Paging system.
 - b) With a neat figure explain process state transition diagram.
 - c) What is context of process? Explain different types of context of process with the help of diagram.
 - d) Explain Swapping system.

Seat No.	
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Set	R
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
UNIX OPERATING SYSTEM

Day & Date: Saturday, 23-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Which process is called *init* process?

a) Process 0	b) Process 1
c) User Process	d) Swapper Process
- 2) Identify the correct sequence of interrupt levels according to increasing priority.

a) machine error, clock, disk, network devices, terminal, s/w interrupts
b) s/w interrupts, terminal, network devices, disk, clock, machine error
c) machine errors, network devices, terminal, s/w interrupts, clock, disk
d) network devices, s/w interrupts, disk, clock, machine error, terminal
- 3) _____ symbol is used to redirect standard output to a file.

a) >	b) <
c)	d) 2>
- 4) Which algorithm is used for conversion of byte offset to block number?

a) namei	b) iput
c) bmap	d) iget
- 5) Every file has _____ inodes.

a) One	b) Two
c) More than one	d) None of above
- 6) A kernel attaches a new region using _____.

a) allocreg	b) dupreg
c) attachreg	d) all of these
- 7) When a process accesses a page that is not part of its working set, it incurs _____ page fault.

a) validity	b) invalid
c) modification	d) recent
- 8) The memory management hardware divides physical memory into set of equal sized blocks called _____.

a) Region	b) Pregion
c) Pages	d) Segments

- 9) _____ translates a file system address, consisting of a logical device number and block number, to a particular sector on a disk.
- | | |
|-----------------------|----------------|
| a) Stream | b) Disk driver |
| c) Strategy interface | d) Kernel |
- 10) Consider the following statements:
S1: process in kernel mode can only access U-area
S2: Process in user mode can access u-area
S3: Process in Kernel mode can access user data structures as well as kernel data structures
- | | |
|--------------------|-------------------------|
| a) All are true | b) Only S1 & S2 is true |
| c) Only S3 is true | d) Both S1 & S3 false |
- 11) The Kernel finds the block in the hash queue, but its buffer is currently busy, this statement indicates _____.
- | | |
|-------------------|--------------------|
| a) First Scenario | b) Second Scenario |
| c) Fifth Scenario | d) Fourth Scenario |
- 12) H/W control is placed in _____.
- | | |
|---------------|------------------|
| a) User level | b) Kernel level |
| c) H/W level | d) None of above |
- 13) In case of _____ algo. kernel raises processor execution level.
- | | |
|-----------|------------------|
| a) brelse | b) bread |
| c) bwrite | d) none of above |
- 14) The kernel uses _____ algorithm to free a disk Inode.
- | | |
|----------|------------|
| a) ifree | b) dealloc |
| c) free | d) namei |

Seat No.	
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
UNIX OPERATING SYSTEM

Day & Date: Saturday, 23-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

Q.2 Solve any three. **12**

- a) Draw & explain data structures of kernel related to file system and process subsystem.
- b) Explain dup() system call.
- c) Explain super block in detail.
- d) Explain dupreg() system call in detail.
- d) Describe the actions taken by Kernel while allocating a buffer for a disk block, when the kernel can not find the block on the hash queue and free list of buffers is empty.

Q.3 Solve any two. **16**

- a) Draw and Explain Structure of Buffer Pool system.
- b) List scenarios for retrieval of buffers. Draw & Explain first two scenario in detail.
- c) Write and explain ialloc algorithm in detail.
- d) Write algorithm to read the buffer contents.

Section – II

Q.4 Write short note on any three of the following. **12**

- a) Swapping process out
- b) detachreg
- c) Clists
- d) Wait system call
- e) The shell

Q.5 Solve any two. **16**

- a) Explain Demand Paging system.
- b) With a neat figure explain process state transition diagram.
- c) What is context of process? Explain different types of context of process with the help of diagram.
- d) Explain Swapping system.

Seat No.	
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Day & Date: Saturday, 23-11-2019
Time: 10:00 AM To 01:00 PM

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

Marks: 14

- 1) A kernel attaches a new region using _____.
a) allocreg b) dupreg
c) attachreg d) all of these
- 2) When a process accesses a page that is not part of its working set, it incurs _____ page fault.
a) validity b) invalid
c) modification d) recent
- 3) The memory management hardware divides physical memory into set of equal sized blocks called _____.
a) Region b) Pregion
c) Pages d) Segments
- 4) _____ translates a file system address, consisting of a logical device number and block number, to a particular sector on a disk.
a) Stream b) Disk driver
c) Strategy interface d) Kernel
- 5) Consider the following statements:
S1: process in kernel mode can only access U-area
S2: Process in user mode can access u-area
S3: Process in Kernel mode can access user data structures as well as kernel data structures
a) All are true b) Only S1 & S2 is true
c) Only S3 is true d) Both S1 & S3 false
- 6) The Kernel finds the block in the hash queue, but its buffer is currently busy, this statement indicates _____.
a) First Scenario b) Second Scenario
c) Fifth Scenario d) Fourth Scenario
- 7) H/W control is placed in _____.
a) User level b) Kernel level
c) H/W level d) None of above
- 8) In case of _____ algo. kernel raises processor execution level.
a) Brelse b) bread
c) Bwrite d) none of above

- 9) The kernel uses _____ algorithm to free a disk Inode.
a) Ifree
b) dealloc
c) Free
d) namei
- 10) Which process is called **init** process?
a) Process 0
b) Process 1
c) User Process
d) Swapper Process
- 11) Identify the correct sequence of interrupt levels according to increasing priority.
a) machine error, clock, disk, network devices, terminal, s/w interrupts
b) s/w interrupts, terminal, network devices, disk, clock, machine error
c) machine errors, network devices, terminal, s/w interrupts, clock, disk
d) network devices, s/w interrupts, disk, clock, machine error, terminal
- 12) _____ symbol is used to redirect standard output to a file.
a) >
b) <
c) |
d) 2>
- 13) Which algorithm is used for conversion of byte offset to block number?
a) namei
b) iput
c) bmap
d) iget
- 14) Every file has _____ inodes.
a) One
b) Two
c) More than one
d) None of above

Seat No.	
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
UNIX OPERATING SYSTEM

Day & Date: Saturday, 23-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

Q.2 Solve any three. **12**

- a) Draw & explain data structures of kernel related to file system and process subsystem.
- b) Explain dup() system call.
- c) Explain super block in detail.
- d) Explain dupreg() system call in detail.
- d) Describe the actions taken by Kernel while allocating a buffer for a disk block, when the kernel can not find the block on the hash queue and free list of buffers is empty.

Q.3 Solve any two. **16**

- a) Draw and Explain Structure of Buffer Pool system.
- b) List scenarios for retrieval of buffers. Draw & Explain first two scenario in detail.
- c) Write and explain ialloc algorithm in detail.
- d) Write algorithm to read the buffer contents.

Section – II

Q.4 Write short note on any three of the following. **12**

- a) Swapping process out
- b) detachreg
- c) Clists
- d) Wait system call
- e) The shell

Q.5 Solve any two. **16**

- a) Explain Demand Paging system.
- b) With a neat figure explain process state transition diagram.
- c) What is context of process? Explain different types of context of process with the help of diagram.
- d) Explain Swapping system.

Seat No.	
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Set	P
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T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE COMPUTING

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 10:00 AM To 01:00 PM

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) _____ describes schemes to subdivide the frequency dimension into several non-overlapping frequency bands.

a) SDM	b) TDM
c) PSK	d) FDM
- 2) Pure Aloha _____.

a) does not require global time synchronization
b) does require global time synchronization
c) does divide time into discrete intervals
d) does not divide time into discrete intervals
- 3) Frequency modulation ranges between _____.

a) 5.9 MHz and 26.1 MHz	b) 87.5 MHz and 108 MHz
c) 148.5 kHz and 283.5 kHz	d) 174 and 230 MHz
- 4) The _____ monitors and controls all other network entities via the O interface.

a) OMC	b) EIR
c) OSS	d) GSM
- 5) _____ protocol is used for signalling between MSC and BSC.

a) LAPDm	b) LAPD
c) PCM	d) SS7
- 6) PLCP in IEEE 802.11 stands for _____.

a) Physical Layer Communication protocol
b) Physical Layer Convergence Protocol
c) Primary Layer Communication protocol
d) Primary Layer Convergence protocol
- 7) Algorithm A8 is used for _____.

a) Authentication	b) Encryption
c) Generation of a cipher key	d) Decryption
- 8) GPRS offers a _____ packet transfer service.

a) point-to-point	b) peer-to-peer
c) Data	d) Network

- 9) Reason for handover is _____.
 - a) load balancing
 - b) moves within the range
 - c) traffic in one cell is less
 - d) moves continuously
- 10) MSRN stands for _____.
 - a) Mobile Station roaming number
 - b) Module Station roaming number
 - c) Modern Station roaming number
 - d) Mode Station roaming number
- 11) For agent advertisements _____ protocol is used.
 - a) TCP
 - b) IP
 - c) RFC
 - d) ICMP
- 12) A _____ is an end-system or router that can change its point of attachment to the internet using mobile IP.
 - a) Mobile node
 - b) Foreign agent
 - c) Home agent
 - d) Care-of address
- 13) The _____ approach assumes a relatively low bit error rate on the wireless network.
 - a) Indirect TCP
 - b) snooping TCP
 - c) Mobile TCP
 - d) A-TCP
- 14) The _____ is responsible for changing data between both parts similar to the proxy in I-TCP
 - a) minimum host
 - b) mobile host
 - c) supervisory host
 - d) peer host

Seat No.	
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T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE COMPUTING

Day & Date: Monday, 25-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three of the following questions. 12**
- Explain with example Packet Reservation Multiple Access.
 - What is Antenna? Draw & Explain Radiation pattern of Directed Antenna.
 - What is Hidden Terminal Problem? Explain why this problem cannot be solved by traditional MAC protocol.
 - Draw & Explain Mobile Terminated Call.
 - How the A3 algorithm is used in subscriber authentication in GSM.
- Q.3 Attempt any one of the following questions. 08**
- What is Modulation? Explain with neat Diagram Digital Modulation & Analog Modulation.
 - Which technique is used to spread the narrowband data into broadband data with the help of chipping sequence? Explain its Transmitter & Receiver system with the example.
- Q.4 Draw & Explain functional architecture of GSM system 08**

Section – II

- Q.5 Attempt any three of the following questions. 12**
- Explain Bluetooth Piconet & Scatternet with neat diagram.
 - Write a short note on HSCSD
 - Write a short note on Registration Process in Mobile IP communication.
 - Draw & Explain DHCP.
 - Write a short note Transaction-Oriented TCP
- Q.6 Attempt any one of the following questions. 08**
- How the packet gets deliver to and from the mobile node with the help of mobile IP.
 - Write a short note on
 - I-TCP
 - S-TCP
- Q.7 Explain with neat diagram GPRS architecture reference model. 08**

Seat No.	
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Set	Q
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T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE COMPUTING

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 10:00 AM To 01:00 PM

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) GPRS offers a _____ packet transfer service.

a) point-to-point	b) peer-to-peer
c) data	d) network
- 2) Reason for handover is _____.

a) load balancing	b) moves within the range
c) traffic in one cell is less	d) moves continuously
- 3) MSRN stands for _____.

a) Mobile Station roaming number
b) Module Station roaming number
c) Modern Station roaming number
d) Mode Station roaming number
- 4) For agent advertisements _____ protocol is used.

a) TCP	b) IP
c) RFC	d) ICMP
- 5) A _____ is an end-system or router that can change its point of attachment to the internet using mobile IP.

a) Mobile node	b) Foreign agent
c) Home agent	d) Care-of address
- 6) The _____ approach assumes a relatively low bit error rate on the wireless network.

a) Indirect TCP	b) snooping TCP
c) Mobile TCP	d) A-TCP
- 7) The _____ is responsible for changing data between both parts similar to the proxy in I-TCP

a) minimum host	b) mobile host
c) supervisory host	d) peer host
- 8) _____ describes schemes to subdivide the frequency dimension into several non-overlapping frequency bands.

a) SDM	b) TDM
c) PSK	d) FDM

- 9) Pure Aloha _____.
a) does not require global time synchronization
b) does require global time synchronization
c) does divide time into discrete intervals
d) does not divide time into discrete intervals
- 10) Frequency modulation ranges between _____.
a) 5.9 MHz and 26.1 MHz b) 87.5 MHz and 108 MHz
c) 148.5 kHz and 283.5 kHz d) 174 and 230 MHz
- 11) The _____ monitors and controls all other network entities via the O interface.
a) OMC b) EIR
c) OSS d) GSM
- 12) _____ protocol is used for signalling between MSC and BSC.
a) LAPDm b) LAPD
c) PCM d) SS7
- 13) PLCP in IEEE 802.11 stands for _____.
a) Physical Layer Communication protocol
b) Physical Layer Convergence Protocol
c) Primary Layer Communication protocol
d) Primary Layer Convergence protocol
- 14) Algorithm A8 is used for _____.
a) Authentication b) Encryption
c) Generation of a cipher key d) decryption

Seat No.	
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T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE COMPUTING

Day & Date: Monday, 25-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three of the following questions. 12**
- Explain with example Packet Reservation Multiple Access.
 - What is Antenna? Draw & Explain Radiation pattern of Directed Antenna.
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- Q.4 Draw & Explain functional architecture of GSM system 08**

Section – II

- Q.5 Attempt any three of the following questions. 12**
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 - Write a short note on HSCSD
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 - Write a short note on
 - I-TCP
 - S-TCP
- Q.7 Explain with neat diagram GPRS architecture reference model. 08**

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T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE COMPUTING

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 10:00 AM To 01:00 PM

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

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 - a) LAPDm
 - b) LAPD
 - c) PCM
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- 3) Algorithm A8 is used for _____.
 - a) Authentication
 - b) Encryption
 - c) Generation of a cipher key
 - d) Decryption
- 4) GPRS offers a _____ packet transfer service.
 - a) point-to-point
 - b) peer-to-peer
 - c) data
 - d) Network
- 5) Reason for handover is _____.
 - a) load balancing
 - b) moves within the range
 - c) traffic in one cell is less
 - d) moves continuously
- 6) MSRN stands for _____.
 - a) Mobile Station roaming number
 - b) Module Station roaming number
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- 8) A _____ is an end-system or router that can change its point of attachment to the internet using mobile IP.
 - a) Mobile node
 - b) Foreign agent
 - c) Home agent
 - d) Care-of address
- 9) The _____ approach assumes a relatively low bit error rate on the wireless network.
 - a) Indirect TCP
 - b) snooping TCP
 - c) Mobile TCP
 - d) A-TCP

- 10) The _____ is responsible for changing data between both parts similar to the proxy in I-TCP
- a) minimum host
 - b) mobile host
 - c) supervisory host
 - d) peer host
- 11) _____ describes schemes to subdivide the frequency dimension into several non-overlapping frequency bands.
- a) SDM
 - b) TDM
 - c) PSK
 - d) FDM
- 12) Pure Aloha _____.
- a) does not require global time synchronization
 - b) does require global time synchronization
 - c) does divide time into discrete intervals
 - d) does not divide time into discrete intervals
- 13) Frequency modulation ranges between _____
- a) 5.9 MHz and 26.1 MHz
 - b) 87.5 MHz and 108 MHz
 - c) 148.5 kHz and 283.5 kHz
 - d) 174 and 230 MHz
- 14) The _____ monitors and controls all other network entities via the O interface.
- a) OMC
 - b) EIR
 - c) OSS
 - d) GSM

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T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE COMPUTING

Day & Date: Monday, 25-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three of the following questions. 12**
- Explain with example Packet Reservation Multiple Access.
 - What is Antenna? Draw & Explain Radiation pattern of Directed Antenna.
 - What is Hidden Terminal Problem? Explain why this problem cannot be solved by traditional MAC protocol.
 - Draw & Explain Mobile Terminated Call.
 - How the A3 algorithm is used in subscriber authentication in GSM.
- Q.3 Attempt any one of the following questions. 08**
- What is Modulation? Explain with neat Diagram Digital Modulation & Analog Modulation.
 - Which technique is used to spread the narrowband data into broadband data with the help of chipping sequence? Explain its Transmitter & Receiver system with the example.
- Q.4 Draw & Explain functional architecture of GSM system 08**

Section – II

- Q.5 Attempt any three of the following questions. 12**
- Explain Bluetooth Piconet & Scatternet with neat diagram.
 - Write a short note on HSCSD
 - Write a short note on Registration Process in Mobile IP communication.
 - Draw & Explain DHCP.
 - Write a short note Transaction-Oriented TCP
- Q.6 Attempt any one of the following questions. 08**
- How the packet gets deliver to and from the mobile node with the help of mobile IP.
 - Write a short note on
 - I-TCP
 - S-TCP
- Q.7 Explain with neat diagram GPRS architecture reference model. 08**

Seat No.	
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T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE COMPUTING

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 10:00 AM To 01:00 PM

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) MSRN stands for _____.
 a) Mobile Station roaming number
 b) Module Station roaming number
 c) Modern Station roaming number
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- 2) For agent advertisements _____ protocol is used.
 a) TCP
 b) IP
 c) RFC
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|----------|---------|
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- | | |
|-------------------------------|---------------|
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| c) Generation of a cipher key | d) decryption |
- 13) GPRS offers a _____ packet transfer service.
- | | |
|-------------------|-----------------|
| a) point-to-point | b) peer-to-peer |
| c) data | d) network |
- 14) Reason for handover is _____.
- | | |
|--------------------------------|---------------------------|
| a) load balancing | b) moves within the range |
| c) traffic in one cell is less | d) moves continuously |

Seat No.	
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T.E. (Part - II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE COMPUTING

Day & Date: Monday, 25-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three of the following questions. 12**
- a) Explain with example Packet Reservation Multiple Access.
 - b) What is Antenna? Draw & Explain Radiation pattern of Directed Antenna.
 - c) What is Hidden Terminal Problem? Explain why this problem cannot be solved by traditional MAC protocol.
 - d) Draw & Explain Mobile Terminated Call.
 - e) How the A3 algorithm is used in subscriber authentication in GSM.
- Q.3 Attempt any one of the following questions. 08**
- a) What is Modulation? Explain with neat Diagram Digital Modulation & Analog Modulation.
 - b) Which technique is used to spread the narrowband data into broadband data with the help of chipping sequence? Explain its Transmitter & Receiver system with the example.
- Q.4 Draw & Explain functional architecture of GSM system 08**

Section – II

- Q.5 Attempt any three of the following questions. 12**
- a) Explain Bluetooth Piconet & Scatternet with neat diagram.
 - b) Write a short note on HSCSD
 - c) Write a short note on Registration Process in Mobile IP communication.
 - d) Draw & Explain DHCP.
 - e) Write a short note Transaction-Oriented TCP
- Q.6 Attempt any one of the following questions. 08**
- a) How the packet gets deliver to and from the mobile node with the help of mobile IP.
 - b) Write a short note on
 - 1) I-TCP
 - 2) S-TCP
- Q.7 Explain with neat diagram GPRS architecture reference model. 08**

Seat No.	
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The _____ relationship models the “is-a” relationship.
 - a) Generalization specialization
 - b) Aggregation
 - c) Association
 - d) None of the above
- 2) CMM provides a general roadmap to _____.
 - a) Test the software
 - b) Develop the software
 - c) Improve the software process
 - d) All of these
- 3) The basic objective of the _____ process is to improve the software process.
 - a) Project management
 - b) Software development
 - c) Process management
 - d) Software configuration management
- 4) KPA stands for _____.
 - a) Key process area
 - b) Key product area
 - c) Key principal area
 - d) None of the above
- 5) Cause-effect diagram is also called as _____.
 - a) Structured diagram
 - b) Fish-bone diagram
 - c) Functional diagram
 - d) None of the above
- 6) _____ is the low level cohesion, and _____ is the high level cohesion.
 - a) Functional, Coincidental
 - b) Coincidental, Functional
 - c) Both a and b
 - d) None of the above
- 7) Which is the worst type of coupling?
 - a) Control coupling
 - b) Data coupling
 - c) Content coupling
 - d) Content coupling
- 8) Which of the property of software modularity is incorrect with respect to benefits software modularity?
 - a) Modules are robust
 - b) Module can use other modules
 - c) Modules Can be separately compiled and stored in a library
 - d) Modules are mostly dependent

- 9) The basic objective of the _____ process is to systematically handle the change that take place during project development.
- a) Project management
 - b) Software development
 - c) Process management
 - d) Software configuration management
- 10) _____ provide quantitative information to the Management process.
- a) Quality
 - b) Metrics
 - c) Schedule
 - d) Planning
- 11) What is the sequence of maturity levels in CMM framework?
- a) Initial, defined, repeatable, managed, and optimizing
 - b) Initial, defined, repeatable, optimizing, and managed
 - c) Initial, repeatable, defined, managed, and optimizing
 - d) Initial, repeatable, defined, optimizing, and managed
- 12) Which of the following is / are Software Configuration items?
- a) Software Requirements
 - b) Design Specification
 - c) Source Code
 - d) All of the above
- 13) Which traditional order in Software Testing is organized?
- i) Integration Testing
 - ii) System Testing
 - iii) Unit Testing
 - iv) Validation Testing
- a) i, iv, iii, iv
 - b) ii, iv, i, iii
 - c) iii, i, iv, ii
 - d) iv, ii, iii, i
- 14) Component Testing is a _____.
- a) Black box Testing
 - b) White box Testing
 - c) Grey box Testing
 - d) Both a and b

Seat No.	
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Set**P**

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any Three:** **12**
- a) What is software process? Explain specification of software process.
 - b) Explain prototyping model. Give its strength and weaknesses.
 - c) Explain the structures which are used to model relationship between classes.
 - d) Explain the key elements of the project planning infrastructure.
- Q.3 Attempt any One:** **08**
- a) Explain structured design methodology.
 - b) What is SRS? Explain components of an SRS in detail.
- Q.4 Explain effort estimation and scheduling techniques used in software engineering.** **08**

Section – II

- Q.5 Attempt any Three:** **12**
- a) Explain quality concepts and quality planning.
 - b) Explain the concept of measurement and project tracking.
 - c) Explain iterative project management life cycle.
 - d) Explain Black box testing.
- Q.6 Attempt any One:** **08**
- a) What is risk management? Explain in detail risk management activities.
 - b) Explain the review process in detail in project execution and closure.
- Q.7 Explain in detail software configuration management process.** **08**

Seat No.	
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Set	Q
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Which of the property of software modularity is incorrect with respect to benefits software modularity?
 - a) Modules are robust
 - b) Module can use other modules
 - c) Modules Can be separately compiled and stored in a library
 - d) Modules are mostly dependent
- 2) The basic objective of the _____ process is to systematically handle the change that take place during project development.
 - a) Project management
 - b) Software development
 - c) Process management
 - d) Software configuration management
- 3) _____ provide quantitative information to the Management process.

a) Quality	b) Metrics
c) Schedule	d) Planning
- 4) What is the sequence of maturity levels in CMM framework?
 - a) Initial, defined, repeatable, managed, and optimizing
 - b) Initial, defined, repeatable, optimizing, and managed
 - c) Initial, repeatable, defined, managed, and optimizing
 - d) Initial, repeatable, defined, optimizing, and managed
- 5) Which of the following is / are Software Configuration items?

a) Software Requirements	b) Design Specification
c) Source Code	d) All of the above
- 6) Which traditional order in Software Testing is organized?

i) Integration Testing	ii) System Testing
iii) Unit Testing	iv) Validation Testing
a) i, iv, iii, iv	b) ii, iv, i, iii
c) iii, i, iv, ii	d) iv, ii, iii, i
- 7) Component Testing is a _____.

a) Black box Testing	b) White box Testing
c) Grey box Testing	d) Both a and b

- 8) The _____ relationship models the “is-a” relationship.
a) Generalization specialization b) Aggregation
c) Association d) None of the above
- 9) CMM provides a general roadmap to _____.
a) Test the software b) Develop the software
c) Improve the software process d) All of these
- 10) The basic objective of the _____ process is to improve the software process.
a) Project management
b) Software development
c) Process management
d) Software configuration management
- 11) KPA stands for _____.
a) Key process area b) Key product area
c) Key principal area d) None of the above
- 12) Cause-effect diagram is also called as _____.
a) Structured diagram b) Fish-bone diagram
c) Functional diagram d) None of the above
- 13) _____ is the low level cohesion, and _____ is the high level cohesion.
a) Functional, Coincidental b) Coincidental, Functional
c) Both a and b d) None of the above
- 14) Which is the worst type of coupling?
a) Control coupling b) Data coupling
c) Content coupling d) Content coupling

Seat No.	
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Set	Q
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any Three:** **12**
- a) What is software process? Explain specification of software process.
 - b) Explain prototyping model. Give its strength and weaknesses.
 - c) Explain the structures which are used to model relationship between classes.
 - d) Explain the key elements of the project planning infrastructure.
- Q.3 Attempt any One:** **08**
- a) Explain structured design methodology.
 - b) What is SRS? Explain components of an SRS in detail.
- Q.4 Explain effort estimation and scheduling techniques used in software engineering.** **08**

Section – II

- Q.5 Attempt any Three:** **12**
- a) Explain quality concepts and quality planning.
 - b) Explain the concept of measurement and project tracking.
 - c) Explain iterative project management life cycle.
 - d) Explain Black box testing.
- Q.6 Attempt any One:** **08**
- a) What is risk management? Explain in detail risk management activities.
 - b) Explain the review process in detail in project execution and closure.
- Q.7 Explain in detail software configuration management process.** **08**

Seat No.	
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Set **R**

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

14

- 1) Cause-effect diagram is also called as _____.
 a) Structured diagram b) Fish-bone diagram
 c) Functional diagram d) None of the above
- 2) _____ is the low level cohesion, and _____ is the high level cohesion.
 a) Functional, Coincidental b) Coincidental, Functional
 c) Both a and b d) None of the above
- 3) Which is the worst type of coupling?
 a) Control coupling b) Data coupling
 c) Content coupling d) Content coupling
- 4) Which of the property of software modularity is incorrect with respect to benefits software modularity?
 a) Modules are robust
 b) Module can use other modules
 c) Modules Can be separately compiled and stored in a library
 d) Modules are mostly dependent
- 5) The basic objective of the _____ process is to systematically handle the change that take place during project development.
 a) Project management
 b) Software development
 c) Process management
 d) Software configuration management
- 6) _____ provide quantitative information to the Management process.
 a) Quality b) Metrics
 c) Schedule d) Planning
- 7) What is the sequence of maturity levels in CMM framework?
 a) Initial, defined, repeatable, managed, and optimizing
 b) Initial, defined, repeatable, optimizing, and managed
 c) Initial, repeatable, defined, managed, and optimizing
 d) Initial, repeatable, defined, optimizing, and managed
- 8) Which of the following is / are Software Configuration items?
 a) Software Requirements b) Design Specification
 c) Source Code d) All of the above

- 9) Which traditional order in Software Testing is organized?
- | | |
|------------------------|------------------------|
| i) Integration Testing | ii) System Testing |
| iii) Unit Testing | iv) Validation Testing |
| a) i, iv, iii, iv | b) ii, iv, i, iii |
| c) iii, i, iv, ii | d) iv, ii, iii, i |
- 10) Component Testing is a _____.
a) Black box Testing b) White box Testing
c) Grey box Testing d) Both a and b
- 11) The _____ relationship models the “is-a” relationship.
a) Generalization specialization b) Aggregation
c) Association d) None of the above
- 12) CMM provides a general roadmap to _____.
a) Test the software b) Develop the software
c) Improve the software process d) All of these
- 13) The basic objective of the _____ process is to improve the software process.
a) Project management
b) Software development
c) Process management
d) Software configuration management
- 14) KPA stands for _____.
a) Key process area b) Key product area
c) Key principal area d) None of the above

Seat No.	
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any Three:** **12**
- a) What is software process? Explain specification of software process.
 - b) Explain prototyping model. Give its strength and weaknesses.
 - c) Explain the structures which are used to model relationship between classes.
 - d) Explain the key elements of the project planning infrastructure.
- Q.3 Attempt any One:** **08**
- a) Explain structured design methodology.
 - b) What is SRS? Explain components of an SRS in detail.
- Q.4 Explain effort estimation and scheduling techniques used in software engineering.** **08**

Section – II

- Q.5 Attempt any Three:** **12**
- a) Explain quality concepts and quality planning.
 - b) Explain the concept of measurement and project tracking.
 - c) Explain iterative project management life cycle.
 - d) Explain Black box testing.
- Q.6 Attempt any One:** **08**
- a) What is risk management? Explain in detail risk management activities.
 - b) Explain the review process in detail in project execution and closure.
- Q.7 Explain in detail software configuration management process.** **08**

Seat No.	
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) _____ provide quantitative information to the Management process.

a) Quality	b) Metrics
c) Schedule	d) Planning
- 2) What is the sequence of maturity levels in CMM framework?

a) Initial, defined, repeatable, managed, and optimizing
b) Initial, defined, repeatable, optimizing, and managed
c) Initial, repeatable, defined, managed, and optimizing
d) Initial, repeatable, defined, optimizing, and managed
- 3) Which of the following is / are Software Configuration items?

a) Software Requirements	b) Design Specification
c) Source Code	d) All of the above
- 4) Which traditional order in Software Testing is organized?

i) Integration Testing	ii) System Testing
iii) Unit Testing	iv) Validation Testing
a) i, iv, iii, iv	b) ii, iv, i, iii
c) iii, i, iv, ii	d) iv, ii, iii, i
- 5) Component Testing is a _____.

a) Black box Testing	b) White box Testing
c) Grey box Testing	d) Both a and b
- 6) The _____ relationship models the “is-a” relationship.

a) Generalization specialization	b) Aggregation
c) Association	d) None of the above
- 7) CMM provides a general roadmap to _____.

a) Test the software	b) Develop the software
c) Improve the software process	d) All of these
- 8) The basic objective of the _____ process is to improve the software process.

a) Project management
b) Software development
c) Process management
d) Software configuration management

- 9) KPA stands for _____.
a) Key process area b) Key product area
c) Key principal area d) None of the above
- 10) Cause-effect diagram is also called as _____.
a) Structured diagram b) Fish-bone diagram
c) Functional diagram d) None of the above
- 11) _____ is the low level cohesion, and _____ is the high level cohesion.
a) Functional, Coincidental b) Coincidental, Functional
c) Both a and b d) None of the above
- 12) Which is the worst type of coupling?
a) Control coupling b) Data coupling
c) Content coupling d) Content coupling
- 13) Which of the property of software modularity is incorrect with respect to benefits software modularity?
a) Modules are robust
b) Module can use other modules
c) Modules Can be separately compiled and stored in a library
d) Modules are mostly dependent
- 14) The basic objective of the _____ process is to systematically handle the change that take place during project development.
a) Project management
b) Software development
c) Process management
d) Software configuration management

Seat No.	
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any Three:** **12**
- a) What is software process? Explain specification of software process.
 - b) Explain prototyping model. Give its strength and weaknesses.
 - c) Explain the structures which are used to model relationship between classes.
 - d) Explain the key elements of the project planning infrastructure.
- Q.3 Attempt any One:** **08**
- a) Explain structured design methodology.
 - b) What is SRS? Explain components of an SRS in detail.
- Q.4 Explain effort estimation and scheduling techniques used in software engineering.** **08**

Section – II

- Q.5 Attempt any Three:** **12**
- a) Explain quality concepts and quality planning.
 - b) Explain the concept of measurement and project tracking.
 - c) Explain iterative project management life cycle.
 - d) Explain Black box testing.
- Q.6 Attempt any One:** **08**
- a) What is risk management? Explain in detail risk management activities.
 - b) Explain the review process in detail in project execution and closure.
- Q.7 Explain in detail software configuration management process.** **08**

Seat No.	
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Set**P**

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Which of the following is not an Android component from manifest file (i.e. a point from which the system can enter your application)?
 - a) Service
 - b) Activity
 - c) Layout
 - d) Content Provider
- 2) How to pass the data from activity to activity in android? (most common and appropriate).
 - a) We can store the data in a common database and access the data on in Activity
 - b) We can't pass data from activity to activity
 - c) Using SQL commands
 - d) Using putExtra() method in intent, we can pass the data using setResult()
- 3) During an Activity life-cycle, what is the first callback method invoked by the system?
 - a) onStop()
 - b) onStart()
 - c) onCreate()
 - d) onRestore()
- 4) Which of the following is NOT a valid usage for Intents?
 - a) Activate and Activity
 - b) Activate a Service
 - c) Activate a Broadcast receiver
 - d) Activate a SQLite DB Connection
- 5) What does this code do?
`Intent intent = new Intent ();
intent.setAction (Intent.ACTION_VIEW) ;
intent.setData (android.net.Uri.parse ("http://www.android.com")) ;
startActivity (intent) ;`
 - a) Starts an activity using an implicit intent
 - b) Starts a service
 - c) Sends results to another activity
 - d) Starts a sub-activity

- 6) What is a thread in android?
a) Same as services
b) Background activity
c) Broadcast Receiver
d) Independent dis-patchable unit is called a thread
- 7) What are the return values of on Start Command in android services?
a) START_STICKY
b) START_NOT_STICKY
c) START_REDELIVER_INTENT
d) All of the above
- 8) On implementing method of onBind(), service must provide an interface for user by returning object called _____.
a) Ibinder
b) Intent
c) R
d) Layout
- 9) _____ widget is useful to produce drawable animation effect.
a) Image View
b) Video View
c) Both a) and b)
d) None
- 10) _____ property in xml file can be used to enlarge or compress object in view animation.
a) FromXScale, toXScale
b) fromAlpha, toAlpha
c) fromDegrees, toDegrees
d) None
- 11) Web browser available in android is based on _____.
a) Chrome
b) Firefox
c) Open-source Webkit
d) Opera
- 12) In Android OS, _____ library used for 2D and 3D rendering.
a) OpenGL
b) OHA
c) Media Framework
d) SQLite
- 13) _____ permission is needed create files on SD card.
a) UPDATE_EXTERNAL_STORAGE
b) WRITE_EXTERNAL_STORAGE
c) MODIFY_EXTERNAL_STORAGE
d) None
- 14) _____ test internal structure of working of application.
a) Black box testing
b) White box testing
c) Regression testing
d) None

Seat No.	
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Set**P**

T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three of the following questions. 12**
- a) What is API level? What it consists of? What are the uses?
 - b) What are the mobile app development approaches?
 - c) Define AVD and its uses.
 - d) Write a short note on SMS API.
- Q.3 Attempt any one of the following questions. 08**
- a) Describe various logical components of an android app with proper example.
 - b) Explain event listener interfaces callback methods for View class.
- Q.4 What are fragments? List and Explain Life cycle of Fragment with suitable diagram. 08**

Section – II

- Q.5 Attempt any three of the following questions. 12**
- a) Enlist types of animation. Explain property animation in detail.
 - b) Write a code snippet for checking availability of Google Play Services.
 - c) Write a short note on Junit tool.
 - d) Explain in short Media Player API.
- Q.6 Attempt any one of the following questions. 08**
- a) Explain use of SQLiteOpenHelper, SQLiteDatabase, Cursor and ContentValues class in SQLite API of android.
 - b) Explain the purpose of different types of testing for a Mobile App.
- Q.7 Attempt any one of the following question. 08**
- a) Explain Versioning, Signing and packaging mobile apps.
 - b) Explain different types of sensors. Write a program to check gyroscope is present on device or not.

Seat No.	
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Day & Date: Wednesday, 27-11-2019
Time: 10:00 AM To 01:00 PM

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

2) Figures to the right indicates full marks.

Duration: 30 Minutes

Marks: 14

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

14

- Page 4 of 12

- 9) How to pass the data from activity to activity in android? (most common and appropriate).
- a) We can store the data in a common database and access the data on in Activity
 - b) We can't pass data from activity to activity
 - c) Using SQL commands
 - d) Using putExtra() method in intent, we can pass the data using setResult()
- 10) During an Activity life-cycle, what is the first callback method invoked by the system?
- a) onStop()
 - b) onStart()
 - c) onCreate()
 - d) onRestore()
- 11) Which of the following is NOT a valid usage for Intents?
- a) Activate and Activity
 - b) Activate a Service
 - c) Activate a Broadcast receiver
 - d) Activate a SQLite DB Connection
- 12) What does this code do?
- ```
Intent intent = new Intent ();
intent.setAction (Intent.ACTION_VIEW) ;
intent.setData (android.net.Uri.parse ("http://www.android.com")) ;
startActivity (intent) ;
```
- a) Starts an activity using an implicit intent
  - b) Starts a service
  - c) Sends results to another activity
  - d) Starts a sub-activity
- 13) What is a thread in android?
- a) Same as services
  - b) Background activity
  - c) Broadcast Receiver
  - d) Independent dis-patchable unit is called a thread
- 14) What are the return values of on Start Command in android services?
- a) START\_STICKY
  - b) START\_NOT\_STICKY
  - c) START\_REDELIVER\_INTENT
  - d) All of the above

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**T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019**  
**Computer Science & Engineering**  
**MOBILE APPLICATION DEVELOPMENT**

Day & Date: Wednesday, 27-11-2019  
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

**Section – I**

- Q.2 Attempt any three of the following questions. 12**
- a) What is API level? What it consists of? What are the uses?
  - b) What are the mobile app development approaches?
  - c) Define AVD and its uses.
  - d) Write a short note on SMS API.
- Q.3 Attempt any one of the following questions. 08**
- a) Describe various logical components of an android app with proper example.
  - b) Explain event listener interfaces callback methods for View class.
- Q.4 What are fragments? List and Explain Life cycle of Fragment with suitable diagram. 08**

**Section – II**

- Q.5 Attempt any three of the following questions. 12**
- a) Enlist types of animation. Explain property animation in detail.
  - b) Write a code snippet for checking availability of Google Play Services.
  - c) Write a short note on Junit tool.
  - d) Explain in short Media Player API.
- Q.6 Attempt any one of the following questions. 08**
- a) Explain use of SQLiteOpenHelper, SQLiteDatabase, Cursor and ContentValues class in SQLite API of android.
  - b) Explain the purpose of different types of testing for a Mobile App.
- Q.7 Attempt any one of the following question. 08**
- a) Explain Versioning, Signing and packaging mobile apps.
  - b) Explain different types of sensors. Write a program to check gyroscope is present on device or not.



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**T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019**  
**Computer Science & Engineering**  
**MOBILE APPLICATION DEVELOPMENT**

Day & Date: Wednesday, 27-11-2019  
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

**MCQ/Objective Type Questions**

Duration: 30 Minutes

Marks: 14

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

- 1) What does this code do?  

```
Intent intent = new Intent ();
intent.setAction (Intent.ACTION_VIEW) ;
intent.setData (android.net.Uri.parse ("http://www.android.com")) ;
startActivity (intent) ;
```

  - a) Starts an activity using an implicit intent
  - b) Starts a service
  - c) Sends results to another activity
  - d) Starts a sub-activity
- 2) What is a thread in android?  
  - a) Same as services
  - b) Background activity
  - c) Broadcast Receiver
  - d) Independent dis-patchable unit is called a thread
- 3) What are the return values of on Start Command in android services?  
  - a) START\_STICKY
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  - c) START\_REDELIVER\_INTENT
  - d) All of the above
- 4) On implementing method of onBind(), service must provide an interface for user by returning object called \_\_\_\_\_.  
  - a) Ibinder
  - b) Intent
  - c) R
  - d) Layout
- 5) \_\_\_\_\_ widget is useful to produce drawable animation effect.  
  - a) Image View
  - b) Video View
  - c) Both a) and b)
  - d) None
- 6) \_\_\_\_\_ property in xml file can be used to enlarge or compress object in view animation.  
  - a) FromXScale, toXScale
  - b) fromAlpha, toAlpha
  - c) fromDegrees, toDegrees
  - d) None
- 7) Web browser available in android is based on \_\_\_\_\_.  
  - a) Chrome
  - b) Firefox
  - c) Open-source Webkit
  - d) Opera

- 8) In Android OS, \_\_\_\_\_ library used for 2D and 3D rendering.
- a) OpenGL
  - b) OHA
  - c) Media Framework
  - d) SQLite
- 9) \_\_\_\_\_ permission is needed create files on SD card.
- a) UPDATE\_EXTERNAL\_STORAGE
  - b) WRITE\_EXTERNAL\_STORAGE
  - c) MODIFY\_EXTERNAL\_STORAGE
  - d) None
- 10) \_\_\_\_\_ test internal structure of working of application.
- a) Black box testing
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  - c) Regression testing
  - d) None
- 11) Which of the following is not an Android component from manifest file (i.e. a point from which the system can enter your application)?
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- 12) How to pass the data from activity to activity in android? (most common and appropriate).
- a) We can store the data in a common database and access the data on in Activity
  - b) We can't pass data from activity to activity
  - c) Using SQL commands
  - d) Using putExtra() method in intent, we can pass the data using setResult()
- 13) During an Activity life-cycle, what is the first callback method invoked by the system?
- a) onStop()
  - b) onStart()
  - c) onCreate()
  - d) onRestore()
- 14) Which of the following is NOT a valid usage for Intents?
- a) Activate and Activity
  - b) Activate a Service
  - c) Activate a Broadcast receiver
  - d) Activate a SQLite DB Connection

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**T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019**  
**Computer Science & Engineering**  
**MOBILE APPLICATION DEVELOPMENT**

Day & Date: Wednesday, 27-11-2019  
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

**Section – I**

- Q.2 Attempt any three of the following questions. 12**
- a) What is API level? What it consists of? What are the uses?
  - b) What are the mobile app development approaches?
  - c) Define AVD and its uses.
  - d) Write a short note on SMS API.
- Q.3 Attempt any one of the following questions. 08**
- a) Describe various logical components of an android app with proper example.
  - b) Explain event listener interfaces callback methods for View class.
- Q.4 What are fragments? List and Explain Life cycle of Fragment with suitable diagram. 08**

**Section – II**

- Q.5 Attempt any three of the following questions. 12**
- a) Enlist types of animation. Explain property animation in detail.
  - b) Write a code snippet for checking availability of Google Play Services.
  - c) Write a short note on Junit tool.
  - d) Explain in short Media Player API.
- Q.6 Attempt any one of the following questions. 08**
- a) Explain use of SQLiteOpenHelper, SQLiteDatabase, Cursor and ContentValues class in SQLite API of android.
  - b) Explain the purpose of different types of testing for a Mobile App.
- Q.7 Attempt any one of the following question. 08**
- a) Explain Versioning, Signing and packaging mobile apps.
  - b) Explain different types of sensors. Write a program to check gyroscope is present on device or not.

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**T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019**  
**Computer Science & Engineering**  
**MOBILE APPLICATION DEVELOPMENT**

Day & Date: Wednesday, 27-11-2019  
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

**MCQ/Objective Type Questions**

Duration: 30 Minutes

Marks: 14

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

- 1) \_\_\_\_\_ property in xml file can be used to enlarge or compress object in view animation.
 

|                           |                       |
|---------------------------|-----------------------|
| a) FromXScale, toXScale   | b) fromAlpha, toAlpha |
| c) fromDegrees, toDegrees | d) None               |
- 2) Web browser available in android is based on \_\_\_\_\_.
 

|                       |            |
|-----------------------|------------|
| a) Chrome             | b) Firefox |
| c) Open-source Webkit | d) Opera   |
- 3) In Android OS, \_\_\_\_\_ library used for 2D and 3D rendering.
 

|                    |           |
|--------------------|-----------|
| a) OpenGL          | b) OHA    |
| c) Media Framework | d) SQLite |
- 4) \_\_\_\_\_ permission is needed create files on SD card.
 

|                            |
|----------------------------|
| a) UPDATE_EXTERNAL_STORAGE |
| b) WRITE_EXTERNAL_STORAGE  |
| c) MODIFY_EXTERNAL_STORAGE |
| d) None                    |
- 5) \_\_\_\_\_ test internal structure of working of application.
 

|                       |                      |
|-----------------------|----------------------|
| a) Black box testing  | b) White box testing |
| c) Regression testing | d) None              |
- 6) Which of the following is not an Android component from manifest file (i.e. a point from which the system can enter your application)?
 

|            |                     |
|------------|---------------------|
| a) Service | b) Activity         |
| c) Layout  | d) Content Provider |
- 7) How to pass the data from activity to activity in android? (most common and appropriate).
 

|                                                                                  |
|----------------------------------------------------------------------------------|
| a) We can store the data in a common database and access the data on in Activity |
| b) We can't pass data from activity to activity                                  |
| c) Using SQL commands                                                            |
| d) Using putExtra() method in intent, we can pass the data using setResult()     |

- 8) During an Activity life-cycle, what is the first callback method invoked by the system?
- a) onStop()
  - b) onStart()
  - c) onCreate()
  - d) onRestore()
- 9) Which of the following is NOT a valid usage for Intents?
- a) Activate and Activity
  - b) Activate a Service
  - c) Activate a Broadcast receiver
  - d) Activate a SQLite DB Connection
- 10) What does this code do?
- ```
Intent intent = new Intent ( );  
intent.setAction (Intent.ACTION_VIEW) ;  
intent.setData (android.net.Uri.parse ("http://www.android.com")) ;  
startActivity ( intent ) ;
```
- a) Starts an activity using an implicit intent
 - b) Starts a service
 - c) Sends results to another activity
 - d) Starts a sub-activity
- 11) What is a thread in android?
- a) Same as services
 - b) Background activity
 - c) Broadcast Receiver
 - d) Independent dis-patchable unit is called a thread
- 12) What are the return values of on Start Command in android services?
- a) START_STICKY
 - b) START_NOT_STICKY
 - c) START_REDELIVER_INTENT
 - d) All of the above
- 13) On implementing method of onBind(), service must provide an interface for user by returning object called ____.
- a) Ibinder
 - b) Intent
 - c) R
 - d) Layout
- 14) ____ widget is useful to produce drawable animation effect.
- a) Image View
 - b) Video View
 - c) Both a) and b)
 - d) None

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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE APPLICATION DEVELOPMENT

Day & Date: Wednesday, 27-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section – I

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Section – II

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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
 Time: 10:00 AM To 12:00 PM

Max. Marks: 50

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.
 2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) Which model applies computational procedures to solve equation?
 - a) Static model
 - b) Dynamic model
 - c) Numerical model
 - d) Analytical model
- 2) Mathematical model is based on _____.
 - a) Analogy between such systems as electrical and mechanical
 - b) Use symbolic notation and mathematical equations to represent a system
 - c) All of the above
 - d) None of the above
- 3) A system which does have exogenous activity is said to be _____.
 - a) Open System
 - b) Closed system
 - c) Both of the above
 - d) None of the above
- 4) In Bank system, What is customer?
 - a) Entity
 - b) Activity
 - c) Environment
 - d) None of the above
- 5) Factory is an Example of _____.
 - a) Entity
 - b) Attribute
 - c) Environment
 - d) System
- 6) Which of the following is simulation language?
 - a) Java
 - b) GPSS
 - c) Java script
 - d) None of the above
- 7) In a corporate model, What is/are main segment/segments?
 - a) Environment
 - b) Management
 - c) Plant/Physical Plant
 - d) All of the above
- 8) Oscillator model is an Example of _____.
 - a) Static Physical model
 - b) Dynamic Physical model
 - c) Static Mathematical model
 - d) Dynamic Mathematical model
- 9) NS2 is written in _____.
 - a) Java
 - b) C++
 - c) OTcl
 - d) Both b & c
- 10) In communication system, What is "Transmitting"?
 - a) Entity
 - b) Activity
 - c) Environment
 - d) System

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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

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

Q.2 Attempt any Four. (each 10 Marks)

40

- a) Explain in detail, When Simulation is the appropriate tool.
- b) Define simulation. Write its Advantages and Disadvantages.
- c) Write a short note on Network Simulation (NS2).
- d) Define Queue monitor. Explain with an Example.
- e) Explain OTcl code for star and bus topology.

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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
 Time: 10:00 AM To 12:00 PM

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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

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Seat No.	
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Day & Date: Thursday, 28-11-2019
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c) Static Mathematical model
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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

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

Q.2 Attempt any Four. (each 10 Marks)

40

- a) Explain in detail, When Simulation is the appropriate tool.
- b) Define simulation. Write its Advantages and Disadvantages.
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- e) Explain OTcl code for star and bus topology.

Seat No.	
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Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.
2) Figures to the right indicate full marks.

Marks: 10

1) A system which does have exogenous activity is said to be _____.

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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

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

Q.2 Attempt any Four. (each 10 Marks)

40

- a) Explain in detail, When Simulation is the appropriate tool.
- b) Define simulation. Write its Advantages and Disadvantages.
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- d) Define Queue monitor. Explain with an Example.
- e) Explain OTcl code for star and bus topology.

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T.E. (Part – II) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
SOFTWARE LICENSES AND PRACTICES

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 50

Instructions: Attempt any five questions. (each question carries 10 marks)

- Q.1** State and explain issues with Copyrights and Patents with indicative examples.
- Q.2** Differentiate between Copyright and Patent Law. Which offers better protection from copying the source code of a developer? Justify your answer.
- Q.3** What are Free and Open Source Software Products? How are they licensed? Explain the role of MIT License in distributing Free Software products.
- Q.4** List and Explain types of Creative Commons Licenses.
- Q.5** State the benefits of Open Source Software Licensing. Explain how Community Enforcement of Open Source and Free Software Licenses works with an example.
- Q.6** What is Multiple and Cross Licensing? With help of proper use-cases and example explain when to use multiple licensing. What effects does multiple licensing have on the overall software product licensed under it?
- Q.7** What is proprietary license, explain with an indicative example? When should an organization prefer licensing a software product under proprietary license?

Seat No.	
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Set**P**

T.E. (Part – II) (New) (CBSC) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SET UP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 50

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer Book.

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) Routing processor searching for routing table is called _____.
 - a) switch fabric
 - b) buffer
 - c) table lookup
 - d) rolling table
- 2) You want to improve network performance by increasing the bandwidth available to hosts and limit the size of the broadcast domains. Which of the following options will achieve this goal?
 - a) Managed Hubs
 - b) Switches
 - c) Bridges
 - d) Switches configured with VLANs
- 3) An application-level protocol in which a few manager stations control a set of agents, known as _____.
 - a) HTML
 - b) TCP
 - c) SNMP
 - d) SNMP/IP
- 4) A personal computer or workstation on an Ethernet network must have one of these cards.
 - a) TDI
 - b) NIC
 - c) PCI
 - d) None of above
- 5) Where is a hub specified in the OSI model?
 - a) Session layer
 - b) Physical layer
 - c) Data Link layer
 - d) Application layer
- 6) In a network with dozens of switches, how many root bridges would you have?
 - a) 1
 - b) 2
 - c) 5
 - d) 12
- 7) Combination of two or more networks are called _____.
 - a) Internetwork
 - b) WAN
 - c) MAN
 - d) LAN

- 8) The Internet Control Message Protocol (ICMP) _____.
a) allows gateways to send error a control messages to other gateways or hosts
b) provides communication between the Internet Protocol Software on one machine and the Internet Protocol Software on another
c) reports error conditions to the original source, the source must relate errors to individual application programs and take action to correct the problem
d) All of the above
- 9) HMP (Host Monitoring Protocol) is _____.
a) a TCP/IP protocol used to dynamically bind a high level IP Address to a low-level physical hardware address
b) a TCP/IP high level protocol for transferring files from one machine to another
c) a protocol used to monitor computers
d) a protocol that handles error and control messages
- 10) Transmission of computerized data from one location to another is called _____.
a) data transfer
b) data flow
c) data communication
d) data management

Seat No.	
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Set**P**

T.E. (Part – II) (New) (CBSC) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SET UP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

Instructions: 1) Attempt any four questions from Q. No. 2.
2) Figures to the right indicate full marks.

Q.2 Answer any four.

40

- a) Explain Abstract Syntax Notation One (ASN.1)
- b) Draw & Network Management Architecture with its Applications.
- c) What is Fault? Explain in details how fault management works.
- d) Explain Host & User Authentication in detail.
- e) Explain any one Integrating Tool and Development Tool in detail.
- f) Write a short note on
 - 1) Switch
 - 2) Router

Seat No.	
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Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer Book.

MCQ/Objective Type Questions

Marks: 10

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T.E. (Part – II) (New) (CBSC) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SET UP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

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Seat No.	
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T.E. (Part – II) (New) (CBSC) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SET UP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 50

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer Book.
2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

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 - a) Session layer
 - b) Physical layer
 - c) Data Link layer
 - d) Application layer

- 8) In a network with dozens of switches, how many root bridges would you have?
- | | |
|------|-------|
| a) 1 | b) 2 |
| c) 5 | d) 12 |
- 9) Combination of two or more networks are called ____.
- | | |
|-----------------|--------|
| a) Internetwork | b) WAN |
| c) MAN | d) LAN |
- 10) The Internet Control Message Protocol (ICMP) ____.
- a) allows gateways to send error a control messages to other gateways or hosts
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Seat No.	
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T.E. (Part – II) (New) (CBSC) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SET UP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

Instructions: 1) Attempt any four questions from Q. No. 2.
2) Figures to the right indicate full marks.

Q.2 Answer any four.

40

- a) Explain Abstract Syntax Notation One (ASN.1)
- b) Draw & Network Management Architecture with its Applications.
- c) What is Fault? Explain in details how fault management works.
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- e) Explain any one Integrating Tool and Development Tool in detail.
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Seat No.	
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Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer Book.

MCQ/Objective Type Questions

Marks: 10

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- 1) An application-level protocol in which a few manager stations control a set of agents, known as _____.
a) HTML b) TCP
c) SNMP d) SNMP/IP
- 2) A personal computer or workstation on an Ethernet network must have one of these cards.
a) TDI b) NIC
c) PCI d) None of above
- 3) Where is a hub specified in the OSI model?
a) Session layer b) Physical layer
c) Data Link layer d) Application layer
- 4) In a network with dozens of switches, how many root bridges would you have?
a) 1 b) 2
c) 5 d) 12
- 5) Combination of two or more networks are called _____.
a) Internetwork b) WAN
c) MAN d) LAN
- 6) The Internet Control Message Protocol (ICMP) _____.
a) allows gateways to send error a control messages to other gateways or hosts
b) provides communication between the Internet Protocol Software on one machine and the Internet Protocol Software on another
c) reports error conditions to the original source, the source must relate errors to individual application programs and take action to correct the problem
d) All of the above
- 7) HMP (Host Monitoring Protocol) is _____.
a) a TCP/IP protocol used to dynamically bind a high level IP Address to a low-level physical hardware address
b) a TCP/IP high level protocol for transferring files from one machine to another
c) a protocol used to monitor computers
d) a protocol that handles error and control messages

- 8) Transmission of computerized data from one location to another is called _____.
 - a) data transfer
 - b) data flow
 - c) data communication
 - d) data management
- 9) Routing processor searching for routing table is called _____.
 - a) switch fabric
 - b) buffer
 - c) table lookup
 - d) rolling table
- 10) You want to improve network performance by increasing the bandwidth available to hosts and limit the size of the broadcast domains. Which of the following options will achieve this goal?
 - a) Managed Hubs
 - b) Switches
 - c) Bridges
 - d) Switches configured with VLANs

Seat No.	
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Set	S
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T.E. (Part – II) (New) (CBSC) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SET UP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

Instructions: 1) Attempt any four questions from Q. No. 2.
2) Figures to the right indicate full marks.

Q.2 Answer any four.

40

- a) Explain Abstract Syntax Notation One (ASN.1)
- b) Draw & Network Management Architecture with its Applications.
- c) What is Fault? Explain in details how fault management works.
- d) Explain Host & User Authentication in detail.
- e) Explain any one Integrating Tool and Development Tool in detail.
- f) Write a short note on
 - 1) Switch
 - 2) Router

Seat No.	
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Set	P
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Friday, 22-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Task of database designer is _____.
 a) create logical database design
 b) take regular back up
 c) Assign privileges to users
 d) none of the above
- 2) Minimal subset of one or more columns in relation having non repeated values is called _____.
 a) super key
 b) candidate key
 c) primary key
 d) foreign key
- 3) _____ operation in relational algebra is used to extract rows in relation.
 a) Select
 b) Project
 c) Union
 d) Join
- 4) _____ operation generates joined tables with columns M+N-1.
 a) Natural join
 b) Left outer join
 c) Right outer join
 d) all
- 5) _____ entity set doesn't have enough attribute to form primary key.
 a) Strong entity set
 b) Weak entity set
 c) both a and b
 d) none
- 6) Multi valued attribute is represented by _____.
 a) dashed ellipse
 b) double rectangle
 c) double ellipse
 d) none
- 7) _____ null values are used in database when.
 a) Value is unknown at given time instance
 b) Value is not applicable
 c) Value is optional and user wants to skip entry
 d) All of the above
- 8) A _____ on the attribute A of relation r consists of one bitmap for each value that A can take.
 a) Bitmap
 b) Index
 c) Array
 d) Bitmap index

- 9) Which of the following has 'all-or-none' property ?
 - a) Atomicity
 - b) Durability
 - c) Isolation
 - d) All of the mentioned
- 10) For a transaction to be durable, its changes need to be written to _____ storage.
 - a) Stable storage
 - b) Volatile storage
 - c) Non-volatile storage
 - d) Dynamic storage
- 11) Which of the following protocols ensures conflict serializability and safety from deadlocks?
 - a) Two-phase locking protocol
 - b) Graph based protocol
 - c) Time-stamp ordering protocol
 - d) None of the mentioned
- 12) The situation where the lock waits only for a specified amount of time for another lock to be released is _____.
 - a) Wound-wait
 - b) Lock timeout
 - c) Timeout
 - d) Wait time
- 13) In a B+-tree index _____ for each value we would normally maintain a list of all records with that value for the indexed attribute.
 - a) Node
 - b) Leaf
 - c) Root
 - d) Link
- 14) _____ locks the item from access of any type.
 - a) Shared lock
 - b) Implicit lock
 - c) Explicit lock
 - d) Exclusive

Seat No.	
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Friday, 22-11-2019

Max. Marks: 56

Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

Q.2 Attempt any three **12**

- a) Explain tuple relational calculus.
- b) What is functional dependency, explain with example. Define cover, closure.
- c) Explain different types of attribute in ER modeling.
- d) What is Cartesian product? Consider two tables
 Student={studid,name,phoneno}, Result = {studid,physics_marks,chem._marks,
 maths_marks}
 Find names of students using sql query having percentage >60 (assume maximum marks 100)

Q.3 Attempt any one **08**

- a) What is ER diagram? Draw ER diagram for hospital management system with following description.
 - 1) Hospital has multiple doctors. Each doctor has specialization area, name, phone no, email id and works in specific opd .
 - 2) Hospital has multiple opd, each opd is assigned to single doctor. Each opd has opd number, building name, floor no.
 - 3) Patient can take prior appointment from specific doctor. Doctor allocate slot for patient consultation, after consultation patient pays consultation fees and depart from opd. For patient unique id is generated and against id, patient name, city, phone number are recorded.
 - 4) Patient can be treated by multiple doctors
 - 5) After every consultation, doctor generate prescription for patient which includes list of medicine, doses per day, date of prescription and no. of days to take prescribed medicine.
 - 6) Every prescription consists of list of medicine and dosage per day.
- b) What is Normalization? Explain 1NF, 2NF, 3NF with example.

Q.4 Explain DBMS architecture in detail. **08**

Section – II

Q.5 Attempt any three **12**

- a) Write a short note on ordered indices.
- b) Explain stable storage implementation.
- c) Explain graph based protocol.
- d) Explain state diagram of a transaction.

Q.6 Attempt any one **08**

- a) What is bitmap indices? Explain bitmap index structure with an example.
- b) Explain log based recovery and also explain differed and immediate database modifications.

Q.7 What is deadlock? State two different deadlock prevention schemes by using timestamps. **08**

Seat No.	
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Set	Q
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Friday, 22-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) A _____ on the attribute A of relation r consists of one bitmap for each value that A can take.

a) Bitmap	b) Index
c) Array	d) Bitmap index
- 2) Which of the following has 'all-or-none' property ?

a) Atomicity	b) Durability
c) Isolation	d) All of the mentioned
- 3) For a transaction to be durable, its changes need to be written to _____ storage.

a) Stable storage	b) Volatile storage
c) Non-volatile storage	d) Dynamic storage
- 4) Which of the following protocols ensures conflict serializability and safety from deadlocks?

a) Two-phase locking protocol	b) Graph based protocol
c) Time-stamp ordering protocol	d) None of the mentioned
- 5) The situation where the lock waits only for a specified amount of time for another lock to be released is _____.

a) Wound-wait	b) Lock timeout
c) Timeout	d) Wait time
- 6) In a B+-tree index _____ for each value we would normally maintain a list of all records with that value for the indexed attribute.

a) Node	b) Leaf
c) Root	d) Link
- 7) _____ locks the item from access of any type.

a) Shared lock	b) Implicit lock
c) Explicit lock	d) Exclusive

- 8) Task of database designer is _____.
a) create logical database design
b) take regular back up
c) Assign privileges to users
d) none of the above
- 9) Minimal subset of one or more columns in relation having non repeated values is called _____.
a) super key
b) candidate key
c) primary key
d) foreign key
- 10) _____ operation in relational algebra is used to extract rows in relation.
a) Select
b) Project
c) Union
d) Join
- 11) _____ operation generates joined tables with columns $M+N-1$.
a) Natural join
b) Left outer join
c) Right outer join
d) all
- 12) _____ entity set doesn't have enough attribute to form primary key.
a) Strong entity set
b) Weak entity set
c) both a and b
d) none
- 13) Multi valued attribute is represented by _____.
a) dashed ellipse
b) double rectangle
c) double ellipse
d) none
- 14) _____ null values are used in database when.
a) Value is unknown at given time instance
b) Value is not applicable
c) Value is optional and user wants to skip entry
d) All of the above

Seat No.	
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Set Q

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Friday, 22-11-2019

Max. Marks: 56

Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

Q.2 Attempt any three **12**

- Explain tuple relational calculus.
- What is functional dependency, explain with example. Define cover, closure.
- Explain different types of attribute in ER modeling.
- What is Cartesian product? Consider two tables
 Student={studid,name,phoneno}, Result = {studid,physics_marks,chem._marks, maths_marks}
 Find names of students using sql query having percentage >60 (assume maximum marks 100)

Q.3 Attempt any one **08**

- What is ER diagram? Draw ER diagram for hospital management system with following description.
 - Hospital has multiple doctors. Each doctor has specialization area, name, phone no, email id and works in specific opd .
 - Hospital has multiple opd, each opd is assigned to single doctor. Each opd has opd number, building name, floor no.
 - Patient can take prior appointment from specific doctor. Doctor allocate slot for patient consultation, after consultation patient pays consultation fees and depart from opd. For patient unique id is generated and against id, patient name, city, phone number are recorded.
 - Patient can be treated by multiple doctors
 - After every consultation, doctor generate prescription for patient which includes list of medicine, doses per day, date of prescription and no. of days to take prescribed medicine.
 - Every prescription consists of list of medicine and dosage per day.
- What is Normalization? Explain 1NF, 2NF, 3NF with example.

Q.4 Explain DBMS architecture in detail. **08**

Section – II

Q.5 Attempt any three **12**

- Write a short note on ordered indices.
- Explain stable storage implementation.
- Explain graph based protocol.
- Explain state diagram of a transaction.

Q.6 Attempt any one **08**

- What is bitmap indices? Explain bitmap index structure with an example.
- Explain log based recovery and also explain differed and immediate database modifications.

Q.7 What is deadlock? State two different deadlock prevention schemes by using timestamps. **08**

Seat No.	
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Set	R
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Friday, 22-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) _____ entity set doesn't have enough attribute to form primary key.
 - a) Strong entity set
 - b) Weak entity set
 - c) both a and b
 - d) None
- 2) Multi valued attribute is represented by _____.
 - a) dashed ellipse
 - b) double rectangle
 - c) double ellipse
 - d) none
- 3) _____ null values are used in database when.
 - a) Value is unknown at given time instance
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- 4) A _____ on the attribute A of relation r consists of one bitmap for each value that A can take.
 - a) Bitmap
 - b) Index
 - c) Array
 - d) Bitmap index
- 5) Which of the following has 'all-or-none' property ?
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 - b) Durability
 - c) Isolation
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- 6) For a transaction to be durable, its changes need to be written to _____ storage.
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 - b) Volatile storage
 - c) Non-volatile storage
 - d) Dynamic storage
- 7) Which of the following protocols ensures conflict serializability and safety from deadlocks?
 - a) Two-phase locking protocol
 - b) Graph based protocol
 - c) Time-stamp ordering protocol
 - d) None of the mentioned
- 8) The situation where the lock waits only for a specified amount of time for another lock to be released is _____.
 - a) Wound-wait
 - b) Lock timeout
 - c) Timeout
 - d) Wait time

- 9) In a B+-tree index _____ for each value we would normally maintain a list of all records with that value for the indexed attribute.
- a) Node
 - b) Leaf
 - c) Root
 - d) Link
- 10) _____ locks the item from access of any type.
- a) Shared lock
 - b) Implicit lock
 - c) Explicit lock
 - d) Exclusive
- 11) Task of database designer is _____.
- a) create logical database design
 - b) take regular back up
 - c) Assign privileges to users
 - d) none of the above
- 12) Minimal subset of one or more columns in relation having non repeated values is called _____.
- a) super key
 - b) candidate key
 - c) primary key
 - d) foreign key
- 13) _____ operation in relational algebra is used to extract rows in relation.
- a) Select
 - b) Project
 - c) Union
 - d) Join
- 14) _____ operation generates joined tables with columns $M+N-1$.
- a) Natural join
 - b) Left outer join
 - c) Right outer join
 - d) all

Seat No.	
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Set	R
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Friday, 22-11-2019

Max. Marks: 56

Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

Q.2 Attempt any three **12**

- Explain tuple relational calculus.
- What is functional dependency, explain with example. Define cover, closure.
- Explain different types of attribute in ER modeling.
- What is Cartesian product? Consider two tables
 $Student = \{studid, name, phoneno\}$, $Result = \{studid, physics_marks, chem_marks, maths_marks\}$
 Find names of students using sql query having percentage >60 (assume maximum marks 100)

Q.3 Attempt any one **08**

- What is ER diagram? Draw ER diagram for hospital management system with following description.
 - Hospital has multiple doctors. Each doctor has specialization area, name, phone no, email id and works in specific opd.
 - Hospital has multiple opd, each opd is assigned to single doctor. Each opd has opd number, building name, floor no.
 - Patient can take prior appointment from specific doctor. Doctor allocate slot for patient consultation, after consultation patient pays consultation fees and depart from opd. For patient unique id is generated and against id, patient name, city, phone number are recorded.
 - Patient can be treated by multiple doctors
 - After every consultation, doctor generate prescription for patient which includes list of medicine, doses per day, date of prescription and no. of days to take prescribed medicine.
 - Every prescription consists of list of medicine and dosage per day.
- What is Normalization? Explain 1NF, 2NF, 3NF with example.

Q.4 Explain DBMS architecture in detail. **08**

Section – II

Q.5 Attempt any three **12**

- Write a short note on ordered indices.
- Explain stable storage implementation.
- Explain graph based protocol.
- Explain state diagram of a transaction.

Q.6 Attempt any one **08**

- What is bitmap indices? Explain bitmap index structure with an example.
- Explain log based recovery and also explain differed and immediate database modifications.

Q.7 What is deadlock? State two different deadlock prevention schemes by using timestamps. **08**

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Set	S
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Friday, 22-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) For a transaction to be durable, its changes need to be written to _____ storage.
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 - c) Non-volatile storage
 - d) Dynamic storage
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 - c) Time-stamp ordering protocol
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 - b) Lock timeout
 - c) Timeout
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- 4) In a B+-tree index _____ for each value we would normally maintain a list of all records with that value for the indexed attribute.
 - a) Node
 - b) Leaf
 - c) Root
 - d) Link
- 5) _____ locks the item from access of any type.
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 - c) Explicit lock
 - d) Exclusive
- 6) Task of database designer is _____.
 - a) create logical database design
 - b) take regular back up
 - c) Assign privileges to users
 - d) none of the above
- 7) Minimal subset of one or more columns in relation having non repeated values is called _____.
 - a) super key
 - b) candidate key
 - c) primary key
 - d) foreign key

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Seat No.	
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Set	S
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATABASE ENGINEERING

Day & Date: Friday, 22-11-2019

Max. Marks: 56

Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

Q.2 Attempt any three **12**

- Explain tuple relational calculus.
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- What is Cartesian product? Consider two tables
 $Student = \{studid, name, phoneno\}$, $Result = \{studid, physics_marks, chem._marks, maths_marks\}$
 Find names of students using sql query having percentage >60 (assume maximum marks 100)

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 - Hospital has multiple doctors. Each doctor has specialization area, name, phone no, email id and works in specific opd .
 - Hospital has multiple opd, each opd is assigned to single doctor. Each opd has opd number, building name, floor no.
 - Patient can take prior appointment from specific doctor. Doctor allocate slot for patient consultation, after consultation patient pays consultation fees and depart from opd. For patient unique id is generated and against id, patient name, city, phone number are recorded.
 - Patient can be treated by multiple doctors
 - After every consultation, doctor generate prescription for patient which includes list of medicine, doses per day, date of prescription and no. of days to take prescribed medicine.
 - Every prescription consists of list of medicine and dosage per day.
- What is Normalization? Explain 1NF, 2NF, 3NF with example.

Q.4 Explain DBMS architecture in detail. **08**

Section – II

Q.5 Attempt any three **12**

- Write a short note on ordered indices.
- Explain stable storage implementation.
- Explain graph based protocol.
- Explain state diagram of a transaction.

Q.6 Attempt any one **08**

- What is bitmap indices? Explain bitmap index structure with an example.
- Explain log based recovery and also explain differed and immediate database modifications.

Q.7 What is deadlock? State two different deadlock prevention schemes by using timestamps. **08**

Seat No.	
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T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Saturday, 23-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Syntax analyzer can be generated by _____ tool.
 - a) Lex
 - b) YACC
 - c) Both a and b
 - d) None of these
- 2) Given a string "banana", the string "ann" is _____ of "orange".
 - a) subsequence
 - b) Substring
 - c) suffix
 - d) Prefix
- 3) Which of the following are the bottom-up parsers?
 - a) LL(1) parser
 - b) operator precedence parser
 - c) LR(1) parser
 - d) both b and c
- 4) Compiler generates efficient target code in _____ phase.
 - a) Syntax analysis
 - b) Semantic analysis
 - c) Code optimization
 - d) None of these
- 5) The evaluation order for the attribute instances is determined by _____.
 - a) DAG
 - b) Dependency graph
 - c) Annotated parse tree
 - d) Both a and b
- 6) Syntax directed definition (SDD) contains _____.
 - a) Grammar productions
 - b) Attributes
 - c) Semantic rules
 - d) All of these
- 7) A grammar G is said to be operator precedence if it posses _____.
 - a) No production on the right side is ϵ
 - b) No production on the right side has 2 adjacent non- terminals
 - c) Both a) and b)
 - d) None of above
- 8) In the grammar: $S \rightarrow bXYa$, $X \rightarrow d$, $Y \rightarrow cY|\epsilon$, the Follow(X) is _____.
 - a) {c}
 - b) {c, a}
 - c) {c, \$}
 - d) {c, ϵ }
- 9) The transformation in which we decrease the size of the code in a loop is called _____.
 - a) Reduction in strength
 - b) copy propagation
 - c) Code motion
 - d) None of these

- 10) To construct the predictive parser from a context-free grammar, we _____.
a) Eliminate left recursion b) Left factor the grammar
c) Compute FIRST and FOLLOW d) All of these
- 11) The quality of generated code is determined, depends on which of the following factors?
a) Uniformity, completeness b) Speed, size
c) Machine idioms, uniformity d) None of these
- 12) Which of the following parsers is more powerful?
a) Simple LR b) Canonical LR
c) Look ahead LR d) None of these
- 13) In regular expressions, the unary postfix operator '?' means _____,
a) Zero or one occurrence b) one or more occurrence
c) zero or more occurrence d) None of these
- 14) To maximize the utilization of space at run time, the two memory areas used are called _____.
a) Stack and heap b) Static and heap
c) Stack and static d) Code and static

Seat No.	
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T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Saturday, 23-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section I

- Q.2 Attempt any three of the following questions. 12**
- Explain the elimination of left recursion of the grammar with example.
 - What is recursive descent parser with backtracking? Explain with example.
 - Write algorithm for simulation of DFA and explain it with example.
 - Find the FIRST and FOLLOW set of the Nonterminals in the following Grammar.
 $S \rightarrow cABd$ $A \rightarrow a| \epsilon$ $B \rightarrow b| \epsilon$
- Q.3 Attempt any one of the following questions. 08**
- Draw and explain in detail all phases of compiler model.
 - Explain the following terms:
 - SLR parser
 - Dependency graph
- Q.4 What is Postfix SDT's? Explain the parser-stack implementation of Postfix SDT's using expression grammar. 08**

Section II

- Q.5 Attempt any three of the following questions. 12**
- What is DAG? Explain construction of DAG for expression with example.
 - Explain stack allocation of space with example.
 - What is basic block? Write the algorithm for partitioning three-address instructions into basic blocks.
 - Explain types of three-address statements in detail.
- Q.6 Attempt any one of the following questions. 08**
- Explain in detail register allocation and assignment.
 - Explain translation of switch-case statement.
- Q.7 Explain the semantic-preserving transformations. 08**

Seat No.	
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Day & Date: Saturday, 23-11-2019
Time: 10:00 AM To 01:00 PM

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

MCQ/Objective Type Questions

Marks: 14

1) In the grammar: $S \rightarrow bXYa$, $X \rightarrow d$, $Y \rightarrow cY| \epsilon$, the Follow(X) is _____.

- Page 4 of 12

- 11) Compiler generates efficient target code in _____ phase.
- a) Syntax analysis
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Seat No.	
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Set	Q
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T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Saturday, 23-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section I

- Q.2 Attempt any three of the following questions. 12**
- Explain the elimination of left recursion of the grammar with example.
 - What is recursive descent parser with backtracking? Explain with example.
 - Write algorithm for simulation of DFA and explain it with example.
 - Find the FIRST and FOLLOW set of the Nonterminals in the following Grammar.
 $S \rightarrow cABd$ $A \rightarrow a| \epsilon$ $B \rightarrow b| \epsilon$
- Q.3 Attempt any one of the following questions. 08**
- Draw and explain in detail all phases of compiler model.
 - Explain the following terms:
 - SLR parser
 - Dependency graph
- Q.4 What is Postfix SDT's? Explain the parser-stack implementation of Postfix SDT's using expression grammar. 08**

Section II

- Q.5 Attempt any three of the following questions. 12**
- What is DAG? Explain construction of DAG for expression with example.
 - Explain stack allocation of space with example.
 - What is basic block? Write the algorithm for partitioning three-address instructions into basic blocks.
 - Explain types of three-address statements in detail.
- Q.6 Attempt any one of the following questions. 08**
- Explain in detail register allocation and assignment.
 - Explain translation of switch-case statement.
- Q.7 Explain the semantic-preserving transformations. 08**

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- 10) To maximize the utilization of space at run time, the two memory areas used are called _____.
 - a) Stack and heap
 - b) Static and heap
 - c) Stack and static
 - d) Code and static
- 11) Syntax analyzer can be generated by _____ tool.
 - a) Lex
 - b) YACC
 - c) Both a and b
 - d) None of these
- 12) Given a string "banana", the string "ann" is _____ of "orange".
 - a) subsequence
 - b) Substring
 - c) suffix
 - d) Prefix
- 13) Which of the following are the bottom-up parsers?
 - a) LL(1) parser
 - b) operator precedence parser
 - c) LR(1) parser
 - d) both b and c
- 14) Compiler generates efficient target code in _____ phase.
 - a) Syntax analysis
 - b) Semantic analysis
 - c) Code optimization
 - d) None of these

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T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Saturday, 23-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section I

- Q.2 Attempt any three of the following questions. 12**
- Explain the elimination of left recursion of the grammar with example.
 - What is recursive descent parser with backtracking? Explain with example.
 - Write algorithm for simulation of DFA and explain it with example.
 - Find the FIRST and FOLLOW set of the Nonterminals in the following Grammar.
 $S \rightarrow cABd$ $A \rightarrow a| \epsilon$ $B \rightarrow b| \epsilon$
- Q.3 Attempt any one of the following questions. 08**
- Draw and explain in detail all phases of compiler model.
 - Explain the following terms:
 - SLR parser
 - Dependency graph
- Q.4 What is Postfix SDT's? Explain the parser-stack implementation of Postfix SDT's using expression grammar. 08**

Section II

- Q.5 Attempt any three of the following questions. 12**
- What is DAG? Explain construction of DAG for expression with example.
 - Explain stack allocation of space with example.
 - What is basic block? Write the algorithm for partitioning three-address instructions into basic blocks.
 - Explain types of three-address statements in detail.
- Q.6 Attempt any one of the following questions. 08**
- Explain in detail register allocation and assignment.
 - Explain translation of switch-case statement.
- Q.7 Explain the semantic-preserving transformations. 08**

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T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Saturday, 23-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) To construct the predictive parser from a context-free grammar, we _____.
 a) Eliminate left recursion b) Left factor the grammar
 c) Compute FIRST and FOLLOW d) All of these
- 2) The quality of generated code is determined, depends on which of the following factors?
 a) Uniformity, completeness b) Speed, size
 c) Machine idioms, uniformity d) None of these
- 3) Which of the following parsers is more powerful?
 a) Simple LR b) Canonical LR
 c) Look ahead LR d) None of these
- 4) In regular expressions, the unary postfix operator '?' means _____.
 a) Zero or one occurrence b) one or more occurrence
 c) zero or more occurrence d) None of these
- 5) To maximize the utilization of space at run time, the two memory areas used are called _____.
 a) Stack and heap b) Static and heap
 c) Stack and static d) Code and static
- 6) Syntax analyzer can be generated by _____ tool.
 a) Lex b) YACC
 c) Both a and b d) None of these
- 7) Given a string "banana", the string "ann" is _____ of "orange".
 a) subsequence b) Substring
 c) suffix d) Prefix
- 8) Which of the following are the bottom-up parsers?
 a) LL(1) parser b) operator precedence parser
 c) LR(1) parser d) both b and c
- 9) Compiler generates efficient target code in _____ phase.
 a) Syntax analysis b) Semantic analysis
 c) Code optimization d) None of these
- 10) The evaluation order for the attribute instances is determined by _____.
 a) DAG b) Dependency graph
 c) Annotated parse tree d) Both a and b

- 11) Syntax directed definition (SDD) contains _____.
a) Grammar productions b) Attributes
c) Semantic rules d) All of these
- 12) A grammar G is said to be operator precedence if it posses _____.
a) No production on the right side is ϵ
b) No production on the right side has 2 adjacent non- terminals
c) Both a) and b)
d) None of above
- 13) In the grammar: $S \rightarrow bXYa$, $X \rightarrow d$, $Y \rightarrow cY|\epsilon$, the Follow(X) is _____.
a) {c} b) {c , a}
c) {c , \$} d) {c, ϵ }
- 14) The transformation in which we decrease the size of the code in a loop is called _____.
a) Reduction in strength b) copy propagation
c) Code motion d) None of these

Seat No.	
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T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPILER CONSTRUCTION

Day & Date: Saturday, 23-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section I

- Q.2 Attempt any three of the following questions. 12**
- Explain the elimination of left recursion of the grammar with example.
 - What is recursive descent parser with backtracking? Explain with example.
 - Write algorithm for simulation of DFA and explain it with example.
 - Find the FIRST and FOLLOW set of the Nonterminals in the following Grammar.
 $S \rightarrow cABd$ $A \rightarrow a| \epsilon$ $B \rightarrow b| \epsilon$
- Q.3 Attempt any one of the following questions. 08**
- Draw and explain in detail all phases of compiler model.
 - Explain the following terms:
 - SLR parser
 - Dependency graph
- Q.4 What is Postfix SDT's? Explain the parser-stack implementation of Postfix SDT's using expression grammar. 08**

Section II

- Q.5 Attempt any three of the following questions. 12**
- What is DAG? Explain construction of DAG for expression with example.
 - Explain stack allocation of space with example.
 - What is basic block? Write the algorithm for partitioning three-address instructions into basic blocks.
 - Explain types of three-address statements in detail.
- Q.6 Attempt any one of the following questions. 08**
- Explain in detail register allocation and assignment.
 - Explain translation of switch-case statement.
- Q.7 Explain the semantic-preserving transformations. 08**

Seat No.	
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- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14**

- 10) _____ the swapper, is the only process that swaps processes into memory from swap devices.
- | | |
|-----------------|--------------|
| a) Process 1 | b) Process 0 |
| c) Init Process | d) None |
- 11) The _____ bit indicates whether a process is recently referenced a page and the _____ bit indicates whether a process recently modified the contents of a page.
- | | |
|--------------------------|------------------------------|
| a) Valid bit, refer bit | b) Reference bit, modify bit |
| c) Valid bit, modify bit | d) Modify bit, valid bit |
- 12) The algorithm for closing a device _____.
- | | |
|------------|------------|
| a) P close | b) D close |
| c) Close | d) None |
- 13) _____ retrieves the cumulative times that the calling process spent executing in user mode and kernel mode.
- | | |
|----------|----------|
| a) Ctime | b) Stime |
| c) Times | d) rTime |
- 14) When a process accesses a page that is not a part of its working set, it incurs _____ page fault.
- | | |
|-----------------|------------|
| a) Validity | b) Invalid |
| c) Modification | d) Recent |

Seat No.	
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T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
UNIX OPERATING SYSTEM

Day & Date: Monday, 25-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

Q.2 Attempt any three of the following questions. 12

- a) Explain "bread" system call algorithm in detail.
- b) What are processor execution level and how it influence the interrupt handling?
- c) Describe the function open() system call.
- d) Write a short note on buffer header.
- e) Write a short note on inode assignment to a new file.

Q.3 Attempt any two of the following questions. 16

- a) Explain Kernel stack and user stack in detail with example.
- b) Explain the algorithm for conversion of path name to inode.
- c) Describe allocation and release of disk block (alloc and free algorithm)
- d) Explain what are inodes? Describe in-core inode and disk inode.

Section – II

Q.4 Attempt any three of the following questions. 12

- a) Write and explain *allocreg* algorithm.
- b) Write and explain *ioctl* system call.
- c) Write a short note on clists.
- d) What is terminal driver? List functions of line discipline.
- e) Explain *dupreg* algorithm in detail.

Q.5 Attempt any two of the following questions. 16

- a) What is context of a process? Explain all the fields of user level context, register level context and system level context.
- b) Describe the major data structure supported by kernel for demand paging.
- c) What is region? List fields in region table entry. Explain any one operation in detail.
- d) What is validity page fault? Explain the function of a validity page fault handler with the help of algorithm.

Seat No.	
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- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14**

- 9) Buffer header contains _____.
a) Device num, block number, status, five ptr
b) Data number, block number, statics, six ptr
c) Hash number, block number, stats, six ptr
d) None
- 10) Race for free buffer occurs in _____.
a) First Scenario
b) Second Scenario
c) Fourth Scenario
d) Fifth Scenario
- 11) iget algorithm is used for _____.
a) allocation of disk inodes
b) allocation of in-core inode
c) allocation of free buffer
d) allocation of file number
- 12) Unix kernel minimizes the frequency of disk access by use of _____.
a) Scheduling
b) Buffer cache
c) Cache memory
d) I/O redirection
- 13) Which algorithm is used for conversion of a pathname to an inode?
a) Iname
b) Pathnamei
c) Namei
d) Bmap
- 14) The OPEN system call for file system in Unix takes the following arguments _____.
a) Pathname, inode number
b) Pathname, user, mode
c) Pathname, flags, mode
d) Pathname, handle, mode

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Set Q

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
UNIX OPERATING SYSTEM

Day & Date: Monday, 25-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

Q.2 Attempt any three of the following questions. 12

- a) Explain "bread" system call algorithm in detail.
- b) What are processor execution level and how it influence the interrupt handling?
- c) Describe the function open() system call.
- d) Write a short note on buffer header.
- e) Write a short note on inode assignment to a new file.

Q.3 Attempt any two of the following questions. 16

- a) Explain Kernel stack and user stack in detail with example.
- b) Explain the algorithm for conversion of path name to inode.
- c) Describe allocation and release of disk block (alloc and free algorithm)
- d) Explain what are inodes? Describe in-core inode and disk inode.

Section – II

Q.4 Attempt any three of the following questions. 12

- a) Write and explain *allocreg* algorithm.
- b) Write and explain *ioctl* system call.
- c) Write a short note on clists.
- d) What is terminal driver? List functions of line discipline.
- e) Explain *dupreg* algorithm in detail.

Q.5 Attempt any two of the following questions. 16

- a) What is context of a process? Explain all the fields of user level context, register level context and system level context.
- b) Describe the major data structure supported by kernel for demand paging.
- c) What is region? List fields in region table entry. Explain any one operation in detail.
- d) What is validity page fault? Explain the function of a validity page fault handler with the help of algorithm.

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- 10) When a process accesses a page that is not a part of its working set, it incurs _____ page fault.
- | | |
|-----------------|------------|
| a) Validity | b) Invalid |
| c) Modification | d) Recent |
- 11) Which of the following acts as kernel data structure for file _____?
- | | |
|------------------|-----------------|
| a) U area | b) Inode table |
| c) Process table | d) Region table |
- 12) Buffer header contains _____.
- | |
|--|
| a) Device num, block number, status, five ptr |
| b) Data number, block number, statics, six ptr |
| c) Hash number, block number, stats, six ptr |
| d) None |
- 13) Race for free buffer occurs in _____.
- | | |
|--------------------|--------------------|
| a) First Scenario | b) Second Scenario |
| c) Fourth Scenario | d) Fifth Scenario |
- 14) iget algorithm is used for _____.
- | | |
|------------------------------|--------------------------------|
| a) allocation of disk inodes | b) allocation of in-core inode |
| c) allocation of free buffer | d) allocation of file number |

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T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
UNIX OPERATING SYSTEM

Day & Date: Monday, 25-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

Q.2 Attempt any three of the following questions. 12

- a) Explain "bread" system call algorithm in detail.
- b) What are processor execution level and how it influence the interrupt handling?
- c) Describe the function open() system call.
- d) Write a short note on buffer header.
- e) Write a short note on inode assignment to a new file.

Q.3 Attempt any two of the following questions. 16

- a) Explain Kernel stack and user stack in detail with example.
- b) Explain the algorithm for conversion of path name to inode.
- c) Describe allocation and release of disk block (alloc and free algorithm)
- d) Explain what are inodes? Describe in-core inode and disk inode.

Section – II

Q.4 Attempt any three of the following questions. 12

- a) Write and explain *allocreg* algorithm.
- b) Write and explain *ioctl* system call.
- c) Write a short note on clists.
- d) What is terminal driver? List functions of line discipline.
- e) Explain *dupreg* algorithm in detail.

Q.5 Attempt any two of the following questions. 16

- a) What is context of a process? Explain all the fields of user level context, register level context and system level context.
- b) Describe the major data structure supported by kernel for demand paging.
- c) What is region? List fields in region table entry. Explain any one operation in detail.
- d) What is validity page fault? Explain the function of a validity page fault handler with the help of algorithm.

Seat
No.

T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
UNIX OPERATING SYSTEM

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.No1 is compulsory. It should be solved in first 30 minutes in Answer Book

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) _____ the swapper, is the only process that swaps processes into memory from swap devices.
 - a) Process 1
 - b) Process 0
 - c) Init Process
 - d) None
- 2) The _____ bit indicates whether a process is recently referenced a page and the _____ bit indicates whether a process recently modified the contents of a page.
 - a) Valid bit, refer bit
 - b) Reference bit, modify bit
 - c) Valid bit, modify bit
 - d) Modify bit, valid bit
- 3) The algorithm for closing a device _____.
 - a) P close
 - b) D close
 - c) Close
 - d) None
- 4) _____ retrieves the cumulative times that the calling process spent executing in user mode and kernel mode.
 - a) Ctime
 - b) Stime
 - c) Times
 - d) rTime
- 5) When a process accesses a page that is not a part of its working set, it incurs _____ page fault.
 - a) Validity
 - b) Invalid
 - c) Modification
 - d) Recent
- 6) Which of the following acts as kernel data structure for file _____.
 - a) U area
 - b) Inode table
 - c) Process table
 - d) Region table
- 7) Buffer header contains _____.
 - a) Device num, block number, status, five ptr
 - b) Data number, block number, statics, six ptr
 - c) Hash number, block number, stats, six ptr
 - d) None
- 8) Race for free buffer occurs in _____.
 - a) First Scenario
 - b) Second Scenario
 - c) Fourth Scenario
 - d) Fifth Scenario

- 9) iget algorithm is used for _____.
a) allocation of disk inodes b) allocation of in-core inode
c) allocation of free buffer d) allocation of file number
- 10) Unix kernel minimizes the frequency of disk access by use of _____.
a) Scheduling b) Buffer cache
c) Cache memory d) I/O redirection
- 11) Which algorithm is used for conversion of a pathname to an inode?
a) Iname b) Pathnamei
c) Namei d) Bmap
- 12) The OPEN system call for file system in Unix takes the following arguments _____.
a) Pathname, inode number b) Pathname, user, mode
c) Pathname, flags, mode d) Pathname, handle, mode
- 13) Boot strap code required to boot and initialize the O.S. is kept in _____.
a) Super block b) Boot block
c) Inode list d) Data block
- 14) Signals are handled when process is changing its state from _____.
a) User to kernel b) Kernel to user
c) Both a and b d) None

Seat No.	
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Set	S
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T.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
UNIX OPERATING SYSTEM

Day & Date: Monday, 25-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

Q.2 Attempt any three of the following questions. 12

- a) Explain "bread" system call algorithm in detail.
- b) What are processor execution level and how it influence the interrupt handling?
- c) Describe the function open() system call.
- d) Write a short note on buffer header.
- e) Write a short note on inode assignment to a new file.

Q.3 Attempt any two of the following questions. 16

- a) Explain Kernel stack and user stack in detail with example.
- b) Explain the algorithm for conversion of path name to inode.
- c) Describe allocation and release of disk block (alloc and free algorithm)
- d) Explain what are inodes? Describe in-core inode and disk inode.

Section – II

Q.4 Attempt any three of the following questions. 12

- a) Write and explain *allocreg* algorithm.
- b) Write and explain *ioctl* system call.
- c) Write a short note on clists.
- d) What is terminal driver? List functions of line discipline.
- e) Explain *dupreg* algorithm in detail.

Q.5 Attempt any two of the following questions. 16

- a) What is context of a process? Explain all the fields of user level context, register level context and system level context.
- b) Describe the major data structure supported by kernel for demand paging.
- c) What is region? List fields in region table entry. Explain any one operation in detail.
- d) What is validity page fault? Explain the function of a validity page fault handler with the help of algorithm.

Seat No.	
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Set	P
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

Instructions: 1) Q. 1 is compulsory. It should be solved in the first 30 minutes in Answer book page No.3. Each question carries one mark.
 2) Don't forget to mention Question Paper set (A/B/C/D) on top of the page.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) _____ contains the component of the structure of the dataflow diagram.
 - a) Data document
 - b) Data dictionary
 - c) Report files
 - d) SRS documents
- 2) The relationship between the various classes in a software project can be shown by _____.
 - a) Association
 - b) Aggregation
 - c) DFD
 - d) None
- 3) Which of the following method provides the interaction between clients and developer?
 - a) Informal approach
 - b) Prototyping
 - c) Both
 - d) Only b
- 4) Which of the following characteristics of an SRS leads to verification & validation?
 - a) Ambiguous
 - b) Verifiable
 - c) Modifiable
 - d) Traceable
- 5) Which of the following is not an error under validation?
 - a) Omission
 - b) Inconsistency
 - c) Incorrect fact
 - d) Missing process
- 6) _____ shows the strength of interconnection between the models.
 - a) Coupling
 - b) Cohesion
 - c) Abstraction
 - d) None
- 7) Function oriented metric were first proposed by _____ and he suggested a measure called the _____.
 - a) Barry Boehm, KLOC.
 - b) Barry Boehm, Function point.
 - c) Albrecht, Function point.
 - d) Albrecht, KLOC.
- 8) Software Quality is _____.
 - a) Conformance to requirements
 - b) Fitness for the purpose
 - c) Level of satisfaction
 - d) All of the above

- 9) Defect rate is _____.
a) Number of defects per million lines of source code
b) Number of defects per function point
c) Number of defects per unit of size of software
d) All of the above
- 10) CMM level 1 has _____.
a) 6 KPAs
b) 2 KPAs
c) 0 KPAs
d) None of the above
- 11) CMM model is a technique to _____.
a) Improve the software process
b) Automatically develop the software
c) Test the software
d) All of the above
- 12) Total numbers of maturing levels in CMM are _____.
a) 1
b) 3
c) 5
d) 7
- 13) CMM was developed at _____.
a) Harvard University
b) Cambridge University
c) Carnegie Mellon University
d) Maryland University
- 14) Pareto Analysis is one of the primary tool for _____.
a) Review
b) Quality Management
c) Milestone Analysis
d) None of the above

Seat No.	
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Set**P**

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three.** **12**
- a) Explain Software Development Process.
 - b) Differentiate between function oriented and object oriented design.
 - c) Mention the methods of problem analysis and explain any one in detail.
 - d) Define the following terms:
 - 1) Class diagram
 - 2) Association
 - 3) Attribute
 - 4) Object
 - e) Explain how the prototyping model differs with the waterfall model.
- Q.3 Attempt any two.** **16**
- a) Explain the characteristics of Software Requirement Specifications.
 - b) Explain UML diagram in detail.
 - c) Write a note on design notation and specification.

Section – II

- Q.4 Attempt any three.** **12**
- a) Explain Defect Prevention Planning.
 - b) Differentiate between static testing and dynamic testing.
 - c) Explain black box testing.
 - d) Explain Project Closure Analysis.
- Q.5 Attempt any two.** **16**
- a) Explain Project Monitoring and control cycle.
 - b) Explain Iterative Project Management Life.
 - c) Explain Configuration Management Process.

Seat No.	
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

Instructions: 1) Q. 1 is compulsory. It should be solved in the first 30 minutes in Answer book page No.3. Each question carries one mark.
 2) Don't forget to mention Question Paper set (A/B/C/D) on top of the page.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Software Quality is _____.
 a) Conformance to requirements b) Fitness for the purpose
 c) Level of satisfaction d) All of the above
- 2) Defect rate is _____.
 a) Number of defects per million lines of source code
 b) Number of defects per function point
 c) Number of defects per unit of size of software
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- 3) CMM level 1 has _____.
 a) 6 KPAs b) 2 KPAs
 c) 0 KPAs d) None of the above
- 4) CMM model is a technique to _____.
 a) Improve the software process
 b) Automatically develop the software
 c) Test the software
 d) All of the above
- 5) Total numbers of maturing levels in CMM are _____.
 a) 1 b) 3
 c) 5 d) 7
- 6) CMM was developed at _____.
 a) Harvard University b) Cambridge University
 c) Carnegie Mellon University d) Maryland University
- 7) Pareto Analysis is one of the primary tool for _____.
 a) Review b) Quality Management
 c) Milestone Analysis d) None of the above
- 8) _____ contains the component of the structure of the dataflow diagram.
 a) Data document b) Data dictionary
 c) Report files d) SRS documents

- 9) The relationship between the various classes in a software project can be shown by _____.
 - a) Association
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- 10) Which of the following method provides the interaction between clients and developer?
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 - c) Incorrect fact
 - d) Missing process
- 13) _____ shows the strength of interconnection between the models.
 - a) Coupling
 - b) Cohesion
 - c) Abstraction
 - d) None
- 14) Function oriented metric were first proposed by _____ and he suggested a measure called the _____.
 - a) Barry Boehm, KLOC.
 - b) Barry Boehm, Function point.
 - c) Albrecht, Function point.
 - d) Albrecht, KLOC.

Seat No.	
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Set	Q
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three.** **12**
- a) Explain Software Development Process.
 - b) Differentiate between function oriented and object oriented design.
 - c) Mention the methods of problem analysis and explain any one in detail.
 - d) Define the following terms:
 - 1) Class diagram
 - 2) Association
 - 3) Attribute
 - 4) Object
 - e) Explain how the prototyping model differs with the waterfall model.
- Q.3 Attempt any two.** **16**
- a) Explain the characteristics of Software Requirement Specifications.
 - b) Explain UML diagram in detail.
 - c) Write a note on design notation and specification.

Section – II

- Q.4 Attempt any three.** **12**
- a) Explain Defect Prevention Planning.
 - b) Differentiate between static testing and dynamic testing.
 - c) Explain black box testing.
 - d) Explain Project Closure Analysis.
- Q.5 Attempt any two.** **16**
- a) Explain Project Monitoring and control cycle.
 - b) Explain Iterative Project Management Life.
 - c) Explain Configuration Management Process.

**Seat
No.**

Set	R
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Day & Date: Tuesday, 26-11-2019
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 1 is compulsory. It should be solved in the first 30 minutes in Answer book page No.3. Each question carries one mark.
2) Don't forget to mention Question Paper set (A/B/C/D) on top of the page.

Duration: 30 Minutes

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

- 1) Which of the following is not an error under validation?
a) Omission
b) Inconsistency
c) Incorrect fact
d) Missing process
- 2) _____ shows the strength of interconnection between the models.
a) Coupling
b) Cohesion
c) Abstraction
d) None
- 3) Function oriented metric were first proposed by _____ and he suggested a measure called the _____.
a) Barry Boehm, KLOC.
b) Barry Boehm, Function point.
c) Albrecht, Function point.
d) Albrecht, KLOC.
- 4) Software Quality is _____.
a) Conformance to requirements
b) Fitness for the purpose
c) Level of satisfaction
d) All of the above
- 5) Defect rate is _____.
a) Number of defects per million lines of source code
b) Number of defects per function point
c) Number of defects per unit of size of software
d) All of the above
- 6) CMM level 1 has _____.
a) 6 KPAs
b) 2 KPAs
c) 0 KPAs
d) None of the above
- 7) CMM model is a technique to _____.
a) Improve the software process
b) Automatically develop the software
c) Test the software
d) All of the above
- 8) Total numbers of maturing levels in CMM are _____.
a) 1
b) 3
c) 5
d) 7

- 9) CMM was developed at _____.
a) Harvard University b) Cambridge University
c) Carnegie Mellon University d) Maryland University
- 10) Pareto Analysis is one of the primary tool for _____.
a) Review b) Quality Management
c) Milestone Analysis d) None of the above
- 11) _____ contains the component of the structure of the dataflow diagram.
a) Data document b) Data dictionary
c) Report files d) SRS documents
- 12) The relationship between the various classes in a software project can be shown by _____.
a) Association b) Aggregation
c) DFD d) None
- 13) Which of the following method provides the interaction between clients and developer?
a) Informal approach b) Prototyping
c) Both d) Only b
- 14) Which of the following characteristics of an SRS leads to verification & validation?
a) Ambiguous b) Verifiable
c) Modifiable d) Traceable

Seat No.	
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Set	R
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three.** **12**
- Explain Software Development Process.
 - Differentiate between function oriented and object oriented design.
 - Mention the methods of problem analysis and explain any one in detail.
 - Define the following terms:
 - Class diagram
 - Association
 - Attribute
 - Object
 - Explain how the prototyping model differs with the waterfall model.
- Q.3 Attempt any two.** **16**
- Explain the characteristics of Software Requirement Specifications.
 - Explain UML diagram in detail.
 - Write a note on design notation and specification.

Section – II

- Q.4 Attempt any three.** **12**
- Explain Defect Prevention Planning.
 - Differentiate between static testing and dynamic testing.
 - Explain black box testing.
 - Explain Project Closure Analysis.
- Q.5 Attempt any two.** **16**
- Explain Project Monitoring and control cycle.
 - Explain Iterative Project Management Life.
 - Explain Configuration Management Process.

- 9) Which of the following characteristics of an SRS leads to verification & validation?
- | | |
|---------------|---------------|
| a) Ambiguous | b) Verifiable |
| c) Modifiable | d) Traceable |
- 10) Which of the following is not an error under validation?
- | | |
|-------------------|--------------------|
| a) Omission | b) Inconsistency |
| c) Incorrect fact | d) Missing process |
- 11) _____ shows the strength of interconnection between the models.
- | | |
|----------------|-------------|
| a) Coupling | b) Cohesion |
| c) Abstraction | d) None |
- 12) Function oriented metric were first proposed by _____ and he suggested a measure called the _____.
- | | |
|------------------------------|---------------------------------|
| a) Barry Boehm, KLOC. | b) Barry Boehm, Function point. |
| c) Albrecht, Function point. | d) Albrecht, KLOC. |
- 13) Software Quality is _____.
- | | |
|--------------------------------|----------------------------|
| a) Conformance to requirements | b) Fitness for the purpose |
| c) Level of satisfaction | d) All of the above |
- 14) Defect rate is _____.
- | |
|---|
| a) Number of defects per million lines of source code |
| b) Number of defects per function point |
| c) Number of defects per unit of size of software |
| d) All of the above |

Seat No.	
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Set	S
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
SOFTWARE ENGINEERING

Day & Date: Tuesday, 26-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three.** **12**
- a) Explain Software Development Process.
 - b) Differentiate between function oriented and object oriented design.
 - c) Mention the methods of problem analysis and explain any one in detail.
 - d) Define the following terms:
 - 1) Class diagram
 - 2) Association
 - 3) Attribute
 - 4) Object
 - e) Explain how the prototyping model differs with the waterfall model.
- Q.3 Attempt any two.** **16**
- a) Explain the characteristics of Software Requirement Specifications.
 - b) Explain UML diagram in detail.
 - c) Write a note on design notation and specification.

Section – II

- Q.4 Attempt any three.** **12**
- a) Explain Defect Prevention Planning.
 - b) Differentiate between static testing and dynamic testing.
 - c) Explain black box testing.
 - d) Explain Project Closure Analysis.
- Q.5 Attempt any two.** **16**
- a) Explain Project Monitoring and control cycle.
 - b) Explain Iterative Project Management Life.
 - c) Explain Configuration Management Process.

Seat No.	
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Set

P

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MOBILE COMPUTING

Day & Date: Wednesday, 27-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full marks.
 3) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) In MANET information packets are transmitted in _____ manner.
 - a) Store and forward
 - b) Save and forward
 - c) Take and forward
 - d) Get and forward
- 2) _____ retransmits only lost data.
 - a) Snooping TCP
 - b) Transaction oriented TCP
 - c) Selective retransmission
 - d) MTCP
- 3) _____ is popularly known as Wi-Fi.
 - a) IEEE 802.11a
 - b) IEEE 802.11b
 - c) IEEE 802.11g
 - d) IEEE 802.11n
- 4) "Every terminal has its own frequency, uninterrupted", is true for _____.
 - a) SDMA
 - b) TDMA
 - c) FDMA
 - d) CDMA
- 5) Example of explicit reservation is _____.
 - a) PRMA
 - b) DAMA
 - c) Reservation TDMA
 - d) CSMA
- 6) Spread spectrum is resistant to _____ interference.
 - a) Narrow band
 - b) Broad band
 - c) Wide band
 - d) All of the above
- 7) Ground waves are _____.
 - a) < 2 MHz
 - b) < 1 MHz
 - c) < 3 MHz
 - d) < 4 MHz
- 8) "Spread the spectrum using orthogonal codes", this idea is used in _____.
 - a) CDMA
 - b) TDMA
 - c) SDMA
 - d) FDMA
- 9) Number of devices can be connected in one piconet is _____.
 - a) 6
 - b) 8
 - c) 10
 - d) 4
- 10) End to End semantic is preserved by _____ in mobile network.
 - a) I-TCP
 - b) S-TCP
 - c) Traditional TCP
 - d) None of these

- 11) Foreign agents and home agents advertise their presence periodically using special _____ messages.
- | | |
|-----------------------------|---------------------------------|
| a) Agent advertisement | b) Foreign agent advertisement |
| c) Home agent advertisement | d) Periodic agent advertisement |
- 12) Android applications are made up of _____.
- | | |
|----------------------------|----------------------------|
| a) Loosely tied components | b) Tightly tied components |
| c) Coupled components | d) None of above |
- 13) The stations and access points which are within the same radio coverage form a _____.
- | | |
|--------|---------|
| a) BSS | b) IBSS |
| c) ESS | d) None |
- 14) An associated BS collects the information gathered by the sensors on a _____ basis.
- | | |
|-----------------|--------------------|
| a) data-centric | b) data-collection |
| c) data-owner | d) None of these |

Seat No.	
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Set

P

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MOBILE COMPUTING

Day & Date: Wednesday, 27-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions compulsory.
 2) Figures to the right indicate full marks.
 3) Make suitable assumptions if necessary and state them clearly.

Section – I

- Q.2 Attempt any four of the following questions. 16**
- What is spread spectrum? Explain with neat diagram.
 - Differentiate among 1G, 2G, 3G, 4G.
 - Explain Near and Far terminal.
 - Compare SDMA, TDMA, FDMA, CDMA.
 - Mention the applications of wireless communications and briefly explain each.
- Q.3 Attempt any one of the following questions. 06**
- Illustrate CDMA, two transmitters A and B are transmitting at same frequency and power, the keys and data of A and B are as given below.
 $A_d = 1$, $A_k = 110110$
 $B_d = 0$, $B_k = 101101$
 - Explain IEEE 802.15.1 Bluetooth architecture with neat diagram.
- Q.4 Explain functional architecture of GSM system with suitable diagram. 06**

Section – II

- Q.5 Attempt any four of the following questions. 16**
- Discuss how packet delivery takes place to and from mobile node with suitable diagram.
 - Write short note on mechanisms of TCP that influence the efficiency of TCP in mobile Environment.
 - Explain four main component of Android application.
 - Give DHCP configuration. Discuss in detail how client gets initialized via DHCP.
 - Compare RFID and NFC.
- Q.6 Attempt any one of the following questions. 06**
- Explain overall architecture of android system with suitable diagram.
 - Explain with neat diagram function NFC architecture.
- Q.7 What is meant by IP micro mobility? List various solutions to resolve this Problem. Explain any two details. 06**

**Seat
No.**

Set Q

Day & Date: Wednesday, 27-11-2019
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Duration: 30 Minutes

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

- Page 4 of 12

- 10) _____ is popularly known as Wi-Fi.
 - a) IEEE 802.11a
 - b) IEEE 802.11b
 - c) IEEE 802.11g
 - d) IEEE 802.11n
- 11) "Every terminal has its own frequency, uninterrupted", is true for _____.
 - a) SDMA
 - b) TDMA
 - c) FDMA
 - d) CDMA
- 12) Example of explicit reservation is _____.
 - a) PRMA
 - b) DAMA
 - c) Reservation TDMA
 - d) CSMA
- 13) Spread spectrum is resistant to _____ interference.
 - a) Narrow band
 - b) Broad band
 - c) Wide band
 - d) All of the above
- 14) Ground waves are _____.
 - a) < 2 MHz
 - b) < 1 MHz
 - c) < 3 MHz
 - d) < 4 MHz

Seat No.	
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Set	Q
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MOBILE COMPUTING

Day & Date: Wednesday, 27-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions compulsory.
 2) Figures to the right indicate full marks.
 3) Make suitable assumptions if necessary and state them clearly.

Section – I

- Q.2 Attempt any four of the following questions. 16**
- What is spread spectrum? Explain with neat diagram.
 - Differentiate among 1G, 2G, 3G, 4G.
 - Explain Near and Far terminal.
 - Compare SDMA, TDMA, FDMA, CDMA.
 - Mention the applications of wireless communications and briefly explain each.
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- Illustrate CDMA, two transmitters A and B are transmitting at same frequency and power, the keys and data of A and B are as given below.
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 - Explain IEEE 802.15.1 Bluetooth architecture with neat diagram.
- Q.4 Explain functional architecture of GSM system with suitable diagram. 06**

Section – II

- Q.5 Attempt any four of the following questions. 16**
- Discuss how packet delivery takes place to and from mobile node with suitable diagram.
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- Q.6 Attempt any one of the following questions. 06**
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 - Explain with neat diagram function NFC architecture.
- Q.7 What is meant by IP micro mobility? List various solutions to resolve this Problem. Explain any two details. 06**

Seat No.	
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Day & Date: Wednesday, 27-11-2019
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Marks: 14

- 1) Example of explicit reservation is _____.
a) PRMA b) DAMA
c) Reservation TDMA d) CSMA
- 2) Spread spectrum is resistant to _____ interference.
a) Narrow band b) Broad band
c) Wide band d) All of the above
- 3) Ground waves are _____.
a) < 2 MHz b) < 1 MHz
c) < 3 MHz d) < 4 MHz
- 4) "Spread the spectrum using orthogonal codes", this idea is used in _____.
a) CDMA b) TDMA
c) SDMA d) FDMA
- 5) Number of devices can be connected in one piconet is _____.
a) 6 b) 8
c) 10 d) 4
- 6) End to End semantic is preserved by _____ in mobile network.
a) I-TCP b) S-TCP
c) Traditional TCP d) None of these
- 7) Foreign agents and home agents advertise their presence periodically using special _____ messages.
a) Agent advertisement b) Foreign agent advertisement
c) Home agent advertisement d) Periodic agent advertisement
- 8) Android applications are made up of _____.
a) Loosely tied components b) Tightly tied components
c) Coupled components d) None of above
- 9) The stations and access points which are within the same radio coverage form a _____.
a) BSS b) IBSS
c) ESS d) None

- 10) An associated BS collects the information gathered by the sensors on a _____ basis.
- | | |
|-----------------|--------------------|
| a) data-centric | b) data-collection |
| c) data-owner | d) None of these |
- 11) In MANET information packets are transmitted in _____ manner.
- | | |
|----------------------|---------------------|
| a) Store and forward | b) Save and forward |
| c) Take and forward | d) Get and forward |
- 12) _____ retransmits only lost data.
- | | |
|-----------------------------|-----------------------------|
| a) Snooping TCP | b) Transaction oriented TCP |
| c) Selective retransmission | d) MTCP |
- 13) _____ is popularly known as Wi-Fi.
- | | |
|-----------------|-----------------|
| a) IEEE 802.11a | b) IEEE 802.11b |
| c) IEEE 802.11g | d) IEEE 802.11n |
- 14) “Every terminal has its own frequency, uninterrupted”, is true for _____.
- | | |
|---------|---------|
| a) SDMA | b) TDMA |
| c) FDMA | d) CDMA |

Seat No.	
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Set	R
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MOBILE COMPUTING

Day & Date: Wednesday, 27-11-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions compulsory.
 2) Figures to the right indicate full marks.
 3) Make suitable assumptions if necessary and state them clearly.

Section – I

- Q.2 Attempt any four of the following questions. 16**
- What is spread spectrum? Explain with neat diagram.
 - Differentiate among 1G, 2G, 3G, 4G.
 - Explain Near and Far terminal.
 - Compare SDMA, TDMA, FDMA, CDMA.
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- Q.3 Attempt any one of the following questions. 06**
- Illustrate CDMA, two transmitters A and B are transmitting at same frequency and power, the keys and data of A and B are as given below.
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 $B_d = 0$, $B_k = 101101$
 - Explain IEEE 802.15.1 Bluetooth architecture with neat diagram.
- Q.4 Explain functional architecture of GSM system with suitable diagram. 06**

Section – II

- Q.5 Attempt any four of the following questions. 16**
- Discuss how packet delivery takes place to and from mobile node with suitable diagram.
 - Write short note on mechanisms of TCP that influence the efficiency of TCP in mobile Environment.
 - Explain four main component of Android application.
 - Give DHCP configuration. Discuss in detail how client gets initialized via DHCP.
 - Compare RFID and NFC.
- Q.6 Attempt any one of the following questions. 06**
- Explain overall architecture of android system with suitable diagram.
 - Explain with neat diagram function NFC architecture.
- Q.7 What is meant by IP micro mobility? List various solutions to resolve this Problem. Explain any two details. 06**

Seat No.	
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Day & Date: Wednesday, 27-11-2019
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Duration: 30 Minutes

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

- 1) End-to-End semantic is preserved by _____ in mobile network.
a) I-TCP b) S-TCP
c) Traditional TCP d) None of these
- 2) Foreign agents and home agents advertise their presence periodically using special _____ messages.
a) Agent advertisement b) Foreign agent advertisement
c) Home agent advertisement d) Periodic agent advertisement
- 3) Android applications are made up of _____.
a) Loosely tied components b) Tightly tied components
c) Coupled components d) None of above
- 4) The stations and access points which are within the same radio coverage form a _____.
a) BSS b) IBSS
c) ESS d) None
- 5) An associated BS collects the information gathered by the sensors on a _____ basis.
a) data-centric b) data-collection
c) data-owner d) None of these
- 6) In MANET information packets are transmitted in _____ manner.
a) Store and forward b) Save and forward
c) Take and forward d) Get and forward
- 7) _____ retransmits only lost data.
a) Snooping TCP b) Transaction oriented TCP
c) Selective retransmission d) MTCP
- 8) _____ is popularly known as Wi-Fi.
a) IEEE 802.11a b) IEEE 802.11b
c) IEEE 802.11g d) IEEE 802.11n
- 9) "Every terminal has its own frequency, uninterrupted", is true for _____.
a) SDMA b) TDMA
c) FDMA d) CDMA

- 10) Example of explicit reservation is _____.
 - a) PRMA
 - b) DAMA
 - c) Reservation TDMA
 - d) CSMA
- 11) Spread spectrum is resistant to _____ interference.
 - a) Narrow band
 - b) Broad band
 - c) Wide band
 - d) All of the above
- 12) Ground waves are _____.
 - a) < 2 MHz
 - b) < 1 MHz
 - c) < 3 MHz
 - d) < 4 MHz
- 13) "Spread the spectrum using orthogonal codes", this idea is used in _____.
 - a) CDMA
 - b) TDMA
 - c) SDMA
 - d) FDMA
- 14) Number of devices can be connected in one piconet is _____.
 - a) 6
 - b) 8
 - c) 10
 - d) 4

Seat No.	
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Set	S
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MOBILE COMPUTING

Day & Date: Wednesday, 27-11-2019
Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

- Q.2 Attempt any four of the following questions. 16**
- What is spread spectrum? Explain with neat diagram.
 - Differentiate among 1G, 2G, 3G, 4G.
 - Explain Near and Far terminal.
 - Compare SDMA, TDMA, FDMA, CDMA.
 - Mention the applications of wireless communications and briefly explain each.
- Q.3 Attempt any one of the following questions. 06**
- Illustrate CDMA, two transmitters A and B are transmitting at same frequency and power, the keys and data of A and B are as given below.
 $A_d = 1$, $A_k = 110110$
 $B_d = 0$, $B_k = 101101$
 - Explain IEEE 802.15.1 Bluetooth architecture with neat diagram.
- Q.4 Explain functional architecture of GSM system with suitable diagram. 06**

Section – II

- Q.5 Attempt any four of the following questions. 16**
- Discuss how packet delivery takes place to and from mobile node with suitable diagram.
 - Write short note on mechanisms of TCP that influence the efficiency of TCP in mobile Environment.
 - Explain four main component of Android application.
 - Give DHCP configuration. Discuss in detail how client gets initialized via DHCP.
 - Compare RFID and NFC.
- Q.6 Attempt any one of the following questions. 06**
- Explain overall architecture of android system with suitable diagram.
 - Explain with neat diagram function NFC architecture.
- Q.7 What is meant by IP micro mobility? List various solutions to resolve this Problem. Explain any two details. 06**

Seat No.	
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Set	P
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SETUP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
 Time: 10:00 AM To 12:00 PM

Max. Marks: 50

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.
 2) Figures to right indicate maximum marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) An IPv6 address is _____ bits long.

a) 128	b) 32
c) 64	d) None of these
- 2) Hub is a multiport _____.

a) Bridge	b) Router
c) Repeater	d) Gateway
- 3) SOA from the web service is _____.

a) Set Oriented Architecture	b) Service Oriented Architecture
c) both a and b	d) None of these
- 4) Which of the following filters the unwanted information?

a) Sality	b) Logic Bomb
c) Firewall	d) All of these
- 5) A modem is a network device which.

a) Converts analog signal to digital signal
b) Convert analog signal to digital data
c) Acts as a relay
d) None of these
- 6) _____ management is the set of functions that detect, isolate and correct malfunctions in a network.

a) Network	b) Error
c) Fault	d) Device
- 7) OSPF is used for _____.

a) Shortest path routing of packets
b) Simulation of packets
c) Creation of packets
d) None of these
- 8) Switch works at _____ layer.

a) Physical	b) Session
c) Data Link	d) All
- 9) Which is the fastest port for data transfer?

a) USB 3.0	b) FireWire 800
c) Serial	d) Parallel

- 10) MAC address _____ bits.
- | | |
|-------|-------|
| a) 64 | b) 32 |
| c) 16 | d) 48 |

Seat No.	
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Set**P**

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SETUP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

Instructions: 1) Attempt any four questions from Q. No. 2 to Q. No. 7.
2) Figures to right indicate maximum marks

Attempt any four.

40

- Q.2** Write a short note on Hub. Explain Hub Configurations.
- Q.3** How an Internetwork is designed? Explain how the Remote Networks are connected.
- Q.4** Write a note on Client - Server Authentication Systems. Explain Host/User Authentication.
- Q.5** Write a note on Configuration Management.
- Q.6** Explain Fault Management. Explain Fault Location and Isolation Techniques in details.
- Q.7** Explain Web Based Enterprise Management in detail.

Seat No.	
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Set Q

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SETUP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
 Time: 10:00 AM To 12:00 PM

Max. Marks: 50

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.
 2) Figures to right indicate maximum marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) _____ management is the set of functions that detect, isolate and correct malfunctions in a network.

a) Network	b) Error
c) Fault	d) Device
- 2) OSPF is used for _____.

a) Shortest path routing of packets
b) Simulation of packets
c) Creation of packets
d) None of these
- 3) Switch works at _____ layer.

a) Physical	b) Session
c) Data Link	d) All
- 4) Which is the fastest port for data transfer?

a) USB 3.0	b) FireWire 800
c) Serial	d) Parallel
- 5) MAC address _____ bits.

a) 64	b) 32
c) 16	d) 48
- 6) An IPv6 address is _____ bits long.

a) 128	b) 32
c) 64	d) None of these
- 7) Hub is a multiport _____.

a) Bridge	b) Router
c) Repeater	d) Gateway
- 8) SOA from the web service is _____.

a) Set Oriented Architecture	b) Service Oriented Architecture
c) both a and b	d) None of these
- 9) Which of the following filters the unwanted information?

a) Sality	b) Logic Bomb
c) Firewall	d) All of these

- 10) A modem is a network device which.
- a) Converts analog signal to digital signal
 - b) Convert analog signal to digital data
 - c) Acts as a relay
 - d) None of these

Seat No.	
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Set	Q
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SETUP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

Instructions: 1) Attempt any four questions from Q. No. 2 to Q. No. 7.
2) Figures to right indicate maximum marks

Attempt any four.

40

- Q.2** Write a short note on Hub. Explain Hub Configurations.
- Q.3** How an Internetwork is designed? Explain how the Remote Networks are connected.
- Q.4** Write a note on Client - Server Authentication Systems. Explain Host/User Authentication.
- Q.5** Write a note on Configuration Management.
- Q.6** Explain Fault Management. Explain Fault Location and Isolation Techniques in details.
- Q.7** Explain Web Based Enterprise Management in detail.

Seat No.	
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Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.

MCQ/Objective Type Questions

Marks: 10

- 1) Which is the fastest port for data transfer?
 - a) USB 3.0
 - b) FireWire 800
 - c) Serial
 - d) Parallel
- 2) MAC address _____ bits.
 - a) 64
 - b) 32
 - c) 16
 - d) 48
- 3) An IPv6 address is _____ bits long.
 - a) 128
 - b) 32
 - c) 64
 - d) None of these
- 4) Hub is a multiport _____.
 - a) Bridge
 - b) Router
 - c) Repeater
 - d) Gateway
- 5) SOA from the web service is _____.
 - a) Set Oriented Architecture
 - b) Service Oriented Architecture
 - c) both a and b
 - d) None of these
- 6) Which of the following filters the unwanted information?
 - a) Sality
 - b) Logic Bomb
 - c) Firewall
 - d) All of these
- 7) A modem is a network device which.
 - a) Converts analog signal to digital signal
 - b) Convert analog signal to digital data
 - c) Acts as a relay
 - d) None of these
- 8) _____ management is the set of functions that detect, isolate and correct malfunctions in a network.
 - a) Network
 - b) Error
 - c) Fault
 - d) Device
- 9) OSPF is used for _____.
 - a) Shortest path routing of packets
 - b) Simulation of packets
 - c) Creation of packets
 - d) None of these

- 10) Switch works at _____ layer.
- | | |
|--------------|------------|
| a) Physical | b) Session |
| c) Data Link | d) All |

Seat No.	
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Set	R
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SETUP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

Instructions: 1) Attempt any four questions from Q. No. 2 to Q. No. 7.
2) Figures to right indicate maximum marks

Attempt any four.

40

- Q.2** Write a short note on Hub. Explain Hub Configurations.
- Q.3** How an Internetwork is designed? Explain how the Remote Networks are connected.
- Q.4** Write a note on Client - Server Authentication Systems. Explain Host/User Authentication.
- Q.5** Write a note on Configuration Management.
- Q.6** Explain Fault Management. Explain Fault Location and Isolation Techniques in details.
- Q.7** Explain Web Based Enterprise Management in detail.

Seat No.	
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SETUP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
 Time: 10:00 AM To 12:00 PM

Max. Marks: 50

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.
 2) Figures to right indicate maximum marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) SOA from the web service is _____.
 a) Set Oriented Architecture b) Service Oriented Architecture
 c) both a and b d) None of these
- 2) Which of the following filters the unwanted information?
 a) Sality b) Logic Bomb
 c) Firewall d) All of these
- 3) A modem is a network device which.
 a) Converts analog signal to digital signal
 b) Convert analog signal to digital data
 c) Acts as a relay
 d) None of these
- 4) _____ management is the set of functions that detect, isolate and correct malfunctions in a network.
 a) Network b) Error
 c) Fault d) Device
- 5) OSPF is used for _____.
 a) Shortest path routing of packets
 b) Simulation of packets
 c) Creation of packets
 d) None of these
- 6) Switch works at _____ layer.
 a) Physical b) Session
 c) Data Link d) All
- 7) Which is the fastest port for data transfer?
 a) USB 3.0 b) FireWire 800
 c) Serial d) Parallel
- 8) MAC address _____ bits.
 a) 64 b) 32
 c) 16 d) 48
- 9) An IPv6 address is _____ bits long.
 a) 128 b) 32
 c) 64 d) None of these

- 10) Hub is a multiport _____.
- | | |
|-------------|------------|
| a) Bridge | b) Router |
| c) Repeater | d) Gateway |

Seat No.	
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Set	S
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
NETWORK SETUP & MANAGEMENT TOOLS

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

Instructions: 1) Attempt any four questions from Q. No. 2 to Q. No. 7.
2) Figures to right indicate maximum marks

Attempt any four.

40

- Q.2** Write a short note on Hub. Explain Hub Configurations.
- Q.3** How an Internetwork is designed? Explain how the Remote Networks are connected.
- Q.4** Write a note on Client - Server Authentication Systems. Explain Host/User Authentication.
- Q.5** Write a note on Configuration Management.
- Q.6** Explain Fault Management. Explain Fault Location and Isolation Techniques in details.
- Q.7** Explain Web Based Enterprise Management in detail.

Seat No.	
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Set**P**

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SOFTWARE LICENSES AND PRACTICES

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 50

Instructions: Attempt any five questions. (each question carries 10 marks)

- Q.1** State and explain issues with Copyrights and Patents with indicative examples.
- Q.2** Differentiate between Copyright and Patent Law. Which offers better protection from copying the source code of a developer? Justify your answer.
- Q.3** What are Free and Open Source Software Products? How are they licensed? Explain the role of MIT License in distributing Free Software products.
- Q.4** List and Explain types of Creative Commons Licenses.
- Q.5** State the benefits of Open Source Software Licensing. Explain how Community Enforcement of Open Source and Free Software Licenses works with an example.
- Q.6** What is Multiple and Cross Licensing? With help of proper use-cases and example explain when to use multiple licensing. What effects does multiple licensing have on the overall software product licensed under it?
- Q.7** What is proprietary license, explain with an indicative example? When should an organization prefer licensing a software product under proprietary license?

Seat No.	
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Set

P

T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
 Time: 10:00 AM To 12:00 PM

Max. Marks: 50

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.
 2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) Which model applies computational procedures to solve equation?
 - a) Static model
 - b) Dynamic model
 - c) Numerical model
 - d) Analytical model
- 2) Mathematical model is based on _____.
 - a) Analogy between such systems as electrical and mechanical
 - b) Use symbolic notation and mathematical equations to represent a system
 - c) All of the above
 - d) None of the above
- 3) A system which does have exogenous activity is said to be _____.
 - a) Open System
 - b) Closed system
 - c) Both of the above
 - d) None of the above
- 4) In Bank system, What is customer?
 - a) Entity
 - b) Activity
 - c) Environment
 - d) None of the above
- 5) Factory is an Example of _____.
 - a) Entity
 - b) Attribute
 - c) Environment
 - d) System
- 6) Which of the following is simulation language?
 - a) Java
 - b) GPSS
 - c) Java script
 - d) None of the above
- 7) In a corporate model, What is/are main segment/segments?
 - a) Environment
 - b) Management
 - c) Plant/Physical Plant
 - d) All of the above
- 8) Oscillator model is an Example of _____.
 - a) Static Physical model
 - b) Dynamic Physical model
 - c) Static Mathematical model
 - d) Dynamic Mathematical model
- 9) NS2 is written in _____.
 - a) Java
 - b) C++
 - c) OTcl
 - d) Both b & c
- 10) In communication system, What is "Transmitting"?
 - a) Entity
 - b) Activity
 - c) Environment
 - d) System

Seat No.	
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Set	P
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

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

Q.2 Attempt any Four. (each 10 Marks)

40

- a) Explain in detail, When Simulation is the appropriate tool.
- b) Define simulation. Write its Advantages and Disadvantages.
- c) Write a short note on Network Simulation (NS2).
- d) Define Queue monitor. Explain with an Example.
- e) Explain OTcl code for star and bus topology.

Seat No.	
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Set	Q
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
 Time: 10:00 AM To 12:00 PM

Max. Marks: 50

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.
 2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes

Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 10

- 1) Which of the following is simulation language?
 - a) Java
 - b) GPSS
 - c) Java script
 - d) None of the above
- 2) In a corporate model, What is/are main segment/segments?
 - a) Environment
 - b) Management
 - c) Plant/Physical Plant
 - d) All of the above
- 3) Oscillator model is an Example of _____.
 - a) Static Physical model
 - b) Dynamic Physical model
 - c) Static Mathematical model
 - d) Dynamic Mathematical model
- 4) NS2 is written in _____.
 - a) Java
 - b) C++
 - c) OTcl
 - d) Both b & c
- 5) In communication system, What is "Transmitting"?
 - a) Entity
 - b) Activity
 - c) Environment
 - d) System
- 6) Which model applies computational procedures to solve equation?
 - a) Static model
 - b) Dynamic model
 - c) Numerical model
 - d) Analytical model
- 7) Mathematical model is based on _____.
 - a) Analogy between such systems as electrical and mechanical
 - b) Use symbolic notation and mathematical equations to represent a system
 - c) All of the above
 - d) None of the above
- 8) A system which does have exogenous activity is said to be _____.
 - a) Open System
 - b) Closed system
 - c) Both of the above
 - d) None of the above
- 9) In Bank system, What is customer?
 - a) Entity
 - b) Activity
 - c) Environment
 - d) None of the above
- 10) Factory is an Example of _____.
 - a) Entity
 - b) Attribute
 - c) Environment
 - d) System

Seat No.	
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Set	Q
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

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

Q.2 Attempt any Four. (each 10 Marks)

40

- a) Explain in detail, When Simulation is the appropriate tool.
- b) Define simulation. Write its Advantages and Disadvantages.
- c) Write a short note on Network Simulation (NS2).
- d) Define Queue monitor. Explain with an Example.
- e) Explain OTcl code for star and bus topology.

Seat No.	
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Seat No.	
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Set	R
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

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

Q.2 Attempt any Four. (each 10 Marks)

40

- a) Explain in detail, When Simulation is the appropriate tool.
- b) Define simulation. Write its Advantages and Disadvantages.
- c) Write a short note on Network Simulation (NS2).
- d) Define Queue monitor. Explain with an Example.
- e) Explain OTcl code for star and bus topology.

Seat No.	
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Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in answer book.
2) Figures to the right indicate full marks.

Marks: 10

1) A system which does have exogenous activity is said to be _____.

- Page 7 of 8

Seat No.	
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Set	S
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T.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
Computer Modeling and Simulation

Day & Date: Thursday, 28-11-2019
Time: 10:00 AM To 12:00 PM

Max. Marks: 40

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

Q.2 Attempt any Four. (each 10 Marks)

40

- a) Explain in detail, When Simulation is the appropriate tool.
- b) Define simulation. Write its Advantages and Disadvantages.
- c) Write a short note on Network Simulation (NS2).
- d) Define Queue monitor. Explain with an Example.
- e) Explain OTcl code for star and bus topology.

Seat No.	
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Set	P
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) A _____ multiprocessor is a shared-memory system in which the access time varies with the location of the memory word.
 - a) UMA
 - b) COMA
 - c) NUMA
 - d) None
- 2) The processor speed is often measured in terms of _____.
 - a) CPI
 - b) MIPS
 - c) I/O
 - d) Throughput
- 3) A _____ is defined as the time required for each phase to complete its operation, assuming equal delay in all phases [pipeline stages].
 - a) Pipeline cycle
 - b) Clock cycle
 - c) Initiations
 - d) None
- 4) The number of instructions issued per cycle, also called the _____ of a superscalar processor.
 - a) Speed
 - b) Initiation
 - c) Degree
 - d) None
- 5) Due to a problem known as _____ the same clock pulse may arrive at different stages with time offset.
 - a) Timing control
 - b) Clocking
 - c) Clock skewing
 - d) Throughput
- 6) The number of time units [clock cycles] between two initiations of a pipeline is the _____ between them.
 - a) Connection
 - b) Latency
 - c) Division
 - d) None
- 7) A _____ is a latency cycle in which each state appears only once.
 - a) Greedy cycle
 - b) Simple cycle
 - c) Clock cycle
 - d) None
- 8) When the network traffic is non-uniform, a _____ may appear corresponding to a certain memory module being excessively accessed by many processors at the same time.
 - a) Latency
 - b) Hot Spot
 - c) Initiations
 - d) None

- 9) _____ protocols achieve data consistency among the caches and shared memory through a bus watching mechanism.
- a) Directory
 - b) Snoopy
 - c) TCP
 - d) UDP
- 10) In hypercube connectivity, if system has _____ PE then each PE is allowed _____ interconnect channel.
- a) N, N
 - b) 2^N , N
 - c) N^2 , N
 - d) N^N , N
- 11) _____ is depends upon what kind of data is processed by processor.
- a) Processor complexity
 - b) Granularity
 - c) Connectivity
 - d) Autonomy
- 12) The communication delay caused by message passing is much longer than that caused by accessing shared variables in a common memory.
- a) True
 - b) False
- 13) _____ passing must synchronize the sender process and the receiver process in time and space.
- a) Asynchronous message
 - b) synchronous message
 - c) N/W diameter
 - d) None of above
- 14) Code generation usually involves transformation from one representation to another, called an _____.
- a) Initial form
 - b) Last form
 - c) Intermediate form
 - d) None

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Answer any three questions.****12**

- a) Explain the following shared memory multiprocessor model.
 - 1) UMA Model
 - 2) NUMA Model
- b) Write a note on VLIW architecture with neat diagram.
- c) Define the following terms:
 - 1) Clock cycle
 - 2) Speed up
 - 3) Efficiency
 - 4) Throughput
- d) Write a note on Paged memory and segmented memory.

Q.3 Answer any two question**16**

- a) Explain Flynn's classification of computer architecture and Bell's taxonomy of MIMD computers.
- b) Explain the Virtual memory model and describe the various page replacement policies.
- c) Consider the five stage pipelined processor specified by the following reservation table.

	1	2	3	4	5	6
S1	X					X
S2		X			X	
S3			X			
S4				X		
S5		X				X

- 1) List the set of forbidden latencies and collision vector.
- 2) Draw the state transition diagram showing all possible initial sequences (cycles). Without causing a collision in the pipeline.
- 3) List all the simple cycles from the state diagram.
- 4) Identify the greedy cycles among the simple cycles.

Section – II

- Q.4 Answer any three questions. 12**
- a) Explain the Snoopy bus protocol.
 - b) Write a note on Hypercube interconnection network.
 - c) Explain the following three major phases of parallelizing compiler. Flow analysis, Optimizations and Code generation.
 - d) Write a note on Multiport memory.
- Q.5 Answer any two questions. 16**
- a) With neat diagram explain the Massively Parallel Processor (MPP) processing element and CM5 processing element.
 - b) Write a note on following directory based protocols
 - 1) Full map directory protocol
 - 2) Limited directory protocol
 - 3) Chained directory protocol
 - c) Explain the following parallel programming models.
 - 1) Shared variable model
 - 2) Message passing model

Seat No.	
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Set Q

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) When the network traffic is non-uniform, a _____ may appear corresponding to a certain memory module being excessively accessed by many processors at the same time.
 - a) Latency
 - b) Hot Spot
 - c) Initiations
 - d) None
- 2) _____ protocols achieve data consistency among the caches and shared memory through a bus watching mechanism.
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 - b) Snoopy
 - c) TCP
 - d) UDP
- 3) In hypercube connectivity, if system has _____ PE then each PE is allowed _____ interconnect channel.
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 - b) 2^N , N
 - c) N^2 , N
 - d) N^N , N
- 4) _____ is depends upon what kind of data is processed by processor.
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 - b) Granularity
 - c) Connectivity
 - d) Autonomy
- 5) The communication delay caused by message passing is much longer than that caused by accessing shared variables in a common memory.
 - a) True
 - b) False
- 6) _____ passing must synchronize the sender process and the receiver process in time and space.
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 - b) synchronous message
 - c) N/W diameter
 - d) None of above
- 7) Code generation usually involves transformation from one representation to another, called an _____.
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 - b) Last form
 - c) Intermediate form
 - d) None
- 8) A _____ multiprocessor is a shared-memory system in which the access time varies with the location of the memory word.
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 - b) COMA
 - c) NUMA
 - d) None
- 9) The processor speed is often measured in terms of _____.
 - a) CPI
 - b) MIPS
 - c) I/O
 - d) Throughput

- 10) A _____ is defined as the time required for each phase to complete its operation, assuming equal delay in all phases [pipeline stages].
- a) Pipeline cycle
 - b) Clock cycle
 - c) Initiations
 - d) None
- 11) The number of instructions issued per cycle, also called the _____ of a superscalar processor.
- a) Speed
 - b) Initiation
 - c) Degree
 - d) None
- 12) Due to a problem known as _____ the same clock pulse may arrive at different stages with time offset.
- a) Timing control
 - b) Clocking
 - c) Clock skewing
 - d) Throughput
- 13) The number of time units [clock cycles] between two initiations of a pipeline is the _____ between them.
- a) Connection
 - b) Latency
 - c) Division
 - d) None
- 14) A _____ is a latency cycle in which each state appears only once.
- a) Greedy cycle
 - b) Simple cycle
 - c) Clock cycle
 - d) None

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Answer any three questions. 12**

- Explain the following shared memory multiprocessor model.
 - UMA Model
 - NUMA Model
- Write a note on VLIW architecture with neat diagram.
- Define the following terms:
 - Clock cycle
 - Speed up
 - Efficiency
 - Throughput
- Write a note on Paged memory and segmented memory.

Q.3 Answer any two question 16

- Explain Flynn's classification of computer architecture and Bell's taxonomy of MIMD computers.
- Explain the Virtual memory model and describe the various page replacement policies.
- Consider the five stage pipelined processor specified by the following reservation table.

	1	2	3	4	5	6
S1	X					X
S2		X			X	
S3			X			
S4				X		
S5		X				X

- List the set of forbidden latencies and collision vector.
- Draw the state transition diagram showing all possible initial sequences (cycles). Without causing a collision in the pipeline.
- List all the simple cycles from the state diagram.
- Identify the greedy cycles among the simple cycles.

Section – II**Q.4 Answer any three questions. 12**

- Explain the Snoopy bus protocol.
- Write a note on Hypercube interconnection network.
- Explain the following three major phases of parallelizing compiler. Flow analysis, Optimizations and Code generation.
- Write a note on Multiport memory.

Q.5 Answer any two questions.

- a)** With neat diagram explain the Massively Parallel Processor (MPP) processing element and CM5 processing element.
- b)** Write a note on following directory based protocols
 - 1) Full map directory protocol
 - 2) Limited directory protocol
 - 3) Chained directory protocol
- c)** Explain the following parallel programming models.
 - 1) Shared variable model
 - 2) Message passing model

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Due to a problem known as _____ the same clock pulse may arrive at different stages with time offset.

a) Timing control	b) Clocking
c) Clock skewing	d) Throughput
- 2) The number of time units [clock cycles] between two initiations of a pipeline is the _____ between them.

a) Connection	b) Latency
c) Division	d) None
- 3) A _____ is a latency cycle in which each state appears only once.

a) Greedy cycle	b) Simple cycle
c) Clock cycle	d) None
- 4) When the network traffic is non-uniform, a _____ may appear corresponding to a certain memory module being excessively accessed by many processors at the same time.

a) Latency	b) Hot Spot
c) Initiations	d) None
- 5) _____ protocols achieve data consistency among the caches and shared memory through a bus watching mechanism.

a) Directory	b) Snoopy
c) TCP	d) UDP
- 6) In hypercube connectivity, if system has _____ PE then each PE is allowed _____ interconnect channel.

a) N, N	b) 2^N , N
c) N^2 , N	d) N^N , N
- 7) _____ is depends upon what kind of data is processed by processor.

a) Processor complexity	b) Granularity
c) Connectivity	d) Autonomy
- 8) The communication delay caused by message passing is much longer than that caused by accessing shared variables in a common memory.

a) True	b) False
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- 9) _____ passing must synchronize the sender process and the receiver process in time and space.
- a) Asynchronous message
 - b) synchronous message
 - c) N/W diameter
 - d) None of above
- 10) Code generation usually involves transformation from one representation to another, called an _____.
- a) Initial form
 - b) Last form
 - c) Intermediate form
 - d) None
- 11) A _____ multiprocessor is a shared-memory system in which the access time varies with the location of the memory word.
- a) UMA
 - b) COMA
 - c) NUMA
 - d) None
- 12) The processor speed is often measured in terms of _____.
- a) CPI
 - b) MIPS
 - c) I/O
 - d) Throughput
- 13) A _____ is defined as the time required for each phase to complete its operation, assuming equal delay in all phases [pipeline stages].
- a) Pipeline cycle
 - b) Clock cycle
 - c) Initiations
 - d) None
- 14) The number of instructions issued per cycle, also called the _____ of a superscalar processor.
- a) Speed
 - b) Initiation
 - c) Degree
 - d) None

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

Q.2 Answer any three questions. **12**

- a) Explain the following shared memory multiprocessor model.
 - 1) UMA Model
 - 2) NUMA Model
- b) Write a note on VLIW architecture with neat diagram.
- c) Define the following terms:
 - 1) Clock cycle
 - 2) Speed up
 - 3) Efficiency
 - 4) Throughput
- d) Write a note on Paged memory and segmented memory.

Q.3 Answer any two question **16**

- a) Explain Flynn's classification of computer architecture and Bell's taxonomy of MIMD computers.
- b) Explain the Virtual memory model and describe the various page replacement policies.
- c) Consider the five stage pipelined processor specified by the following reservation table.

	1	2	3	4	5	6
S1	X					X
S2		X			X	
S3			X			
S4				X		
S5		X				X

- 1) List the set of forbidden latencies and collision vector.
- 2) Draw the state transition diagram showing all possible initial sequences (cycles). Without causing a collision in the pipeline.
- 3) List all the simple cycles from the state diagram.
- 4) Identify the greedy cycles among the simple cycles.

Section – II

Q.4 Answer any three questions. **12**

- a) Explain the Snoopy bus protocol.
- b) Write a note on Hypercube interconnection network.
- c) Explain the following three major phases of parallelizing compiler. Flow analysis, Optimizations and Code generation.
- d) Write a note on Multiport memory.

Q.5 Answer any two questions.

- a)** With neat diagram explain the Massively Parallel Processor (MPP) processing element and CM5 processing element.
- b)** Write a note on following directory based protocols
 - 1) Full map directory protocol
 - 2) Limited directory protocol
 - 3) Chained directory protocol
- c)** Explain the following parallel programming models.
 - 1) Shared variable model
 - 2) Message passing model

Seat No.	
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Day & Date: Saturday, 07-12-2019
Time: 02:30 PM To 05:30 PM

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

Marks: 14

- 1) In hypercube connectivity, if system has _____ PE then each PE is allowed _____ interconnect channel.
a) N, N
b) $2^N, N$
c) N^2, N
d) N^N, N
- 2) _____ is depends upon what kind of data is processed by processor.
a) Processor complexity
b) Granularity
c) Connectivity
d) Autonomy
- 3) The communication delay caused by message passing is much longer than that caused by accessing shared variables in a common memory.
a) True
b) False
- 4) _____ passing must synchronize the sender process and the receiver process in time and space.
a) Asynchronous message
b) synchronous message
c) N/W diameter
d) None of above
- 5) Code generation usually involves transformation from one representation to another, called an _____.
a) Initial form
b) Last form
c) Intermediate form
d) None
- 6) A _____ multiprocessor is a shared-memory system in which the access time varies with the location of the memory word.
a) UMA
b) COMA
c) NUMA
d) None
- 7) The processor speed is often measured in terms of _____.
a) CPI
b) MIPS
c) I/O
d) Throughput
- 8) A _____ is defined as the time required for each phase to complete its operation, assuming equal delay in all phases [pipeline stages].
a) Pipeline cycle
b) Clock cycle
c) Initiations
d) None

- 9) The number of instructions issued per cycle, also called the _____ of a superscalar processor.
- a) Speed
 - b) Initiation
 - c) Degree
 - d) None
- 10) Due to a problem known as _____ the same clock pulse may arrive at different stages with time offset.
- a) Timing control
 - b) Clocking
 - c) Clock skewing
 - d) Throughput
- 11) The number of time units [clock cycles] between two initiations of a pipeline is the _____ between them.
- a) Connection
 - b) Latency
 - c) Division
 - d) None
- 12) A _____ is a latency cycle in which each state appears only once.
- a) Greedy cycle
 - b) Simple cycle
 - c) Clock cycle
 - d) None
- 13) When the network traffic is non-uniform, a _____ may appear corresponding to a certain memory module being excessively accessed by many processors at the same time.
- a) Latency
 - b) Hot Spot
 - c) Initiations
 - d) None
- 14) _____ protocols achieve data consistency among the caches and shared memory through a bus watching mechanism.
- a) Directory
 - b) Snoopy
 - c) TCP
 - d) UDP

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

Q.2 Answer any three questions. **12**

- a) Explain the following shared memory multiprocessor model.
 - 1) UMA Model
 - 2) NUMA Model
- b) Write a note on VLIW architecture with neat diagram.
- c) Define the following terms:
 - 1) Clock cycle
 - 2) Speed up
 - 3) Efficiency
 - 4) Throughput
- d) Write a note on Paged memory and segmented memory.

Q.3 Answer any two question **16**

- a) Explain Flynn's classification of computer architecture and Bell's taxonomy of MIMD computers.
- b) Explain the Virtual memory model and describe the various page replacement policies.
- c) Consider the five stage pipelined processor specified by the following reservation table.

	1	2	3	4	5	6
S1	X					X
S2		X			X	
S3			X			
S4				X		
S5		X				X

- 1) List the set of forbidden latencies and collision vector.
- 2) Draw the state transition diagram showing all possible initial sequences (cycles). Without causing a collision in the pipeline.
- 3) List all the simple cycles from the state diagram.
- 4) Identify the greedy cycles among the simple cycles.

Section – II

Q.4 Answer any three questions. **12**

- a) Explain the Snoopy bus protocol.
- b) Write a note on Hypercube interconnection network.
- c) Explain the following three major phases of parallelizing compiler. Flow analysis, Optimizations and Code generation.
- d) Write a note on Multiport memory.

Q.5 Answer any two questions.

- a)** With neat diagram explain the Massively Parallel Processor (MPP) processing element and CM5 processing element.
- b)** Write a note on following directory based protocols
 - 1) Full map directory protocol
 - 2) Limited directory protocol
 - 3) Chained directory protocol
- c)** Explain the following parallel programming models.
 - 1) Shared variable model
 - 2) Message passing model

Seat No.	
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Set	P
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISTRIBUTED SYSTEMS

Day & Date: Tuesday, 10-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full marks.
 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) In _____ systems a single system wide primary memory is shared by all the processors.
 - a) Tightly coupled systems
 - b) Loosely coupled systems
 - c) Distributed system
 - d) None of these
- 2) _____ is defined as the degree of tolerance against errors and component failures in a system.
 - a) Throughput
 - b) Performance
 - c) Accuracy
 - d) Reliability
- 3) _____ ensures that if every process that is granted a resource, which must not be used simultaneously by multiple processes, eventually releases it, every request for that resource is eventually granted.
 - a) An event-ordering property
 - b) A mutual-exclusion property
 - c) A no-deadlock property
 - d) A no-starvation property
- 4) In distributed system _____ and _____ are used to achieve fault tolerance.
 - a) Redundancy technique, Distributed control
 - b) Mutual Exclusion, virtual Uniprocessor
 - c) Deadlock detection, Replication technique
 - d) None of these
- 5) The size of FLIP messages are less than _____ bytes.
 - a) $2^{64}-1$
 - b) $2^{16}-1$
 - c) $2^{32}-1$
 - d) $2^{128}-1$
- 6) Sequence number is used to identify _____ and _____.
 - a) Lost messages, Duplicate messages
 - b) Lost messages and corrupted messages
 - c) Duplicated message and corrupted messages
 - d) Corrupted messages and duplicate messages
- 7) In 0-reliable of multicast communication _____ is expected from senders.
 - a) 1 response
 - b) No response
 - c) m-out-of-n response
 - d) All response

- 8) _____ means that a remote procedure call should have exactly the same syntax as a local procedure call.
- a) Syntactic transparency
 - b) Semantic Transparency
 - c) Access Transparency
 - d) Name Transparency
- 9) _____ is used for stub generation in RPC that defines interface between client and server.
- a) Internet definition language
 - b) Intercommunication definition language
 - c) Interface definition language
 - d) Interface data definition language
- 10) An interface name has two parts _____.
- a) request and reply
 - b) request and response
 - c) object and instance
 - d) type and instance
- 11) In mutual exclusion algorithm, _____ dictates that requests must be executed in the order they are made.
- a) Starvation
 - b) Tolerance
 - c) Fairness
 - d) Deadlock
- 12) Lamport algorithm executes critical section requests in the _____ order of timestamps.
- a) increasing
 - b) Decreasing
 - c) random
 - d) none of these
- 13) In hierarchical distributed algorithm, controllers are at bottom most level to _____ and non leaf controllers are responsible for _____.
- a) Manage resource, deadlock detection
 - b) mutual exclusion, deadlock detection
 - c) Deadlock detection, deadlock removal
 - d) mutual exclusion, deadlock removal
- 14) The mechanism of binding different file name spaces together to form single hierarchical structured name space is called as _____.
- a) Hints
 - b) Mount
 - c) Name space
 - d) Cache manager

Seat No.	
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Set	P
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISTRIBUTED SYSTEMS

Day & Date: Tuesday, 10-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

- Q.2 Attempt any three.** **12**
- Explain workstation model.
 - Describe FLIP protocol.
 - Explain transparencies in RPC.
 - Write a note on RRA protocol.
 - Discuss Clock Synchronization Issues.
- Q.3 Attempt any one.** **08**
- Explain implementation of RPC in detail with diagram.
 - Discuss centralized clock synchronization algorithm.
- Q.4 What is Buffering? Explain different types of buffering with neat diagram.** **08**

Section – II

- Q.5 Answer any three.** **12**
- What are the requirements of mutual exclusion algorithms?
 - Explain issues in deadlock detection.
 - Write a note on hints and caching.
 - What is page replacement?
 - Write a note on memory coherence.
- Q.6 Answer any one.** **08**
- Explain Lamport's algorithm.
 - Draw and explain architecture of distributed file system.
- Q.7 Answer any one.** **08**
- Explain Ho-Ramamoorthy algorithm.
 - Discuss Suzuki-Kasami's Broadcast algorithm.

Seat No.	
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Set Q

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISTRIBUTED SYSTEMS

Day & Date: Tuesday, 10-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full marks.
 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) _____ means that a remote procedure call should have exactly the same syntax as a local procedure call.

a) Syntactic transparency	b) Semantic Transparency
c) Access Transparency	d) Name Transparency
- 2) _____ is used for stub generation in RPC that defines interface between client and server.

a) Internet definition language
b) Intercommunication definition language
c) Interface definition language
d) Interface data definition language
- 3) An interface name has two parts _____.

a) request and reply	b) request and response
c) object and instance	d) type and instance
- 4) In mutual exclusion algorithm, _____ dictates that requests must be executed in the order they are made.

a) Starvation	b) Tolerance
c) Fairness	d) Deadlock
- 5) Lamport algorithm executes critical section requests in the _____ order of timestamps.

a) increasing	b) Decreasing
c) random	d) none of these
- 6) In hierarchical distributed algorithm, controllers are at bottom most level to _____ and non leaf controllers are responsible for _____.

a) Manage resource, deadlock detection
b) mutual exclusion, deadlock detection
c) Deadlock detection, deadlock removal
d) mutual exclusion, deadlock removal
- 7) The mechanism of binding different file name spaces together to form single hierarchical structured name space is called as _____.

a) Hints	b) Mount
c) Name space	d) Cache manager

- 8) In _____ systems a single system wide primary memory is shared by all the processors.
- a) Tightly coupled systems
 - b) Loosely coupled systems
 - c) Distributed system
 - d) None of these
- 9) _____ is defined as the degree of tolerance against errors and component failures in a system.
- a) Throughput
 - b) Performance
 - c) Accuracy
 - d) Reliability
- 10) _____ ensures that if every process that is granted a resource, which must not be used simultaneously by multiple processes, eventually releases it, every request for that resource is eventually granted.
- a) An event-ordering property
 - b) A mutual-exclusion property
 - c) A no-deadlock property
 - d) A no-starvation property
- 11) In distributed system _____ and _____ are used to achieve fault tolerance.
- a) Redundancy technique, Distributed control
 - b) Mutual Exclusion, virtual Uniprocessor
 - c) Deadlock detection, Replication technique
 - d) None of these
- 12) The size of FLIP messages are less than _____ bytes.
- a) $2^{64}-1$
 - b) $2^{16}-1$
 - c) $2^{32}-1$
 - d) $2^{128}-1$
- 13) Sequence number is used to identify _____ and _____.
- a) Lost messages, Duplicate messages
 - b) Lost messages and corrupted messages
 - c) Duplicated message and corrupted messages
 - d) Corrupted messages and duplicate messages
- 14) In 0-reliable of multicast communication _____ is expected from senders.
- a) 1 response
 - b) No response
 - c) m-out-of-n response
 - d) All response

Seat No.	
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Set	Q
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISTRIBUTED SYSTEMS

Day & Date: Tuesday, 10-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

- Q.2 Attempt any three.** **12**
- Explain workstation model.
 - Describe FLIP protocol.
 - Explain transparencies in RPC.
 - Write a note on RRA protocol.
 - Discuss Clock Synchronization Issues.
- Q.3 Attempt any one.** **08**
- Explain implementation of RPC in detail with diagram.
 - Discuss centralized clock synchronization algorithm.
- Q.4** What is Buffering? Explain different types of buffering with neat diagram. **08**

Section – II

- Q.5 Answer any three.** **12**
- What are the requirements of mutual exclusion algorithms?
 - Explain issues in deadlock detection.
 - Write a note on hints and caching.
 - What is page replacement?
 - Write a note on memory coherence.
- Q.6 Answer any one.** **08**
- Explain Lamport's algorithm.
 - Draw and explain architecture of distributed file system.
- Q.7 Answer any one.** **08**
- Explain Ho-Ramamoorthy algorithm.
 - Discuss Suzuki-Kasami's Broadcast algorithm.

Seat No.	
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Day & Date: Tuesday,10-12-2019
Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Marks: 14

- 1) The size of FLIP messages are less than _____ bytes.
a) $2^{64}-1$
b) $2^{16}-1$
c) $2^{32}-1$
d) $2^{128}-1$
- 2) Sequence number is used to identify _____ and _____.
a) Lost messages, Duplicate messages
b) Lost messages and corrupted messages
c) Duplicated message and corrupted messages
d) Corrupted messages and duplicate messages
- 3) In O-reliable of multicast communication _____ is expected from senders.
a) 1 response
b) No response
c) m-out-of-n response
d) All response
- 4) _____ means that a remote procedure call should have exactly the same syntax as a local procedure call.
a) Syntactic transparency
b) Semantic Transparency
c) Access Transparency
d) Name Transparency
- 5) _____ is used for stub generation in RPC that defines interface between client and server.
a) Internet definition language
b) Intercommunication definition language
c) Interface definition language
d) Interface data definition language
- 6) An interface name has two parts _____.
a) request and reply
b) request and response
c) object and instance
d) type and instance
- 7) In mutual exclusion algorithm, _____ dictates that requests must be executed in the order they are made.
a) Starvation
b) Tolerance
c) Fairness
d) Deadlock
- 8) Lamport algorithm executes critical section requests in the _____ order of timestamps.
a) increasing
b) Decreasing
c) random
d) none of these

- 9) In hierarchical distributed algorithm, controllers are at bottom most level to _____ and non leaf controllers are responsible for _____.
a) Manage resource, deadlock detection
b) mutual exclusion, deadlock detection
c) Deadlock detection, deadlock removal
d) mutual exclusion, deadlock removal
- 10) The mechanism of binding different file name spaces together to form single hierarchical structured name space is called as _____.
a) Hints
b) Mount
c) Name space
d) Cache manager
- 11) In _____ systems a single system wide primary memory is shared by all the processors.
a) Tightly coupled systems
b) Loosely coupled systems
c) Distributed system
d) None of these
- 12) _____ is defined as the degree of tolerance against errors and component failures in a system.
a) Throughput
b) Performance
c) Accuracy
d) Reliability
- 13) _____ ensures that if every process that is granted a resource, which must not be used simultaneously by multiple processes, eventually releases it, every request for that resource is eventually granted.
a) An event-ordering property
b) A mutual-exclusion property
c) A no-deadlock property
d) A no-starvation property
- 14) In distributed system _____ and _____ are used to achieve fault tolerance.
a) Redundancy technique, Distributed control
b) Mutual Exclusion, virtual Uniprocessor
c) Deadlock detection, Replication technique
d) None of these

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISTRIBUTED SYSTEMS

Day & Date: Tuesday, 10-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

- Q.2 Attempt any three.** **12**
- Explain workstation model.
 - Describe FLIP protocol.
 - Explain transparencies in RPC.
 - Write a note on RRA protocol.
 - Discuss Clock Synchronization Issues.
- Q.3 Attempt any one.** **08**
- Explain implementation of RPC in detail with diagram.
 - Discuss centralized clock synchronization algorithm.
- Q.4 What is Buffering? Explain different types of buffering with neat diagram.** **08**

Section – II

- Q.5 Answer any three.** **12**
- What are the requirements of mutual exclusion algorithms?
 - Explain issues in deadlock detection.
 - Write a note on hints and caching.
 - What is page replacement?
 - Write a note on memory coherence.
- Q.6 Answer any one.** **08**
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 - Draw and explain architecture of distributed file system.
- Q.7 Answer any one.** **08**
- Explain Ho-Ramamoorthy algorithm.
 - Discuss Suzuki-Kasami's Broadcast algorithm.

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISTRIBUTED SYSTEMS

Day & Date: Tuesday, 10-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full marks.
 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) An interface name has two parts _____.
 a) request and reply b) request and response
 c) object and instance d) type and instance
- 2) In mutual exclusion algorithm, _____ dictates that requests must be executed in the order they are made.
 a) Starvation b) Tolerance
 c) Fairness d) Deadlock
- 3) Lamport algorithm executes critical section requests in the _____ order of timestamps.
 a) increasing b) Decreasing
 c) random d) none of these
- 4) In hierarchical distributed algorithm, controllers are at bottom most level to _____ and non leaf controllers are responsible for _____.
 a) Manage resource, deadlock detection
 b) mutual exclusion, deadlock detection
 c) Deadlock detection, deadlock removal
 d) mutual exclusion, deadlock removal
- 5) The mechanism of binding different file name spaces together to form single hierarchical structured name space is called as _____.
 a) Hints b) Mount
 c) Name space d) Cache manager
- 6) In _____ systems a single system wide primary memory is shared by all the processors.
 a) Tightly coupled systems b) Loosely coupled systems
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- 8) _____ ensures that if every process that is granted a resource, which must not be used simultaneously by multiple processes, eventually releases it, every request for that resource is eventually granted.
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 - b) A mutual-exclusion property
 - c) A no-deadlock property
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 - b) $2^{16}-1$
 - c) $2^{32}-1$
 - d) $2^{128}-1$
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- a) Lost messages, Duplicate messages
 - b) Lost messages and corrupted messages
 - c) Duplicated message and corrupted messages
 - d) Corrupted messages and duplicate messages
- 12) In 0-reliable of multicast communication _____ is expected from senders.
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 - b) Semantic Transparency
 - c) Access Transparency
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- 14) _____ is used for stub generation in RPC that defines interface between client and server.
- a) Internet definition language
 - b) Intercommunication definition language
 - c) Interface definition language
 - d) Interface data definition language

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DISTRIBUTED SYSTEMS

Day & Date: Tuesday, 10-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

- Q.2 Attempt any three.** **12**
- Explain workstation model.
 - Describe FLIP protocol.
 - Explain transparencies in RPC.
 - Write a note on RRA protocol.
 - Discuss Clock Synchronization Issues.
- Q.3 Attempt any one.** **08**
- Explain implementation of RPC in detail with diagram.
 - Discuss centralized clock synchronization algorithm.
- Q.4** What is Buffering? Explain different types of buffering with neat diagram. **08**

Section – II

- Q.5 Answer any three.** **12**
- What are the requirements of mutual exclusion algorithms?
 - Explain issues in deadlock detection.
 - Write a note on hints and caching.
 - What is page replacement?
 - Write a note on memory coherence.
- Q.6 Answer any one.** **08**
- Explain Lamport's algorithm.
 - Draw and explain architecture of distributed file system.
- Q.7 Answer any one.** **08**
- Explain Ho-Ramamoorthy algorithm.
 - Discuss Suzuki-Kasami's Broadcast algorithm.

Seat No.	
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Set	P
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MODERN DATABASE SYSTEM

Day & Date: Thursday, 12-12-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

- Instructions:** 1) Q. No 1 is compulsory. It should be solved in first 30 minutes.
 2) Figures to the right indicate full marks.
 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The protocol which ensures that a transaction is terminated same way at every site it executes is called _____.
 a) Consistency protocol b) Logging protocol
 c) 2-PC protocol d) Concurrency Control protocol
- 2) Which of following protocol has the advantage of imposing less overhead on read operation?
 a) Majority b) Biased
 c) Quorum consensus d) Primary copy
- 3) In horizontal fragmentation, the relation is partitioned _____.
 a) Column wise b) Row wise
 c) Attribute wise d) None
- 4) _____ partitioning technique is best suited for Point Queries based on partitioning attributes.
 a) Range b) Round Robin
 c) Hash d) All
- 5) Following OLAP query can be achieved by using which of the following?
 { (item name, color, clothes size), (item name, color), (item name, clothes size), (color, clothes size), (item name), (color), (clothes size), () }
 a) group by rollup b) group by cube
 c) group by d) drilldown
- 6) The file in Namenode which stores the information mapping the data block location with file name is?
 a) dfsimage b) nameimage
 c) fsimage d) image
- 7) Execution of a single query in parallel on multiple processors/disks for speeding up long running queries is called _____.
 a) Inter-query parallelism b) Intra- query parallelism
 c) Inter-operation d) Intra-operation
- 8) Ranking query is done in conjunction with which of following specification?
 a) group by b) order by
 c) avg d) sum

- 9) The operation of moving from finer-granularity data to a coarser granularity (by means of aggregation) is called a _____.
 - a) Rollup
 - b) Drill down
 - c) Dicing
 - d) Pivoting
- 10) The full form of KDD is _____.
 - a) Knowledge Database
 - b) Knowledge Discovery Database
 - c) Knowledge Data House
 - d) Knowledge Data Definition
- 11) In type inheritance, the keyword _____ says that, subtype may not be created from the given type.
 - a) Not final
 - b) Self
 - c) Create
 - d) Final
- 12) To copy files/folders from local file system to hdfs store _____.
 - a) Cat
 - b) CopyFromLocal
 - c) CopyToLocal
 - d) cp
- 13) The source of HDFS architecture in Hadoop originated as _____.
 - a) Google distributed filesystem
 - b) Yahoo distributed filesystem
 - c) Facebook distributed filesystem
 - d) Azure distributed filesystem
- 14) Which of the following is a NoSQL Database Type?
 - a) SQL
 - b) Document databases
 - c) JSON
 - d) All of the mentioned

Seat No.	
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Set	P
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MODERN DATABASE SYSTEM

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

Max. Marks: 56

Instructions: 1) Figures to the right indicate full marks.
2) Assume suitable data if necessary.

Section – I

Q.2 Answer any four. **20**

- a) Explain Majority and Biased locking protocol for concurrency control in distributed system.
- b) Explain Partitioned join with diagram.
- c) Explain following OLAP operations.
 - 1) Cube
 - 2) Rollup
- d) Explain Association Rules with support and confidence in Data Mining with example.
- e) What is data warehousing? Give its architecture with different issues.

Q.3 Answer any one. **08**

- a) Explain working of 2 Phase Commit protocol. Give any two types of failures handled by this protocol.
- b) Explain different partitioning Techniques in I/O Parallelism and compare them with example.

Section – II

Q.4 Answer any four. **20**

- a) Explain following concepts with SQL query examples in Object based Databases.
 - 1) Structured types
 - 2) Type inheritance
 - 3) Array and multiset
- b) Differentiate between object oriented DBMS and Object relational DBMS.
- c) Explain Hash join method in query processing with diagram.
- d) Give different Hadoop commands.
- e) What is big data? Explain different characteristic of big data.

Q.5 Answer any one. **08**

- a) Explain high level architecture of Hadoop with its components. Give difference between Hadoop and RDBMS.
- b) Explain Nested loop join in detail with its pseudo code. Give worst case and best case cost of Nested loop join for two relations R and S w.r.t following.
 - 1) No of block transfer
 - 2) Seek time

Seat No.	
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Set Q

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MODERN DATABASE SYSTEM

Day & Date: Thursday, 12-12-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

- Instructions:** 1) Q. No 1 is compulsory. It should be solved in first 30 minutes.
 2) Figures to the right indicate full marks.
 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Ranking query is done in conjunction with which of following specification?

a) group by	b) order by
c) avg	d) Sum
- 2) The operation of moving from finer-granularity data to a coarser granularity (by means of aggregation) is called a _____.

a) Rollup	b) Drill down
c) Dicing	d) Pivoting
- 3) The full form of KDD is _____.

a) Knowledge Database
b) Knowledge Discovery Database
c) Knowledge Data House
d) Knowledge Data Definition
- 4) In type inheritance, the keyword _____ says that, subtype may not be created from the given type.

a) Not final	b) Self
c) Create	d) Final
- 5) To copy files/folders from local file system to hdfs store _____.

a) Cat	b) CopyFromLocal
c) CopyToLocal	d) cp
- 6) The source of HDFS architecture in Hadoop originated as _____.

a) Google distributed filesystem
b) Yahoo distributed filesystem
c) Facebook distributed filesystem
d) Azure distributed filesystem
- 7) Which of the following is a NoSQL Database Type?

a) SQL	b) Document databases
c) JSON	d) All of the mentioned
- 8) The protocol which ensures that a transaction is terminated same way at every site it executes is called _____.

a) Consistency protocol	b) Logging protocol
c) 2-PC protocol	d) Concurrency Control protocol

- 9) Which of following protocol has the advantage of imposing less overhead on read operation?
- a) Majority
 - b) Biased
 - c) Quorum consensus
 - d) Primary copy
- 10) In horizontal fragmentation, the relation is partitioned _____.
a) Column wise b) Row wise
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- 11) _____ partitioning technique is best suited for Point Queries based on partitioning attributes.
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- 12) Following OLAP query can be achieved by using which of the following?
{ (item name, color, clothes size), (item name, color), (item name, clothes size), (color, clothes size), (item name), (color), (clothes size), () }
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MODERN DATABASE SYSTEM

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

Max. Marks: 56

Instructions: 1) Figures to the right indicate full marks.
 2) Assume suitable data if necessary.

Section – I

Q.2 Answer any four. **20**

- a) Explain Majority and Biased locking protocol for concurrency control in distributed system.
- b) Explain Partitioned join with diagram.
- c) Explain following OLAP operations.
 - 1) Cube
 - 2) Rollup
- d) Explain Association Rules with support and confidence in Data Mining with example.
- e) What is data warehousing? Give its architecture with different issues.

Q.3 Answer any one. **08**

- a) Explain working of 2 Phase Commit protocol. Give any two types of failures handled by this protocol.
- b) Explain different partitioning Techniques in I/O Parallelism and compare them with example.

Section – II

Q.4 Answer any four. **20**

- a) Explain following concepts with SQL query examples in Object based Databases.
 - 1) Structured types
 - 2) Type inheritance
 - 3) Array and multiset
- b) Differentiate between object oriented DBMS and Object relational DBMS.
- c) Explain Hash join method in query processing with diagram.
- d) Give different Hadoop commands.
- e) What is big data? Explain different characteristic of big data.

Q.5 Answer any one. **08**

- a) Explain high level architecture of Hadoop with its components. Give difference between Hadoop and RDBMS.
- b) Explain Nested loop join in detail with its pseudo code. Give worst case and best case cost of Nested loop join for two relations R and S w.r.t following.
 - 1) No of block transfer
 - 2) Seek time

Seat No.	
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Day & Date: Thursday, 12-12-2019
Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No 1 is compulsory. It should be solved in first 30 minutes.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Marks: 14

1) Following OLAP query can be achieved by using which of the following?
{ (item name, color, clothes size), (item name, color), (item name, clothes size), (color, clothes size), (item name), (color), (clothes size), () }

- Page 7 of 12

- 9) The source of HDFS architecture in Hadoop originated as _____.
a) Google distributed filesystem
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c) Facebook distributed filesystem
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- 10) Which of the following is a NoSQL Database Type?
a) SQL
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a) Majority
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d) Primary copy
- 13) In horizontal fragmentation, the relation is partitioned _____.
a) Column wise
b) Row wise
c) Attribute wise
d) None
- 14) _____ partitioning technique is best suited for Point Queries based on partitioning attributes.
a) Range
b) Round Robin
c) Hash
d) All

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MODERN DATABASE SYSTEM

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

Max. Marks: 56

Instructions: 1) Figures to the right indicate full marks.
 2) Assume suitable data if necessary.

Section – I

Q.2 Answer any four. **20**

- a) Explain Majority and Biased locking protocol for concurrency control in distributed system.
- b) Explain Partitioned join with diagram.
- c) Explain following OLAP operations.
 - 1) Cube
 - 2) Rollup
- d) Explain Association Rules with support and confidence in Data Mining with example.
- e) What is data warehousing? Give its architecture with different issues.

Q.3 Answer any one. **08**

- a) Explain working of 2 Phase Commit protocol. Give any two types of failures handled by this protocol.
- b) Explain different partitioning Techniques in I/O Parallelism and compare them with example.

Section – II

Q.4 Answer any four. **20**

- a) Explain following concepts with SQL query examples in Object based Databases.
 - 1) Structured types
 - 2) Type inheritance
 - 3) Array and multiset
- b) Differentiate between object oriented DBMS and Object relational DBMS.
- c) Explain Hash join method in query processing with diagram.
- d) Give different Hadoop commands.
- e) What is big data? Explain different characteristic of big data.

Q.5 Answer any one. **08**

- a) Explain high level architecture of Hadoop with its components. Give difference between Hadoop and RDBMS.
- b) Explain Nested loop join in detail with its pseudo code. Give worst case and best case cost of Nested loop join for two relations R and S w.r.t following.
 - 1) No of block transfer
 - 2) Seek time

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MODERN DATABASE SYSTEM

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

Max. Marks: 70

Instructions: 1) Q. No 1 is compulsory. It should be solved in first 30 minutes.
 2) Figures to the right indicate full marks.
 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The full form of KDD is _____.
 a) Knowledge Database
 b) Knowledge Discovery Database
 c) Knowledge Data House
 d) Knowledge Data Definition
- 2) In type inheritance, the keyword _____ says that, subtype may not be created from the given type.
 a) Not final
 b) Self
 c) Create
 d) Final
- 3) To copy files/folders from local file system to hdfs store _____.
 a) Cat
 b) CopyFromLocal
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 d) Concurrency Control protocol
- 7) Which of following protocol has the advantage of imposing less overhead on read operation?
 a) Majority
 b) Biased
 c) Quorum consensus
 d) Primary copy
- 8) In horizontal fragmentation, the relation is partitioned _____.
 a) Column wise
 b) Row wise
 c) Attribute wise
 d) None

- 9) _____ partitioning technique is best suited for Point Queries based on partitioning attributes.
- a) Range
 - b) Round Robin
 - c) Hash
 - d) All
- 10) Following OLAP query can be achieved by using which of the following?
{ (item name, color, clothes size), (item name, color), (item name, clothes size), (color, clothes size), (item name), (color), (clothes size), () }
- a) group by rollup
 - b) group by cube
 - c) group by
 - d) drilldown
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 - b) nameimage
 - c) fsimage
 - d) image
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 - b) order by
 - c) avg
 - d) sum
- 14) The operation of moving from finer-granularity data to a coarser granularity (by means of aggregation) is called a _____.
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 - b) Drill down
 - c) Dicing
 - d) Pivoting

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
MODERN DATABASE SYSTEM

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

Max. Marks: 56

Instructions: 1) Figures to the right indicate full marks.
2) Assume suitable data if necessary.

Section – I

Q.2 Answer any four. **20**

- a) Explain Majority and Biased locking protocol for concurrency control in distributed system.
- b) Explain Partitioned join with diagram.
- c) Explain following OLAP operations.
 - 1) Cube
 - 2) Rollup
- d) Explain Association Rules with support and confidence in Data Mining with example.
- e) What is data warehousing? Give its architecture with different issues.

Q.3 Answer any one. **08**

- a) Explain working of 2 Phase Commit protocol. Give any two types of failures handled by this protocol.
- b) Explain different partitioning Techniques in I/O Parallelism and compare them with example.

Section – II

Q.4 Answer any four. **20**

- a) Explain following concepts with SQL query examples in Object based Databases.
 - 1) Structured types
 - 2) Type inheritance
 - 3) Array and multiset
- b) Differentiate between object oriented DBMS and Object relational DBMS.
- c) Explain Hash join method in query processing with diagram.
- d) Give different Hadoop commands.
- e) What is big data? Explain different characteristic of big data.

Q.5 Answer any one. **08**

- a) Explain high level architecture of Hadoop with its components. Give difference between Hadoop and RDBMS.
- b) Explain Nested loop join in detail with its pseudo code. Give worst case and best case cost of Nested loop join for two relations R and S w.r.t following.
 - 1) No of block transfer
 - 2) Seek time

Seat No.	
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Set	P
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
INTERNET OF THINGS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) IoT is enabled by technology such as, _____.
 a) Wireless sensor networks b) Cloud computing
 c) Big data analytics d) All of the above
- 2) REST service is characterized by _____.
 a) Bi-directional model b) Full duplex model
 c) Request-Response model d) Unidirectional model
- 3) Exclusive Pair model is _____.
 a) Bi-directional communication model
 b) Fully- duplex communication model
 c) Both a) & b)
 d) none of the above
- 4) Hardware sources of IoT prototype development are _____.
 a) RasWIK b) Microduino
 c) Beagle Board d) All of the above
- 5) _____ Wireless communication technologies IoT.
 a) NFC (Near-Field Communication)
 b) RFID
 c) Bluetooth BR/EDR and Bluetooth Low Energy
 d) all of the above
- 6) Bluetooth network has _____ features.
 a) Self-discovery capability b) Self-configuration capability
 c) Self-healing capability d) all of the above
- 7) IEEE 802.15.4 is standard protocol for _____.
 a) ZigBee b) Bluetooth low energy (BT/LE)
 c) WPAN d) Bluetooth
- 8) Acceleration sensor uses _____ for measuring acceleration component in three axes by capacitive variation in three axes.
 a) MEMS (Micro Electro Mechanical Sensor)
 b) Thermistor
 c) Photo-conductor
 d) None of the above

Seat No.	
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Set	P
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
INTERNET OF THINGS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

Q.2 Solve any three. **12**

- a) What are the different applications of IoT? Explain.
- b) Write a note on IoT architecture. Explain Oracle's IoT architecture.
- c) Explain sensor technology in brief.
- d) Write a note on WSN Technology.

Q.3 Solve any two. **16**

- a) Write a note on Logical design of IoT.
- b) Elaborate on RFID (Radio frequency identification technology) in detail.
- c) Write a note on IoT communication technologies.

Section – II

Q.4 Solve any three. **12**

- a) Write a note on constrained application protocol (CoAP).
- b) Explain IoT Privacy & Vulnerability in brief.
- c) Write a note on IoT security tomography & layered attacker model.
- d) Write a note on applications of IoT in home automation.

Q.5 Solve any two. **16**

- a) Write a note on business models in IoT.
- b) Write a note value creation in IoT & business model innovation for IoT.
- c) Write a short note on Zigbee/IEEE802.15.4 standard.

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
INTERNET OF THINGS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Acceleration sensor uses _____ for measuring acceleration component in three axes by capacitive variation in three axes.
 - a) MEMS (Micro Electro Mechanical Sensor)
 - b) Thermistor
 - c) Photo-conductor
 - d) None of the above
- 2) Applications such as Connected cars, vehicles-to-infrastructure technology, predictive and preventive maintenances & autonomous cars are enabled by, _____.
 - a) Automotive IoT
 - b) Industrial IoT (IIoT)
 - c) WSN
 - d) None of above
- 3) LIN an abbreviation of _____.
 - a) Local Interconnect Network
 - b) Local Internet Network
 - c) Leased Internet Network
 - d) none of the above
- 4) LEAP protocol stands for _____.
 - a) Localized Encryption & Authentication Protocol
 - b) Local Eavesdropping Application Protocol
 - c) Local Encryption Authorization Protocol
 - d) None of the above
- 5) CoAP is an _____.
 - a) Application Layer protocol
 - b) Session Layer Protocol
 - c) Physical Layer Protocol
 - d) Data Link Layer Protocol
- 6) ZigBee offers _____ communication between devices without the need for the initial network synchronization delays as required by Bluetooth.
 - a) High-latency
 - b) Medium-latency
 - c) low-latency
 - d) None of the above
- 7) OWASP (Open Web Application Security Project) defines _____.
 - a) Top vulnerabilities
 - b) Attack Surface Areas
 - c) Testing guides
 - d) All of the above
- 8) IoT is enabled by technology such as, _____.
 - a) Wireless sensor networks
 - b) Cloud computing
 - c) Big data analytics
 - d) All of the above

- 9) REST service is characterized by _____.
a) Bi-directional model b) Full duplex model
c) Request-Response model d) Unidirectional model
- 10) Exclusive Pair model is _____.
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- 12) _____ Wireless communication technologies IoT.
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- 13) Bluetooth network has _____ features.
a) Self-discovery capability b) Self-configuration capability
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Seat No.	
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Set **Q**

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
INTERNET OF THINGS

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Section – I

Q.2 Solve any three. **12**

- a) What are the different applications of IoT? Explain.
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Section – II

Q.4 Solve any three. **12**

- a) Write a note on constrained application protocol (CoAP).
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- c) Write a short note on Zigbee/IEEE802.15.4 standard.

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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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14

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- 4) Acceleration sensor uses _____ for measuring acceleration component in three axes by capacitive variation in three axes.
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- 9) ZigBee offers _____ communication between devices without the need for the initial network synchronization delays as required by Bluetooth.
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 - c) Request-Response model
 - d) Unidirectional model
- 13) Exclusive Pair model is _____.
- a) Bi-directional communication model
 - b) Fully- duplex communication model
 - c) Both a) & b)
 - d) none of the above
- 14) Hardware sources of IoT prototype development are _____.
- a) RasWIK
 - b) Microduino
 - c) Beagle Board
 - d) All of the above

Seat No.	
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Set

R

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
INTERNET OF THINGS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

Q.2 Solve any three. **12**

- a) What are the different applications of IoT? Explain.
- b) Write a note on IoT architecture. Explain Oracle's IoT architecture.
- c) Explain sensor technology in brief.
- d) Write a note on WSN Technology.

Q.3 Solve any two. **16**

- a) Write a note on Logical design of IoT.
- b) Elaborate on RFID (Radio frequency identification technology) in detail.
- c) Write a note on IoT communication technologies.

Section – II

Q.4 Solve any three. **12**

- a) Write a note on constrained application protocol (CoAP).
- b) Explain IoT Privacy & Vulnerability in brief.
- c) Write a note on IoT security tomography & layered attacker model.
- d) Write a note on applications of IoT in home automation.

Q.5 Solve any two. **16**

- a) Write a note on business models in IoT.
- b) Write a note value creation in IoT & business model innovation for IoT.
- c) Write a short note on Zigbee/IEEE802.15.4 standard.

Seat No.	
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Set **S**

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
INTERNET OF THINGS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.**14**

- 1) LIN an abbreviation of _____.
 a) Local Interconnect Network b) Local Internet Network
 c) Leased Internet Network d) none of the above
- 2) LEAP protocol stands for _____.
 a) Localized Encryption & Authentication Protocol
 b) Local Eavesdropping Application Protocol
 c) Local Encryption Authorization Protocol
 d) None of the above
- 3) CoAP is an _____.
 a) Application Layer protocol b) Session Layer Protocol
 c) Physical Layer Protocol d) Data Link Layer Protocol
- 4) ZigBee offers _____ communication between devices without the need for the initial network synchronization delays as required by Bluetooth.
 a) High-latency b) Medium-latency
 c) low-latency d) None of the above
- 5) OWASP (Open Web Application Security Project) defines _____.
 a) Top vulnerabilities b) Attack Surface Areas
 c) Testing guides d) All of the above
- 6) IoT is enabled by technology such as, _____.
 a) Wireless sensor networks b) Cloud computing
 c) Big data analytics d) All of the above
- 7) REST service is characterized by _____.
 a) Bi-directional model b) Full duplex model
 c) Request-Response model d) Unidirectional model
- 8) Exclusive Pair model is _____.
 a) Bi-directional communication model
 b) Fully- duplex communication model
 c) Both a) & b)
 d) none of the above
- 9) Hardware sources of IoT prototype development are _____.
 a) RasWIK b) Microduino
 c) Beagle Board d) All of the above

- 10) _____ Wireless communication technologies IoT.
- a) NFC (Near-Field Communication)
 - b) RFID
 - c) Bluetooth BR/EDR and Bluetooth Low Energy
 - d) all of the above
- 11) Bluetooth network has _____ features.
- a) Self-discovery capability
 - b) Self-configuration capability
 - c) Self-healing capability
 - d) all of the above
- 12) IEEE 802.15.4 is standard protocol for _____.
- a) ZigBee
 - b) Bluetooth low energy (BT/LE)
 - c) WPAN
 - d) Bluetooth
- 13) Acceleration sensor uses _____ for measuring acceleration component in three axes by capacitive variation in three axes.
- a) MEMS (Micro Electro Mechanical Sensor)
 - b) Thermistor
 - c) Photo-conductor
 - d) None of the above
- 14) Applications such as Connected cars, vehicles-to-infrastructure technology, predictive and preventive maintenances & autonomous cars are enabled by, _____.
- a) Automotive IoT
 - b) Industrial IoT (IIoT)
 - c) WSN
 - d) None of above

Seat No.	
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Set **S**

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
INTERNET OF THINGS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

Q.2 Solve any three. **12**

- a) What are the different applications of IoT? Explain.
- b) Write a note on IoT architecture. Explain Oracle's IoT architecture.
- c) Explain sensor technology in brief.
- d) Write a note on WSN Technology.

Q.3 Solve any two. **16**

- a) Write a note on Logical design of IoT.
- b) Elaborate on RFID (Radio frequency identification technology) in detail.
- c) Write a note on IoT communication technologies.

Section – II

Q.4 Solve any three. **12**

- a) Write a note on constrained application protocol (CoAP).
- b) Explain IoT Privacy & Vulnerability in brief.
- c) Write a note on IoT security tomography & layered attacker model.
- d) Write a note on applications of IoT in home automation.

Q.5 Solve any two. **16**

- a) Write a note on business models in IoT.
- b) Write a note value creation in IoT & business model innovation for IoT.
- c) Write a short note on Zigbee/IEEE802.15.4 standard.

Seat No.	
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Set	P
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS ADHOC NETWORKS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Comparative bidding and often referred to as the _____ method.
 - a) Beauty contest
 - b) Lottery System
 - c) Auctioning
 - d) ISM band allocation
- 2) The ratio of the power of the transmitted signal to the power of the same signal received by the receiver, on a given path is called as _____.
 - a) Fading
 - b) Auctioning
 - c) Path loss
 - d) Interference
- 3) MACA was proposed due to the shortcomings of _____ protocols when used for wireless networks.
 - a) MACAW
 - b) CDMA
 - c) FDMA
 - d) CSMA
- 4) The Nyquist theorem is also known as _____.
 - a) sampling theorem
 - b) signalling theorem
 - c) shannon's theorem
 - d) baud rate theorem
- 5) The floor acquisition multiple access (FAMA) protocols are based on a channel access discipline which consists of a _____ and _____ dialog between the sender and the intended receiver of a packet.
 - a) Carrier-sensing operation, collision-avoidance
 - b) Collision detection, packet transmission
 - c) Signal distribution, medium access
 - d) Fluctuation & synchronization
- 6) _____ protocol do not maintain the network topology information.
 - a) Reactive routing protocol
 - b) Proactive routing protocol
 - c) Table driven routing protocol
 - d) Hybrid routing protocol
- 7) Flat addressing scheme similar to the one used in _____ LANs.
 - a) IEEE 802.15
 - b) IEEE 802.3
 - c) IEEE 802.4
 - d) IEEE 802.11
- 8) _____ protocol is used in the zone where a particular node employs proactive routing.
 - a) intra-zone routing
 - b) inter zone routing
 - c) both a & b
 - d) none of above

- 9) Multicast group periodically floods a _____ packet throughout the network.
- | | |
|---------------|-----------------|
| a) Join Reply | b) Join Request |
| c) RTS & CTS | d) RRTS |
- 10) It is found that the TCP _____ degrades rapidly with an increase in _____ in string topology Ad-hoc wireless network.
- | | |
|----------------------------|---------------------------|
| a) frequency, amplitude | b) path length, path loss |
| c) throughput, path length | d) wavelength, path loss |
- 11) _____ does not disrupt the operation of the network; the snoops the data exchanged in the network without altering it.
- | | |
|--------------------|-------------------|
| a) Active attack | b) Flooding |
| c) External attack | d) Passive attack |
- 12) Digital Signature scheme is based on _____.
- | | |
|----------------------------|-----------------------------|
| a) public key cryptography | b) private key cryptography |
| c) stenography | d) public key encryption |
- 13) PCF stands for _____.
- | | |
|-------------------------------|--------------------------------|
| a) Point Coordinator Function | b) Point Coordination Function |
| c) Point correlation fading | d) Point Coordination Fading |
- 14) Secure efficient ad hoc distance vector (SEAD) routing protocol uses a _____ for authenticating the updates.
- | | |
|--------------------------|--------------------------|
| a) One-way hash function | b) two way hash function |
| c) Hash table | d) two way handshaking |

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS ADHOC NETWORKS

Day & Date: Tuesday, 17-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

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

Section – I

Q.2 Attempt any three questions. **12**

- a) Distinguish between cellular network & Ad-hoc network.
- b) Explain the characteristics of wireless channel.
- c) What issues need to be considered while designing MAC protocol?
- d) Explain the details Classifications of MAC protocols.

Q.3 Attempt any one question. **08**

- a) Explain the issues in wireless Ad-hoc network using following points.
 - 1) Medium-access scheme
 - 2) Routing
 - 3) Security
 - 4) Energy management

OR

Explain Ad Hoc On-Demand Distance-Vector Routing Protocol also explain Route maintenance in AODV.

Q.4 What is Hybrid routing protocol? Explain Zone routing protocol. Give the advantages & disadvantage of zone routing protocol. **08**

Section – II

Q.5 Attempt any three questions: **12**

- a) Explain Mesh based routing protocol with following points.
 - 1) On demand multicast routing protocol
 - 2) Dynamic Core based multicast routing protocol
- b) What are the design goals of a transport layer protocol for ad hoc wireless network?
- c) Explain the Batten scheduling techniques using following points.
 - 1) Round robin technique
 - 2) random technique
- d) Explain QoS Framework for Ad-hoc wireless network.

Q.6 Attempt any one question. **08**

- a) Explain the Network Layer Attacks using following points
 - 1) Black hole attack
 - 2) Byzantine attack
 - 3) Wormhole attack
 - 4) Routing attacks

OR

Explain Key Management in Ad Hoc Wireless Networks.

Q.7 Draw and Explain Architectural reference model for multicast routing. **08**

Seat No.	
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Set **Q**

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS ADHOC NETWORKS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.**14**

- 1) _____ protocol is used in the zone where a particular node employs proactive routing.
 - a) intra-zone routing
 - b) inter zone routing
 - c) both a & b
 - d) none of above
- 2) Multicast group periodically floods a _____ packet throughout the network.
 - a) Join Reply
 - b) Join Request
 - c) RTS & CTS
 - d) RRTS
- 3) It is found that the TCP _____ degrades rapidly with an increase in _____ in string topology Ad-hoc wireless network.
 - a) frequency, amplitude
 - b) path length, path loss
 - c) throughput, path length
 - d) wavelength, path loss
- 4) _____ does not disrupt the operation of the network; the snoops the data exchanged in the network without altering it.
 - a) Active attack
 - b) Flooding
 - c) External attack
 - d) Passive attack
- 5) Digital Signature scheme is based on _____.
 - a) public key cryptography
 - b) private key cryptography
 - c) stenography
 - d) public key encryption
- 6) PCF stands for _____.
 - a) Point Coordinator Function
 - b) Point Coordination Function
 - c) Point correlation fading
 - d) Point Coordination Fading
- 7) Secure efficient ad hoc distance vector (SEAD) routing protocol uses a _____ for authenticating the updates.
 - a) One-way hash function
 - b) two way hash function
 - c) Hash table
 - d) two way handshaking
- 8) Comparative bidding and often referred to as the _____ method.
 - a) Beauty contest
 - b) Lottery System
 - c) Auctioning
 - d) ISM band allocation
- 9) The ratio of the power of the transmitted signal to the power of the same signal received by the receiver, on a given path is called as _____.
 - a) Fading
 - b) Auctioning
 - c) Path loss
 - d) Interference

- 10) MACA was proposed due to the shortcomings of _____ protocols when used for wireless networks.
- a) MACAW
 - b) CDMA
 - c) FDMA
 - d) CSMA
- 11) The Nyquist theorem is also known as _____.
- a) sampling theorem
 - b) signalling theorem
 - c) shannon's theorem
 - d) baud rate theorem
- 12) The floor acquisition multiple access (FAMA) protocols are based on a channel access discipline which consists of a _____ and _____ dialog between the sender and the intended receiver of a packet.
- a) Carrier-sensing operation, collision-avoidance
 - b) Collision detection, packet transmission
 - c) Signal distribution, medium access
 - d) Fluctuation & synchronization
- 13) _____ protocol do not maintain the network topology information.
- a) Reactive routing protocol
 - b) Proactive routing protocol
 - c) Table driven routing protocol
 - d) Hybrid routing protocol
- 14) Flat addressing scheme similar to the one used in _____ LANs.
- a) IEEE 802.15
 - b) IEEE 802.3
 - c) IEEE 802.4
 - d) IEEE 802.11

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019**Computer Science & Engineering****WIRELESS ADHOC NETWORKS**

Day & Date: Tuesday, 17-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

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

Section – I**Q.2 Attempt any three questions. 12**

- Distinguish between cellular network & Ad-hoc network.
- Explain the characteristics of wireless channel.
- What issues need to be considered while designing MAC protocol?
- Explain the details Classifications of MAC protocols.

Q.3 Attempt any one question. 08

- Explain the issues in wireless Ad-hoc network using following points.
 - Medium-access scheme
 - Routing
 - Security
 - Energy management

OR

Explain Ad Hoc On-Demand Distance-Vector Routing Protocol also explain Route maintenance in AODV.

Q.4 What is Hybrid routing protocol? Explain Zone routing protocol. Give the advantages & disadvantage of zone routing protocol. 08**Section – II****Q.5 Attempt any three questions: 12**

- Explain Mesh based routing protocol with following points.
 - On demand multicast routing protocol
 - Dynamic Core based multicast routing protocol
- What are the design goals of a transport layer protocol for ad hoc wireless network?
- Explain the Batten scheduling techniques using following points.
 - Round robin technique
 - random technique
- Explain QoS Framework for Ad-hoc wireless network.

Q.6 Attempt any one question. 08

- Explain the Network Layer Attacks using following points
 - Black hole attack
 - Byzantine attack
 - Wormhole attack
 - Routing attacks

OR

Explain Key Management in Ad Hoc Wireless Networks.

Q.7 Draw and Explain Architectural reference model for multicast routing. 08

Seat No.	
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Set	R
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS ADHOC NETWORKS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) The floor acquisition multiple access (FAMA) protocols are based on a channel access discipline which consists of a _____ and _____ dialog between the sender and the intended receiver of a packet.
 - a) Carrier-sensing operation, collision-avoidance
 - b) Collision detection, packet transmission
 - c) Signal distribution, medium access
 - d) Fluctuation & synchronization
- 2) _____ protocol do not maintain the network topology information.
 - a) Reactive routing protocol
 - b) Proactive routing protocol
 - c) Table driven routing protocol
 - d) Hybrid routing protocol
- 3) Flat addressing scheme similar to the one used in _____ LANs.
 - a) IEEE 802.15
 - b) IEEE 802.3
 - c) IEEE 802.4
 - d) IEEE 802.11
- 4) _____ protocol is used in the zone where a particular node employs proactive routing.
 - a) intra-zone routing
 - b) inter zone routing
 - c) both a & b
 - d) none of above
- 5) Multicast group periodically floods a _____ packet throughout the network.
 - a) Join Reply
 - b) Join Request
 - c) RTS & CTS
 - d) RRTS
- 6) It is found that the TCP _____ degrades rapidly with an increase in _____ in string topology Ad-hoc wireless network.
 - a) frequency, amplitude
 - b) path length, path loss
 - c) throughput, path length
 - d) wavelength, path loss
- 7) _____ does not disrupt the operation of the network; the snoops the data exchanged in the network without altering it.
 - a) Active attack
 - b) Flooding
 - c) External attack
 - d) Passive attack
- 8) Digital Signature scheme is based on _____.
 - a) public key cryptography
 - b) private key cryptography
 - c) stenography
 - d) public key encryption

- 9) PCF stands for _____.
a) Point Coordinator Function b) Point Coordination Function
c) Point correlation fading d) Point Coordination Fading
- 10) Secure efficient ad hoc distance vector (SEAD) routing protocol uses a _____ for authenticating the updates.
a) One-way hash function b) two way hash function
c) Hash table d) two way handshaking
- 11) Comparative bidding and often referred to as the _____ method.
a) Beauty contest b) Lottery System
c) Auctioning d) ISM band allocation
- 12) The ratio of the power of the transmitted signal to the power of the same signal received by the receiver, on a given path is called as _____.
a) Fading b) Auctioning
c) Path loss d) Interference
- 13) MACA was proposed due to the shortcomings of _____ protocols when used for wireless networks.
a) MACAW b) CDMA
c) FDMA d) CSMA
- 14) The Nyquist theorem is also known as _____.
a) sampling theorem b) signalling theorem
c) shannon's theorem d) baud rate theorem

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019**Computer Science & Engineering****WIRELESS ADHOC NETWORKS**

Day & Date: Tuesday, 17-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

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

Section – I**Q.2 Attempt any three questions. 12**

- Distinguish between cellular network & Ad-hoc network.
- Explain the characteristics of wireless channel.
- What issues need to be considered while designing MAC protocol?
- Explain the details Classifications of MAC protocols.

Q.3 Attempt any one question. 08

- Explain the issues in wireless Ad-hoc network using following points.
 - Medium-access scheme
 - Routing
 - Security
 - Energy management

OR

Explain Ad Hoc On-Demand Distance-Vector Routing Protocol also explain Route maintenance in AODV.

Q.4 What is Hybrid routing protocol? Explain Zone routing protocol. Give the advantages & disadvantage of zone routing protocol. 08**Section – II****Q.5 Attempt any three questions: 12**

- Explain Mesh based routing protocol with following points.
 - On demand multicast routing protocol
 - Dynamic Core based multicast routing protocol
- What are the design goals of a transport layer protocol for ad hoc wireless network?
- Explain the Batten scheduling techniques using following points.
 - Round robin technique
 - random technique
- Explain QoS Framework for Ad-hoc wireless network.

Q.6 Attempt any one question. 08

- Explain the Network Layer Attacks using following points
 - Black hole attack
 - Byzantine attack
 - Wormhole attack
 - Routing attacks

OR

Explain Key Management in Ad Hoc Wireless Networks.

Q.7 Draw and Explain Architectural reference model for multicast routing. 08

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS ADHOC NETWORKS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) It is found that the TCP _____ degrades rapidly with an increase in _____ in string topology Ad-hoc wireless network.
 - a) frequency, amplitude
 - b) path length, path loss
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 - d) Passive attack
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 - c) stenography
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 - b) Point Coordination Function
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 - d) Point Coordination Fading
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 - b) two way hash function
 - c) Hash table
 - d) two way handshaking
- 6) Comparative bidding and often referred to as the _____ method.
 - a) Beauty contest
 - b) Lottery System
 - c) Auctioning
 - d) ISM band allocation
- 7) The ratio of the power of the transmitted signal to the power of the same signal received by the receiver, on a given path is called as _____.
 - a) Fading
 - b) Auctioning
 - c) Path loss
 - d) Interference
- 8) MACA was proposed due to the shortcomings of _____ protocols when used for wireless networks.
 - a) MACAW
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 - c) FDMA
 - d) CSMA
- 9) The Nyquist theorem is also known as _____.
 - a) sampling theorem
 - b) signalling theorem
 - c) shannon's theorem
 - d) baud rate theorem

- 10) The floor acquisition multiple access (FAMA) protocols are based on a channel access discipline which consists of a _____ and _____ dialog between the sender and the intended receiver of a packet.
- a) Carrier-sensing operation, collision-avoidance
 - b) Collision detection, packet transmission
 - c) Signal distribution, medium access
 - d) Fluctuation & synchronization
- 11) _____ protocol do not maintain the network topology information.
- a) Reactive routing protocol
 - b) Proactive routing protocol
 - c) Table driven routing protocol
 - d) Hybrid routing protocol
- 12) Flat addressing scheme similar to the one used in _____ LANs.
- a) IEEE 802.15
 - b) IEEE 802.3
 - c) IEEE 802.4
 - d) IEEE 802.11
- 13) _____ protocol is used in the zone where a particular node employs proactive routing.
- a) intra-zone routing
 - b) inter zone routing
 - c) both a & b
 - d) none of above
- 14) Multicast group periodically floods a _____ packet throughout the network.
- a) Join Reply
 - b) Join Request
 - c) RTS & CTS
 - d) RRTS

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS ADHOC NETWORKS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

Q.2 Attempt any three questions. **12**

- a) Distinguish between cellular network & Ad-hoc network.
- b) Explain the characteristics of wireless channel.
- c) What issues need to be considered while designing MAC protocol?
- d) Explain the details Classifications of MAC protocols.

Q.3 Attempt any one question. **08**

- a) Explain the issues in wireless Ad-hoc network using following points.
 - 1) Medium-access scheme
 - 2) Routing
 - 3) Security
 - 4) Energy management

OR

Explain Ad Hoc On-Demand Distance-Vector Routing Protocol also explain Route maintenance in AODV.

Q.4 What is Hybrid routing protocol? Explain Zone routing protocol. Give the advantages & disadvantage of zone routing protocol. **08**

Section – II

Q.5 Attempt any three questions: **12**

- a) Explain Mesh based routing protocol with following points.
 - 1) On demand multicast routing protocol
 - 2) Dynamic Core based multicast routing protocol
- b) What are the design goals of a transport layer protocol for ad hoc wireless network?
- c) Explain the Batten scheduling techniques using following points.
 - 1) Round robin technique
 - 2) random technique
- d) Explain QoS Framework for Ad-hoc wireless network.

Q.6 Attempt any one question. **08**

- a) Explain the Network Layer Attacks using following points
 - 1) Black hole attack
 - 2) Byzantine attack
 - 3) Wormhole attack
 - 4) Routing attacks

OR

Explain Key Management in Ad Hoc Wireless Networks.

Q.7 Draw and Explain Architectural reference model for multicast routing. **08**

**Seat
No.**

Max. Marks: 70

2) Figures to the right indicate full marks.

Marks: 14

14

- Page 1 of 12

- 9) What is a Cybernetics?
- a) Study of communication between two machines
 - b) Study of communication between human and machine
 - c) Study of communication between two humans
 - d) Study of Boolean values
- 10) What is back propagation?
- a) It is another name given to the curvy function in the perceptron
 - b) It is the transmission of error back through the network to adjust the inputs
 - c) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn
 - d) None of the mentioned
- 11) Neural Networks are complex _____ with many parameters.
- a) Linear Functions
 - b) Nonlinear Functions
 - c) Discrete Functions
 - d) Exponential Functions
- 12) Where does the bayes rule can be used?
- a) Solving queries
 - b) Increasing complexity
 - c) Decreasing complexity
 - d) Answering probabilistic query
- 13) What is the consequence between a node and its predecessors while creating bayesian network?
- a) Functionally dependent
 - b) Dependant
 - c) Conditionally independent
 - d) Both Conditionally dependant & Dependant
- 14) Where does the Hidden Markov Model is used?
- a) Speech recognition
 - b) Understanding of real world
 - c) Both speech recognition & Understanding of real world
 - d) None of the mentioned

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

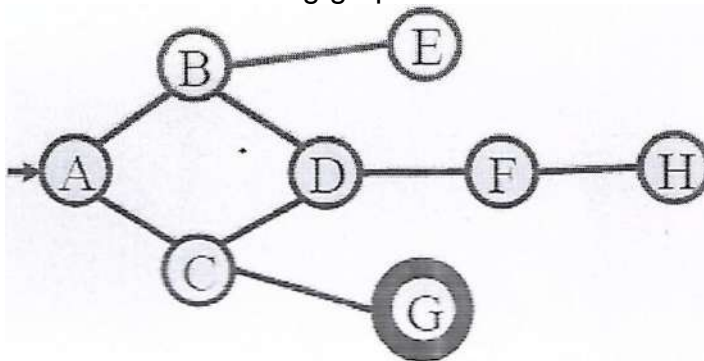
Max. Marks: 56

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Q.2 Attempt any five.

30

- Explain state space approach for solving any AI problem.
- Explain A* searching technique in detail with example. Discuss conditions for the optimality of this technique.
- Will Breadth First Search always find Optimal Solution. Why? Elaborate with a good example.
- Discuss the need and structure of Bayesian Networks.
- Define Belief Network. Explain conditional Independence relation in Belief Network with example.
- Consider the following graph.



Starting from state A, execute DFS. The goal node is G. Show the order in which the nodes are expanded? Assume that the alphabetically smaller node is expanded first to break ties.

Q.3 Attempt any two.

16

- Write a note on Passive reinforcement learning and direct utility estimation.
- Explain Markov Decision Process and its working with good example.
- Write a note on Random search, Search with closed and open list.

Q.4 Review different Search Strategies.

10

- Blind Search
 - Depth first search
 - Breadth first search
 - Iterative deepening search
 - Bidirectional search
- Informed Search.

Seat No.	
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Set	Q
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) The network that involves backward links from output to the input and hidden layers is called _____.
 a) Self organizing maps b) Perceptrons
 c) Recurrent neural network d) Multi layered perceptron
- 2) What is a Cybernetics?
 a) Study of communication between two machines
 b) Study of communication between human and machine
 c) Study of communication between two humans
 d) Study of Boolean values
- 3) What is back propagation?
 a) It is another name given to the curvy function in the perceptron
 b) It is the transmission of error back through the network to adjust the inputs
 c) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn
 d) None of the mentioned
- 4) Neural Networks are complex _____ with many parameters.
 a) Linear Functions b) Nonlinear Functions
 c) Discrete Functions d) Exponential Functions
- 5) Where does the bayes rule can be used?
 a) Solving queries b) Increasing complexity
 c) Decreasing complexity d) Answering probabilistic query
- 6) What is the consequence between a node and its predecessors while creating bayesian network?
 a) Functionally dependent
 b) Dependant
 c) Conditionally independent
 d) Both Conditionally dependant & Dependant
- 7) Where does the Hidden Markov Model is used?
 a) Speech recognition
 b) Understanding of real world
 c) Both speech recognition & Understanding of real world
 d) None of the mentioned

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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 17-12-2019

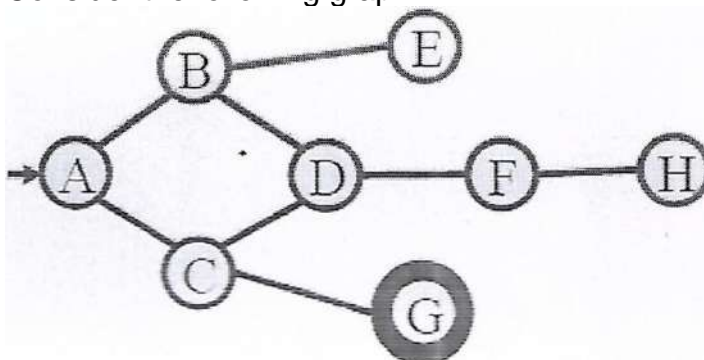
Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Q.2 Attempt any five.**30**

- Explain state space approach for solving any AI problem.
- Explain A* searching technique in detail with example. Discuss conditions for the optimality of this technique.
- Will Breadth First Search always find Optimal Solution. Why? Elaborate with a good example.
- Discuss the need and structure of Bayesian Networks.
- Define Belief Network. Explain conditional Independence relation in Belief Network with example.
- Consider the following graph.



Starting from state A, execute DFS. The goal node is G. Show the order in which the nodes are expanded? Assume that the alphabetically smaller node is expanded first to break ties.

Q.3 Attempt any two.**16**

- Write a note on Passive reinforcement learning and direct utility estimation.
- Explain Markov Decision Process and its working with good example.
- Write a note on Random search, Search with closed and open list.

Q.4 Review different Search Strategies.**10**

- Blind Search
 - Depth first search
 - Breadth first search
 - Iterative deepening search
 - Bidirectional search
- Informed Search.

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 17-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) What is the evaluation function in greedy approach?
 - a) Heuristic function
 - b) Path cost from start node to current node
 - c) Path cost from start node to current node + Heuristic cost
 - d) Average of Path cost from start node to current node and Heuristic cost
- 2) What is the evaluation function in A* approach?
 - a) Heuristic function
 - b) Path cost from start node to current node
 - c) Path cost from start node to current node + Heuristic cost
 - d) Average of Path cost from start node to current node and Heuristic cost
- 3) Which is used for utility functions in game playing algorithm?
 - a) Linear polynomial
 - b) Weighted polynomial
 - c) Polynomial
 - d) Linear weighted polynomial
- 4) The network that involves backward links from output to the input and hidden layers is called _____.
 - a) Self organizing maps
 - b) Perceptrons
 - c) Recurrent neural network
 - d) Multi layered perceptron
- 5) What is a Cybernetics?
 - a) Study of communication between two machines
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d) Both Conditionally dependant & Dependant
- 10) Where does the Hidden Markov Model is used?
a) Speech recognition
b) Understanding of real world
c) Both speech recognition & Understanding of real world
d) None of the mentioned
- 11) A.M. Turing developed a technique for determining whether a computer could or could not demonstrate the artificial Intelligence, Presently, this technique is called _____.
a) Turing Test b) Algorithm
c) Boolean Algebra d) Logarithm
- 12) Which search is implemented with an empty first-in-first-out queue?
a) Depth-first search b) Breadth-first search
c) Bidirectional search d) None of the mentioned
- 13) Which Search algorithm imposes a fixed depth limit on nodes?
a) Depth-limited search b) Depth-first search
c) Iterative deepening search d) Bidirectional search
- 14) A* algorithm is based on _____.
a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing

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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

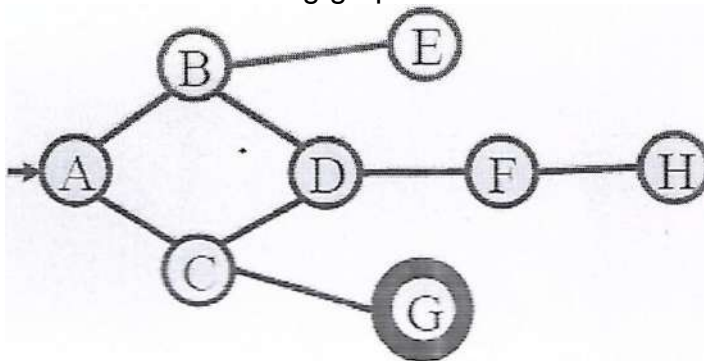
Max. Marks: 56

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Q.2 Attempt any five.

30

- Explain state space approach for solving any AI problem.
- Explain A* searching technique in detail with example. Discuss conditions for the optimality of this technique.
- Will Breadth First Search always find Optimal Solution. Why? Elaborate with a good example.
- Discuss the need and structure of Bayesian Networks.
- Define Belief Network. Explain conditional Independence relation in Belief Network with example.
- Consider the following graph.



Starting from state A, execute DFS. The goal node is G. Show the order in which the nodes are expanded? Assume that the alphabetically smaller node is expanded first to break ties.

Q.3 Attempt any two.

16

- Write a note on Passive reinforcement learning and direct utility estimation.
- Explain Markov Decision Process and its working with good example.
- Write a note on Random search, Search with closed and open list.

Q.4 Review different Search Strategies.

10

- Blind Search
 - Depth first search
 - Breadth first search
 - Iterative deepening search
 - Bidirectional search
- Informed Search.

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

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 - a) It is another name given to the curvy function in the perceptron
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 - d) Both Conditionally dependant & Dependant
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 - a) Speech recognition
 - b) Understanding of real world
 - c) Both speech recognition & Understanding of real world
 - d) None of the mentioned
- 6) A.M. Turing developed a technique for determining whether a computer could or could not demonstrate the artificial Intelligence, Presently, this technique is called _____.
 - a) Turing Test
 - b) Algorithm
 - c) Boolean Algebra
 - d) Logarithm
- 7) Which search is implemented with an empty first-in-first-out queue?
 - a) Depth-first search
 - b) Breadth-first search
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- 10) What is the evaluation function in greedy approach?
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- 13) The network that involves backward links from output to the input and hidden layers is called _____.
a) Self organizing maps b) Perceptrons
c) Recurrent neural network d) Multi layered perceptron
- 14) What is a Cybernetics?
a) Study of communication between two machines
b) Study of communication between human and machine
c) Study of communication between two humans
d) Study of Boolean values

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
ARTIFICIAL INTELLIGENCE

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

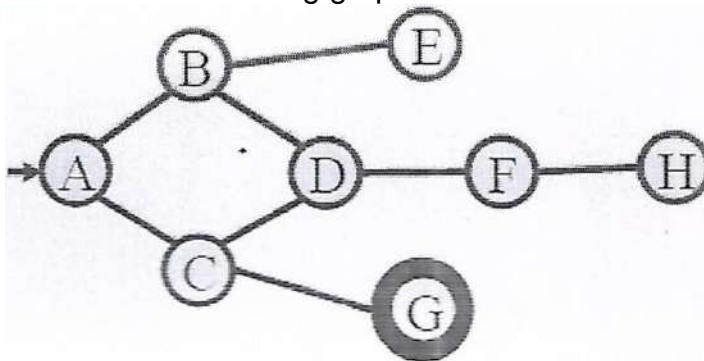
Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Q.2 Attempt any five.

30

- Explain state space approach for solving any AI problem.
- Explain A* searching technique in detail with example. Discuss conditions for the optimality of this technique.
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Q.4 Review different Search Strategies.

10

- Blind Search
 - Depth first search
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Seat No.	
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Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

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

Marks: 14

14

- Page 1 of 12

- 9) _____ is an oriented graph consisting of nodes, which in the biological analogy represent neurons, connected by arcs, which corresponds to dendrites and synapses.
- a) Neural networks
 - b) Regression
 - c) Classification
 - d) Clustering
- 10) Web mining method is used for _____.
- a) Content mining
 - b) Structure mining
 - c) Usage mining
 - d) All of the above
- 11) The type of relationship in star schema is _____.
- a) Many to many
 - b) one to one
 - c) one to many
 - d) many to one
- 12) The important aspect of the data warehouse environment is that data found within the data warehouse is _____.
- a) subject-oriented
 - b) time-variant
 - c) Integrated
 - d) All of the above
- 13) Business Intelligence and data warehousing is used for _____.
- a) Forecasting
 - b) Data Mining
 - c) Analysis of large volumes of product sales data
 - d) All of the above
- 14) Which statement is true about the K-means algorithm?
- a) The output attributes must be categorical
 - b) All attribute values must be categorical
 - c) All attribute must be numeric
 - d) Attribute values may be either categorical or numeric

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All Questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

- Q.2 Attempt any Four.** **16**
- What do you mean by effective and timely decisions? Describe the benefits of a Business intelligence system.
 - How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
 - List the differences between Star schema and Galaxy schema.
 - What is the purpose of Data exploratory analysis? Explain the three main phases of Data exploratory analysis.
 - Write a short note on Data Reduction.
- Q.3 Attempt any One.** **06**
- Define Decision system. Describe the phases of Decision-making process in detail.
 - Draw architecture of business intelligence system and explain the Components of business intelligence system.
- Q.4 Attempt the following.** **06**
- What do you mean by Data validation? Explain techniques used for data validation.

Section – II

- Q.5 Attempt any Four.** **16**
- Describe the purpose of Regression models and list the types of regression.
 - Write a short note on Bayesian methods.
 - Why exponential smoothing models are used?
 - Compare Bivariate and multivariate analysis.
 - How Salesforce management play a critical role in the implementation of relational marketing?
- Q.6 Attempt any One.** **06**
- Define Time series. How evaluation and analysis of time series take place?
 - What are the various data mining techniques for BI? Explain classification and its problems in detail.
- Q.7 Attempt the following.** **06**
- Illustrate the Motivation and objectives of Relational Marketing in detail.

Seat No.	
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Set Q

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Which of the following are standardization techniques for Data transformation?
 - a) Decimal Scaling
 - b) z-index
 - c) Min-max method
 - d) All of the above
- 2) _____ is an oriented graph consisting of nodes, which in the biological analogy represent neurons, connected by arcs, which corresponds to dendrites and synapses.
 - a) Neural networks
 - b) Regression
 - c) Classification
 - d) Clustering
- 3) Web mining method is used for _____.
 - a) Content mining
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 - a) The output attributes must be categorical
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 - c) All attribute must be numeric
 - d) Attribute values may be either categorical or numeric

Seat No.	
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Set	Q
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All Questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

- Q.2 Attempt any Four.** **16**
- What do you mean by effective and timely decisions? Describe the benefits of a Business intelligence system.
 - How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
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Section – II

- Q.5 Attempt any Four.** **16**
- Describe the purpose of Regression models and list the types of regression.
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- Define Time series. How evaluation and analysis of time series take place?
 - What are the various data mining techniques for BI? Explain classification and its problems in detail.
- Q.7 Attempt the following.** **06**
- Illustrate the Motivation and objectives of Relational Marketing in detail.

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Which of the following is the last step in decision-making process?
 - a) Analyze the problem
 - b) Collect relevant data
 - c) Identify the problem
 - d) Ensure feedback
- 2) A decision is _____ if it is based on well-defined and recurring decision-making procedure.
 - a) Structured Decisions
 - b) Semi-structured decisions
 - c) Unstructured Decisions
 - d) None of the above
- 3) _____ describes the data contained in the data warehouse.
 - a) Relational data
 - b) Metadata
 - c) Operational data
 - d) Informational data
- 4) Which of the following are standardization techniques for Data transformation?
 - a) Decimal Scaling
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- 5) _____ is an oriented graph consisting of nodes, which in the biological analogy represent neurons, connected by arcs, which corresponds to dendrites and synapses.
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- 9) Business Intelligence and data warehousing is used for _____.
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d) All of the above
- 10) Which statement is true about the K-means algorithm?
a) The output attributes must be categorical
b) All attribute values must be categorical
c) All attribute must be numeric
d) Attribute values may be either categorical or numeric
- 11) Business intelligence (BI) is a broad category of application programs which includes _____.
a) Decision support
b) Data mining
c) OLAP
d) All of the mentioned
- 12) Which of the following is not an algorithm of partitioning methods?
a) K-means
b) DIANA
c) K-medoids
d) CLARANS
- 13) Which of the following is not a type of decision in decision-making process?
a) Strategic Decision
b) Operational Decisions
c) Tactical Decisions
d) Mathematical Decisions
- 14) CRM refers to _____.
a) Customer Relationship Management
b) Customers Relational Management
c) Consumer Relations Management
d) Consumer Relational Management

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All Questions are compulsory.
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Section – I

- Q.2 Attempt any Four.** **16**
- What do you mean by effective and timely decisions? Describe the benefits of a Business intelligence system.
 - How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
 - List the differences between Star schema and Galaxy schema.
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 - Write a short note on Data Reduction.
- Q.3 Attempt any One.** **06**
- Define Decision system. Describe the phases of Decision-making process in detail.
 - Draw architecture of business intelligence system and explain the Components of business intelligence system.
- Q.4 Attempt the following.** **06**
- What do you mean by Data validation? Explain techniques used for data validation.

Section – II

- Q.5 Attempt any Four.** **16**
- Describe the purpose of Regression models and list the types of regression.
 - Write a short note on Bayesian methods.
 - Why exponential smoothing models are used?
 - Compare Bivariate and multivariate analysis.
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- Q.6 Attempt any One.** **06**
- Define Time series. How evaluation and analysis of time series take place?
 - What are the various data mining techniques for BI? Explain classification and its problems in detail.
- Q.7 Attempt the following.** **06**
- Illustrate the Motivation and objectives of Relational Marketing in detail.

Seat No.	
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Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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Marks: 14

14

- Page 10 of 12

- 9) CRM refers to _____.
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a) Structured Decisions b) Semi-structured decisions
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Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All Questions are compulsory.
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Section – II

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Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA MINING

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) A figure to the right place indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) The process of forming general concept definitions from examples of concepts to be learned.
 - a) deduction
 - b) Abduction
 - c) induction
 - d) Conjunction
- 2) Data mining is best described as the process of _____.
 - a) identifying patterns in data
 - b) deducing relationships in data
 - c) representing data
 - d) simulating trends in data
- 3) Data used to build a data mining model.
 - a) validation data
 - b) training data
 - c) test data
 - d) hidden data
- 4) Supervised learning differs from unsupervised clustering in that supervised learning requires _____.
 - a) at least one input attribute
 - b) Input attributes to be categorical
 - c) at least one output attribute
 - d) output attributes to be categorical
- 5) A nearest neighbor approach is best used _____.
 - a) with large-sized datasets
 - b) when irrelevant attributes have been removed from the data
 - c) when a generalized model of the data is desirable
 - d) when an explanation of what has been found is of primary importance
- 6) Classification problems are distinguished from estimation problems in that _____.
 - a) classification problems require the output attribute to be numeric
 - b) classification problems require the output attribute to be categorical
 - c) classification problems do not allow an output attribute
 - d) classification problems are designed to predict future outcome
- 7) Which statement is true about prediction problems?
 - a) the output attribute must be categorical
 - b) the output attribute must be numeric
 - c) the resultant model is designed to determine future outcomes
 - d) the resultant model is designed to classify current behavior

- 8) Which statement is true about neural network and linear regression models?
- a) Both models require input attributes to be numeric
 - b) Both models require numeric attributes to range between 0 and 1
 - c) The output of both models is a categorical attribute value
 - d) Both techniques build models whose output is determined by a linear sum of weighted input attribute values
 - e) More than one of a,b,c or d is true
- 9) Which statement is true about the decision tree attribute selection process described in your book?
- a) A categorical attribute may appear in a tree node several times but a numeric attribute may appear at most once.
 - b) A numeric attribute may appear in several tree nodes but a categorical attribute may appear at most once
 - c) Both numeric and categorical attributes may appear in several tree nodes
 - d) Numeric and categorical attributes may appear in at most one tree node
- 10) Association rule support is defined as _____.
a) the percentage of instances that contain the antecedent conditional items listed in the association rule
b) the percentage of instances that contain the consequent conditions listed in the association rule
c) the percentage of instances that contain all items listed in the association rule
d) the percentage of instances in the database that contain at least one of the antecedent conditional items listed in the association rule
- 11) KDD has been described as the application of _____ to data mining.
a) the waterfall model b) object-oriented programming
c) the scientific method d) procedural intuition
- 12) A feed-forward neural network is said to be fully connected when _____.
a) all nodes are connected to each other
b) all nodes at the same layer are connected to each other
c) all nodes at one layer are connected to all nodes in the next higher layer
d) all hidden layer nodes are connected to all output layer nodes
- 13) Simple regression assumes a _____ relationship between the input attribute and output attribute.
a) linear b) Quadratic
c) reciprocal d) Inverse
- 14) With Bayes classifier, missing data items are _____.
a) treated as equal compares b) treated as unequal compares
c) replaced with a default value d) Ignored

Seat No.	
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Set	P
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA MINING

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

Q.2 Attempt any three **12**

- a) What is data mining?
- b) Explain combining techniques.
- c) What do you mean by distance - based algorithm?
- d) What are different steps in Data Preprocessing?

Q.3 Attempt any two

- a) Define each of the following data mining functionalities: characterization, discrimination, association and correlation analysis, classification, regression, clustering, and outlier analysis. Give examples of each data mining functionality, using a real-life database that you are familiar with. **16**
- b) Explain with an example Bayesian classification.
- c) Use a flowchart to summarize the following procedures for attribute subset selection :
 - 1) Stepwise forward selection
 - 2) Stepwise backward elimination
 - 3) a combination of forward selection and backward elimination

Section – II

Q.4 Attempt any three **12**

- a) Explain large itemset algorithm.
- b) How do you measure the quality of rules?
- c) What are advanced association rule techniques?
- d) Explain Crawlers.

Q.5 Attempt any two **16**

- a) Give an example for K-Means clustering.
- b) What do you mean Web content mining?
- c) What do you mean by partitioning?

Seat No.	
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Set Q

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA MINING

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) A figure to the right place indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Which statement is true about neural network and linear regression models?
 - a) Both models require input attributes to be numeric
 - b) Both models require numeric attributes to range between 0 and 1
 - c) The output of both models is a categorical attribute value
 - d) Both techniques build models whose output is determined by a linear sum of weighted input attribute values
 - e) More than one of a,b,c or d is true
- 2) Which statement is true about the decision tree attribute selection process described in your book?
 - a) A categorical attribute may appear in a tree node several times but a numeric attribute may appear at most once.
 - b) A numeric attribute may appear in several tree nodes but a categorical attribute may appear at most once
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 - d) Numeric and categorical attributes may appear in at most one tree node
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 - a) the percentage of instances that contain the antecedent conditional items listed in the association rule
 - b) the percentage of instances that contain the consequent conditions listed in the association rule
 - c) the percentage of instances that contain all items listed in the association rule
 - d) the percentage of instances in the database that contain at least one of the antecedent conditional items listed in the association rule
- 4) KDD has been described as the application of _____ to data mining.
 - a) the waterfall model
 - b) object-oriented programming
 - c) the scientific method
 - d) procedural intuition

- 5) A feed-forward neural network is said to be fully connected when _____.
a) all nodes are connected to each other
b) all nodes at the same layer are connected to each other
c) all nodes at one layer are connected to all nodes in the next higher layer
d) all hidden layer nodes are connected to all output layer nodes
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a) linear
b) Quadratic
c) reciprocal
d) Inverse
- 7) With Bayes classifier, missing data items are _____.
a) treated as equal compares
b) treated as unequal compares
c) replaced with a default value
d) Ignored
- 8) The process of forming general concept definitions from examples of concepts to be learned.
a) deduction
b) Abduction
c) induction
d) Conjunction
- 9) Data mining is best described as the process of _____.
a) identifying patterns in data
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a) validation data
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c) test data
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- 11) Supervised learning differs from unsupervised clustering in that supervised learning requires _____.
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c) at least one output attribute
d) output attributes to be categorical
- 12) A nearest neighbor approach is best used _____.
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c) when a generalized model of the data is desirable
d) when an explanation of what has been found is of primary importance
- 13) Classification problems are distinguished from estimation problems in that _____.
a) classification problems require the output attribute to be numeric
b) classification problems require the output attribute to be categorical
c) classification problems do not allow an output attribute
d) classification problems are designed to predict future outcome
- 14) Which statement is true about prediction problems?
a) the output attribute must be categorical
b) the output attribute must be numeric
c) the resultant model is designed to determine future outcomes
d) the resultant model is designed to classify current behavior

Seat No.	
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Set	Q
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA MINING

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

Q.2 Attempt any three **12**

- a) What is data mining?
- b) Explain combining techniques.
- c) What do you mean by distance - based algorithm?
- d) What are different steps in Data Preprocessing?

Q.3 Attempt any two

- a) Define each of the following data mining functionalities: characterization, discrimination, association and correlation analysis, classification, regression, clustering, and outlier analysis. Give examples of each data mining functionality, using a real-life database that you are familiar with. **16**
- b) Explain with an example Bayesian classification.
- c) Use a flowchart to summarize the following procedures for attribute subset selection :
 - 1) Stepwise forward selection
 - 2) Stepwise backward elimination
 - 3) a combination of forward selection and backward elimination

Section – II

Q.4 Attempt any three **12**

- a) Explain large itemset algorithm.
- b) How do you measure the quality of rules?
- c) What are advanced association rule techniques?
- d) Explain Crawlers.

Q.5 Attempt any two **16**

- a) Give an example for K-Means clustering.
- b) What do you mean Web content mining?
- c) What do you mean by partitioning?

Seat No.	
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Set	R
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA MINING

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) A figure to the right place indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) A nearest neighbor approach is best used _____.
 - a) with large-sized datasets
 - b) when irrelevant attributes have been removed from the data
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 - c) the resultant model is designed to determine future outcomes
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- 4) Which statement is true about neural network and linear regression models?
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- 6) Association rule support is defined as _____.
a) the percentage of instances that contain the antecedent conditional items listed in the association rule
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a) all nodes are connected to each other
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c) all nodes at one layer are connected to all nodes in the next higher layer
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a) linear b) Quadratic
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- 14) Supervised learning differs from unsupervised clustering in that supervised learning requires _____.
a) at least one input attribute
b) Input attributes to be categorical
c) at least one output attribute
d) output attributes to be categorical

Seat No.	
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Set	R
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA MINING

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicates full marks.

Section – I

Q.2 Attempt any three **12**

- a) What is data mining?
- b) Explain combining techniques.
- c) What do you mean by distance - based algorithm?
- d) What are different steps in Data Preprocessing?

Q.3 Attempt any two

- a) Define each of the following data mining functionalities: characterization, discrimination, association and correlation analysis, classification, regression, clustering, and outlier analysis. Give examples of each data mining functionality, using a real-life database that you are familiar with. **16**
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 - 1) Stepwise forward selection
 - 2) Stepwise backward elimination
 - 3) a combination of forward selection and backward elimination

Section – II

Q.4 Attempt any three **12**

- a) Explain large itemset algorithm.
- b) How do you measure the quality of rules?
- c) What are advanced association rule techniques?
- d) Explain Crawlers.

Q.5 Attempt any two **16**

- a) Give an example for K-Means clustering.
- b) What do you mean Web content mining?
- c) What do you mean by partitioning?

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA MINING

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 2) A figure to the right place indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Association rule support is defined as _____.
 - a) the percentage of instances that contain the antecedent conditional items listed in the association rule
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d) Numeric and categorical attributes may appear in at most one tree node

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
DATA MINING

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicates full marks.

Section – I

Q.2 Attempt any three **12**

- a) What is data mining?
- b) Explain combining techniques.
- c) What do you mean by distance - based algorithm?
- d) What are different steps in Data Preprocessing?

Q.3 Attempt any two

- a) Define each of the following data mining functionalities: characterization, discrimination, association and correlation analysis, classification, regression, clustering, and outlier analysis. Give examples of each data mining functionality, using a real-life database that you are familiar with. **16**
- b) Explain with an example Bayesian classification.
- c) Use a flowchart to summarize the following procedures for attribute subset selection :
 - 1) Stepwise forward selection
 - 2) Stepwise backward elimination
 - 3) a combination of forward selection and backward elimination

Section – II

Q.4 Attempt any three **12**

- a) Explain large itemset algorithm.
- b) How do you measure the quality of rules?
- c) What are advanced association rule techniques?
- d) Explain Crawlers.

Q.5 Attempt any two **16**

- a) Give an example for K-Means clustering.
- b) What do you mean Web content mining?
- c) What do you mean by partitioning?

Seat No.	
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Set **P**

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Object Oriented Modeling and Design

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right place indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Idioms represent the _____.
 - a) Lowest- level pattern
 - b) Highest- Level pattern
 - c) Middle- Level pattern
 - d) Design Pattern
- 2) Each pattern has three Part Rule, which expresses a relationship between _____.
 - a) A Context
 - b) A Problem
 - c) A solution
 - d) All of the above
- 3) A method is robust if it _____.
 - a) Does not avoid predefined limit
 - b) Optimize the program until you get it working
 - c) Does not fail even if it receives improper parameter
 - d) Don't include arguments that can't be validated
- 4) A Component is rendered as a _____.
 - a) Rectangle with tabs
 - b) Ellipse with tabs
 - c) Circle with tab
 - d) Both a, b & c
- 5) A collaboration is a society of _____.
 - a) Classes, interfaces & other element
 - b) Classes & objects
 - c) Objects & interfaces
 - d) Classes & functions
- 6) _____ are called interaction diagram.
 - a) Sequence diagram
 - b) Collaboration Diagram
 - c) Both a & b
 - d) None of the above
- 7) A use case diagram is a diagram that shows _____.
 - a) A set of use cases
 - b) Actors
 - c) Their relationship
 - d) All of the above
- 8) The state diagram _____.
 - a) Depicts relationship between data objects
 - b) Depicts function that transform the data flow
 - c) Indicates how data are transformed by the system
 - d) Indicates system reactions to external events

- 9) _____ is an event caused by the occurrence of an absolute time or the elapse of a time interval.
- | | |
|-----------------|---------------|
| a) Signal event | b) Time event |
| c) Change event | d) State |
- 10) Which is the correct order of phase of OMT Methodology?
- | | |
|--|--|
| a) Analysis – system design – object design – Implementation | b) Analysis – system design – Implementation – object design |
| c) Object design – analysis – system design – Implementation | d) Object design – analysis – implementation – system design |
- 11) _____ is data describe other data.
- | | |
|-------------|-------------|
| a) database | b) function |
| c) metadata | d) method |
- 12) A _____ is a collection of elements with duplicates allowed.
- | | |
|-------------|----------------|
| a) sequence | b) bag |
| c) link | d) association |
- 13) _____ a description of the real world objects reflected within the system.
- | | |
|-------------------|----------------------|
| a) System Model | b) Application Model |
| c) Abstract Model | d) Domain Model |
- 14) _____ means that the same operation may behave differently for different classes.
- | | |
|-----------------|-------------------|
| a) Inheritance | b) Classification |
| c) Polymorphism | d) Identity |

Seat No.	
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Set	P
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Object Oriented Modeling and Design

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

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

Section – I

Q.2 Answer the following (Any Three) 12

- a) Explain link & association?
- b) Write note on Event?
- c) Describe Object oriented Themes?
- d) Explain OMT as a Software Engineering Methodology?

Q.3 Explain State diagram? How it differ from one shot state diagram? Draw state diagram for Phone line? 08

OR

Draw Data flow Diagram for Hotel reservation System (Level 0, Level 1, Level 2)?

Q.4 Explain Objects & classes? And Draw class diagram for Air transportation system. 08

Section – II

Q.5 Answer the following (Any Three) 12

- a) Describe object Oriented Style?
- b) What is a pattern and what makes a pattern?
- c) Explain Pattern & Framework with example?
- d) Write note on Object Oriented Language Features?

Q.6 Explain Use case diagram? And Draw Use case diagram for Book publish story? 08

OR

Explain Deployment diagram with example.

Q.7 Explain Time and space in detail? 08

Seat No.	
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Set **Q**

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Object Oriented Modeling and Design

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.**14**

- 1) The state diagram _____.
 - a) Depicts relationship between data objects
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 - c) Indicates how data are transformed by the system
 - d) Indicates system reactions to external events
- 2) _____ is an event caused by the occurrence of an absolute time or the elapse of a time interval.
 - a) Signal event
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- 3) Which is the correct order of phase of OMT Methodology?
 - a) Analysis – system design – object design – Implementation
 - b) Analysis – system design – Implementation – object design
 - c) Object design – analysis – system design – Implementation
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- 4) _____ is data describe other data.
 - a) database
 - b) function
 - c) metadata
 - d) method
- 5) A _____ is a collection of elements with duplicates allowed.
 - a) sequence
 - b) bag
 - c) link
 - d) association
- 6) _____ a description of the real world objects reflected within the system.
 - a) System Model
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 - c) Abstract Model
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- 7) _____ means that the same operation may behave differently for different classes.
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 - b) Classification
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 - d) Identity
- 8) Idioms represent the _____.
 - a) Lowest- level pattern
 - b) Highest- Level pattern
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 - d) Design Pattern

Seat No.	
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Set

Q

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Object Oriented Modeling and Design

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

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

Section – I

Q.2 Answer the following (Any Three) 12

- a) Explain link & association?
- b) Write note on Event?
- c) Describe Object oriented Themes?
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OR

Draw Data flow Diagram for Hotel reservation System (Level 0, Level 1, Level 2)?

Q.4 Explain Objects & classes? And Draw class diagram for Air transportation system. 08

Section – II

Q.5 Answer the following (Any Three) 12

- a) Describe object Oriented Style?
- b) What is a pattern and what makes a pattern?
- c) Explain Pattern & Framework with example?
- d) Write note on Object Oriented Language Features?

Q.6 Explain Use case diagram? And Draw Use case diagram for Book publish story? 08

OR

Explain Deployment diagram with example.

Q.7 Explain Time and space in detail? 08

Seat No.	
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Set **R**

B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Object Oriented Modeling and Design

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.**14**

- 1) A collaboration is a society of _____.
 a) Classes, interfaces & other element
 b) Classes & objects
 c) Objects & interfaces
 d) Classes & functions
- 2) _____ are called interaction diagram.
 a) Sequence diagram
 b) Collaboration Diagram
 c) Both a & b
 d) None of the above
- 3) A use case diagram is a diagram that shows _____.
 a) A set of use cases
 b) Actors
 c) Their relationship
 d) All of the above
- 4) The state diagram _____.
 a) Depicts relationship between data objects
 b) Depicts function that transform the data flow
 c) Indicates how data are transformed by the system
 d) Indicates system reactions to external events
- 5) _____ is an event caused by the occurrence of an absolute time or the elapse of a time interval.
 a) Signal event
 b) Time event
 c) Change event
 d) State
- 6) Which is the correct order of phase of OMT Methodology?
 a) Analysis – system design – object design – Implementation
 b) Analysis – system design – Implementation – object design
 c) Object design – analysis – system design – Implementation
 d) Object design – analysis – implementation – system design
- 7) _____ is data describe other data.
 a) database
 b) function
 c) metadata
 d) method
- 8) A _____ is a collection of elements with duplicates allowed.
 a) sequence
 b) bag
 c) link
 d) association

- 9) _____ a description of the real world objects reflected within the system.
- a) System Model
 - b) Application Model
 - c) Abstract Model
 - d) Domain Model
- 10) _____ means that the same operation may behave differently for different classes.
- a) Inheritance
 - b) Classification
 - c) Polymorphism
 - d) Identity
- 11) Idioms represent the _____.
- a) Lowest- level pattern
 - b) Highest- Level pattern
 - c) Middle- Level pattern
 - d) Design Pattern
- 12) Each pattern has three Part Rule, which expresses a relationship between _____.
- a) A Context
 - b) A Problem
 - c) A solution
 - d) All of the above
- 13) A method is robust if it _____.
- a) Does not avoid predefined limit
 - b) Optimize the program until you get it working
 - c) Does not fail even if it receives improper parameter
 - d) Don't include arguments that can't be validated
- 14) A Component is rendered as a _____.
- a) Rectangle with tabs
 - b) Ellipse with tabs
 - c) Circle with tab
 - d) Both a, b & c

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Object Oriented Modeling and Design

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

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

Section – I

Q.2 Answer the following (Any Three) 12

- a) Explain link & association?
- b) Write note on Event?
- c) Describe Object oriented Themes?
- d) Explain OMT as a Software Engineering Methodology?

Q.3 Explain State diagram? How it differ from one shot state diagram? Draw state diagram for Phone line? 08

OR

Draw Data flow Diagram for Hotel reservation System (Level 0, Level 1, Level 2)?

Q.4 Explain Objects & classes? And Draw class diagram for Air transportation system. 08

Section – II

Q.5 Answer the following (Any Three) 12

- a) Describe object Oriented Style?
- b) What is a pattern and what makes a pattern?
- c) Explain Pattern & Framework with example?
- d) Write note on Object Oriented Language Features?

Q.6 Explain Use case diagram? And Draw Use case diagram for Book publish story? 08

OR

Explain Deployment diagram with example.

Q.7 Explain Time and space in detail? 08

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Object Oriented Modeling and Design

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Which is the correct order of phase of OMT Methodology?
 - a) Analysis – system design – object design – Implementation
 - b) Analysis – system design – Implementation – object design
 - c) Object design – analysis – system design – Implementation
 - d) Object design – analysis – implementation – system design
- 2) _____ is data describe other data.
 - a) database
 - b) function
 - c) metadata
 - d) method
- 3) A _____ is a collection of elements with duplicates allowed.
 - a) sequence
 - b) bag
 - c) link
 - d) association
- 4) _____ a description of the real world objects reflected within the system.
 - a) System Model
 - b) Application Model
 - c) Abstract Model
 - d) Domain Model
- 5) _____ means that the same operation may behave differently for different classes.
 - a) Inheritance
 - b) Classification
 - c) Polymorphism
 - d) Identity
- 6) Idioms represent the _____.
 - a) Lowest- level pattern
 - b) Highest- Level pattern
 - c) Middle- Level pattern
 - d) Design Pattern
- 7) Each pattern has three Part Rule, which expresses a relationship between _____.
 - a) A Context
 - b) A Problem
 - c) A solution
 - d) All of the above
- 8) A method is robust if it _____.
 - a) Does not avoid predefined limit
 - b) Optimize the program until you get it working
 - c) Does not fail even if it receives improper parameter
 - d) Don't include arguments that can't be validated

- 9) A Component is rendered as a _____.
a) Rectangle with tabs b) Ellipse with tabs
c) Circle with tab d) Both a, b & c
- 10) A collaboration is a society of _____.
a) Classes, interfaces & other element
b) Classes & objects
c) Objects & interfaces
d) Classes & functions
- 11) _____ are called interaction diagram.
a) Sequence diagram b) Collaboration Diagram
c) Both a & b d) None of the above
- 12) A use case diagram is a diagram that shows _____.
a) A set of use cases b) Actors
c) Their relationship d) All of the above
- 13) The state diagram _____.
a) Depicts relationship between data objects
b) Depicts function that transform the data flow
c) Indicates how data are transformed by the system
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- 14) _____ is an event caused by the occurrence of an absolute time or the elapse of a time interval.
a) Signal event b) Time event
c) Change event d) State

Seat No.	
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B.E. (Part – I) (New) (CBCS) Examination Nov/Dec-2019
Computer Science & Engineering
Object Oriented Modeling and Design

Day & Date: Saturday, 14-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

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

Section – I

Q.2 Answer the following (Any Three) 12

- a) Explain link & association?
- b) Write note on Event?
- c) Describe Object oriented Themes?
- d) Explain OMT as a Software Engineering Methodology?

Q.3 Explain State diagram? How it differ from one shot state diagram? Draw state diagram for Phone line? 08

OR

Draw Data flow Diagram for Hotel reservation System (Level 0, Level 1, Level 2)?

Q.4 Explain Objects & classes? And Draw class diagram for Air transportation system. 08

Section – II

Q.5 Answer the following (Any Three) 12

- a) Describe object Oriented Style?
- b) What is a pattern and what makes a pattern?
- c) Explain Pattern & Framework with example?
- d) Write note on Object Oriented Language Features?

Q.6 Explain Use case diagram? And Draw Use case diagram for Book publish story? 08

OR

Explain Deployment diagram with example.

Q.7 Explain Time and space in detail? 08

Seat No.	
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P

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) From the programmer's perspective a program is an _____.
 - a) Order set of instructions
 - b) Executable file stored in secondary memory
 - c) Executable file stored on disk
 - d) Quantum of work dealt with as an entity
- 2) Occam-2 Language uses _____ for synchronized creation and termination of threads.
 - a) COBEGIN / COEND
 - b) PAR
 - c) FORK /JOIN
 - d) All of the options
- 3) Process scheduling involves _____.
 - a) Declaration of distinct process states
 - b) Specification of the state transition diagram
 - c) Statement of a scheduling policy
 - d) None of the options
- 4) Flynn's classification is based on _____ and No of processors available in a computer.
 - a) No of Data Units
 - b) No of Functional Units
 - c) No of Control Units
 - d) No of Registers
- 5) _____ is not a Hazard.
 - a) RAW
 - b) WAW
 - c) WAR
 - d) RAR
- 6) _____ is a set of instructions that could potentially begin execution in one clock period.
 - a) chime
 - b) Convex
 - c) strip mining
 - d) Convoy
- 7) Basic Vector architecture have _____ scalar registers in total.
 - a) 64
 - b) 32
 - c) 16
 - d) 8
- 8) In _____ Machine Processing element complexity is more than 1-bit.
 - a) CLIP
 - b) DAP
 - c) MasPar
 - d) MPP

- 9) Example system for coarse grain Machine is _____.
 - a) MPP
 - b) CM-5
 - c) Both a and b
 - d) None of above
- 10) _____ is used in MPP for data format Conversion.
 - a) Separate data I/O Registers
 - b) Staging Memory
 - c) Both a & b
 - d) None of these
- 11) A system with few data element per processing element is _____.
 - a) Fine Grain
 - b) Coarse Grain
 - c) Both a & b
 - d) None of above
- 12) _____ is a dynamic interconnection Network.
 - a) NN
 - b) Pyramid
 - c) Bus
 - d) Hypercube
- 13) Peak performance rate of CM-5 Machine is _____ MFLOPS.
 - a) 64
 - b) 256
 - c) 128
 - d) 512
- 14) Which is Correct Statement?
 - a) FORK/JOIN Can be used to implement COBEGIN/COEND
 - b) COBEGIN/COEND Can be used to implement FORK/JOIN
 - c) Both a and b
 - d) None of above

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Answer any three questions. 12**
- a) List and Explain methods for creation and termination of Threads.
 - b) Explain BTB with suitable diagram.
 - c) With suitable diagram, explain steps involved in handling an instruction with BTB.
 - d) Explain Strip mining code with suitable example.
- Q.3 Answer any two questions. 16**
- a) Explain Tomasulo's algorithm with suitable Diagram.
 - b) Write a code for DAXPY on MIPS and VMIPS.
 - c) List and Explain Techniques for enhancing vector performance.

Section – II

- Q.4 Answer any three questions. 12**
- a) Explain Pyramid Interconnection network with suitable diagram.
 - b) List and explain main design issues of scalable MIMD computers.
 - c) What is granularity? Explain coarse grained and fine grained systems.
 - d) List and Explain distributed shared Memory classes.
- Q.5 Explain MPP System in Detail. 08**
- OR**
- List and explain alternative architectural classes.
- Q.6 Differentiate between Data Flow Model and Control Flow Model. 08**

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Max. Marks: 70

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

Marks: 14

1) In _____ Machine Processing element complexity is more than 1-bit.

- Page 4 of 12

- 10) Process scheduling involves _____.
a) Declaration of distinct process states
b) Specification of the state transition diagram
c) Statement of a scheduling policy
d) None of the options
- 11) Flynn's classification is based on _____ and No of processors available in a computer.
a) No of Data Units
b) No of Functional Units
c) No of Control Units
d) No of Registers
- 12) _____ is not a Hazard.
a) RAW
b) WAW
c) WAR
d) RAR
- 13) _____ is a set of instructions that could potentially begin execution in one clock period.
a) chime
b) Convex
c) strip mining
d) Convoy
- 14) Basic Vector architecture have _____ scalar registers in total.
a) 64
b) 32
c) 16
d) 8

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Answer any three questions. 12**
- a) List and Explain methods for creation and termination of Threads.
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- a) Explain Tomasulo's algorithm with suitable Diagram.
 - b) Write a code for DAXPY on MIPS and VMIPS.
 - c) List and Explain Techniques for enhancing vector performance.

Section – II

- Q.4 Answer any three questions. 12**
- a) Explain Pyramid Interconnection network with suitable diagram.
 - b) List and explain main design issues of scalable MIMD computers.
 - c) What is granularity? Explain coarse grained and fine grained systems.
 - d) List and Explain distributed shared Memory classes.
- Q.5 Explain MPP System in Detail. 08**
- OR**
- List and explain alternative architectural classes.
- Q.6 Differentiate between Data Flow Model and Control Flow Model. 08**

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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) _____ is not a Hazard.

a) RAW	b) WAW
c) WAR	d) RAR
- 2) _____ is a set of instructions that could potentially begin execution in one clock period.

a) chime	b) Convex
c) strip mining	d) Convoy
- 3) Basic Vector architecture have _____ scalar registers in total.

a) 64	b) 32
c) 16	d) 8
- 4) In _____ Machine Processing element complexity is more than 1-bit.

a) CLIP	b) DAP
c) MasPar	d) MPP
- 5) Example system for coarse grain Machine is _____.

a) MPP	b) CM-5
c) Both a and b	d) None of above
- 6) _____ is used in MPP for data format Conversion.

a) Separate data I/O Registers	b) Staging Memory
c) Both a & b	d) None of these
- 7) A system with few data element per processing element is _____.

a) Fine Grain	b) Coarse Grain
c) Both a & b	d) None of above
- 8) _____ is a dynamic interconnection Network.

a) NN	b) Pyramid
c) Bus	d) Hypercube
- 9) Peak performance rate of CM-5 Machine is _____ MFLOPS.

a) 64	b) 256
c) 128	d) 512
- 10) Which is Correct Statement?

a) FORK/JOIN Can be used to implement COBEGIN/COEND
b) COBEGIN/COEND Can be used to implement FORK/JOIN
c) Both a and b
d) None of above

- 11) From the programmer's perspective a program is an _____.
a) Order set of instructions
b) Executable file stored in secondary memory
c) Executable file stored on disk
d) Quantum of work dealt with as an entity
- 12) Occam-2 Language uses _____ for synchronized creation and termination of threads.
a) COBEGIN / COEND b) PAR
c) FORK / JOIN d) All of the options
- 13) Process scheduling involves _____.
a) Declaration of distinct process states
b) Specification of the state transition diagram
c) Statement of a scheduling policy
d) None of the options
- 14) Flynn's classification is based on _____ and No of processors available in a computer.
a) No of Data Units b) No of Functional Units
c) No of Control Units d) No of Registers

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Answer any three questions. 12**
- List and Explain methods for creation and termination of Threads.
 - Explain BTB with suitable diagram.
 - With suitable diagram, explain steps involved in handling an instruction with BTB.
 - Explain Strip mining code with suitable example.
- Q.3 Answer any two questions. 16**
- Explain Tomasulo's algorithm with suitable Diagram.
 - Write a code for DAXPY on MIPS and VMIPS.
 - List and Explain Techniques for enhancing vector performance.

Section – II

- Q.4 Answer any three questions. 12**
- Explain Pyramid Interconnection network with suitable diagram.
 - List and explain main design issues of scalable MIMD computers.
 - What is granularity? Explain coarse grained and fine grained systems.
 - List and Explain distributed shared Memory classes.
- Q.5 Explain MPP System in Detail. 08**
- OR**
- List and explain alternative architectural classes.
- Q.6 Differentiate between Data Flow Model and Control Flow Model. 08**

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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) _____ is used in MPP for data format Conversion.
 - a) Separate data I/O Registers
 - b) Staging Memory
 - c) Both a & b
 - d) None of these
- 2) A system with few data element per processing element is _____.
 - a) Fine Grain
 - b) Coarse Grain
 - c) Both a & b
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- 3) _____ is a dynamic interconnection Network.
 - a) NN
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 - c) Bus
 - d) Hypercube
- 4) Peak performance rate of CM-5 Machine is _____ MFLOPS.
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- 5) Which is Correct Statement?
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 - c) Statement of a scheduling policy
 - d) None of the options

- 9) Flynn's classification is based on _____ and No of processors available in a computer.
- | | |
|------------------------|---------------------------|
| a) No of Data Units | b) No of Functional Units |
| c) No of Control Units | d) No of Registers |
- 10) _____ is not a Hazard.
- | | |
|--------|--------|
| a) RAW | b) WAW |
| c) WAR | d) RAR |
- 11) _____ is a set of instructions that could potentially begin execution in one clock period.
- | | |
|-----------------|-----------|
| a) chime | b) Convex |
| c) strip mining | d) Convoy |
- 12) Basic Vector architecture have _____ scalar registers in total.
- | | |
|-------|-------|
| a) 64 | b) 32 |
| c) 16 | d) 8 |
- 13) In _____ Machine Processing element complexity is more than 1-bit.
- | | |
|-----------|--------|
| a) CLIP | b) DAP |
| c) MasPar | d) MPP |
- 14) Example system for coarse grain Machine is _____.
- | | |
|-----------------|------------------|
| a) MPP | b) CM-5 |
| c) Both a and b | d) None of above |

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED COMPUTER ARCHITECTURE

Day & Date: Saturday, 07-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Answer any three questions. 12**
- a) List and Explain methods for creation and termination of Threads.
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 - d) Explain Strip mining code with suitable example.
- Q.3 Answer any two questions. 16**
- a) Explain Tomasulo's algorithm with suitable Diagram.
 - b) Write a code for DAXPY on MIPS and VMIPS.
 - c) List and Explain Techniques for enhancing vector performance.

Section – II

- Q.4 Answer any three questions. 12**
- a) Explain Pyramid Interconnection network with suitable diagram.
 - b) List and explain main design issues of scalable MIMD computers.
 - c) What is granularity? Explain coarse grained and fine grained systems.
 - d) List and Explain distributed shared Memory classes.
- Q.5 Explain MPP System in Detail. 08**
- OR**
- List and explain alternative architectural classes.
- Q.6 Differentiate between Data Flow Model and Control Flow Model. 08**

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DISTRIBUTED SYSTEMS

Day & Date: Tuesday, 10-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Distributed OS works on the _____ principle.
 - a) Single system image
 - b) File Foundation
 - c) Multi system image
 - d) Networking image
- 2) Which of the following is not the issue in the design of distributed operating system?
 - a) Scalability
 - b) Resource sharing
 - c) Performance
 - d) Heterogeneity
- 3) In distributed system each processor has its own _____.
 - a) local memory
 - b) Clock
 - c) both a) and b)
 - d) none of these
- 4) In _____ representation of encoding and decoding the message data only contain program objects.
 - a) tagged
 - b) System
 - c) labeled
 - d) Untagged
- 5) The _____ handles transmission of messages across the network between client and server.
 - a) RPCRuntime
 - b) Server Stub
 - c) Client stub
 - d) Server
- 6) _____ requires each node to read the other node's clock value.
 - a) Process synchronization
 - b) Clock synchronization
 - c) Event synchronization
 - d) All
- 7) Which activity deals with the process of deciding which process should be assigned to which processor.
 - a) Process migration
 - b) Threads allocation
 - c) Process allocation
 - d) None of these
- 8) Non-token based mutual exclusion algorithm logical clock are maintained and updated according to _____.
 - a) Maekawa's algorithm
 - b) Ricart-agrawala
 - c) Lamport's scheme
 - d) Generalized algorithm
- 9) Lamport's algorithm requires messages to be delivered in the _____ order between every pair of site.
 - a) FIFO
 - b) critical section
 - c) LIFO
 - d) none of the above

- 10) A _____ mechanism allows the binding together of different filename spaces to form a single hierarchically structured name space.
- | | |
|------------------|----------------|
| a) cache manager | b) Mount |
| c) file manager | d) name server |
- 11) _____ is commonly employed in distributed file system to reduce delays in the accessing of data.
- | | |
|----------------|------------|
| a) mount | b) Naming |
| c) name server | d) Caching |
- 12) Following is not a form of memory coherence.
- | | |
|--------------------------|------------------------|
| a) weak consistency | b) memory consistency |
| c) processor consistency | d) general consistency |
- 13) Following is not a type specific coherence mechanism in Munin system.
- | | |
|----------------------|----------------------|
| a) write-once object | b) write-many object |
| c) private object | d) processor object |
- 14) Grids are geographically _____ system.
- | | |
|----------------|------------|
| a) distributed | b) Web |
| c) parallel | d) Dynamic |

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DISTRIBUTED SYSTEMS

Day & Date: Tuesday, 10-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

- Q.2 Attempt any Three.** **12**
- Why distributed computing gaining popularity?
 - What are the different protocols used in distributed systems?
 - What is Buffering? Explain all the types of buffering.
 - Explain Event ordering in distributed system.
 - Write note on Distributed Operating System.
- Q.3 Attempt any One.** **08**
- Explain Group communication in distributed system in detail.
 - Explain all process migration mechanisms.
- Q.4 Explain workstation-server, processor- pool and hybrid model of distributed systems in detail.** **08**

Section – II

- Q.5 Attempt any Three.** **12**
- What is computation grid? Explain its type.
 - Illustrate with example the non-token based distributed algorithm used for implementation of mutual exclusion.
 - Explain centralized server algorithm for distributed shared memory.
 - Explain typical data access action in distributed file system.
- Q.6 Attempt any One.** **08**
- Explain deadlock handling strategies in distributed system in detail.
 - Draw and Explain architecture of distributed file system.
- Q.7 Attempt any One.** **08**
- Explain component of load distribution algorithm?
 - What are different types of grid? List and explain different application of grid computing.

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Set Q

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DISTRIBUTED SYSTEMS

Day & Date: Tuesday, 10-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Non-token based mutual exclusion algorithm logical clock are maintained and updated according to _____.
 a) Maekawa's algorithm b) Ricart-agrawala
 c) Lamport's scheme d) Generalized algorithm
- 2) Lamport's algorithm requires messages to be delivered in the _____ order between every pair of site.
 a) FIFO b) critical section
 c) LIFO d) none of the above
- 3) A _____ mechanism allows the binding together of different filename spaces to form a single hierarchically structured name space.
 a) cache manager b) Mount
 c) file manager d) name server
- 4) _____ is commonly employed in distributed file system to reduce delays in the accessing of data.
 a) mount b) Naming
 c) name server d) Caching
- 5) Following is not a form of memory coherence.
 a) weak consistency b) memory consistency
 c) processor consistency d) general consistency
- 6) Following is not a type specific coherence mechanism in Munin system.
 a) write-once object b) write-many object
 c) private object d) processor object
- 7) Grids are geographically _____ system.
 a) distributed b) Web
 c) parallel d) Dynamic
- 8) Distributed OS works on the _____ principle.
 a) Single system image b) File Foundation
 c) Multi system image d) Networking image
- 9) Which of the following is not the issue in the design of distributed operating system?
 a) Scalability b) Resource sharing
 c) Performance d) Heterogeneity

- 10) In distributed system each processor has its own _____.
 - a) local memory
 - b) Clock
 - c) both a) and b)
 - d) none of these
- 11) In _____ representation of encoding and decoding the message data only contain program objects.
 - a) tagged
 - b) System
 - c) labeled
 - d) Untagged
- 12) The _____ handles transmission of messages across the network between client and server.
 - a) RPCRuntime
 - b) Server Stub
 - c) Client stub
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- 13) _____ requires each node to read the other node's clock value.
 - a) Process synchronization
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 - d) All
- 14) Which activity deals with the process of deciding which process should be assigned to which processor.
 - a) Process migration
 - b) Threads allocation
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Seat No.	
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Day & Date: Tuesday, 10-12-2019
 Time: 02:30 PM To 05:30 PM

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Instructions: 1) All questions are compulsory.
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Section – I

- Q.2 Attempt any Three.** **12**
- Why distributed computing gaining popularity?
 - What are the different protocols used in distributed systems?
 - What is Buffering? Explain all the types of buffering.
 - Explain Event ordering in distributed system.
 - Write note on Distributed Operating System.
- Q.3 Attempt any One.** **08**
- Explain Group communication in distributed system in detail.
 - Explain all process migration mechanisms.
- Q.4 Explain workstation-server, processor- pool and hybrid model of distributed systems in detail.** **08**

Section – II

- Q.5 Attempt any Three.** **12**
- What is computation grid? Explain its type.
 - Illustrate with example the non-token based distributed algorithm used for implementation of mutual exclusion.
 - Explain centralized server algorithm for distributed shared memory.
 - Explain typical data access action in distributed file system.
- Q.6 Attempt any One.** **08**
- Explain deadlock handling strategies in distributed system in detail.
 - Draw and Explain architecture of distributed file system.
- Q.7 Attempt any One.** **08**
- Explain component of load distribution algorithm?
 - What are different types of grid? List and explain different application of grid computing.

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- 10) Grids are geographically _____ system.
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|----------------|------------|
| a) distributed | b) Web |
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- 11) Distributed OS works on the _____ principle.
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Set	P
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
MODERN DATABASE SYSTEMS

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

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The Protocol which ensures that a transaction is terminated same way at every site it executes is called _____.
 a) Consistency protocol b) Logging Protocol
 c) 2-PC Protocol d) Concurrency Control Protocol
- 2) _____ parallelism, single operation can be implemented on n machines.
 a) Interoperation b) Intraoperation
 c) Pipelined parallelism d) Both a & b
- 3) Which of the following protocol has the advantages of imposing less overhead on read operation?
 a) Majority b) Biased
 c) Quorum Consensus d) Primary copy
- 4) Some of the coloum of relation are at different sites in which of the following?
 a) Horizontal Fragmentation
 b) Horizontal & vertical Fragmentation
 c) Vertical Fragmentation
 d) Data replication
- 5) The generalization of a cross-tab, which is two-dimensional, to n dimensions can be visualized as an n-dimensional cube, called the _____.
 a) cross tab b) data cube
 c) n-tab d) none
- 6) Cube (color, size) generates _____ group.
 a) 1 b) 2
 c) 8 d) 4
- 7) If there are M partitions of relations r and N partitions of relations s, then asymmetric fragment and replicate join requires _____ processors.
 a) M=1 b) N
 c) M*N d) None of these

- 8) A scheme with fact table, multiple dimension tables and foreign key from that fact table to the dimension table is called _____.
a) Snowflake Schema b) Star Schema
c) Both a & b d) None
- 9) In path expression, for object references, symbol used is _____.
a) * b) &
c) → d) :
- 10) In object oriented databases, nesting can be done using function _____ to create a multiset of particular attribute.
a) Aggregate b) Group by
c) Order by d) Collect
- 11) PostgreSQL can be used from just about any major programming language, including C, C++, Perl, Python, Java, Tcl, and PHP.
a) True b) False
- 12) _____ can be best described as a programming model used to develop Hadoop-based applications that can process massive amounts of data.
a) MapReduce b) Mahout
c) Oozie d) All of the mentioned
- 13) _____ stores are used to store information about networks, such as social connections.
a) Key-value b) Wide-column
c) Document d) Graph
- 14) MongoDB has been adopted as _____ software by a number of major websites and services.
a) Frontend b) Backend
c) Proprietary d) All of the mentioned

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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
MODERN DATABASE SYSTEMS

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

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer any four. **16**

- a) What is the objective of 2-phase commit protocol? Explain its working and its ability to handle failure of participating site.
- b) Write the queries for the operations.
 - 1) Cube
 - 2) Rollup
 - 3) Rank ()
 - 4) ntile ()
- c) Write the steps of bully algorithm.
- d) What are decision support systems? Explain several issues of decision support system.
- e) What is data mining? Explain classification and decision tree classifiers with example.

Q.3 Answer any two. **12**

- a) Explain and compare the partition techniques in IO Parallelism.
- b) What is data warehouse? Draw its architecture and explain the star schema of data warehouse.
- c) Explain the transaction server, its architecture and its component with diagram.

Section – II

Q.4 Answer any four. **16**

- a) Explain External Sort merge Algorithm in detail.
- b) Explain block nested loop join and its cost complexity.
- c) What is bigdata and explain its characteristic.
- d) With proper example, explain the structure type and inheritance type in object based database.
- e) Differentiate between RDBMS and MongoDB.

Q.5 Answer any two. **12**

- a) Write the features of HADOOP System and explain in detail Hadoop Ecosystem. How a secondary name node differs from the name node in HDFS.
- b) What is NOSQL database? List the application where NOSQL is used.
- c) What are the basic steps in query processing? Explain different factors to measure the query cost.

**Seat
No.**

Set Q

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MCQ/Objective Type Questions

Marks: 14

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- Page 4 of 12

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 - b) Horizontal & vertical Fragmentation
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 - d) Data replication
- 12) The generalization of a cross-tab, which is two-dimensional, to n dimensions can be visualized as an n-dimensional cube, called the _____.
- a) cross tab
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Set	Q
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Section – I

Q.2 Answer any four. **16**

- a) What is the objective of 2-phase commit protocol? Explain its working and its ability to handle failure of participating site.
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- d) What are decision support systems? Explain several issues of decision support system.
- e) What is data mining? Explain classification and decision tree classifiers with example.

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- a) Explain and compare the partition techniques in IO Parallelism.
- b) What is data warehouse? Draw its architecture and explain the star schema of data warehouse.
- c) Explain the transaction server, its architecture and its component with diagram.

Section – II

Q.4 Answer any four. **16**

- a) Explain External Sort merge Algorithm in detail.
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MCQ/Objective Type Questions

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[illegible]

- 9) _____ stores are used to store information about networks, such as social connections.
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- 10) MongoDB has been adopted as _____ software by a number of major websites and services.
- a) Frontend
 - b) Backend
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- e) Differentiate between RDBMS and MongoDB.

Q.5 Answer any two. **12**

- a) Write the features of HADOOP System and explain in detail Hadoop Ecosystem. How a secondary name node differs from the name node in HDFS.
- b) What is NOSQL database? List the application where NOSQL is used.
- c) What are the basic steps in query processing? Explain different factors to measure the query cost.

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Set	P
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B.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
HUMAN COMPUTER INTERACTION

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.
 2) Assume the suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) _____ memory for aural stimuli.

a) Iconic	b) Echoic
c) Haptic	d) None of these
- 2) _____ are used quite successfully to teach new concepts in terms of ones which are already understood.

a) Metaphor	b) Direct Manipulation
c) Programming	d) None of these
- 3) _____ prototype is not discarded and serves as the basis for the next iteration of design.

a) Throw-away	b) Incremental
c) Evolutionary	d) None of these
- 4) QOC is _____.

a) Query-Objective-Control	b) Question-Option-Criterion
c) Question-Objective-Consistent	d) None of these
- 5) _____ focuses on the user's ability to determine the effect of future interactions.

a) Predictability	b) Synthesizability
c) Familiarity	d) Generalizability
- 6) _____ can be used as a means of describing the user's day-to-day activities.

a) Storyboarding	b) Workshops
c) Brainstorming	d) Pencil and paper exercises
- 7) Which utterance points of clarification and elaborations?

a) Substantive	b) Annotative
c) Procedural	d) None of these
- 8) _____ discussions usually focus on the decisions to be made by network designers and operators.

a) Quality of Service	b) Quality of Productivity
c) Quality of Design	d) None of these
- 9) _____ can provide indexes of terms, keyword searches, step by step guidance and access to complementary web information

a) Context-Sensitive help	b) Online Help
c) Guides	d) Journals

- 10) View large volumes of data is one of the challenges of _____.
a) Information Search b) Information Analysis
c) Information Visualization d) All of these
- 11) E-mail is the best example for which of the collaboration approach?
a) Same Place, Same Time b) Same Place, Different Time
c) Different Place, Same Time d) Different Place, Different Time
- 12) _____ displays are attractive to users, and can often improve task.
a) Color b) Structured
c) Vertical d) Angular
- 13) _____ web content can be used for complete web-based business applications.
a) Dynamic b) Static
c) Complex d) Simple
- 14) The _____ is global hypermedia system
a) Multimedia b) World wide web
c) Hypertext d) Virtual reality

Seat No.	
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B.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
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Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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SECTION I

Q.2 Answer any four of the following. 16

- Explain the model of the structure of memory.
- Explain any two Text entry devices.
- Explain why should you know the users in designing the interaction systems?
- Explain any one technique of evaluation through user participation.
- Who are stakeholders? And explain different categories of stakeholders.
- What do you mean by backchannels? Explain how it affects the face-to face communication?

Q.3 Answer any two of the following. 12

- Explain the framework for human-computer interaction with respect to Social and Organizational context.
- Explain the Shneiderman's eight golden rules of interface design.
- Explain CUSTOM methodology.

SECTION II

Q.4 Answer any four of the following. 16

- Explain the importance of quality of service.
- Write a note on groupware systems.
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- What is Dynamic web content? Explain how dynamic web pages work?
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Set Q

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MCQ/Objective Type Questions

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- | | |
|-----------------|------------------|
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- | | |
|----------------------------------|------------------------------|
| a) Query-Objective-Control | b) Question-Option-Criterion |
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- | | |
|-------------------|---------------------|
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- | | |
|----------------|------------------|
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Set Q

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SECTION I

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- Explain the importance of quality of service.
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B.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
HUMAN COMPUTER INTERACTION

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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14

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 - a) Query-Objective-Control
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B.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
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MCQ/Objective Type Questions

Duration: 30 Minutes

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

B.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
HUMAN COMPUTER INTERACTION

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- f) What do you mean by backchannels? Explain how it affects the face-to face communication?

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- a) Explain the framework for human-computer interaction with respect to Social and Organizational context.
- b) Explain the Shneiderman's eight golden rules of interface design.
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Day & Date: Saturday,14-12-2019
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Marks: 14

14

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B.E. (Part -I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL SIGNAL PROCESSING

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section - I

Q.2 Attempt any three questions **12**

- a) List and Explain properties of z transform.
- b) Sketch and label following signals.
 - 1) $u(n-1)$
 - 2) $u(3-n)$
 - 3) $x(3n)$
 - 4) $x(3n+1)$
- c) State the properties of ROC.
- d) Find the DFT of $x[n] = an$ for $0 \leq n \leq 3$
 $= 0$ otherwise

Q.3 Attempt any two questions **16**

- a) Obtain direct form I, direct form II and cascade realizations of system described by the equation, $y[n] = y[n-1] - (1/2)y[n-2] + x[n] - x[n-1] + x[n-2]$
- b) Realize $H(z) = \frac{1+0.6z^{-2}+0.2z^{-1}}{3+5z^{-1}+4z^{-2}}$ using Direct form I and Direct form II structures.
- c) Explain Basic structure for FIR Systems.

Section - II

Q.4 Attempt any three questions **12**

- a) Describe the applications of DSP in RADAR.
- b) Explain in brief the architectural features of First generation TMS320C1X processor.
- c) Explain the Windowing techniques for FIR filter design along with different window functions.
- d) Explain the place computations with respect to FFT algorithm.

Q.5 Attempt any two question **16**

- a) Convert the following analog transfer function in to digital using bilinear transform with $T=1\text{sec}$. $H(s) = \frac{s}{(s+3)(s+9)}$
- b) Explain the Bilinear transformation for digital filters in detail.
- c) Explain with example how to design of discrete time IIR filters from continuous time filters.

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Set **Q**

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.**14**

- 1) The anti-symmetric condition with M even is not used in the design of which of the following linear-phase FIR filter?
 - a) Low pass
 - b) High pass
 - c) Band pass
 - d) Band stop
- 2) What is the value of α in $(M-1/2)$ if the unit sample response is anti-symmetric?
 - a) 0
 - b) 1
 - c) -1
 - d) None of above
- 3) How many complex multiplications are needed to be performed for each FFT algorithm?
 - a) $(N/2)\log N$
 - b) $N \log_2 N$
 - c) $(N/2)\log_2 N$
 - d) None of these
- 4) The similarity between the Fourier transform and the z transform is that _____.
 - a) Both convert frequency Spectrum domain to discrete time domain
 - b) Both convert discrete time domain to frequency spectrum domain
 - c) Both convert analog signal to digital signal
 - d) None of these
- 5) Which of the following block is not required in digital processing of an RADAR signal?
 - a) A/D converter
 - b) D/A Converter
 - c) DSP
 - d) All above
- 6) Which among the following has/have a provision to support an adaptive filtering _____?
 - a) IIR
 - b) FIR
 - c) Both a and b
 - d) None of above
- 7) If we store the signal row wise then the result must be read column wise.
 - a) True
 - b) False
- 8) If $x(n)$ is a discrete-time signal, then the value of $x(n)$ at non integer value of 'n' is _____.
 - a) Zero
 - b) Positive
 - c) Negative
 - d) Not Defined

- 9) The discrete time function defined as $u(n) = n$ for $n \geq 0$; $= 0$ for $n < 0$ is an _____.
a) Unit sample signal b) Unit step signal
c) Unit ramp signal d) None of the mentioned
- 10) What is the ROC of the system function $H(z)$ if the discrete time LTI system is BIBO stable?
a) Entire z -plane, except at $z = 0$ b) Entire z -plane, except at $z = \infty$
c) Contain unit circle d) None of the mentioned
- 11) The ROC of z -transform of any signal cannot contain poles.
a) True b) False
- 12) The several ways to perform an inverse Z transform are _____.
1) Direct computation
2) Long division
3) Partial fraction expansion with table lookup
4) Direct inversion
a) 1, 2 and 3 are correct b) only 1 is correct
c) only 1 and 3 correct d) all the four are correct
- 13) The realization of FIR filter by frequency sampling realization can be viewed as cascade of how many filters?
a) Two b) Three
c) Four d) None of above
- 14) In direct form-I realization, all-pole system is placed before the all-zero system.
a) True b) False

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Set Q

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Section - I

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Q.3 Attempt any two questions **16**

- a) Obtain direct form I, direct form II and cascade realizations of system described by the equation, $y[n] = y[n-1] - (1/2)y[n-2] + x[n] - x[n-1] + x[n-2]$
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Seat No.	
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Set **R**

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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- 2) The realization of FIR filter by frequency sampling realization can be viewed as cascade of how many filters?
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 - b) Three
 - c) Four
 - d) None of above
- 3) In direct form-I realization, all-pole system is placed before the all-zero system.
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- 6) How many complex multiplications are need to be performed for each FFT algorithm?
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 - b) $N \log_2 N$
 - c) $(N/2)\log 2N$
 - d) None of these
- 7) The similarity between the Fourier transform and the z transform is that _____.
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Computer Science & Engineering
DIGITAL SIGNAL PROCESSING

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section - I

Q.2 Attempt any three questions **12**

- a) List and Explain properties of z transform.
- b) Sketch and label following signals.
 - 1) $u(n-1)$
 - 2) $u(3-n)$
 - 3) $x(3n)$
 - 4) $x(3n+1)$
- c) State the properties of ROC.
- d) Find the DFT of $x[n] = an$ for $0 \leq n \leq 3$
 $= 0$ otherwise

Q.3 Attempt any two questions **16**

- a) Obtain direct form I, direct form II and cascade realizations of system described by the equation, $y[n] = y[n-1] - (1/2)y[n-2] + x[n] - x[n-1] + x[n-2]$
- b) Realize $H(z) = \frac{1+0.6z^{-2}+0.2z^{-1}}{3+5z^{-1}+4z^{-2}}$ using Direct form I and Direct form II structures.
- c) Explain Basic structure for FIR Systems.

Section - II

Q.4 Attempt any three questions **12**

- a) Describe the applications of DSP in RADAR.
- b) Explain in brief the architectural features of First generation TMS320C1X processor.
- c) Explain the Windowing techniques for FIR filter design along with different window functions.
- d) Explain the place computations with respect to FFT algorithm.

Q.5 Attempt any two question **16**

- a) Convert the following analog transfer function in to digital using bilinear transform with $T=1$ sec. $H(s) = \frac{s}{(s+3)(s+9)}$
- b) Explain the Bilinear transformation for digital filters in detail.
- c) Explain with example how to design of discrete time IIR filters from continuous time filters.

Seat No.	
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Set **S**

B.E. (Part -I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL SIGNAL PROCESSING

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full mark.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.**14**

- 1) How many complex multiplications are need to be performed for each FFT algorithm?
 - a) $(N/2)\log N$
 - b) $N \log_2 N$
 - c) $(N/2)\log_2 N$
 - d) None of these
- 2) The similarity between the Fourier transform and the z transform is that _____.
 - a) Both convert frequency Spectrum domain to discrete time domain
 - b) Both convert discrete time domain to frequency spectrum domain
 - c) Both convert analog signal to digital signal
 - d) None of these
- 3) Which of the following block is not required in digital processing of an RADAR signal?
 - a) A/D converter
 - b) D/A Converter
 - c) DSP
 - d) All above
- 4) Which among the following has/have a provision to support an adaptive filtering _____?
 - a) IIR
 - b) FIR
 - c) Both a and b
 - d) None of above
- 5) If we store the signal row wise then the result must be read column wise.
 - a) True
 - b) False
- 6) If $x(n)$ is a discrete-time signal, then the value of $x(n)$ at non integer value of 'n' is _____.
 - a) Zero
 - b) Positive
 - c) Negative
 - d) Not Defined
- 7) The discrete time function defined as $u(n) = n$ for $n \geq 0$; $= 0$ for $n < 0$ is an _____.
 - a) Unit sample signal
 - b) Unit step signal
 - c) Unit ramp signal
 - d) None of the mentioned
- 8) What is the ROC of the system function $H(z)$ if the discrete time LTI system is BIBO stable?
 - a) Entire z-plane, except at $z = 0$
 - b) Entire z-plane, except at $z = \infty$
 - c) Contain unit circle
 - d) None of the mentioned

Seat No.	
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Set **S**

B.E. (Part -I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL SIGNAL PROCESSING

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section - I**Q.2 Attempt any three questions** **12**

- a) List and Explain properties of z transform.
- b) Sketch and label following signals.
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 - 4) $x(3n+1)$
- c) State the properties of ROC.
- d) Find the DFT of $x[n] = an$ for $0 \leq n \leq 3$
 $= 0$ otherwise

Q.3 Attempt any two questions **16**

- a) Obtain direct form I, direct form II and cascade realizations of system described by the equation, $y[n] = y[n-1] - (1/2)y[n-2] + x[n] - x[n-1] + x[n-2]$
- b) Realize $H(z) = \frac{1+0.6z^{-2}+0.2z^{-1}}{3+5z^{-1}+4z^{-2}}$ using Direct form I and Direct form II structures.
- c) Explain Basic structure for FIR Systems.

Section - II**Q.4 Attempt any three questions** **12**

- a) Describe the applications of DSP in RADAR.
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Seat No.	
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Set

P

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SOFTWARE TESTING & QUALITY ASSURANCE

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) This money is considered as an investment by the organisation in doing quality work.

a) Blue Money	b) White Money
c) Green Money	d) Red Money
- 2) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation	b) Quality Assurance
c) Verification	d) None
- 3) This testing involves testing of high-level design as well as low-level design.

a) Big Bang	b) Design Testing
c) Requirement Testing	d) Code Testing
- 4) _____ coverage involves tracking a piece of data completely through the software.

a) Data flow	b) Process flow
c) Information flow	d) None
- 5) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.

a) Test Planning	b) Test Strategy
c) Test Design	d) Equivalence Partitioning
- 6) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

a) Regression Testing	b) Stress Testing
c) Usability Testing	d) Installation Testing
- 7) In this type of Compatibility, the application does not perform as expected on new platform similar to its base platform.

a) Neutral Compatibility	b) Friend Compatibility
c) Enemy Compatibility	d) System Compatibility
- 8) Reasons for not fixing all the bugs _____.

a) Too risky to fix	b) Not enough time
c) Inefficient bug reporting	d) All

- 9) This defines the step-by-step details of exactly how to perform the test cases _____.
 - a) Test Design
 - b) Test Procedures
 - c) Test Phases
 - d) Test Planning
- 10) We can Achieve Software quality by using _____.
 - a) Project Management Techniques
 - b) Quality Control
 - c) Quality Assurance
 - d) All
- 11) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as: _____.
 - a) Software Quality
 - b) Quality Control
 - c) Software Availability
 - d) All
- 12) The probability of failure free operation of a computer program in a specified environment for a specified time is termed as _____.
 - a) Software Availability
 - b) Software Safety
 - c) Software Reliability
 - d) All
- 13) A _____ analyser is an example of a viewing tool.
 - a) Data Flow
 - b) Code coverage
 - c) Information flow
 - d) All
- 14) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
 - a) Viewers and Monitors
 - b) Drivers
 - c) Stubs
 - d) Stress and Load Tools

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SOFTWARE TESTING & QUALITY ASSURANCE

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Answer any three questions** **12**
- a) What are the misconceptions about testing?
 - b) Explain Developing Test Strategy in detail.
 - c) Explain State Testing in brief.
 - d) Write Short note on Equivalence Partitioning.
 - e) Explain Compatibility testing in detail.
- Q.3 Answer any two questions** **16**
- a) Explain different test methodologies in detail.
 - b) Explain Data Testing and State Testing in detail.
 - c) Write short notes on: Performance testing, Volume (Load) testing and Stress testing.

Section – II

- Q.4 Answer any three questions** **12**
- a) Explain goals of Test Case Planning.
 - b) Why it is not possible to fix all the bugs?
 - c) Write note on Six Sigma Standard.
 - d) Explain the Concept of Software Reliability.
 - e) Explain Random Testing in automation.
- Q.5 Answer any two questions** **16**
- a) Explain Test case planning in detail with diagram.
 - b) What are the CMM Levels?
 - c) Write few benefits of using software test tools and automation.

Seat No.	
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Set Q

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SOFTWARE TESTING & QUALITY ASSURANCE

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Reasons for not fixing all the bugs _____.
 - a) Too risky to fix
 - b) Not enough time
 - c) Inefficient bug reporting
 - d) All
- 2) This defines the step-by-step details of exactly how to perform the test cases _____.
 - a) Test Design
 - b) Test Procedures
 - c) Test Phases
 - d) Test Planning
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 - a) Data Flow
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- 7) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
 - a) Viewers and Monitors
 - b) Drivers
 - c) Stubs
 - d) Stress and Load Tools
- 8) This money is considered as an investment by the organisation in doing quality work.
 - a) Blue Money
 - b) White Money
 - c) Green Money
 - d) Red Money

- 9) It is an activity where we check the work products with reference to standards, guidelines and procedures.
- | | |
|-----------------|----------------------|
| a) Validation | b) Quality Assurance |
| c) Verification | d) None |
- 10) This testing involves testing of high-level design as well as low-level design.
- | | |
|------------------------|-------------------|
| a) Big Bang | b) Design Testing |
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- 11) _____ coverage involves tracking a piece of data completely through the software.
- | | |
|---------------------|-----------------|
| a) Data flow | b) Process flow |
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- 12) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
- | | |
|------------------|-----------------------------|
| a) Test Planning | b) Test Strategy |
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- 13) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
- | | |
|-----------------------|-------------------------|
| a) Regression Testing | b) Stress Testing |
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- 14) In this type of Compatibility, the application does not perform as expected on new platform similar to its base platform.
- | | |
|--------------------------|-------------------------|
| a) Neutral Compatibility | b) Friend Compatibility |
| c) Enemy Compatibility | d) System Compatibility |

Seat No.	
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Set	Q
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SOFTWARE TESTING & QUALITY ASSURANCE

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section – I

- Q.2 Answer any three questions** **12**
- a) What are the misconceptions about testing?
 - b) Explain Developing Test Strategy in detail.
 - c) Explain State Testing in brief.
 - d) Write Short note on Equivalence Partitioning.
 - e) Explain Compatibility testing in detail.
- Q.3 Answer any two questions** **16**
- a) Explain different test methodologies in detail.
 - b) Explain Data Testing and State Testing in detail.
 - c) Write short notes on: Performance testing, Volume (Load) testing and Stress testing.

Section – II

- Q.4 Answer any three questions** **12**
- a) Explain goals of Test Case Planning.
 - b) Why it is not possible to fix all the bugs?
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 - d) Explain the Concept of Software Reliability.
 - e) Explain Random Testing in automation.
- Q.5 Answer any two questions** **16**
- a) Explain Test case planning in detail with diagram.
 - b) What are the CMM Levels?
 - c) Write few benefits of using software test tools and automation.

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SOFTWARE TESTING & QUALITY ASSURANCE

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
 - a) Test Planning
 - b) Test Strategy
 - c) Test Design
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- 2) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
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 - a) Too risky to fix
 - b) Not enough time
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- | | |
|---------------------|------------------|
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| a) Viewers and Monitors | b) Drivers |
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- | | |
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- | | |
|-----------------|----------------------|
| a) Validation | b) Quality Assurance |
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- 13) This testing involves testing of high-level design as well as low-level design.
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- | | |
|---------------------|-----------------|
| a) Data flow | b) Process flow |
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Set	R
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SOFTWARE TESTING & QUALITY ASSURANCE

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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- a) Explain different test methodologies in detail.
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Section – II

Q.4 Answer any three questions **12**

- a) Explain goals of Test Case Planning.
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- d) Explain the Concept of Software Reliability.
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- b) What are the CMM Levels?
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Seat No.	
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Set	S
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SOFTWARE TESTING & QUALITY ASSURANCE

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

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 - b) Test Procedures
 - c) Test Phases
 - d) Test Planning

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SOFTWARE TESTING & QUALITY ASSURANCE

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer any three questions **12**

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Q.3 Answer any two questions **16**

- a) Explain different test methodologies in detail.
- b) Explain Data Testing and State Testing in detail.
- c) Write short notes on: Performance testing, Volume (Load) testing and Stress testing.

Section – II

Q.4 Answer any three questions **12**

- a) Explain goals of Test Case Planning.
- b) Why it is not possible to fix all the bugs?
- c) Write note on Six Sigma Standard.
- d) Explain the Concept of Software Reliability.
- e) Explain Random Testing in automation.

Q.5 Answer any two questions **16**

- a) Explain Test case planning in detail with diagram.
- b) What are the CMM Levels?
- c) Write few benefits of using software test tools and automation.

Seat No.	
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Set	P
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) _____ is a system where operations like data extraction, transformation and loading operations are executed.

a) Data staging	b) Data integration
c) ETL	d) None of the mentioned
- 2) _____ describes the data contained in the data warehouse.

a) Relational data	b) Operational data
c) Metadata	d) Informational data
- 3) Business intelligence (BI) is a broad category of application programs which includes: _____.

a) Decision support	b) Data mining
c) OLAP	d) All of the mentioned
- 4) CRM refers to _____.

a) Customer Relationship Management
b) Consumer Relations Management
c) Customers Relational Management
d) Consumer Relational Management
- 5) The star schema is composed of _____ fact table.

a) One	b) Two
c) Three	d) Four
- 6) _____ modeling is used for the design of the data warehouse.

a) Relational model	b) Dimensional model
c) Object-oriented model	d) None of the above
- 7) ETL is a part of _____ architecture.

a) Front room	b) Back room
c) Both a & b	d) None of mentioned
- 8) Multiple fact tables and multiple dimension tables present in _____.

a) Star schema	b) Snowflake schema
c) Constellation schema	d) All the above

- 9) Data Integration is a _____ view of the customer.
 - a) 90 degree
 - b) 180 degree
 - c) 360 degree
 - d) None
- 10) Which of the following is/are category of fact?
 - a) Additive fact
 - b) Semi-additive fact
 - c) Non-additive fact
 - d) All the above
- 11) _____ Connected to the fact table and located at the edges of the star or snowflake schema.
 - a) Dimension table
 - b) Fact table
 - c) Both a and b
 - d) None
- 12) Which of the following is/are the types of B.I. applications?
 - a) Spreadsheets
 - b) Data Mining
 - c) OLAP
 - d) All of the above
- 13) The load and index is _____.
 - a) a process to reject data from the data warehouse and to create the necessary indexes
 - b) a process to load the data in the data warehouse and to create the necessary indexes
 - c) a process to upgrade the quality of data after it is moved into a data warehouse
 - d) a process to upgrade the quality of data before it is moved into a data warehouse
- 14) _____ cardinality exists between dimension tables to fact table.
 - a) one-to-many
 - b) many-to-one
 - c) many-to-many
 - d) none of these

Seat No.	
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Set	P
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three.** **12**
- Differentiate between fact table and dimension table.
 - Compare ER modelling and dimensional modeling.
 - Write short note on Metadata.
 - Describe Enterprise Data Warehouse Bus Architecture.
- Q.3 Attempt any one.** **08**
- What are the various steps involve in dimensional modeling? Describe with example.
 - Draw architecture of business intelligence system and explain the Components of business intelligence system.
- Q.4 What is BI? Why it is important? List the functions of Business Intelligence.** **08**

Section – II

- Q.5 Attempt any three.** **12**
- What are the various types of BI applications?
 - Write a short note on security in BI.
 - Describe BI application resource planning.
 - What do you mean by Extracting data into data warehouse?
- Q.6 Attempt any one.** **08**
- What do you mean by cleaning and conforming data in ETL process?
 - Describe analytical cycle for BI.
- Q.7 Why 34 subsystems of ETL are required? List and describe 34 subsystems of ETL.** **08**

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Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

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

MCQ/Objective Type Questions

Marks: 14

14

- Page 4 of 12

- 9) _____ describes the data contained in the data warehouse.
- a) Relational data
 - b) Operational data
 - c) Metadata
 - d) Informational data
- 10) Business intelligence (BI) is a broad category of application programs which includes: _____.
- a) Decision support
 - b) Data mining
 - c) OLAP
 - d) All of the mentioned
- 11) CRM refers to _____.
- a) Customer Relationship Management
 - b) Consumer Relations Management
 - c) Customers Relational Management
 - d) Consumer Relational Management
- 12) The star schema is composed of _____ fact table.
- a) One
 - b) Two
 - c) Three
 - d) Four
- 13) _____ modeling is used for the design of the data warehouse.
- a) Relational model
 - b) Dimensional model
 - c) Object-oriented model
 - d) None of the above
- 14) ETL is a part of _____ architecture.
- a) Front room
 - b) Back room
 - c) Both a & b
 - d) None of mentioned

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section – I

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 - Describe Enterprise Data Warehouse Bus Architecture.
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Section – II

- Q.5 Attempt any three.** **12**
- What are the various types of BI applications?
 - Write a short note on security in BI.
 - Describe BI application resource planning.
 - What do you mean by Extracting data into data warehouse?
- Q.6 Attempt any one.** **08**
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) The star schema is composed of _____ fact table.
 - a) One
 - b) Two
 - c) Three
 - d) Four
- 2) _____ modeling is used for the design of the data warehouse.
 - a) Relational model
 - b) Dimensional model
 - c) Object-oriented model
 - d) None of the above
- 3) ETL is a part of _____ architecture.
 - a) Front room
 - b) Back room
 - c) Both a & b
 - d) None of mentioned
- 4) Multiple fact tables and multiple dimension tables present in _____.
 - a) Star schema
 - b) Snowflake schema
 - c) Constellation schema
 - d) All the above
- 5) Data Integration is a _____ view of the customer.
 - a) 90 degree
 - b) 180 degree
 - c) 360 degree
 - d) None
- 6) Which of the following is/are category of fact?
 - a) Additive fact
 - b) Semi-additive fact
 - c) Non-additive fact
 - d) All the above
- 7) _____ Connected to the fact table and located at the edges of the star or snowflake schema.
 - a) Dimension table
 - b) Fact table
 - c) Both a and b
 - d) None
- 8) Which of the following is/are the types of B.I. applications?
 - a) Spreadsheets
 - b) Data Mining
 - c) OLAP
 - d) All of the above

- 9) The load and index is _____.
a) a process to reject data from the data warehouse and to create the necessary indexes
b) a process to load the data in the data warehouse and to create the necessary indexes
c) a process to upgrade the quality of data after it is moved into a data warehouse
d) a process to upgrade the quality of data before it is moved into a data warehouse
- 10) _____ cardinality exists between dimension tables to fact table.
a) one-to-many
b) many-to-one
c) many-to-many
d) none of these
- 11) _____ is a system where operations like data extraction, transformation and loading operations are executed.
a) Data staging
b) Data integration
c) ETL
d) None of the mentioned
- 12) _____ describes the data contained in the data warehouse.
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b) Operational data
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- 13) Business intelligence (BI) is a broad category of application programs which includes: _____.
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
BUSINESS INTELLIGENCE

Day & Date: Saturday, 14-12-2019
Time: 02:30 PM To 05:30 PM

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Set	P
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B.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OBJECT ORIENTED MODELING & DESIGN

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q.No.1 is compulsory and should be solved in first 30 Minutes in answer Book Page No.3
 2) Figures to the right indicate full mark.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) What is the programming style of the object oriented conceptual model?
 - a) Invariant relationships
 - b) Algorithms
 - c) Classes and objects
 - d) Goals, often expressed in a predicate calculus
- 2) Abstraction is classified into _____ types.

a) 4	b) 3
c) 2	d) 1
- 3) Object oriented technology is built upon a sound engineering foundation, whose elements are collectively called as _____.

a) Von Neumann Model	b) Object Model
c) Structured Model	d) Programming Model
- 4) Callback is an operation provided by _____.

a) Inheritance	b) Encapsulation
c) Modularity	d) Abstraction
- 5) Which of the following property is associated with objects?

a) State	b) Behavior
c) Identity	d) All of the mentioned
- 6) A _____ is a special member function whose task is to initialize the objects of its class.

a) Constructor	b) Destructor
c) Selector	d) Iterator
- 7) An attribute is a data item held by which of the following?

a) Class	b) Object
c) All of the mentioned	d) None of the mentioned
- 8) An operation can be described as?

a) Object behavior	b) Class behavior
c) Functions	d) a.b
e) None of the mentioned	

- 9) An object symbol is divided into what parts?
- a) Top compartment
 - b) Bottom Compartment
 - c) All of the mentioned
 - d) None of the mentioned
- 10) Which of these are the heuristics?
- a) Name classes, attributes, and roles with noun phrases
 - b) Name operations and associations with verb phrases
 - c) Stick to binary associations
 - d) All of the mentioned
- 11) A _____ is a description of a set of objects that share the same attributes, operations, relationships, and semantics.
- a) Structure
 - b) Class
 - c) Constructor
 - d) Function
- 12) Which of the following is not the primary objective in the analysis model?
- a) describing the customer complaints
 - b) establishing a basis for the creation of a software design
 - c) defining a set of requirements that can be validated once the software is built
 - d) none of the mentioned
- 13) What can be requested from any object of the class to affect behavior?
- a) object
 - b) Attribute
 - c) operation
 - d) instance
- 14) Idioms represent the _____.
- a) Lowest level pattern
 - b) Highest level pattern
 - c) Middle level pattern
 - d) Design pattern

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B.E. (Part -I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OBJECT ORIENTED MODELING & DESIGN

Day & Date: Tuesday, 17-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Solve any four.** **20**
- a) Explain the concept of generalization.
 - b) Explain with suitable example modeling as design technique.
 - c) Differentiate between aggregation, association generalization
 - d) Draw state diagram for phone line.
 - e) With an example define derived objects links and attributes.
- Q.3 Solve any one.** **08**
- a) Explain with respect to dynamic model.
 - 1) Entry and exit action
 - 2) Internal action
 - b) Describe DFD with example.

Section – II

- Q.4 Solve any four.** **20**
- a) What are building blocks of UML?
 - b) Compare Interactive and activity diagrams.
 - c) Write a short note on deployment diagram.
 - d) Explain Patterns and Frame works.
 - e) Explain communication pattern and forwarder-receiver pattern.
- Q.5 Solve any one.** **08**
- a) Write a short note on
 - 1) Extensibility
 - 2) Robustness
 - b) Draw and explain Sequence and Collaboration diagram For ATM System.

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Set Q

B.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OBJECT ORIENTED MODELING & DESIGN

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) An operation can be described as?
 - a) Object behavior
 - b) Class behavior
 - c) Functions
 - d) a.b
 - e) None of the mentioned
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 - d) instance
- 7) Idioms represent the _____.
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 - b) Highest level pattern
 - c) Middle level pattern
 - d) Design pattern
- 8) What is the programming style of the object oriented conceptual model?
 - a) Invariant relationships
 - b) Algorithms
 - c) Classes and objects
 - d) Goals, often expressed in a predicate calculus

- 9) Abstraction is classified into _____ types.
 - a) 4
 - b) 3
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- 10) Object oriented technology is built upon a sound engineering foundation, whose elements are collectively called as _____.
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- 14) An attribute is a data item held by which of the following?
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Seat No.	
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Set	Q
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B.E. (Part -I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OBJECT ORIENTED MODELING & DESIGN

Day & Date: Tuesday, 17-12-2019
Time: 02:30 PM To 05:30 PM

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Section – I

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B.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OBJECT ORIENTED MODELING & DESIGN

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q.No.1 is compulsory and should be solved in first 30 Minutes in answer Book Page No.3
 2) Figures to the right indicate full mark.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

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Seat No.	
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B.E. (Part -I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OBJECT ORIENTED MODELING & DESIGN

Day & Date: Tuesday, 17-12-2019
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Seat No.	
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B.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OBJECT ORIENTED MODELING & DESIGN

Day & Date: Tuesday, 17-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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 - a) Constructor
 - b) Destructor
 - c) Selector
 - d) Iterator
- 12) An attribute is a data item held by which of the following?
 - a) Class
 - b) Object
 - c) All of the mentioned
 - d) None of the mentioned
- 13) An operation can be described as?
 - a) Object behavior
 - b) Class behavior
 - c) Functions
 - d) a.b
 - e) None of the mentioned
- 14) An object symbol is divided into what parts?
 - a) Top compartment
 - b) Bottom Compartment
 - c) All of the mentioned
 - d) None of the mentioned

Seat No.	
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Set S

B.E. (Part -I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OBJECT ORIENTED MODELING & DESIGN

Day & Date: Tuesday, 17-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Solve any four.** **20**
- a) Explain the concept of generalization.
 - b) Explain with suitable example modeling as design technique.
 - c) Differentiate between aggregation, association generalization
 - d) Draw state diagram for phone line.
 - e) With an example define derived objects links and attributes.
- Q.3 Solve any one.** **08**
- a) Explain with respect to dynamic model.
 - 1) Entry and exit action
 - 2) Internal action
 - b) Describe DFD with example.

Section – II

- Q.4 Solve any four.** **20**
- a) What are building blocks of UML?
 - b) Compare Interactive and activity diagrams.
 - c) Write a short note on deployment diagram.
 - d) Explain Patterns and Frame works.
 - e) Explain communication pattern and forwarder-receiver pattern.
- Q.5 Solve any one.** **08**
- a) Write a short note on
 - 1) Extensibility
 - 2) Robustness
 - b) Draw and explain Sequence and Collaboration diagram For ATM System.

Seat No.	
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Set	P
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS AD HOC NETWORKS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) In _____ model, the speed of node is constant.

a) Direction Persistent	b) Direction Non-Persistent
c) RBS	d) None
- 2) In ONRBS, a _____ multi-hop route from source to destination is created.

a) tentative	b) Permanent
c) reserved	d) None
- 3) The optimal transmit power is the minimum power sufficient to guarantee network _____.

a) disconnection	b) Traffic
c) ability	d) Connectivity
- 4) Spatial density will be considered as _____.

a) d_{link}	b) λ
c) N/A	d) None
- 5) In Two Dimension Poisson Node Distribution, nearest neighbor is denoted by _____.

a) w	b) d_{link}
c) N/A	d) None
- 6) Bluetooth unit will change the carrier frequency (hop) _____ times in second.

a) 1602	b) 600
c) 1600	d) 2600
- 7) Which of the following is energy saving routing strategy?

a) Nearest-Neighbor	b) Random finding
c) Both	d) None
- 8) UNII stands for _____.

a) Unlicensed National Information Infrastructure
b) Undestined Node In Infrastructure
c) Unlicensed Node Information Infrastructure
d) Understanding National Information Infrastructure

- 9) _____ describes the fading affect when signal strength variation is measured on a large scale movement.
- | | |
|--------------------|----------------------|
| a) Rayleigh fading | b) Log-normal fading |
| c) Time dispersion | d) None of these |
- 10) The _____ protocol header contains logical channel identification bits.
- | | |
|----------|-------------|
| a) MAC | b) Reactive |
| c) L2CAP | d) None |
- 11) _____ is generally refer to any reduction in the strength of a signal.
- | | |
|----------------|---------|
| a) Attenuation | b) AWGN |
| c) Fading | d) None |
- 12) _____ routing is energy saving in Wireless routing protocol.
- | | |
|---------------------|-------------|
| a) Nearest-Neighbor | b) Reactive |
| c) Proactive | d) None |
- 13) Distance between _____ neighboring nodes of Regular grid topology is d_{link} .
- | | |
|----------|---------|
| a) All | b) Two |
| c) Three | d) None |
- 14) A packet is relayed _____, through a sequence of nearest neighboring nodes, until it reaches to destination nodes.
- | | |
|---------------|------------|
| a) Hop by Hop | b) Jumping |
| c) Both | d) None |

Seat No.	
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Set	P
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS AD HOC NETWORKS

Day & Date: Tuesday, 17-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

Q.2 Attempt any three questions. 12

- a) Write a short note on Link communication model without INI scenario.
- b) Define any two definitions of Quasi-Regular Topology.
- c) Explain Wireless LAN Technologies.
- d) Write a short note on Digital Radio Properties.

Q.3 Explain Preliminaries used in Ideal Scenario of theoretic Framework for multi-hop Adhoc Wireless Network. 08

OR

Explain with mathematic equation Inter Node Interference.

Q.4 Explain with neat diagram Simplified Bluetooth Protocol Stack. 08

Section – II

Q.5 Attempt any four questions. 12

- a) With Ideal scenario of Aggregate effective transport capacity.
- b) Explain RBS Scheme in Route Reservation.
- c) Write a short note on Performance matrix in WAN.
- d) Write a short note on Optimal Common Transmit Power with Square Grid Topology.

Q.6 Derive & Explain the equation for average sustainable number of hops for Transport Capacity. 08

Q.7 What are the Switching Models in Impact of Mobility? Explain any one of them in details. 08

OR

Derive and explain the equation for BER at the end of multi-hop route for Random Topology.

Seat No.	
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Set **Q**

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS AD HOC NETWORKS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) UNII stands for _____.
 - a) Unlicensed National Information Infrastructure
 - b) Undesired Node In Infrastructure
 - c) Unlicensed Node Information Infrastructure
 - d) Understanding National Information Infrastructure
- 2) _____ describes the fading affect when signal strength variation is measured on a large scale movement.
 - a) Rayleigh fading
 - b) Log-normal fading
 - c) Time dispersion
 - d) None of these
- 3) The _____ protocol header contains logical channel identification bits.
 - a) MAC
 - b) Reactive
 - c) L2CAP
 - d) None
- 4) _____ is generally refer to any reduction in the strength of a signal.
 - a) Attenuation
 - b) AWGN
 - c) Fading
 - d) None
- 5) _____ routing is energy saving in Wireless routing protocol.
 - a) Nearest-Neighbor
 - b) Reactive
 - c) Proactive
 - d) None
- 6) Distance between _____ neighboring nodes of Regular grid topology is d_{link} .
 - a) All
 - b) Two
 - c) Three
 - d) None
- 7) A packet is relayed _____, through a sequence of nearest neighboring nodes, until it reaches to destination nodes.
 - a) Hop by Hop
 - b) Jumping
 - c) Both
 - d) None
- 8) In _____ model, the speed of node is constant.
 - a) Direction Persistent
 - b) Direction Non-Persistent
 - c) RBS
 - d) None
- 9) In ONRBS, a _____ multi-hop route from source to destination is created.
 - a) tentative
 - b) Permanent
 - c) reserved
 - d) None

- 10) The optimal transmit power is the minimum power sufficient to guarantee network _____.
a) disconnection
b) Traffic
c) ability
d) Connectivity
- 11) Spatial density will be considered as _____.
a) d_{link}
b) λ
c) N/A
d) None
- 12) In Two Dimension Poisson Node Distribution, nearest neighbor is denoted by _____.
a) w
b) d_{link}
c) N/A
d) None
- 13) Bluetooth unit will change the carrier frequency (hop) _____ times in second.
a) 1602
b) 600
c) 1600
d) 2600
- 14) Which of the following is energy saving routing strategy?
a) Nearest-Neighbor
b) Random finding
c) Both
d) None

Seat No.	
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Set	Q
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS AD HOC NETWORKS

Day & Date: Tuesday, 17-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

Q.2 Attempt any three questions. 12

- a) Write a short note on Link communication model without INI scenario.
- b) Define any two definitions of Quasi-Regular Topology.
- c) Explain Wireless LAN Technologies.
- d) Write a short note on Digital Radio Properties.

Q.3 Explain Preliminaries used in Ideal Scenario of theoretic Framework for multi-hop Adhoc Wireless Network. 08

OR

Explain with mathematic equation Inter Node Interference.

Q.4 Explain with neat diagram Simplified Bluetooth Protocol Stack. 08

Section – II

Q.5 Attempt any four questions. 12

- a) With Ideal scenario of Aggregate effective transport capacity.
- b) Explain RBS Scheme in Route Reservation.
- c) Write a short note on Performance matrix in WAN.
- d) Write a short note on Optimal Common Transmit Power with Square Grid Topology.

Q.6 Derive & Explain the equation for average sustainable number of hops for Transport Capacity. 08

Q.7 What are the Switching Models in Impact of Mobility? Explain any one of them in details. 08

OR

Derive and explain the equation for BER at the end of multi-hop route for Random Topology.

Seat No.	
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Day & Date: Tuesday, 17-12-2019
Time: 02:30 PM To 05:30 PM

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

MCQ/Objective Type Questions

Marks: 14

14

- Page 7 of 12

- 10) A packet is relayed _____, through a sequence of nearest neighboring nodes, until it reaches to destination nodes.
- | | |
|---------------|------------|
| a) Hop by Hop | b) Jumping |
| c) Both | d) None |
- 11) In _____ model, the speed of node is constant.
- | | |
|-------------------------|-----------------------------|
| a) Direction Persistent | b) Direction Non-Persistent |
| c) RBS | d) None |
- 12) In ONRBS, a _____ multi-hop route from source to destination is created.
- | | |
|--------------|--------------|
| a) tentative | b) Permanent |
| c) reserved | d) None |
- 13) The optimal transmit power is the minimum power sufficient to guarantee network _____.
- | | |
|------------------|-----------------|
| a) disconnection | b) Traffic |
| c) ability | d) Connectivity |
- 14) Spatial density will be considered as _____.
- | | |
|---------------|--------------|
| a) d_{link} | b) λ |
| c) N/A | d) None |

Seat No.	
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Set	R
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS AD HOC NETWORKS

Day & Date: Tuesday, 17-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

Q.2 Attempt any three questions. 12

- a) Write a short note on Link communication model without INI scenario.
- b) Define any two definitions of Quasi-Regular Topology.
- c) Explain Wireless LAN Technologies.
- d) Write a short note on Digital Radio Properties.

Q.3 Explain Preliminaries used in Ideal Scenario of theoretic Framework for multi-hop Adhoc Wireless Network. 08

OR

Explain with mathematic equation Inter Node Interference.

Q.4 Explain with neat diagram Simplified Bluetooth Protocol Stack. 08

Section – II

Q.5 Attempt any four questions. 12

- a) With Ideal scenario of Aggregate effective transport capacity.
- b) Explain RBS Scheme in Route Reservation.
- c) Write a short note on Performance matrix in WAN.
- d) Write a short note on Optimal Common Transmit Power with Square Grid Topology.

Q.6 Derive & Explain the equation for average sustainable number of hops for Transport Capacity. 08

Q.7 What are the Switching Models in Impact of Mobility? Explain any one of them in details. 08

OR

Derive and explain the equation for BER at the end of multi-hop route for Random Topology.

Seat No.	
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Set **S**

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS AD HOC NETWORKS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) The _____ protocol header contains logical channel identification bits.
 - a) MAC
 - b) Reactive
 - c) L2CAP
 - d) None
- 2) _____ is generally refer to any reduction in the strength of a signal.
 - a) Attenuation
 - b) AWGN
 - c) Fading
 - d) None
- 3) _____ routing is energy saving in Wireless routing protocol.
 - a) Nearest-Neighbor
 - b) Reactive
 - c) Proactive
 - d) None
- 4) Distance between _____ neighboring nodes of Regular grid topology is d_{link} .
 - a) All
 - b) Two
 - c) Three
 - d) None
- 5) A packet is relayed _____, through a sequence of nearest neighboring nodes, until it reaches to destination nodes.
 - a) Hop by Hop
 - b) Jumping
 - c) Both
 - d) None
- 6) In _____ model, the speed of node is constant.
 - a) Direction Persistent
 - b) Direction Non-Persistent
 - c) RBS
 - d) None
- 7) In ONRBS, a _____ multi-hop route from source to destination is created.
 - a) tentative
 - b) Permanent
 - c) reserved
 - d) None
- 8) The optimal transmit power is the minimum power sufficient to guarantee network _____.
 - a) disconnection
 - b) Traffic
 - c) ability
 - d) Connectivity
- 9) Spatial density will be considered as _____.
 - a) d_{link}
 - b) λ
 - c) N/A
 - d) None

- 10) In Two Dimension Poisson Node Distribution, nearest neighbor is denoted by _____.
 - a) w
 - b) d_{link}
 - c) N/A
 - d) None
- 11) Bluetooth unit will change the carrier frequency (hop) _____ times in second.
 - a) 1602
 - b) 600
 - c) 1600
 - d) 2600
- 12) Which of the following is energy saving routing strategy?
 - a) Nearest-Neighbor
 - b) Random finding
 - c) Both
 - d) None
- 13) UNII stands for _____.
 - a) Unlicensed National Information Infrastructure
 - b) Undesired Node In Infrastructure
 - c) Unlicensed Node Information Infrastructure
 - d) Understanding National Information Infrastructure
- 14) _____ describes the fading affect when signal strength variation is measured on a large scale movement.
 - a) Rayleigh fading
 - b) Log-normal fading
 - c) Time dispersion
 - d) None of these

Seat No.	
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Set	S
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WIRELESS AD HOC NETWORKS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

Q.2 Attempt any three questions. 12

- a) Write a short note on Link communication model without INI scenario.
- b) Define any two definitions of Quasi-Regular Topology.
- c) Explain Wireless LAN Technologies.
- d) Write a short note on Digital Radio Properties.

Q.3 Explain Preliminaries used in Ideal Scenario of theoretic Framework for multi-hop Adhoc Wireless Network. 08

OR

Explain with mathematic equation Inter Node Interference.

Q.4 Explain with neat diagram Simplified Bluetooth Protocol Stack. 08

Section – II

Q.5 Attempt any four questions. 12

- a) With Ideal scenario of Aggregate effective transport capacity.
- b) Explain RBS Scheme in Route Reservation.
- c) Write a short note on Performance matrix in WAN.
- d) Write a short note on Optimal Common Transmit Power with Square Grid Topology.

Q.6 Derive & Explain the equation for average sustainable number of hops for Transport Capacity. 08

Q.7 What are the Switching Models in Impact of Mobility? Explain any one of them in details. 08

OR

Derive and explain the equation for BER at the end of multi-hop route for Random Topology.

Seat No.	
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Set	P
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INTELLIGENT SYSTEMS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) What were the two main streams of research that led to the evolution and development of the concept of Decision Support Systems?
 - a) Theoretical studies of organizational decision making and technical work on interactive computer systems
 - b) Theoretical studies of organizational behavior and technical work on relational data bases
 - c) Empirical studies of graphical displays and technical work on artificial intelligence
- 2) What should be a major characteristic of a DSS?
 - a) Automates decision making
 - b) Includes a spreadsheet model
 - c) Responds quickly to the changing needs of decision makers
- 3) In which of Steven Alter's categories of DSS would you place data warehouses?
 - a) Analysis Information systems
 - b) Accounting and financial models
 - c) Data analysis systems
- 4) What would one conclude after visiting DSS-related sites on the World-Wide Web?
 - a) There is limited support for DSS researchers and practitioners on the World-Wide Web
 - b) The Web is where the DSS research and development action is occurring
 - c) The quality and value of DSS-related Web sites is outstanding
- 5) What is a data warehouse?
 - a) A database application that searches for hidden patterns in a data base
 - b) A database designed to support decision making in organizations. It is batch updated and structured for rapid on-line queries and managerial summaries
 - c) An interactive computer based system which helps decision makers utilize data and models to identify and solve problems and make decisions

- 6) What general type of DSS would include file drawer systems, data warehouses, on-line analytical processing (OLAP) systems, and Executive Information Systems?
 - a) Communications-Driven DSS
 - b) Data-Driven DSS
 - c) Document-Driven DSS
- 7) What type of computerized system records current information and emphasizes data integrity and consistency?
 - a) Data Analysis System
 - b) File Drawer System
 - c) Transaction Processing System
- 8) What is the most important component of a Decision Support System?
 - a) Architecture and network design
 - b) Database
 - c) User interface
- 9) Which of the following web sites provides organized information on a wide variety of Decision Support Systems topics?
 - a) <http://DSSResources.COM>
 - b) <http://www.usatoday.com>
 - c) <http://www.zoogdisney.com>
 - d) <http://www.hotmail.com>
- 10) What category of software technology enables analysts, managers and executives to gain insight into data through fast, consistent, interactive access to a wide variety of possible views of information that has been transformed from raw data to reflect the real dimensionality of the enterprise as understood by the user?
 - a) Data Warehouse software
 - b) On-line Analytical Processing (OLAP) software
 - c) On-line Transaction Processing (OLTP) software
- 11) Which of the following level of managers develop short- and medium-range plans, schedules, and budgets and specify the policies, procedures, and business objectives for their sub-units of the company?
 - a) Strategic
 - b) Tactical
 - c) Operational
- 12) Information that is outdated, inaccurate, or hard to understand would be very meaningful, useful, or valuable to you or other business professionals.
 - a) True
 - b) False
- 13) Information has three dimensions. There are _____.
 - a) Time, consent, and form
 - b) Time, content, and form
 - c) Cost, content, and form
- 14) The growth of corporate intranets, extranets, as well as the web, has accelerated the development and use of "executive class" information delivery and decision support software tools by lower levels of management and by individuals and teams of business professionals. This dramatic expansion has opened the door to the use of which of the following tool?
 - a) Business intelligence (BI)
 - b) Business Knowledge (BK)
 - c) Business Ideas (BI)

Seat No.	
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Set	P
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INTELLIGENT SYSTEMS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any four.** **08**
- What are ANN's?
 - What is a DSS?
 - What is DSS development?
 - What are Expert Systems?
 - List the phases of decision making probes.
- Q.3 Attempt any two.** **10**
- List characteristics and capabilities of DSS
 - What are the components of a DSS? Illustrate each.
 - What is prototyping? State the steps involved
- Q.4 Attempt any one.** **10**
- How does a KBMS work?
 - Illustrate the DSS Development.

Section – II

- Q.5 Attempt any four.** **08**
- What is a Group decision making?
 - What is an Executive IS?
 - Compare between ERP and SCM
 - What is Knowledge management?
 - What is the role of people in KM?
- Q.6 Attempt any two.** **10**
- What is the impact of MSS?
 - What are the approaches to knowledge management?
 - How is success ensured in management?
- Q.7 Attempt any one.** **10**
- State characteristics of MRP, ERP and SCM.
 - State the impact of MSS.

Seat No.	
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Set **Q**

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INTELLIGENT SYSTEMS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) What is the most important component of a Decision Support System?
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 - d) <http://www.hotmail.com>
- 3) What category of software technology enables analysts, managers and executives to gain insight into data through fast, consistent, interactive access to a wide variety of possible views of information that has been transformed from raw data to reflect the real dimensionality of the enterprise as understood by the user?
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 - c) On-line Transaction Processing (OLTP) software
- 4) Which of the following level of managers develop short- and medium-range plans, schedules, and budgets and specify the policies, procedures, and business objectives for their sub-units of the company?
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 - b) Tactical
 - c) Operational
- 5) Information that is outdated, inaccurate, or hard to understand would be very meaningful, useful, or valuable to you or other business professionals.
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- 6) Information has three dimensions. There are _____.
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 - b) Time, content, and form
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 - b) Business Knowledge (BK)
 - c) Business Ideas (BI)
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 - c) Empirical studies of graphical displays and technical work on artificial intelligence
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 - c) The quality and value of DSS-related Web sites is outstanding
- 12) What is a data warehouse?
 - a) A database application that searches for hidden patterns in a data base
 - b) A database designed to support decision making in organizations. It is batch updated and structured for rapid on-line queries and managerial summaries
 - c) An interactive computer based system which helps decision makers utilize data and models to identify and solve problems and make decisions
- 13) What general type of DSS would include file drawer systems, data warehouses, on- line analytical processing (OLAP) systems, and Executive Information Systems?
 - a) Communications-Driven DSS
 - b) Data-Driven DSS
 - c) Document-Driven DSS
- 14) What type of computerized system records current information and emphasizes data integrity and consistency?
 - a) Data Analysis System
 - b) File Drawer System
 - c) Transaction Processing System

Seat No.	
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Set Q

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INTELLIGENT SYSTEMS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any four.** **08**
- What are ANN's?
 - What is a DSS?
 - What is DSS development?
 - What are Expert Systems?
 - List the phases of decision making probes.
- Q.3 Attempt any two.** **10**
- List characteristics and capabilities of DSS
 - What are the components of a DSS? Illustrate each.
 - What is prototyping? State the steps involved
- Q.4 Attempt any one.** **10**
- How does a KBMS work?
 - Illustrate the DSS Development.

Section – II

- Q.5 Attempt any four.** **08**
- What is a Group decision making?
 - What is an Executive IS?
 - Compare between ERP and SCM
 - What is Knowledge management?
 - What is the role of people in KM?
- Q.6 Attempt any two.** **10**
- What is the impact of MSS?
 - What are the approaches to knowledge management?
 - How is success ensured in management?
- Q.7 Attempt any one.** **10**
- State characteristics of MRP, ERP and SCM.
 - State the impact of MSS.

Seat No.	
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Set R

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INTELLIGENT SYSTEMS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) What is a data warehouse?
 - a) A database application that searches for hidden patterns in a data base
 - b) A database designed to support decision making in organizations. It is batch updated and structured for rapid on-line queries and managerial summaries
 - c) An interactive computer based system which helps decision makers utilize data and models to identify and solve problems and make decisions
- 2) What general type of DSS would include file drawer systems, data warehouses, on- line analytical processing (OLAP) systems, and Executive Information Systems?
 - a) Communications-Driven DSS
 - b) Data-Driven DSS
 - c) Document-Driven DSS
- 3) What type of computerized system records current information and emphasizes data integrity and consistency?
 - a) Data Analysis System
 - b) File Drawer System
 - c) Transaction Processing System
- 4) What is the most important component of a Decision Support System?
 - a) Architecture and network design
 - b) Database
 - c) User interface
- 5) Which of the following web sites provides organized information on a wide variety of Decision Support Systems topics?
 - a) <http://DSSResources.COM>
 - b) <http://www.usatoday.com>
 - c) <http://www.zoogdisney.com>
 - d) <http://www.hotmail.com>
- 6) What category of software technology enables analysts, managers and executives to gain insight into data through fast, consistent, interactive access to a wide variety of possible views of information that has been transformed from raw data to reflect the real dimensionality of the enterprise as understood by the user?
 - a) Data Warehouse software
 - b) On-line Analytical Processing (OLAP) software
 - c) On-line Transaction Processing (OLTP) software

- 7) Which of the following level of managers develop short- and medium-range plans, schedules, and budgets and specify the policies, procedures, and business objectives for their sub-units of the company?
 - a) Strategic
 - b) Tactical
 - c) Operational
- 8) Information that is outdated, inaccurate, or hard to understand would be very meaningful, useful, or valuable to you or other business professionals.
 - a) True
 - b) False
- 9) Information has three dimensions. There are _____.
 - a) Time, consent, and form
 - b) Time, content, and form
 - c) Cost, content, and form
- 10) The growth of corporate intranets, extranets, as well as the web, has accelerated the development and use of “executive class” information delivery and decision support software tools by lower levels of management and by individuals and teams of business professionals. This dramatic expansion has opened the door to the use of which of the following tool?
 - a) Business intelligence (BI)
 - b) Business Knowledge (BK)
 - c) Business Ideas (BI)
- 11) What were the two main streams of research that led to the evolution and development of the concept of Decision Support Systems?
 - a) Theoretical studies of organizational decision making and technical work on interactive computer systems
 - b) Theoretical studies of organizational behavior and technical work on relational data bases
 - c) Empirical studies of graphical displays and technical work on artificial intelligence
- 12) What should be a major characteristic of a DSS?
 - a) Automates decision making
 - b) Includes a spreadsheet model
 - c) Responds quickly to the changing needs of decision makers
- 13) In which of Steven Alter's categories of DSS would you place data warehouses?
 - a) Analysis Information systems
 - b) Accounting and financial models
 - c) Data analysis systems
- 14) What would one conclude after visiting DSS-related sites on the World-Wide Web?
 - a) There is limited support for DSS researchers and practitioners on the World-Wide Web
 - b) The Web is where the DSS research and development action is occurring
 - c) The quality and value of DSS-related Web sites is outstanding

Seat No.	
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Set **R**

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INTELLIGENT SYSTEMS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any four.** **08**
- What are ANN's?
 - What is a DSS?
 - What is DSS development?
 - What are Expert Systems?
 - List the phases of decision making probes.
- Q.3 Attempt any two.** **10**
- List characteristics and capabilities of DSS
 - What are the components of a DSS? Illustrate each.
 - What is prototyping? State the steps involved
- Q.4 Attempt any one.** **10**
- How does a KBMS work?
 - Illustrate the DSS Development.

Section – II

- Q.5 Attempt any four.** **08**
- What is a Group decision making?
 - What is an Executive IS?
 - Compare between ERP and SCM
 - What is Knowledge management?
 - What is the role of people in KM?
- Q.6 Attempt any two.** **10**
- What is the impact of MSS?
 - What are the approaches to knowledge management?
 - How is success ensured in management?
- Q.7 Attempt any one.** **10**
- State characteristics of MRP, ERP and SCM.
 - State the impact of MSS.

Seat No.	
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Set **S****B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019****Computer Science & Engineering****INTELLIGENT SYSTEMS**

Day & Date: Tuesday, 17-12-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

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

2) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.**14**

- 1) What category of software technology enables analysts, managers and executives to gain insight into data through fast, consistent, interactive access to a wide variety of possible views of information that has been transformed from raw data to reflect the real dimensionality of the enterprise as understood by the user?
 - a) Data Warehouse software
 - b) On-line Analytical Processing (OLAP) software
 - c) On-line Transaction Processing (OLTP) software
- 2) Which of the following level of managers develop short- and medium-range plans, schedules, and budgets and specify the policies, procedures, and business objectives for their sub-units of the company?
 - a) Strategic
 - b) Tactical
 - c) Operational
- 3) Information that is outdated, inaccurate, or hard to understand would be very meaningful, useful, or valuable to you or other business professionals.
 - a) True
 - b) False
- 4) Information has three dimensions. There are _____.
 - a) Time, consent, and form
 - b) Time, content, and form
 - c) Cost, content, and form
- 5) The growth of corporate intranets, extranets, as well as the web, has accelerated the development and use of “executive class” information delivery and decision support software tools by lower levels of management and by individuals and teams of business professionals. This dramatic expansion has opened the door to the use of which of the following tool?
 - a) Business intelligence (BI)
 - b) Business Knowledge (BK)
 - c) Business Ideas (BI)
- 6) What were the two main streams of research that led to the evolution and development of the concept of Decision Support Systems?
 - a) Theoretical studies of organizational decision making and technical work on interactive computer systems
 - b) Theoretical studies of organizational behavior and technical work on relational data bases
 - c) Empirical studies of graphical displays and technical work on artificial intelligence

- 7) What should be a major characteristic of a DSS?
 - a) Automates decision making
 - b) Includes a spreadsheet model
 - c) Responds quickly to the changing needs of decision makers
- 8) In which of Steven Alter's categories of DSS would you place data warehouses?
 - a) Analysis Information systems
 - b) Accounting and financial models
 - c) Data analysis systems
- 9) What would one conclude after visiting DSS-related sites on the World-Wide Web?
 - a) There is limited support for DSS researchers and practitioners on the World-Wide Web
 - b) The Web is where the DSS research and development action is occurring
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 - a) A database application that searches for hidden patterns in a data base
 - b) A database designed to support decision making in organizations. It is batch updated and structured for rapid on-line queries and managerial summaries
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 - c) Document-Driven DSS
- 12) What type of computerized system records current information and emphasizes data integrity and consistency?
 - a) Data Analysis System
 - b) File Drawer System
 - c) Transaction Processing System
- 13) What is the most important component of a Decision Support System?
 - a) Architecture and network design
 - b) Database
 - c) User interface
- 14) Which of the following web sites provides organized information on a wide variety of Decision Support Systems topics?
 - a) <http://DSSResources.COM>
 - b) <http://www.usatoday.com>
 - c) <http://www.zoogdisney.com>
 - d) <http://www.hotmail.com>

Seat No.	
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Set **S**

B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INTELLIGENT SYSTEMS

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Attempt any four.** **08**
- What are ANN's?
 - What is a DSS?
 - What is DSS development?
 - What are Expert Systems?
 - List the phases of decision making probes.
- Q.3 Attempt any two.** **10**
- List characteristics and capabilities of DSS
 - What are the components of a DSS? Illustrate each.
 - What is prototyping? State the steps involved
- Q.4 Attempt any one.** **10**
- How does a KBMS work?
 - Illustrate the DSS Development.

Section – II

- Q.5 Attempt any four.** **08**
- What is a Group decision making?
 - What is an Executive IS?
 - Compare between ERP and SCM
 - What is Knowledge management?
 - What is the role of people in KM?
- Q.6 Attempt any two.** **10**
- What is the impact of MSS?
 - What are the approaches to knowledge management?
 - How is success ensured in management?
- Q.7 Attempt any one.** **10**
- State characteristics of MRP, ERP and SCM.
 - State the impact of MSS.

Seat No.	
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Set	P
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE APPLICATION DEVELOPMENT

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) What are the indirect Direct subclasses of Services?
 - a) RecognitionService
 - b) RemoteViewsService
 - c) SpellCheckerService
 - d) InputMethodService
- 2) What are the Direct subclasses of Activity?
 - a) AccountAuthenticatorActivity
 - b) ActivityGroup
 - c) ExpandableListActivity
 - d) All of the above
- 3) How many ways to start services?
 - a) Started
 - b) Bound
 - c) a & b
 - d) None of the above
- 4) Android component that manages appearance and format on screen is called _____.
 - a) layout
 - b) Intent
 - c) view
 - d) Fragment
- 5) What does the following line of code achieve?
 Intent intent = new Intent(FirstActivity.this, SecondActivity-Class);
 - a) Creates an hidden Intent
 - b) Creates an implicit Intent
 - c) Create an explicit Intent
 - d) Starts an activity
- 6) Which is not included in the Android application framework?
 - a) WindowManager
 - b) NotificationManager
 - c) DialerManager
 - d) PackageManager
- 7) Which of these files contains text values that you can use in your application?
 - a) AndroidManifest.xml
 - b) res/Text.xml
 - c) res/layout/Main.xml
 - d) res/values/strings.xml
- 8) _____ is methods in Media Player class.
 - a) seekTo()
 - b) start()
 - c) pause()
 - d) All
- 9) Image to be moved by in quick succession of time are saved in _____ folder.
 - a) Drawable_hdpi
 - b) drawable_ldpi
 - c) Drawable_mdpi
 - d) in either a or b or c

- 10) _____ method in Cursor returns number of columns in selection query result set.
- | | |
|-------------------|-------------|
| a) getColumnCount | b) getCount |
| c) getRowCount | d) None |
- 11) _____ animation can be used to animate any property of object.
- | | |
|-------------|-------------|
| a) View | b) Property |
| c) Drawable | d) None |
- 12) _____ method is used to instantiate SqliteOpenHelper class.
- | | |
|--------------------------|------------------|
| a) getWritableDatabase() | b) getReadable() |
| c) both a and b | d) None |
- 13) Geocoding means _____.
- | |
|--|
| a) Converting latitude and longitude to address |
| b) Converting address to latitude-longitude pair |
| c) displaying address in map |
| d) None |
- 14) _____ method is called whenever data received by sensor is changed.
- | | |
|----------------------|------------------------|
| a) onSensorChanged | b) onSensorDataChanged |
| c) onAccuracyChanged | d) onDataChanged |

Seat No.	
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Set	P
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE APPLICATION DEVELOPMENT

Day & Date: Tuesday, 17-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

- Q.2 Attempt any three.** **12**
- Define Intent Service and demonstrate its use with a simple pseudocode.
 - Define and elaborate the use of Broadcast receiver along with example.
 - Define layouts with example.
 - Outline the various views of the DDMS perspective and its purpose.
- Q.3 Attempt any one.** **08**
- Illustrate the three philosophies of hybrid app development. List down the frameworks and tools used in these approaches.
 - Describe Android platform architecture. Discuss the various layers and their components and functions.
- Q.4** What is service? Elaborate with a neat diagram states and Life cycle methods. **08**
 Explain the steps to initiate the service.

Section – II

- Q.5 Attempt any Three.** **12**
- Write a note on Geocoder.
 - explain types of sensors .
 - Write a note on white box testing.
 - Write a program to get list of sensors on device and display those on Toast message.
- Q.6 Attempt any one.** **08**
- Explain app uploading process on google play store.
 - Explain types of animation in android.
- Q.7** Explain SQLiteOpenHelper and SQLiteDatabase classes in detail with example. **08**
 Write a program to insert student record (rollno,name,marks) in student table created using SQLite database.

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE APPLICATION DEVELOPMENT

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) _____ is methods in Media Player class.
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 - b) res/Text.xml
 - c) res/layout/Main.xml
 - d) res/values/strings.xml

Seat No.	
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Set	Q
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE APPLICATION DEVELOPMENT

Day & Date: Tuesday, 17-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
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Section – I

- Q.2 Attempt any three. 12**
- a) Define Intent Service and demonstrate its use with a simple pseudocode.
 - b) Define and elaborate the use of Broadcast receiver along with example.
 - c) Define layouts with example.
 - d) Outline the various views of the DDMS perspective and its purpose.
- Q.3 Attempt any one. 08**
- a) Illustrate the three philosophies of hybrid app development. List down the frameworks and tools used in these approaches.
 - b) Describe Android platform architecture. Discuss the various layers and their components and functions.
- Q.4 What is service? Elaborate with a neat diagram states and Life cycle methods. 08**
 Explain the steps to initiate the service.

Section – II

- Q.5 Attempt any Three. 12**
- a) Write a note on Geocoder.
 - b) explain types of sensors .
 - c) Write a note on white box testing.
 - d) Write a program to get list of sensors on device and display those on Toast message.
- Q.6 Attempt any one. 08**
- a) Explain app uploading process on google play store.
 - b) Explain types of animation in android.
- Q.7 Explain SQLiteOpenHelper and SQLiteDatabase classes in detail with example. 08**
 Write a program to insert student record (rollno,name,marks) in student table created using SQLite database.

Seat No.	
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Set	R
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE APPLICATION DEVELOPMENT

Day & Date: Tuesday, 17-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) What does the following line of code achieve?
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- 4) _____ is methods in Media Player class.
 a) seekTo() b) start()
 c) pause() d) All
- 5) Image to be moved by in quick succession of time are saved in _____ folder.
 a) Drawable_hdpi b) drawable_ldpi
 c) Drawable_mdpi d) in either a or b or c
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 a) getColumnCount b) getCount
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- 8) _____ method is used to instantiate SqliteOpenHelper class.
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Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE APPLICATION DEVELOPMENT

Day & Date: Tuesday, 17-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
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Section – I

- Q.2 Attempt any three.** **12**
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Section – II

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- Explain app uploading process on google play store.
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- Q.7** Explain SQLiteOpenHelper and SQLiteDatabase classes in detail with example. **08**
 Write a program to insert student record (rollno,name,marks) in student table created using SQLite database.

Seat No.	
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Day & Date: Tuesday, 17-12-2019
Time: 02:30 PM To 05:30 PM

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

Marks: 14

14

- Page 10 of 12

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 - d) PackageManager
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 - c) Drawable_mdpi
 - d) in either a or b or c

Seat No.	
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B.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
MOBILE APPLICATION DEVELOPMENT

Day & Date: Tuesday, 17-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I

- Q.2 Attempt any three.** **12**
- Define Intent Service and demonstrate its use with a simple pseudocode.
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 - Describe Android platform architecture. Discuss the various layers and their components and functions.
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 Explain the steps to initiate the service.

Section – II

- Q.5 Attempt any Three.** **12**
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 - explain types of sensors .
 - Write a note on white box testing.
 - Write a program to get list of sensors on device and display those on Toast message.
- Q.6 Attempt any one.** **08**
- Explain app uploading process on google play store.
 - Explain types of animation in android.
- Q.7 Explain SQLiteOpenHelper and SQLiteDatabase classes in detail with example.** **08**
 Write a program to insert student record (rollno,name,marks) in student table created using SQLite database.

Seat No.	
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- 10) Information systems that allow data to be shared throughout the organization are called _____ systems.
- | | |
|-----------------|---------------|
| a) Unintegrated | b) Integrated |
| c) Unrestricted | d) Bounded |
- 11) Assembling a product, identifying customers and hiring employees is a _____.
- | | |
|---------------------|----------------------|
| a) Transaction | b) Phases |
| c) Business Process | d) Business Function |
- 12) EDP means _____.
- | | |
|-------------------------------|-------------------------------|
| a) Electronic Data Predict | b) Electronic Data Processing |
| c) Electronic Data Projection | d) Electronic Data Process |
- 13) If a university sets up a web-based information system that faculty could access to record student grades and to advise students, that would be an example of a/an _____.
- | | |
|--------|-------------|
| a) CRM | b) Intranet |
| c) ERP | d) Extranet |
- 14) Which one of the following is **not** one of the major types of e-commerce?
- | | |
|--------|--------|
| a) C2B | b) B2C |
| c) B2B | d) C2C |

Seat No.	
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Set	P
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MANAGEMENT INFORMATION SYSTEM

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

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
 2) Figures to the right indicates full marks.
 3) Support your answers with neat block diagrams wherever required.

Section – I

- Q.2 Answer any FOUR from the following questions. 16**
- Describe the impact of the Management Information System on the organization.
 - Explain Group Decision Support Systems (GDSS) in detail.
 - Explain the concepts of strategic information system.
 - Explain role of data in Information System.
 - Clearly explain the overview of System Development Life Cycle.
- Q.3 Answer any TWO from the following questions. 12**
- How Decision Support System (DSS) helps in taking right decision? Write down the characteristics and benefits of DSS.
 - Explain the role of ESS (Executive Support System) in Organization. And write down the benefits of ESS.
 - What are the principle causes of Information System failure?

Section – II

- Q.4 Answer any FOUR from the following questions. 16**
- Explain Computer System Management in information systems resource management.
 - Define Security and Explain security concepts: Confidentiality, Integrity, and Availability.
 - Explain clearly what do you mean by Security Audit?
 - Explain about E-market in business organization.
 - Explain M-commerce.
 - What is ERP? Explain clearly by taking an example.
- Q.5 Answer any TWO from the following questions. 12**
- Explain E-commerce Business models.
 - Explain Business Process Re-engineering (BPR) in detail.
 - Write note on any two of the following.
 - Common ERP myths
 - Supply Chain Management (SCM)
 - Customer Relationship Management (CRM)

**Seat
No.**

Max. Marks: 70

MCQ/Objective Type Questions

Marks: 14

14

- Page 4 of 12

- 9) The objective of the MIS is to provide information for a _____ support in the process of management.
- | | |
|-------------|-------------|
| a) Tool | b) Goal |
| c) decision | d) Analysis |
- 10) DSS stands for _____.
- | | |
|--------------------------|----------------------------|
| a) Direct Support System | b) Decision Support System |
| c) Decade Support System | d) All |
- 11) _____ System provides information about the performance of the organization.
- | | |
|---------------------------|----------------------|
| a) Financial Management | b) Decision Support |
| c) Management Information | d) none of the above |
- 12) The _____ information generally relates to the top management functions in a business organization.
- | | |
|----------------|--------------|
| a) Tactical | b) Strategic |
| c) Operational | d) Financial |
- 13) _____ is one of the types of security.
- | | |
|------------------------------|------------------------------|
| a) Resource Security Systems | b) Computer Security Systems |
| c) Domain Security Systems | d) All |
- 14) Staffing is behaviorally related to _____.
- | | |
|---------------|----------------|
| a) Organizing | b) Controlling |
| c) Managing | d) Proceedings |

Seat No.	
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Set	Q
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MANAGEMENT INFORMATION SYSTEM

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Section – II

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 - Supply Chain Management (SCM)
 - Customer Relationship Management (CRM)

Seat No.	
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MANAGEMENT INFORMATION SYSTEM

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The _____ information generally relates to the top management functions in a business organization.

a) Tactical	b) Strategic
c) Operational	d) Financial
- 2) _____ is one of the types of security.

a) Resource Security Systems	b) Computer Security Systems
c) Domain Security Systems	d) All
- 3) Staffing is behaviorally related to _____.

a) Organizing	b) Controlling
c) Managing	d) Proceedings
- 4) Information refers to _____.

a) Process	b) Event
c) Task	d) Data
- 5) System is a group of elements organized with a _____.

a) Purpose	b) Data
c) Instruction	d) Procedure
- 6) Information systems that allow data to be shared throughout the organization are called _____ systems.

a) Unintegrated	b) Integrated
c) Unrestricted	d) Bounded
- 7) Assembling a product, identifying customers and hiring employees is a _____.

a) Transaction	b) Phases
c) Business Process	d) Business Function
- 8) EDP means _____.

a) Electronic Data Predict	b) Electronic Data Processing
c) Electronic Data Projection	d) Electronic Data Process

- 9) If a university sets up a web-based information system that faculty could access to record student grades and to advise students, that would be an example of a/an _____.
 - a) CRM
 - b) Intranet
 - c) ERP
 - d) Extranet
- 10) Which one of the following is **not** one of the major types of e-commerce?
 - a) C2B
 - b) B2C
 - c) B2B
 - d) C2C
- 11) The role of MIS in an organization can be compared to the role of _____ in the body.
 - a) Brain
 - b) Heart
 - c) Lever
 - d) Stomach
- 12) The objective of the MIS is to provide information for a _____ support in the process of management.
 - a) Tool
 - b) Goal
 - c) decision
 - d) Analysis
- 13) DSS stands for _____.
 - a) Direct Support System
 - b) Decision Support System
 - c) Decade Support System
 - d) All
- 14) _____ System provides information about the performance of the organization.
 - a) Financial Management
 - b) Decision Support
 - c) Management Information
 - d) none of the above

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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MANAGEMENT INFORMATION SYSTEM

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

Max. Marks: 56

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 - What are the principle causes of Information System failure?

Section – II

- Q.4 Answer any FOUR from the following questions. 16**
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- Q.5 Answer any TWO from the following questions. 12**
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 - Supply Chain Management (SCM)
 - Customer Relationship Management (CRM)

Seat No.	
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MANAGEMENT INFORMATION SYSTEM

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Information systems that allow data to be shared throughout the organization are called _____ systems.

a) Unintegrated	b) Integrated
c) Unrestricted	d) Bounded
- 2) Assembling a product, identifying customers and hiring employees is a _____.

a) Transaction	b) Phases
c) Business Process	d) Business Function
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a) Electronic Data Predict	b) Electronic Data Processing
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a) CRM	b) Intranet
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a) C2B	b) B2C
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- 6) The role of MIS in an organization can be compared to the role of _____ in the body.

a) Brain	b) heart
c) Lever	d) stomach
- 7) The objective of the MIS is to provide information for a _____ support in the process of management.

a) Tool	b) goal
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| a) Process | b) Event |
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| c) Instruction | d) Procedure |

Seat
No.

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
MANAGEMENT INFORMATION SYSTEM

Day & Date: Friday, 22-11-2019
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Max. Marks: 56

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Section – I

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Section – II

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 - Explain Business Process Re-engineering (BPR) in detail.
 - Write note on any two of the following.
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 - Supply Chain Management (SCM)
 - Customer Relationship Management (CRM)

Seat No.	
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Seat No.	
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B.E (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION & CYBER SECURITY

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

Max. Marks: 56

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

Section I

Q.2 Attempt any three of the following questions. 12

- What is difference between monoalphabetic cipher and polyalphabetic cipher?
- Describe the cipher block chaining mode of block cipher.
- Explain the public key distribution using public key authority.
- Explain Caesar cipher with example.
- Explain the model of network security with diagram.

Q.3 Attempt any two of the following questions. 16

- Consider the Diffie- Hellman key exchange technique with a common prime $q = 11$ and primitive root $\alpha = 2$.
 - Show that 2 is a primitive root of 11
 - If A has public key $Y_A = 9$, what is X_A ?
 - If B has public key $Y_B = 3$, what is shared secret key?
- Explain the working of DES with diagram.
- What is MAC? Explain three basic uses of Message authentication code.

Section – II

Q.4 Attempt any three of the following questions. 12

- Explain SSL Record protocol with its operation.
- Write note on S/MIME.
- Define the term
 - E – mail bombing
 - Salami attack
 - Logic bomb
 - Data diddling
- What is phishing? Explain how it work.
- What is Buffer overflow and how to minimize it?

Q.5 Attempt any two of the following questions. 16

- What is SET? Explain SET Participant with diagram in detail.
- What is DoS Attack? Explain the levels of DoS Attack.
- What is ESP? Give the format of ESP packet and explain Transport and Tunnel mode of ESP.

Seat No.	
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B.E (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION & CYBER SECURITY

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

Max. Marks: 70

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

2) Figures to right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) In the _____ mode, IPSec protects the whole IP packet, including the original IP header.

a) Transport	b) Tunnel
c) AH	d) ESP
- 2) In _____ the cryptographic algorithms and secrets are sent with the message.

a) IPSec	b) SSL
c) TLS	d) PGP
- 3) In PGP services, SHA-1 is used to generate _____.

a) 56	b) 64
c) 160	d) 256
- 4) Financial motivation hacking coming under type of _____.

a) Hungry for Recognition	b) Not interested in Recognition
c) The insider	d) The Outsider
- 5) Following is the event dependent program executed only when certain event occur _____.

a) Logic Bomb	b) Salami
c) Email Bombing	d) Trojan Horse
- 6) Phishing execute following sequential steps _____.

a) Planning, Collection, Setup, Attack
b) Planning, Setup, Collection, Attack
c) Planning, Setup, Attack, Collection
d) Collection, Planning, Setup, Attack
- 7) _____ is a computer on a network which act as an intermediary for connections with other computers on the network.

a) Proxy Server	b) Anonymizer
c) Both a & b	d) Neither a nor b
- 8) What is the size of output production by each s -box in DES algorithm?

a) 6	b) 10
c) 4	d) 8
- 9) What is the ciphertext of "we will meet" using Caesercipher assume k=3.

a) zhzihpphph	b) zizhoophhw
c) zhziophhwh	d) zgziophhgw

- 10) A _____ is a trusted third party that assigns a symmetric key to two parties.
- | | |
|--------|------------------|
| a) KDC | b) CA |
| c) KDD | d) None of above |
- 11) A substitution technique in which every new message requires a new key of the same length as the new message is known as _____.
- | | |
|-----------------|--------------------|
| a) Hill Cipher | b) Playfair Cipher |
| c) One time pad | d) Caesar Cipher |
- 12) If the message includes a _____ the receiver is assured that the message has not been delayed beyond that normally expected for network transit.
- | | |
|-------------------------|--------------------|
| a) Shared Key | b) Timestamp |
| c) Error detection code | d) Sequence number |
- 13) In asymmetric key cryptography, the private key is kept by _____.
- | |
|--|
| a) Sender |
| b) Receiver |
| c) Sender & Receiver |
| d) All the connected device to network |
- 14) Hash function is_____.
- | | |
|-----------------|----------------|
| a) Many to one | b) One to many |
| c) Many to Many | d) One to one |

Seat No.	
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B.E (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION & CYBER SECURITY

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

Max. Marks: 56

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Q.2 Attempt any three of the following questions. 12

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 - Show that 2 is a primitive root of 11
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- Write note on S/MIME.
- Define the term
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- What is Buffer overflow and how to minimize it?

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- What is ESP? Give the format of ESP packet and explain Transport and Tunnel mode of ESP.

Seat No.	
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B.E (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION & CYBER SECURITY

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

Max. Marks: 70

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

2) Figures to right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

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b) Planning, Setup, Collection, Attack
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b) 10
c) 4
d) 8
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b) zlzhoophhw
c) zhzloophhw
d) zgzloopggu
- 13) A _____ is a trusted third party that assigns a symmetric key to two parties.
a) KDC
b) CA
c) KDD
d) None of above
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Seat No.	
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B.E (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION & CYBER SECURITY

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

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section I

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Section – II

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- What is DoS Attack? Explain the levels of DoS Attack.
- What is ESP? Give the format of ESP packet and explain Transport and Tunnel mode of ESP.

Seat No.	
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- 10) If the message includes a _____ the receiver is assured that the message has not been delayed beyond that normally expected for network transit.
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| a) Shared Key | b) Timestamp |
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- 12) Hash function is_____.
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| a) Many to one | b) One to many |
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- 13) In the _____ mode, IPSec protects the whole IP packet, including the original IP header.
- | | |
|--------------|-----------|
| a) Transport | b) Tunnel |
| c) AH | d) ESP |
- 14) In _____ the cryptographic algorithms and secrets are sent with the message.
- | | |
|----------|--------|
| a) IPSec | b) SSL |
| c) TLS | d) PGP |

Seat No.	
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B.E (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION & CYBER SECURITY

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

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section I

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Seat No.	
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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA WAREHOUSING & MINING

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Which of the following is not data mining task?
 - a) Classification
 - b) SQL query
 - c) Clustering
 - d) Association Rule Mining
- 2) In data mining output is precise.
 - a) True
 - b) False
- 3) In _____ groups are not predefined.
 - a) Classification
 - b) Clustering
 - c) Association
 - d) None of the above
- 4) "Find the hotels near CST Railway Station" is a _____ type of query.
 - a) Spatial
 - b) Temporal
 - c) Data Stream Query
 - d) Graph Query
- 5) Binning is the method for handling _____.
 - a) Missing data
 - b) Noisy data
 - c) Data reduction
 - d) Outliers
- 6) _____ is an approach to handle missing data.
 - a) Ignore the missing value
 - b) Assume a value for missing data
 - c) Fill missing value manually
 - d) All the above
- 7) The "IF" - part of a rule is known as _____.
 - a) Rule Antecedent
 - b) Rule Consequent
 - c) Action
 - d) None of these
- 8) Text data is unstructured data.
 - a) True
 - b) False
- 9) Full form of SPADE is _____.
 - a) Sequential Pattern Discovery using Equivalence Classes
 - b) Serial Pattern Discovery using Equal Closure
 - c) Sequence Pattern Disclosure using Equal Classes
 - d) None
- 10) Seasonal Movements can be found out from _____ data.
 - a) Spatial
 - b) Transaction data
 - c) Temporal
 - d) None

- 11) _____ is a spatial database primitive.
- | | |
|----------|---------------------|
| a) South | b) Near |
| c) North | d) All of the above |
- 12) Wireless Sensor Data is a _____ type of data.
- | | |
|----------------|-------------|
| a) Temporal | b) Stream |
| c) Time series | d) Web data |
- 13) KNN algorithm is also called as _____.
- | | |
|----------------------------|----------------------------|
| a) Fast learning algorithm | b) Slow learning algorithm |
| c) Lazy Learner algorithm | d) None of the above |
- 14) Frequent item sets means the item sets whose number of occurrences are _____.
- | | |
|-------------------------------|----------------------|
| a) Equal or Above a threshold | b) Below threshold |
| c) Exactly threshold | d) None of the above |

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA WAREHOUSING & MINING

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

Max. Marks: 56

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

Section – I

- Q.2 Answer any three of the following. 12**
- a) Explain difference OLTP and OLAP.
 - b) What are different issues in KDD?
 - c) What is difference between Classification and Clustering?
 - d) What are different OLAP operations? Explain.
- Q.3 Solve any one of the following. 08**
- a) Explain classification by decision tree induction
 - b) Explain data warehouse as a multi-tiered architecture with diagram.
- Q.4 Explain Naive Bays Classification method with example. 08**

Section – II

- Q.5 Answer any three of the following. 12**
- a) Explain MST partitional clustering algorithm.
 - b) Write a note on Spatial data mining and its primitives.
 - c) Write a note on stream data mining.
 - d) Write a note on Text Mining and its applications.
- Q.6 solve any one of the Following 08**
- a) Explain web content mining and web usage mining.
 - b) What do you mean by time series database and explain applications of time series mining.
- Q.7 Explain dendrogram data structure and what is the use of dendrogram in agglomerative algorithms? 08**

Seat No.	
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- 11) "Find the hotels near CST Railway Station" is a _____ type of query.
- a) Spatial
 - b) Temporal
 - c) Data Stream Query
 - d) Graph Query
- 12) Binning is the method for handling _____.
- a) Missing data
 - b) Noisy data
 - c) Data reduction
 - d) Outliers
- 13) _____ is an approach to handle missing data.
- a) Ignore the missing value
 - b) Assume a value for missing data
 - c) Fill missing value manually
 - d) All the above
- 14) The "IF" - part of a rule is known as _____.
- a) Rule Antecedent
 - b) Rule Consequent
 - c) Action
 - d) None of these

Seat No.	
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Set	Q
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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA WAREHOUSING & MINING

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

Max. Marks: 56

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

Section – I

- Q.2 Answer any three of the following.** **12**
- a) Explain difference OLTP and OLAP.
 - b) What are different issues in KDD?
 - c) What is difference between Classification and Clustering?
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- Q.3 Solve any one of the following.** **08**
- a) Explain classification by decision tree induction
 - b) Explain data warehouse as a multi-tiered architecture with diagram.
- Q.4 Explain Naive Bays Classification method with example.** **08**

Section – II

- Q.5 Answer any three of the following.** **12**
- a) Explain MST partitional clustering algorithm.
 - b) Write a note on Spatial data mining and its primitives.
 - c) Write a note on stream data mining.
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- Q.6 solve any one of the Following** **08**
- a) Explain web content mining and web usage mining.
 - b) What do you mean by time series database and explain applications of time series mining.
- Q.7 Explain dendrogram data structure and what is the use of dendrogram in agglomerative algorithms?** **08**

Seat No.	
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- 10) Frequent item sets means the item sets whose number of occurrences are _____.
a) Equal or Above a threshold b) Below threshold
c) Exactly threshold d) None of the above
- 11) Which of the following is not data mining task?
a) Classification b) SQL query
c) Clustering d) Association Rule Mining
- 12) In data mining output is precise.
a) True b) False
- 13) In _____ groups are not predefined.
a) Classification b) Clustering
c) Association d) None of the above
- 14) "Find the hotels near CST Railway Station" is a _____ type of query.
a) Spatial b) Temporal
c) Data Stream Query d) Graph Query

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA WAREHOUSING & MINING

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

Max. Marks: 56

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

Section – I

- Q.2 Answer any three of the following.** **12**
- Explain difference OLTP and OLAP.
 - What are different issues in KDD?
 - What is difference between Classification and Clustering?
 - What are different OLAP operations? Explain.
- Q.3 Solve any one of the following.** **08**
- Explain classification by decision tree induction
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- Q.4 Explain Naive Bays Classification method with example.** **08**

Section – II

- Q.5 Answer any three of the following.** **12**
- Explain MST partitional clustering algorithm.
 - Write a note on Spatial data mining and its primitives.
 - Write a note on stream data mining.
 - Write a note on Text Mining and its applications.
- Q.6 solve any one of the Following** **08**
- Explain web content mining and web usage mining.
 - What do you mean by time series database and explain applications of time series mining.
- Q.7 Explain dendrogram data structure and what is the use of dendrogram in agglomerative algorithms?** **08**

Seat No.	
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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA WAREHOUSING & MINING

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

14

- 1) Seasonal Movements can be found out from _____ data.
 - a) Spatial
 - b) Transaction data
 - c) Temporal
 - d) None
- 2) _____ is a spatial database primitive.
 - a) South
 - b) Near
 - c) North
 - d) All of the above
- 3) Wireless Sensor Data is a _____ type of data.
 - a) Temporal
 - b) Stream
 - c) Time series
 - d) Web data
- 4) KNN algorithm is also called as _____.
 - a) Fast learning algorithm
 - b) Slow learning algorithm
 - c) Lazy Learner algorithm
 - d) None of the above
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 - b) Below threshold
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 - d) None of the above
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 - c) Association
 - d) None of the above
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 - a) Spatial
 - b) Temporal
 - c) Data Stream Query
 - d) Graph Query
- 10) Binning is the method for handling _____.
 - a) Missing data
 - b) Noisy data
 - c) Data reduction
 - d) Outliers

- 11) _____ is an approach to handle missing data.
 - a) Ignore the missing value
 - b) Assume a value for missing data
 - c) Fill missing value manually
 - d) All the above
- 12) The “IF” - part of a rule is known as _____.
 - a) Rule Antecedent
 - b) Rule Consequent
 - c) Action
 - d) None of these
- 13) Text data is unstructured data.
 - a) True
 - b) False
- 14) Full form of SPADE is _____.
 - a) Sequential Pattern Discovery using Equivalence Classes
 - b) Serial Pattern Discovery using Equal Closure
 - c) Sequence Pattern Disclosure using Equal Classes
 - d) None

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA WAREHOUSING & MINING

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

Max. Marks: 56

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

Section – I

- Q.2 Answer any three of the following.** **12**
- a) Explain difference OLTP and OLAP.
 - b) What are different issues in KDD?
 - c) What is difference between Classification and Clustering?
 - d) What are different OLAP operations? Explain.
- Q.3 Solve any one of the following.** **08**
- a) Explain classification by decision tree induction
 - b) Explain data warehouse as a multi-tiered architecture with diagram.
- Q.4 Explain Naive Bays Classification method with example.** **08**

Section – II

- Q.5 Answer any three of the following.** **12**
- a) Explain MST partitional clustering algorithm.
 - b) Write a note on Spatial data mining and its primitives.
 - c) Write a note on stream data mining.
 - d) Write a note on Text Mining and its applications.
- Q.6 solve any one of the Following** **08**
- a) Explain web content mining and web usage mining.
 - b) What do you mean by time series database and explain applications of time series mining.
- Q.7 Explain dendrogram data structure and what is the use of dendrogram in agglomerative algorithms?** **08**

Seat No.	
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- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14**

- 9) The Hadamard transform has good to very good energy compaction for highly correlated images.
- | | |
|--------------|----------------------|
| a) True | b) False |
| c) Can't Say | d) None of the above |
- 10) Fidelity Criteria having two types, objective fidelity criteria and _____ fidelity criteria.
- | | |
|---------------|--------------|
| a) image | b) color |
| c) subjective | d) adjective |
- 11) Image compression _____ defines procedures for compressing and decompressing images that is for reducing the amount of data needed to represent image.
- | | |
|---------------|------------------|
| a) Model | b) Standard |
| c) Containers | d) None of above |
- 12) In region based representation, _____ of order($p + q$) is dependent on scaling, translation, rotation and even on gray-level transformations.
- | | |
|----------------|----------------|
| a) Convex hull | b) Moments |
| c) Chain codes | d) Compression |
- 13) A region R is _____ if and only if for any two points x_1, x_2 belongs to R, the whole line segment x_1x_2 defined by its end points x_1, x_2 is inside the region R.
- | | |
|----------------|----------------|
| a) convex | b) moments |
| c) plain codes | d) compression |
- 14) Which of the following method is used in contour representation?
- | | |
|------------------|-------------------------|
| a) chain codes | b) B-spline orientation |
| c) Fragmentation | d) Both a and b |

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
IMAGE PROCESSING

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three: **12**

- a) What is Edge Relaxation? Explain with diagram and example.
- b) Describe the use of Edge detectors.
- c) What is image? Give mathematical representation of image.
- d) Write a note on: brightness correction

Q.3 Attempt any two: **16**

- a) What is Image Splitting and Merging? Write and explain split and merge algorithm. Explain it with example.
- b) What is image restoration? Explain Inverse and Wiener filtration.
- c) Describe the following Digital image properties:
 - 1) brightness
 - 2) segmentation
 - 3) region
 - 4) border

Section – II

Q.4 Attempt any three: **12**

- a) Describe properties of 2D DFT
- b) Write a note on: Region Identification
- c) Describe chain codes used in contour based representation.
- d) Describe error free compression.

Q.5 Attempt any two **16**

- a) Explain following methods of Region based representation
 - 1) moments
 - 2) convex hull
- b) Describe Discrete Cosine Transform (DST) in detail.
- c) What is image compression? Explain any two methods of image compression with the help of its algorithm and example.

Seat No.	
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Set Q

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
IMAGE PROCESSING

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

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The DFT and unitary DFT of dimension N can be implemented by a fast algorithm in _____ operations.

a) $O(N)$	b) $O(N \log_2 N)$
c) $O(\log_2 N)$	d) None of above
- 2) The Hadamard transform has good to very good energy compaction for highly correlated images.

a) True	b) False
c) Can't Say	d) None of the above
- 3) Fidelity Criteria having two types, objective fidelity criteria and _____ fidelity criteria.

a) image	b) color
c) subjective	d) adjective
- 4) Image compression _____ defines procedures for compressing and decompressing images that is for reducing the amount of data needed to represent image.

a) Model	b) Standard
c) Containers	d) None of above
- 5) In region based representation, _____ of order(p + q) is dependent on scaling, translation, rotation and even on gray-level transformations.

a) Convex hull	b) Moments
c) Chain codes	d) Compression
- 6) A region R is _____ if and only if for any two points x_1, x_2 belongs to R, the whole line segment x_1x_2 defined by its end points x_1, x_2 is inside the region R.

a) convex	b) moments
c) plain codes	d) compression
- 7) Which of the following method is used in contour representation?

a) chain codes	b) B-spline orientation
c) Fragmentation	d) Both a and b
- 8) The transition between continuous values of the image function and its digital equivalent is called _____.

a) quantization	b) enhancement
c) coloring	d) none of above

- 9) An edge is a local property of a pixel and it tells us how fast the image intensity varies in a small neighborhood of a pixel.
- a) False
 - b) True
 - c) Can't Say
 - d) None of above
- 10) The _____ provides a natural bridge between images and a probabilistic description. It also has many local minima and maxima, which may complicate its further processing.
- a) Histogram
 - b) Fractals
 - c) Color
 - d) Border
- 11) Gray scale transformation do not depend on the _____ of the pixel in the image.
- a) Color
 - b) Position
 - c) Threshold
 - d) None of above
- 12) _____ transformation maps the coordinates of the input image pixel to the point in the output image.
- a) Brightness
 - b) Pixel coordinate
 - c) Interpolation
 - d) all
- 13) One of the pre-processing method which is based on local derivatives of the image function is _____.
- a) gradient operators
 - b) smoothing
 - c) interpolation
 - d) all
- 14) Edge _____ is an interactive method, with edge confidences converging either zero (edge termination) or one (the edge forms a border).
- a) relaxation
 - b) sectioning
 - c) trapping
 - d) all

Seat No.	
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Set	Q
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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
IMAGE PROCESSING

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three: **12**

- a) What is Edge Relaxation? Explain with diagram and example.
- b) Describe the use of Edge detectors.
- c) What is image? Give mathematical representation of image.
- d) Write a note on: brightness correction

Q.3 Attempt any two: **16**

- a) What is Image Splitting and Merging? Write and explain split and merge algorithm. Explain it with example.
- b) What is image restoration? Explain Inverse and Wiener filtration.
- c) Describe the following Digital image properties:
 - 1) brightness
 - 2) segmentation
 - 3) region
 - 4) border

Section – II

Q.4 Attempt any three: **12**

- a) Describe properties of 2D DFT
- b) Write a note on: Region Identification
- c) Describe chain codes used in contour based representation.
- d) Describe error free compression.

Q.5 Attempt any two **16**

- a) Explain following methods of Region based representation
 - 1) moments
 - 2) convex hull
- b) Describe Discrete Cosine Transform (DST) in detail.
- c) What is image compression? Explain any two methods of image compression with the help of its algorithm and example.

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
IMAGE PROCESSING

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

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) _____ transformation maps the coordinates of the input image pixel to the point in the output image.
 - a) Brightness
 - b) Pixel coordinate
 - c) Interpolation
 - d) all
- 2) One of the pre-processing method which is based on local derivatives of the image function is _____.
 - a) gradient operators
 - b) smoothing
 - c) interpolation
 - d) all
- 3) Edge _____ is an interactive method, with edge confidences converging either zero (edge termination) or one (the edge forms a border).
 - a) relaxation
 - b) sectioning
 - c) trapping
 - d) all
- 4) The DFT and unitary DFT of dimension N can be implemented by a fast algorithm in _____ operations.
 - a) $O(N)$
 - b) $O(N \log_2 N)$
 - c) $O(\log_2 N)$
 - d) None of above
- 5) The Hadamard transform has good to very good energy compaction for highly correlated images.
 - a) True
 - b) False
 - c) Can't Say
 - d) None of the above
- 6) Fidelity Criteria having two types, objective fidelity criteria and _____ fidelity criteria.
 - a) image
 - b) color
 - c) subjective
 - d) adjective
- 7) Image compression _____ defines procedures for compressing and decompressing images that is for reducing the amount of data needed to represent image.
 - a) Model
 - b) Standard
 - c) Containers
 - d) None of above
- 8) In region based representation, _____ of order(p + q) is dependent on scaling, translation, rotation and even on gray-level transformations.
 - a) Convex hull
 - b) Moments
 - c) Chain codes
 - d) Compression

- 9) A region R is _____ if and only if for any two points x_1, x_2 belongs to R, the whole line segment x_1x_2 defined by its end points x_1, x_2 is inside the region R.
- a) convex
 - b) moments
 - c) plain codes
 - d) compression
- 10) Which of the following method is used in contour representation?
- a) chain codes
 - b) B-spline orientation
 - c) Fragmentation
 - d) Both a and b
- 11) The transition between continuous values of the image function and its digital equivalent is called _____.
- a) quantization
 - b) enhancement
 - c) coloring
 - d) none of above
- 12) An edge is a local property of a pixel and it tells us how fast the image intensity varies in a small neighborhood of a pixel.
- a) False
 - b) True
 - c) Can't Say
 - d) None of above
- 13) The _____ provides a natural bridge between images and a probabilistic description. It also has many local minima and maxima, which may complicate its further processing.
- a) Histogram
 - b) Fractals
 - c) Color
 - d) Border
- 14) Gray scale transformation do not depend on the _____ of the pixel in the image.
- a) Color
 - b) Position
 - c) Threshold
 - d) None of above

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
IMAGE PROCESSING

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three: **12**

- a) What is Edge Relaxation? Explain with diagram and example.
- b) Describe the use of Edge detectors.
- c) What is image? Give mathematical representation of image.
- d) Write a note on: brightness correction

Q.3 Attempt any two: **16**

- a) What is Image Splitting and Merging? Write and explain split and merge algorithm. Explain it with example.
- b) What is image restoration? Explain Inverse and Wiener filtration.
- c) Describe the following Digital image properties:
 - 1) brightness
 - 2) segmentation
 - 3) region
 - 4) border

Section – II

Q.4 Attempt any three: **12**

- a) Describe properties of 2D DFT
- b) Write a note on: Region Identification
- c) Describe chain codes used in contour based representation.
- d) Describe error free compression.

Q.5 Attempt any two **16**

- a) Explain following methods of Region based representation
 - 1) moments
 - 2) convex hull
- b) Describe Discrete Cosine Transform (DST) in detail.
- c) What is image compression? Explain any two methods of image compression with the help of its algorithm and example.

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
IMAGE PROCESSING

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Fidelity Criteria having two types, objective fidelity criteria and _____ fidelity criteria.

a) image	b) color
c) subjective	d) adjective
- 2) Image compression _____ defines procedures for compressing and decompressing images that is for reducing the amount of data needed to represent image.

a) Model	b) Standard
c) Containers	d) None of above
- 3) In region based representation, _____ of order(p + q) is dependent on scaling, translation, rotation and even on gray-level transformations.

a) Convex hull	b) Moments
c) Chain codes	d) Compression
- 4) A region R is _____ if and only if for any two points x_1, x_2 belongs to R, the whole line segment x_1x_2 defined by its end points x_1, x_2 is inside the region R.

a) convex	b) moments
c) plain codes	d) compression
- 5) Which of the following method is used in contour representation?

a) chain codes	b) B-spline orientation
c) Fragmentation	d) Both a and b
- 6) The transition between continuous values of the image function and its digital equivalent is called _____.

a) quantization	b) enhancement
c) coloring	d) none of above
- 7) An edge is a local property of a pixel and it tells us how fast the image intensity varies in a small neighborhood of a pixel.

a) False	b) True
c) Can't Say	d) None of above
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- a) Color
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- 10) _____ transformation maps the coordinates of the input image pixel to the point in the output image.
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 - b) Pixel coordinate
 - c) Interpolation
 - d) all
- 11) One of the pre-processing method which is based on local derivatives of the image function is _____.
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 - d) all
- 12) Edge _____ is an interactive method, with edge confidences converging either zero (edge termination) or one (the edge forms a border).
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 - b) sectioning
 - c) trapping
 - d) all
- 13) The DFT and unitary DFT of dimension N can be implemented by a fast algorithm in _____ operations.
- a) $O(N)$
 - b) $O(N \log_2 N)$
 - c) $O(\log_2 N)$
 - d) None of above
- 14) The Hadamard transform has good to very good energy compaction for highly correlated images.
- a) True
 - b) False
 - c) Can't Say
 - d) None of the above

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
IMAGE PROCESSING

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three: **12**

- a) What is Edge Relaxation? Explain with diagram and example.
- b) Describe the use of Edge detectors.
- c) What is image? Give mathematical representation of image.
- d) Write a note on: brightness correction

Q.3 Attempt any two: **16**

- a) What is Image Splitting and Merging? Write and explain split and merge algorithm. Explain it with example.
- b) What is image restoration? Explain Inverse and Wiener filtration.
- c) Describe the following Digital image properties:
 - 1) brightness
 - 2) segmentation
 - 3) region
 - 4) border

Section – II

Q.4 Attempt any three: **12**

- a) Describe properties of 2D DFT
- b) Write a note on: Region Identification
- c) Describe chain codes used in contour based representation.
- d) Describe error free compression.

Q.5 Attempt any two **16**

- a) Explain following methods of Region based representation
 - 1) moments
 - 2) convex hull
- b) Describe Discrete Cosine Transform (DST) in detail.
- c) What is image compression? Explain any two methods of image compression with the help of its algorithm and example.

Seat No.	
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- 11) Digital Libraries are the part of _____ information infrastructure.
a) whole b) global
c) domestic d) national
- 12) Crawler is the _____ that sends request to different remote web servers.
a) process b) program
c) data d) information
- 13) MULTOS data model is based on _____ architecture.
a) client b) server
c) client-server d) two-tier
- 14) Harvest uses _____ architecture.
a) client /server b) centralized
c) distributed d) none of these

Seat No.	
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Set**P**

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION RETRIEVAL

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

Max. Marks: 56

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

Section – I

- Q.2 Write notes on: (Any Three)** **12**
- a) Browsing Models
 - b) Brute Force Algorithm
 - c) Structural Queries
 - d) Vector Model
 - e) KMP
- Q.3 Attempt Any Two:** **16**
- a) Keyword Based Querying
 - b) IR Process
 - c) Inverted File Indexing

Section – II

- Q.4 Write notes on (Any Three)** **12**
- a) Document Models of DL
 - b) Harvest Architecture
 - c) Architectural issues of Digital Library
 - d) Problems posed by web
 - e) Data Retrieval Steps
- Q.5 Attempt Any Two:** **16**
- a) Crawler-Indexer Architecture
 - b) GEMINI
 - c) Describe MULTOS Query Language Form

Seat No.	
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- Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14**

- 12) Documents have no match in vector model if cosine value is _____.
 - a) zero
 - b) one
 - c) ninety
 - d) sixty
- 13) In Boolean Model index term weights are _____ values.
 - a) hexadecimal
 - b) octal
 - c) binary
 - d) decimal
- 14) Precision is the ratio of retrieved and _____ documents.
 - a) relevant
 - b) non relevant
 - c) all doc. of database
 - d) modified

Seat No.	
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Set	Q
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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION RETRIEVAL

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Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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Section – I

- Q.2 Write notes on: (Any Three)** **12**
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 - b) Brute Force Algorithm
 - c) Structural Queries
 - d) Vector Model
 - e) KMP
- Q.3 Attempt Any Two:** **16**
- a) Keyword Based Querying
 - b) IR Process
 - c) Inverted File Indexing

Section – II

- Q.4 Write notes on (Any Three)** **12**
- a) Document Models of DL
 - b) Harvest Architecture
 - c) Architectural issues of Digital Library
 - d) Problems posed by web
 - e) Data Retrieval Steps
- Q.5 Attempt Any Two:** **16**
- a) Crawler-Indexer Architecture
 - b) GEMINI
 - c) Describe MULTOS Query Language Form

Seat No.	
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- 12) Phrase query is sequence of _____ queries.
- | | |
|--------------|----------------|
| a) boolean | b) single word |
| c) proximity | d) context |
- 13) An inverted file is _____ oriented mechanism.
- | | |
|--------------|-----------|
| a) sentences | b) data |
| c) word | d) letter |
- 14) Use of IR is more concerned with retrieving _____.
- | | |
|----------------|--------------|
| a) information | b) data |
| c) words | d) sentences |

Seat No.	
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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION RETRIEVAL

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

Max. Marks: 56

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

Section – I

- Q.2 Write notes on: (Any Three)** **12**
- a) Browsing Models
 - b) Brute Force Algorithm
 - c) Structural Queries
 - d) Vector Model
 - e) KMP
- Q.3 Attempt Any Two:** **16**
- a) Keyword Based Querying
 - b) IR Process
 - c) Inverted File Indexing

Section – II

- Q.4 Write notes on (Any Three)** **12**
- a) Document Models of DL
 - b) Harvest Architecture
 - c) Architectural issues of Digital Library
 - d) Problems posed by web
 - e) Data Retrieval Steps
- Q.5 Attempt Any Two:** **16**
- a) Crawler-Indexer Architecture
 - b) GEMINI
 - c) Describe MULTOS Query Language Form

Seat
No.

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION RETRIEVAL

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Trying all possible pattern positions in text is _____ algorithm.
 - a) KMP
 - b) Boyer-Moore Family
 - c) BF
 - d) None of these
- 2) Digital Libraries are the part of _____ information infrastructure.
 - a) whole
 - b) global
 - c) domestic
 - d) national
- 3) Crawler is the _____ that sends request to different remote web servers.
 - a) process
 - b) program
 - c) data
 - d) information
- 4) MULTOS data model is based on _____ architecture.
 - a) client
 - b) server
 - c) client-server
 - d) two-tier
- 5) Harvest uses _____ architecture.
 - a) client /server
 - b) centralized
 - c) distributed
 - d) none of these
- 6) Recall is fraction of relevant and _____ documents.
 - a) modified
 - b) deleted
 - c) retrieved
 - d) whole text collection
- 7) Phrase query is sequence of _____ queries.
 - a) boolean
 - b) single word
 - c) proximity
 - d) context
- 8) An inverted file is _____ oriented mechanism.
 - a) sentences
 - b) data
 - c) word
 - d) letter
- 9) Use of IR is more concerned with retrieving _____.
 - a) information
 - b) data
 - c) words
 - d) sentences
- 10) Documents have no match in vector model if cosine value is _____.
 - a) zero
 - b) one
 - c) ninety
 - d) sixty
- 11) In Boolean Model index term weights are _____ values.
 - a) hexadecimal
 - b) octal
 - c) binary
 - d) decimal

- 12) Precision is the ratio of retrieved and _____ documents.
- | | |
|-------------------------|-----------------|
| a) relevant | b) non relevant |
| c) all doc. of database | d) modified |
- 13) Object index is pair of _____.
- | | |
|--------------|------------------|
| a) (BI, IMH) | b) (MF, IMH) |
| c) (BI, MF) | d) None of these |
- 14) MULTOS stands for _____.
- | | |
|-------------------------------|------------------------------|
| a) Multimedia Office Server | b) Multimedia Offline Server |
| c) Multimedia Oriented Server | d) Multimedia Online Server |

Seat No.	
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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
INFORMATION RETRIEVAL

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

Max. Marks: 56

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

Section – I

- Q.2 Write notes on: (Any Three)** **12**
- a) Browsing Models
 - b) Brute Force Algorithm
 - c) Structural Queries
 - d) Vector Model
 - e) KMP
- Q.3 Attempt Any Two:** **16**
- a) Keyword Based Querying
 - b) IR Process
 - c) Inverted File Indexing

Section – II

- Q.4 Write notes on (Any Three)** **12**
- a) Document Models of DL
 - b) Harvest Architecture
 - c) Architectural issues of Digital Library
 - d) Problems posed by web
 - e) Data Retrieval Steps
- Q.5 Attempt Any Two:** **16**
- a) Crawler-Indexer Architecture
 - b) GEMINI
 - c) Describe MULTOS Query Language Form

Seat No.	
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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
CLOUD COMPUTING

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

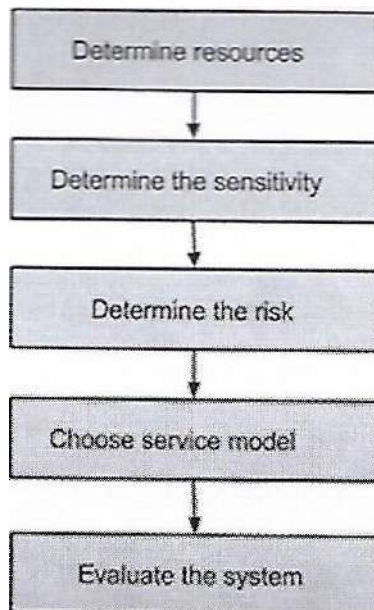
Duration: 30 Minutes

Marks: 14

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

- 1) Which of the following is essential concept related to Cloud?
 - a) Reliability
 - b) Productivity
 - c) Abstraction
 - d) All of the mentioned
- 2) Point out the correct statement:
 - a) A client can request access to a cloud service from any location
 - b) A cloud has multiple application instances and directs requests to an instance based on conditions
 - c) Computers can be partitioned into a set of virtual machines with each machine being assigned a workload
 - d) All of the mentioned
- 3) Which of the following is not a type of cloud?
 - a) Private
 - b) Public
 - c) Protected
 - d) Hybrid
- 4) SaaS stands for?
 - a) Software as a service
 - b) System Software and services
 - c) Software as a system
 - d) System as a service
- 5) 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
- 6) Which of the following is key mechanism for protecting data?
 - a) Access control
 - b) Auditing
 - c) Authentication
 - d) All of the mentioned

- 7) The following flowchart is intended to evaluate _____ in any cloud.



- a) risk
b) Errors
c) inconsistencies
d) none of the mentioned
- 8) Which of the following model type is not trusted in terms of security?
a) Public
b) Private
c) Hybrid
d) None of the mentioned
- 9) Which of the following allows you to create instances of the MySQL database to support your Web sites?
a) Amazon Elastic Compute Cloud
b) Amazon Simple Queue Service
c) Amazon Relational Database Service
d) Amazon Simple Storage System
- 10) Point out the correct statement:
a) Except for tightly managed SaaS cloud providers, the burden of resource management is still in the hands of the user
b) Cloud computing vendors run very reliable networks
c) The low barrier to entry cannot be accompanied by a low barrier to provisioning
d) All of the mentioned
- 11) Point out the wrong statement
a) The total workload might be served by a single server instance in the cloud
b) Performance logs are the only source of performance measurements
c) The amount of resources to be deployed depends upon the characterization of the Web servers involved, their potential utilization rates, and other factors
d) All of the mentioned

- 12) Point out the wrong statement:
- a) Internet consumes roughly 1 percent of the world's total power
 - b) The cost advantages of cloud computing have enabled new software vendors to create productivity applications
 - c) A client can provision computer resources without the need for interaction with cloud service provider personnel
 - d) None of the mentioned
- 13) _____ Live Services can be used in applications that run in the Azure cloud.
- a) Microsoft
 - b) Windows
 - c) Yahoo
 - d) Ruby
- 14) Which of the following google product sends you periodic email alerts based on your search term?
- a) Alerts
 - b) Blogger
 - c) Calendar
 - d) All of the mentioned

Seat No.	
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Set**P**

B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
CLOUD COMPUTING

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

Max. Marks: 56

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

Section – I

- Q.2 Attempt any three.** **12**
- Explain cloud service models with suitable diagram
 - Discuss various VM migration techniques
 - Give PaaS and SaaS vendors along with offerings.
 - Why server virtualization is needed? Which are the types to create virtual servers?
- Q.3 Attempt any one.** **08**
- Give cloud security reference model and explain the same.
 - Currently your company is running with private cloud, but now, your business is growing, then will you opt public cloud? If yes, then which parameters you will consider to opt it?
- Q.4 Give implementation steps for any one of the private cloud.** **08**

Section – II

- Q.5 Attempt any three.** **12**
- Discuss about benefits and advantages of multi-cloud management system.
 - Focus on business intelligence in cloud
 - Brief about migration paths for cloud.
 - Describe challenges in managing heterogeneous clouds.
- Q.6 Attempt any one.** **08**
- What are the benefits of cloud computing in business?
 - List and discuss various current issues of cloud computing leading to future research directions.
- Q.7 Discuss about future technology trends in cloud computing with focus on** **08**
- Cloud service models
 - Cloud deployment models
 - Cloud applications
 - Cloud security

Seat No.	
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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
CLOUD COMPUTING

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

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

MCQ/Objective Type Questions

Duration: 30 Minutes

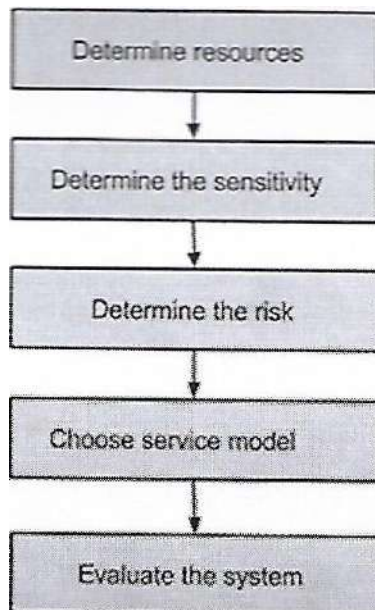
Marks: 14

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

- 1) Which of the following model type is not trusted in terms of security?
 - a) Public
 - b) Private
 - c) Hybrid
 - d) None of the mentioned
- 2) Which of the following allows you to create instances of the MySQL database to support your Web sites?
 - a) Amazon Elastic Compute Cloud
 - b) Amazon Simple Queue Service
 - c) Amazon Relational Database Service
 - d) Amazon Simple Storage System
- 3) Point out the correct statement:
 - a) Except for tightly managed SaaS cloud providers, the burden of resource management is still in the hands of the user
 - b) Cloud computing vendors run very reliable networks
 - c) The low barrier to entry cannot be accompanied by a low barrier to provisioning
 - d) All of the mentioned
- 4) Point out the wrong statement
 - a) The total workload might be served by a single server instance in the cloud
 - b) Performance logs are the only source of performance measurements
 - c) The amount of resources to be deployed depends upon the characterization of the Web servers involved, their potential utilization rates, and other factors
 - d) All of the mentioned
- 5) Point out the wrong statement:
 - a) Internet consumes roughly 1 percent of the world's total power
 - b) The cost advantages of cloud computing have enabled new software vendors to create productivity applications
 - c) A client can provision computer resources without the need for interaction with cloud service provider personnel
 - d) None of the mentioned

- 6) _____ Live Services can be used in applications that run in the Azure cloud.
- a) Microsoft
 - b) Windows
 - c) Yahoo
 - d) Ruby
- 7) Which of the following google product sends you periodic email alerts based on your search term?
- a) Alerts
 - b) Blogger
 - c) Calendar
 - d) All of the mentioned
- 8) Which of the following is essential concept related to Cloud?
- a) Reliability
 - b) Productivity
 - c) Abstraction
 - d) All of the mentioned
- 9) Point out the correct statement:
- a) A client can request access to a cloud service from any location
 - b) A cloud has multiple application instances and directs requests to an instance based on conditions
 - c) Computers can be partitioned into a set of virtual machines with each machine being assigned a workload
 - d) All of the mentioned
- 10) Which of the following is not a type of cloud?
- a) Private
 - b) Public
 - c) Protected
 - d) Hybrid
- 11) SaaS stands for?
- a) Software as a service
 - b) System Software and services
 - c) Software as a system
 - d) System as a service
- 12) Which delivery model is an example of a cloud computing environment that provides users access to virtual machines?
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 - b) Software as a Service
 - c) Application as a Service
 - d) Infrastructure as a Service
- 13) Which of the following is key mechanism for protecting data?
- a) Access control
 - b) Auditing
 - c) Authentication
 - d) All of the mentioned

- 14) The following flowchart is intended to evaluate _____ in any cloud.



- a) risk
b) errors
c) inconsistencies
d) none of the mentioned

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Set	Q
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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
CLOUD COMPUTING

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Section – I

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- Explain cloud service models with suitable diagram
 - Discuss various VM migration techniques
 - Give PaaS and SaaS vendors along with offerings.
 - Why server virtualization is needed? Which are the types to create virtual servers?
- Q.3 Attempt any one.** **08**
- Give cloud security reference model and explain the same.
 - Currently your company is running with private cloud, but now, your business is growing, then will you opt public cloud? If yes, then which parameters you will consider to opt it?
- Q.4** Give implementation steps for any one of the private cloud. **08**

Section – II

- Q.5 Attempt any three.** **12**
- Discuss about benefits and advantages of multi-cloud management system.
 - Focus on business intelligence in cloud
 - Brief about migration paths for cloud.
 - Describe challenges in managing heterogeneous clouds.
- Q.6 Attempt any one.** **08**
- What are the benefits of cloud computing in business?
 - List and discuss various current issues of cloud computing leading to future research directions.
- Q.7** Discuss about future technology trends in cloud computing with focus on **08**
- Cloud service models
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 - Cloud applications
 - Cloud security

Seat No.	
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- 5) Which of the following allows you to create instances of the MySQL database to support your Web sites?
- a) Amazon Elastic Compute Cloud
 - b) Amazon Simple Queue Service
 - c) Amazon Relational Database Service
 - d) Amazon Simple Storage System
- 6) Point out the correct statement:
- a) Except for tightly managed SaaS cloud providers, the burden of resource management is still in the hands of the user
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 - d) All of the mentioned

- 13) Which of the following is not a type of cloud?
- | | |
|--------------|-----------|
| a) Private | b) Public |
| c) Protected | d) Hybrid |
- 14) SaaS stands for?
- | | |
|--------------------------|---------------------------------|
| a) Software as a service | b) System Software and services |
| c) Software as a system | d) System as a service |

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
CLOUD COMPUTING

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Max. Marks: 56

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Section – I

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Section – II

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
CLOUD COMPUTING

Day & Date: Monday, 25-11-2019

Max. Marks: 70

Time: 02:30 PM To 05:30 PM

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

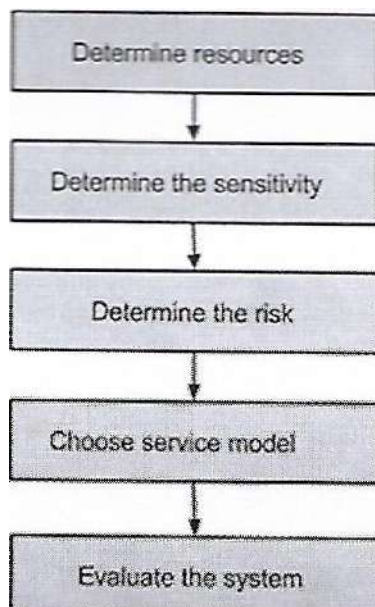
Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

- 1) Point out the correct statement:
 - a) Except for tightly managed SaaS cloud providers, the burden of resource management is still in the hands of the user
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- 2) Point out the wrong statement
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- 4) _____ Live Services can be used in applications that run in the Azure cloud.

a) Microsoft	b) Windows
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 - Infrastructure as a Service
- 11) Which of the following is key mechanism for protecting data?
- Access control
 - Auditing
 - Authentication
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- 12) The following flowchart is intended to evaluate _____ in any cloud.



- risk
 - errors
 - inconsistencies
 - none of the mentioned
- 13) Which of the following model type is not trusted in terms of security?
- Public
 - Private
 - Hybrid
 - None of the mentioned

- 14) Which of the following allows you to create instances of the MySQL database to support your Web sites?
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 - b) Amazon Simple Queue Service
 - c) Amazon Relational Database Service
 - d) Amazon Simple Storage System

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B.E. (Part - II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering

CLOUD COMPUTING

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

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section – I

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- Q.4 Give implementation steps for any one of the private cloud.** **08**

Section – II

- Q.5 Attempt any three.** **12**
- Discuss about benefits and advantages of multi-cloud management system.
 - Focus on business intelligence in cloud
 - Brief about migration paths for cloud.
 - Describe challenges in managing heterogeneous clouds.
- Q.6 Attempt any one.** **08**
- What are the benefits of cloud computing in business?
 - List and discuss various current issues of cloud computing leading to future research directions.
- Q.7 Discuss about future technology trends in cloud computing with focus on** **08**
- Cloud service models
 - Cloud deployment models
 - Cloud applications
 - Cloud security

Seat No.	
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Day & Date: Tuesday, 26-11-2019
Time: 02:30 PM To 05:30 PM

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

MCQ/Objective Type Questions

Marks: 14

14

- Page 1 of 12

- 8) The important function of multipathing software is: _____.
a) To eliminate failure caused by the server
b) To eliminate failure of databases
c) To eliminate redundant IO path in storage environments
d) To implement cluster for load distribution
- 9) In which of following type of cluster server is designed with built-in redundancy?
a) Shared -Null cluster b) Shared-Nothing cluster
c) Shared everything cluster d) Plain cluster
- 10) Which of the following is NOT the component of Backup Servers?
a) Job Scheduler b) Error handler
c) Media manager d) Volume manager
- 11) Which of following protocol defines an interface between NAS server and network backup system?
a) NDMP b) SMTP
c) FTP d) SNMP
- 12) Which of the following is favourable alternative to cope with failure of disk subsystem?
a) JBOD b) Remote Mirroring
c) Volume Manager Mirroring d) LUN Masking
- 13) Which of following approach leads several application to work on same data set?
a) Static load balancing b) Dynamic load balancing
c) Real Time data Sharing d) All of the above
- 14) In which of the following type of system, particular server cannot use the free space of other servers?
a) Storage Centric IT System b) Server Centric IT System
c) Dynamic tape library system d) None of the above

Seat No.	
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Set	P
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
STORAGE AREA NETWORK

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

Max. Marks: 56

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

Section – I

- Q.2 Solve any four.** **16**
- a) Write a short note on JBOD.
 - b) Explain Remote Mirroring in detail.
 - c) Explain Shared disk file system
 - d) Discuss all the advantage of Symmetric virtualization as well as disadvantages of asymmetric virtualization.
 - e) Explain performance bottlenecks in file servers.
- Q.3 Solve any two.** **12**
- a) Write a short notes on
 - 1) Journaling
 - 2) Snapshots
 - 3) Volume Manager
 - b) Explain Direct Access File System (DAFS).
 - c) Explain NAS in detail.

Section – II

- Q.4 Solve any four.** **16**
- a) Write a short note on Backup Clients.
 - b) Discuss the components of Backup Server.
 - c) Write a short note on next generation backup of databases.
 - d) Explain static and dynamic load balancing data sharing strategies.
 - e) Write a short note on standardized and Proprietary interfaces.
- Q.5 Solve any two.** **12**
- a) Explain the application multipathing software to improve the availability of data.
 - b) Explain in brief Network Data Management Protocol (NDMP).
 - c) Explain Outband management in detail.

Seat No.	
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Set Q

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
STORAGE AREA NETWORK

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

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The important function of multipathing software is: _____.
 - a) To eliminate failure caused by the server
 - b) To eliminate failure of databases
 - c) To eliminate redundant IO path in storage environments
 - d) To implement cluster for load distribution
- 2) In which of following type of cluster server is designed with built-in redundancy?
 - a) Shared -Null cluster
 - b) Shared-Nothing cluster
 - c) Shared everything cluster
 - d) Plain cluster
- 3) Which of the following is NOT the component of Backup Servers?
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 - b) Error handler
 - c) Media manager
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 - b) Remote Mirroring
 - c) Volume Manager Mirroring
 - d) LUN Masking
- 6) Which of following approach leads several application to work on same data set?
 - a) Static load balancing
 - b) Dynamic load balancing
 - c) Real Time data Sharing
 - d) All of the above
- 7) In which of the following type of system, particular server cannot use the free space of other servers?
 - a) Storage Centric IT System
 - b) Server Centric IT System
 - c) Dynamic tape library system
 - d) None of the above
- 8) Which of the following offers very good read performance?
 - a) RAID 0
 - b) RAID 10
 - c) RAID 5
 - d) Both b and c

- 9) Which of following is realised on HBA cards of end device?
a) End-to-end flow control b) Link flow control
c) Data access control d) None of the above
- 10) Which of the following component of local file system is realised with any hardware?
a) Volume Manager b) Snapshots
c) Journaling d) None of the above
- 11) In which of the following type of remote mirroring disk subsystem acknowledges write operation immediately after saving the block?
a) Synchronous type of remote mirroring
b) Asynchronous type of remote mirroring
c) The combination of both of the above
d) Plain remote mirroring
- 12) Which of the following function of intelligent disk subsystem synchronizes access to the hard disk?
a) Instant copy b) Remote mirroring
c) LUN Masking d) None of the above
- 13) If in the process of storage virtualisation, data and control flow travel down on same path then it is called as _____ storage virtualization.
a) Asymmetric storage virtualisation
b) Storage virtualisation at server level
c) Storage virtualisation at block level
d) Symmetric storage virtualization
- 14) Which of the following is main objective of archiving?
a) To maintain the backup copy of the data
b) To make several copies of the data
c) To freeze the data for future use
d) To generate the test data

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Set	Q
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
STORAGE AREA NETWORK

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

Max. Marks: 56

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

Section – I

Q.2 Solve any four. **16**

- a) Write a short note on JBOD.
- b) Explain Remote Mirroring in detail.
- c) Explain Shared disk file system
- d) Discuss all the advantage of Symmetric virtualization as well as disadvantages of asymmetric virtualization.
- e) Explain performance bottlenecks in file servers.

Q.3 Solve any two. **12**

- a) Write a short notes on
 - 1) Journaling
 - 2) Snapshots
 - 3) Volume Manager
- b) Explain Direct Access File System (DAFS).
- c) Explain NAS in detail.

Section – II

Q.4 Solve any four. **16**

- a) Write a short note on Backup Clients.
- b) Discuss the components of Backup Server.
- c) Write a short note on next generation backup of databases.
- d) Explain static and dynamic load balancing data sharing strategies.
- e) Write a short note on standardized and Proprietary interfaces.

Q.5 Solve any two. **12**

- a) Explain the application multipathing software to improve the availability of data.
- b) Explain in brief Network Data Management Protocol (NDMP).
- c) Explain Outband management in detail.

Seat No.	
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 - d) All of the above
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 - b) Server Centric IT System
 - c) Dynamic tape library system
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 - c) The combination of both of the above
 - d) Plain remote mirroring

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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
STORAGE AREA NETWORK

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

Max. Marks: 56

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

Section – I

Q.2 Solve any four. **16**

- a) Write a short note on JBOD.
- b) Explain Remote Mirroring in detail.
- c) Explain Shared disk file system
- d) Discuss all the advantage of Symmetric virtualization as well as disadvantages of asymmetric virtualization.
- e) Explain performance bottlenecks in file servers.

Q.3 Solve any two. **12**

- a) Write a short notes on
 - 1) Journaling
 - 2) Snapshots
 - 3) Volume Manager
- b) Explain Direct Access File System (DAFS).
- c) Explain NAS in detail.

Section – II

Q.4 Solve any four. **16**

- a) Write a short note on Backup Clients.
- b) Discuss the components of Backup Server.
- c) Write a short note on next generation backup of databases.
- d) Explain static and dynamic load balancing data sharing strategies.
- e) Write a short note on standardized and Proprietary interfaces.

Q.5 Solve any two. **12**

- a) Explain the application multipathing software to improve the availability of data.
- b) Explain in brief Network Data Management Protocol (NDMP).
- c) Explain Outband management in detail.

Seat No.	
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- a) Instant copy
 - b) Remote mirroring
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 - b) Storage virtualisation at server level
 - c) Storage virtualisation at block level
 - d) Symmetric storage virtualization
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- a) To maintain the backup copy of the data
 - b) To make several copies of the data
 - c) To freeze the data for future use
 - d) To generate the test data
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 - b) To eliminate failure of databases
 - c) To eliminate redundant IO path in storage environments
 - d) To implement cluster for load distribution
- 14) In which of following type of cluster server is designed with built-in redundancy?
- a) Shared -Null cluster
 - b) Shared-Nothing cluster
 - c) Shared everything cluster
 - d) Plain cluster

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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
STORAGE AREA NETWORK

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

Max. Marks: 56

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

Section – I

Q.2 Solve any four. **16**

- a) Write a short note on JBOD.
- b) Explain Remote Mirroring in detail.
- c) Explain Shared disk file system
- d) Discuss all the advantage of Symmetric virtualization as well as disadvantages of asymmetric virtualization.
- e) Explain performance bottlenecks in file servers.

Q.3 Solve any two. **12**

- a) Write a short notes on
 - 1) Journaling
 - 2) Snapshots
 - 3) Volume Manager
- b) Explain Direct Access File System (DAFS).
- c) Explain NAS in detail.

Section – II

Q.4 Solve any four. **16**

- a) Write a short note on Backup Clients.
- b) Discuss the components of Backup Server.
- c) Write a short note on next generation backup of databases.
- d) Explain static and dynamic load balancing data sharing strategies.
- e) Write a short note on standardized and Proprietary interfaces.

Q.5 Solve any two. **12**

- a) Explain the application multipathing software to improve the availability of data.
- b) Explain in brief Network Data Management Protocol (NDMP).
- c) Explain Outband management in detail.

Seat No.	
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WEB 2.0 AND RICH INTERNET APPLICATIONS

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 2) Assume suitable data if necessary.
 3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Choose the correct HTML element for numbered list.

a) 	b)
c) <bl>	d) <list>
- 2) What is the status code of the HTTP Not found error?

a) 401	b) 408
c) 404	d) 402
- 3)


```
var x = 10
var y = 10
x === y
```

 What would be the output of the above JS code?

a) True	b) False
c) Undefined	d) cannot be determined
- 4)


```
x = 10
y = "10"
x === y
```

 What would be the output of the above JS code?

a) True	b) False
c) Error: undefined variable 'x' and 'y'.	d) cannot be determined
- 5) Which of the following is NOT a rich client framework?

a) Open Laszlo	b) XML
c) XUL	d) XAML
- 6) XPath is syntax for defining parts of _____.

a) HTML document	b) XML document
c) DTD document	d) All of the above
- 7) RSS stands for _____.

a) Really Simple Syndication	b) Random Send Signal
c) Real State Signal	d) Real-time Simple Syndication

- 8) The Document Object Model (DOM) is an object oriented representation of an HTML or XML document.
- a) TRUE
 - b) FALSE
 - c) DOM is related to HTML but not to XML
 - d) Not sure
- 9) Commenting in XQuery is done by which of the following?
- a) <!-- Comment here-->
 - b) //Comment here
 - c) /*Comment here*/
 - d) (: Comment here :)
- 10) Which of the following is a valid declaration of JSON object?
- a) "employee":{ "name":"John", "age":30, "city":"New York" }
 - b) "employee":["name":"John", "age":30, "city":"New York"]
 - c) "employee":("name":"John", "age":30, "city":"New York")
 - d) Any declaration is permitted if the values are assigned
- 11) A _____ is a web page or web site that combines information and services from multiple sources.
- a) search engine
 - b) Mashup
 - c) bookmark
 - d) None of the above
- 12) Types of mashups are _____.
- a) Data mashup
 - b) Business mashup
 - c) Consumer mashup
 - d) All of the above
- 13) The _____ protocol provides a private channel between communicating applications, thus ensuring privacy of data authentication and integrity.
- a) HTTPS
 - b) SSL
 - c) TSL
 - d) PSL
- 14) HTTPS stands for _____.
- a) Hyper Text Transfer Protocol Secure
 - b) Hyper Text Transfer Protocol Security
 - c) Hybrid Text Transfer Protocol Security
 - d) Hyper Textual Transcript Protocol Secure

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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WEB 2.0 AND RICH INTERNET APPLICATIONS

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

Max. Marks: 56

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

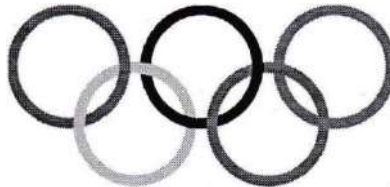
Section – I

Q.2 Attempt any three. **12**

- a) Enlist and describe the HTTP methods.
- b) What do you understand by RSS? Explain web feed.
- c) Differentiate between Web 1.0 and Web 2.0.
- d) Explain the necessity and use of XSLT for transformation. Give suitable example.
- e) Compare and contrast - HTML and XHTML.

Q.3 Attempt any two. **16**

- a) Design a web page with SVG to generate the output as given below. Draw the five rings in blue, black, red, yellow and green colours respectively. Write suitable code.



- b) Explain different rich client frameworks.
- c) Explain REST architecture with suitable diagram.

Section – II

Q.4 Attempt any three. **12**

- a) What are mashups? Give its different types.
- b) Explain JSON.
- c) Discuss how SSL protocol helps in web security?
- d) What is XQuery? Explain with example.
- e) Show with a neat diagram how dynamic content is served over the internet.

Q.5 Attempt any two. **16**

- a) What is the business model for Mashups?
- b) Describe the two methods for message encryption over the web.
- c) Write down the five general steps for implementing the Web 2.0 model.

Seat No.	
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Set	Q
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WEB 2.0 AND RICH INTERNET APPLICATIONS

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 2) Assume suitable data if necessary.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The Document Object Model (DOM) is an object oriented representation of an HTML or XML document.
 - a) TRUE
 - b) FALSE
 - c) DOM is related to HTML but not to XML
 - d) Not sure
- 2) Commenting in XQuery is done by which of the following?
 - a) <!-- Comment here-->
 - b) //Comment here
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 - d) (: Comment here :)
- 3) Which of the following is a valid declaration of JSON object?
 - a) "employee":{ "name":"John", "age":30, "city":"New York" }
 - b) "employee":["name":"John", "age":30, "city":"New York"]
 - c) "employee":("name":"John", "age":30, "city":"New York")
 - d) Any declaration is permitted if the values are assigned
- 4) A _____ is a web page or web site that combines information and services from multiple sources.
 - a) search engine
 - b) Mashup
 - c) bookmark
 - d) None of the above
- 5) Types of mashups are _____.
 - a) Data mashup
 - b) Business mashup
 - c) Consumer mashup
 - d) All of the above
- 6) The _____ protocol provides a private channel between communicating applications, thus ensuring privacy of data authentication and integrity.
 - a) HTTPS
 - b) SSL
 - c) TSL
 - d) PSL
- 7) HTTPS stands for _____.
 - a) Hyper Text Transfer Protocol Secure
 - b) Hyper Text Transfer Protocol Security
 - c) Hybrid Text Transfer Protocol Security
 - d) Hyper Textual Transcript Protocol Secure
- 8) Choose the correct HTML element for numbered list.
 - a)
 - b)
 - c) <bl>
 - d) <list>

- 9) What is the status code of the HTTP Not found error?
a) 401
b) 408
c) 404
d) 402
- 10)

```
var x = 10  
var y = 10  
x === y
```


What would be the output of the above JS code?
a) True
b) False
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- 11)

```
x = 10  
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What would be the output of the above JS code?
a) True
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- 12) Which of the following is NOT a rich client framework?
a) Open Laszlo
b) XML
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- 13) XPath is syntax for defining parts of _____.
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a) Really Simple Syndication
b) Random Send Signal
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Seat No.	
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WEB 2.0 AND RICH INTERNET APPLICATIONS

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

Max. Marks: 56

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

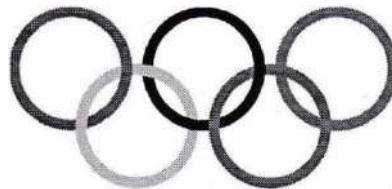
Section – I

Q.2 Attempt any three. **12**

- Enlist and describe the HTTP methods.
- What do you understand by RSS? Explain web feed.
- Differentiate between Web 1.0 and Web 2.0.
- Explain the necessity and use of XSLT for transformation. Give suitable example.
- Compare and contrast - HTML and XHTML.

Q.3 Attempt any two. **16**

- Design a web page with SVG to generate the output as given below. Draw the five rings in blue, black, red, yellow and green colours respectively. Write suitable code.



- Explain different rich client frameworks.
- Explain REST architecture with suitable diagram.

Section – II

Q.4 Attempt any three. **12**

- What are mashups? Give its different types.
- Explain JSON.
- Discuss how SSL protocol helps in web security?
- What is XQuery? Explain with example.
- Show with a neat diagram how dynamic content is served over the internet.

Q.5 Attempt any two. **16**

- What is the business model for Mashups?
- Describe the two methods for message encryption over the web.
- Write down the five general steps for implementing the Web 2.0 model.

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

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- 2) Assume suitable data if necessary.
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Duration: 30 Minutes

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

- 1) Which of the following is NOT a rich client framework?
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a) search engine b) Mashup
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- 8) Types of mashups are _____.
a) Data mashup b) Business mashup
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- 9) The _____ protocol provides a private channel between communicating applications, thus ensuring privacy of data authentication and integrity.
- a) HTTPS
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- 10) HTTPS stands for _____.
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- 11) Choose the correct HTML element for numbered list.
- a)
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- 12) What is the status code of the HTTP Not found error?
- a) 401
 - b) 408
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 - d) 402
- 13) `var x = 10`
`var y = 10`
`x === y`
What would be the output of the above JS code?
- a) True
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 - c) Undefined
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 - c) Error: undefined variable 'x' and 'y'.
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WEB 2.0 AND RICH INTERNET APPLICATIONS

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

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
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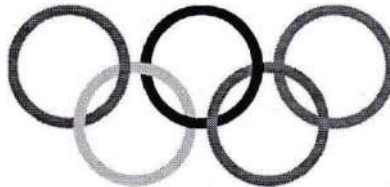
Section – I

Q.2 Attempt any three. **12**

- Enlist and describe the HTTP methods.
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- Explain different rich client frameworks.
- Explain REST architecture with suitable diagram.

Section – II

Q.4 Attempt any three. **12**

- What are mashups? Give its different types.
- Explain JSON.
- Discuss how SSL protocol helps in web security?
- What is XQuery? Explain with example.
- Show with a neat diagram how dynamic content is served over the internet.

Q.5 Attempt any two. **16**

- What is the business model for Mashups?
- Describe the two methods for message encryption over the web.
- Write down the five general steps for implementing the Web 2.0 model.

Seat No.	
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Set **S**

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WEB 2.0 AND RICH INTERNET APPLICATIONS

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 2) Assume suitable data if necessary.
 3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Which of the following is a valid declaration of JSON object?
 - a) "employee":{ "name": "John", "age":30, "city": "New York" }
 - b) "employee":["name": "John", "age":30, "city": "New York"]
 - c) "employee":("name": "John", "age":30, "city": "New York")
 - d) Any declaration is permitted if the values are assigned
- 2) A _____ is a web page or web site that combines information and services from multiple sources.
 - a) search engine
 - b) Mashup
 - c) bookmark
 - d) None of the above
- 3) Types of mashups are _____.
 - a) Data mashup
 - b) Business mashup
 - c) Consumer mashup
 - d) All of the above
- 4) The _____ protocol provides a private channel between communicating applications, thus ensuring privacy of data authentication and integrity.
 - a) HTTPS
 - b) SSL
 - c) TSL
 - d) PSL
- 5) HTTPS stands for _____.
 - a) Hyper Text Transfer Protocol Secure
 - b) Hyper Text Transfer Protocol Security
 - c) Hybrid Text Transfer Protocol Security
 - d) Hyper Textual Transcript Protocol Secure
- 6) Choose the correct HTML element for numbered list.
 - a)
 - b)
 - c) <bl>
 - d) <list>
- 7) What is the status code of the HTTP Not found error?
 - a) 401
 - b) 408
 - c) 404
 - d) 402
- 8)


```
var x = 10
var y = 10
x === y
```

 What would be the output of the above JS code?
 - a) True
 - b) False
 - c) Undefined
 - d) cannot be determined

- 9) `x = 10`
`y = "10"`
`x === y`
What would be the output of the above JS code?
a) True
b) False
c) Error: undefined variable 'x' and 'y'.
d) cannot be determined
- 10) Which of the following is NOT a rich client framework?
a) Open Laszlo
b) XML
c) XUL
d) XAML
- 11) XPath is syntax for defining parts of _____.
a) HTML document
b) XML document
c) DTD document
d) All of the above
- 12) RSS stands for _____.
a) Really Simple Syndication
b) Random Send Signal
c) Real State Signal
d) Real-time Simple Syndication
- 13) The Document Object Model (DOM) is an object oriented representation of an HTML or XML document.
a) TRUE
b) FALSE
c) DOM is related to HTML but not to XML
d) Not sure
- 14) Commenting in XQuery is done by which of the following?
a) `<!-- Comment here-->`
b) `//Comment here`
c) `/*Comment here*/`
d) `(: Comment here :)`

Seat No.	
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
WEB 2.0 AND RICH INTERNET APPLICATIONS

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

Max. Marks: 56

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

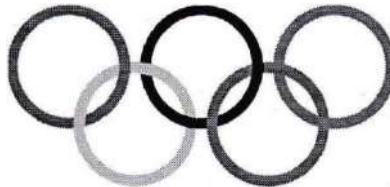
Section – I

Q.2 Attempt any three. **12**

- a) Enlist and describe the HTTP methods.
- b) What do you understand by RSS? Explain web feed.
- c) Differentiate between Web 1.0 and Web 2.0.
- d) Explain the necessity and use of XSLT for transformation. Give suitable example.
- e) Compare and contrast - HTML and XHTML.

Q.3 Attempt any two. **16**

- a) Design a web page with SVG to generate the output as given below. Draw the five rings in blue, black, red, yellow and green colours respectively. Write suitable code.



- b) Explain different rich client frameworks.
- c) Explain REST architecture with suitable diagram.

Section – II

Q.4 Attempt any three. **12**

- a) What are mashups? Give its different types.
- b) Explain JSON.
- c) Discuss how SSL protocol helps in web security?
- d) What is XQuery? Explain with example.
- e) Show with a neat diagram how dynamic content is served over the internet.

Q.5 Attempt any two. **16**

- a) What is the business model for Mashups?
- b) Describe the two methods for message encryption over the web.
- c) Write down the five general steps for implementing the Web 2.0 model.

Seat No.	
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Day & Date: Tuesday, 26-11-2019
Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Marks: 14

- 1) ANN is composed of large number of highly interconnected processing elements (neurons) working in unison to solve problems.
a) True b) False
- 2) Artificial neural network used for _____.
a) Pattern Recognition b) Classification
c) Clustering d) All of these
- 3) Neural Network can answer _____.
a) For Loop questions
b) what-if questions
c) IF-The-Else Analysis Questions
d) None of these
- 4) Ability to learn how to do tasks based on the data given for training or initial experience?
a) Self Organization b) Adaptive Learning
c) Fault tolerance d) Robustness
- 5) Feature of ANN in which ANS creates its own organization or representation of information it receives during learning time is _____.
a) Adaptive Learning b) Self Organization
c) What-If Analysis d) Supervised Learning
- 6) In artificial Neural Network interconnected processing elements are called _____.
a) nodes or neurons b) weights
c) axons d) soma
- 7) Each connection link in ANN is associated with _____ which has information about the input signal.
a) neurons b) weights
c) bias d) activation function
- 8) Neurons or artificial neurons have the capability to model networks of original neurons as found in brain.
a) True b) False

- 9) Internal state of neuron is called _____, is the function of the inputs the neurons receives.
- a) Weight
 - b) Activation or activity level of neuron
 - c) Bias
 - d) None of these
- 10) Neuron can send _____ signal at a time.
- a) multiple
 - b) one
 - c) none
 - d) any number of
- 11) A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is 111. After generalization the output will be zero when and only when the input is _____.
- a) 000 or 110 or 011 or 101
 - b) 010 or 100 or 110 or 101
 - c) 000 or 010 or 110 or 100
 - d) 100 or 111 or 101 or 001
- 12) A perceptron is _____.
- a) a single layer feed-forward neural network with pre-processing
 - b) an auto-associative neural network
 - c) a double layer auto-associative neural network
 - d) a neural network that contains feedback
- 13) An auto-associative network is _____.
- a) a neural network that contains no loops
 - b) a neural network that contains feedback
 - c) a neural network that has only one loop
 - d) a single layer feed-forward neural network with pre-processing
- 14) A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be _____.
- a) 238
 - b) 76
 - c) 119
 - d) 123

Seat No.	
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Set

P

B.E. (Part – II) (CGPA) Examination Nov/Dec -2019
Computer Science & Engineering
ARTIFICIAL NEURAL NETWORKS

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

Max. Marks: 56

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

Section – I

- Q.2 Answer any three. 12**
 a) Develop the Mc Culloch Pitts model.
 b) What is learning? Derive a simple expression.
 c) State and explain the Delta training rule.
 d) What are self organizing Kohonen's map?
- Q.3 Answer any two. 08**
 a) How does Discrete Perceptron work as a classifier?
 b) State and derive the error back propagation algorithm.
 c) Compare BNN with ANN.
- Q.4 Answer any one. 08**
 a) Give various topologies of ANN. How do they work?
 b) How are Hamming nets and Maxnets used for classification?

Section – II

- Q.5 Answer any three. 12**
 a) What is activation?
 b) What is competitive learning?
 c) What is pattern association?
 d) Elaborate on the concepts used in pattern recognition tasks.
- Q.6 Answer any two. 08**
 a) Explain the working of a simple feed-forward network with a flow chart.
 b) What is pattern classification? How does it work?
 c) What is Neo-recognition? How are handwritten characters recognised?
- Q.7 Answer any one. 08**
 a) List and elaborate on the applications of ANN.
 b) What are the operators in NET talk? Elaborate on each.

Seat No.	
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Day & Date: Tuesday, 26-11-2019
Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Duration: 30 Minutes

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

- Neurons or artificial neurons have the capability to model networks of original neurons as found in brain.
 - True
 - False
- Internal state of neuron is called _____, is the function of the inputs the neurons receives.
 - Weight
 - Activation or activity level of neuron
 - Bias
 - None of these
- Neuron can send _____ signal at a time.
 - multiple
 - one
 - none
 - any number of
- A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is 111. After generalization the output will be zero when and only when the input is _____.
 - 000 or 110 or 011 or 101
 - 010 or 100 or 110 or 101
 - 000 or 010 or 110 or 100
 - 100 or 111 or 101 or 001
- A perceptron is _____.
 - a single layer feed-forward neural network with pre-processing
 - an auto-associative neural network
 - a double layer auto-associative neural network
 - a neural network that contains feedback
- An auto-associative network is _____.
 - a neural network that contains no loops
 - a neural network that contains feedback
 - a neural network that has only one loop
 - a single layer feed-forward neural network with pre-processing
- A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be _____.
 - 238
 - 76
 - 119
 - 123

- [illegible]

Seat No.	
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Set	Q
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B.E. (Part – II) (CGPA) Examination Nov/Dec -2019
Computer Science & Engineering
ARTIFICIAL NEURAL NETWORKS

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

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
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3) Assume suitable data if necessary.

Section – I

- Q.2 Answer any three. 12**
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b) What is learning? Derive a simple expression.
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- Q.3 Answer any two. 08**
a) How does Discrete Perceptron work as a classifier?
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- Q.4 Answer any one. 08**
a) Give various topologies of ANN. How do they work?
b) How are Hamming nets and Maxnets used for classification?

Section – II

- Q.5 Answer any three. 12**
a) What is activation?
b) What is competitive learning?
c) What is pattern association?
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- Q.6 Answer any two. 08**
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Seat No.	
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Day & Date: Tuesday, 26-11-2019
Time: 02:30 PM To 05:30 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Marks: 14

- 1) Feature of ANN in which ANN creates its own organization or representation of information it receives during learning time is _____.
a) Adaptive Learning b) Self Organization
c) What-If Analysis d) Supervised Learning
- 2) In artificial Neural Network interconnected processing elements are called _____.
a) nodes or neurons b) weights
c) axons d) soma
- 3) Each connection link in ANN is associated with _____ which has information about the input signal.
a) neurons b) weights
c) bias d) activation function
- 4) Neurons or artificial neurons have the capability to model networks of original neurons as found in brain.
a) True b) False
- 5) Internal state of neuron is called _____, is the function of the inputs the neurons receives.
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b) Activation or activity level of neuron
c) Bias
d) None of these
- 6) Neuron can send _____ signal at a time.
a) multiple b) one
c) none d) any number of
- 7) A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is 111. After generalization the output will be zero when and only when the input is _____.
a) 000 or 110 or 011 or 101 b) 010 or 100 or 110 or 101
c) 000 or 010 or 110 or 100 d) 100 or 111 or 101 or 001

- 8) A perceptron is _____.
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 - c) a neural network that has only one loop
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- 10) A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be _____.
 - a) 238
 - b) 76
 - c) 119
 - d) 123
- 11) ANN is composed of large number of highly interconnected processing elements (neurons) working in unison to solve problems.
 - a) True
 - b) False
- 12) Artificial neural network used for _____.
 - a) Pattern Recognition
 - b) Classification
 - c) Clustering
 - d) All of these
- 13) Neural Network can answer _____.
 - a) For Loop questions
 - b) what-if questions
 - c) IF-The-Else Analysis Questions
 - d) None of these
- 14) Ability to learn how to do tasks based on the data given for training or initial experience?
 - a) Self Organization
 - b) Adaptive Learning
 - c) Fault tolerance
 - d) Robustness

Seat No.	
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Set	R
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B.E. (Part – II) (CGPA) Examination Nov/Dec -2019
Computer Science & Engineering
ARTIFICIAL NEURAL NETWORKS

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

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
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Section – I

- Q.2 Answer any three. 12**
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a) Give various topologies of ANN. How do they work?
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Section – II

- Q.5 Answer any three. 12**
a) What is activation?
b) What is competitive learning?
c) What is pattern association?
d) Elaborate on the concepts used in pattern recognition tasks.
- Q.6 Answer any two. 08**
a) Explain the working of a simple feed-forward network with a flow chart.
b) What is pattern classification? How does it work?
c) What is Neo-recognition? How are handwritten characters recognised?
- Q.7 Answer any one. 08**
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b) What are the operators in NET talk? Elaborate on each.

Seat No.	
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Set	S
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B.E. (Part – II) (CGPA) Examination Nov/Dec -2019
Computer Science & Engineering
ARTIFICIAL NEURAL NETWORKS

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Neuron can send _____ signal at a time.
 - a) multiple
 - b) one
 - c) none
 - d) any number of
- 2) A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is 111. After generalization the output will be zero when and only when the input is _____.
 - a) 000 or 110 or 011 or 101
 - b) 010 or 100 or 110 or 101
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 - d) a neural network that contains feedback
- 4) An auto-associative network is _____.
 - a) a neural network that contains no loops
 - b) a neural network that contains feedback
 - c) a neural network that has only one loop
 - d) a single layer feed-forward neural network with pre-processing
- 5) A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be _____.
 - a) 238
 - b) 76
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- 6) ANN is composed of large number of highly interconnected processing elements (neurons) working in unison to solve problems.
 - a) True
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- 7) Artificial neural network used for _____.
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 - c) Clustering
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- 8) Neural Network can answer _____.
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- 11) In artificial Neural Network interconnected processing elements are called _____.
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b) weights
c) bias
d) activation function
- 13) Neurons or artificial neurons have the capability to model networks of original neurons as found in brain.
a) True
b) False
- 14) Internal state of neuron is called _____, is the function of the inputs the neurons receives.
a) Weight
b) Activation or activity level of neuron
c) Bias
d) None of these

Seat No.	
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Set	S
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B.E. (Part – II) (CGPA) Examination Nov/Dec -2019
Computer Science & Engineering
ARTIFICIAL NEURAL NETWORKS

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

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
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 3) Assume suitable data if necessary.

Section – I

- Q.2 Answer any three. 12**
 a) Develop the Mc Culloch Pitts model.
 b) What is learning? Derive a simple expression.
 c) State and explain the Delta training rule.
 d) What are self organizing Kohonen's map?
- Q.3 Answer any two. 08**
 a) How does Discrete Perceptron work as a classifier?
 b) State and derive the error back propagation algorithm.
 c) Compare BNN with ANN.
- Q.4 Answer any one. 08**
 a) Give various topologies of ANN. How do they work?
 b) How are Hamming nets and Maxnets used for classification?

Section – II

- Q.5 Answer any three. 12**
 a) What is activation?
 b) What is competitive learning?
 c) What is pattern association?
 d) Elaborate on the concepts used in pattern recognition tasks.
- Q.6 Answer any two. 08**
 a) Explain the working of a simple feed-forward network with a flow chart.
 b) What is pattern classification? How does it work?
 c) What is Neo-recognition? How are handwritten characters recognised?
- Q.7 Answer any one. 08**
 a) List and elaborate on the applications of ANN.
 b) What are the operators in NET talk? Elaborate on each.

Seat No.	
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- 10) A List is a collection of _____.
a) Unordered elements b) Ordered elements
c) Paired elements d) Only images
- 11) PIG is _____.
a) dataflow language b) NoSQL database
c) import export tool d) scheduling engine
- 12) Hive provides _____ kinds of partitions.
a) Static b) Dynamic
c) Both Static and dynamic d) Neither static nor dynamic
- 13) _____ is Data warehousing tool.
a) Jaspersoft studio b) Cassandra
c) Pig d) Hive
- 14) ETL processing in Pig stand for _____.
a) Extract, transform and load b) Extend transfer and load
c) Extract, transform and local d) None of the above

Seat No.	
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Set	P
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
BIG DATA ANALYTICS

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

Max. Marks: 56

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

Section – I

- Q.2 Attempt any Four** **16**
- What do you mean by structured Data? List sources of structured data. Why it is easy of working with structured data?
 - Describe the anatomy of File Read in HDFS.
 - Compare between SQL, NoSQL, and NewSQL.
 - List the features of Name Node. Why secondary Name Node is required?
 - What is Big Data Analytics? Explain second schools of thought of Big Data Analytics.
- Q.3 Attempt any two.** **12**
- How does MapReduce work? Explain with suitable example.
 - Explain various terminologies used in Big Data environments.
 - What are the limitations of Hadoop 1.0 architecture? Explain YARN Architecture in detail.

Section – II

- Q.4 Attempt any Four.** **16**
- List four important differences between RDBMS and MongoDB.
 - With the help of example, explain set collection, list collection and Map collection in Cassandra. When collections should not be used?
 - What is static and dynamic partitioning in HIVE? Illustrate with example.
 - Write word count example using PIG.
 - Write MongoDB query for an objective given below :
Create a collection "students" and insert 5 documents into the students collection by "_id" and "stdname" array. Check these documents are present in students collection. Find that document from students collection where "joy" is present in 4th index position of the students array.
- Q.5 Attempt any two.** **12**
- Explain Map reduce Programming in Mongo DB with suitable example.
 - What is the concept of hinted handoffs, consistency and replication factor in Cassandra?
 - Draw the architecture of Hive and explain its components.

Seat No.	
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Set Q

B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
BIG DATA ANALYTICS

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Core mongo DB operations are _____.
 a) create, select, update, delete b) create, read, update, delete
 c) create, read, update, drop d) create, remove, update, drop
- 2) Cassandra is a _____ database.
 a) Document-oriented b) Graph-oriented
 c) Column-oriented d) SQL
- 3) A List is a collection of _____.
 a) Unordered elements b) Ordered elements
 c) Paired elements d) Only images
- 4) PIG is _____.
 a) dataflow language b) NoSQL database
 c) import export tool d) scheduling engine
- 5) Hive provides _____ kinds of partitions.
 a) Static b) Dynamic
 c) Both Static and dynamic d) Neither static nor dynamic
- 6) _____ is Data warehousing tool.
 a) Jaspersoft studio b) Cassandra
 c) Pig d) Hive
- 7) ETL processing in Pig stand for _____.
 a) Extract, transform and load b) Extend transfer and load
 c) Extract, transform and local d) None of the above
- 8) MapReduce framework of Hadoop is also takes care of _____.
 a) Scheduling b) Monitoring
 c) Re-executing failed task d) All
- 9) The term NoSQL was first coined by _____.
 a) Doug Laney b) Carlo Strozzi
 c) Brewer d) Gartner

- 10) The structured, unstructured and semi-structured data is deals with which of the following characteristics?
- | | |
|----------------|---------------|
| a) Velocity | b) Volatility |
| c) Variability | d) Volume |
- 11) In which of the following analysis, Data is descriptive, predictive and prescriptive?
- | | |
|------------------|------------------|
| a) Analytics 1.0 | b) Analytics 2.0 |
| c) Analytics 3.0 | d) None |
- 12) When NameNode starts up, it reads the _____ and _____ from disk.
- | | |
|----------------------------|-----------------------|
| a) TaskTracker, JobTracker | b) FsImage, EditLog |
| c) Master Node, Slave Node | d) None of the above. |
- 13) Which of the following is a tool to transfer data between Hadoop and Relational Databases?
- | | |
|----------|----------|
| a) Sqoop | b) HBase |
| c) Hive | d) Pig |
- 14) Which of the following is/are advantages of Hadoop?
- | | |
|-------------------|-------------------|
| a) Scalable | b) Cost Effective |
| c) Fault-tolerant | d) All the above |

Seat No.	
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Set	Q
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
BIG DATA ANALYTICS

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

Max. Marks: 56

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

Section – I

- Q.2 Attempt any Four** **16**
- What do you mean by structured Data? List sources of structured data. Why it is easy of working with structured data?
 - Describe the anatomy of File Read in HDFS.
 - Compare between SQL, NoSQL, and NewSQL.
 - List the features of Name Node. Why secondary Name Node is required?
 - What is Big Data Analytics? Explain second schools of thought of Big Data Analytics.
- Q.3 Attempt any two.** **12**
- How does MapReduce work? Explain with suitable example.
 - Explain various terminologies used in Big Data environments.
 - What are the limitations of Hadoop 1.0 architecture? Explain YARN Architecture in detail.

Section – II

- Q.4 Attempt any Four.** **16**
- List four important differences between RDBMS and MongoDB.
 - With the help of example, explain set collection, list collection and Map collection in Cassandra. When collections should not be used?
 - What is static and dynamic partitioning in HIVE? Illustrate with example.
 - Write word count example using PIG.
 - Write MongoDB query for an objective given below :
 Create a collection "students" and insert 5 documents into the students collection by "_id" and "stdname" array. Check these documents are present in students collection. Find that document from students collection where "joy" is present in 4th index position of the students array.
- Q.5 Attempt any two.** **12**
- Explain Map reduce Programming in Mongo DB with suitable example.
 - What is the concept of hinted handoffs, consistency and replication factor in Cassandra?
 - Draw the architecture of Hive and explain its components.

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Set	R
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
BIG DATA ANALYTICS

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full marks.
 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) When NameNode starts up, it reads the _____ and _____ from disk.
 - a) TaskTracker, JobTracker
 - b) FsImage, EditLog
 - c) Master Node, Slave Node
 - d) None of the above.
- 2) Which of the following is a tool to transfer data between Hadoop and Relational Databases?
 - a) Sqoop
 - b) HBase
 - c) Hive
 - d) Pig
- 3) Which of the following is/are advantages of Hadoop?
 - a) Scalable
 - b) Cost Effective
 - c) Fault-tolerant
 - d) All the above
- 4) Core mongo DB operations are _____.
 - a) create, select, update, delete
 - b) create, read, update, delete
 - c) create, read, update, drop
 - d) create, remove, update, drop
- 5) Cassandra is a _____ database.
 - a) Document-oriented
 - b) Graph-oriented
 - c) Column-oriented
 - d) SQL
- 6) A List is a collection of _____.
 - a) Unordered elements
 - b) Ordered elements
 - c) Paired elements
 - d) Only images
- 7) PIG is _____.
 - a) dataflow language
 - b) NoSQL database
 - c) import export tool
 - d) scheduling engine
- 8) Hive provides _____ kinds of partitions.
 - a) Static
 - b) Dynamic
 - c) Both Static and dynamic
 - d) Neither static nor dynamic
- 9) _____ is Data warehousing tool.
 - a) Jaspersoft studio
 - b) Cassandra
 - c) Pig
 - d) Hive

- 10) ETL processing in Pig stand for _____.
a) Extract, transform and load b) Extend transfer and load
c) Extract, transform and local d) None of the above
- 11) MapReduce framework of Hadoop is also takes care of _____.
a) Scheduling b) Monitoring
c) Re-executing failed task d) All
- 12) The term NoSQL was first coined by _____.
a) Doug Laney b) Carlo Strozzi
c) Brewer d) Gartner
- 13) The structured, unstructured and semi-structured data is deals with which of the following characteristics?
a) Velocity b) Volatility
c) Variability d) Volume
- 14) In which of the following analysis, Data is descriptive, predictive and prescriptive?
a) Analytics 1.0 b) Analytics 2.0
c) Analytics 3.0 d) None

Seat No.	
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Set	R
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
BIG DATA ANALYTICS

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

Max. Marks: 56

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Section – I

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Set	S
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
BIG DATA ANALYTICS

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

Max. Marks: 70

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Duration: 30 Minutes

Marks: 14

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Seat No.	
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B.E. (Part – II) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
BIG DATA ANALYTICS

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Max. Marks: 56

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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – I

Day & Date: Saturday, 07-12-2019

Max. Marks: 70

Time: 10:00 AM To 01:00 PM

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) $\frac{1}{D-3} \times$ is equal to _____.
 - a) $\frac{x}{3} - \frac{1}{9}$
 - b) $-\frac{x}{3} - \frac{1}{9}$
 - c) $\frac{x}{3} + \frac{1}{9}$
 - d) $-\frac{x}{3} + \frac{1}{9}$
- 2) The particular integral of $(D^2 + 16)y = \cos 4x$ is _____.
 - a) $\frac{x}{8} \sin 2x$
 - b) $\frac{x}{8} \cos 2x$
 - c) $\frac{-x}{8} \sin 2x$
 - d) $\frac{-x}{8} \cos 2x$
- 3) $L^{-1}\{\phi'(s)\} =$ _____.
 - a) $-\frac{1}{t} L^{-1}\{\phi(s)\}$
 - b) $-t L^{-1}\{\phi(s)\}$
 - c) $t L^{-1}\{\phi(s)\}$
 - d) None of these
- 4) $L^{-1}\left\{\frac{1}{(s-3)^2}\right\} =$ _____.
 - a) $t e^{-3t}$
 - b) $\frac{e^{-3t}}{t}$
 - c) $t e^{3t}$
 - d) $t^2 e^{3t}$
- 5) $Z\{1\} =$ _____.
 - a) $\frac{1}{z-1}$
 - b) $\frac{z}{z+1}$
 - c) $\frac{1}{z+1}$
 - d) $\frac{z}{z-1}$
- 6) If $Z\{f(k)\} = F(z)$ then $Z\{kf(k)\} =$ _____.
 - a) $-z \frac{dF(z)}{dz}$
 - b) $z \frac{dF(z)}{dz}$
 - c) $\frac{-dF(z)}{dz}$
 - d) $\frac{dF(z)}{dz}$
- 7) If $f(x)$ is an even function then $\int_{-x}^x f(x) dx =$ _____.
 - a) $2 \int_0^z f(x) dx$
 - b) $\int_{-z}^0 f(x) dx$
 - c) 0
 - d) None of these

Seat No.	
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Set

P

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – I

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

Max. Marks: 56

- Instructions:** 1) Q. No. 4 & Q. No. 8 are compulsory.
 2) Solve any two questions from each section.
 3) Figures to the right indicate full marks.

Q.2 Attempt the following questions.

- a) Solve $(D^3 + D)y = \cos x$ 03
 b) Solve $(D^3 - 7D + 6)y = x^2$ 03
 c) Solve $(D^2 - 2D - 1)y = e^x \cos x$ 03

Q.3 Attempt any three of following questions.

- a) Find $L \left\{ \int_0^t u^{-1} 2^u \sin u \, du \right\}$ 03
 b) Find $L^{-1} \left\{ \frac{s}{(s-3)(s^2+4)} \right\}$ 03
 c) Evaluate $\int_0^\infty \frac{\cos 4t - \cos 3t}{t} dt$ using Laplace transform. 03
 d) Find $L\{te^{-2t} \sin^2 t\}$ 03

Q.4 Attempt the following questions.

- a) Find z-transform and its ROC of $f(k) = \frac{3^k}{k!}, k \geq 0$ 03
 b) Prove that the z-transform of $x_k = \sin \alpha k, k \geq 0$ where α is real is given by 04

$$\frac{z \sin \alpha}{z^2 - 2z \cos \alpha + 1} \text{ if } |z| > 1$$

 c) Find $Z^{-1} \left(\frac{z}{z-5} \right) |z| < 5$ 03

Q.5 Attempt the following questions.

- a) Find a Fourier series to represent $f(x) = x^2$ in $(0, 2\pi)$. 05
 b) Find Half-range sine series of 04

$$f(x) = \frac{2x}{1}, 0 \leq x \leq \frac{1}{2}$$

$$= \frac{2}{1} (1-x), \frac{1}{2} \leq x \leq 1$$

Section – II**Q.6 Attempt the following questions.**

- a) A particle moves along the curve $x = t^2 + 1, y = t^2, z = 2t + 3$ where t is the time find velocity and acceleration with their magnitudes? 03
 b) Find the directional derivative of $\phi = x^4 + y^4 + z^4$ at point $(1, -2, 1)$ in the directional of AB where B is $(2, 6, -1)$. 03
 c) Show that the vector field defined by $\vec{F} = (y + z)\mathbf{i} + (z + x)\mathbf{j} + (x + y)\mathbf{k}$ is irrotational. Also find scalar potential. 04

Q.7 Attempt the following questions.

- a) Six dice are thrown 729 times. How many times do expect at least three dice to show a 5 or 6?
- b) Fit a poisson distribution to the following data.

X	0	1	2	3	4	Total
F	109	65	22	3	1	200

- c) Weights of 4000 students are found to be normally distributed with mean 50 kgs and standard deviation 5 kgs. Find the number of students with weight:
- 1) Less than 45 kgs and
 - 2) Between 45 and 60 kgs.
- [Given - for SNV z , Area between $z = 0$ to $z = 1$ is 0.3413 and $z = 0$ to $z = 2$ is 0.4772].

Q.8 Attempt the following questions.

- a) Calculate Karl Pearson's coefficient of correlation from the following data.

04

x :	28	45	40	38	35	33	40	32	36	33
y :	23	34	33	34	30	26	28	31	36	35

- b) Fit a second degree parabola for the following data.

03

x :	1	2	3	4	5	6	7	8	9
y :	2	6	7	8	10	11	11	10	9

- c) The equation to the two lines of regressions are $6y = 5x + 90$ and $15x = 8y + 130$. Find the mean of x and y and the coefficient of correlation?

03

Q.9 Attempt the following questions.

- a) There are two typists in a type writing shop each typists can type on an average 5 letters per hour. The rate of arrivals of letters is 8 per hours

05

- 1) What is the probability that both the typist are busy?
- 2) What is the average idle time for which both typist are idle?

- b) People arrive to purchase railways tickets at the rate of 5 per minute. On an average it takes 10 seconds to issue the ticket. A person arrives 5 min, before the train starts. It takes 4 min for him to get in the train after purchasing the ticket.

04

- 1) Can he be expected in the train before the train starts?
- 2) What is the probability that he will be in the train before the train starts?

Seat No.	
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Set **Q**

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – I

Day & Date: Saturday, 07-12-2019

Max. Marks: 70

Time: 10:00 AM To 01:00 PM

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) A unit normal to the surface $z = 2xy$ at the point $(2, 1, 4)$ is _____.
 - a) $2i + 4j - k$
 - b) $2i + 4j + k$
 - c) $\frac{1}{\sqrt{21}}(2i + 4j - k)$
 - d) $\frac{1}{\sqrt{21}}(4i + 2j - k)$
- 2) If $\vec{v} = 5xyi + 2y^2j + 3yz^2k$ The divergence of this vector at $(1, 1, 1)$ is _____.
 - a) 9
 - b) 10
 - c) 14
 - d) 15
- 3) If mean of $x = 70$ mean of $y = 149$ and $x = 0.7$ then the line of regression of y on x is _____.
 - a) $y = 0.8x + 120$
 - b) $y = 0.6x + 80$
 - c) $y = 0.5x + 60$
 - d) $y = 0.7x + 100$
- 4) If coefficient of correlation $r = \pm 1$ then the regression lines are _____.
 - a) coincident
 - b) perpendicular
 - c) parallel
 - d) inclined at an angle of $\frac{2}{3}$
- 5) In a $M|M|1|\infty$ system the ration $\frac{\lambda}{\mu}$ must be _____.
 - a) greater than 1
 - b) less than 1
 - c) equal to 1
 - d) equal to 1.5
- 6) For binominal distribution mean = 12 and variance is 4, then the values of n, p, q are respectively.
 - a) $9, \frac{1}{3}, \frac{2}{3}$
 - b) $4, \frac{1}{2}, \frac{1}{2}$
 - c) $18, \frac{2}{3}, \frac{1}{3}$
 - d) $9, \frac{2}{3}, \frac{1}{3}$
- 7) Fourier expansion of an odd function has only _____.
 - a) sine terms
 - b) cosine terms
 - c) both sine and cosine terms
 - d) none of these
- 8) $\frac{1}{D-3} \times$ is equal to _____.
 - a) $\frac{x}{3} - \frac{1}{9}$
 - b) $-\frac{x}{3} - \frac{1}{9}$
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- 9) The particular integral of $(D^2 + 16)y = \cos 4x$ is _____.
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Seat No.	
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Set Q

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – I

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

Max. Marks: 56

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Section – II

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04

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- 2) What is the probability that he will be in the train before the train starts?

Seat No.	
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Set **R**

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – I

Day & Date: Saturday, 07-12-2019

Max. Marks: 70

Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) $Z\{1\} = \underline{\hspace{2cm}}$.
 - a) $\frac{1}{z-1}$
 - b) $\frac{z}{z+1}$
 - c) $\frac{1}{z+1}$
 - d) $\frac{z}{z-1}$
- 2) If $Z\{f(k)\} = F(z)$ then $Z\{kf(k)\} = \underline{\hspace{2cm}}$.
 - a) $-z \frac{dF(z)}{dz}$
 - b) $z \frac{dF(z)}{dz}$
 - c) $\frac{-dF(z)}{dz}$
 - d) $\frac{dF(z)}{dz}$
- 3) If $f(x)$ is an even function then $\int_{-x}^x f(x)dx = \underline{\hspace{2cm}}$.
 - a) $2 \int_0^z f(x)dx$
 - b) $\int_{-z}^0 f(x)dx$
 - c) 0
 - d) None of these
- 4) A unit normal to the surface $z = 2xy$ at the point $(2,1,4)$ is _____.
 - a) $2i + 4j - k$
 - b) $2i + 4j + k$
 - c) $\frac{1}{\sqrt{21}}(2i + 4j - k)$
 - d) $\frac{1}{\sqrt{21}}(4i + 2j - k)$
- 5) If $\vec{v} = 5xyi + 2y^2j + 3yz^2k$ The divergence of this vector at $(1, 1, 1)$ is _____.
 - a) 9
 - b) 10
 - c) 14
 - d) 15
- 6) If mean of $x = 70$ mean of $y = 149$ and $x = 0.7$ then the line of regression of y on x is _____.
 - a) $y = 0.8x + 120$
 - b) $y = 0.6x + 80$
 - c) $y = 0.5x + 60$
 - d) $y = 0.7x + 100$
- 7) If coefficient of correlation $r = \pm 1$ then the regression lines are _____.
 - a) coincident
 - b) perpendicular
 - c) parallel
 - d) inclined at an angle of $\frac{2}{3}$
- 8) In a $M|M|1$ system the ration $\frac{\lambda}{\mu}$ must be _____.
 - a) greater than 1
 - b) less than 1
 - c) equal to 1
 - d) equal to 1.5

- 9) For binominal distribution mean = 12 and variance is 4, then the values of n, p, q are respectively.
- a) $9, \frac{1}{3}, \frac{2}{3}$
- b) $4, \frac{1}{2}, \frac{1}{2}$
- c) $18, \frac{2}{3}, \frac{1}{3}$
- d) $9, \frac{2}{3}, \frac{1}{3}$
- 10) Fourier expansion of an odd function has only _____.
- a) sine terms
- b) cosine terms
- c) both sine and cosine terms
- d) none of these
- 11) $\frac{1}{D-3} x$ is equal to _____.
- a) $\frac{x}{3} - \frac{1}{9}$
- b) $-\frac{x}{3} - \frac{1}{9}$
- c) $\frac{x}{3} + \frac{1}{9}$
- d) $-\frac{x}{3} + \frac{1}{9}$
- 12) The particular integral of $(D^2 + 16)y = \cos 4x$ is _____.
- a) $\frac{x}{8} \sin 2x$
- b) $\frac{x}{8} \cos 2x$
- c) $\frac{-x}{8} \sin 2x$
- d) $\frac{-x}{8} \cos 2x$
- 13) $L^{-1}\{\phi'(s)\} =$ _____.
- a) $-\frac{1}{t} L^{-1}\{\phi(s)\}$
- b) $-tL^{-1}\{\phi(s)\}$
- c) $tL^{-1}\{\phi(s)\}$
- d) None of these
- 14) $L^{-1}\left\{\frac{1}{(s-3)^2}\right\} =$ _____.
- a) te^{-3t}
- b) $\frac{e^{-3t}}{t}$
- c) te^{3t}
- d) $t^2 e^{3t}$

Seat No.	
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Set **R**

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – I

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

Max. Marks: 56

Instructions: 1) Q. No. 4 & Q. No. 8 are compulsory.
 2) Solve any two questions from each section.
 3) Figures to the right indicate full marks.

Q.2 Attempt the following questions.

- a) Solve $(D^3 + D)y = \cos x$ 03
 b) Solve $(D^3 - 7D + 6)y = x^2$ 03
 c) Solve $(D^2 - 2D - 1)y = e^x \cos x$ 03

Q.3 Attempt any three of following questions.

- a) Find $L \left\{ \int_0^t u^{-1} 2^u \sin u \, du \right\}$ 03
 b) Find $L^{-1} \left\{ \frac{s}{(s-3)(s^2+4)} \right\}$ 03
 c) Evaluate $\int_0^\infty \frac{\cos 4t - \cos 3t}{t} dt$ using Laplace transform. 03
 d) Find $L\{te^{-2t} \sin^2 t\}$ 03

Q.4 Attempt the following questions.

- a) Find z-transform and its ROC of $f(k) = \frac{3^k}{k!}, k \geq 0$ 03
 b) Prove that the z-transform of $x_k = \sin \alpha k, k \geq 0$ where α is real is given by 04

$$\frac{z \sin \alpha}{z^2 - 2z \cos \alpha + 1} \text{ if } |z| > 1$$

 c) Find $Z^{-1} \left(\frac{z}{z-5} \right) |z| < 5$ 03

Q.5 Attempt the following questions.

- a) Find a Fourier series to represent $f(x) = x^2$ in $(0, 2\pi)$. 05
 b) Find Half-range sine series of 04

$$f(x) = \frac{2x}{1}, 0 \leq x \leq \frac{1}{2}$$

$$= \frac{2}{1} (1-x), \frac{1}{2} \leq x \leq 1$$

Section – II**Q.6 Attempt the following questions.**

- a) A particle moves along the curve $x = t^2 + 1, y = t^2, z = 2t + 3$ where t is the time find velocity and acceleration with their magnitudes? 03
 b) Find the directional derivative of $\phi = x^4 + y^4 + z^4$ at point $(1, -2, 1)$ in the directional of AB where B is $(2, 6, -1)$. 03
 c) Show that the vector field defined by $\vec{F} = (y + z)\mathbf{i} + (z + x)\mathbf{j} + (x + y)\mathbf{k}$ is irrotational. Also find scalar potential. 04

Q.7 Attempt the following questions.

- a) Six dice are thrown 729 times. How many times do expect at least three dice to show a 5 or 6?
- b) Fit a poisson distribution to the following data.

X	0	1	2	3	4	Total
F	109	65	22	3	1	200

- c) Weights of 4000 students are found to be normally distributed with mean 50 kgs and standard deviation 5 kgs. Find the number of students with weight:
- 1) Less than 45 kgs and
 - 2) Between 45 and 60 kgs.
- [Given - for SNV z , Area between $z = 0$ to $z = 1$ is 0.3413 and $z = 0$ to $z = 2$ is 0.4772].

Q.8 Attempt the following questions.

- a) Calculate Karl Pearson's coefficient of correlation from the following data.

04

x :	28	45	40	38	35	33	40	32	36	33
y :	23	34	33	34	30	26	28	31	36	35

- b) Fit a second degree parabola for the following data.

03

x :	1	2	3	4	5	6	7	8	9
y :	2	6	7	8	10	11	11	10	9

- c) The equation to the two lines of regressions are $6y = 5x + 90$ and $15x = 8y + 130$. Find the mean of x and y and the coefficient of correlation?

03

Q.9 Attempt the following questions.

- a) There are two typists in a type writing shop each typists can type on an average 5 letters per hour. The rate of arrivals of letters is 8 per hours

05

- 1) What is the probability that both the typist are busy?
- 2) What is the average idle time for which both typist are idle?

- b) People arrive to purchase railways tickets at the rate of 5 per minute. On an average it takes 10 seconds to issue the ticket. A person arrives 5 min, before the train starts. It takes 4 min for him to get in the train after purchasing the ticket.

04

- 1) Can he be expected in the train before the train starts?
- 2) What is the probability that he will be in the train before the train starts?

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Set

S

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
APPLIED MATHEMATICS – I

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

Max. Marks: 56

- Instructions:** 1) Q. No. 4 & Q. No. 8 are compulsory.
 2) Solve any two questions from each section.
 3) Figures to the right indicate full marks.

Q.2 Attempt the following questions.

- a) Solve $(D^3 + D)y = \cos x$ 03
 b) Solve $(D^3 - 7D + 6)y = x^2$ 03
 c) Solve $(D^2 - 2D - 1)y = e^x \cos x$ 03

Q.3 Attempt any three of following questions.

- a) Find $L \left\{ \int_0^t u^{-1} 2^u \sin u \, du \right\}$ 03
 b) Find $L^{-1} \left\{ \frac{s}{(s-3)(s^2+4)} \right\}$ 03
 c) Evaluate $\int_0^\infty \frac{\cos 4t - \cos 3t}{t} dt$ sing Laplace transform. 03
 d) Find $L\{te^{-2t} \sin^2 t\}$ 03

Q.4 Attempt the following questions.

- a) Find z-transform and its ROC of $f(k) = \frac{3^k}{k!}, k \geq 0$ 03
 b) Prove that the z-transform of $x_k = \sin \alpha k, k \geq 0$ where α is real is given by 04

$$\frac{z \sin \alpha}{z^2 - 2z \cos \alpha + 1} \text{ if } |z| > 1$$

 c) Find $Z^{-1} \left(\frac{z}{z-5} \right) |z| < 5$ 03

Q.5 Attempt the following questions.

- a) Find a Fourier series to represent $f(x) = x^2$ in $(0, 2\pi)$. 05
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$$f(x) = \frac{2x}{1}, 0 \leq x \leq \frac{1}{2}$$

$$= \frac{2}{1} (1-x), \frac{1}{2} \leq x \leq 1$$

Section – II**Q.6 Attempt the following questions.**

- a) A particle moves along the curve $x = t^2 + 1, y = t^2, z = 2t + 3$ where t is the time find velocity and acceleration with their magnitudes? 03
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 c) Show that the vector field defined by $\vec{F} = (y+z)\mathbf{i} + (z+x)\mathbf{j} + (x+y)\mathbf{k}$ is irrotational. Also find scalar potential. 04

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- 1) Less than 45 kgs and
 - 2) Between 45 and 60 kgs.
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- b) Fit a second degree parabola for the following data.

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x :	1	2	3	4	5	6	7	8	9
y :	2	6	7	8	10	11	11	10	9

- c) The equation to the two lines of regressions are $6y = 5x + 90$ and $15x = 8y + 130$. Find the mean of x and y and the coefficient of correlation?

03

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- a) There are two typists in a type writing shop each typists can type on an average 5 letters per hour. The rate of arrivals of letters is 8 per hours

05

- 1) What is the probability that both the typist are busy?
- 2) What is the average idle time for which both typist are idle?

- b) People arrive to purchase railways tickets at the rate of 5 per minute. On an average it takes 10 seconds to issue the ticket. A person arrives 5 min, before the train starts. It takes 4 min for him to get in the train after purchasing the ticket.

04

- 1) Can he be expected in the train before the train starts?
- 2) What is the probability that he will be in the train before the train starts?

**Seat
No.**

Max. Marks: 70

2) Figures to the right indicate full marks.

Marks: 14

- 1) POSET on set P can be represented by _____.
a) $\langle P, \langle \rangle$
b) $\langle P, \geq \rangle$
c) $\langle P \rangle \rangle$
d) $\langle P \leq \rangle$
- 2) Suppose $A = \{1, 2, 3\}$, $B = \{\}$. What does the set $A \times B$ contain _____.
a) $\{\langle 1, 1 \rangle, \langle 2, 2 \rangle, \langle 3, 3 \rangle\}$
b) $\{\langle 1, 2, 3 \rangle\}$
c) $\{\}$
d) $\{\langle \langle 1, 2 \rangle, 3 \rangle\}$
- 3) The function of $f: N \rightarrow N$ (N is set of natural numbers) is defined by $f(n) = 2n + 3$ is _____.
a) one to one
b) into
c) Onto
d) Both a & b
- 4) LUB is called as _____.
a) Join
b) Supremum
c) Infimum
d) Both a & b
- 5) A group is said to _____ if there exist an element $a \in G$ such that every element of G can be written as some power of a .
a) Acyclic
b) Cyclic
c) Abelian
d) Angular
- 6) Which of the following is partition of the set $S = \{4, 5, 6, 7, 8, 9\}$?
a) $\{\{4, 5, 6\}, \{7, 4\}, \{8, 6\}\}$
b) $\{\{4, 5\}, \{8\}, \{6, 7\}\}$
c) $\{\{4, 5\}, \{8, 9\}, \{6, 7\}\}$
d) $\{\{4, 5, 6, 7, 8, 9\}, \{9\}\}$
- 7) The possible number of relation from $A = \{a, b, c\}$ to $B = \{1, 2, 3, 4\}$ is _____.
a) 12
b) 144
c) 4096
d) 128
- 8) The number of possible function from set of m elements to set of n elements are _____.
a) $m + n$
b) m^n
c) n^m
d) $m * n$
- 9) Hasse diagram are drawn for _____.
a) POSET
b) Lattice
c) Boolean algebra
d) POSET which is not lattice

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Set	P
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S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DISCRETE MATHEMATICAL STRUCTURES

Day & Date: Tuesday, 10-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 56

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

Section – I

Q.2 Answer the following questions. (Any Three) 12

- State and explain Duality law with example.
- Show the following Tautological implication
 $((P \vee \sim P) \rightarrow Q) \rightarrow ((P \vee \sim P) \rightarrow R) \Rightarrow (Q \rightarrow R)$
- Defined Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
- Draw the Hasse diagram of the given sets under partial ordering which satisfy "divides" and indicate which set is totally ordered
 - $\{2, 6, 12, 24\}$
 - $\{1, 2, 3, 6, 12\}$

Q.3 Answer the following questions. (Any One) 08

- Define Relation and explain the Properties of relation with example.
- Define and explain the following with suitable example.
 - Ordered pair & order - n- type
 - Equivalence Relation

Q.4 Obtain PDNF and PCNF of the following 08

- $(\neg p \rightarrow \neg q) \rightarrow (p \leftrightarrow \neg q)$
- $p \vee (\neg p \rightarrow (q \vee (\neg q \rightarrow r)))$

Section – II

Q.5 Answer the following questions. (Any Three) 12

- Let $X = \{1, 2, 3, 4\}$ Define function f from X to X such that $f \neq I_x$ and it is one to one onto find
 - $f \circ f = f^2$
 - $f \circ f^2 = f^3$
 - f^{-1}
 - $f \circ f^{-1}$
- Define Semi group & Monoid with example.
- What is Permutation Group? Define order of Permutation Group and Degree of Permutation Group.
- Define with example
 - upper bound
 - lower bound
 - LUB
 - GLB

08

Q.6 Answer the following questions. (Any One)**a)** Obtain the sum of product of canonical form of following Boolean algebra

i) $X_1 \oplus X_2$

ii) $X_1 \oplus [X_2^0 * X_3^1]$

b) Let Z_4 be the set of equivalence classes generated so that $Z_4 = \{[0], [1], [2], [3]\}$.Let $+_4$ on Z_4 is given by $[i] +_4 [j] = [(i + j) \bmod 4]$ determine an algebraic System & list out the properties which are applicable on algebraic system

08

Q.7 Composition table for $\langle G, * \rangle$ and $\langle S, \diamond \rangle$ are given below show that they are groups and they are isomorphic

$*$	p1	p2	p3	p4	\diamond	q1	q2	q3	q4
p1	p1	p2	p3	p4	q1	q3	q4	q1	q2
p2	p2	p1	p4	p3	q2	q4	q3	q2	q1
p3	p3	p4	p1	p2	q3	q1	q2	q3	q4
p4	p4	p3	p2	p1	q4	q2	q1	q4	q3

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Set	Q
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S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DISCRETE MATHEMATICAL STRUCTURES

Day & Date: Tuesday, 10-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 56

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

Section – I

Q.2 Answer the following questions. (Any Three) 12

- a) State and explain Duality law with example.
- b) Show the following Tautological implication
 $((P \vee \sim P) \rightarrow Q) \rightarrow ((P \vee \sim P) \rightarrow R) \Rightarrow (Q \rightarrow R)$
- c) Define Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
- d) Draw the Hasse diagram of the given sets under partial ordering which satisfy "divides" and indicate which set is totally ordered
 - i) $\{2, 6, 12, 24\}$
 - ii) $\{1, 2, 3, 6, 12\}$

Q.3 Answer the following questions. (Any One) 08

- a) Define Relation and explain the Properties of relation with example.
- b) Define and explain the following with suitable example.
 - i) Ordered pair & order - n- type
 - ii) Equivalence Relation

Q.4 Obtain PDNF and PCNF of the following 08

- a) $(\neg p \rightarrow \neg q) \rightarrow (p \leftrightarrow \neg q)$
- b) $p \vee (\neg p \rightarrow (q \vee (\neg q \rightarrow r)))$

Section – II

Q.5 Answer the following questions. (Any Three) 12

- a) Let $X = \{1, 2, 3, 4\}$ Define function f from X to X such that $f \neq I_X$ and it is one to one onto find
 - i) $f \circ f = f^2$
 - ii) $f \circ f^2 = f^3$
 - iii) f^{-1}
 - iv) $f \circ f^{-1}$
- b) Define Semi group & Monoid with example.
- c) What is Permutation Group? Define order of Permutation Group and Degree of Permutation Group.
- d) Define with example
 - i) upper bound
 - ii) lower bound
 - iii) LUB
 - iv) GLB

08

Q.6 Answer the following questions. (Any One)**a)** Obtain the sum of product of canonical form of following Boolean algebra

i) $X_1 \oplus X_2$

ii) $X_1 \oplus [X_2^0 * X_3^1]$

b) Let Z_4 be the set of equivalence classes generated so that $Z_4 = \{[0], [1], [2], [3]\}$.Let $+_4$ on Z_4 is given by $[i] +_4 [j] = [(i + j) \bmod 4]$ determine an algebraic System & list out the properties which are applicable on algebraic system

08

Q.7 Composition table for $\langle G, * \rangle$ and $\langle S, \diamond \rangle$ are given below show that they are groups and they are isomorphic

$*$	p1	p2	p3	p4	\diamond	q1	q2	q3	q4
p1	p1	p2	p3	p4	q1	q3	q4	q1	q2
p2	p2	p1	p4	p3	q2	q4	q3	q2	q1
p3	p3	p4	p1	p2	q3	q1	q2	q3	q4
p4	p4	p3	p2	p1	q4	q2	q1	q4	q3

Seat No.	
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Set	R
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S.E. (Part -I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DISCRETE MATHEMATICAL STRUCTURES

Day & Date: Tuesday, 10-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory. It should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) A group is said to _____ if there exist an element $a \in G$ such that every element of G can be written as some power of a
 - a) Acyclic
 - b) Cyclic
 - c) Abelian
 - d) Angular
- 2) Which of the following is partition of the set $S = \{4, 5, 6, 7, 8, 9\}$?
 - a) $\{\{4, 5, 6\}, \{7, 4\}, \{8, 6\}\}$
 - b) $\{\{4, 5\}, \{8\}, \{6, 7\}\}$
 - c) $\{\{4, 5\}, \{8, 9\}, \{6, 7\}\}$
 - d) $\{\{4, 5, 6, 7, 8, 9\}, \{9\}\}$
- 3) The possible number of relation from $A = \{a, b, c\}$ to $B = \{1, 2, 3, 4\}$ is _____.
 - a) 12
 - b) 144
 - c) 4096
 - d) 128
- 4) The number of possible function from set of m elements to set of n elements are _____.
 - a) $m + n$
 - b) m^n
 - c) n^m
 - d) $m * n$
- 5) Hasse diagram are drawn for _____.
 - a) POSET
 - b) Lattice
 - c) Boolean algebra
 - d) POSET which is not lattice
- 6) Join operation is denoted by the symbol _____.
 - a) $+$
 - b) \cup
 - c) \wedge
 - d) Both a and b
- 7) Absorption law is defined as _____.
 - a) $a * (a * b) = b$
 - b) $a * (a \oplus b) = b$
 - c) $a * (a \oplus b) = b$
 - d) $a * (a \oplus b) = a$
- 8) Pick the correct prefix _____.
 - a) $\rightarrow P \vee Q \neg S$
 - b) $\rightarrow P \vee QRS$
 - c) $\rightarrow \rightarrow P Q \rightarrow \rightarrow QR \rightarrow PR$
 - d) $\rightarrow P \vee Q \neg QSP$
- 9) Every finite subset of lattice has _____.
 - a) An LUB and GLB
 - b) Many LUB and a GLB
 - c) Many LUBs and Many GLBs
 - d) Either some LUBs or some GLBs

Seat No.	
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Set

R

S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DISCRETE MATHEMATICAL STRUCTURES

Day & Date: Tuesday, 10-12-2019
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p1	p1	p2	p3	p4	q1	q3	q4	q1	q2
p2	p2	p1	p4	p3	q2	q4	q3	q2	q1
p3	p3	p4	p1	p2	q3	q1	q2	q3	q4
p4	p4	p3	p2	p1	q4	q2	q1	q4	q3

Max. Marks: 70

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

2) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- [illegible]

- 10) A group is said to _____ if there exist an element $a \in G$ such that every element of G can be written as some power of a
 - a) Acyclic
 - b) Cyclic
 - c) Abelian
 - d) Angular
- 11) Which of the following is partition of the set $S = \{4, 5, 6, 7, 8, 9\}$?
 - a) $\{\{4, 5, 6\}, \{7, 4\}, \{8, 6\}\}$
 - b) $\{\{4, 5\}, \{8\}, \{6, 7\}\}$
 - c) $\{\{4, 5\}, \{8, 9\}, \{6, 7\}\}$
 - d) $\{\{4, 5, 6, 7, 8, 9\}, \{9\}\}$
- 12) The possible number of relation from $A = \{a, b, c\}$ to $B = \{1, 2, 3, 4\}$ is _____.
 - a) 12
 - b) 144
 - c) 4096
 - d) 128
- 13) The number of possible function from set of m elements to set of n elements are _____.
 - a) $m + n$
 - b) m^n
 - c) n^m
 - d) $m * n$
- 14) Hasse diagram are drawn for _____.
 - a) POSET
 - b) Lattice
 - c) Boolean algebra
 - d) POSET which is not lattice

Seat No.	
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Set	S
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S.E. (Part - I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DISCRETE MATHEMATICAL STRUCTURES

Day & Date: Tuesday, 10-12-2019
 Time: 10.00 AM To 01.00 PM

Max. Marks: 56

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

Section – I

Q.2 Answer the following questions. (Any Three) 12

- State and explain Duality law with example.
- Show the following Tautological implication
 $((P \vee \sim P) \rightarrow Q) \rightarrow ((P \vee \sim P) \rightarrow R) \Rightarrow (Q \rightarrow R)$
- Defined Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
- Draw the Hasse diagram of the given sets under partial ordering which satisfy "divides" and indicate which set is totally ordered
 - $\{2, 6, 12, 24\}$
 - $\{1, 2, 3, 6, 12\}$

Q.3 Answer the following questions. (Any One) 08

- Define Relation and explain the Properties of relation with example.
- Define and explain the following with suitable example.
 - Ordered pair & order - n- type
 - Equivalence Relation

Q.4 Obtain PDNF and PCNF of the following 08

- $(\neg p \rightarrow \neg q) \rightarrow (p \leftrightarrow \neg q)$
- $p \vee (\neg p \rightarrow (q \vee (\neg q \rightarrow r)))$

Section – II

Q.5 Answer the following questions. (Any Three) 12

- Let $X = \{1, 2, 3, 4\}$ Define function f from X to X such that $f \neq I_x$ and it is one to one onto find
 - $f \circ f = f^2$
 - $f \circ f^2 = f^3$
 - f^{-1}
 - $f \circ f^{-1}$
- Define Semi group & Monoid with example.
- What is Permutation Group? Define order of Permutation Group and Degree of Permutation Group.
- Define with example
 - upper bound
 - lower bound
 - LUB
 - GLB

08

Q.6 Answer the following questions. (Any One)**a)** Obtain the sum of product of canonical form of following Boolean algebra

i) $X_1 \oplus X_2$

ii) $X_1 \oplus [X_2^0 * X_3^1]$

b) Let Z_4 be the set of equivalence classes generated so that $Z_4 = \{[0], [1], [2], [3]\}$.Let $+_4$ on Z_4 is given by $[i] +_4 [j] = [(i + j) \bmod 4]$ determine an algebraic System & list out the properties which are applicable on algebraic system

08

Q.7 Composition table for $\langle G, * \rangle$ and $\langle S, \diamond \rangle$ are given below show that they are groups and they are isomorphic

$*$	p1	p2	p3	p4	\diamond	q1	q2	q3	q4
p1	p1	p2	p3	p4	q1	q3	q4	q1	q2
p2	p2	p1	p4	p3	q2	q4	q3	q2	q1
p3	p3	p4	p1	p2	q3	q1	q2	q3	q4
p4	p4	p3	p2	p1	q4	q2	q1	q4	q3

Seat No.	
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- 11) In which searching method comparison is carried out sequentially?
 - a) Linear search
 - b) Binary search
 - c) In both (a) and (b)
 - d) None of these
- 12) Partition sort is also known as _____.
 - a) Bubble sort
 - b) Insertion sort
 - c) quick sort
 - d) shell sort
- 13) Linear probability is the case of collision resolution by chaining.
 - a) True
 - b) False
- 14) Hashing means effective search.
 - a) True
 - b) False

Seat No.	
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Set	P
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED C CONCEPTS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any four. **16**

- a) Explain storage classes with example.
- b) List and explain any four data conversion function.
- c) Write advantage and disadvantage of recursive techniques.
- d) Explain Array of strings.
- e) Explain with example pointer to an array.
- f) Explain the concept of dynamic memory allocation

Q.3 Attempt any two. **12**

- a) Write a program to display Fibonacci series using recursion.
- b) Write a program to count the length of string entered by user using pointer. (Do not use library function).
- c) Write a function which displays your name 5 times. Invoke this function by using pointer to function.

Section – II

Q.4 Attempt any four **16**

- a) Explain the following functions:
 - 1) fseek()
 - 2) ftell()
- b) Explain the concept of command line arguments.
- c) Write in short about how algorithm analysis can be done.
- d) Explain the steps for Binary search.
- e) Explain what is hashing & hash function.
- f) Write in short different ways of collision resolution.

Q.5 Answer the following questions. **12**

- a) Write a program to copy the content of one file to another.
- b) Sort the numbers using quick sort: 25 38 7 42 18 39 97 84 77 12
Write answer step by step.

OR

Write a program for Bubble sort technique.

Seat No.	
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- 12) Find the correct declaration _____.
a) `char name[] = "exam";` b) `char name[10] = 'exam';`
c) `char name[] = 'e','x','a','m';` d) `char name[] = "exam",'\o';`
- 13) To work out `***p`, how many minimum variable are required _____.
a) 1 b) 2
c) 3 d) 4
- 14) A pointer can hold the address of a function.
a) true b) false

Seat No.	
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Set Q

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED C CONCEPTS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any four. 16

- a) Explain storage classes with example.
- b) List and explain any four data conversion function.
- c) Write advantage and disadvantage of recursive techniques.
- d) Explain Array of strings.
- e) Explain with example pointer to an array.
- f) Explain the concept of dynamic memory allocation

Q.3 Attempt any two. 12

- a) Write a program to display Fibonacci series using recursion.
- b) Write a program to count the length of string entered by user using pointer. (Do not use library function).
- c) Write a function which displays your name 5 times. Invoke this function by using pointer to function.

Section – II

Q.4 Attempt any four 16

- a) Explain the following functions:
 - 1) fseek()
 - 2) ftell()
- b) Explain the concept of command line arguments.
- c) Write in short about how algorithm analysis can be done.
- d) Explain the steps for Binary search.
- e) Explain what is hashing & hash function.
- f) Write in short different ways of collision resolution.

Q.5 Answer the following questions. 12

- a) Write a program to copy the content of one file to another.
- b) Sort the numbers using quick sort: 25 38 7 42 18 39 97 84 77 12
Write answer step by step.

OR

Write a program for Bubble sort technique.

Seat No.	
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Set	R
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED C CONCEPTS

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

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Find the correct declaration _____.
 a) char name[] = "exam"; b) char name[10] = 'exam';
 c) char name[] = 'e','x','a','m'; d) char name[] = "exam",'o';
- 2) To work out 2^{32} , how many minimum variable are required _____.
 a) 1 b) 2
 c) 3 d) 4
- 3) A pointer can hold the address of a function.
 a) true b) false
- 4) Which one is not a file handling library function?
 a) open() b) close()
 c) delete() d) remove()
- 5) How many arguments are there in fread function?
 a) 2 b) 4
 c) 0 d) 3
- 6) For analysis of algorithm which notation are used
 a) infix b) postfix
 c) arithmetic d) omega
- 7) In which searching method comparison is carried out sequentially?
 a) Linear search b) Binary search
 c) In both (a) and (b) d) None of these
- 8) Partition sort is also known as _____.
 a) Bubble sort b) Insertion sort
 c) quick sort d) shell sort
- 9) Linear probability is the case of collision resolution by chaining.
 a) True b) False
- 10) Hashing means effective search.
 a) True b) False
- 11) Default storage class of a variable is _____.
 a) static b) auto
 c) extern d) register

- 12) The library function used to calculate power is _____.
a) raised_to() b) power ()
c) pow () d) all above
- 13) Recursive function, during execution uses _____.
a) stack b) queue
c) heap d) none of these
- 14) One of the following is not a type of recursion _____.
a) mutual b) linear
c) head d) tail

Seat No.	
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Set	R
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED C CONCEPTS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any four. **16**

- a) Explain storage classes with example.
- b) List and explain any four data conversion function.
- c) Write advantage and disadvantage of recursive techniques.
- d) Explain Array of strings.
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- f) Explain the concept of dynamic memory allocation

Q.3 Attempt any two. **12**

- a) Write a program to display Fibonacci series using recursion.
- b) Write a program to count the length of string entered by user using pointer. (Do not use library function).
- c) Write a function which displays your name 5 times. Invoke this function by using pointer to function.

Section – II

Q.4 Attempt any four **16**

- a) Explain the following functions:
 - 1) fseek()
 - 2) ftell()
- b) Explain the concept of command line arguments.
- c) Write in short about how algorithm analysis can be done.
- d) Explain the steps for Binary search.
- e) Explain what is hashing & hash function.
- f) Write in short different ways of collision resolution.

Q.5 Answer the following questions. **12**

- a) Write a program to copy the content of one file to another.
- b) Sort the numbers using quick sort: 25 38 7 42 18 39 97 84 77 12
 Write answer step by step.

OR

Write a program for Bubble sort technique.

Seat No.	
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- 12) A pointer can hold the address of a function.
 - a) true
 - b) false
- 13) Which one is not a file handling library function?
 - a) open()
 - b) close()
 - c) delete()
 - d) remove()
- 14) How many arguments are there in fread function?
 - a) 2
 - b) 4
 - c) 0
 - d) 3

Seat No.	
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Set	S
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
ADVANCED C CONCEPTS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any four. **16**

- a) Explain storage classes with example.
- b) List and explain any four data conversion function.
- c) Write advantage and disadvantage of recursive techniques.
- d) Explain Array of strings.
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- a) Write a program to display Fibonacci series using recursion.
- b) Write a program to count the length of string entered by user using pointer. (Do not use library function).
- c) Write a function which displays your name 5 times. Invoke this function by using pointer to function.

Section – II

Q.4 Attempt any four **16**

- a) Explain the following functions:
 - 1) fseek()
 - 2) ftell()
- b) Explain the concept of command line arguments.
- c) Write in short about how algorithm analysis can be done.
- d) Explain the steps for Binary search.
- e) Explain what is hashing & hash function.
- f) Write in short different ways of collision resolution.

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- a) Write a program to copy the content of one file to another.
- b) Sort the numbers using quick sort: 25 38 7 42 18 39 97 84 77 12
Write answer step by step.

OR

Write a program for Bubble sort technique.

Seat No.	
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
 2) Figures to the right indicates full marks.
 3) Illustrate your answers with sketches wherever necessary.
 4) Assume suitable data if necessary.

MCQ/Objective Type Questions

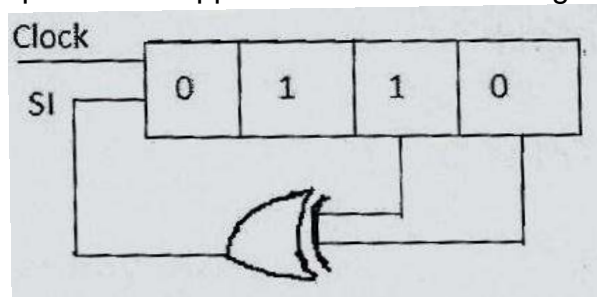
Duration: 30 Minutes

Marks: 14

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

- 1) Which statement below best describes a Karnaugh map?
 - a) A Karnaugh map can be used to replace Boolean rules
 - b) The Karnaugh map eliminates the need for using NAND and NOR gates
 - c) Variable complements can be eliminated by using Karnaugh maps
 - d) Karnaugh maps provide a visual approach to simplifying Boolean expressions
- 2) The Boolean equation for the exclusive-OR function is _____.
 - a) $X = \overline{A}B + AB$
 - b) $X = \overline{A}B + \overline{A}\overline{B}$
 - c) $X = \overline{A} \overline{B} + AB$
 - d) $X = \overline{A}B + A\overline{B}$
- 3) A full-adder adds _____.
 - a) two single bits and one carry bit
 - b) two 2-bit binary numbers
 - c) two 4-bit binary numbers
 - d) two 2-bit numbers and one carry bit
- 4) A 4-variable AND-OR circuit produces a 1 at its Y output. Which combination of inputs is correct?
 - a) $A = 0, B = 0, C = 0, D = 0$
 - b) $A = 0, B = 1, C = 1, D = 0$
 - c) $A = 1, B = 1, C = 0, D = 0$
 - d) $A = 1, B = 0, C = 0, D = 0$
- 5) What is a multiplexer?
 - a) It is a type of decoder which decodes several inputs and gives one output
 - b) A multiplexer is a device which converts many signals into one
 - c) It takes one input and results into many output
 - d) None of the Mentioned
- 6) The output of an exclusive-NOR gate is 1. Which input combination is correct?
 - a) $A = 1, B = 0$
 - b) $A = 0, B = 1$
 - c) $A = 0, B = 0$
 - d) none of the above

- 7) How many inputs of a four-input AND gate must be HIGH in order for the output of the logic gate to go HIGH?
- a) any one of the inputs b) any two of the inputs
c) any three of the inputs d) all four inputs
- 8) “#100 \$finish” indicate _____.
a) end of simulation time
b) end of simulation at 100 time unit
c) suspend the simulation at 100 time unit
d) None
- 9) IC 7490 is _____.
a) MOD 5 followed by MOD 2 synchronous counter
b) MOD 5 followed by MOD 2 Asynchronous counter
c) MOD 2 followed by MOD 5 synchronous counter
d) MOD 2 followed by MOD 5 Asynchronous counter
- 10) A MOD 12 and MOD 10 counters are cascaded. Determine the output frequency if input frequency is of 60 MHz.
a) 1500 KHz b) 6 MHz
c) 500 KHz d) 5 MHz
- 11) In initial content of 4 bit SIPO, right shift, shift register shown in figure is 0110. After three clock pulses are applied contents of shift register will be _____.



- a) 0101 b) 1010
c) 0011 d) 1011
- 12) Flip is also called as _____ Device.
a) Astable b) Bistable
c) Monostable d) Metastable
- 13) Which Flip flop is free from Race around condition?
a) SR flip flop b) JK flip flop
c) MS JK flip flop d) D Flip flop
- 14) What is the system task to suspend simulation?
a) \$Stop b) \$finish
c) \$monitor d) \$hold

Seat No.	
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Set	P
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
 2) Figures to the right indicates full marks.
 3) Illustrate your answers with sketches wherever necessary.
 4) Assume suitable data if necessary.

Section – I

Q.2 Solve any three. **12**

- a) Given

$$Y = A\bar{B} + \bar{B}\bar{C} + \bar{A}C$$
 Implement the logical expression using NAND and NOR gates.
- b) Minimize the following Boolean expression using K – map.

$$Y = \sum (m1, m3, m5, m7, m10, m11, m14, m15).$$
- c) Design 16:1 multiplexer using 4:1 multiplexers only.
- d) Short Note on :
 1) Arithmetic and Logic Unit
 or
 2) IC 74151

Q.3 Solve any two. **16**

- a) Simplify the Boolean Function:
 $F(w, x, y, z) = \sum(1, 3, 7, 11, 15)$, the Don't care conditions $d(w, x, y, z) = \sum(0, 2, 5)$
 and Implement using NAND gates.
- b) Design a 8 to 1 multiplexer by using the four variable function given by
 $F(A, B, C, D) = \sum m(0, 1, 3, 4, 8, 9, 15).$
- c) State and prove De'Morgan's Theorems with the help of truth tables.

Section – II

Q.4 Attempt any three. **12**

- a) Draw and explain SIPO shift register with waveform.
- b) Write the verilog code for JK flip flop using behavioral modeling.
- c) Design 3 bit asynchronous down counter with waveform in detail.
- d) Write the verilog code for full adder.

Q.5 Attempt any two. **16**

- a) Write a Verilog code for 3 line to 8 line decoder using behavioral modeling.
- b) Design synchronous counter which counts following sequence
 ---1-2-3-4-5-6-7-8-0-1-2--- using JK flip flop
- c) Explain the IC 7490. Also design MOD 9 counter using IC 7490 in detail.

Seat No.	
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Set Q

S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
 2) Figures to the right indicates full marks.
 3) Illustrate your answers with sketches wherever necessary.
 4) Assume suitable data if necessary.

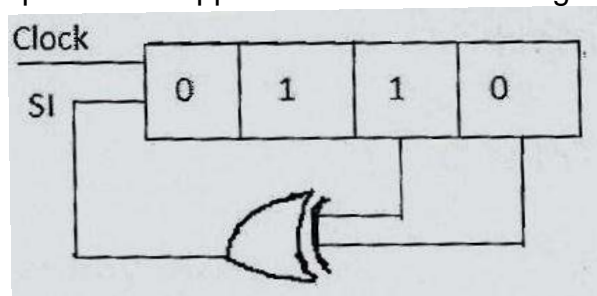
MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) “#100 \$finish” indicate _____.
 a) end of simulation time
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- 4) In initial content of 4 bit SIPO, right shift, shift register shown in figure is 0110. After three clock pulses are applied contents of shift register will be ____.



- a) 0101
 b) 1010
 c) 0011
 d) 1011
- 5) Flip is also called as _____ Device.
 a) Astable
 b) Bistable
 c) Monostable
 d) Metastable

- 6) Which Flip flop is free from Race around condition?
 - a) SR flip flop
 - b) JK flip flop
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 - a) A Karnaugh map can be used to replace Boolean rules
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 - a) $A = 1, B = 0$
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 - c) $A = 0, B = 0$
 - d) none of the above
- 14) How many inputs of a four-input AND gate must be HIGH in order for the output of the logic gate to go HIGH?
 - a) any one of the inputs
 - b) any two of the inputs
 - c) any three of the inputs
 - d) all four inputs

Seat No.	
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Set	Q
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
 2) Figures to the right indicates full marks.
 3) Illustrate your answers with sketches wherever necessary.
 4) Assume suitable data if necessary.

Section – I

Q.2 Solve any three. **12**

- a) Given

$$Y = A\bar{B} + \bar{B}\bar{C} + \bar{A}C$$
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- b) Minimize the following Boolean expression using K – map.

$$Y = \sum (m1, m3, m5, m7, m10, m11, m14, m15).$$
- c) Design 16:1 multiplexer using 4:1 multiplexers only.
- d) Short Note on :
 1) Arithmetic and Logic Unit
 or
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Q.3 Solve any two. **16**

- a) Simplify the Boolean Function:
 $F(w, x, y, z) = \sum(1, 3, 7, 11, 15)$, the Don't care conditions $d(w, x, y, z) = \sum(0, 2, 5)$
 and Implement using NAND gates.
- b) Design a 8 to 1 multiplexer by using the four variable function given by
 $F(A, B, C, D) = \sum m(0, 1, 3, 4, 8, 9, 15).$
- c) State and prove De'Morgan's Theorems with the help of truth tables.

Section – II

Q.4 Attempt any three. **12**

- a) Draw and explain SIPO shift register with waveform.
- b) Write the verilog code for JK flip flop using behavioral modeling.
- c) Design 3 bit asynchronous down counter with waveform in detail.
- d) Write the verilog code for full adder.

Q.5 Attempt any two. **16**

- a) Write a Verilog code for 3 line to 8 line decoder using behavioral modeling.
- b) Design synchronous counter which counts following sequence
 ---1-2-3-4-5-6-7-8-0-1-2--- using JK flip flop
- c) Explain the IC 7490. Also design MOD 9 counter using IC 7490 in detail.

Seat No.	
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Set	R
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer Book.
 2) Figures to the right indicates full marks.
 3) Illustrate your answers with sketches wherever necessary.
 4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) What is a multiplexer?
 - a) It is a type of decoder which decodes several inputs and gives one output
 - b) A multiplexer is a device which converts many signals into one
 - c) It takes one input and results into many output
 - d) None of the Mentioned
- 2) The output of an exclusive-NOR gate is 1. Which input combination is correct?

a) A = 1, B = 0	b) A = 0, B = 1
c) A = 0, B = 0	d) none of the above
- 3) How many inputs of a four-input AND gate must be HIGH in order for the output of the logic gate to go HIGH?

a) any one of the inputs	b) any two of the inputs
c) any three of the inputs	d) all four inputs
- 4) “ #100 \$finish” indicate _____.
 - a) end of simulation time
 - b) end of simulation at 100 time unit
 - c) suspend the simulation at 100 time unit
 - d) None
- 5) IC 7490 is _____.
 - a) MOD 5 followed by MOD 2 synchronous counter
 - b) MOD 5 followed by MOD 2 Asynchronous counter
 - c) MOD 2 followed by MOD 5 synchronous counter
 - d) MOD 2 followed by MOD 5 Asynchronous counter
- 6) A MOD 12 and MOD 10 counters are cascaded. Determine the output frequency if input frequency is of 60 MHz.

a) 1500 KHz	b) 6 MHz
c) 500 KHz	d) 5 MHz

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Seat No.	
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
 2) Figures to the right indicates full marks.
 3) Illustrate your answers with sketches wherever necessary.
 4) Assume suitable data if necessary.

Section – I

Q.2 Solve any three. **12**

- a) Given

$$Y = A\bar{B} + \bar{B}\bar{C} + \bar{A}C$$
 Implement the logical expression using NAND and NOR gates.
- b) Minimize the following Boolean expression using K – map.

$$Y = \sum (m1, m3, m5, m7, m10, m11, m14, m15).$$
- c) Design 16:1 multiplexer using 4:1 multiplexers only.
- d) Short Note on :
 1) Arithmetic and Logic Unit
 or
 2) IC 74151

Q.3 Solve any two. **16**

- a) Simplify the Boolean Function:
 $F(w, x, y, z) = \sum(1, 3, 7, 11, 15)$, the Don't care conditions $d(w, x, y, z) = \sum(0, 2, 5)$
 and Implement using NAND gates.
- b) Design a 8 to 1 multiplexer by using the four variable function given by
 $F(A, B, C, D) = \sum m(0, 1, 3, 4, 8, 9, 15).$
- c) State and prove De'Morgan's Theorems with the help of truth tables.

Section – II

Q.4 Attempt any three. **12**

- a) Draw and explain SIPO shift register with waveform.
- b) Write the verilog code for JK flip flop using behavioral modeling.
- c) Design 3 bit asynchronous down counter with waveform in detail.
- d) Write the verilog code for full adder.

Q.5 Attempt any two. **16**

- a) Write a Verilog code for 3 line to 8 line decoder using behavioral modeling.
- b) Design synchronous counter which counts following sequence
 ---1-2-3-4-5-6-7-8-0-1-2--- using JK flip flop
- c) Explain the IC 7490. Also design MOD 9 counter using IC 7490 in detail.

**Seat
No.**

Max. Marks: 70

- 2) Figures to the right indicates full marks.
- 3) Illustrate your answers with sketches wherever necessary.
- 4) Assume suitable data if necessary.

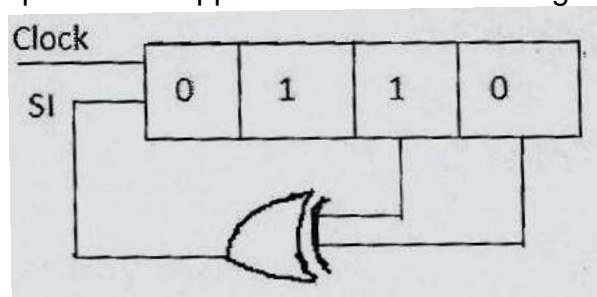
MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) A MOD 12 and MOD 10 counters are cascaded. Determine the output frequency if input frequency is of 60 MHz.
 - a) 1500 KHz
 - b) 6 MHz
 - c) 500 KHz
 - d) 5 MHz
- 2) In initial content of 4 bit SIPO, right shift, shift register shown in figure is 0110. After three clock pulses are applied contents of shift register will be _____.



- a) 0101 b) 1010
 - c) 0011 d) 1011
- 3) Flip is also called as _____ Device.
- a) Astable b) Bistable
 - c) Monostable d) Metastable
- 4) Which Flip flop is free from Race around condition?
- a) SR flip flop b) JK flip flop
 - c) MS JK flip flop d) D Flip flop
- 5) What is the system task to suspend simulation?
- a) \$Stop b) \$finish
 - c) \$monitor d) \$hold
- 6) Which statement below best describes a Karnaugh map?
- a) A Karnaugh map can be used to replace Boolean rules
 - b) The Karnaugh map eliminates the need for using NAND and NOR gates
 - c) Variable complements can be eliminated by using Karnaugh maps
 - d) Karnaugh maps provide a visual approach to simplifying Boolean expressions

Seat No.	
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DIGITAL TECHNIQUES

Day & Date: Saturday, 14-12-2019
 Time: 10:00 AM To 01:00 PM

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
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 4) Assume suitable data if necessary.

Section – I

Q.2 Solve any three. **12**

- a) Given

$$Y = A\bar{B} + \bar{B}\bar{C} + \bar{A}C$$
 Implement the logical expression using NAND and NOR gates.
- b) Minimize the following Boolean expression using K – map.

$$Y = \sum (m1, m3, m5, m7, m10, m11, m14, m15).$$
- c) Design 16:1 multiplexer using 4:1 multiplexers only.
- d) Short Note on :
 1) Arithmetic and Logic Unit
 or
 2) IC 74151

Q.3 Solve any two. **16**

- a) Simplify the Boolean Function:
 $F(w, x, y, z) = \sum(1, 3, 7, 11, 15)$, the Don't care conditions $d(w, x, y, z) = \sum(0, 2, 5)$
 and Implement using NAND gates.
- b) Design a 8 to 1 multiplexer by using the four variable function given by
 $F(A, B, C, D) = \sum m(0, 1, 3, 4, 8, 9, 15).$
- c) State and prove De'Morgan's Theorems with the help of truth tables.

Section – II

Q.4 Attempt any three. **12**

- a) Draw and explain SIPO shift register with waveform.
- b) Write the verilog code for JK flip flop using behavioral modeling.
- c) Design 3 bit asynchronous down counter with waveform in detail.
- d) Write the verilog code for full adder.

Q.5 Attempt any two. **16**

- a) Write a Verilog code for 3 line to 8 line decoder using behavioral modeling.
- b) Design synchronous counter which counts following sequence
 ---1-2-3-4-5-6-7-8-0-1-2--- using JK flip flop
- c) Explain the IC 7490. Also design MOD 9 counter using IC 7490 in detail.

Seat No.	
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Day & Date: Tuesday,17-12-2019
Time: 10:00 AM To 01:00 PM

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

Marks: 14

14

- Page 1 of 12

- 9) The resolution of an image is _____.
a) Number of pixels per unit area
b) Number of pixels per unit length in horizontal
c) Number of pixels per unit length in vertical
d) None of These
- 10) A line with end point codes 0001 and 0110 respectively then the line is _____.
a) Completely Visible b) Partially Visible
c) Invisible d) All above
- 11) _____ number of bits are used for representing each sub-region of the Cohen-Sutherland line clipping.
a) 1 b) 4
c) 3 d) 2
- 12) _____ is a technique for using minimum number of intensity levels to obtain increase visual resolution.
a) Antialiasing b) Half-toning
c) Rasterization d) Aliasing
- 13) In interpolation, curve always passes through _____ control points.
a) Last and Second b) First and Second
c) First and Last d) All
- 14) Rotation about an arbitrary point requires _____ transformations.
a) 5 b) 3
c) 4 d) 1

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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three. **12**

- a) What is 3D rotation? Write the matrix for it about X, Y and Z axis.
- b) Describe joy stick in brief.
- c) Explain in detail raster scan display.
- d) Write note on reflection through an arbitrary line.

Q.3 Consider a triangle A(2,2) B(4,2) and C(4,4) and apply combined transformation **08**
 as:

- 1) 90 degree rotation about origin
- 2) Reflection through the line $y=-x$

OR

Explain DDA line drawing algorithm in detail. Rasterise the line with the same whose end points are A(0,0) and B(5,5).

Q.4 Write and explain Bresenham's line drawing algorithm in detail. **08**

Section – II

Q.5 Attempt any three **12**

- a) Write note on display file compilation.
- b) Explain Bezier curves in brief.
- c) Write note on viewing transformation.
- d) Define corruption. How to tackle the problem of corruption? Explain.

Q.6 Explain in detail Z-buffer algorithm. Also state its advantages and **08**
 disadvantages.

OR

What is display file? Enlist the functions of segmented display file. Explain each.

Q.7 Explain the working of Warnock algorithm in detail. Also explain quad tree data **08**
 structure.

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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

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Section – I

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OR

Explain DDA line drawing algorithm in detail. Rasterise the line with the same whose end points are A(0,0) and B(5,5).

Q.4 Write and explain Bresenham's line drawing algorithm in detail. **08**

Section – II

Q.5 Attempt any three **12**

- a) Write note on display file compilation.
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Seat No.	
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Day & Date: Tuesday,17-12-2019
Time: 10:00 AM To 01:00 PM

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

Marks: 14

14

- Page 7 of 12

- 9) In interpolation, curve always passes through _____ control points.
a) Last and Second b) First and Second
c) First and Last d) All
- 10) Rotation about an arbitrary point requires _____ transformations.
a) 5 b) 3
c) 4 d) 1
- 11) The transformation which results in dragging of object from one position to another is called as _____.
a) Translation b) Rotation
c) Reflection d) Shearing
- 12) The picture definition stored in memory is generally referred as _____.
a) Refresh buffer b) Frame buffer
c) Both a & b d) None of above
- 13) Reflection through an arbitrary line requires _____ transformations.
a) 7 b) 2
c) 3 d) 5
- 14) _____ is used to include a segment in the display refresh cycle for making visibility of objects.
a) Posting b) Unposting
c) Deleting d) Appending

Seat No.	
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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any three. **12**

- a) What is 3D rotation? Write the matrix for it about X, Y and Z axis.
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- c) Explain in detail raster scan display.
- d) Write note on reflection through an arbitrary line.

Q.3 Consider a triangle A(2,2) B(4,2) and C(4,4) and apply combined transformation **08**
as:

- 1) 90 degree rotation about origin
- 2) Reflection through the line $y=-x$

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Section – II

Q.5 Attempt any three **12**

- a) Write note on display file compilation.
- b) Explain Bezier curves in brief.
- c) Write note on viewing transformation.
- d) Define corruption. How to tackle the problem of corruption? Explain.

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OR

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Q.7 Explain the working of Warnock algorithm in detail. Also explain quad tree data **08**
structure.

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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) A line with end point codes 0001 and 0110 respectively then the line is _____.
 a) Completely Visible b) Partially Visible
 c) Invisible d) All above
- 2) _____ number of bits are used for representing each sub-region of the Cohen-Sutherland line clipping.
 a) 1 b) 4
 c) 3 d) 2
- 3) _____ is a technique for using minimum number of intensity levels to obtain increase visual resolution.
 a) Antialiasing b) Half-toning
 c) Rasterization d) Aliasing
- 4) In interpolation, curve always passes through _____ control points.
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- 5) Rotation about an arbitrary point requires _____ transformations.
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 c) Reflection d) Shearing
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 a) Refresh buffer b) Frame buffer
 c) Both a & b d) None of above
- 8) Reflection through an arbitrary line requires _____ transformations.
 a) 7 b) 2
 c) 3 d) 5
- 9) _____ is used to include a segment in the display refresh cycle for making visibility of objects.
 a) Posting b) Unposting
 c) Deleting d) Appending

- 10) In generalised 4X4 transformation matrix for 3D, the lower left 1X3 sub matrix produces _____.
 - a) Translation
 - b) Rotation
 - c) Scaling
 - d) All above
- 11) Bezier curves are generated by using _____ number of control points.
 - a) 6
 - b) 2
 - c) 5
 - d) 4
- 12) The window can be mapped directly onto the sub region of the display is called as _____.
 - a) Window
 - b) Region
 - c) Viewport
 - d) None of above
- 13) Super sampling is a technique for _____.
 - a) Shading
 - b) Anti-aliasing
 - c) Half toning
 - d) None of the above
- 14) The resolution of an image is _____.
 - a) Number of pixels per unit area
 - b) Number of pixels per unit length in horizontal
 - c) Number of pixels per unit length in vertical
 - d) None of These

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S.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER GRAPHICS

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

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section – I

- Q.2 Attempt any three.** **12**
- What is 3D rotation? Write the matrix for it about X, Y and Z axis.
 - Describe joy stick in brief.
 - Explain in detail raster scan display.
 - Write note on reflection through an arbitrary line.
- Q.3** Consider a triangle A(2,2) B(4,2) and C(4,4) and apply combined transformation **08**
 as:
- 90 degree rotation about origin
 - Reflection through the line $y=-x$

OR

Explain DDA line drawing algorithm in detail. Rasterise the line with the same whose end points are A(0,0) and B(5,5).

- Q.4** Write and explain Bresenham's line drawing algorithm in detail. **08**

Section – II

- Q.5 Attempt any three** **12**
- Write note on display file compilation.
 - Explain Bezier curves in brief.
 - Write note on viewing transformation.
 - Define corruption. How to tackle the problem of corruption? Explain.
- Q.6** Explain in detail Z-buffer algorithm. Also state its advantages and **08**
 disadvantages.

OR

What is display file? Enlist the functions of segmented display file. Explain each.

- Q.7** Explain the working of Warnock algorithm in detail. Also explain quad tree data **08**
 structure.

Seat No.	
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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
APPLIED MATHEMATICS - II

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

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
 2) Answer MCQ/Objective type questions on Page No. 3 only. Don't forget to mention, Q. P. Set (A, B, C, D) on Top of Page.
 3) Use of non programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The use of Romberg's method is _____.
 a) To solve simultaneous linear equations
 b) To find root of the equation
 c) To evaluate definite integration
 d) To find eigen values
- 2) As soon as a new value of a variable is found by iteration, it is used immediately in the next step, this method is called as _____.
 a) Gauss-Jacobi's method b) Gauss-Seidal method
 c) Gauss-Jordan method d) Gauss Elimination method
- 3) When Gauss Elimination method is used to solve set of equation $AX = B$, matrix A is transformed to _____.
 a) Upper triangular matrix b) Diagonal matrix
 c) Lower triangular matrix d) Identity matrix
- 4) Truncation error in Trapezoidal rule is of order _____.
 a) h b) h^2
 c) h^3 d) h^4
- 5) The order of convergence of Regula falsi method for finding roots of equation $f(x) = 0$ is _____.
 a) Second order b) Cubic order
 c) First order d) Very slow
- 6) A root of the equation $x - \cos x = 0$ lies between _____.
 a) 1 and 2 b) 2 and 3
 c) 0 and 1 d) -1 and 0
- 7) The Newton - Raphson method fails when _____.
 a) $f'(x)$ is negative b) $f'(x)$ is positive
 c) Never fails d) $f'(x)$ is zero
- 8) The Multiplication of closed interval $[-3,4] \cdot [-3,5] =$ _____.
 a) $[-15,20]$ b) $\left[\frac{1}{15}, \frac{1}{20}\right]$
 c) $[20, -15]$ d) $[9, 15]$

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
APPLIED MATHEMATICS - II

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

Max. Marks: 70

- Instructions:** 1) Question No. 3 is compulsory in Section –I solve any two questions from Q. No.2, 4, 5.
 2) Question No. 6 is compulsory in Section –II solve any two questions from Q. No.7, 8, 9.
 2) Figures to the right indicate full marks.
 3) Use of non programmable calculator is allowed.

Section – I

- Q.2** a) Find the positive real root of the equation $e^{-x} = \sin x$ Correct to three decimal places by Regula falsi method. **05**
 b) Find the positive real root of the equation $x^3 - 9x + 1 = 0$ by Bisection method.(Carry out 6 iterations) **04**

OR

- b) Use $N-R$ method to find a positive root of $e^{0.4x} - 0.4x = 9$ **04**
Q.3 a) Perform two iterations of the $N-R$ method to solve non-linear equations $x^2 + y = 11$ and $y^2 - x = 7$ starting with initial conditions as $x_0 = 3.5$, $y_0 = -1.8$ **05**
 b) Solve the following equations by using factorization method. **05**
 $x + 5y + z = 14, 2x + y + 3z = 13, 3x + y + 4z = 17$
Q.4 a) Evaluate $\int_0^1 \frac{dx}{2x+3}$ by using Trapezoidal Rule by taking $h = 0.2$ **03**
 b) Use Romberg's method to evaluate $\int_0^1 \frac{dx}{x^2+4}$ take $n = 2$ **06**
Q.5 a) Solve the following equations by Gauss Elimination method. **04**
 $x + 4y + 9z = 16, 2x + y + z = 10, 3x + 2y + 3z = 18$
 b) Using Trapezoidal rule evaluate $\int_1^2 \int_3^4 \frac{1}{(x+y)^2} dx dy$, $h = k = 0.5$ **05**

Section – II

- Q.6** a) State the conditions for fuzzy set to be a fuzzy number and hence determine whether the following fuzzy set is a fuzzy number. **04**

$$C(x) = \begin{cases} 1 & 0 \leq x \leq b \\ 0 & \text{otherwise} \end{cases}$$

OR
 a) Prove that: **04**
 i) $\alpha(A \cup B) = \alpha_A \cup \alpha_B$
 ii) $\alpha_+(A \cap B) = \alpha_{+A} \cap \alpha_{+B}$

- b) For given fuzzy numbers find $MIN(A, B)$

06

$$\begin{aligned} \text{Where } A(x) &= \frac{x-2}{3} & 2 < x \leq 5 \\ &= \frac{7-x}{3} & 5 < x \leq 7 \\ &= 0 & \text{otherwise} \\ B(x) &= x-3 & 3 < x \leq 4 \\ &= \frac{9-x}{3} & 4 < x \leq 9 \\ &= 0 & \text{otherwise} \end{aligned}$$

- Q.7 a) For the following fuzzy sets

04

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

Find $S(B, A)$ & $0.4 A \cap B$

- b) Find $A - B$ for the following membership function:

05

$$\begin{aligned} B(x) &= \frac{x-10}{10} & 10 < x \leq 20 \\ &= \frac{35-x}{15} & 20 < x \leq 35 \\ &= 0 & \text{otherwise} \\ A(x) &= x-4 & 4 < x \leq 5 \\ &= 6-x & 5 < x \leq 6 \\ &= 0 & \text{otherwise} \end{aligned}$$

- Q.8 a) Let A be fuzzy set defined on $X = \{-3, -2, -1, 0, 1, 2, 3, 4, 5\}$ by membership function $A(x) = \frac{12-x}{15}$ for all x and $f(x) = x^2 + 2$ is crisp function for all $x \in X$ then by using extension principle find $f(A)$.

05

- b) Calculate α -cuts and strong α -cuts for the fuzzy set B ,

04

$$\begin{aligned} B(x) &= 0 & x > 13, x < 7 \\ &= \frac{x-7}{3} & 7 < x \leq 10 \\ &= \frac{13-x}{3} & 10 < x \leq 13 \text{ where } \alpha = 0.7, 0.8, 1 \end{aligned}$$

- Q.9 a) Solve the fuzzy equation $A + X = B$ where

05

$$\begin{aligned} A(x) &= x-3 & 3 < x \leq 4 \\ &= 5-x & 4 < x < 5 \\ &= 0 & \text{otherwise} \\ B(x) &= \frac{(x-12)}{8} & 12 < x \leq 20 \\ &= \frac{32-x}{12} & 20 < x \leq 32 \\ &= 0 & \text{otherwise} \end{aligned}$$

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

04

Seat No.	
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- 7) The largest membership grade obtained by an element in a fuzzy set is called as _____.
a) Support of fuzzy set b) Height of Fuzzy set
c) Normal of fuzzy set d) Fuzzy number
- 8) The use of Romberg's method is _____.
a) To solve simultaneous linear equations
b) To find root of the equation
c) To evaluate definite integration
d) To find eigen values
- 9) As soon as a new value of a variable is found by iteration, it is used immediately in the next step, this method is called as _____.
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c) 0 and 1 d) -1 and 0
- 14) The Newton - Raphson method fails when _____.
a) $f'(x)$ is negative b) $f'(x)$ is positive
c) Never fails d) $f'(x)$ is zero

Seat No.	
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Set Q

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
APPLIED MATHEMATICS – II

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

Max. Marks: 70

- Instructions:** 1) Question No. 3 is compulsory in Section –I solve any two questions from Q. No.2, 4, 5.
 2) Question No. 6 is compulsory in Section –II solve any two questions from Q. No.7, 8, 9.
 2) Figures to the right indicate full marks.
 3) Use of non programmable calculator is allowed.

Section – I

- Q.2** a) Find the positive real root of the equation $e^{-x} = \sin x$ Correct to three decimal places by Regula falsi method. **05**
 b) Find the positive real root of the equation $x^3 - 9x + 1 = 0$ by Bisection method.(Carry out 6 iterations) **04**

OR

- b) Use $N-R$ method to find a positive root of $e^{0.4x} - 0.4x = 9$ **04**
Q.3 a) Perform two iterations of the $N-R$ method to solve non-linear equations $x^2 + y = 11$ and $y^2 - x = 7$ starting with initial conditions as $x_0 = 3.5$, $y_0 = -1.8$ **05**
 b) Solve the following equations by using factorization method. **05**
 $x + 5y + z = 14, 2x + y + 3z = 13, 3x + y + 4z = 17$
Q.4 a) Evaluate $\int_0^1 \frac{dx}{2x+3}$ by using Trapezoidal Rule by taking $h = 0.2$ **03**
 b) Use Romberg's method to evaluate $\int_0^1 \frac{dx}{x^2+4}$ take $n = 2$ **06**
Q.5 a) Solve the following equations by Gauss Elimination method. **04**
 $x + 4y + 9z = 16, 2x + y + z = 10, 3x + 2y + 3z = 18$
 b) Using Trapezoidal rule evaluate $\int_1^2 \int_3^4 \frac{1}{(x+y)^2} dx dy$, $h = k = 0.5$ **05**

Section – II

- Q.6** a) State the conditions for fuzzy set to be a fuzzy number and hence determine whether the following fuzzy set is a fuzzy number. **04**

$$C(x) = \begin{cases} 1 & 0 \leq x \leq b \\ 0 & \text{otherwise} \end{cases}$$

OR

- a) Prove that: **04**
 i) $\alpha(A \cup B) = \alpha_A \cup \alpha_B$
 ii) $\alpha_+(A \cap B) = \alpha_{+A} \cap \alpha_{+B}$

- b) For given fuzzy numbers find $MIN(A, B)$

06

$$\begin{aligned}
 \text{Where } A(x) &= \frac{x-2}{3} & 2 < x \leq 5 \\
 &= \frac{7-x}{3} & 5 < x \leq 7 \\
 &= 0 & \text{otherwise} \\
 B(x) &= x-3 & 3 < x \leq 4 \\
 &= \frac{9-x}{3} & 4 < x \leq 9 \\
 &= 0 & \text{otherwise}
 \end{aligned}$$

- Q.7 a) For the following fuzzy sets

04

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

Find $S(B, A)$ & $0.4 A \cap B$

- b) Find $A - B$ for the following membership function:

05

$$\begin{aligned}
 B(x) &= \frac{x-10}{10} & 10 < x \leq 20 \\
 &= \frac{35-x}{15} & 20 < x \leq 35 \\
 &= 0 & \text{otherwise} \\
 A(x) &= x-4 & 4 < x \leq 5 \\
 &= 6-x & 5 < x \leq 6 \\
 &= 0 & \text{otherwise}
 \end{aligned}$$

- Q.8 a) Let A be fuzzy set defined on $X = \{-3, -2, -1, 0, 1, 2, 3, 4, 5\}$ by membership function $A(x) = \frac{12-x}{15}$ for all x and $f(x) = x^2 + 2$ is crisp function for all $x \in X$ then by using extension principle find $f(A)$.

05

- b) Calculate α -cuts and strong α -cuts for the fuzzy set B,

04

$$\begin{aligned}
 B(x) &= 0 & x > 13, x < 7 \\
 &= \frac{x-7}{3} & 7 < x \leq 10 \\
 &= \frac{13-x}{3} & 10 < x \leq 13 \text{ where } \alpha = 0.7, 0.8, 1
 \end{aligned}$$

- Q.9 a) Solve the fuzzy equation $A + X = B$ where

05

$$\begin{aligned}
 A(x) &= x-3 & 3 < x \leq 4 \\
 &= 5-x & 4 < x < 5 \\
 &= 0 & \text{otherwise} \\
 B(x) &= \frac{(x-12)}{8} & 12 < x \leq 20 \\
 &= \frac{32-x}{12} & 20 < x \leq 32 \\
 &= 0 & \text{otherwise}
 \end{aligned}$$

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

04

Seat No.	
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- 8) The fuzzy sets A and B are defined as follows,
 $A = \frac{0.2}{x_1} + \frac{0.5}{x_2} + \frac{0.6}{x_3}$ $B = \frac{0.1}{x_1} + \frac{0.4}{x_2} + \frac{0.5}{x_3}$ the set $A \cap B^c$ is _____.
 a) $\frac{0.9}{x_1} + \frac{0.6}{x_2} + \frac{0.5}{x_3}$ b) $\frac{0.2}{x_1} + \frac{0.5}{x_2} + \frac{0.5}{x_3}$
 c) $\frac{0.3}{x_1} + \frac{0.9}{x_2} + \frac{0.1}{x_3}$ d) $\frac{0.9}{x_1} + \frac{0.6}{x_2} + \frac{0.6}{x_3}$
- 9) For the fuzzy set defined by the function $A(x) = 1 - \frac{x}{10}, x \in \{0,1,2, \dots 10\}$
 The scalar cardinality of t set A is _____.
 a) 5.2 b) 5.4
 c) 5.5 d) 5.6
- 10) The largest membership grade obtained by an element in a fuzzy set is called as _____.
 a) Support of fuzzy set b) Height of Fuzzy set
 c) Normal of fuzzy set d) Fuzzy number
- 11) The use of Romberg's method is _____.
 a) To solve simultaneous linear equations
 b) To find root of the equation
 c) To evaluate definite integration
 d) To find eigen values
- 12) As soon as a new value of a variable is found by iteration, it is used immediately in the next step, this method is called as _____.
 a) Gauss-Jacobi's method b) Gauss-Seidal method
 c) Gauss-Jordan method d) Gauss Elimination method
- 13) When Gauss Elimination method is used to solve set of equation $AX = B$, matrix A is transformed to _____.
 a) Upper triangular matrix b) Diagonal matrix
 c) Lower triangular matrix d) Identity matrix
- 14) Truncation error in Trapezoidal rule is of order _____.
 a) h b) h^2
 c) h^3 d) h^4

Seat No.	
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Set **R**

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
APPLIED MATHEMATICS – II

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

Max. Marks: 70

- Instructions:** 1) Question No. 3 is compulsory in Section –I solve any two questions from Q. No.2, 4, 5.
 2) Question No. 6 is compulsory in Section –II solve any two questions from Q. No.7, 8, 9.
 2) Figures to the right indicate full marks.
 3) Use of non programmable calculator is allowed.

Section – I

- Q.2** a) Find the positive real root of the equation $e^{-x} = \sin x$ Correct to three decimal places by Regula falsi method. **05**
 b) Find the positive real root of the equation $x^3 - 9x + 1 = 0$ by Bisection method.(Carry out 6 iterations) **04**

OR

- b) Use $N-R$ method to find a positive root of $e^{0.4x} - 0.4x = 9$ **04**
Q.3 a) Perform two iterations of the $N-R$ method to solve non-linear equations $x^2 + y = 11$ and $y^2 - x = 7$ starting with initial conditions as $x_0 = 3.5$, $y_0 = -1.8$ **05**
 b) Solve the following equations by using factorization method. **05**
 $x + 5y + z = 14, 2x + y + 3z = 13, 3x + y + 4z = 17$
Q.4 a) Evaluate $\int_0^1 \frac{dx}{2x+3}$ by using Trapezoidal Rule by taking $h = 0.2$ **03**
 b) Use Romberg's method to evaluate $\int_0^1 \frac{dx}{x^2+4}$ take $n = 2$ **06**
Q.5 a) Solve the following equations by Gauss Elimination method. **04**
 $x + 4y + 9z = 16, 2x + y + z = 10, 3x + 2y + 3z = 18$
 b) Using Trapezoidal rule evaluate $\int_1^2 \int_3^4 \frac{1}{(x+y)^2} dx dy$, $h = k = 0.5$ **05**

Section – II

- Q.6** a) State the conditions for fuzzy set to be a fuzzy number and hence determine whether the following fuzzy set is a fuzzy number. **04**

$$C(x) = \begin{cases} 1 & 0 \leq x \leq b \\ 0 & \text{otherwise} \end{cases}$$

OR

- a) Prove that: **04**
 i) $\alpha(A \cup B) = \alpha_A \cup \alpha_B$
 ii) $\alpha_+(A \cap B) = \alpha_{+A} \cap \alpha_{+B}$

- b) For given fuzzy numbers find $MIN(A, B)$

06

$$\begin{aligned} \text{Where } A(x) &= \frac{x-2}{3} & 2 < x \leq 5 \\ &= \frac{7-x}{3} & 5 < x \leq 7 \\ &= 0 & \text{otherwise} \\ B(x) &= x-3 & 3 < x \leq 4 \\ &= \frac{9-x}{3} & 4 < x \leq 9 \\ &= 0 & \text{otherwise} \end{aligned}$$

- Q.7 a) For the following fuzzy sets

04

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

Find $S(B, A)$ & $0.4 A \cap B$

- b) Find $A - B$ for the following membership function:

05

$$\begin{aligned} B(x) &= \frac{x-10}{10} & 10 < x \leq 20 \\ &= \frac{35-x}{15} & 20 < x \leq 35 \\ &= 0 & \text{otherwise} \\ A(x) &= x-4 & 4 < x \leq 5 \\ &= 6-x & 5 < x \leq 6 \\ &= 0 & \text{otherwise} \end{aligned}$$

- Q.8 a) Let A be fuzzy set defined on $X = \{-3, -2, -1, 0, 1, 2, 3, 4, 5\}$ by membership function $A(x) = \frac{12-x}{15}$ for all x and $f(x) = x^2 + 2$ is crisp function for all $x \in X$ then by using extension principle find $f(A)$.

05

- b) Calculate α -cuts and strong α -cuts for the fuzzy set B ,

04

$$\begin{aligned} B(x) &= 0 & x > 13, x < 7 \\ &= \frac{x-7}{3} & 7 < x \leq 10 \\ &= \frac{13-x}{3} & 10 < x \leq 13 \text{ where } \alpha = 0.7, 0.8, 1 \end{aligned}$$

- Q.9 a) Solve the fuzzy equation $A + X = B$ where

05

$$\begin{aligned} A(x) &= x-3 & 3 < x \leq 4 \\ &= 5-x & 4 < x < 5 \\ &= 0 & \text{otherwise} \\ B(x) &= \frac{(x-12)}{8} & 12 < x \leq 20 \\ &= \frac{32-x}{12} & 20 < x \leq 32 \\ &= 0 & \text{otherwise} \end{aligned}$$

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

04

Seat No.	
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- 7) As soon as a new value of a variable is found by iteration, it is used immediately in the next step, this method is called as _____.
 a) Gauss-Jacobi's method b) Gauss-Seidal method
 c) Gauss-Jordan method d) Gauss Elimination method
- 8) When Gauss Elimination method is used to solve set of equation $AX = B$, matrix A is transformed to _____.
 a) Upper triangular matrix b) Diagonal matrix
 c) Lower triangular matrix d) Identity matrix
- 9) Truncation error in Trapezoidal rule is of order _____.
 a) h b) h^2
 c) h^3 d) h^4
- 10) The order of convergence of Regula falsi method for finding roots of equation $f(x) = 0$ is _____.
 a) Second order b) Cubic order
 c) First order d) Very slow
- 11) A root of the equation $x - \cos x = 0$ lies between _____.
 a) 1 and 2 b) 2 and 3
 c) 0 and 1 d) -1 and 0
- 12) The Newton - Raphson method fails when _____.
 a) $f'(x)$ is negative b) $f'(x)$ is positive
 c) Never fails d) $f'(x)$ is zero
- 13) The Multiplication of closed interval $[-3,4] \cdot [-3,5] =$ _____.
 a) $[-15,20]$ b) $\left[\frac{1}{15}, \frac{1}{20}\right]$
 c) $[20, -15]$ d) $[9, 15]$
- 14) Quantifiers of the second kind are called _____ Quantifiers
 a) Absolute b) Relative
 c) Approximate d) Modified

Seat No.	
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Set	S
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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
APPLIED MATHEMATICS - II

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

Max. Marks: 70

- Instructions:** 1) Question No. 3 is compulsory in Section –I solve any two questions from Q. No.2, 4, 5.
 2) Question No. 6 is compulsory in Section –II solve any two questions from Q. No.7, 8, 9.
 2) Figures to the right indicate full marks.
 3) Use of non programmable calculator is allowed.

Section – I

- Q.2** a) Find the positive real root of the equation $e^{-x} = \sin x$ Correct to three decimal places by Regula falsi method. **05**
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OR

- b) Use $N-R$ method to find a positive root of $e^{0.4x} - 0.4x = 9$ **04**
Q.3 a) Perform two iterations of the $N-R$ method to solve non-linear equations $x^2 + y = 11$ and $y^2 - x = 7$ starting with initial conditions as $x_0 = 3.5$, $y_0 = -1.8$ **05**
 b) Solve the following equations by using factorization method. **05**
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Q.4 a) Evaluate $\int_0^1 \frac{dx}{2x+3}$ by using Trapezoidal Rule by taking $h = 0.2$ **03**
 b) Use Romberg's method to evaluate $\int_0^1 \frac{dx}{x^2+4}$ take $n = 2$ **06**
Q.5 a) Solve the following equations by Gauss Elimination method. **04**
 $x + 4y + 9z = 16, 2x + y + z = 10, 3x + 2y + 3z = 18$
 b) Using Trapezoidal rule evaluate $\int_1^2 \int_3^4 \frac{1}{(x+y)^2} dx dy$, $h = k = 0.5$ **05**

Section – II

- Q.6** a) State the conditions for fuzzy set to be a fuzzy number and hence determine whether the following fuzzy set is a fuzzy number. **04**

$$C(x) = \begin{cases} 1 & 0 \leq x \leq b \\ 0 & \text{otherwise} \end{cases}$$

OR

- a) Prove that: **04**
 i) $\alpha(A \cup B) = \alpha_A \cup \alpha_B$
 ii) $\alpha_+(A \cap B) = \alpha_{+A} \cap \alpha_{+B}$

- b) For given fuzzy numbers find $MIN(A, B)$

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$$\begin{aligned}
 \text{Where } A(x) &= \frac{x-2}{3} & 2 < x \leq 5 \\
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 &= 0 & \text{otherwise} \\
 B(x) &= x-3 & 3 < x \leq 4 \\
 &= \frac{9-x}{3} & 4 < x \leq 9 \\
 &= 0 & \text{otherwise}
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- Q.7 a) For the following fuzzy sets

04

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
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Find $S(B, A)$ & $0.4 A \cap B$

- b) Find $A - B$ for the following membership function:

05

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

- Q.8 a) Let A be fuzzy set defined on $X = \{-3, -2, -1, 0, 1, 2, 3, 4, 5\}$ by membership function $A(x) = \frac{12-x}{15}$ for all x and $f(x) = x^2 + 2$ is crisp function for all $x \in X$ then by using extension principle find $f(A)$.

05

- b) Calculate α -cuts and strong α -cuts for the fuzzy set B ,

04

$$\begin{aligned}
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- Q.9 a) Solve the fuzzy equation $A + X = B$ where

05

$$\begin{aligned}
 A(x) &= x-3 & 3 < x \leq 4 \\
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 &= 0 & \text{otherwise} \\
 B(x) &= \frac{(x-12)}{8} & 12 < x \leq 20 \\
 &= \frac{32-x}{12} & 20 < x \leq 32 \\
 &= 0 & \text{otherwise}
 \end{aligned}$$

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

04

**Seat
No.**

Max. Marks: 70

2) Figures to the right indicate full marks.

Marks: 14

- 1) Productions in CNF are _____.
a) $A \rightarrow \alpha, B \rightarrow C$ b) $A \rightarrow \alpha, A \rightarrow BC$
c) $A \rightarrow \alpha, A \rightarrow BC, A \rightarrow \Lambda$ d) None
- 2) Productions in CFGs are of the form _____.
a) $A \rightarrow \alpha, \alpha \in (V \cup \Sigma)^*$ b) $A \rightarrow \alpha, \alpha \in V^*$
c) $A \rightarrow \alpha, \alpha \in (V^* \cup \Sigma^*)^*$ d) Both a and c
- 3) The class of type 1 grammars corresponds to _____.
a) PDA b) Linear bounded automata
c) Finite automata d) Turing machine
- 4) $CFG S \rightarrow AB | AS, A \rightarrow a | aA, B \rightarrow b$ generates the language _____.
a) $(ab)^*$ b) $a(ab)^*b$
c) aa^*b^+ d) aa^*b
- 5) The language accepted by finite automata is _____.
a) Nonregular b) Regular
c) Both a and b d) None
- 6) Definition of δ for NFA- Λ is _____.
a) $\delta: QX\Sigma \rightarrow Q$ b) $\delta: QX\Sigma \rightarrow 2^Q$
c) $\delta: QX(\Sigma \cup \{\Lambda\}) \rightarrow 2^Q$ d) None of above
- 7) δ^* for NFA is _____.
a) $\delta^*(q, \Lambda) = q$ b) $\delta^*(q, \Lambda) = \{q\}$
c) $\delta^*(q, \Lambda) = \Lambda(\{q\})$ d) None of above
- 8) Which is not a part of the mechanical diagram of Turing machine?
a) Input tape b) Finite control
c) Stack d) Read-write head
- 9) PDA is the machine format of _____.
a) Type 0 language b) Type 1 language
c) Type 2 language d) Type 3 language

Seat No.	
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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
THEORY OF COMPUTATION

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

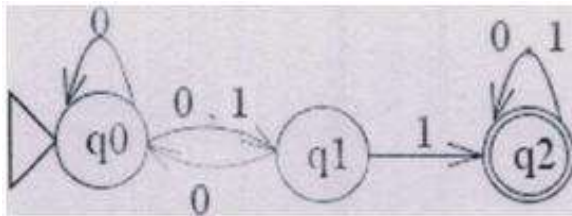
Max. Marks: 56

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

Q.2 Attempt any three of the following questions.

12

- a) Write the regular expression for the following languages:
- 1) The language of all strings of length 5 or less over $\Sigma = \{a, b\}$.
 - 2) The language of all strings of length 5 or more over $\Sigma = \{a, b\}$.
 - 3) The language of all strings of length exact 5 over $\Sigma = \{a, b\}$.
 - 4) The language of all strings of odd length over $\Sigma = \{a, b\}$.
- b) Give the deterministic finite automata accepting the following language over $\Sigma = \{0, 1\}$
- 1) Number of 1's is multiple of 4.
 - 2) Number of 1's is not multiple of 4.
- c) Define \wedge - closure for NFA- \wedge with example.
- d) Construct finite automata equivalent to the following regular sets.
- 1) $ba + (a + bb) a^* b$
 - 2) $(b + ba + bba)^* a$
- e) Convert the follow NFA to DFA.



- Q.3** Consider language L_1 where each string ends with 00 and language L_2 where each string ends with 11 over $\Sigma = \{0, 1\}$, construct finite automata for $L_1 \cup L_2$, $L_1 - L_2$, $L_2 - L_1$.

08

OR

Define non-recursive definition of δ^* for DFA, NFA and NFA- \wedge with example.

- Q.4** Given CFG G . find CFG G' in Chomsky normal form.

08

$S \rightarrow ABA$
 $A \rightarrow aA \mid A$
 $B \rightarrow bB \mid A$

Q.5 Solve any three.

12

- a) Define PDA, and explain the condition of acceptance by empty stack.
- b) State and explain the pumping Lemma for CFL's.
- c) Design a TM that compute the function $f(x) = x \bmod 2$.
- d) Explain the following w.r.t. TM
- 1) Multi-tape Turing Machine.
 - 2) Multi-track Turing Machine.
- e) Design a DPDA accept a Strings with More a's than b's over an alphabet $\Sigma = \{a, b\}$

Q.6 Show that the Language $L = \{a^n b^n c^n | n \geq 0\}$ is a non context free language. **08**

OR

Design a TM to accept a language $L = \{x \in \{a, b\}^* \mid x \text{ should end with } aba\}$

Q.7 Write a short note on. **08**

a) Universal TM.

b) Deterministic Push down automata (DPDA) with example.

Seat No.	
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Set Q

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
THEORY OF COMPUTATION

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

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Which is not a part of the mechanical diagram of Turing machine?
 - a) Input tape
 - b) Finite control
 - c) Stack
 - d) Read-write head
- 2) PDA is the machine format of _____.
 - a) Type 0 language
 - b) Type 1 language
 - c) Type 2 language
 - d) Type 3 language
- 3) Universal TM is more powerful than FA because _____.
 - a) Tape movement is confined to one direction
 - b) It has not finite state control
 - c) It has the capability to remember arbitrary long sequences of input symbols
 - d) None
- 4) Pumping lemma is generally used for proving _____.
 - a) Given grammar is regular
 - b) Given grammar is non regular
 - c) Given regular expressions are equivalent
 - d) None
- 5) Which is the most powerful language acceptor?
 - a) TM
 - b) FA
 - c) PDA
 - d) All
- 6) Which of the following languages over {a,b,c} is accepted by DPDA?
 - a) $\{wcw^R \mid w \in \{a, b\}^*\}$
 - b) $\{ww^R \mid w \in \{a, b, c\}^*\}$
 - c) $\{a^n b^n c^n \mid n \geq 0\}$
 - d) $\{ww \mid w \in \{a, b, c\}^*\}$
- 7) PDA _____ accept the language of palindrome without the middle marker input symbol.
 - a) May
 - b) Can
 - c) May not
 - d) Can not
- 8) Productions in CNF are _____.
 - a) $A \rightarrow \alpha, B \rightarrow C$
 - b) $A \rightarrow \alpha, A \rightarrow BC$
 - c) $A \rightarrow \alpha, A \rightarrow BC, A \rightarrow \Lambda$
 - d) None

- 9) Productions in CFGs are of the form _____.
 a) $A \rightarrow \alpha, \alpha \in (V \cup \Sigma)^*$ b) $A \rightarrow \alpha, \alpha \in V^*$
 c) $A \rightarrow \alpha, \alpha \in (V^* \cup \Sigma^*)^*$ d) Both a and c
- 10) The class of type 1 grammars corresponds to _____.
 a) PDA b) Linear bounded automata
 c) Finite automata d) Turing machine
- 11) CFG $S \rightarrow AB|AS, A \rightarrow a|aA, B \rightarrow b$ generates the language _____.
 a) $(ab)^*$ b) $a(ab)^*b$
 c) aa^*b^+ d) aa^*b
- 12) The language accepted by finite automata is _____.
 a) Nonregular b) Regular
 c) Both a and b d) None
- 13) Definition of δ for NFA- Λ is _____.
 a) $\delta: QX\Sigma \rightarrow Q$ b) $\delta: QX\Sigma \rightarrow 2^Q$
 c) $\delta: QX(\Sigma \cup \{\Lambda\}) \rightarrow 2^Q$ d) None of above
- 14) δ^* for NFA is _____.
 a) $\delta^*(q, \Lambda) = q$ b) $\delta^*(q, \Lambda) = \{q\}$
 c) $\delta^*(q, \Lambda) = \Lambda(\{q\})$ d) None of above

Seat No.	
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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
THEORY OF COMPUTATION

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

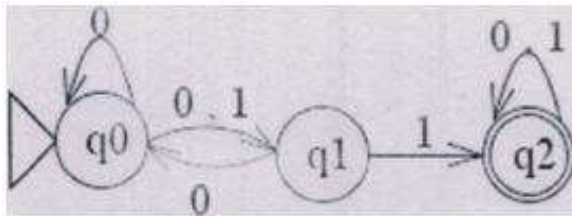
Max. Marks: 56

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

Q.2 Attempt any three of the following questions.

12

- a) Write the regular expression for the following languages:
- 1) The language of all strings of length 5 or less over $\Sigma = \{a, b\}$.
 - 2) The language of all strings of length 5 or more over $\Sigma = \{a, b\}$.
 - 3) The language of all strings of length exact 5 over $\Sigma = \{a, b\}$.
 - 4) The language of all strings of odd length over $\Sigma = \{a, b\}$.
- b) Give the deterministic finite automata accepting the following language over $\Sigma = \{0, 1\}$
- 1) Number of 1's is multiple of 4.
 - 2) Number of 1's is not multiple of 4.
- c) Define \wedge - closure for NFA- \wedge with example.
- d) Construct finite automata equivalent to the following regular sets.
- 1) $ba + (a + bb) a^* b$
 - 2) $(b + ba + bba)^* a$
- e) Convert the follow NFA to DFA.



- Q.3** Consider language L_1 where each string ends with 00 and language L_2 where each string ends with 11 over $\Sigma = \{0, 1\}$, construct finite automata for $L_1 \cup L_2$, $L_1 - L_2$, $L_2 - L_1$.

08

OR

Define non-recursive definition of δ^* for DFA, NFA and NFA- \wedge with example.

- Q.4** Given CFG G . find CFG G' in Chomsky normal form.

08

$S \rightarrow ABA$
 $A \rightarrow aA \mid A$
 $B \rightarrow bB \mid A$

Q.5 Solve any three.

12

- a) Define PDA, and explain the condition of acceptance by empty stack.
- b) State and explain the pumping Lemma for CFL's.
- c) Design a TM that compute the function $f(x) = x \bmod 2$.
- d) Explain the following w.r.t. TM
- 1) Multi-tape Turing Machine.
 - 2) Multi-track Turing Machine.
- e) Design a DPDA accept a Strings with More a's than b's over an alphabet $\Sigma = \{a, b\}$

Q.6 Show that the Language $L = \{a^n b^n c^n | n \geq 0\}$ is a non context free language. **08**

OR

Design a TM to accept a language $L = \{x \in \{a, b\}^* \mid x \text{ should end with } aba\}$

Q.7 Write a short note on. **08**

a) Universal TM.

b) Deterministic Push down automata (DPDA) with example.

**Seat
No.**

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

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

Duration: 30 Minutes

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

- Page 9 of 16

- 9) Which of the following languages over $\{a,b,c\}$ is accepted by DPDA?
- a) $\{wcw^R \mid w \in \{a,b\}^*\}$ b) $\{ww^R \mid w \in \{a,b,c\}^*\}$
 c) $\{a^n b^n c^n \mid n \geq 0\}$ d) $\{ww \mid w \in \{a,b,c\}^*\}$
- 10) PDA _____ accept the language of palindrome without the middle marker input symbol.
- a) May b) Can
 c) May not d) Can not
- 11) Productions in CNF are _____.
 a) $A \rightarrow \alpha, B \rightarrow C$ b) $A \rightarrow \alpha, A \rightarrow BC$
 c) $A \rightarrow \alpha, A \rightarrow BC, A \rightarrow \Lambda$ d) None
- 12) Productions in CFGs are of the form _____.
 a) $A \rightarrow \alpha, \alpha \in (V \cup \Sigma)^*$ b) $A \rightarrow \alpha, \alpha \in V^*$
 c) $A \rightarrow \alpha, \alpha \in (V^* \cup \Sigma^*)^*$ d) Both a and c
- 13) The class of type 1 grammars corresponds to _____.
 a) PDA b) Linear bounded automata
 c) Finite automata d) Turing machine
- 14) $CFG S \rightarrow AB \mid AS, A \rightarrow a \mid aA, B \rightarrow b$ generates the language _____.
 a) $(ab)^*$ b) $a(ab)^*b$
 c) aa^*b^+ d) aa^*b

Seat No.	
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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
THEORY OF COMPUTATION

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

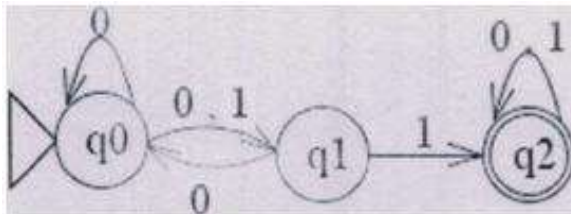
Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Q.2 Attempt any three of the following questions.

12

- a) Write the regular expression for the following languages:
 - 1) The language of all strings of length 5 or less over $\Sigma = \{a, b\}$.
 - 2) The language of all strings of length 5 or more over $\Sigma = \{a, b\}$.
 - 3) The language of all strings of length exact 5 over $\Sigma = \{a, b\}$.
 - 4) The language of all strings of odd length over $\Sigma = \{a, b\}$.
- b) Give the deterministic finite automata accepting the following language over $\Sigma = \{0, 1\}$
 - 1) Number of 1's is multiple of 4.
 - 2) Number of 1's is not multiple of 4.
- c) Define \wedge - closure for NFA- \wedge with example.
- d) Construct finite automata equivalent to the following regular sets.
 - 1) $ba + (a + bb) a^* b$
 - 2) $(b + ba + bba)^* a$
- e) Convert the follow NFA to DFA.



- Q.3** Consider language L_1 where each string ends with 00 and language L_2 where each string ends with 11 over $\Sigma = \{0, 1\}$, construct finite automata for $L_1 \cup L_2$, $L_1 - L_2$, $L_2 - L_1$.

08

OR

Define non-recursive definition of δ^* for DFA, NFA and NFA- \wedge with example.

- Q.4** Given CFG G . find CFG G' in Chomsky normal form.

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$S \rightarrow ABA$
 $A \rightarrow aA \mid A$
 $B \rightarrow bB \mid A$

Q.5 Solve any three.

12

- a) Define PDA, and explain the condition of acceptance by empty stack.
- b) State and explain the pumping Lemma for CFL's.
- c) Design a TM that compute the function $f(x) = x \bmod 2$.
- d) Explain the following w.r.t. TM
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 - 2) Multi-track Turing Machine.
- e) Design a DPDA accept a Strings with More a's than b's over an alphabet $\Sigma = \{a, b\}$

Q.6 Show that the Language $L = \{a^n b^n c^n | n \geq 0\}$ is a non context free language. **08**

OR

Design a TM to accept a language $L = \{x \in \{a, b\}^* \mid x \text{ should end with } aba\}$

Q.7 Write a short note on. **08**

a) Universal TM.

b) Deterministic Push down automata (DPDA) with example.

**Seat
No.**

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

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

- Page 13 of 16

Seat No.	
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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science and Engineering
THEORY OF COMPUTATION

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

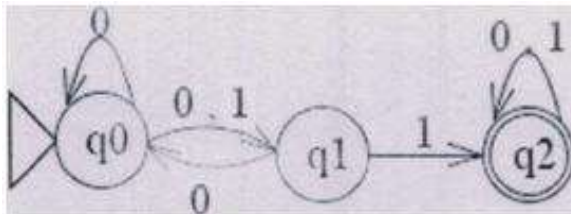
Max. Marks: 56

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Q.2 Attempt any three of the following questions.

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- a) Write the regular expression for the following languages:
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 - 3) The language of all strings of length exact 5 over $\Sigma = \{a, b\}$.
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- e) Convert the follow NFA to DFA.



- Q.3** Consider language L_1 where each string ends with 00 and language L_2 where each string ends with 11 over $\Sigma = \{0, 1\}$, construct finite automata for $L_1 \cup L_2$, $L_1 - L_2$, $L_2 - L_1$.

08

OR

Define non-recursive definition of δ^* for DFA, NFA and NFA- \wedge with example.

- Q.4** Given CFG G . find CFG G' in Chomsky normal form.

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$S \rightarrow ABA$
 $A \rightarrow aA \mid A$
 $B \rightarrow bB \mid A$

Q.5 Solve any three.

12

- a) Define PDA, and explain the condition of acceptance by empty stack.
- b) State and explain the pumping Lemma for CFL's.
- c) Design a TM that compute the function $f(x) = x \bmod 2$.
- d) Explain the following w.r.t. TM
- 1) Multi-tape Turing Machine.
 - 2) Multi-track Turing Machine.
- e) Design a DPDA accept a Strings with More a's than b's over an alphabet $\Sigma = \{a, b\}$

Q.6 Show that the Language $L = \{a^n b^n c^n | n \geq 0\}$ is a non context free language. **08**

OR

Design a TM to accept a language $L = \{x \in \{a, b\}^* \mid x \text{ should end with } aba\}$

Q.7 Write a short note on. **08**

a) Universal TM.

b) Deterministic Push down automata (DPDA) with example.

**Seat
No.**

Max. Marks: 70

2) Figures to right indicate full marks.

Marks: 14

- a) 10
c) 4
- b) 5
d) 6

2) The number of address lines required to address a memory of size 32 K is ____.

- a) 15 lines
c) 18 lines
- b) 16 lines
d) 14 lines

3) What is the addressing mode used in instruction LDA 1050H?

- a) Indirect
c) Indexed
- b) Direct
d) Immediate

4) Which microprocessor pins are used to request and acknowledge a DMA transfer _____.

- a) Reset and Ready
c) HOLD and HLDA
- b) Ready and Wait
d) None of these

5) _____ register deals with sequencing the execution of instructions.

- a) Stack pointer
c) Flag
- b) Accumulator
d) Program Counter

6) To put 8085 microprocessor in wait state _____.

- a) Lower HOLD Input
c) Raise HOLD Input
- b) Lower READY Input
d) Raise READY Input

7) DAA : Decimal Adjust Accumulator is a _____.

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

8) In 8086 -Microprocessor, following has the highest priority among all the interrupts?

- a) NMI
c) Type 255
- b) DIV 0
d) overflow

9) The first processor with an inbuilt floating point unit is _____.

- a) 80386
c) 80286
- b) 80486
d) 8086

- 10) The segments in 80386 real mode are _____.
a) overlapped
b) non-overlapped
c) either overlapped or non-overlapped
d) none of the mentioned
- 11) In cascaded mode, the number of vectored interrupts provided by 8259 is _____.
a) 4
b) 8
c) 16
d) 64
- 12) Which interrupt has highest priority?
a) INTR
b) TRAP
c) RST 6.5
d) RST 5.5
- 13) 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
- 14) In real addressing mode, the 80286 addresses a physical memory of _____.
a) 16 MB
b) 8 MB
c) 2 MB
d) 1 MB

Seat No.	
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Set**P**

S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
COMPUTER SCIENCE & ENGINEERING
MICROPROCESSORS

Day & Date: Monday, 25-11-2019
Time: 02.30 PM To 05.30 PM

Max. Marks: 56

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

Section - I

Q.2 Attempt any Three. **12**

- a) Draw and explain 8085 clock circuit.
- b) Draw Memory Write machine cycle.
- c) Explain following instructions of 8085 with Example:
 - 1) XTHL
 - 2) RLC
- d) Describe operation of Ready, TRAP, INTR and HOLD pins of 8085 microprocessor.

Q.3 Attempt any two. **16**

- a) Write assembly language program for arranging 10 numbers in descending order. Also explain the instructions used in program.
- b) Explain various addressing modes of 8085 with suitable example.
- c) Draw and explain internal architecture of 8085.

Section - II

Q.4 Attempt any four. **12**

- a) Explain Hardware and Software Interrupts of microprocessor.
- b) Explain with neat diagram 8255 PPI.
- c) Explain 8257 DMA controller.
- d) Differentiate 80286 and 80386 microprocessors.

Q.5 Attempt any two. **16**

- a) Define the term Interrupt. What are the types of Interrupts? Explain in detail types of interrupts.
- b) Draw and explain 8251 USART in detail.
- c) Draw and explain 8259 programmable interrupt controller.

**Seat
No.**

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

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 Minutes in answer book.
2) Figures to right indicate full marks.

Marks: 14

- 1) In 8086 -Microprocessor, following has the highest priority among all the interrupts?
a) NMI
b) DIV 0
c) Type 255
d) overflow
- 2) The first processor with an inbuilt floating point unit is _____.
a) 80386
b) 80486
c) 80286
d) 8086
- 3) The segments in 80386 real mode are _____.
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b) non-overlapped
c) either overlapped or non-overlapped
d) none of the mentioned
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b) a pair of two 16-bit registers
c) one 16-bit register
d) one 8-bit register
- 7) In real addressing mode, the 80286 addresses a physical memory of _____.
a) 16 MB
b) 8 MB
c) 2 MB
d) 1 MB
- 8) Total number of T- States required for LXI Rp, 16 bit data are _____.
a) 10
b) 5
c) 4
d) 6
- 9) The number of address lines required to address a memory of size 32 K is _____.
a) 15 lines
b) 16 lines
c) 18 lines
d) 14 lines

- 10) What is the addressing mode used in instruction LDA 1050H?
a) Indirect b) Direct
c) Indexed d) Immediate
- 11) Which microprocessor pins are used to request and acknowledge a DMA transfer _____.
a) Reset and Ready b) Ready and Wait
c) HOLD and HLDA d) None of these
- 12) _____ register deals with sequencing the execution of instructions.
a) Stack pointer b) Accumulator
c) Flag d) Program Counter
- 13) To put 8085 microprocessor in wait state _____.
a) Lower HOLD Input b) Lower READY Input
c) Raise HOLD Input d) Raise READY Input
- 14) DAA : Decimal Adjust Accumulator is a _____.
a) 1 byte instruction b) 2 byte instruction
c) 3 byte instruction d) 4 byte instruction

Seat No.	
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Set	Q
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S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
COMPUTER SCIENCE & ENGINEERING
MICROPROCESSORS

Day & Date: Monday, 25-11-2019
Time: 02.30 PM To 05.30 PM

Max. Marks: 56

Instructions: 1) All questions are compulsory.
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Section - I

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- a) Draw and explain 8085 clock circuit.
- b) Draw Memory Write machine cycle.
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 - 1) XTHL
 - 2) RLC
- d) Describe operation of Ready, TRAP, INTR and HOLD pins of 8085 microprocessor.

Q.3 Attempt any two. **16**

- a) Write assembly language program for arranging 10 numbers in descending order. Also explain the instructions used in program.
- b) Explain various addressing modes of 8085 with suitable example.
- c) Draw and explain internal architecture of 8085.

Section - II

Q.4 Attempt any four. **12**

- a) Explain Hardware and Software Interrupts of microprocessor.
- b) Explain with neat diagram 8255 PPI.
- c) Explain 8257 DMA controller.
- d) Differentiate 80286 and 80386 microprocessors.

Q.5 Attempt any two. **16**

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- c) Draw and explain 8259 programmable interrupt controller.

Seat No.	
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Set	R
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S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
COMPUTER SCIENCE & ENGINEERING
MICROPROCESSORS

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

Max. Marks: 70

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 Minutes in answer book.
 2) Figures to right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) _____ register deals with sequencing the execution of instructions.
 - a) Stack pointer
 - b) Accumulator
 - c) Flag
 - d) Program Counter
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 - a) Lower HOLD Input
 - b) Lower READY Input
 - c) Raise HOLD Input
 - d) Raise READY Input
- 3) DAA : Decimal Adjust Accumulator is a _____.
 - a) 1 byte instruction
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- 4) In 8086 -Microprocessor, following has the highest priority among all the interrupts?
 - a) NMI
 - b) DIV 0
 - c) Type 255
 - d) overflow
- 5) The first processor with an inbuilt floating point unit is _____.
 - a) 80386
 - b) 80486
 - c) 80286
 - d) 8086
- 6) The segments in 80386 real mode are _____.
 - a) overlapped
 - b) non-overlapped
 - c) either overlapped or non-overlapped
 - d) none of the mentioned
- 7) In cascaded mode, the number of vectored interrupts provided by 8259 is _____.
 - a) 4
 - b) 8
 - c) 16
 - d) 64
- 8) Which interrupt has highest priority?
 - a) INTR
 - b) TRAP
 - c) RST 6.5
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- 9) In 8257 (DMA), each of the four channels has _____.
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 - d) one 8-bit register
- 10) In real addressing mode, the 80286 addresses a physical memory of _____.
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- 11) Total number of T- States required for LXI Rp, 16 bit data are _____.
a) 10 b) 5
c) 4 d) 6
- 12) The number of address lines required to address a memory of size 32 K is _____.
a) 15 lines b) 16 lines
c) 18 lines d) 14 lines
- 13) What is the addressing mode used in instruction LDA 1050H?
a) Indirect b) Direct
c) Indexed d) Immediate
- 14) Which microprocessor pins are used to request and acknowledge a DMA transfer _____.
a) Reset and Ready b) Ready and Wait
c) HOLD and HLDA d) None of these

Seat No.	
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Set	R
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S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
COMPUTER SCIENCE & ENGINEERING
MICROPROCESSORS

Day & Date: Monday, 25-11-2019
Time: 02.30 PM To 05.30 PM

Max. Marks: 56

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

Section - I

Q.2 Attempt any Three. **12**

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- d) Describe operation of Ready, TRAP, INTR and HOLD pins of 8085 microprocessor.

Q.3 Attempt any two. **16**

- a) Write assembly language program for arranging 10 numbers in descending order. Also explain the instructions used in program.
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Section - II

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Seat No.	
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Set	S
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S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
COMPUTER SCIENCE & ENGINEERING
MICROPROCESSORS

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

Max. Marks: 70

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 Minutes in answer book.
 2) Figures to right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The segments in 80386 real mode are _____.
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- 2) In cascaded mode, the number of vectored interrupts provided by 8259 is _____.
 a) 4
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- 3) Which interrupt has highest priority?
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Seat No.	
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Set	S
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S.E. (Part - II) (Old) (CGPA) Examination Nov/Dec-2019
COMPUTER SCIENCE & ENGINEERING
MICROPROCESSORS

Day & Date: Monday, 25-11-2019
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 - 1) XTHL
 - 2) RLC
- d) Describe operation of Ready, TRAP, INTR and HOLD pins of 8085 microprocessor.

Q.3 Attempt any two. **16**

- a) Write assembly language program for arranging 10 numbers in descending order. Also explain the instructions used in program.
- b) Explain various addressing modes of 8085 with suitable example.
- c) Draw and explain internal architecture of 8085.

Section - II

Q.4 Attempt any four. **12**

- a) Explain Hardware and Software Interrupts of microprocessor.
- b) Explain with neat diagram 8255 PPI.
- c) Explain 8257 DMA controller.
- d) Differentiate 80286 and 80386 microprocessors.

Q.5 Attempt any two. **16**

- a) Define the term Interrupt. What are the types of Interrupts? Explain in detail types of interrupts.
- b) Draw and explain 8251 USARY in detail.
- c) Draw and explain 8259 programmable interrupt controller.

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA STRUCTURES

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

Max. Marks: 56

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

Section – I

Q.2 Attempt any four questions. **12**

- a) Explain stack with its operation. List out application of stack.
- b) Evaluate the following postfix expression $2\ 3\ 1\ * + 9 -$
- c) WAP to implement stack using linked list.
- d) Explain priority queue.
- e) Create a binary search tree of following sequence.

50,30,60,38,35,55,22,59,94,13,98

Q.3 Attempt any one questions. **08**

- a) What is Threaded- Binary Tree? Explain with example.
 - 1) Left-in Threaded Binary Tree
 - 2) Right-in Threaded Binary Tree
 - 3) Fully Threaded Binary Tree
- b) Explain doubly linked list with insertion and deletion operation.

Q.4 How to convert infix expression into postfix expression. Convert following infix expression into postfix $(A+B)/(C-D)$. **08**

Section – II

Q.5 Attempt any four questions. **12**

- a) Define the following terms
 - 1) Graph
 - 2) Cyclic graph
 - 3) Isolated node
- b) Write a note on topological sorting.
- c) Explain AVL tree.
- d) Construct B-tree of order 5
10,40,30,35,20,15,50,28,25,5,60,9,12
- e) How to represent a graph using adjacency matrix and adjacency list.

Q.6 Solve any one question: **08**

- a) Explain Single and Double rotation of AVL tree with example.
- b) Explain Dijkstra's algorithm with example.

Q.7 Explain graph traversal methods with example. **08**

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA STRUCTURES

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Max. Marks: 56

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Section – I

Q.2 Attempt any four questions. 12

- Explain stack with its operation. List out application of stack.
- Evaluate the following postfix expression $2\ 3\ 1\ * + 9 -$
- WAP to implement stack using linked list.
- Explain priority queue.
- Create a binary search tree of following sequence.

50,30,60,38,35,55,22,59,94,13,98

Q.3 Attempt any one questions. 08

- What is Threaded- Binary Tree? Explain with example.
 - Left-in Threaded Binary Tree
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Q.4 How to convert infix expression into postfix expression. Convert following infix expression into postfix $(A+B)/(C-D)$. 08

Section – II

Q.5 Attempt any four questions. 12

- Define the following terms
 - Graph
 - Cyclic graph
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- Explain AVL tree.
- Construct B-tree of order 5

10,40,30,35,20,15,50,28,25,5,60,9,12
- How to represent a graph using adjacency matrix and adjacency list.

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- Explain Dijkstra's algorithm with example.

Q.7 Explain graph traversal methods with example. 08

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA STRUCTURES

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

Max. Marks: 70

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) In 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
- 2) In a circular linked list _____.

a) Components are all linked together in some sequential manner.
b) there is no beginning and no end.
c) Components are arranged hierarchically
d) Forward and backward traversal within the list is permitted.
- 3) Which of the following operations is performed more efficiently by doubly linked list than by singly linked list?

a) Deleting a node whose location is given
b) Searching of an unsorted list for a given item
c) Inverting a node after the node with given location
d) Traversing a list to process each node
- 4) The pre-order and post order traversal of a Binary Tree generates the same output. The tree can have maximum _____.

a) Three nodes	b) Two nodes
c) One node	d) Any number of nodes
- 5) In order to get the contents of a Binary search tree in ascending order, one has to traverse it in _____.

a) pre-order	b) in-order
c) post order	d) not possible
- 6) Consider a B+-tree in which the maximum number of keys in a node is 5. What is the minimum number of keys in any non-root node?

a) 1	b) 2
c) 3	d) 4
- 7) Inorder to get the information stored in a BST in the descending order, one should traverse it in which of the following order?

a) left, root, right	b) root, left, right
c) right, root, left	d) right, left, root

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019
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Section – I

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- Evaluate the following postfix expression $2\ 3\ 1\ * + 9 -$
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- Explain priority queue.
- Create a binary search tree of following sequence.

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 - Left-in Threaded Binary Tree
 - Right-in Threaded Binary Tree
 - Fully Threaded Binary Tree
- Explain doubly linked list with insertion and deletion operation.

Q.4 How to convert infix expression into postfix expression. Convert following infix expression into postfix $(A+B)/(C-D)$. 08

Section – II

Q.5 Attempt any four questions. 12

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 - Isolated node
- Write a note on topological sorting.
- Explain AVL tree.
- Construct B-tree of order 5

10,40,30,35,20,15,50,28,25,5,60,9,12
- How to represent a graph using adjacency matrix and adjacency list.

Q.6 Solve any one question: 08

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- Explain Dijkstra's algorithm with example.

Q.7 Explain graph traversal methods with example. 08

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Consider a B+-tree in which the maximum number of keys in a node is 5. What is the minimum number of keys in any non-root node?

a) 1	b) 2
c) 3	d) 4
- 2) Inorder to get the information stored in a BST in the descending order, one should traverse it in which of the following order?

a) left, root, right	b) root, left, right
c) right, root, left	d) right, left, root
- 3) The number of edges in a simple, n-vertex, complete graph is

a) $n*(n-2)$	b) $n*(n-1)$
c) $n*(n-1)/2$	d) $n*(n-1)*(n-2)$
- 4) For an undirected graph with n vertices and e edges, the sum of the degree of each vertex is equal to

a) 2n	b) $(2n-1)/2$
c) 2e	d) $e^2/2$
- 5) The preorder traversal sequence of a binary search tree is 30, 20, 10, 15, 25, 23, 39, 35, 42. Which one of the following is the postorder traversal sequence of the same tree?

a) 10, 20, 15, 23, 25, 35, 42, 39, 30
b) 15, 10, 25, 23, 20, 42, 35, 39, 30
c) 15, 20, 10, 23, 25, 42, 35, 39, 30
d) 15, 10, 23, 25, 20, 35, 42, 39, 30
- 6) The postfix form of $A * B + C / D$ is _____.

a) $AB * CD / +$	b) $A * BCD / +$
c) $ABCD * / +$	d) None
- 7) In _____ tree leaf node is connected to next leaf node

a) AVL	b) Binary Search Tree
c) B	d) B+
- 8) In _____ Tree, all the null pointers are replaced by their corresponding threads that point back to their inorder successor in the binary tree.

a) Binary tree	b) B-Tree
c) B+ Tree	d) Binary threaded Tree

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA STRUCTURES

Day & Date: Tuesday, 26-11-2019
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Max. Marks: 56

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Section – I

Q.2 Attempt any four questions. 12

- Explain stack with its operation. List out application of stack.
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- WAP to implement stack using linked list.
- Explain priority queue.
- Create a binary search tree of following sequence.

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 - Left-in Threaded Binary Tree
 - Right-in Threaded Binary Tree
 - Fully Threaded Binary Tree
- Explain doubly linked list with insertion and deletion operation.

Q.4 How to convert infix expression into postfix expression. Convert following infix expression into postfix $(A+B)/(C-D)$. 08

Section – II

Q.5 Attempt any four questions. 12

- Define the following terms
 - Graph
 - Cyclic graph
 - Isolated node
- Write a note on topological sorting.
- Explain AVL tree.
- Construct B-tree of order 5

10,40,30,35,20,15,50,28,25,5,60,9,12
- How to represent a graph using adjacency matrix and adjacency list.

Q.6 Solve any one question: 08

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- Explain Dijkstra's algorithm with example.

Q.7 Explain graph traversal methods with example. 08

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

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

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Duration: 30 Minutes

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

- Page 1 of 12

- 9) The _____ layer is split into a SAR sub layer and CS sub layer in Asynchronous Transfer Mode.
- | | |
|--------|------------------|
| a) AAL | b) Physical |
| c) ATM | d) None of these |
- 10) Which of the following is required to communicate between two computers?
- | | |
|---------------------------|-----------------|
| a) Transmission medium | b) Protocol |
| c) Communication hardware | d) All of these |
- 11) An error detection code in which, code is remainder resulting from dividing the bits to be checked by a predetermined primary number.
- | | |
|----------------------------|------------------|
| a) Cyclic redundancy check | b) Checksum |
| c) Hamming code | d) none of these |
- 12) The Data link layer takes the data from _____ and encapsulate them into frames for transmission.
- | | |
|--------------------|----------------------|
| a) Network layer | b) Physical layer |
| c) Transport layer | d) Application layer |
- 13) IEEE 802.5 is known as _____.
- | | |
|---------------|--------------|
| a) Ethernet | b) Token Bus |
| c) Token Ring | d) DQDB |
- 14) _____ is a loss of energy as the signal propagates outwards.
- | | |
|----------------|------------------|
| a) Attenuation | b) Noise |
| c) Distortion | d) None of these |

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S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA COMMUNICATION

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

Max. Marks: 56

- Instructions:** 1) All questions are compulsory.
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Section - I

- Q.2 Attempt any three of the following questions. 12**
a) Compare OSI and TCP models.
b) Explain different Data Link Layer design issues.
c) Uses of Computer Network.
d) Explain Simplex Stop-and-Wait ARQ Protocol.
- Q.3 Attempt any one of the following questions. 08**
a) Explain Cyclic Redundancy Check method with a suitable example.
b) Explain Go-back-N protocol with diagram.
- Q.4 Explain in detail about OSI reference layer. 08**

Section - II

- Q.5 Attempt any three of the following questions 12**
a) Explain ALOHA and its types in detail.
b) Explain shortest path routing algorithm with diagram.
c) What is Variable Length Blocks in Classless Addressing?
d) Explain CSMA/CD with diagram.
- Q.6 Attempt any one. 08**
a) Explain IEEE std. 802.5. Explain its Frame Format in detail.
b) Explain minimum any two routing algorithms.
- Q.7 Explain IPv4 in detail. 08**

Seat No.	
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Set Q

S.E. (Part – II) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DATA COMMUNICATION

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

Max. Marks: 70

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Which one of the following task is not done by data link layer?
 - a) Framing
 - b) Error control
 - c) Flow control
 - d) Channel control
- 2) The _____ layer is split into a SAR sub layer and CS sub layer in Asynchronous Transfer Mode.
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 - b) Physical
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- 5) The Data link layer takes the data from _____ and encapsulate them into frames for transmission.
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 - c) Transport layer
 - d) Application layer
- 6) IEEE 802.5 is known as _____.
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 - b) Token Bus
 - c) Token Ring
 - d) DQDB
- 7) _____ is a loss of energy as the signal propagates outwards.
 - a) Attenuation
 - b) Noise
 - c) Distortion
 - d) None of these
- 8) File transfer, mail transfer are the function of _____ layer.
 - a) Application
 - b) DLL
 - c) Transport
 - d) session
- 9) Which of the transport layer protocol is connectionless?
 - a) UDP
 - b) TCP
 - c) FTP
 - d) NVT

- 10) _____ protocol is used for mapping physical addresses to logical address.
- a) ARP
 - b) OSPF
 - c) RARP
 - d) SMTP
- 11) _____ protocol is used for sending mail.
- a) CSMA
 - b) CDMA
 - c) SMTP
 - d) OSPF
- 12) The term 'duplex' refers to the ability of the data receiving stations to echo back a confirming message to the sender. In full duplex data transmission, both the sender and receiver.
- a) Cannot talk at once
 - b) can receive and send data simultaneously
 - c) Can send or receive data one at a time
 - d) Can do one way transmission only
- 13) _____ have a single communication channel that is shared by all the machines on the network.
- a) Point to point
 - b) broadcast
 - c) Unicast
 - d) None of these
- 14) A _____ is an agreement between the communicating parties on how communication is to proceed.
- a) Protocol
 - b) algorithm
 - c) Internet
 - d) None of these

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- Q.4 Explain in detail about OSI reference layer. 08**

Section - II

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c) What is Variable Length Blocks in Classless Addressing?
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- Q.6 Attempt any one. 08**
a) Explain IEEE std. 802.5. Explain its Frame Format in detail.
b) Explain minimum any two routing algorithms.
- Q.7 Explain IPv4 in detail. 08**

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Computer Science & Engineering
DATA COMMUNICATION

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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- 1) The term 'duplex' refers to the ability of the data receiving stations to echo back a confirming message to the sender. In full duplex data transmission, both the sender and receiver.
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| a) Ethernet | b) Token Bus |
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| a) Attenuation | b) Noise |
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- 11) File transfer, mail transfer are the function of _____ layer.
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| a) Application | b) DLL |
| c) Transport | d) session |
- 12) Which of the transport layer protocol is connectionless?
- | | |
|--------|--------|
| a) UDP | b) TCP |
| c) FTP | d) NVT |
- 13) _____ protocol is used for mapping physical addresses to logical address.
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|---------|---------|
| a) ARP | b) OSPF |
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|---------|---------|
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| c) SMTP | d) OSPF |

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Computer Science & Engineering
DATA COMMUNICATION

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Section - I

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- Q.5 Attempt any three of the following questions 12**
a) Explain ALOHA and its types in detail.
b) Explain shortest path routing algorithm with diagram.
c) What is Variable Length Blocks in Classless Addressing?
d) Explain CSMA/CD with diagram.
- Q.6 Attempt any one. 08**
a) Explain IEEE std. 802.5. Explain its Frame Format in detail.
b) Explain minimum any two routing algorithms.
- Q.7 Explain IPv4 in detail. 08**

Seat No.	
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Set	P
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

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

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The Process Control Block is _____.
a) Process type variable b) Data Structure
c) a secondary storage section d) a Block in memory
- 2) What is a long-term scheduler?
a) It selects which process has to be brought into the ready queue
b) It selects which process has to be executed next and allocates CPU
c) It selects which process to remove from memory by swapping
d) None of these
- 3) When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called _____.
a) dynamic condition b) race condition
c) essential condition d) critical condition
- 4) With _____ only one process can execute at a time; mean while all other process are waiting for the processor. With _____ more than one process can be running simultaneously each on a different processor.
a) Multiprocessing, Multiprogramming
b) Multiprogramming, Uniprocessing
c) Multiprogramming, Multiprocessing
d) Uniprogramming, Multiprocessing
- 5) Semaphore is a/an _____ to solve the critical section problem.
a) hardware for a system b) special program for a system
c) integer variable d) None of these
- 6) The most optimal scheduling algorithm is _____.
a) FCFS - First come First served
b) SJF - Shortest Job First
c) RR - Round Robin
d) None of these
- 7) 'Aging' is _____.
a) keeping track of cache contents
b) keeping track of what pages are currently residing in memory
c) keeping track of how many times a given page is referenced
d) increasing the priority of jobs to ensure termination in a finite time

- 8) One way to ensure that the circular wait condition never holds is to _____.
a) Impose a total ordering of all resource types and to determine whether one precedes another in the ordering.
b) to never let a process acquire resources that are held by other processes
c) to let a process wait for only one resource at a time
d) All of these
- 9) Which of the following condition is required for deadlock to be possible?
a) mutual exclusion
b) a process may hold allocated resources while awaiting assignment of other resources
c) no resource can be forcibly removed from a process holding it
d) all of the mentioned
- 10) The circular wait condition can be prevented by _____.
a) defining a linear ordering of resources types
b) using thread
c) using pipes
d) all of the mentioned
- 11) In FIFO page replacement algorithm when a page must be replaced _____.
a) oldest page is chosen b) newest page is chosen
c) random page is chosen d) none of the mentioned
- 12) The address of a page table in memory is pointed by _____.
a) stack pointer b) page table base register
c) page register d) program counter
- 13) A process is thrashing if.
a) it is spending more time paging than executing
b) it is spending less time paging than executing
c) page fault occurs
d) swapping can not take place
- 14) The hardware mechanism that allows a device to notify the CPU is called _____.
a) polling b) interrupt
c) driver d) controlling

Seat No.	
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

Day & Date: Friday, 06-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Solve any three.** **12**

- Differentiate between Batch operating system and multi-programmed batch operating systems.
- Define inter-process communication. Explain the reasons for using such environment.
- Describe Pre-emptive and Non-preemptive scheduling algorithms.
- What is operating system? Explain its functions.
- List and explain different scheduling criteria.

Q.3 Solve any two. **16**

- Consider the following set of processes with arrival time and burst time in milliseconds as given below.

P No.	BT	Priority
1	10	3
2	1	1
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- Draw Gantt Chart illustrating the execution of processes using Pre-emptive Priority scheduling (smaller number represents higher priority).
 - Calculate average waiting time for the above scheduling algorithm.
 - Calculate average Turn around for the above time scheduling algorithm.
- Describe bounded buffer producer-consumer problem. Provide its solution using semaphore.
 - What is critical section? Provide two-process solution using Algorithm 1, Algorithm 2, Algorithm 3.

Section – II**Q.4 Solve any Three.** **12**

- How will you prevent deadlock? Explain.
- Explain Contiguous memory allocation with an example.
- Explain the steps for page fault handling.
- Define :
 - Memory management Unit
 - TLB
 - Page and frame
 - Pager or Lazy Swapper

Q.5 Attempt any two.

- a)** Explain page replacement policies with suitable example.
(Use frame size at least 3)
- b)** Explain Banker's algorithm with suitable example.
- c)** What are the responsibilities of DMA Controller and the advantages of DMA? Explain the steps process to perform DMA transfer.

Seat No.	
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Set Q

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

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

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

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 - a) Impose a total ordering of all resource types and to determine whether one precedes another in the ordering.
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- 7) The hardware mechanism that allows a device to notify the CPU is called _____.
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- 8) The Process Control Block is _____.
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a) It selects which process has to be brought into the ready queue
b) It selects which process has to be executed next and allocates CPU
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a) dynamic condition b) race condition
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b) Multiprogramming, Uniprocessing
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

Day & Date: Friday, 06-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Solve any three.** **12**

- Differentiate between Batch operating system and multi-programmed batch operating systems.
- Define inter-process communication. Explain the reasons for using such environment.
- Describe Pre-emptive and Non-preemptive scheduling algorithms.
- What is operating system? Explain its functions.
- List and explain different scheduling criteria.

Q.3 Solve any two. **16**

- Consider the following set of processes with arrival time and burst time in milliseconds as given below.

P No.	BT	Priority
1	10	3
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- Draw Gantt Chart illustrating the execution of processes using Pre-emptive Priority scheduling (smaller number represents higher priority).
 - Calculate average waiting time for the above scheduling algorithm.
 - Calculate average Turn around for the above time scheduling algorithm.
- Describe bounded buffer producer-consumer problem. Provide its solution using semaphore.
 - What is critical section? Provide two-process solution using Algorithm 1, Algorithm 2, Algorithm 3.

Section – II**Q.4 Solve any Three.** **12**

- How will you prevent deadlock? Explain.
- Explain Contiguous memory allocation with an example.
- Explain the steps for page fault handling.
- Define :
 - Memory management Unit
 - TLB
 - Page and frame
 - Pager or Lazy Swapper

Q.5 Attempt any two.

- a)** Explain page replacement policies with suitable example.
(Use frame size at least 3)
- b)** Explain Banker's algorithm with suitable example.
- c)** What are the responsibilities of DMA Controller and the advantages of DMA? Explain the steps process to perform DMA transfer.

Seat No.	
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Set	R
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

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

Max. Marks: 70

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

Day & Date: Friday, 06-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Solve any three.** **12**

- Differentiate between Batch operating system and multi-programmed batch operating systems.
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- Describe Pre-emptive and Non-preemptive scheduling algorithms.
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Q.3 Solve any two. **16**

- Consider the following set of processes with arrival time and burst time in milliseconds as given below.

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Section – II**Q.4 Solve any Three.** **12**

- How will you prevent deadlock? Explain.
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- Define :
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

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

Max. Marks: 70

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
OPERATING SYSTEM CONCEPTS

Day & Date: Friday, 06-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
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Section – I**Q.2 Solve any three.** **12**

- Differentiate between Batch operating system and multi-programmed batch operating systems.
- Define inter-process communication. Explain the reasons for using such environment.
- Describe Pre-emptive and Non-preemptive scheduling algorithms.
- What is operating system? Explain its functions.
- List and explain different scheduling criteria.

Q.3 Solve any two. **16**

- Consider the following set of processes with arrival time and burst time in milliseconds as given below.

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 - What is critical section? Provide two-process solution using Algorithm 1, Algorithm 2, Algorithm 3.

Section – II**Q.4 Solve any Three.** **12**

- How will you prevent deadlock? Explain.
- Explain Contiguous memory allocation with an example.
- Explain the steps for page fault handling.
- Define :
 - Memory management Unit
 - TLB
 - Page and frame
 - Pager or Lazy Swapper

Q.5 Attempt any two.

- a)** Explain page replacement policies with suitable example.
(Use frame size at least 3)
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- c)** What are the responsibilities of DMA Controller and the advantages of DMA? Explain the steps process to perform DMA transfer.

Seat No.	
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Set **P**

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Which of the following statement is TRUE?
 - a) Natural languages are formal languages
 - b) Formal languages are both natural & PL s
 - c) PLs are formal languages
 - d) None of above
- 2) Which of the following statement is NOT TRUE?
 - a) Binding time is the time at which a binding is performed.
 - b) Language implementation time is the time when language translator is designed.
 - c) Binding is association of one program with another program.
 - d) None of above
- 3) Which one of the following is a operator grammar _____.
 - a) $A ::= CD + E \mid a$
 - b) $A ::= CAD \mid C+D$
 - c) $A ::= C + D \mid C * D \mid a$
 - d) None of above
- 4) Consider the following assembly code?

```

START 101
READ  N
PRINT N
N     DS     01

```

What is equivalent machine code?

- a) 101) + 09 0, 103
 102) + 10 0, 103
 103)
- b) 101) + 08 0, 103
 102) + 10 0, 103
 103)
- c) 101) + 09 0, 104
 102) + 11 0, 103
 103)
- d) 101) + 07 0, 103
 102) + 10 0, 103
 103)

- 5) Consider the following assembly code

```

START      100
MOVER      AREG, = '5'
ADD        AREG, B
MOVEM      AREG, C
STOP
B          DC      '8'
C          DS      1
END

```

The content of literal table for above code will be _____.

a)

Literal_Table_Pointer	Literal	Address
1	= '5'	106
2		

b)

Literal_Table_Pointer	Literal	Address
1	= '5'	105
2		

c)

Literal_Table_Pointer	Literal	Address
1	= '5'	104
2		

d) None of above

- 6) Consider the macro definition.

```

MACRO
INCR_D      &MEM_VAL=,&INCR_VAL=,&REG=AREG
MOVER      &REG, &MEM_VAL
ADD        &RREG, &INCR_VAL
MOVEM      &REG, &INCR_VAL
MEND

```

Call of this macro can be _____.

- a) INCR_D MEM_VAL=A, INCR_VAL=B, REG=AREG
b) INCR_D INCR_VAL=B, MEM_VAL=A
c) INCR_D INCR_VAL=B, MEM_VAL=A, REG=BREG
d) All of these

- 7) The statement used to perform auxiliary function is _____.

- a) model statement b) conditional statement
c) pre-processor statement d) prototypes statement

- 8) Overlays are used to _____.

- a) Reduce execution time b) Reduce code
c) Reduce memory requirement d) Reduce linking requirement

- 9) The register descriptor has the fields _____.

- a) Name
b) Address of CPU register or memory word
c) Addressability
d) None of the above

- 10) In basic block _____.
a) Loops are included
b) Control can be transferred from any part of program
c) First statement is destination of a transfer of control statement
d) All of the above
- 11) If translated origin and linked origin are different, then relocation is performed by _____.
a) Linker
b) Loader
c) Translator
d) All of these
- 12) In loaders track or each segments assigned address is maintained by _____.
a) Initial PLA
b) PLA
c) External Symbol table
d) None of the above
- 13) In absolute loading scheme relocation done by _____.
a) Programmer
b) Linker
c) Loader
d) Assembler
- 14) Binary symbolic subroutine loader is example of _____.
a) Absolute loader
b) Compile-and-go loader
c) Relocating loader
d) Direct linking loader

Seat No.	
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Set	P
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

- Q.2 Solve any three.** **12**
- What is lexical & semantic expansion? Explain with example, how macro & subroutine differ?
 - Define positional and keyword parameter with example.
 - Explain assembler directives START, END, ORIGIN, EQU, and LTORG with example for each.
 - Explain different types of assembly language statement.
 - Explain in detail front end of toy compiler with the help of examples.
- Q.3 Solve any one** **08**
- Discuss pass-I of Two pass assembler. Write an algorithm & display the content of different data structure after pass-I.
 - List and explain advanced macro facilities.
- Q.4 Explain in detail fundamental language processing activities.** **08**
- Q.5 Solve any three** **12**
- List PL features which contribute to aspects of compilation and explain in brief.
 - Define and Explain following control flow concepts
 - Predecessors and successors
 - Paths
 - Ancestors and descendants
 - Dominators and post-dominators
 - Describe program execution steps in detail with proper schematic
 - What is overlay structured program? Explain linking of overlays with example.
 - Discuss general loading scheme with advantages and disadvantages.
- Q.6 Solve any one** **08**
- Explain global common sub expression elimination with the help of data flow analysis.
 - Define and Explain following concepts used in linking.
 - EXTRN and ENTRY statements
 - Binary program
 - Object module with example
- Q.7 Explain design of Direct linking loader.** **08**

Seat No.	
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Set	Q
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
 Time: 02:30 PM To 05:30 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Overlays are used to _____.
 a) Reduce execution time b) Reduce code
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 a) Name
 b) Address of CPU register or memory word
 c) Addressability
 d) None of the above
- 3) In basic block _____.
 a) Loops are included
 b) Control can be transferred from any part of program
 c) First statement is destination of a transfer of control statement
 d) All of the above
- 4) If translated origin and linked origin are different, then relocation is performed by _____.
 a) Linker b) Loader
 c) Translator d) All of these
- 5) In loaders track or each segments assigned address is maintained by _____.
 a) Initial PLA b) PLA
 c) External Symbol table d) None of the above
- 6) In absolute loading scheme relocation done by _____.
 a) Programmer b) Linker
 c) Loader d) Assembler
- 7) Binary symbolic subroutine loader is example of _____.
 a) Absolute loader b) Compile-and-go loader
 c) Relocating loader d) Direct linking loader
- 8) Which of the following statement is TRUE?
 a) Natural languages are formal languages
 b) Formal languages are both natural & PL s
 c) PLs are formal languages
 d) None of above

- 9) Which of the following statement is NOT TRUE?
- Binding time is the time at which a binding is performed.
 - Language implementation time is the time when language translator is designed.
 - Binding is association of one program with another program.
 - None of above
- 10) Which one of the following is a operator grammar _____.
- $A ::= CD + E \mid a$
 - $A ::= CAD \mid C+D$
 - $A ::= C + D \mid C * D \mid a$
 - None of above

- 11) Consider the following assembly code?

```

START 101
READ  N
PRINT  N
N      DS      01

```

What is equivalent machine code?

- 101) + 09 0, 103
102) + 10 0, 103
103)
 - 101) + 08 0, 103
102) + 10 0, 103
103)
 - 101) + 09 0, 104
102) + 11 0, 103
103)
 - 101) + 07 0, 103
102) + 10 0, 103
103)
- 12) Consider the following assembly code

```

START      100
MOVER      AREG, = '5'
ADD        AREG, B
MOVEM      AREG, C
STOP
B          DC      '8'
C          DS      1
END

```

The content of literal table for above code will be _____.

- a)

Literal_Table_Pointer	Literal	Address
1	= '5'	106
2		

- b)

Literal_Table_Pointer	Literal	Address
1	= '5'	105
2		

- c)

Literal_Table_Pointer	Literal	Address
1	= '5'	104
2		

- d) None of above

- 13) Consider the macro definition.

```
MACRO
INCR_D      &MEM_VAL=,&INCR_VAL=,&REG=AREG
MOVER      &REG, &MEM_VAL
ADD        &RREG, &INCR_VAL
MOVEM      &REG, &INCR_VAL
MEND
```

Call of this macro can be _____.

- a) INCR_D MEM_VAL=A, INCR_VAL=B, REG=AREG
 - b) INCR_D INCR_VAL=B, MEM_VAL=A
 - c) INCR_D INCR_VAL=B, MEM_VAL=A, REG=BREG
 - d) All of these
- 14) The statement used to perform auxiliary function is _____.
- a) model statement
 - b) conditional statement
 - c) pre-processor statement
 - d) prototypes statement

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

- Q.2 Solve any three. 12**
- What is lexical & semantic expansion? Explain with example, how macro & subroutine differ?
 - Define positional and keyword parameter with example.
 - Explain assembler directives START, END, ORIGIN, EQU, and LTORG with example for each.
 - Explain different types of assembly language statement.
 - Explain in detail front end of toy compiler with the help of examples.
- Q.3 Solve any one 08**
- Discuss pass-I of Two pass assembler. Write an algorithm & display the content of different data structure after pass-I.
 - List and explain advanced macro facilities.
- Q.4 Explain in detail fundamental language processing activities. 08**
- Q.5 Solve any three 12**
- List PL features which contribute to aspects of compilation and explain in brief.
 - Define and Explain following control flow concepts
 - Predecessors and successors
 - Paths
 - Ancestors and descendants
 - Dominators and post-dominators
 - Describe program execution steps in detail with proper schematic
 - What is overlay structured program? Explain linking of overlays with example.
 - Discuss general loading scheme with advantages and disadvantages.
- Q.6 Solve any one 08**
- Explain global common sub expression elimination with the help of data flow analysis.
 - Define and Explain following concepts used in linking.
 - EXTRN and ENTRY statements
 - Binary program
 - Object module with example
- Q.7 Explain design of Direct linking loader. 08**

Seat No.	
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

- Instructions:** 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) Consider the following assembly code

```

START      100
MOVER      AREG, = '5'
ADD        AREG, B
MOVEM      AREG, C
STOP
B          DC      '8'
C          DS      1
END
  
```

The content of literal table for above code will be _____.

- a)

Literal_Table_Pointer	Literal	Address
1	= '5'	106
2		

- b)

Literal_Table_Pointer	Literal	Address
1	= '5'	105
2		

- c)

Literal_Table_Pointer	Literal	Address
1	= '5'	104
2		

- d) None of above

- 2) Consider the macro definition.

```

MACRO
INCR_D      &MEM_VAL=,&INCR_VAL=,&REG=AREG
MOVER      &REG, &MEM_VAL
ADD        &RREG, &INCR_VAL
MOVEM      &REG, &INCR_VAL
MEND
  
```

Call of this macro can be _____.

- a) INCR_D MEM_VAL=A, INCR_VAL=B, REG=AREG
 b) INCR_D INCR_VAL=B, MEM_VAL=A
 c) INCR_D INCR_VAL=B, MEM_VAL=A, REG=BREG
 d) All of these

- 3) The statement used to perform auxiliary function is _____.
 - a) model statement
 - b) conditional statement
 - c) pre-processor statement
 - d) prototypes statement
- 4) Overlays are used to _____.
 - a) Reduce execution time
 - b) Reduce code
 - c) Reduce memory requirement
 - d) Reduce linking requirement
- 5) The register descriptor has the fields _____.
 - a) Name
 - b) Address of CPU register or memory word
 - c) Addressability
 - d) None of the above
- 6) In basic block _____.
 - a) Loops are included
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 - d) Assembler
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 - c) Relocating loader
 - d) Direct linking loader
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 - c) PLs are formal languages
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- 12) Which of the following statement is NOT TRUE?
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 - b) $A ::= CAD \mid C+D$
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```
START 101  
READ  N  
PRINT N  
N     DS     01
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What is equivalent machine code?

- a) 101) + 09 0, 103
102) + 10 0, 103
103)
- b) 101) + 08 0, 103
102) + 10 0, 103
103)
- c) 101) + 09 0, 104
102) + 11 0, 103
103)
- d) 101) + 07 0, 103
102) + 10 0, 103
103)

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

- Q.2 Solve any three.** **12**
- What is lexical & semantic expansion? Explain with example, how macro & subroutine differ?
 - Define positional and keyword parameter with example.
 - Explain assembler directives START, END, ORIGIN, EQU, and LTORG with example for each.
 - Explain different types of assembly language statement.
 - Explain in detail front end of toy compiler with the help of examples.
- Q.3 Solve any one** **08**
- Discuss pass-I of Two pass assembler. Write an algorithm & display the content of different data structure after pass-I.
 - List and explain advanced macro facilities.
- Q.4 Explain in detail fundamental language processing activities.** **08**
- Q.5 Solve any three** **12**
- List PL features which contribute to aspects of compilation and explain in brief.
 - Define and Explain following control flow concepts
 - Predecessors and successors
 - Paths
 - Ancestors and descendants
 - Dominators and post-dominators
 - Describe program execution steps in detail with proper schematic
 - What is overlay structured program? Explain linking of overlays with example.
 - Discuss general loading scheme with advantages and disadvantages.
- Q.6 Solve any one** **08**
- Explain global common sub expression elimination with the help of data flow analysis.
 - Define and Explain following concepts used in linking.
 - EXTRN and ENTRY statements
 - Binary program
 - Object module with example
- Q.7 Explain design of Direct linking loader.** **08**

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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) In basic block _____.
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 - b) Control can be transferred from any part of program
 - c) First statement is destination of a transfer of control statement
 - d) All of the above
- 2) If translated origin and linked origin are different, then relocation is performed by _____.
 - a) Linker
 - b) Loader
 - c) Translator
 - d) All of these
- 3) In loaders track or each segments assigned address is maintained by _____.
 - a) Initial PLA
 - b) PLA
 - c) External Symbol table
 - d) None of the above
- 4) In absolute loading scheme relocation done by _____.
 - a) Programmer
 - b) Linker
 - c) Loader
 - d) Assembler
- 5) Binary symbolic subroutine loader is example of _____.
 - a) Absolute loader
 - b) Compile-and-go loader
 - c) Relocating loader
 - d) Direct linking loader
- 6) Which of the following statement is TRUE?
 - a) Natural languages are formal languages
 - b) Formal languages are both natural & PL s
 - c) PLs are formal languages
 - d) None of above
- 7) Which of the following statement is NOT TRUE?
 - a) Binding time is the time at which a binding is performed.
 - b) Language implementation time is the time when language translator is designed.
 - c) Binding is association of one program with another program.
 - d) None of above

- 9) Consider the following assembly code?

What is equivalent machine code?

- 10) Consider the following assembly code

The content of literal table for above code will be _____.

- d) None of above

- 11) Consider the macro definition.

```
MACRO
INCR_D      &MEM_VAL=,&INCR_VAL=,&REG=AREG
MOVER      &REG, &MEM_VAL
ADD        &RREG, &INCR_VAL
MOVEM      &REG, &INCR_VAL
MEND
```

Call of this macro can be _____.

- a) INCR_D MEM_VAL=A, INCR_VAL=B, REG=AREG
 - b) INCR_D INCR_VAL=B, MEM_VAL=A
 - c) INCR_D INCR_VAL=B, MEM_VAL=A, REG=BREG
 - d) All of these
- 12) The statement used to perform auxiliary function is _____.
- a) model statement
 - b) conditional statement
 - c) pre-processor statement
 - d) prototypes statement
- 13) Overlays are used to _____.
- a) Reduce execution time
 - b) Reduce code
 - c) Reduce memory requirement
 - d) Reduce linking requirement
- 14) The register descriptor has the fields _____.
- a) Name
 - b) Address of CPU register or memory word
 - c) Addressability
 - d) None of the above

Seat No.	
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
SYSTEM PROGRAMMING

Day & Date: Monday, 09-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

- Q.2 Solve any three. 12**
- What is lexical & semantic expansion? Explain with example, how macro & subroutine differ?
 - Define positional and keyword parameter with example.
 - Explain assembler directives START, END, ORIGIN, EQU, and LTORG with example for each.
 - Explain different types of assembly language statement.
 - Explain in detail front end of toy compiler with the help of examples.
- Q.3 Solve any one 08**
- Discuss pass-I of Two pass assembler. Write an algorithm & display the content of different data structure after pass-I.
 - List and explain advanced macro facilities.
- Q.4 Explain in detail fundamental language processing activities. 08**
- Q.5 Solve any three 12**
- List PL features which contribute to aspects of compilation and explain in brief.
 - Define and Explain following control flow concepts
 - Predecessors and successors
 - Paths
 - Ancestors and descendants
 - Dominators and post-dominators
 - Describe program execution steps in detail with proper schematic
 - What is overlay structured program? Explain linking of overlays with example.
 - Discuss general loading scheme with advantages and disadvantages.
- Q.6 Solve any one 08**
- Explain global common sub expression elimination with the help of data flow analysis.
 - Define and Explain following concepts used in linking.
 - EXTRN and ENTRY statements
 - Binary program
 - Object module with example
- Q.7 Explain design of Direct linking loader. 08**

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Set

P

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

Day & Date: Wednesday, 11-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

2) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The ports ranging from 1,024 to 49,151 are called _____ ports.
 - a) Well-known
 - b) Registered
 - c) Dynamic
 - d) None of these
- 2) Which of the following functions does UDP perform?
 - a) process-to-process communication
 - b) host-to-host communication
 - c) end-to-end reliable data delivery
 - d) None of the choices are correct
- 3) When the IP layer of a receiving host receives a datagram, _____.
 - a) delivery is complete
 - b) a transport layer protocol takes over
 - c) A header is added
 - d) none of the choices are correct
- 4) TCP sliding windows are _____ oriented.
 - a) Packet
 - b) Segment
 - c) Byte
 - d) None of the choices are correct
- 5) In TCP, the size of the send window is the _____ of rwnd and cwnd.
 - a) Maximum
 - b) Sum of
 - c) Minimum
 - d) None of the choices are correct
- 6) Which of the following does UDP guarantee?
 - a) Flow control
 - b) connection-oriented delivery
 - c) Error control
 - d) None of these
- 7) In the _____ algorithm the size of the congestion window increases exponentially until it reaches a threshold.
 - a) Congestion avoidance
 - b) Congestion detection
 - c) Slow start
 - d) None of the choices are correct
- 8) A special segment called a probe is sent by a sending TCP when the _____ timer goes off.
 - a) Transmission
 - b) Persistence
 - c) Keepalive
 - d) None of these
- 9) Information in a computer is stored in _____ byte order.
 - a) Host
 - b) Network
 - c) Server
 - d) None of these

- 10) An interface is a set of _____ designed to facilitate interaction between two entities.
- | | |
|-------------|------------------|
| a) Programs | b) Instructions |
| c) Rules | d) None of these |
- 11) If DHCP client and server are on different networks, there is a need for an intermediary called a _____.
- | | |
|------------------|-------------------|
| a) Second client | b) Primary server |
| c) Relay agent | d) None of these |
- 12) NVT uses two sets of characters, one for _____ and one for _____.
- | | |
|-----------------------|-------------------|
| a) Sending; receiving | b) Request; reply |
| c) Data; control | d) None of these |
- 13) To distinguish data from control characters, each sequence of control characters is preceded by a special control character called _____.
- | | |
|--------|------------------|
| a) ICA | b) IAC |
| c) AIC | d) None of these |
- 14) After sending the DHCPDISCOVER message, the client goes to the _____ state.
- | | |
|---------------|------------------|
| a) Selecting | b) Init |
| c) Requesting | d) None of these |

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Set	P
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

Day & Date: Wednesday, 11-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

Q.2 Answer any THREE from the following questions. 12

- a) Explain what is DHCP and DHCP packet format and operations of DHCP?
- b) Explain the concept of connection oriented concurrent server.
- c) Explain three-way handshaking in TCP connection.
- d) Describe DNS Query and DNS response message in detail.
- e) Describe following system calls.
 - 1) Bind
 - 2) Accept
 - 3) Listen
 - 4) Connect

Q.3 Answer any TWO from the following questions. 16

- a) What is DHCP? What is need of it? Explain concept of DHCP with transition diagram.
- b) Draw TCP segment format. Explain each field in detail.
- c) What is congestion window? Explain all congestion control policies used by TCP.

Section – II

Q.4 Answer any THREE from the following questions. 12

- a) Explain different OPTIONS provided by TELNET.
- b) Explain Out of Band Signaling and Escape characters concept of TELNET.
- c) List out in detail the 3 steps of FTP file transfer.
- d) Describe the following.
 - 1) Label
 - 2) Domain Name
 - 3) Domain
 - 4) Zone
 - 5) Root Server
- e) Write a note on TFTP.

Q.5 Answer any TWO from the following questions. 16

- a) Explain the architecture of Email along with neat diagrams of all scenarios.
- b) Explain all file systems of windows NT or Windows 2000.
- c) Describe Hypertext Transfer Protocol (HTTP).

Seat No.	
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Set Q

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

Day & Date: Wednesday, 11-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) A special segment called a probe is sent by a sending TCP when the _____ timer goes off.

a) Transmission	b) Persistence
c) Keepalive	d) None of these
- 2) Information in a computer is stored in _____ byte order.

a) Host	b) Network
c) Server	d) None of these
- 3) An interface is a set of _____ designed to facilitate interaction between two entities.

a) Programs	b) Instructions
c) Rules	d) None of these
- 4) If DHCP client and server are on different networks, there is a need for an intermediary called a _____.

a) Second client	b) Primary server
c) Relay agent	d) None of these
- 5) NVT uses two sets of characters, one for _____ and one for _____.

a) Sending; receiving	b) Request; reply
c) Data; control	d) None of these
- 6) To distinguish data from control characters, each sequence of control characters is preceded by a special control character called _____.

a) ICA	b) IAC
c) AIC	d) None of these
- 7) After sending the DHCPDISCOVER message, the client goes to the _____ state.

a) Selecting	b) Init
c) Requesting	d) None of these
- 8) The ports ranging from 1,024 to 49,151 are called _____ ports.

a) Well-known	b) Registered
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- 9) Which of the following functions does UDP perform?
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Seat No.	
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Set Q

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

Day & Date: Wednesday, 11-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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- c) Describe Hypertext Transfer Protocol (HTTP).

Seat No.	
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Set	R
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

Day & Date: Wednesday, 11-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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Duration: 30 Minutes

Marks: 14

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 - c) Requesting
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 - b) host-to-host communication
 - c) end-to-end reliable data delivery
 - d) None of the choices are correct
- 13) When the IP layer of a receiving host receives a datagram, ____.
- a) delivery is complete
 - b) a transport layer protocol takes over
 - c) A header is added
 - d) none of the choices are correct
- 14) TCP sliding windows are ____ oriented.
- a) Packet
 - b) Segment
 - c) Byte
 - d) None of the choices are correct

Seat No.	
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Set	R
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

Day & Date: Wednesday, 11-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

Q.2 Answer any THREE from the following questions. 12

- a) Explain what is DHCP and DHCP packet format and operations of DHCP?
- b) Explain the concept of connection oriented concurrent server.
- c) Explain three-way handshaking in TCP connection.
- d) Describe DNS Query and DNS response message in detail.
- e) Describe following system calls.
 - 1) Bind
 - 2) Accept
 - 3) Listen
 - 4) Connect

Q.3 Answer any TWO from the following questions. 16

- a) What is DHCP? What is need of it? Explain concept of DHCP with transition diagram.
- b) Draw TCP segment format. Explain each field in detail.
- c) What is congestion window? Explain all congestion control policies used by TCP.

Section – II

Q.4 Answer any THREE from the following questions. 12

- a) Explain different OPTIONS provided by TELNET.
- b) Explain Out of Band Signaling and Escape characters concept of TELNET.
- c) List out in detail the 3 steps of FTP file transfer.
- d) Describe the following.
 - 1) Label
 - 2) Domain Name
 - 3) Domain
 - 4) Zone
 - 5) Root Server
- e) Write a note on TFTP.

Q.5 Answer any TWO from the following questions. 16

- a) Explain the architecture of Email along with neat diagrams of all scenarios.
- b) Explain all file systems of windows NT or Windows 2000.
- c) Describe Hypertext Transfer Protocol (HTTP).

Seat No.	
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Day & Date: Wednesday, 11-12-2019
Time: 02:30 PM To 05:30 PM

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

MCQ/Objective Type Questions

Marks: 14

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

- Page 10 of 12

- 9) TCP sliding windows are _____ oriented.
- a) Packet
 - b) Segment
 - c) Byte
 - d) None of the choices are correct
- 10) In TCP, the size of the send window is the _____ of rwnd and cwnd.
- a) Maximum
 - b) Sum of
 - c) Minimum
 - d) None of the choices are correct
- 11) Which of the following does UDP guarantee?
- a) Flow control
 - b) connection-oriented delivery
 - c) Error control
 - d) None of these
- 12) In the _____ algorithm the size of the congestion window increases exponentially until it reaches a threshold.
- a) Congestion avoidance
 - b) Congestion detection
 - c) Slow start
 - d) None of the choices are correct
- 13) A special segment called a probe is sent by a sending TCP when the _____ timer goes off.
- a) Transmission
 - b) Persistence
 - c) Keepalive
 - d) None of these
- 14) Information in a computer is stored in _____ byte order.
- a) Host
 - b) Network
 - c) Server
 - d) None of these

Seat No.	
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Set	S
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER NETWORKS

Day & Date: Wednesday, 11-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

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Set No.	
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Day & Date: Friday,13-12-2019
Time: 02:30 PM To 05:30 PM

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

2) Figures to the right indicate full marks.

Duration: 30 Minutes

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

- Page 1 of 20

- 8) The correct matching for the following pairs is _____.
A. All pair shortest path 1. Greedy Method
B. Prims algorithm 2. Dynamic Programming
C. Quick sort 3. Backtracking
D. Hamilton Cycle 4. Divide and Conquer
a) A-3, B-2, C-4, D-1 b) A-4, B-3, C-1, D-2
c) A-2, B-1, C-4, D-3 d) None
- 9) In flow shop scheduling OFT stands for _____.
a) Optimal Find Time b) Organized Finish Time
c) Optimal Finish Time d) None
- 10) Dynamic programming works on principle of _____.
a) optimality b) feasible solutions
c) constraint d) None
- 11) In NXN Queens's problems, the constraints are "No Two queens are placed" at _____.
a) Same row b) Same column
c) Same diagonal d) All of the above
- 12) Graph coloring problem is which type of algorithm design strategy.
a) Dynamic Programming b) Greedy Method
c) Backtracking d) None
- 13) Hamiltonian Circuit problem belongs to which of the class?
a) P b) NP
c) Linear d) None of the mentioned
- 14) The hardest of NP problems can be _____.
a) NP-complete b) NP-hard
c) P d) None of the mentioned

Seat
No.

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Solve any three questions.****12**

- Write a note on Asymptotic Notations with example.
- Explain time and space complexity with suitable example.
- Prove that time complexity of Binary search is $O(\log n)$.
- Find an optimal solution to knapsack problem using greedy method.
 $M=20, n=3$
 $(p_1, \dots, p_3) = \{25, 24, 15\}$ and $(w_1, \dots, w_3) = \{18, 15, 10\}$

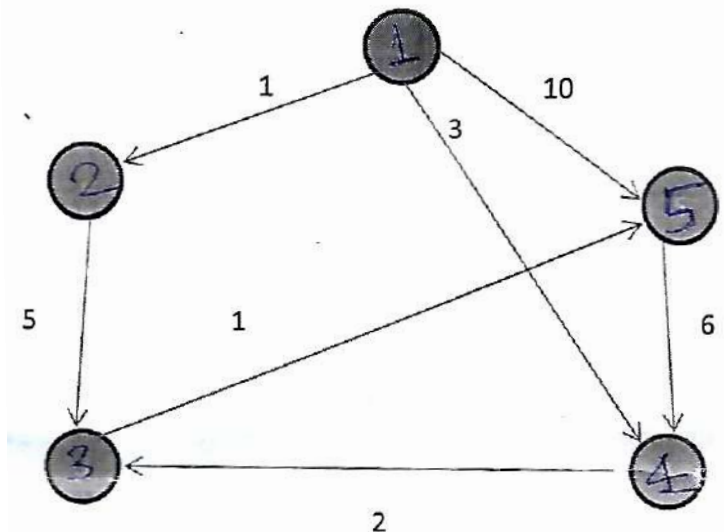
Q.3 Solve any one question.**08**

Sort the following elements using Quick Sort.

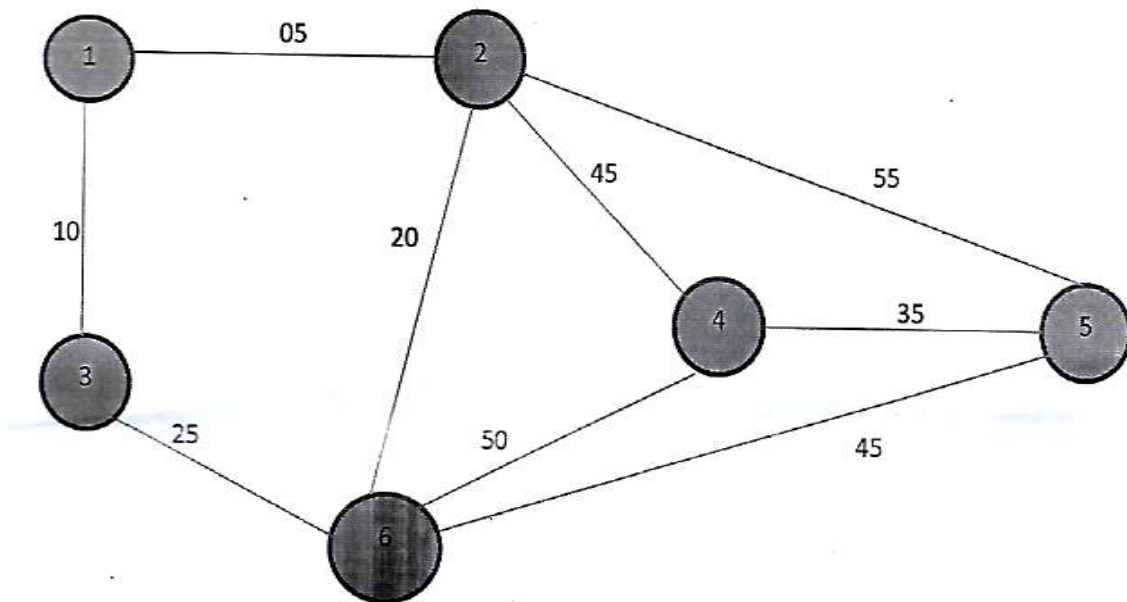
45, 36, 15, 92, 35, 71, 20

OR

Find the single source shortest path of following graph. Take vertex 1 as vertex.



Q.4 Find minimum weight /cost spanning tree using Kruskal algorithm.



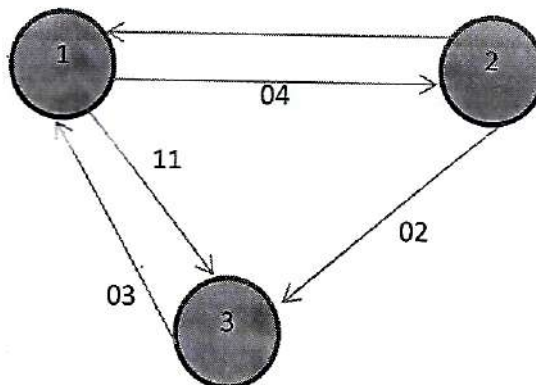
Section – II

Q.5 Solve any three questions.

12

- Solve 0/1 Knapsack problem using dynamic programming.
 $M=8$, $n=4$ profit= $\{1,2,5,6\}$ and weight= $\{2,3,4,5\}$
- Find all pair shortest path using dynamic programming.

06



- Explain Hamiltonian Cycle with suitable example.
- Write brief note on P, NP, NP -complete and NP – Hard problems.

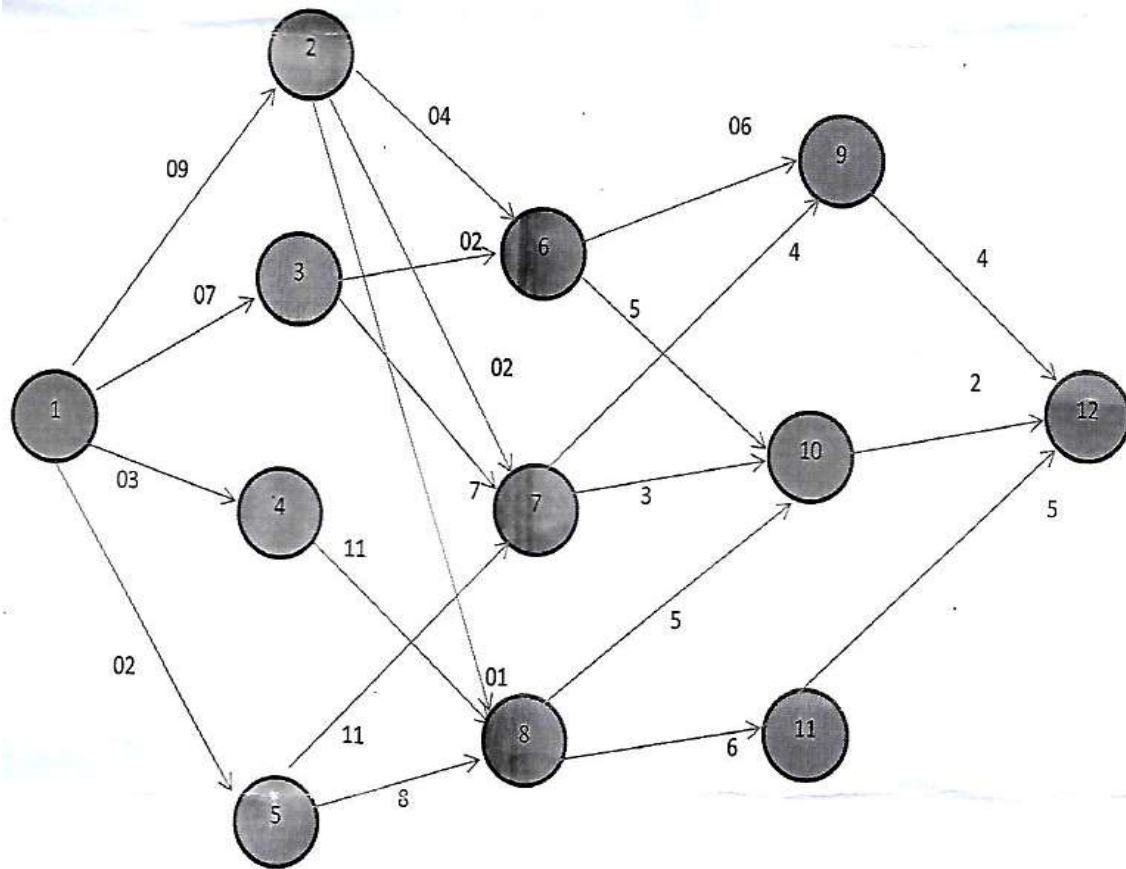
Q.6 Solve any one.

08

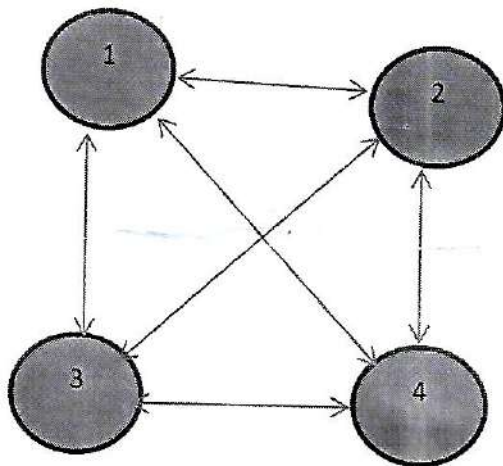
Given $W[1:6]=\{5,10,12,13,15,18\}$, $m=30$ and $n=6$. Find all possible subsets of w that sum to m . Draw the portion of the state space tree that is generated.

OR

Find minimum cost path from s to t multistage graph using forward approach.



Q.7 Consider the following directed graph and edge length are given by matrix. Find optimal tour length of travelling sales person problem. **08**



$$\begin{bmatrix} 0 & 10 & 15 & 20 \\ 5 & 0 & 9 & 10 \\ 6 & 13 & 0 & 12 \\ 8 & 8 & 9 & 0 \end{bmatrix}$$

Set No.	
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Set Q

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

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

- 1) The correct matching for the following pairs is _____.

E. All pair shortest path	5. Greedy Method
F. Prim's algorithm	6. Dynamic Programming
G. Quick sort	7. Backtracking
H. Hamilton Cycle	8. Divide and Conquer

 - a) A-3, B-2, C-4, D-1
 - b) A-4, B-3, C-1, D-2
 - c) A-2, B-1, C-4, D-3
 - d) None
- 2) In flow shop scheduling OFT stands for _____.
 - a) Optimal Find Time
 - b) Organized Finish Time
 - c) Optimal Finish Time
 - d) None
- 3) Dynamic programming works on principle of _____.
 - a) optimality
 - b) feasible solutions
 - c) constraint
 - d) None
- 4) In NXN Queens's problems, the constraints are "No Two queens are placed" at _____.
 - a) Same row
 - b) Same column
 - c) Same diagonal
 - d) All of the above
- 5) Graph coloring problem is which type of algorithm design strategy.
 - a) Dynamic Programming
 - b) Greedy Method
 - c) Backtracking
 - d) None
- 6) Hamiltonian Circuit problem belongs to which of the class?
 - a) P
 - b) NP
 - c) Linear
 - d) None of the mentioned
- 7) The hardest of NP problems can be _____.
 - a) NP-complete
 - b) NP-hard
 - c) P
 - d) None of the mentioned
- 8) Big Omega stands for _____.
 - a) $f(n) \leq g(n)$
 - b) $f(n) \geq g(n)$
 - c) $f(n) = g(n)$
 - d) None

- Page 7 of 20

Seat No.	
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Solve any three questions.****12**

- Write a note on Asymptotic Notations with example.
- Explain time and space complexity with suitable example.
- Prove that time complexity of Binary search is $O(\log n)$.
- Find an optimal solution to knapsack problem using greedy method.
 $M=20, n=3$
 $(p_1, \dots, p_3) = \{25, 24, 15\}$ and $(w_1, \dots, w_3) = \{18, 15, 10\}$

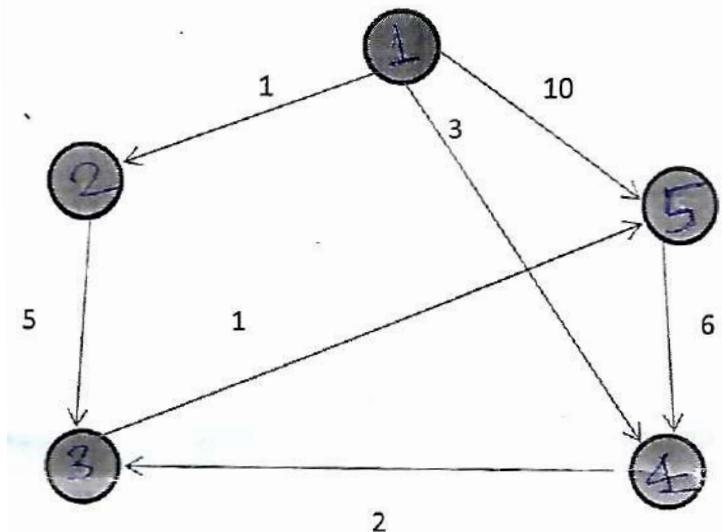
Q.3 Solve any one question.**08**

Sort the following elements using Quick Sort.

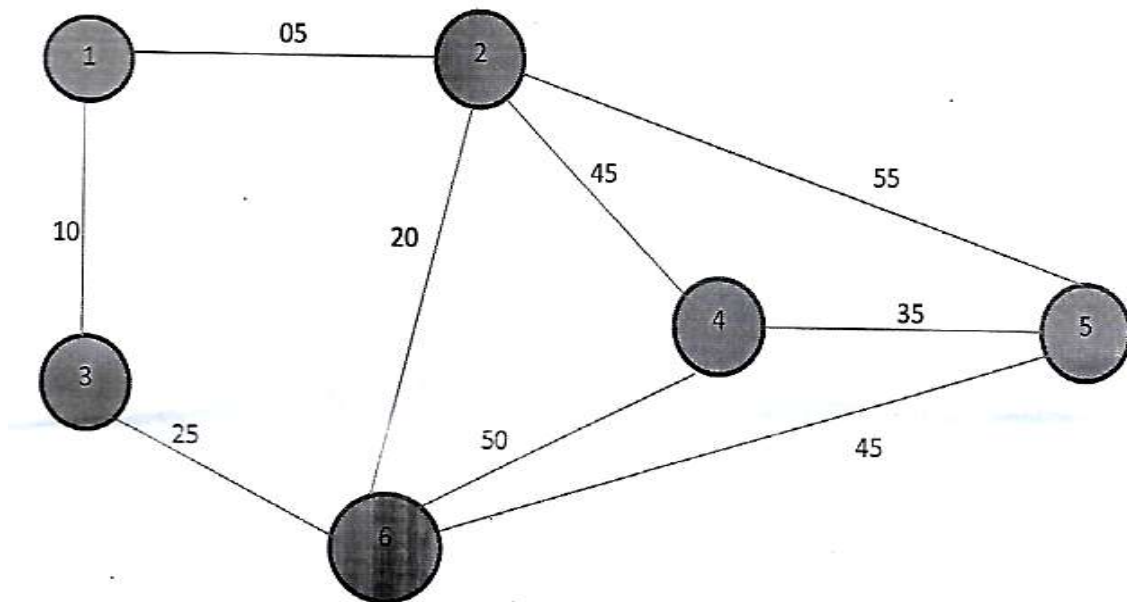
45, 36, 15, 92, 35, 71, 20

OR

Find the single source shortest path of following graph. Take vertex 1 as vertex.



Q.4 Find minimum weight /cost spanning tree using Kruskal algorithm.



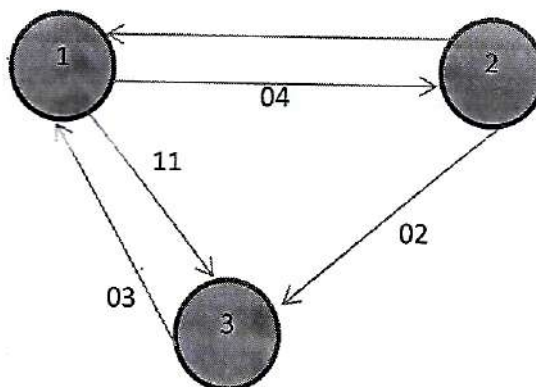
Section – II

Q.5 Solve any three questions.

12

- Solve 0/1 Knapsack problem using dynamic programming.
 $M=8$, $n=4$ profit= $\{1,2,5,6\}$ and weight= $\{2,3,4,5\}$
- Find all pair shortest path using dynamic programming.

06



- Explain Hamiltonian Cycle with suitable example.
- Write brief note on P, NP, NP -complete and NP – Hard problems.

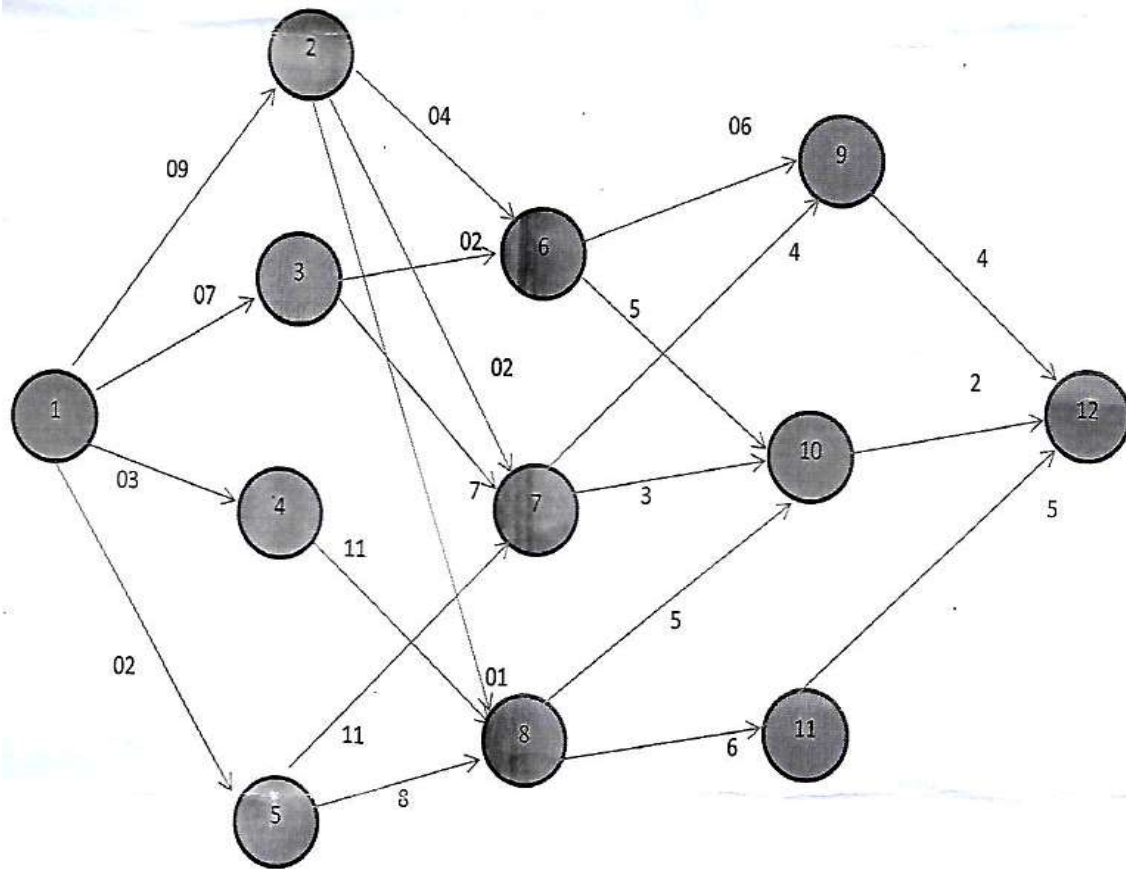
Q.6 Solve any one.

08

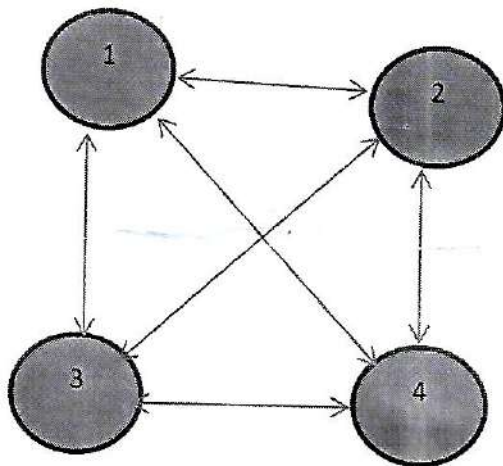
Given $W[1:6]=\{5,10,12,13,15,18\}$, $m=30$ and $n=6$. Find all possible subsets of w that sum to m . Draw the portion of the state space tree that is generated.

OR

Find minimum cost path from s to t multistage graph using forward approach.



Q.7 Consider the following directed graph and edge length are given by matrix. Find optimal tour length of travelling sales person problem. **08**



$$\begin{bmatrix} 0 & 10 & 15 & 20 \\ 5 & 0 & 9 & 10 \\ 6 & 13 & 0 & 12 \\ 8 & 8 & 9 & 0 \end{bmatrix}$$

Set No.	
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Day & Date: Friday,13-12-2019
Time: 02:30 PM To 05:30 PM

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

MCQ/Objective Type Questions

Marks: 14

- 1) Using Greedy method, an object i is placed into the knapsack, the value of solution sector X_i .

- Page 11 of 20

Seat
No.

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019

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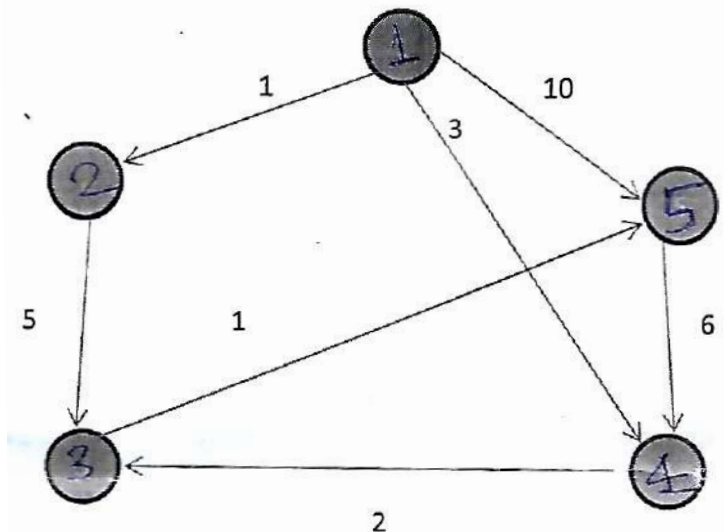
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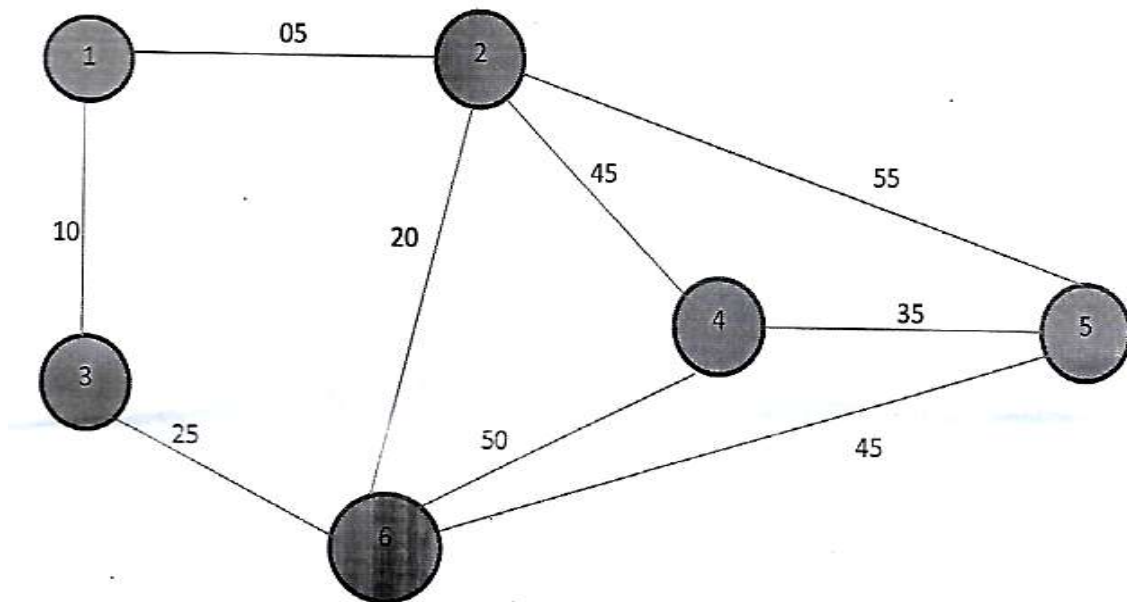
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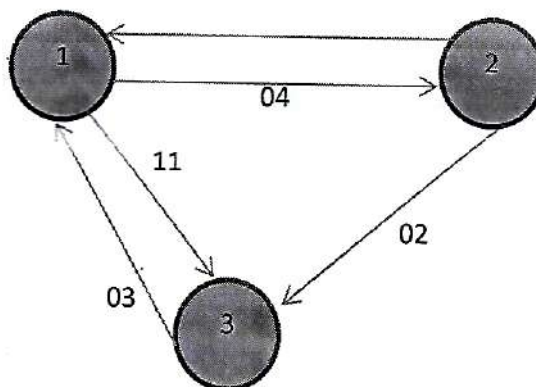
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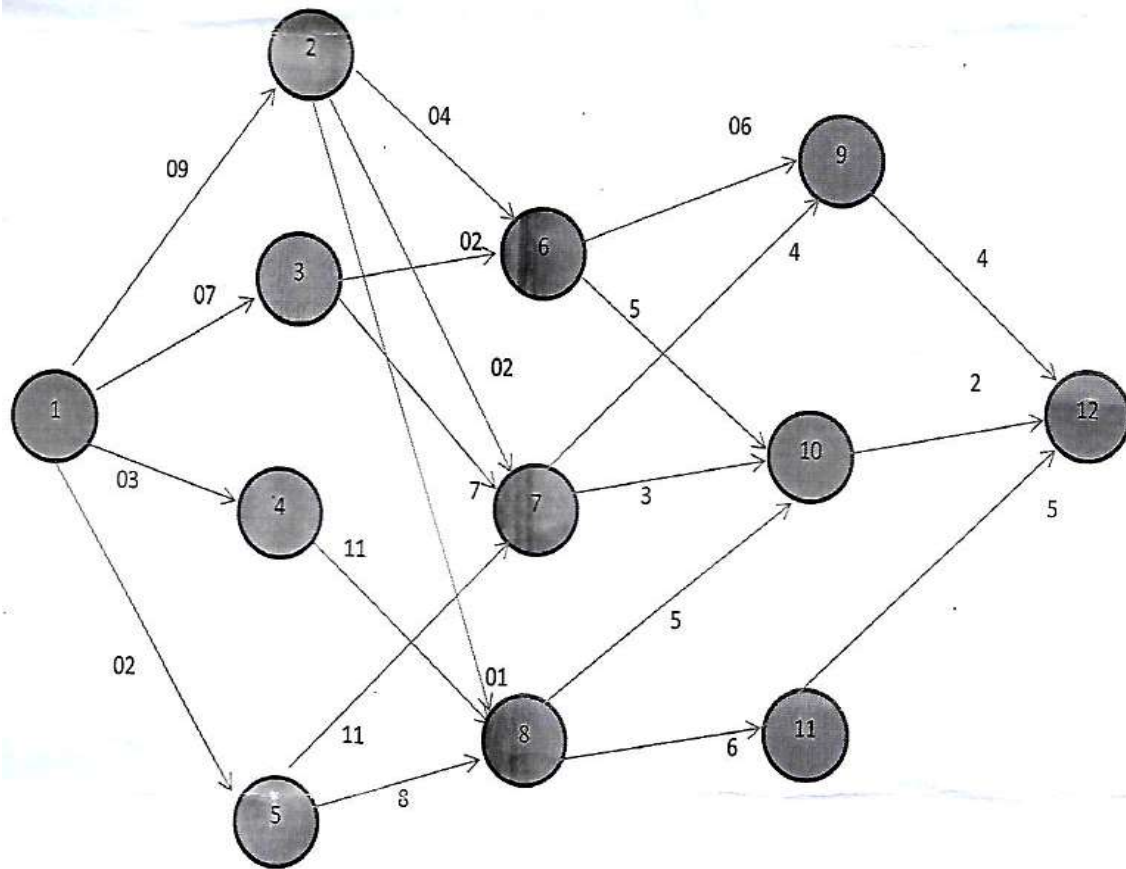
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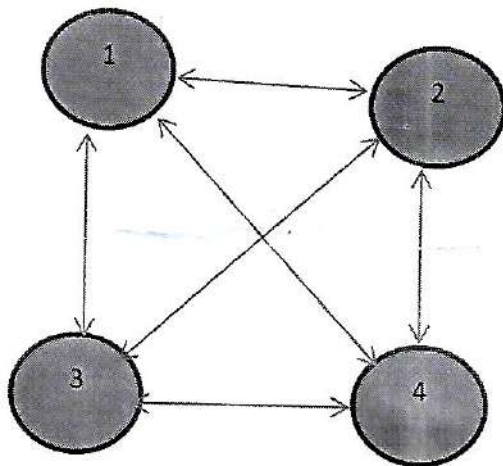
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Q.7 Consider the following directed graph and edge length are given by matrix. Find optimal tour length of travelling sales person problem. **08**



$$\begin{bmatrix} 0 & 10 & 15 & 20 \\ 5 & 0 & 9 & 10 \\ 6 & 13 & 0 & 12 \\ 8 & 8 & 9 & 0 \end{bmatrix}$$

**Set
No.**

Max. Marks: 70

2) Figures to the right indicate full marks.

Marks: 14

- 1) Dynamic programming works on principle of _____.
a) optimality b) feasible solutions
c) constraint d) None
- 2) In NXN Queens's problems, the constraints are "No Two queens are placed" at _____.
a) Same row b) Same column
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- 3) Graph coloring problem is which type of algorithm design strategy.
a) Dynamic Programming b) Greedy Method
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- 5) The hardest of NP problems can be _____.
a) NP-complete b) NP-hard
c) P d) None of the mentioned
- 6) Big Omega stands for _____.
a) $f(n) \leq g(n)$ b) $f(n) \geq g(n)$
c) $f(n) = g(n)$ d) None
- 7) What is the time complexity for following pseudocode?
For(i:=0 to n)
 For(j:=0 to n)
 Python=java;
a) $O(n^2)$ b) $O(n^3)$
c) $O(n)$ d) None
- 8) Recurrence relations for finding Max and Min using divide and conquer is _____.
a) $T(n)=T(n/2)+b$, b is constant b) $T(n)=2T(n/2)+b$, b is constant
c) $T(n)=T(n/2)+\log n$ d) $T(n)=T(n/2)+n$
- 9) The Time complexity of Binary search is using divide and conquer method _____.
a) $O(\log n)$ b) $O(n)$
c) $O(n \log n)$ d) None

- 10) Using Greedy method, an object i is placed into the knapsack, the value of solution sector X_i .
 - a) 0 or 1
 - b) $0 \leq x_i \leq 1$
 - c) 0 and 1
 - d) None
- 11) While solving job sequencing problem using greedy method, each job completes in _____ unit.
 - a) 1
 - b) 2
 - c) 3
 - d) None
- 12) In an optimal storage on tape problem if $(I_1, I_2, I_3) = (5, 10, 3)$ then the optimal ordering of program is _____.
 - a) 1,2,3
 - b) 1,3,2
 - c) 3,1,2
 - d) 3,2,1
- 13) The correct matching for the following pairs is _____.

M. All pair shortest path	13. Greedy Method
N. Prim's algorithm	14. Dynamic Programming
O. Quick sort	15. Backtracking
P. Hamilton Cycle	16. Divide and Conquer

 - a) A-3, B-2, C-4, D-1
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 - c) A-2, B-1, C-4, D-3
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- 14) In flow shop scheduling OFT stands for _____.
 - a) Optimal Find Time
 - b) Organized Finish Time
 - c) Optimal Finish Time
 - d) None

Seat
No.

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
DESIGN & ANALYSIS OF ALGORITHM

Day & Date: Friday, 13-12-2019

Max. Marks: 56

Time: 02:30 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
 2) Figure to the right indicates full marks.

Section – I**Q.2 Solve any three questions.****12**

- Write a note on Asymptotic Notations with example.
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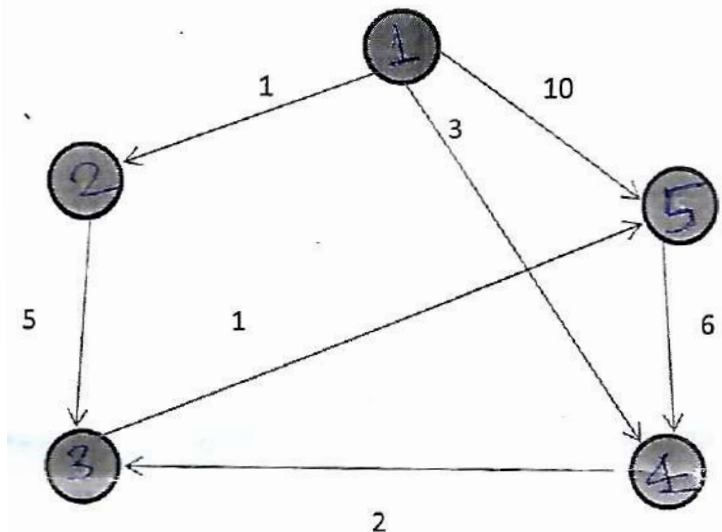
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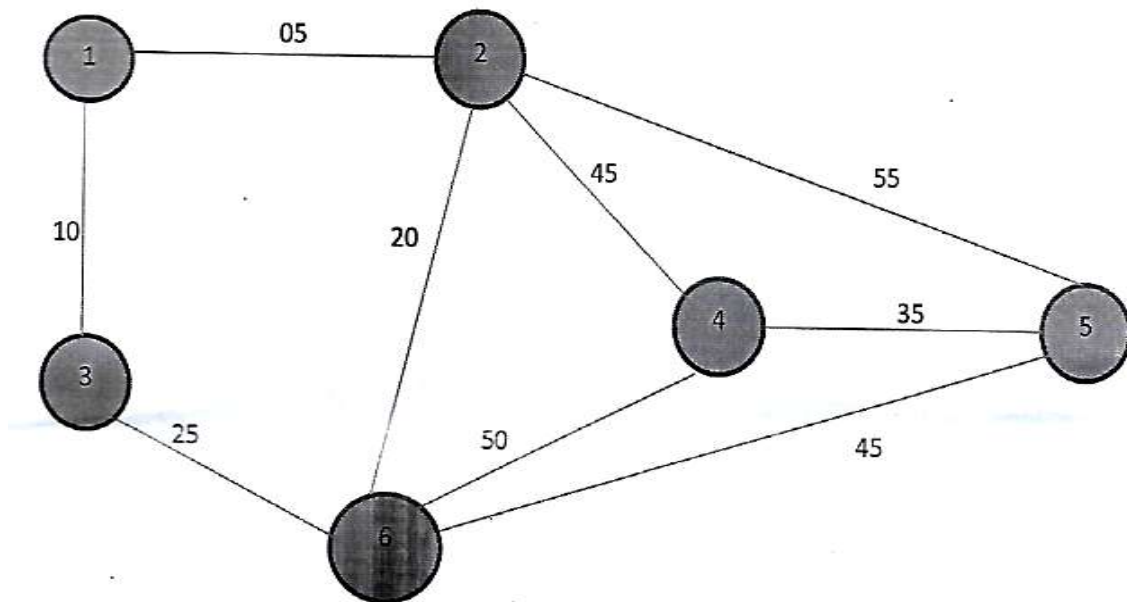
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OR

Find the single source shortest path of following graph. Take vertex 1 as vertex.



Q.4 Find minimum weight /cost spanning tree using Kruskal algorithm.



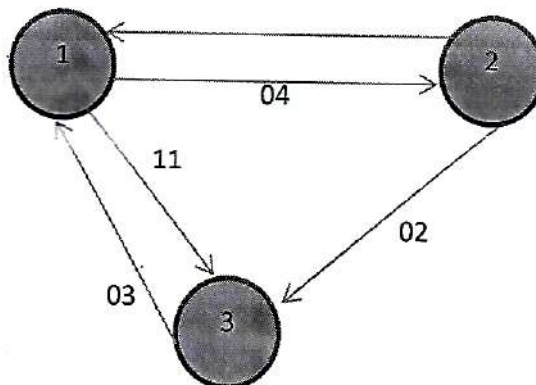
Section – II

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12

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06



- Explain Hamiltonian Cycle with suitable example.
- Write brief note on P, NP, NP -complete and NP – Hard problems.

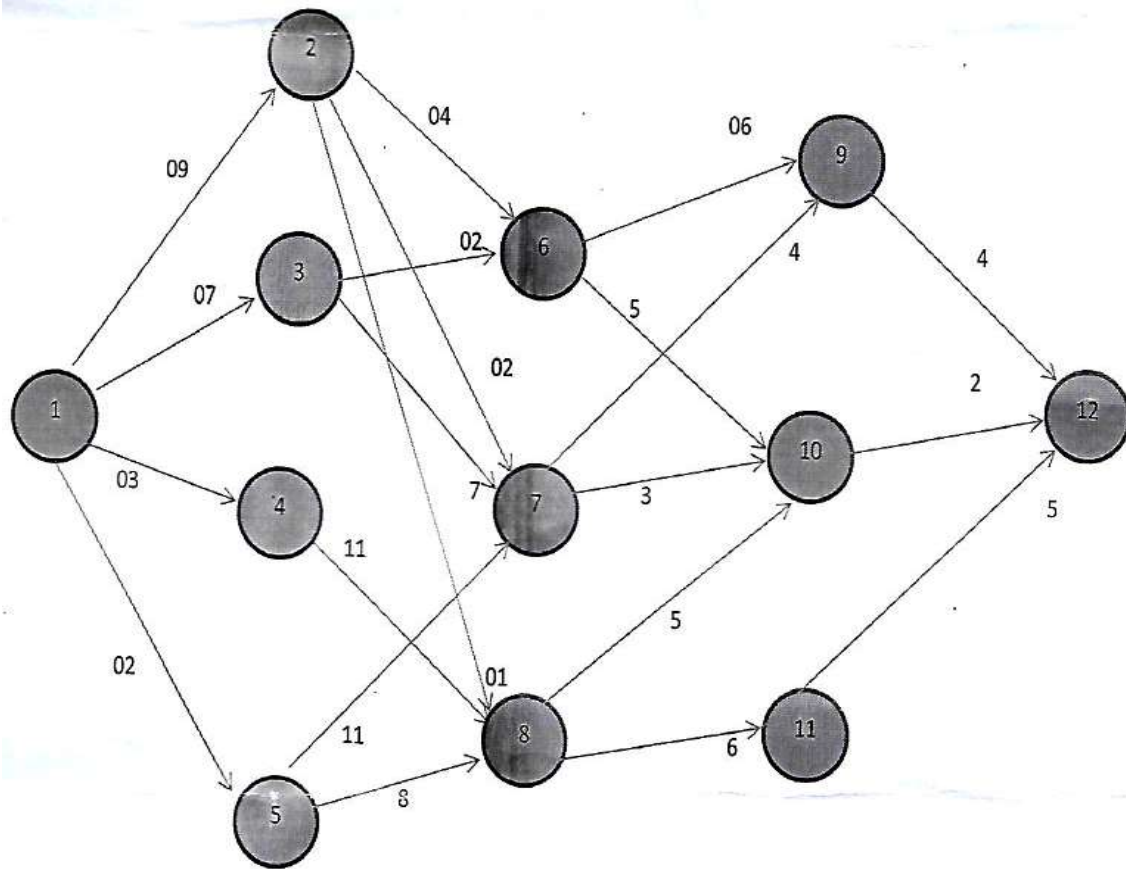
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08

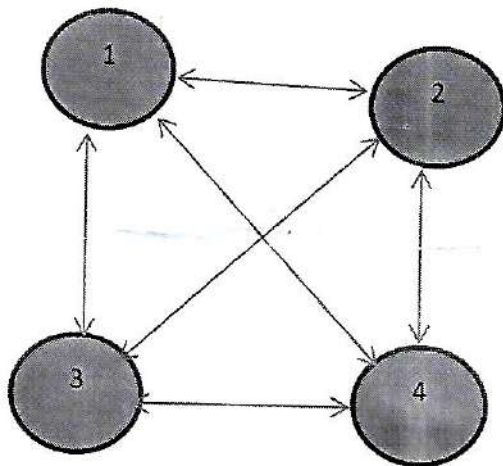
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OR

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Q.7 Consider the following directed graph and edge length are given by matrix. Find optimal tour length of travelling sales person problem. **08**



$$\begin{bmatrix} 0 & 10 & 15 & 20 \\ 5 & 0 & 9 & 10 \\ 6 & 13 & 0 & 12 \\ 8 & 8 & 9 & 0 \end{bmatrix}$$

Seat No.	
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- 9) Memory management is mainly implemented by hardware in case of _____.
a) main-secondary memory hierarchy
b) Cache-secondary memory hierarchy
c) Cache-main memory hierarchy
d) None
- 10) Which of the following is the shared memory multiprocessor model?
a) UMA
b) NUMA
c) COMA
d) All
- 11) Consider two instructions i and j, with i occurring before j. If instruction j tries to read a source before instruction i write, then the hazard is of type _____.
a) RAW
b) WAW
c) WAR
d) Structural Hazard
- 12) How does the processor in loosely coupled system communicate with each other?
a) Through shared memory
b) Through I/O
c) Through message transfer system
d) None
- 13) The usual BUS structure used to connect the I/O devices is _____.
a) Star BUS structure
b) Multiple BUS structure
c) Single BUS structure
d) Node to Node BUS structure
- 14) The method of synchronizing the processor with the I/O device in which the device sends a signal when it is ready is _____.
a) Exceptions
b) Signal handling
c) Interrupts
d) DMA

Seat No.	
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Set**P**

T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Day & Date: Monday, 16-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Solve any three.** **12**
- Write note on bus hierarchical architecture.
 - Differentiate RISC and CISC.
 - Draw and explain the hardwired control unit organization.
 - Explain how ripple carry adder work? Write drawbacks of ripple carry adder.
 - Perform (-9×-4) by using booth's algorithm.
- Q.3 Solve any two.** **16**
- What is the addressing mode? Explain the different types addressing mode with example.
 - Explain Booth's algorithm with example and hardware implementation of Booth's algorithm.
 - Explain ISA architecture.
 - Perform $29/3$ using restoring algorithm and $24/8$ using non-restoring algorithm.

Section – II

- Q.4 Solve any three.** **12**
- Write a short note on Interleaved Memory.
 - Draw and explain Generic Vector Architecture.
 - Write a short note on Data Hazard in Pipelining.
 - Draw & explain Selector I/O Channel Architecture.
- Q.5 Solve any two.** **16**
- Draw & Explain Tightly Coupled & Loosely Coupled Multiprocessor Architecture.
 - What is DMA? Explain with neat diagram DMA Controller.
 - What is Cache Coherency? Explain any three techniques to maintain coherency.

**Seat
No.**

Set	Q
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Day & Date: Monday, 16-12-2019
Time: 02:30 PM To 05:30 PM

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

MCQ/Objective Type Questions

Marks: 14

14

- Page 4 of 12

- 9) _____ register keeps the track of instructions stored in memory.
a) AR (Address Register) b) IR (Index Register)
c) PC (Program Counter) d) AC (Accumulator)
- 10) How many bits are used in single precision floating point format representation?
a) 32 b) 16
c) 64 d) 36
- 11) What is the width of exponent field in single precision format?
a) 23 bit b) 52 bit
c) 11 bit d) 8 bit
- 12) Ferrite cores becoming the dominant technology for main memories in _____ generation.
a) First b) Second
c) Third d) None of these
- 13) PLA in hardwired control unit design stands for _____.
a) Parallel Architecture b) Parallel Loop Array
c) Programmable Logic Arrays d) Parallel Loop Architecture
- 14) Specify the operation that transfer word from processor to memory _____.
a) Store b) Load
c) SET d) Transfer

Seat No.	
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Set	Q
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Day & Date: Monday, 16-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Solve any three.** **12**
- a) Write note on bus hierarchical architecture.
 - b) Differentiate RISC and CISC.
 - c) Draw and explain the hardwired control unit organization.
 - d) Explain how ripple carry adder work? Write drawbacks of ripple carry adder.
 - e) Perform (-9×-4) by using booth's algorithm.
- Q.3 Solve any two.** **16**
- a) What is the addressing mode? Explain the different types addressing mode with example.
 - b) Explain Booth's algorithm with example and hardware implementation of Booth's algorithm.
 - c) Explain ISA architecture.
 - d) Perform $29/3$ using restoring algorithm and $24/8$ using non-restoring algorithm.

Section – II

- Q.4 Solve any three.** **12**
- a) Write a short note on Interleaved Memory.
 - b) Draw and explain Generic Vector Architecture.
 - c) Write a short note on Data Hazard in Pipelining.
 - d) Draw & explain Selector I/O Channel Architecture.
- Q.5 Solve any two.** **16**
- a) Draw & Explain Tightly Coupled & Loosely Coupled Multiprocessor Architecture.
 - b) What is DMA? Explain with neat diagram DMA Controller.
 - c) What is Cache Coherency? Explain any three techniques to maintain coherency.

Seat No.	
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Set	R
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Day & Date: Monday, 16-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Ferrite cores becoming the dominant technology for main memories in _____ generation.
 - a) First
 - b) Second
 - c) Third
 - d) None of these
- 2) PLA in hardwired control unit design stands for _____.
 - a) Parallel Architecture
 - b) Parallel Loop Array
 - c) Programmable Logic Arrays
 - d) Parallel Loop Architecture
- 3) Specify the operation that transfer word from processor to memory _____.
 - a) Store
 - b) Load
 - c) SET
 - d) Transfer
- 4) The access efficiency of the two level memories is given by _____.
 - a) $1/r+(1-r)H$
 - b) $1/r-(1+r)H$
 - c) $r/r+(1-r)H$
 - d) $r/r-(1+r)H$
- 5) Memory management is mainly implemented by hardware in case of _____.
 - a) main-secondary memory hierarchy
 - b) Cache-secondary memory hierarchy
 - c) Cache-main memory hierarchy
 - d) None
- 6) Which of the following is the shared memory multiprocessor model?
 - a) UMA
 - b) NUMA
 - c) COMA
 - d) All
- 7) Consider two instructions i and j, with i occurring before j. If instruction j tries to read a source before instruction i write, then the hazard is of type _____.
 - a) RAW
 - b) WAW
 - c) WAR
 - d) Structural Hazard
- 8) How does the processor in loosely coupled system communicate with each other?
 - a) Through shared memory
 - b) Through I/O
 - c) Through message transfer system
 - d) None

- 9) The usual BUS structure used to connect the I/O devices is _____.
a) Star BUS structure b) Multiple BUS structure
c) Single BUS structure d) Node to Node BUS structure
- 10) The method of synchronizing the processor with the I/O device in which the device sends a signal when it is ready is _____.
a) Exceptions b) Signal handling
c) Interrupts d) DMA
- 11) In Analytical Engine computing ALU's are called as _____.
a) Store b) Operations cards
c) Mill d) Mill and Store
- 12) _____ register keeps the track of instructions stored in memory.
a) AR (Address Register) b) IR (Index Register)
c) PC (Program Counter) d) AC (Accumulator)
- 13) How many bits are used in single precision floating point format representation?
a) 32 b) 16
c) 64 d) 36
- 14) What is the width of exponent field in single precision format?
a) 23 bit b) 52 bit
c) 11 bit d) 8 bit

Seat No.	
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Set	R
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Day & Date: Monday, 16-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Solve any three.** **12**
- Write note on bus hierarchical architecture.
 - Differentiate RISC and CISC.
 - Draw and explain the hardwired control unit organization.
 - Explain how ripple carry adder work? Write drawbacks of ripple carry adder.
 - Perform (-9×-4) by using booth's algorithm.
- Q.3 Solve any two.** **16**
- What is the addressing mode? Explain the different types addressing mode with example.
 - Explain Booth's algorithm with example and hardware implementation of Booth's algorithm.
 - Explain ISA architecture.
 - Perform $29/3$ using restoring algorithm and $24/8$ using non-restoring algorithm.

Section – II

- Q.4 Solve any three.** **12**
- Write a short note on Interleaved Memory.
 - Draw and explain Generic Vector Architecture.
 - Write a short note on Data Hazard in Pipelining.
 - Draw & explain Selector I/O Channel Architecture.
- Q.5 Solve any two.** **16**
- Draw & Explain Tightly Coupled & Loosely Coupled Multiprocessor Architecture.
 - What is DMA? Explain with neat diagram DMA Controller.
 - What is Cache Coherency? Explain any three techniques to maintain coherency.

Seat No.	
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Set	S
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Day & Date: Monday, 16-12-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 70

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

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 14

Q.1 Choose the correct alternatives from the options.

14

- 1) Which of the following is the shared memory multiprocessor model?
 - a) UMA
 - b) NUMA
 - c) COMA
 - d) All
- 2) Consider two instructions i and j, with i occurring before j. If instruction j tries to read a source before instruction i write, then the hazard is of type _____.
 - a) RAW
 - b) WAW
 - c) WAR
 - d) Structural Hazard
- 3) How does the processor in loosely coupled system communicate with each other?
 - a) Through shared memory
 - b) Through I/O
 - c) Through message transfer system
 - d) None
- 4) The usual BUS structure used to connect the I/O devices is _____.
 - a) Star BUS structure
 - b) Multiple BUS structure
 - c) Single BUS structure
 - d) Node to Node BUS structure
- 5) The method of synchronizing the processor with the I/O device in which the device sends a signal when it is ready is _____.
 - a) Exceptions
 - b) Signal handling
 - c) Interrupts
 - d) DMA
- 6) In Analytical Engine computing ALU's are called as _____.
 - a) Store
 - b) Operations cards
 - c) Mill
 - d) Mill and Store
- 7) _____ register keeps the track of instructions stored in memory.
 - a) AR (Address Register)
 - b) IR (Index Register)
 - c) PC (Program Counter)
 - d) AC (Accumulator)
- 8) How many bits are used in single precision floating point format representation?
 - a) 32
 - b) 16
 - c) 64
 - d) 36

- 9) What is the width of exponent field in single precision format?
a) 23 bit b) 52 bit
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- 10) Ferrite cores becoming the dominant technology for main memories in _____ generation.
a) First b) Second
c) Third d) None of these
- 11) PLA in hardwired control unit design stands for _____.
a) Parallel Architecture b) Parallel Loop Array
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a) Store b) Load
c) SET d) Transfer
- 13) The access efficiency of the two level memories is given by _____.
a) $\frac{1}{r+(1-r)H}$ b) $\frac{1}{r-(1+r)H}$
c) $\frac{r}{r+(1-r)H}$ d) $\frac{r}{r-(1+r)H}$
- 14) Memory management is mainly implemented by hardware in case of _____.
a) main-secondary memory hierarchy
b) Cache-secondary memory hierarchy
c) Cache-main memory hierarchy
d) None

Seat No.	
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Set	S
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T.E. (Part – I) (Old) (CGPA) Examination Nov/Dec-2019
Computer Science & Engineering
COMPUTER ORGANIZATION

Day & Date: Monday, 16-12-2019
Time: 02:30 PM To 05:30 PM

Max. Marks: 56

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

Section – I

- Q.2 Solve any three.** **12**
- Write note on bus hierarchical architecture.
 - Differentiate RISC and CISC.
 - Draw and explain the hardwired control unit organization.
 - Explain how ripple carry adder work? Write drawbacks of ripple carry adder.
 - Perform (-9×-4) by using booth's algorithm.
- Q.3 Solve any two.** **16**
- What is the addressing mode? Explain the different types addressing mode with example.
 - Explain Booth's algorithm with example and hardware implementation of Booth's algorithm.
 - Explain ISA architecture.
 - Perform $29/3$ using restoring algorithm and $24/8$ using non-restoring algorithm.

Section – II

- Q.4 Solve any three.** **12**
- Write a short note on Interleaved Memory.
 - Draw and explain Generic Vector Architecture.
 - Write a short note on Data Hazard in Pipelining.
 - Draw & explain Selector I/O Channel Architecture.
- Q.5 Solve any two.** **16**
- Draw & Explain Tightly Coupled & Loosely Coupled Multiprocessor Architecture.
 - What is DMA? Explain with neat diagram DMA Controller.
 - What is Cache Coherency? Explain any three techniques to maintain coherency.

- Page 2 of 20

- 18) For the universal TM, the non- halting states of TM T_1 are encoded as _____.
 - a) $s(q_i) = 0^{i+1}$
 - b) $e(q_i) = 0^{i+2}$
 - c) $s(q_i) = 0^i$
 - d) $s(q_i) = 0^{i+2}$
- 19) Which of the following machine uses the stack as its memory?
 - a) DFA
 - b) PDA
 - c) TM
 - d) Nondeterministic TM
- 20) The PDA can accept _____.
 - a) Any context-free language
 - b) Only regular language
 - c) Context-free and context-sensitive language
 - d) All a above

Seat No.	
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Set **P**

S.E. (Part – II) (Old) Examination Nov/Dec-2019
Computer Science & Engineering
FORMAL SYSTEM & AUTOMATA

Day & Date: Thursday, 28-11-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 80

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

Section – I

Q.2 Attempt any four.

20

- Define δ^* for NFA and NFA – Λ with example.
- Find regular expression corresponding to language of string that consist of substring 101 over $\Sigma = \{0,1\}^*$ construct FA for above language.
- If L_1 and L_2 are regular languages, then prove $L_1 \cup L_2$, $L_1 \cap L_2$ and $L_1 - L_2$ are also regular.
- Find CFG for a regular language $(abb + b)^* (ab)^* baa$ using union and closure operations of CFL'S
- What is ambiguity in grammer? How is it removed from CFG algebra expression?

Q.3 Answer the Following.

10

- Give the steps to simplify the given CFG. Why we have to go for simplification of CFG. Convert the following CFG into CNF.
 $S \rightarrow bA|aB$
 $A \rightarrow bAA|aS|a| \Lambda$
 $B \rightarrow aBB|bS|b| \Lambda$

OR

- How minimum state FA is obtained from a given FA. Explain with algorithm and example.

Q.4 Answer the following.

10

- State and define the types of grammars and show how their corresponding languages are developed.

Section – II

- Q.5 Attempt any four.** **20**
- a) State pumping lemma for CFL.
 - b) **Write short note:**
Universal Turing Machine
 - c) Define PDA. Develop a PDA to accept the language of palindromes.
 - d) Explain concept of basic Turing Machine Model.
 - e) Show that $L = \{a^n.b^n.c^n\}$ is not context free.
- Q.6 Attempt the following.** **10**
- a) Design a Turing machine to accept palindrome for odd and even length string.
Show an ID for the string 'abbbba' with tape symbol.
- OR**
- b) Explain different types of variations in TM. What is need of these variations?
- Q.7 Give a transistion diagram for turning machines. Which deletes a symbol from a string?** **10**

Seat No.	
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Set

Q

S.E. (Part – II) (Old) Examination Nov/Dec-2019
Computer Science & Engineering
FORMAL SYSTEM & AUTOMATA

Day & Date: Thursday, 28-11-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 100

- Instructions:** 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full marks.
 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 20

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 20

- 1) The regular expression for the language $f = \{11,110\}^*\{10\}$ is _____.
 a) $(11 + 110)^*(1 + 0)$ b) $(11 + 110)^*10$
 c) $(11 + 110)^* + 10$ d) $(11110)^*10$
- 2) Which of the following string is not described by the regular expression $(11 + 110)^*0$?
 a) 1100 b) 1110
 c) 110 d) 11110
- 3) The CFG for the language $\{a^n, b^n | n \geq 1\}$ is _____.
 a) $S \rightarrow abS | \Lambda$ b) $S \rightarrow abS | ab$
 c) $S \rightarrow aSb | ab$ d) $S \rightarrow Sab | \Lambda$
- 4) If any string in the CFG have more than one leftmost or rightmost derivation tree, then CFG is said to be _____.
 a) Ambiguous b) Unambiguous
 c) CNF d) Regular
- 5) The context- free languages are not closed under the operation of _____.
 a) Union b) Kleen's Star
 c) Concatenation d) Inter section and complements
- 6) The pumping lemma for regular language is used to prove that, _____.
 a) A language is not regular b) A language is regular
 c) A language is not context-free d) A language is context free
- 7) The Turing Machine acts as _____.
 a) A language acceptor b) Computable machine
 c) Both a) and b) d) None of the above

- 8) The input tape of a Turing machine is used to _____.
 a) Store input symbols b) Output string
 c) External symbols d) All of above
- 9) The PDA corresponding to the CFG can be accept the input string _____.
 a) Acceptance by final states b) Acceptance by empty stock
 c) Both a) and b) d) None of the above
- 10) Which of the following is not a CFL?
 a) $\{a^n.b^n | n \geq 1\}$ b) $\{a^i.b^j.c^k | i > j < k\}$
 c) $\{xx^r | x \in \{a, b\}^*\}$ d) $\{a^n.b^n.c^m | n \geq 1, m \geq 0\}$
- 11) The Turing Machine computes the numeric value (n) by using the formula _____.
 a) $(q_0, \underline{\Delta} 1^n) \xrightarrow{*} (ha, \underline{\Delta} 1^{f(n)})$
 b) $(q_0, \underline{\Delta} 1^n) \xrightarrow[T]{*} (hr, \underline{\Delta} 1^{f(n)})$
 c) $(q_0, \underline{\Delta} n) \xrightarrow[T]{*} (ha, \underline{\Delta} f(n))$
 d) $(q_0, \underline{\Delta} 1^n) \xrightarrow[T]{*} (ha, \underline{\Delta})$
- 12) Which of the following machine is more powerful?
 a) FA b) PDA
 c) TM d) Linear bounded Automata
- 13) For the universal TM, the non- halting states of TM T_1 are encoded as _____.
 a) $s(q_i) = 0^{i+1}$ b) $e(q_i) = 0^{i+2}$
 c) $s(q_i) = 0^i$ d) $s(q_i) = 0^{i+2}$
- 14) Which of the following machine uses the stack as its memory?
 a) DFA b) PDA
 c) TM d) Nondeterministic TM
- 15) The PDA can accept _____.
 a) Any context-free language
 b) Only regular language
 c) Context-free and context-sensitive language
 d) All a above
- 16) If a language is regular, then it is can be recognized by _____.
 a) FA only b) FA and PDA only
 c) FA, PDA and TM d) FA and Tm only
- 17) The language $L = \{x | x \text{ has equal number of occurrences of 0's and 1's}\}$ is _____.
 a) Not regular b) Equal to $\{0^n, 1^n | n \geq 0\}$
 c) Finite d) Not Context Free

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Seat No.	
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Set **Q**

S.E. (Part – II) (Old) Examination Nov/Dec-2019
Computer Science & Engineering
FORMAL SYSTEM & AUTOMATA

Day & Date: Thursday, 28-11-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 80

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

Section – I**Q.2 Attempt any four.****20**

- Define δ^* for NFA and NFA – Λ with example.
- Find regular expression corresponding to language of string that consist of substring 101 over $\Sigma = \{0,1\}^*$ construct FA for above language.
- If L_1 and L_2 are regular languages, then prove $L_1 \cup L_2$, $L_1 \cap L_2$ and $L_1 - L_2$ are also regular.
- Find CFG for a regular language $(abb + b)^* (ab)^* baa$ using union and closure operations of CFL'S
- What is ambiguity in grammer? How is it removed from CFG algebra expression?

Q.3 Answer the Following.**10**

- Give the steps to simplify the given CFG. Why we have to go for simplification of CFG. Convert the following CFG into CNF.
 $S \rightarrow bA|aB$
 $A \rightarrow bAA|aS|a| \Lambda$
 $B \rightarrow aBB|bS|b| \Lambda$

OR

- How minimum state FA is obtained from a given FA. Explain with algorithm and example.

Q.4 Answer the following.**10**

- State and define the types of grammars and show how their corresponding languages are developed.

Section – II

- Q.5 Attempt any four.** **20**
- a) State pumping lemma for CFL.
 - b) **Write short note:**
Universal Turing Machine
 - c) Define PDA. Develop a PDA to accept the language of palindromes.
 - d) Explain concept of basic Turing Machine Model.
 - e) Show that $L = \{a^n.b^n.c^n\}$ is not context free.
- Q.6 Attempt the following.** **10**
- a) Design a Turing machine to accept palindrome for odd and even length string.
Show an ID for the string 'abbbba' with tape symbol.
- OR**
- b) Explain different types of variations in TM. What is need of these variations?
- Q.7 Give a transition diagram for turning machines. Which deletes a symbol from a string?** **10**

Seat No.	
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Set

R

S.E. (Part – II) (Old) Examination Nov/Dec-2019
Computer Science & Engineering
FORMAL SYSTEM & AUTOMATA

Day & Date: Thursday, 28-11-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 100

- Instructions:** 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full marks.
 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 20

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 20

- 1) The pumping lemma for regular language is used to prove that, _____.
 a) A language is not regular b) A language is regular
 c) A language is not context-free d) A language is context free
- 2) The Turing Machine acts as _____.
 a) A language acceptor b) Computable machine
 c) Both a) and b) d) None of the above
- 3) The input tape of a Turing machine is used to _____.
 a) Store input symbols b) Output string
 c) External symbols d) All of above
- 4) The PDA corresponding to the CFG can be accept the input string _____.
 a) Acceptance by final states b) Acceptance by empty stock
 c) Both a) and b) d) None of the above
- 5) Which of the following is not a CFL?
 a) $\{a^n.b^n | n \geq 1\}$ b) $\{a^i.b^j.c^k | i > j < k\}$
 c) $\{xx^r | x \in \{a, b\}^*\}$ d) $\{a^n.b^n.c^m | n \geq 1, m \geq 0\}$
- 6) The Turing Machine computes the numeric value (n) by using the formula _____.
 a) $(q_0, \underline{\Delta} 1^n) \xrightarrow{*} (ha, \underline{\Delta} 1^{f(n)})$
 b) $(q_0, \underline{\Delta} 1^n) \xrightarrow[T]{*} (hr, \underline{\Delta} 1^{f(n)})$
 c) $(q_0, \underline{\Delta} n) \xrightarrow[T]{*} (ha, \underline{\Delta} f(n))$
 d) $(q_0, \underline{\Delta} 1^n) \xrightarrow{T^*} (ha, \underline{\Delta})$

- Page 12 of 20

- Page 13 of 20

Seat No.	
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Set **R**

S.E. (Part – II) (Old) Examination Nov/Dec-2019
Computer Science & Engineering
FORMAL SYSTEM & AUTOMATA

Day & Date: Thursday, 28-11-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 80

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

Section – I

Q.2 Attempt any four. **20**

- a) Define δ^* for NFA and NFA – Λ with example.
- b) Find regular expression corresponding to language of string that consist of substring 101 over $\Sigma = \{0,1\}^*$ construct FA for above language.
- c) If L_1 and L_2 are regular languages, then prove $L_1 \cup L_2$, $L_1 \cap L_2$ and $L_1 - L_2$ are also regular.
- d) Find CFG for a regular language $(abb + b)^* (ab)^* baa$ using union and closure operations of CFL'S
- e) What is ambiguity in grammer? How is it removed from CFG algebra expression?

Q.3 Answer the Following. **10**

- a) Give the steps to simplify the given CFG. Why we have to go for simplification of CFG. Convert the following CFG into CNF.
 $S \rightarrow bA|aB$
 $A \rightarrow bAA|aS|a| \Lambda$
 $B \rightarrow aBB|bS|b| \Lambda$

OR

- b) How minimum state FA is obtained from a given FA. Explain with algorithm and example.

Q.4 Answer the following. **10**

- a) State and define the types of grammars and show how their corresponding languages are developed.

Section – II

- Q.5 Attempt any four.** **20**
- a) State pumping lemma for CFL.
 - b) **Write short note:**
Universal Turing Machine
 - c) Define PDA. Develop a PDA to accept the language of palindromes.
 - d) Explain concept of basic Turing Machine Model.
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- OR**
- b) Explain different types of variations in TM. What is need of these variations?
- Q.7 Give a transition diagram for turning machines. Which deletes a symbol from a string?** **10**

Seat No.	
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Set **S**

S.E. (Part – II) (Old) Examination Nov/Dec-2019
Computer Science & Engineering
FORMAL SYSTEM & AUTOMATA

Day & Date: Thursday, 28-11-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 100

- Instructions:** 1) Q. No. 1 is compulsory and it should be solved in first 30 minutes in answer book.
 2) Figures to the right indicate full marks.
 3) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes

Marks: 20

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 20

- 1) The Turing Machine computes the numeric value (n) by using the formula _____.
 - a) $(q_0, \underline{\Delta} 1^n) \xrightarrow{*} (ha, \underline{\Delta} 1^{f(n)})$
 - b) $(q_0, \underline{\Delta} 1^n) \xrightarrow{\frac{T}{*}} (hr, \underline{\Delta} 1^{f(n)})$
 - c) $(q_0, \underline{\Delta} n) \xrightarrow{\frac{*}{T}} (ha, \underline{\Delta} f(n))$
 - d) $(q_0, \underline{\Delta} 1^n) \xrightarrow{\frac{*}{T}} (ha, \underline{\Delta})$
- 2) Which of the following machine is more powerful?
 - a) FA
 - b) PDA
 - c) TM
 - d) Linear bounded Automata
- 3) For the universal TM, the non- halting states of TM T_1 are encoded as _____.
 - a) $s(q_i) = 0^{i+1}$
 - b) $e(q_i) = 0^{i+2}$
 - c) $s(q_i) = 0^i$
 - d) $s(q_i) = 0^{i+2}$
- 4) Which of the following machine uses the stack as its memory?
 - a) DFA
 - b) PDA
 - c) TM
 - d) Nondeterministic TM
- 5) The PDA can accept _____.
 - a) Any context-free language
 - b) Only regular language
 - c) Context-free and context-sensitive language
 - d) All a above

- 17) The Turing Machine acts as _____.
a) A language acceptor b) Computable machine
c) Both a) and b) d) None of the above
- 18) The input tape of a Turing machine is used to _____.
a) Store input symbols b) Output string
c) External symbols d) All of above
- 19) The PDA corresponding to the CFG can be accept the input string _____.
a) Acceptance by final states b) Acceptance by empty stock
c) Both a) and b) d) None of the above
- 20) Which of the following is not a CFL?
a) $\{a^n.b^n | n \geq 1\}$ b) $\{a^i.b^j.c^k | i > j < k\}$
c) $\{xx^r | x \in \{a, b\}^*\}$ d) $\{a^n.b^n.c^m | n \geq 1, m \geq 0\}$

Seat No.	
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Set **S**

S.E. (Part – II) (Old) Examination Nov/Dec-2019
Computer Science & Engineering
FORMAL SYSTEM & AUTOMATA

Day & Date: Thursday, 28-11-2019
 Time: 02:30 PM To 05:30 PM

Max. Marks: 80

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

Section – I

Q.2 Attempt any four. **20**

- Define δ^* for NFA and NFA – Λ with example.
- Find regular expression corresponding to language of string that consist of substring 101 over $\Sigma = \{0,1\}^*$ construct FA for above language.
- If L_1 and L_2 are regular languages, then prove $L_1 \cup L_2$, $L_1 \cap L_2$ and $L_1 - L_2$ are also regular.
- Find CFG for a regular language $(abb + b)^* (ab)^* baa$ using union and closure operations of CFL'S
- What is ambiguity in grammer? How is it removed from CFG algebra expression?

Q.3 Answer the Following. **10**

- Give the steps to simplify the given CFG. Why we have to go for simplification of CFG. Convert the following CFG into CNF.
 $S \rightarrow bA|aB$
 $A \rightarrow bAA|aS|a| \Lambda$
 $B \rightarrow aBB|bS|b| \Lambda$

OR

- How minimum state FA is obtained from a given FA. Explain with algorithm and example.

Q.4 Answer the following. **10**

- State and define the types of grammars and show how their corresponding languages are developed.

Section – II

- Q.5 Attempt any four.** **20**
- a) State pumping lemma for CFL.
 - b) **Write short note:**
Universal Turing Machine
 - c) Define PDA. Develop a PDA to accept the language of palindromes.
 - d) Explain concept of basic Turing Machine Model.
 - e) Show that $L = \{a^n.b^n.c^n\}$ is not context free.
- Q.6 Attempt the following.** **10**
- a) Design a Turing machine to accept palindrome for odd and even length string.
Show an ID for the string 'abbbba' with tape symbol.
- OR**
- b) Explain different types of variations in TM. What is need of these variations?
- Q.7 Give a transistion diagram for turning machines. Which deletes a symbol from a string?** **10**