Total No. of Questions : 5]

SEAT No. :

PD-2808

[Total No. of Pages : 4

[6430]-506
M.B.A.
GC - 06 : DECISION SCIENCE
(2024 Pattern) (Semester - I) (DS - 506 MJ)

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) Explain PERT.
b) What is Saddle Point?
c) What is Hungarian Method?
d) What is Pure strategy Game?
e) Explain Method to Obtain Feasible solution in Transportation Problem.
f) What is Unbalanced Transportation Problem?
g) Explan CPM
h) What is EMV criteria in decision making under risk?

Q2) **Solve Any Two out of the three questions :** **[10]**

a) Explain role of quantitative techniques in management decision making process.
b) With suitable example elaborate difference between CPM and PERT.
c) How would you deal with assignment problems where:
   i) Some Assignment are prohibited.
   ii) The objective function is to be maximized.
   iii) It is not balanced problem.
   iv) It has got multiple solution

P.T.O.

SPPUQuestionPapers.com

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

a) A project work consists of four major jobs for which an equal number of contractors have submitted tenders. The tender amount quoted (in lakhs of rupees) is given in the matrix:

		Job			
Contractor		**a**	**b**	**c**	**d**
	1	10	24	30	15
	2	16	22	28	12
	3	12	20	32	10
	4	9	26	34	16

Find the optimum assignment which minimises the total cost of the project.

OR

b) Solve the following LPP graphically.

Minimise $Z = 6x + 5y$

Subject to; $4x + y \geq 10$

$2x + 3y \geq 15$

$x \leq 10$

$x, y \geq 0$

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

a) Two breakfast food manufacturing firms A and B are competing for an increased market share. To improve its market share, both the firms decide to launch the following strategies :

$A_1 B_1$ = Give coupons; $A_2 B_2$ = Decrease Price

$A_3 B_3$ = Maintain Present Strategy $A_4 B_4$ = Increase Advertising

The pay off matrix shown in the following table describes the increase in the market share for firm A and decrease in the market share for firm B.

Firm A	**Firm B**			
	B_1	**B_2**	**B_3**	**B_4**
A_1	35	65	25	5
A_2	30	20	15	0
A_3	40	50	0	10
A_4	55	60	10	15

Determine the optimal strategies for each firm and the value of the game.

SPPUQuestionPapers.com

OR

b) Obtain the initial solution of the following transportation problem using

i) NWCM ii) LCM

iii) VAM

	D_1	D_2	D_3	D_4	Supply
O_1	10	20	5	7	10
O_2	13	9	12	8	20
O_3	4	15	7	9	30
O_4	14	7	1	0	40
O_5	3	12	5	19	50
Demand	60	60	20	10	

Q5) **Solve Any One from the following :** **[10]**

a) A project has been defined to contain the following list of activities along with their required time of completion.

Activity	A	B	C	D	E	F	G	H	I
Time in Days	1	4	3	7	6	2	7	9	4
Immediate Predecessor	-	A	A	A	B	C	E,F	D	G,H

i) Draw the network diagram.

ii) Show early start time and early finish time.

iii) Identify critical path.

iv) What would happen if duration of activity F is taken as four days instead of two?

OR

b) **A farmer wants to decide which of the three crops he should plant. The farmer has categorised the amount of rainfall as high, medium and low. Estimated profit is given below:**

	Estimated profit (In Rs.)		
Rainfall	**Crop - A**	**Crop - B**	**Crop - C**
High	8000	3500	5000
Medium	4500	4500	4900
Low	2000	5000	4000

SPPUQuestionPapers.com

Farmers wishes to plant one crop. Decide the best crop using :

i) Hurwicz Criteria ($\propto = 0.6$)

ii) Laplace Criteria

iii) Minimax Regret Criteria

SPPUQuestionPapers.com