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Code: 22MBA1005

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

I MBA I Semester Regular & Supplementary Examinations, February, 2025

QUANTITATIVE TECHNIQUES FOR MANAGEMENT

(MASTER OF BUSINESS ADMINISTRATION)

Time: 3 Hrs

Max. Marks: 60

Answer any Five questions

All questions carry EQUAL marks

Question No. 8 is Compulsory

1. In a bolt factory, machines M1, M2, M3 manufactures respectively 25, 35 and 45 per cent of the total output. Of their output 5, 4 and 2 per cent respectively are defective bolts. If a bolt is drawn at random from the product and is found to be defective. What is the probability that it is manufactured in the machine M2? Using Baye's theorem. **12M**

2. Solve the following LPP by graphical method Maximize $Z = 4x_1 + 5x_2$ **12M**
Subject to constraints $2x_1 + x_2 \leq 50$, $2x_1 + 5x_2 \leq 100$, $2x_1 + 3x_2 \leq 90$,
 $x_1, x_2 \geq 0$

3. Find an optimum solution to the following transportation problem. **12M**

Source/ Destination	D ₁	D ₂	D ₃	Available
S ₁	4	8	8	76
S ₂	16	24	16	82
S ₃	8	16	24	77
Demand	72	102	41	

4. Explain the principle of Dominance in Game theory and solve the following game. **12M**

Strategies	B ₁	B ₂	B ₃	B ₄	B ₅
A ₁	3	5	4	9	6
A ₂	5	6	3	7	8
A ₃	8	7	9	8	7
A ₄	4	2	8	5	3

5. A branch of Bank of Baroda has only one typist. Since the typist work varies in length (number of pages to be typed), the typing rate is randomly distributed as a poisson distribution with mean service rate of 8 letters/hour. The letters arrive at a rate of 5 per hour during the entire 8-hour workday. If the type work is valued at Rs.1.5 per hour, determine the following. **12M**
- Equipment utilization.
 - The percentage time that an arriving letter has to wait.
 - Average system time
 - Average cost due to waiting on the part of the typewriter.

6. Write down the following. 12M
- i. Probability Distributions
 - ii. Travelling salesman problem.
 - iii. Dominance rule
 - iv. LPP Graphical method

7. Given below is the table that lists the jobs of network along with their time estimates. 12M

Activity	to	tm	tp
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

- a) Draw the project network.
- b) Find the expected duration and variance of the project length.
- c) What is the probability that the project is completed in 13 weeks?

8. **CASE STUDY:**

12M

A project schedule has the following characteristics.

Activity	1-2	1-3	1-4	2-5	3-6	3-7	4-6	5-8	6-9	7-8	8-9
Time	2	2	1	4	8	5	3	1	5	4	3

Construct the network diagram and compute

- i) Total float of each activity and
- ii) the critical path and duration.

CODE: 24MCA1005 **SET-1**
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I MCA I Semester Regular Examinations, February, 2025
Data Structures
(MASTER OF COMPUTER APPLICATIONS)

Time: 3 Hours**Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Categorize primary data types with neat diagram and explanation 7M
b) Discuss any 3 Decision making statements available in C 7M
(OR)
2. a) Create a structure named Book to store book details like title, author, and price. Write a C program to input details for three books, find the most expensive and the lowest priced books, and display their information. 7M
b) What is an Array in Programming? Mention some advantages and disadvantages of Arrays. 7M

UNIT-II

3. a) Define recursion and explain with a c program 7M
b) Explain recursion concept in c by finding the factorial of a number 7M
(OR)
4. a) Write a C program for single linked list insertAtFirst, insertAtEnd 7M
b) Write a function that searches a given key 'x' in a given singly linked list. 7M

UNIT-III

5. a) What is Stack Data Structure? Explain Basic Operations on Stack 7M
b) Write the push and Pop operations algorithms of stack 7M
(OR)
6. a) Explain the Basic Operations on Queue 7M
b) Discuss Operation 1: enqueue() , Operation 2: dequeue() 7M

UNIT-IV

7. a) Explain Insertion sort algorithm 7M
b) Write the selection sort Algorithm 7M
(OR)
8. a) Compare and contrast exchange-bubble sort and bubble sort 7M
b) Discuss the applications of quick sort 7M

UNIT-V

9. a) Explain 3 Tree traversals of binary trees 7M
b) Write about B+ Tree and its representation 7M
(OR)
10. a) Comparison between a B-tree and a B+ Tree 7M
b) Explain with neat sketch of Searching on a B+ Tree 7M