S.D.E.

M.C.A. Sem - III : SUMMER - 2019

SUBJECT : DECISION TECHNOLOGIES

Day : Friday
Date : 17/05/2019

Time : 10.00 AM TO 1.00 PM
Max. Marks : 80

S-2019-5264

N.B.:

1) Attempt **ANY THREE** questions from Section – I and attempt **ANY TWO** questions from Section – II.
2) Answer to both the sections should be written in **SAME** Answer book.
3) Use of non-programmable **CALCULATOR** is allowed.
4) Figures to the right indicate **FULL** marks.

SECTION – I

Q.1 What is decision making? Explain various conditions in which decision is to be made along with methods available to take decisions in those conditions. **[16]**

Q.2 a) Find the solution to the following equation by using Bisection method. (Minimum 3 iterations) **[08]**

$$x^3 - 2x - 3 = 0$$

b) Find mean and median from the following data: **[08]**

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
No. of students	12	17	29	34	22	11

Q.3 a) Fit a straight line of the form Y= a + bX from the following data **[08]**

X	2	4	6	8	10	12
Y	5	9	12	17	21	25

b) A company requires 4000 items annually.The cost of one item is ₹. 40 and the cost of placing one order is ₹ 60. If the inventory carrying cost is 20% , find **[08]**
i) EOQ **ii)** total cost of inventory.

Q.4 a) From the following data, find Karl Pearson's correlation coefficient. **[08]**

X	40	41	42	43	44	45	46	47	48
Y	42	47	54	46	59	49	51	50	52

b) Explain PERT and CPM techniques in detail. **[08]**

Q.5 Write short notes on **ANY FOUR** of the following: **[16]**

a) Applications of forecasting

b) Testing of Hypothesis

c) M/M/I queueing model

d) Graphical method for solving LPP.

e) Hungarian method for solving assignment problems.

P.T.O.

SECTION – II

Q.6 Find the optimal transportation schedule from the following: **[16]**

	D_1	D_2	D_3	D_4	Availability
S_1	8	6	10	9	56
S_2	4	3	15	18	75
S_3	18	5	3	7	42
Demand	28	32	45	68	

Q.7 **a)** The demand of an item is uniform at a rate of 25 units per month. The fixed cost is ₹ 30 each time a production is made. The production cost is ₹ 2 per item and the inventory carrying cost is 20% of average inventory cost. The cost of placing one order is ₹ 120. Find **[08]**

i) EOQ **ii)** Total cost of inventory

b) Evaluate $\int_0^4 e^x dx$ by Simpson's $(1/3^{rd})$ and $(3/8)^{th}$ rule. Take h = 1. **[08]**

Q.8 Solve the following LPP by using Simplex method. **[16]**

Maximize $z = 28x_1 + 30x_2$

subject to $6x_1 + 3x_2 \leq 18,$

$4x_1 + 5x_2 \leq 30,$

$3x_1 + x_2 \leq 8,$

$x_1, x_2 \geq 0.$

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