[6380]-5006

M.B.A.

106 - GC - 06 : DECISION SCIENCE

(2024 Pattern) (Semester - I)

Time : 2½ Hours]   *[Max. Marks : 50*

Instructions to the candidates:

1) *All questions are compulsory.*

2) *Each question carries 10 marks.*

3) *Each question has an internal option.*

4) *Use of simple calculator is allowed.*

5) *Graph paper will not be provided separately, draw graph on answer paper.*

Q1) **Solve any five questions :**   **[10]**

a) What is CPM?

b) Enlist various criteria of decision making under Risk.

c) What is Mixed strategy Game?

d) Explain Principal of Dominance.

e) Enlist various criteria of decision making under Uncertainty.

f) Explain the concept of PERT.

g) What is Hungarian Method?

h) Explain Methods to Obtain Feasible solution in Transportation Problem.

Q2) **Solve any two out of the three questions :**   **[10]**

a) Explain importance of decision science in organizational decision making process.

b) Explain applications of Linear programming in functional areas of management.

c) Differentiate between PERT and CPM.

Q3) **Solve Any One :** [10]

a) The owner of winner sports wishes to determine the number of advertisements to be placed in three selected monthly magazine A, B and C. His objective is to advertise in such a way that the total exposure to the principal buyers of the expensive sports goods is maximized. Percentage of readers for each magazine are known.Exposure in any particular magazine is the number of advertisements placed multiplied by number of principal buyers. The following data may be used:

Particulars	Magazines		
	A	**B**	**C**
Readers	100000	60000	40000
Principal Buyers	15%	15%	7%
Cost/Adv. (Rs.)	5000	4500	4250

The budget amount at most is Rs.100000 for advertisements. The owner has already decided that magazine A will have no more than 6 advertisements and that B and C each have at least 2 advertisements. Formulate LPP model for the given information.

OR

b) The cost (Rs.Thousand) of locating of machines the places is estimated as follows. Find the optimal assignment schedule.

	Places				
	A	**B**	**C**	**D**	**E**
M₁	19	21	25	20	21
M₂	27	24	-	25	24
M₃	-	24	27	24	20
M₄	22	16	20	15	16

Q4) **Solve Any One :** [10]

a) Find the optimal strategies for A and B in the following game. Also obtain the value of the game.

Player A	Player B		
	B₁	**B₂**	**B₃**
A₁	9	8	-7
A₂	3	-6	4
A₃	6	7	-7

OR

b) Pay-offs of three acts X, Y, Z and the states of nature of L, M, N are given below:

States of Nature	Acts		
	X	Y	Z
L	-20	-50	200
M	200	-100	50
N	400	600	300

The probabilities of the states of nature are 0.3, 0.4 and 0.3 respectively. Calculate VPI for the above data.

Q5) **Solve any one from the following :** [10]

a) Find the initial solution for the following problem by using

    i)   NWCM   ii)   LCM

    iii)   VAM

	W_1	W_2	W_3	W_4	Supply
P_1	190	300	500	100	70
P_2	700	300	400	600	90
P_3	400	100	400	200	180
Demand	50	80	70	140	

OR

b) Following are the activities of a project:

Activity	Immediate Predecessor activity	Activity time in Weeks		
		Most Optimistic	Most Likely	Most Pessimistic
A	-	4	7	13
B	A	6	9	11
C	A	5	7	9
D	B	3	5	7
E	C	7	8	10
F	D	2	3	5
G	E	6	7	8
H	F & G	2	3	4

    i)   Calculate the expected time of each activity.

    ii)   Draw the network diagram and indicate the expected time on each activity.

    iii)   Identify the critical path in the diagram.

▽ ▽ ▽ ▽