

**SRM Institute of Science and Technology**  
**Ramapuram Campus**  
**Department of Mathematics**

SET 1

**CONTINUOUS ASSESSMENT – I**

**18MAB302T– Discrete Mathematics for Engineers**

Year : III

Semester: V

Branch: CSE(Exclude CSBS), IT, ECE & EKE

Date:

Time:

Max.Marks: 25 Marks

**Part – A (5×1=5 Marks)**  
**Answer ALL Questions**

Q.No.	Question	Marks	CO	BL	PI
1	If a set contains ‘n’ elements then its power set contains _____ elements (a) n      (b) $2^n$ (c) $n^2$ (d) $2n$	1	1	1	1.1.1
2	Let $A=\{1, 2, 3\}$ $B=\{1, 4\}$ . Consider the relation R such that ‘<’, then the relation R is given by (a) $\{(1,4),(2,4),(3,4)\}$ (b) $\{(1,4),(2,4)\}$ (c) $\{(3,4)\}$ (d) $\{(1,1)\}$	1	1	3	1.4.1
3	Hasse diagram are drawn for (a) Partially order sets      (b) logic (c) Boolean algebra      (d) equivalence set	1	1	1	1.3.1
4	Equivalence relation is (a) Reflexive, Symmetric and Transitive (b) Irreflexive, Symmetric and Transitive (c) Reflexive, Antisymmetric and, Transitive (d) Irreflexive, Antisymmetric and Transitive	1	1	2	1.3.1
5	The function $f : Z^+ \rightarrow Z^+$ given by $f(x) = x^2$ is (a)One-One (b) Onto (c) Both 1-1 & onto (d) neither 1-1 nor onto	1	1	2	1.4.1

**Part – B (2×4=8 Marks)**  
**Answer Any Two Questions**

Q.No.	Question	Marks	CO	BL	PI
6	Let $f : R \rightarrow R$ and $g : R \rightarrow R$ defined by $f(x) = 4x-1$ , $g(x) = \cos x$ . Find (i) $g \circ f(x)$ (ii) $f \circ g(x)$	4	1	3	2.4.1
7	Let $A=\{1,2,3,4,5,6\}$ . Find the Maxsets generated by the subsets $B_1=\{1,3,5\}$ $B_2=\{1,2,3\}$ .	4	1	3	1.4.1
8	Draw the Hasse diagram representing the partial ordering $\{(A, B)/A \subseteq B\}$ on the power set $P(S)$ where $S = \{a, b, c\}$ .	4	1	2	2.1.3

**Part - C ( $1 \times 12 = 12$  Marks)**  
**Answer All Questions**

Q.No.	Question	Marks	CO	BL	PI
9	<p>(a) For the relation <math>R = \{(1,1), (1,2), (1,3), (2,1), (2,2), (2,3), (3,1), (3,3), (4,4)\}</math> defined on <math>X = \{1, 2, 3, 4\}</math>, find the transitive closure of <math>R</math> using Warshall's algorithm.</p> <p style="text-align: center;">(OR)</p> <p>(b)(i) Prove that a function <math>f : A \rightarrow B</math> is invertible if and only if <math>f</math> is one to one and onto.  (ii) If <math>R = \{(1,2), (2,4), (3,3)\}</math> and <math>S = \{(1,3), (2,4), (4,2)\}</math>, find <math>R \cup S, R \cap S, R - S</math> and <math>S - R</math>.</p>	12	1	3	2.4.1
		8	1	2	1.2.1
		4	1	3	2.4.1

### CONTINUOUS LEARNING ASSESSMENT-II

18MAB302T– Discrete Mathematics for Engineers

Year: III

Branch: CSE (Exclude CSBS), IT, ECE & EKE

Time: 2:00 to 3:30 pm

Semester: V

Date: 12.10.2022

Max. Marks: 50 Marks

**Part – A (10×1=10 Marks)**  
**Answer ALL Questions**

Q.No.	Question	Marks	CO	BL	PI
1	Every integer $n > 1$ can be written uniquely as a product of _____ (a) permutation (b) Prime numbers (c) factorial (d) composite	1	2	1	1.1.1
2	If $a$ and $b$ are two positive integers, then $\gcd(a, b) \cdot \text{lcm}(a, b) =$ (a) 1 (b) $a$ (c) $b$ (d) $ab$	1	2	2	1.1.2
3	In how many ways can 6 boys and 4 girls sit in a row? (a) $10!$ (b) $9!$ (c) $2!$ (d) $1!$	1	2	3	1.2.1
4	The value of $P(n, r) =$ _____ (a) $\frac{r!}{(n+r)!}$ (b) $\frac{n!}{r!(n-r)!}$ (c) $\frac{n!}{(n-r)!}$ (d) $\frac{n!}{r!(n+r)!}$	1	2	1	1.1.1
5	If $n$ pigeons are accommodated in $m$ pigeon-holes and $n > m$ , then atleast one pigeonhole will contain _____ (a) two or more pigeons (b) zero pigeons (c) only three pigeons (d) only two pigeons	1	2	1	1.1.2
6	Which of the following statement is the contra positive of the statement “If 4 is even and then -5 is negative”? (a) If -5 is not negative and then 4 is not even (b) If 4 is even then -5 is not negative (c) 4 is odd or -5 is not negative (d) 4 is even and -5 is not negative	1	3	2	1.1.2
7	Symbolize the statement, “If Rama gets his degree ( $p$ ), then he will go for a job ( $q$ )” (a) $q \rightarrow p$ (b) $p \rightarrow q$ (c) $p \wedge q$ (d) $p \vee q$	1	3	2	1.2.1
8	$q \rightarrow p$ is logically equivalent to (a) $7q \vee p$ (b) $p$ (c) $q$ (d) $7q$	1	3	1	1.1.2
9	$(p \rightarrow q) \wedge (p \rightarrow r)$ is logically equivalent to (a) $p \rightarrow (q \wedge r)$ (b) $p \rightarrow (q \vee r)$ (c) $p \wedge (q \vee r)$ (d) $p \vee (q \wedge r)$	1	3	2	1.2.1
10	Which one is the converse of $p \rightarrow q$ ? (a) $p \rightarrow q$ (b) $7p \rightarrow 7q$ (c) $q \rightarrow p$ (d) $7q \rightarrow 7p$	1	3	2	1.2.1

RAMAY S  
C

**Part - B (4×4=24 Marks)**  
**Answer ANY FOUR Questions**

Q.No.	Question	Marks	CO	BL	PI
11	Prove that in any group of six people, at least three must be mutual friends or at least three must be mutual strangers.	4	2	3	2.1.3
12	Find the GCD and LCM of (231, 1575) using prime factorization.	4	2	3	1.2.1
13	How many different words can be formed with the letters of the word MISSISSIPPI?	4	2	4	1.2.1
14	Show that $p \rightarrow (q \rightarrow r) \equiv (p \wedge q) \rightarrow r$ without using truth table.	4	3	4	2.1.3
15	Show that r is a valid inference from the premises $p \rightarrow q, q \rightarrow r, p$	4	3	4	2.4.1
16	Prove that $(p \rightarrow q) \wedge (p \rightarrow r) \equiv p \rightarrow (q \wedge r)$ using truth table.	4	3	4	1.1.1

**Part - C (2×12=24 Marks)**

Answer ALL Questions

Q.No.	Question	Marks	CO	BL	PI
17	<p>(a) There are 250 students in an engineering college. Of these 188 have taken a course in Fortran, 100 have taken a course in C and 35 have taken a course in Java. Further 88 have taken courses in both Fortran and C, 23 have taken courses in both C and Java and 29 have taken courses in both Fortran and Java. If 19 of these students have taken all the three courses, how many of these 250 students have not taken a course in any of these three programming languages?</p> <p style="text-align: center;">( OR )</p> <p>(b) Find the GCD of (12345, 54321) using Euclidean Algorithm and express the GCD as the linear combination of given two numbers.</p>	12	2	3	2.1.3
18	<p>(a) Show that the following premises are Inconsistent.</p> <p>(i) If Jack misses many classes due to illness then he fails in school.</p> <p>(ii) If Jack fails in school then he is uneducated.</p> <p>(iii) If Jack reads lot of books then he is not uneducated.</p> <p>(iv) Jack misses many classes due to illness and reads a lot of books.</p> <p style="text-align: center;">( OR )</p> <p>(b) Using mathematical induction, prove that <math>(3^n + 7^n - 2)</math> is divisible by 8 for <math>n \geq 1</math>.</p>	12	3	4	2.4.1

## CONTINUOUS LEARNING ASSESSMENT -III

18MAB302T- Discrete Mathematics for Engineers

Year: III

Semester: V

Branch: CSE (Exclude CSBS), IT, ECE &amp; EKE

Date:

Time:

Max.Marks: 50 Marks

## Part – A (10x1=10 Marks)

Answer ALL Questions

Q. No.	Question	Marks	CO	BL	PI
1	The inverse of $-i$ in the multiplication group $\{ 1, -1, i, -i \}$ is (a) 1      (b) $-1$ (c) $i$ (d) $-i$	1	4	2	1.1.1
2	A code can correct at most $k$ errors if and only if the minimum distance between any two codes is (a) at most $(k + 1)$ (b) at least $(2k + 1)$ (c) exactly $(k + 1)$ (d) zero	1	4	1	1.1.2
3	Let $G$ be a group. If $a, b \in G$ , then $(a * b)^{-1}$ is (a) $a^{-1} * b^{-1}$ (b) $a * b^{-1}$ (c) $a^{-1} * b$ (d) $b^{-1} * a^{-1}$	1	4	1	1.2.1
4	If $x = 11010$ , $y = 10101$ , the Hamming distance between $x$ and $y$ is (a) 3      (b) 2      (c) 4      (d) 1	1	4	2	1.1.1
5	In a group $G$ , for all $a \in G$ (a) $(a^{-1})^{-1} = a$ (b) $(a^{-1})^{-1} = a^2$ (c) $(a^{-1})^{-1} = \frac{1}{a}$ (d) $(a^{-1})^{-1} = -a$	1	4	1	1.1.2
6	A vertex with zero in degree is called (a) Sink      (b) Source      (c) Terminal      (d) Out degree	1	5	1	1.1.1
7	A path of a graph $G$ is called _____ path if it includes each vertex of $G$ exactly once (a) Hamiltonian      (b) Konigsberg      (c) Eulerian      (d) Planar	1	5	2	1.2.1
8	A tree with $n$ vertices has _____ edges (a) $nC_2$ (b) $nP_2$ (c) $n - 1$ (d) $n!$	1	5	2	1.2.1
9	A graph in which all vertices are of equal degree is called (a) multi graph      (b) non regular graph (c) regular graph      (d) complete graph	1	5	2	1.2.1
10	A graph with no parallel edges and no loops is called _____ graph. (a) Pseudo      (b) Multi      (c) Simple      (d) Tree	1	5	1	1.1.1

**Part - B (4×4=16 Marks)**  
**Answer ANY FOUR Questions**

Q.No.	Question	Marks	CO	BL	PI
11	Define: (i) abelian group (ii) cyclic group	4	4	2	2.1.3
12	Prove that the identity element of a group $(G, *)$ is unique.	4	4	2	1.2.1
13	Define Ring and Integral domain.	4	4	2	1.2.1
14	Prove that the number of vertices of odd degree in an undirected graph is even.	4	5	4	2.1.3
15	Prove that an undirected graph is a tree if and only if every pair of vertices has a unique path between them.	4	5	4	2.4.1
16	Define: (i) graph colouring (ii) chromatic number of a graph.	4	5	2	1.1.1

**Part - C (2×12=24 Marks)**  
**Answer ALL Questions**

Q. No.	Question	Marks	CO	BL	PI
17	<p>(a) Find the code words generated by the parity check matrix</p> $H = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ <p>when the encoding function is <math>e : B^3 \rightarrow B^6</math>.</p> <p style="text-align: center;">(OR)</p> <p>(b) Prove that every subgroup of a cyclic group is cyclic.</p>	12	4	3	2.1.3
18	<p>(a) Find the minimum spanning tree for the weighted graph using Kruskal's Algorithm.</p> <p style="text-align: center;">(OR)</p> <p>(b) Show that the maximum number of edges in a simple disconnected graph with <math>n</math> vertices and <math>k</math> components is <math>\underline{(n - k)(n - k + 1)}</math>.</p>	12	5	3	2.1.3



**RAMAPURAM CAMPUS**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**CONTINUOUS LEARNING ASSESSMENT-1**

**Sub Code/Name:** 18CSC301T – Formal Language and Automata

**Set : B**

**Class :** III Year / V Sem / B.Tech -CSE,AIML, IOT, BDA, CS & IT

**Date :** 12.09.2022 (AN)

**Duration : 60mins**

**Max Marks : 25**

**PARTA (5x1= 5 Marks)**

**ANSWER ALL THE QUESTIONS**

Q.No.	Question	Marks	CO	BL	PI
1	<p>Which of the following is false?</p> <p>a) The languages accepted by FA's are regular languages.</p> <p>b) Every DFA is an NFA.</p> <p>c) There are some NFA's for which no DFA can be constructed.</p> <p>d) If L is accepted by an NFA with e transition then L is accepted by an NFA without e transition</p>	1	1	2	2.8.3
2	<p>Numbers of states require to accept string ends with 10.</p> <p>a) 3</p> <p>b) 2</p> <p>c) 1</p> <p>d) 0</p>	1	1	3	2.8.4
3	<p>Given the language <math>L = \{ab, aa, baa\}</math>, which of the following strings are in <math>L^*</math>?</p> <p>1) abaabaaabaa</p> <p>2) aaaabaaaa</p> <p>3) baaaaabaaaab</p> <p>4) baaaaabaa</p> <p>a) 1, 2 and 3</p> <p>b) 2, 3 and 4</p> <p>c) 1, 2 and 4</p> <p>d) 1, 3 and 4</p>	1	1	3	3.5.1
4	<p>FSM can recognize</p> <p>a) any grammar</p> <p>b) only CFG</p> <p>c) any unambiguous grammar</p> <p>d) only regular grammar</p>	1	1	2	2.5.1
5	<p>How many minimum number of states will be there in the DFA accepting all strings (over the alphabet {a,b}) that do not contain two consecutive a's?</p> <p>a) 2</p> <p>b) 3</p> <p>c) 4</p> <p>d) 5</p>	1	1	3	2.8.1

**PART B (2x4= 8 Marks)**  
**ANSWER ALL THE QUESTIONS**

Q.N o.	Question	Marks	CO	BL	PI
6.	Using the principle of mathematical induction, prove that $1^2+2^2+3^2+\dots+n^2 \sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6}$	4	1	1	1.7.1
7.	Design DFA for the following language over $\Sigma=\{0,1\}$ (i) strings starting with 101 (ii) strings with 3 consecutive 0's	2 2	1 3	2.5.1 2.5.1	

**PART C (1x12= 12 Marks)**  
**ANSWER ANY ONE OF THE QUESTIONS**

Q.N o.	Question	Marks	CO	BL	PI
8 (a)	Construct DFA equivalent to the NFA $M=(\{A,B,C,D\}, \{0,1\}, \delta, A, \{B,D\})$ where $\delta$ is defined in the following table	12	1	2	3.5.1
	(Or)				
8 (b)	Convert the given regular expression to an $\epsilon$ -NFA (i) $(a+b)^*b(a+b)$ (ii) $(a+b)^*(aa+bb)$	6 6	1 1	1 1	1.7.1 1.7.1

Register number \_\_\_\_\_



**SRM Institute of Science and Technology**  
**Faculty of Engineering and Technology**  
**Ramapuram Campus**  
**Department of Computer Science & Engineering**

Academic Year: 2022-23 (ODD)  
 Continuous Learning Assessment -2

Course Code &amp; Title: 18CSC301T &amp; Formal Languages and Automata Theory

Duration: 90 Mins Date: 19.10.2022

Year &amp; Sem: III Year /V Sem (CSE, CSE with all specialization &amp; IT) Max. Marks: 50

**Set -A**

Course articulation matrix:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO-1	3														3
CO-2		3	2												3
CO-3	3	3													3
CO-4	3	3													3
CO-5		3	1										2		3

Part - A

Instructions: Answer any two questions

Q. No	Question	Marks	B L	C O	P O	PI Code
1	Consider the following grammar $S \rightarrow NP VP$ $S \rightarrow Aux NP VP$ $S \rightarrow VP$ $NP \rightarrow Det NOM$ $NOM \rightarrow Noun$ $NOM \rightarrow Noun NOM$ $VP \rightarrow Verb$ $VP \rightarrow Verb NP$ $Det \rightarrow that   this   a   the$ $Noun \rightarrow book   flight   meal   man$ $Verb \rightarrow book   include   read$ $Aux \rightarrow does$	25	3	2, 3	4	4.2.1
i.	How many productions in the given CFG are already in CNF? (1 Mark)					
a.	16					
b.	12					
c.	4					
d.	13					
ii.	The given production are Type _____ grammar. (1 Mark)					
a.	0					
b.	1					
c.	2					
d.	3					
iii.	List the terminal and non-terminal symbols (3 Marks)					

Register number \_\_\_\_\_

	iv. Give the equivalent PDA rules for the grammar given in question (5 marks) v. Check if the above grammar could generate the string "does this flight include a meal" (4 marks) vi. Simplify the grammar (7 Marks) vii. Convert the above CFG to Chomsky Normal Form (CNF) (4 Marks)				
2	2. Read the following scenario and answer the following questions. Consider there are two color cubes (Red and Yellow) they are equal in number. The logic is Red cube to be taken and stack all the Red cubes first. Later once no more Red cubes are available, for each Yellow cube remove one Red cube from the stack. Make sure stack should be cleared. i. What is the maximum stack size for a PDA? (1 Mark) a. n b. $2^n$ c. infinite d. $n^*$ ii. Is the language generated for the given scenario is regular? (1 Mark) a. Yes b. No iii. Generate the accepting language for above Scenario. (3 Marks) iv. Construct CFG for the above Scenario. (4 Marks) v. Design PDA transitions for the given scenario. (5 marks) vi. List the PDA and CFG Tuple representations for above scenario. (4 Marks) vii. Illustrate a PDA Diagram for the above scenario. (4 Marks) viii. Check whether 3 consecutive yellow followed by three consecutive red balls can be taken? (3 Marks)	25	4, 2, 3	4	4.2.1
3	3. Consider the following CFG for any programming construct $BLOCK \rightarrow STMT \{ STMTS \}$ $STMTS \rightarrow \epsilon   STMT STMTS$ $STMT \rightarrow EXPR   if (EXPR) BLOCK   while (EXPR) BLOCK   do BLOCK while (EXPR) BLOCK$ $EXPR \rightarrow a   constant   EXPR + EXPR   EXPR - EXPR   EXPR * EXPR   EXPR / EXPR$ i. What can be told about the given grammar? (1 Mark) a. It is ambiguous for the string $a+a^*$ b. It is unambiguous for the string $a+a^*$ c. It cannot derive the string $a+a^*$ d. It can derive the string $a+a^*$ ii. Which of the following is not true about ambiguous grammar? (1 Mark) a. It has two leftmost derivations. b. It has two rightmost derivations. c. It is sufficient to derive one leftmost and one rightmost derivation to prove its ambiguity. d. It has two parse trees. iii. Remove the null production (3 Marks) iv. Remove the unit production (4 Marks) v. Remove the useless symbols (4 Marks) vi. Convert it into GNF (12 Marks)	25	3, 2, 4	4	4.2.1



**SRM INSTITUTE OF SCIENCE AND TECHNOLOGY  
RAMAPURAM CAMPUS  
FACULTY OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF INFORMATION TECHNOLOGY**

CYCLE TEST III

[Common To CSE & IT]

**Sub Code/Name : 18CSC301T - Formal Language and Automata**  
**Class : III Year / V Sem / B.Tech**  
**Max Marks : 50**

**Set: 1**  
**Date: 18.11.2022**  
**Duration: 90 mins**

✓  
*Gpt*  
 OPEN Book

**ANSWER ANY TWO QUESTIONS**

Q.N o	Questions	Ma rks	CO	BL	PI
1	<p>a) Design a Turing Machine to add the number of red and blue color pens owned by a school kid in his school bag in single digits. The result should be the addition two single digit numbers. (Solution in words(2)State transition diagram (4), Table (2), example parsing(4))</p> <p>b) A simple robot was designed by a set of interns in a research lab which asks everyone their age and simply tells whether it is prime or not. Design a Multiple Track Turing Machine which performs this task. (10)</p> <p>c) Name some of the computational functions for which we can design a Turing Machine. (2)</p> <p>d) Recursively Enumerable Language is a subset of Context Free Language. State it is True or False. (1)</p>	25	5	L1	1.7.1
2	<p>a) Write the corresponding binary code for the given Turing Machine (12)</p> <p>A single tape Turing Machine M has six states <math>\{q_0, q_1, q_2, q_3, q_4, q_5\}</math>, of <math>q_0</math> and <math>q_5</math> are initial state and final state respectively. The tape alphabet of M is <math>\{a, b, B\}</math> and its input alphabet is <math>\{a, b\}</math>. The symbol B is the blank symbol used to indicate end of an input string. The transition function of M is given below:</p> $\begin{aligned}\delta(q_0, a) &= (q_1, a, R), \\ \delta(q_1, a) &= (q_2, a, R), \\ \delta(q_2, a) &= (q_3, a, R), \\ \delta(q_3, a) &= (q_3, a, R), \\ \delta(q_3, b) &= (q_4, b, R), \\ \delta(q_3, B) &= (q_5, B, L), \\ \delta(q_4, b) &= (q_4, b, R), \\ \delta(q_4, B) &= (q_5, B, L).\end{aligned}$ <p>b) Every non trivial property of a Turing Machine is Undecidable. Define the theorem with its correct name. Write the Proof for the same (6)</p> <p>c) When can you say that the problem P1 reduces to P2? Write the proof. (7)</p>	25	5 & 6	L2	3.6.2

	a) There are two set of computers in a lab. The details are given below:			
	DELL	ASUS		
	1	10		
	110	0		
	0	11		
3	We need to find out the correct sequence with which they need to be arranged, so that both the computers are uniformly distributed in the lab. (8)	25	6	L3 1.7.1
	b) Is it a Post Correspondence Problem? If yes define it.(2)			
	c) If it is a Modified Post Correspondence Problem, Justify it. (3)			
	d) Prove the following:			
	i) The Intersection of two recursively enumerable languages is also recursively enumerable (5)			
	ii) A Language is recursive if it and its complement are recursively enumerable (5)			
	e) Write the difference between NP-Complete and NP-Hard problem. (2)			

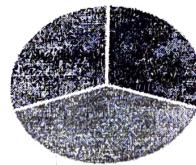
#### Outcome Alignment Matrix:

QUESTION N NUMBER						
	CO 1	CO 2	CO 3	CO 4	CO5	CO5
1					1	
2					1	1
3						1
Total %					50 %	50 %

Quality Matrix:			
Question No.	BL Distribution		
	L1	L2	L3
1	1		
2		1	
3			1
Total	25 Marks	25 Marks	25 Marks
% (for 50)	30%	40%	30%

#### Bloom's level Distribution:

CLA-3-Distribution of Questions



- L1-Remember & Understand
- L2-Apply & Analyse
- L3-Evaluate & Create

Prepared by:

Dr.R.Rathna

Rathna

Scrubinised by:

S.Biju  
S.Biju  
Dr. D. Damodaran

Verified and approved by HOD:

Rajswal  
11/11/2022



# SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

RAMAPURAM CAMPUS

FACULTY OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING



*[Handwritten signature]*

ACADEMIC YEAR (2022-2023)

## CONTINUOUS LEARNING ASSESSMENT - 1

Sub Code/Name : 18CSE390T COMPUTER VISION

Set: EVEN

Class : III Year / V Sem / B.Tech (AIML)

Date : 13-09-2022

Max Marks : 25

Duration : 60 mins

### PART A (5x1= 5)

ANSWER ALL THE QUESTIONS

Q.No.	Question	Marks	CO	BL	PI
1.	A translation is applied to an object by _____. a) Enlarging the Object b) Repositioning it along with straight line path c) Repositioning it along with circular path d) Shrinking the Object	1	1	1	1.2.2
2.	The two-dimensional translation equation in the matrix form is _____. a) $P' = P + T$ b) $P' = P - T$ c) $P' = P * T$ d) $P' = p$	1	1	1	1.2.1
3.	The rotation axis that is perpendicular to the xy plane and passes through the pivot point is known as _____. a) Rotation b) Translation c) Scaling d) Shearing	1	1	1	1.6.1
4.	In controllable interaction user can change the attributes of the _____. A) Images B) Widgets C) Videos D) Audios	1	1	2	2.5.1
5.	If the direction of the projection is normal then it is called as _____. A) Orthographic parallel projection B) Oblique parallel projection C) Perspective Projection D) Ortho-Oblique Projection	1	1	2	2.6.1

**PART-B (2x4= 8)**  
**ANSWER ALL THE QUESTIONS**

Q.No.	Question	Marks	CO	BL	PI
6.	Define BRDF. What is Helmholtz reciprocity?	4	1	3	3.6.2
7.	Differentiate between Discrete Fourier Transform and Fast Fourier Transform.	4	1	3	3.6.4

**PART-C (1x12= 12)**  
**ANSWER ALL THE QUESTIONS**

Q.No.	Question	Marks	CO	BL	PI
8.a	Illustrate briefly about Orthography and Para-perspective in 2D and 3D geometric primitives. [or]	12	1	2	2.6.4
8.b	Explain the following Linear Filtering techniques, ♦ Separable filtering ♦ Band-pass and steerable filters	12	1	1	1.6.1



11/12

<b>Sub Code/Name</b>	18CSE390T – Computer Vision	<b>Set</b>	<b>EVEN</b>
<b>Year/Sem/Branch</b>	III/ V/ B.Tech-CSE-AIML A,B,C	<b>Date</b>	17.10.22
<b>Max. Marks</b>	50	<b>Duration</b>	90 Mins.

**PART A (10 X 1=10)****ANSWER ALL THE FOLLOWING QUESTIONS**

<b>Q.No.</b>	<b>MCQ Questions</b>	<b>Marks</b>	<b>CO</b>	<b>BL</b>	<b>PI</b>
1.	<b>For edge detection we observe</b> a) intensity transition b) shape transition c) color transition d) sign transition	1	2	1	1.6.1
2	<b>The direction of angle to the gradient is</b> a) Orthogonal b) Isolated c) Isomorphic d) Isotropic	1	2	1	1.6.1
3	<b>Edge detection in images is commonly accomplished by performing a spatial --- of the image field.</b> a) Smoothing Filter b) Integration c) Differentiation d) Min Filter	1	2	2	1.6.1
4	<b>Multi-dimensional hashing maps descriptors into _____ based on some function applied to each descriptor vector.</b> a) fixed size buckets b) variable sized buckets c) table d) Dbms	1	2	2	1.6.1
5	<b>Isolated edge points can also be grouped into</b> a) Pixel b) region c) Longer curves or contours, as well as straight line segments d) Contour	1	2	1	1.6.1
6	<b>Techniques like Livewire or Intelligent Scissors are used in</b> a.Model based segmentation b.Semi automatic segmentation c.Threshold segmentation d.Segmentation	1	3	1	1.6.1

<b>7</b>	<b>Example of Active Contour</b> a.Snakes, intelligent scissors, level set b. Successive Approximation c. Hough Transform d.Scissors	1	3	1	1.6.1
<b>8</b>	<b>An Approach which optimize the contour in real time as the user is drawing</b> a) Intelligent Scissors System b) Gaussian c) Similarity d) Edge	1	3	1	1.6.1
<b>9</b>	<b>In level set which define the curve</b> a. Contrast b. Quantization c. Sampling d. Zero crossing of a characteristic function	1	3	1	1.6.1
<b>10</b>	<b>Split and merge technique is</b> a. Image Restoration Technique b. an Image Processing Technique Used To Segment An Image c. Image Enhancement Technique d. Image Acquisition Technique	1	3	1	1.6.1

**PART B (4 X 4 = 16)****ANSWER ANY FOUR OUT OF SIX QUESTIONS**

<b>Q. No.</b>	<b>Questions</b>	<b>Marks</b>	<b>CO</b>	<b>BL</b>	<b>PI</b>
11	Discuss about Bias and Gain normalization	4	2	1	2.5.1
12	Explain briefly about Vanishing points	4	2	2	2.5.2
13	Write short notes on Edge Linking	4	2	2	2.5.4
14	Discuss in detail about Snakes	4	3	2	2.5.1
15	Difference between Divisive and Agglomerative algorithms in Cluster analysis.	4	3	2	2.6.4
16	Write short note on Pose Estimation.	4	3	2	2.6.2

**PART C (2 X 12 = 24)****ANSWER EITHER OF OR IN EACH UNIT**

<b>Q. No.</b>	<b>Questions</b>	<b>Marks</b>	<b>CO</b>	<b>BL</b>	<b>PI</b>
	a) Explain in detail about Feature Detection techniques with relevant examples and diagrams.	12	2	3	2.6.4
	OR				
17	b) What are Feature Descriptors? Explain the following Feature Descriptors: i) SIFT ii) GLOH.	12	2	2	2.7.1
	a) List the approaches used to locate Boundary Curves in Images. Explain Intelligent Scissors and Level Set in detail.	12	3	1	2.7.1
	OR				
18	b) Illustrate the Expectation Maximization algorithm in K-means and Mixtures of Gaussians.	12	3	3	2.7.1



**CONTINUOUS LEARNING ASSESSMENT-III**

<b>Sub Code /Name</b>	18CSE390T – Computer Vision	<b>Set</b>	ODD
<b>Year/Sem/Branch</b>	III/ V/B.Tech-CSE-AIML	<b>Date</b>	17.11.2022
<b>Max. Marks</b>	50	<b>Duration</b>	90 Mins.

**PART A (10 × 1 = 10 marks)**

**ANSWER ALL THE QUESTIONS**

<b>Q.No.</b>	<b>MCQ Questions</b>	<b>Mark</b>	<b>CO</b>	<b>BL</b>	<b>PI</b>
1.	The fundamental matrix is given by _____. a. $F = K_1^T E K_2^{-1}$ b. $F = K_1^{-T} E K_2^{-1}$ c. $F = K_1^T E K_2^1$ d. $F = K_1^{-T} E K_2^1$	1	4	1	1.6.1
2.	Most modern cameras have _____ pixels and an image center near the _____ of the image a. round, center b. rectangle, corner c. square, middle d. round, edge	1	4	1	1.6.1
3.	Which one of the following is the point of intersection of the line joining the camera centers with the image plane? a. Epipole b. Axis c. Point of projection d. Point at infinity	1	4	2	1.6.1
4.	Fourier-based alignment relies on the fact that the Fourier transform of a shifted signal has the same magnitude as the original signal, but a _____ phase	1	4	2	1.6.1

a. exponentially varying b. linearly varying c. unvarying d. constant				
Structure from motion is a _____ in structure and motion. 5. a. Bipartite problem b. Graph Coloring Problem c. Travelling salesman problem d. Normalized Cut	1	4	1	1.6.1
Triangulation is the converse of _____ problem. 6. a. Direct Linear Transform b. Pose Estimation c. 2D Motion Estimation d. Rigid Transform	1	5	1	1.6.1
For converting a projective reconstruction into a metric one, _____ techniques have been developed. 7. a. Orthographic Projection b. Projection Matrix c. Self-calibration d. Epipolar	1	5	1	1.6.1
The normal vector perpendicular to the line $\vec{n}$ can be expressed as a function of two angles $(\theta, \phi)$ , such that $\vec{n} = (\cos \theta \cos \phi, \sin \theta \cos \phi, \sin \phi)$ using _____. 8. a. Spherical coordinates b. Cylindrical coordinates c. Planar coordinates d. Vector coordinates	1	5	1	1.6.1
Professional panoramic photographers often use pan-tilt heads that make it easy to control the tilt and to stop at specific _____ in the rotation angle. 9. a. error b. bias c. weight d. detents	1	5	1	1.6.1
Radial distortion can be estimated _____. 10. a. ahead of time b. just in time c. using alignment d. by matching pixels	1	5	1	1.6.1

**PART B (4 × 4 = 16 marks)**  
**ANSWER ANY 4 QUESTIONS OUT OF 6**

Q. No.	Questions	Mark	CO	BL	PI
11.	What is the need for Projective Reconstruction?	4	4	1	2.5.1
12.	Write short notes on the Bundle Adjustment techniques involved in accurately recovering structure and motion.	4	4	2	2.5.2
13.	Give the equation and briefly explain the components of Brightness Constancy Constraint equation.	4	4	2	2.5.2
14.	Explain the Projection from 3D to Cylindrical coordinate	4	5	2	2.5.1
15.	Explain the process of Recognizing Panoramas.	4	5	2	2.5.2
16.	What is parallax? How can it be removed?	4	5	2	2.6.2

**PART C (2 × 12 = 24 marks)**  
**ANSWER ALL THE QUESTIONS**

Q. No.	Questions	Mark	CO	BL	PI
17.	a) What is Fourier-based Alignment? Explain it in detail with necessary examples.	12	4	3	2.6.4
	OR				
18.	b) Explain Hierarchical Motion Estimation in detail.	12	4	2	2.7.1
	a) Explain Parametric Motion Models in detail with necessary figures. OR b) Explain the concept of Bundle Adjustment in detail.				
		12	5	3	2.7.1



## Department of Computer Science and Engineering

18CSE388T - ARTIFICIAL NEURAL NETWORKS

CONTINUOUS LEARNING ASSESSMENT - 1

Branch: CSE-AIML

Max. Marks: 25

Year/Sem: III/V

Date: 13.09.2022(AN)

Set: Set - A

Duration: 60mins

## PART-A (5x1=5)

## ANSWER ALL THE QUESTIONS

Q.No	Questions	Marks	CO	BL	PI
1	<p>Choose the estimated number of neurons in human cortex?</p> <p>a) <math>10^8</math>  b) <math>10^5</math>  c) <math>10^{11}</math>  d) <math>10^{20}</math></p>	1	1	3	1.7.1
2	<p>Who proposed the first perceptron model in 1958?</p> <p>a) McCulloch-Pitts  b) Marvin Minsky  c) Hopfield  d) Rosenblatt</p>	1	1	1	1.7.1
3	<p>Choose these action potential events in their proper sequence:</p> <p>1. The neuron is stimulated at the dendrites  2. K<sup>+</sup> gates open  3. The neuron is in a polarized "resting" state  4. Na<sup>+</sup> gates open  5. The cell is fully depolarized  6. The cell is fully repolarized</p> <p>a) 1, 2, 4, 3, 5, 6  b) 3, 1, 4, 5, 2, 6  c) 4, 6, 2, 1, 5, 3  d) 1, 4, 2, 6, 5, 3</p>	1	1	3	1.5.1
4	<p>Find the right option:</p> <p>i. Electric synapse requires a direct, strong connection between sender and receiver  ii. Chemical synapse needs a connection between the source and the target  iii. Neurotransmitters carry the information into the nucleus of the cell.</p> <p>a) i,ii,iii are true  b) i,iii are true  c) ii,iii are true  d) i alone is true</p>	1	1	1	1.5.1
5	<p>Choose the right hierarchy of light processing information:</p> <p>a) Bipolar cells-&gt;Ganglion cells-&gt;Photoreceptors  b) Photoreceptors-&gt;Ganglion cells-&gt;Bipolar cells  c) Photoreceptors-&gt;Amacrine Cells-&gt;Bipolar cells  d) Photoreceptor-&gt;Bipolar cell-&gt;Ganglion cell</p>	1	1	3	1.5.1

d)  
W  
a) Re  
b) Re  
c) Rem  
d) Rest

**PART-B (2x4=8)**  
**ANSWER ALL THE QUESTIONS**

<b>Q.No</b>	<b>Questions</b>	<b>Marks</b>	<b>CO</b>	<b>BL</b>	<b>PI</b>
6	Explain why receptors cells are called specialized cells?	4	1	3	1.5.1
7	Compare Biological Neural Networks with Artificial Neural Networks.	4	1	2	1.7.1

**PART-C (1x12=12)**  
**ANSWER THE QUESTION**

<b>Q.No</b>	<b>Questions</b>	<b>Marks</b>	<b>CO</b>	<b>BL</b>	<b>PI</b>
8 (a)	Explain in detail about the Electrochemical processes in the neuron and its components.	12	1	1	1.7.1
8 (b)	(OR) Distinguish between different types of eyes and give an outline of common light sensing organs with suitable diagrams.	12	1	2	1.5.1


**Branch: CSE-AIML**
**Year/Sem: III**
**Set: Set - B Duration: 90mins**
**Max. Marks: 50**
**Date: 14.10.2022**
**PART-A (10 x 1 = 10 marks)**
**(ANSWER ALL THE QUESTIONS)**

<b>Q. No.</b>	<b>Questions</b>	<b>Marks</b>	<b>CO</b>	<b>BL</b>	<b>PI</b>
1.	In which network topology, loops are allowed? a) Feed Forward network b) Forward Feed network c) Lateral recurrence network d) Direct recurrence network	2	1	1.7.1	
2.	What is the simplest and also commonly used linear activation function? a) Binary function b) Quadrille function c) Propagation function d) Fermi function	2	1	2.5.1	
3.	Which function converts vector inputs to scalar network inputs? a) Activation function b) Propagation function c) Output function d) Input function	2	1	1.5.1	
4.	When the first artificial neural network is founded in the year _____? a) 1957 b) 1958 c) 1959 d) 1960	2	1	1.6.1	
5.	What is the condition to activate the neuron? a) Network input < Threshold value b) Network input > Threshold value c) When it reaches highest point of sensation d) when it reaches zero input	2	1	1.5.1	
6.	Which of the following is not example of unsupervised neural network? a) Self organizing feature map b) Hebb network c) Back Propagation network d) Self organizing feature map and Hebb network	3	1	1.7.1	
7.	What does RNN stands for? a) Recurrent Neural Network b) Recurring Neural Network. c) Removable Neural Network d) Restoring Neural Network	2	1	1.7.1	

8.	Which of the following option is no the disadvantage of Recurrent Neural Network? a) Training an RNN is quite a challenging task b) Input of any length can be processed in this model. c) Exploding and gradient vanishing is common in this model. d) It cannot process very long sequences if using 'tanh' or 'relu' as an activation function	1	2	1	1.2.2
9.	Why are linearly separable problem of interest of neural network researchers? a) because they are the only class of problem that perceptron can solve successfully b) because they are the only mathematical functions that are continue c) because they are the only class of problem that network can solve successfully d) because they are the only mathematical functions you can draw	1	3	3	1.5.1
10.	What is back propagation? a) it is the transmission of error back through the network to adjust the inputs b) it is the transmission of error back through the network to allow weights to be adjusted so that the network can learn. c) it is another name given to the curve function in the perceptron. d) it is the transmission of error back through the network to adjust the output.	1	3	1	1.5.1

**PART- B (4 x 4 = 16)**
**(ANSWER ANY FOUR OUT OF SIX QUESTIONS)**

<b>Q. No.</b>	<b>Question</b>	<b>Marks</b>	<b>CO</b>	<b>BL</b>	<b>PI</b>
11.	Describe the order in which neuron activations are calculated.	4	2	2	1.6.1
12.	Distinguish between a feed forward network and a recurrent network	4	2	3	1.6.1
13.	Discuss the role of activation function in artificial neuron and list down names of some popular activation functions.	4	2	2	1.5.1
14.	What is Rprop? Explain the term “F prop is an extension to back propagation of error”.	4	3	1	1.7.1
15.	What do you mean by Gradient descent? Explain the problems associated with Gradient procedure?	4	2	3	2.5.1
16.	Explain Hebbian learning rule.	4	3	2	1.7.1

**PART- C (2 x 12 = 24)**
**ANSWER EITHER OF OR IN EACH UNIT**

<b>Q. No.</b>	<b>Question</b>	<b>Marks</b>	<b>CO</b>	<b>BL</b>	<b>PI</b>
17 (a).	With neat sketch explain network topologies in ANN.  (OR)	12	2	1	1.6.1
17 (b).	Explain various function aspects of artificial neuron model with respect to bias, weighted inputs and activation functions.	12	2	2	1.6.1
18 (a).	Distinguish between Supervised Learning and Unsupervised Learning in ANN.  (OR)	12	3	3	1.5.1
18 (b).	Demonstrate in detail about Single Layer Perceptron (SLP) learning algorithm for linearly separable classification.	12	3	3	1.7.1



**SRM INSTITUTE OF SCIENCE AND TECHNOLOGY**

RAMAPURAM CAMPUS



*CSE 388T*

ODD

FACULTY OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
18CSE388T/ARTIFICIAL NEURAL NETWORKS  
CONTINUOUS LEARNING ASSESSMENT - III (2022-2023)

Branch: CSE-AIML

Year/Sem: II/I/V

Set: Set - B

Max. Marks : 50

Date: 16-11-2022 (FN)

Duration: 90 mins

**PART-A (10 x 1 = 10 marks)**  
(ANSWER ALL THE QUESTIONS)

Q. No.	Questions	Marks	CO	BL	PI
1.	In which type of neural network, the data is grouped based on its distance from a center point? a) Recurrent Neural Network b) Modular Neural Network c) Radial Basis Functions Neural Network d) Convolution Neural Network	1	3	1	1.7.1
2.	Which network has backward links from output to the input and hidden layers is called as ____. a) Self-organizing maps b) Perceptrons c) Recurrent neural network d) Multi layered perceptron	1	3	1	2.5.1
3.	Why is the XOR problem exceptionally interesting to neural network researchers? a) because it can be expressed in a way that allows you to use a neural network b) because it is complex binary operation that cannot be solved using neural networks c) because it can be solved by a single layer perceptron d) because it is the simplest linearly inseparable problem that exists	1	3	3	1.5.1
4.	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	1	3	3	1.6.1
5.	What does RBF stand for? a) Radial Basis Function b) Recurrent Base Function c) Recurrence Basic Function d) Radial Basic Function	1	3	1	1.5.1
6.	Which network has backward links from output to the input and hidden layers is called as ____. a) Self-organizing maps b) Perceptrons c) Recurrent neural network d) Multi layered perceptron	1	4	3	1.7.1

7.	In self-organizing network, how is layer connected to output layer? a) Some are connected b) all are one to one connected c) each input unit is connected to each output unit d) all are self connected	1	4	1	1.7.1
8.	What is the objective of back propagation algorithm? a) To develop learning algorithm for multilayer feed forward neural network b) To develop learning algorithm for single layer feed forward neural network c) To develop learning algorithm for multilayer feed forward neural network, so that network can be trained to capture mapping implicitly. d) To develop learning algorithm for single layer feed forward neural network, so that network can be trained to capture mapping implicitly.	1	4	3	1.2.2
9.	What type learning involved in ART? a) Supervised b) Unsupervised c) Reinforcement d) Supervised and unsupervised	1	4	3	1.5.1
10.	What is unsupervised learning? a) Weight adjustment based on deviation of desired output from actual input b) Weight adjustment based on desired output only c) Weight adjustment based on local information available to weights d) Weight adjustment based on input only	1	4	1	1.5.1

**PART- B (4 x 4 = 16)**  
(ANSWER ANY FOUR OUT OF SIX QUESTIONS)

Q. No.	Questions	Marks	CO	BL	PI
11.	Sketch the architecture of Elman network and explain the role of the context layer in an Elman network.	4	3	3	1.6.1
12.	Summarize the methods to determine centers and widths of RBF neurons.	4	3	2	1.6.1
13.	Brief about Growing RBF networks.	4	3	2	1.5.1
14.	List the applications of SOMs.	4	4	1	1.7.1
15.	Define Topology function and explain how a learning neuron influences its neighbors?	4	4	3	2.5.1
16.	Explain the steps involved in training SOMs.	4	4	1	1.7.1

**PART- C (2 x 12 = 24)**  
ANSWER ALL THE QUESTIONS

Q. No.	Questions	Marks	CO	BL	PI
17 (a)	Explain about training recurrent networks.  (OR)	12	3	2	1.6.1
17 (b)	Distinguish between Radian Basis Function Neural Network and Multi-layer Perceptron Feed-Forward Neural Network.	12	3	3	1.6.1
18 (a)	What is ART? Explain the structure and learning process of an ART network.  (OR)	12	4	1	1.5.1
18 (b)	Discuss in detail about variations of SOMs.	12	4	2	1.7.1



Sub Code/Name: 18CSC302J – COMPUTER NETWORKS

Set: 2

Class : III Year / V Sem/ B.Tech (IT)/CSE/ CSE Specializations

Date : 14.09.2022

Max Marks : 25

Duration : 1hr

**PART-A(5x1= 5)****ANSWER ALL THE QUESTIONS**

Q.No.	Question	Marks	CO	BL	PI
1.	Header of datagram in IPv4 has a) 0 to 20 bytes                            b) 20 to 40 bytes c) 20 to 60 bytes                            d) 20 to 80 bytes	1	1	1	3.5.1
2.	In a communication scenario, there is a host A present in network X having MTU = 520 bytes, there is a host B present in network Y having MTU = 200 bytes, IP header of 20 bytes. Host A wants to send a message of 540 bytes to host B. Identify the number of fragments to be fragmented for the above scenario. a) 4b) 3c) 2d) 1	1	1	1	3.5.1
3.	An ARP request is ____; an ARP reply is ____. a) Unicast, Broadcast                        b) Broadcast, Broadcast c) Unicast, Unicast                            d) Broadcast, Unicast	1	1	1	3.5.1
4.	UDP header checksum is used to detect errors over the user datagram with a) header & datab) header & error c) data & error                                d) error only	1	1	1	3.5.1
5.	In TCP/IP communication scenario, the round trip time is the a) Time taken to send a packet from sender to receiver b) Time taken to send a packet from receiver to sender c) Time taken to send a packet and receive the packet d) Time taken to send, receive and fragment a packet	1	1	1	3.5.1

**PART- B(2x4= 8)****ANSWER ANY 2 QUESTION:**

Q.No.	Question	Marks	CO	BL	PI
6.	Discuss the protocol used for address resolution and explain the Proxy ARP.	4	1	1	3.5.1
7.	Identify the protocol that is used to message the errors and control mechanism. Explain the message format and types of errors	4	1	2	3.6.2

**PART- C (12x1= 12)**

Q.No.	Question	Marks	CO	BL	PI
8.a	Identify and explain the fragmentation process with suitable example. [OR]	12	1	3	3.5.2
8.b	Illustrate and explain with diagram the TCP connection establishment, Data transfer and TCP connection termination.				



**CONTINUOUS LEARNING ASSESSMENT - II**

Sub Code/Name: 18CSC302J – Computer Networks      Set : A  
 Class: III Yr. / V Sem. / B.Tech (IT)/CSE/CSE Specializations      Date : 18.10.2022(AN)  
 Max Marks : 50      Duration : 90 Mins.

PART-A (10 x 1 = 10 marks)

(ANSWER ALL THE QUESTIONS)

Q. No.	Questions	Marks	CO	BL	PI
1.	To use _____, a program must create a socket, bind addresses to it, accept incoming connections, and then communicate using the read or write primitives. a)TCP                    b) FTP c)UDP                    d) IP	1	2	1	2.5.1
2.	Transport layer aggregates data from different applications into a single stream before passing it to _____ a) Data Link layer                    b) Network layer c) Application layer                d) physical layer	1	2	1	2.6.2
3.	User datagram protocol is called connectionless because a) all UDP packets are treated independently by transport layer b) it sends data as a stream of related packets c) it is received in the same order as sent order d) it sends data very quickly	1	2	1	2.5.3
4.	An endpoint of an inter-process communication flow across a computer network is called _____ a) pipe                            b) socket c) Port                            d) machine	1	2	1	2.5.1
5.	In Transmission Control Protocol (TCP) each connection have _____ a) 1 Stream                    b) 2 Streams c) 3 Streams                    d) Infinite Streams	1	2	1	2.5.2
6.	The characters are sent to the TELNET client, which transforms the characters to a universal character set called -----characters and delivers them to the local TCP/IP stack. a) Network Virtual Terminal                    b) Data Terminal c) Command line interface                    d) Remote flow control	1	3	1	4.4.3
7.	The well-known port _____ is used for the control connection and the well-known port _____ for the data connection. a) 21,20                            b) 20,21	1	3	1	4.4.2

	c) 20,20	d) 21,20			
8.	Which is a standard locator for specifying any kind of information on the Internet? a) Uniform Resource Locator                    b) Uniform Resource Location c) User Resource Locator		i	3	I 4.6.3
9.	HTTP is _____ protocol. a) Application layer                            b) Transport layer c) Network layer                                    d) Data Link layer		i	3	I 4.6.2
10.	A proxy server can act as _____ a) Client    b) Server c) Both client and server		i	3	I 4.6.3

**PART- B (4 x 4 = 16)**

(ANSWER ANY FOUR OUT OF SIX QUESTIONS)

Q. No.	Question	Marks	CO	BL	PI
11.	Write short notes on TCP package with a neat sketch.	4	2	1	2.5.1
12.	Distinguish between TCP and UDP.	4	2	2	2.6.5
13.	Explain any two services of SCTP.	4	2	2	2.6.2
14.	Define the concept of domains and domain name space	4	3	1	4.4.1
15.	Describe process of local login and remote login in TELNET	4	3	1	4.4.3
16.	Define the components of an URL with an example	4	3	1	12.5.1

**PART- C (2 x 12 = 24)**

(ANSWER EITHER OF OR IN EACH UNIT)

Q. No.	Question	Marks	CO	BL	PI
17 (a).	Describe in detail packet format of SCTP and its working with neat diagram.	12	2	2	2.7.2
	(OR)				
17 (b).	Explain the working of client-server communication paradigm using TCP connection	12	2	2	2.7.1
18 (a).	Discuss the use of DNS on the Internet and describe the categories of domains	12	3	3	4.4.1
	(OR)				
18 (b).	Brief about various connections and communications available in FTP. Explain the process of file transfer with neat sketch.	12	3	3	4.6.2



Sub Code/Name : 18CSC3023- COMPUTER NETWORKS Set : EVEN  
 Class: III Year / V Sem/ B.Tech CSE, CSE Specialization, IT Date : 18.11.2022  
 Max Marks : 50 Duration : 90 mins

## PART - A (10x1= 10)

## ANSWER ALL THE QUESTIONS

Q.No.	Questions	Marks	CO	BL	PI
1	The size of an IP address in IPv6 is _____ a) 4 bytes b) 128 bits c) 8 bytes d) 100 bits	1	4	1	1.6.1
2	Which among the following features is present in IPv6 but not in IPv4? a) Fragmentation b) Header checksum c) Options d) Anycast address	1	4	1	1.5.1
3	IPv6 supports both _____ auto configuration mode of its host devices. a) Stateful b) Stateless c) stateful and stateless d) No state	1	4	1	1.6.1
4	IPv6 uses _____ times more bits to address a device on the Internet. a) 3 b) 4 c) 5 d) 6	1	4	1	1.5.2
5	Which of the following transmission directions listed is not a legitimate channel? a) Simplex b) Half Duplex c) Full Duplex d) Double Duplex	1	4	2	1.6.1
6	Which protocol does the PPP protocol provide for handling the capabilities of the connection/link on the network? a) LCP b) NCP c) Both LCP and NCP d) TCP	1	5	1	1.5.1
7	ATM standard defines _____ layers a) 2 b) 3 c) 4	1	5	1	1.6.1

	d) 5 Frame Relay has error detection at the _____. a) Data link layer b) Network layer c) Application layer d) Transport layer	1	5	1	1.5.1
8	Which of the following statements is not applicable for cable internet access? a) It is a shared broadcast medium b) It includes HFCs c) Cable modem connects home PC to Ethernet port d) Analog signal is converted to digital signal in DSLAM	1	5	1	1.6.1
9	The function of DSLAM is to a) Convert analog signals into digital signals b) Convert digital signals into analog signals c) Amplify digital signals d) De-amplify digital signals	1	5	1	1.5.1

 PART - B (4 X 4= 16)  
 ANSWER ANY FOUR OUT OF SIX QUESTIONS

Q.N.o.	Question	Marks	CO	BL	PI
11	Classify the different types of Addresses of IPV6.	4	4	2	2.6.4
12	Explain about IPV6 packet format.	4	4	3	1.6.1
13	Compare and contrast between IPV4 to IPV6 Tunnelling.	4	4	3	4.6.1
14	Inference about the concept of Frame relaying.	4	5	2	2.6.4
15	Justify the importance of other DSL Technologies.	4	5	3	2.6.4
16	Summarize about PPP frame format.	4	5	1	1.6.1

 PART - C (2 X 12= 24)  
 ANSWER ALL THE QUESTIONS

Q.N.o.	Question	Marks	CO	BL	PI
17.a	How the transitions do occurs from IPV4 to IPV6?	12	4	2	2.6.5
	OR				
17.b	Briefly explain about the Mobility process in IPV6.	12	4	1	1.7.1
18.a	Elaborate about the ATM technology in detail with a neat sketch.	12	5	3	2.6.3
	OR				
18.b	Illustrate in detail about the HDLC transfer mode and Frame structure.	12	5	2	2.7.1



FACULTY OF ENGINEERING AND TECHNOLOGY  
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CONTINUOUS LEARNING ASSESSMENT I

**Sub Code/Name** : 18ECO133T SENSORS & TRANSDUCERS      **Set: EVEN**  
**Class** : Common for III YEAR CSE All Sections & CSE Specialization Date: 13.09.2022  
**Max Marks** : 25      **Duration: 60 mins**

**PART A (5x1=5)**

**ANSWER ALL THE QUESTIONS**

Q.No	Question	Mark s	CO	B L	PI
1	The smallest incremental change in input that would produce a detectable change in output is called as _____. a. Sensitivity                          b. Resolution c. Selectivity                            d. Isolation	1	1	1	2.2.2
2	The life span of the sensor is described by a. Accuracy                            b. Precision c. Reliability                         d. Repeatability	1	1	1	2.2.2
3	Overlapping of signals between two adjacent transducer element is said to be _____. a. Noise    b. Cross Talk    c. Leakage    d. Breakdown	1	1	1	2.2.2
4	Identification of failure sensor nodes in High temperature storage bake test is done by ----- a. Sensors are subjected to high temperature of about 125°C for 48 hours b. Sensors are baked at high temperature of 250 °C for several hours c. Progressively larger voltages up to 50% in excess are applied over different intervals of time d. Sensors are subjected to -65 °C and 125 °C for about 10 sec for every temperature	1	1	1	2.2.2
5	The error which is caused by poor calibration of the instrumentation is called as _____. a. Random error                        b. Gross error c. Systematic Error                    d. Precision Error	1	1	1	2.2.2

**PART B (2x4= 8)****ANSWER THE FOLLOWING QUESTIONS**

<b>Q.N o</b>	<b>Question</b>	<b>Ma rks</b>	<b>C O</b>	<b>B L</b>	<b>PI</b>
6.	Explain the following: i) Resolution ii) Minimum Detectable Signal(MDS)	4	1	2	2.2.2
7.	Write a short note on dynamic characteristics of sensors	4	1	2	2.2.2

**PART C (1x12= 12)****ANSWER THE FOLLOWING QUESTIONS**

<b>Q.No</b>	<b>Question</b>	<b>Ma rks</b>	<b>C O</b>	<b>B L</b>	<b>PI</b>
8.	Briefly describe sensors and classify it based on measurands and technology.	12	1	2	2.2.2
(OR)					
9.	Explain the working principles of RTD along with the necessary equations and its different types in detail.	12	1	2	2.2.2



✓  
GJ/10

Sub Code/Name : 18ECO133TSENSORS &amp; TRANSDUCERS

Set: EVEN

Class : Common for III YEAR CSE All Sections &amp; CSE Specialization &amp; IT Date: 13-10-2022

Max Marks : 50

Duration: 90 mins

## PARTA(10x1=10)

## ANSWER ALL THE QUESTIONS

Q.No	Question	Marks	CO	BL	PI
1	Self-inductance depends on _____ a) permeability b) permittivity c) plank's constant d) rydberg constant	1	2	1	2.2.2
2	In synchros the stator with windings S1, S2 and S3 are separated by _____ degree in space a) 120 b) 30 c) 45 d) 90	1	2	1	2.2.2
3	In electromagnetic based transduction measurand is _____ a) converted into mechanical force b) converted into electromotive force c) converted into chemical force d) converted into physical force	1	2	1	2.2.2
4	In a LVDT, the two secondary voltages a) Are independent of the core position b) Vary unequally depending on the core position c) Vary equally depending on the core position d) Are always in phase quadrature	1	2	1	2.2.2
5	Frequency response of capacitive transducers is _____ a) high b) medium c) low d) zero	1	2	1	2.2.2
6	Sound wave has two main characteristics which are a) Highness and loudness b) Tone and loudness c) Pitch and loudness d) Rarefaction and compression	1	3	1	2.2.2
7	Which type of temperature sensor is placed in Integrated Circuits? a) Thermistor b) Resistance Thermometer c) Thermocouple d) Semiconductor based sensor	1	3	1	2.2.2
8	Pyroelectric detectors are used for detecting electromagnetic radiation in a wavelength range from a) 2 to 14 $\mu\text{m}$ b) 2 to 12 $\mu\text{m}$ c) 2 to 10 $\mu\text{m}$ d) 2 to 8 $\mu\text{m}$	1	3	1	2.2.2
9	Identify the material used for Type T thermocouple is _____ a) Nickel-Chromium / Nickel-Alumel b) Iron/Constantan c) Copper/Constantan d) Nickel-Chromium/Constantan	1	3	1	2.2.2
10	Major characteristics of semiconductor thermosensors include: a) Linear output b) Moderately small sizes c) Not capable enough to measure high temperatures d) All of the mentioned	1	3	1	2.2.2

**PARTB(4x4= 16)**

**ANSWER ANY FOUR OUT OF SIX QUESTIONS**

Q.No	Question	Marks	CO	BL	PI
11	Write short notes on construction and working of synchros transducer.	4	2	2	2.2.2
12	Explain the effect of thickness in working of capacitive transducers with necessary equation and diagram.	4	2	1	2.2.2
13	How capacitor microphone works. Explain?	4	2	1	2.2.2
14	With the help of neat sketch explain the working of pyroelectric thermal sensors	4	3	2	2.2.2
15	Write short note about scintillation detectors.	4	3	1	2.2.2
16	Draw and explain the construction of thermocouple	4	3	1	2.2.2

**PARTC(2x12= 24)**

**ANSWER THE FOLLOWING QUESTIONS**

Q.No	Question	Marks	CO	BL	PI
17	a) With necessary equations deduce the characteristic transfer matrix equation for electromagnetic transducers.	12	2	3	2.2.2
(OR)					
	b) What is meant by LVDT and explain its construction and working with the help of a diagram?	12	2	1	2.2.2
(OR)					
18	a) Discuss in detail about the various types of thermocouples based on material used and temperature of operation.	12	3	1	2.2.2
	b) Explain the construction and working of semiconductor-based sensors for measuring temperature.	12	3	1	2.2.2



**CONTINUOUS LEARNING ASSESSMENT - III**

Sub Code/Name : 18EC0133T - SENSORS AND TRANSDUCERS

Class/Sem/Course: III Yr / V Sem / B. Tech -CSE (ALL DISCIPLINE), IT

Max Marks: 50

Set: B

Date: 17.11.2022

Duration: 90 mins

**PART-A (10x1= 10)  
ANSWER ALL THE QUESTIONS**

Q.No.	Questions	Marks	CO	BL	PI
1.	The change of the magnetization of a material when subjected to a mechanical stress is called a) Hall effect b) Matteucci effect c) Villari effect d) Wiedemann effect	1	4	1	4.3.1
2.	If External magnetic field is applied to ferromagnetic material in vertical direction, the dipoles gets arranged in _____ a) same direction b) in different direction c) horizontal direction d) transverse direction	1	4	1	4.4.1
3.	When certain materials are cooled below a _____ temperature remarkable interactions of electric currents and magnetic field occur. a) Certain b) Superconducting transition c) Curie d) Critical	1	4	1	4.3.1
4.	Which of the following is a correct description about different types of conveyors ? a) Belt conveyors transport materials in any direction b) Slat conveyors requires high maintenance c) Vibrating conveyor can convey materials of any friction factor d) Screw conveyors usually handle lightweight materials	1	4	1	4.1.2
5.	Today almost all electronic weighing scales use _____ for the measurement of weight. a) Magneto resistance b) Strain gauge c) Load cell d) Gyroscope	1	4	1	4.3.1
6.	Bernoulli's Equation is a mathematical expression of: a) The ratio of kinetic to viscous forces in a flow stream b) Friction loss as fluid moves through a rough pipe c) Potential and kinetic energies in a flow stream d) Fluid density and compressibility in a restriction	1	4	1	5.3.1
	For accurate operation, orifice plate flowmeters require: a) Laminar flow b) turbulent flow	1	4	2	5.3.1

c) Swirls and eddies in the flow stream d) Transitional flow				
Hot wire anemometer is used to measure _____? a) discharge b) velocity of gas c) pressure intensity of gas d) pressure intensity of liquid	1	4	2	5.4.1
Which of the following is a direct method of level measurement? a) Laser level Sensor b) Air purge system c) Ultrasonic level detector d) Sight glass system	1	4	1	5.4.1
Bourdon tube is used for the measurement of gauge pressure of a) Gas b) Liquid fluid c) Solid d) Both (a) and (b)	1	4	1	5.3.1

**PART B (4x4= 16)  
ANSWER ANY 4 QUESTIONS**

Q.No.	Questions	Marks	CO	BL	PI
11.	Illustrate the three basic types of magneto elastic sensors designed based on the principle of Villari effect with neat sketch and give its equation.	4	4	1	4.3.1
12.	List out the (i) The preparation steps involved in thick film sensors (ii) Techniques involved in preparation of thin film sensor	4	4	1	4.2.1
13.	Discuss the need of nano sensors and explain proximity nano sensor with neat sketch.	4	4	2	4.4.1
14.	Discuss the construction and working of flow meter using (i) Orifice Plate and (ii) Venturi meter	4	5	1	5.4.1
15.	With a neat a sketch, discuss why Transit-time flow meters are better than ultrasonic flow meter. Give the flow rate equation for both type.	4	5	3	5.3.1
16.	What are the types of mechanical tachometer? Explain Centrifugal tachometer.	4	5	3	5.2.1

**PART C(2x12= 24)  
ANSWER THE QUESTIONS**

Q.No.	Questions	Marks	CO	BL	PI
17.	a) Explain Hall effect with necessary equations.  (or)	12	4	1	4.3.1
	b) Explain in detail the construction of Bucket conveyor and Slat conveyor	12	4	1	4.2.1
18.	a) List out the methods to measure hydrostatic pressure. Explain any two with neat diagram. (or)	12	5	2	5.4.1
	b) Illustrate the applications of sensors in Industries and Home Appliances.	12	5	1	5.3.1