

Total No. of Questions : 5]

PD-2808

SEAT No. 103.132.148.3

[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) Explain 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.

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.

$$\text{Minimise } Z = 6x + 5y$$

$$\text{Subject to; } 4x + y \geq 10$$

$$2x + 3y \geq 15$$

$$x \leq 10$$

$$x, y \geq 0$$

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 :

$$A_1 B_1 = \text{Give coupons, } A_2 B_2 = \text{Decrease Price}$$

$$A_3 B_3 = \text{Maintain Present Strategy, } A_4 B_4 = \text{Increase Advertising}$$

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.

OR

- b) Obtain the initial solution of the following transportation problem using
- NWCM
 - LCM
 - 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

- Draw the network diagram.
- Show early start time and early finish time.
- Identify critical path.
- 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:

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

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

- i) Hurwicz Criteria ($\alpha = 0.6$)
- ii) Laplace Criteria
- iii) Minimax Regret Criteria



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