SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)
R.V.S Nagar, Chittoor
Department of Mechanical Engineering
Mid Test –I
(Common to CSD, CSM, CAI & IT Branches)

Subject: Optimization Techniques (23AME05) **Time:** 10.00 AM - 12.00 AM
Date : 17.03.2025 **Max. Marks:** 25
Year &Sem: II B.Tech & II Semester **Branch:** CSD, CSM, CAI & IT

PART-A

Answer all the questions, each question carries equal marks **(5X2=10M)**

1. Define optimization techniques and write one example? **(CO1) (Understanding)**
2. Briefly explain scope and significance of optimization technique? **(CO1) (Remembering)**
3. Define linear programming and just write its techniques? **(CO1) (Remembering)**
4. Briefly explain difference between balanced and unbalanced transportation problem? **(CO2) (Remembering)**
5. Which method is used to solve assignment problem in linear programming and briefly explain its phases?**(CO2) (Remembering)**

PART-B

Answer any four of the following, each question carries equal marks **(3X5 = 15M)**

6(a) Solve the following linear programming problem using graphical method. $Maximization\ Z = 100\,x_1 + 60x_2$ and subject to constraints are $5x_1 + 10x_2 \leq 50, 8x_1 + 2x_2 \geq 16, 3x_1 - 2x_2 \geq 6\ and\ , x_1 \& x_2 \geq 0$ **(CO1) (Understanding)**

(or)

6(b) Find the initial basic feasible solution to the following transportation problem by using (a) Northwest corner cell method, (b) method of matrix minima and (c) Vogel's approximation method **(CO2) (Understanding)**

	A	B	C	D	E	Supply
1	5	1	8	7	5	15
2	3	9	6	7	8	25
3	4	2	7	6	57	42
4	7	11	10	4	9	35
Demand	30	20	15	10	20	

7(a) Solve the following linear programming problem using simplex method. $Maximization\ Z = 12x_1 + 16x_2$ and subject to constraints are $10x_1 + 20x_2 \leq 120, 8x_1 + 8x_2 \leq 80, and\ , x_1 \& x_2 \geq 0$ **(CO1) (Understanding)**

(or)

7(b) Find the initial basic feasible solution of the following transportation problem using northwest corner cell method and then optimize the solution using U-V method **(CO2) (Understanding)**

	A	B	C	D	Supply
1	3	1	7	4	250
2	2	6	5	9	350
3	8	3	3	2	400
Demand	200	300	350	150	

8(a) Solve the following linear programming problem using penalty method. $Minimization\ Z = 7x_1 + 15x_2 + 20x_3$ and subject to constraints are $2x_1 + 4x_2 + 6x_3 \geq 50,\ 3x_1 + 9x_2 + 6x_3 \geq 30, and\ , x_1, x_2 \& x_3 \geq 0$ **(CO1) (Understanding)**

(or)

8(b) Solve the following assignment problem using Hungarian method. The matrix entries represent the processing times in hours. **(CO2) (Understanding)**

Jobs \ Operators	1	2	3	4	5
1	9	11	14	11	10
2	6	15	13	13	10
3	12	13	6	8	8
4	11	9	10	12	9
5	7	12	14	10	14

SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

MID TEST – I

Year : II B.Tech II Semester
Branch: Common to[CSE, CSM,CSE(AI),CSE(BS), CSE(IOT) & IT]]
Subject: Probability and Statistics [23AHS21]

Date :18-03-2025 (FN)
Time : 2 hrs
Max. Marks : 25

PART-A

1. Answer all questions and all questions carries Two marks **5 x 2 = 10 M**

I. Find the median from the following data 57, 58, 61, 42, 38, 65, 72, 66. [CO1-Remember]

II. Define a Correlation and list the types of Correlation. [CO1-Remember]

III. Find the range of the given data 60, 72, 96, 28, 35, 10, 40, 9, 85, 25. [CO1-Remember]

IV. Define a Conditional probability. [CO2-Remember]

V. State Multiplication theorem of probability. [CO2-Understand]

PART-B

Answer all questions and each question carries TEN marks. **3 x 10 = 30 M**

(Part-B is condemned to 5 marks)

2. a). Calculate the variance and standard deviation of the following data

Classs interval	30-40	40-50	50-60	60-70	70-80	80-90	90-100
frequency	3	7	12	15	8	3	2

[CO1-Apply]

OR

b). Find the coefficient of correlation between the two variables [CO1-Apply]

X	12	9	8	10	11	13	7
Y	14	8	6	9	11	12	3

3. a). For the following data [CO1-Apply]

X	1	5	3	2	1	1	7	3
Y	6	1	0	0	1	2	1	5

i) Find the regression line of Yon X and hence predict Y, if X=10.

ii) Fit a regression line of X on Y and hence predict X, if Y=2.5

OR

b). From a city 3 news papers A, B, C are being published. A is read by 20%, B is read by 16%, C is read by 14% both A and B are read by 8%, both A and C are read by 5%, both B and C Are read by 4% and all three A, B, C are read by 2%. What is the percentage of the population that read at least one paper. [CO2-Apply]

4. a). A bag contains 2 white and 3 red balls and a bag B contains 4 white and 5 red balls. One Ball is drawn at random from one of the bags and it is found to be red. Find the probability that the red ball drawn is from bag B. [CO2-Apply]

OR

b). A random variable X has the following probability function:

x	0	1	2	3	4	5	6	7
P(x)	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2+K$

(i) Determine K (ii) find $P(X < 6)$, $P(0 < X < 5)$ (iii) Determine the distribution function of X (iv) Mean (v) Variance. [CO2-Apply]

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SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous)
RVS NAGAR, CHITTOOR-517127.
Department of Computer Science and Engineering (AI&ML)
Sessional Examinations-I, March 2025

Year & Sem: II B.Tech - II Semester **Time:** 10.00 AM to 12.00 NOON
Branches: Common to II B.Tech – CSE (AI&ML) & CSE(AI)
Max. Marks: 25
Subject: MACHINE LEARNING [**23ACA02**] **Date:** 19/03/2025

PART-A

Answer all the questions. Each carry 2 Marks: **[5 x 2 = 10 M]**

1.	Define Machine Learning.	[CO1]	/Remembering
2.	Write about learning by rote in ML.	[CO1]	/ Understanding
3.	Mention the machine learning stages.	[CO1]	/ Remembering
4.	List out the non-metric similarity functions.	[CO2]	/Remembering
5.	Define the KNN Regression.	[CO2]	/Understanding

PART-B

Answer all the questions. Each carry 5Marks: **[3x10 = 30 M/2=15 M]**

6.a	Explain the Machine learning paradigms briefly.	[CO1]	/Understanding
	OR		
6.b	What is reinforcement learning? Explain reinforcement learning with an example.	[CO1]	/Understanding
7.a	List and explain the various machine learning stages in detail.	[CO1]	/Analyze
	OR		
7.b	Write about model prediction in detail.	[CO1]	/Apply
8.a	List out the Proximity Measures and elaborate in detail.	[CO2]	/Understanding
	OR		
8.b	Define K-Nearest Neighbor Classifier. Implement K-Nearest Neighbor Classifier with a suitable example.	[CO2]	/Apply

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SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

I Sessional Examination

Database Management Systems (23ACS12)

(Common to CSE, CSD, CSM, CSC, CAI, [redacted], IT, CSBS)

Date: 20/03/2025 **Time: 10.00AM - 12.00PM**

Year/Sem: II/II **Total Marks: 25 Marks**

Part –A (5 * 2=10 Marks) (Answer all the questions)

1. Define a database system and list its key characteristics. **(CO1/ Remembering)**
2. Define the terms: Schema and Instance in DBMS. **(CO1/ Remembering)**
3. What are the differences between centralized and client-server architecture in databases? **(CO2/Remembering)**
4. What is a domain in the relational model? Provide an example. **(CO2 /Analyze)**
5. Define primary key, foreign key. **(CO2 /understand)**

Part –B (3* 10=30 Marks) (Answer all the questions)

6.a) Describe the three-tier schema architecture in detail. How does it ensure data independence? **(CO1/Analyze)**

(OR)

6. b) what is Entity? Explain types of entity with examples. Also explain about attributes and its type with examples. **(CO1/Apply)**

7. a) Create an ER diagram with entities like Students,Course,Department,Hostel,Library and Faculties. Also mention the different types of cardinalities and participants in the diagram. **(CO1/Remember)**

(OR)

7.b) Explain primary key,foreign key, super key, candidate key, alternate key and composite keys with examples. **(CO2/Understand)**

8.a). Explain the different types of constraints in the relational model (domain, key, and integrity constraints) with examples. **(CO2/Understand)**

(OR)

8.b) Describe the basic operations in relational algebra with examples. **(CO2/Analyze)**

Sri Venkateswara College of Engineering & Technology, Chittoor
(Autonomous)

Class & Branch: II B.Tech- II Sem CSE(AI&ML), CSE (AI) & CSE (DS).
Time: 2 Hrs. **Date:21-03-2025/FN**
Subject: Digital Logic & computer Organization. [23AEC06] **Max Marks: 25M**
Exam: MID Test- I

Part-A

Answer all questions. All questions carry equal marks. **5X2=10M**

1.	What are the basic logic gates? List them with symbols.	[CO1]	[L2]
2.	Give the examples of 1's Compliment and 2's compliment.	[CO1]	[L3]
3	Define a combinational circuit and provide an example.	[CO1]	[L4]
4	Write short notes on : (i) Standard Form , (ii) Canonical form	[CO2]	[L2]
5	What is the purpose of an arithmetic logic unit (ALU) in a computer system?	[CO2]	[L3]
	Part-B **10*3= 30** **Answer ALL questions and each question carries TEN marks (Part B to be condemned to 15 marks)**		
6(A)	Convert the following numbers: (i) $(1546.675)_{10}$ to Hexa decimal, Octal and Binary. (ii) $(1010.101)_2$ to decimal, Hexadecimal, and Octal. **(OR)**	[CO1]	[L3]
6(B)	Simplify the following expression using Boolean algebra: (i) $x'y'z'+x'y'z+x'yz'+x'yz + xy'z' = x'+y'z'$ (ii) $w'xyz'+ xyz'+ xy'z'+ xy'z = xz$	[CO2]	[L2]
7(A)	Reduce the following function using K-Map Architecture: (i) $F(A, B, C, D) = \Sigma m(0,1,4,8, 9, 10)$ (ii) $F(A, B, C, D) = \Sigma m(0,6, 8, 13, 14) + \Sigma d(2, 4, 10)$ **(OR)**	[CO2]	[L2]
7(B)	Explain the operation of a multiplexer and a demultiplexer. Provide examples of their applications in digital circuits and how they can be used to implement logic functions.	[CO2]	[L2]
8(A)	Draw and Explain about JK and D Flip-Flop with a neat diagram. **(OR)**	[CO2]	[L3]
8(B)	Define and Explain i) Bus structures in computer. ii) Von-Neumann Architecture	[CO2]	[L4]

L1: Remembering **L2: Understanding** **L3: Applying**
L4: Analyzing **L5: Evaluating** **L6: Creating**

SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
MID -I Examination March -2025
DESIGN THINKING – (~~23AHS10~~ 23AMB05)

Date: 22.03.2025 (FN) **Time: 2 hours**
Branch: II B Tech II Sem **30 M**
Common to All Branches

PART – A

1. Answer all the questions. Each question carries TWO marks. **5 X 2= 10M**

1. What is the role of shape, line in design composition? **(CO4 – Remember)**
2. Why is contrast important in design? **(CO2 – Apply)**
3. What are the five phases of the Design Thinking process? **(CO2 – Apply)**
4. What are some real-world examples of Design Thinking leading to successful innovations? **(CO4 – Remember)**
5. How do new materials impact the aesthetics and functionality of design? **(CO2 – Apply)**

PART – B

Answer all the questions. Each question carries FIVE marks. **4 X 5= 20M**

6. a) Explain the elements of Design Thinking. **(CO4 – Understand)**

(Or)

b) Elaborate on Principles of Design Thinking. **(CO5- Understand)**

7. a) Explain the process of Design Thinking. **(CO2- Apply)**

(Or)

b) Write about customer journey mapping and its utility in Design Thinking. **(CO4- Understand)**

8. a) What is a user, Persona? What are the components in a Persona? **(CO2- Understand)**

(Or)

b) Write a short note on any two techniques of Brainstorming **(CO2- Apply)**

9. a) How is Design Thinking helpful in Social innovations? Quote any two relevant examples of Social innovation through Design Thinking. **(CO2- Apply)**

(Or)

b) Describe the role of Design thinking in Product Development. **(CO2- Understand)**

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