

Total No. of Questions : 5]

PD-2706

SEAT No. : LIBRARY

[Total No. of Pages : 3

[6430]-42

M.B.A.

GC - 12 - 302 : DECISION SCIENCE

(Revised 2019 Pattern) (Semester - III)

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.

Q1) Solve Any Five questions :

[10]

- a) Explain PERT.
- b) Enlist various criteria of decision making under uncertainty.
- c) State the condition for case of degeneracy in transportation models.
- d) What is Pure strategy Game?
- e) Define the term Markov Chain.
- f) Explain Trail and Event.
- g) What are the assumptions of single server queuing model?

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) Describe Elements of Queuing system in detail.

P.T.O.

Q3) Solve Any One :

[10]

- a) An airline Co. has drawn-up a new flight schedule involving five flights. To assist in allocating five pilots to the flights it has asked them to state their preference scores by giving each flight a number out of 10. The higher the number, the greater is the preference. Certain of these flights are unsuitable to some pilots owing to some domestic reasons. These have been marked with x. What should be the allocation of the pilots to flights in order to meet as many preferences as possible.

Pilot	Flight Number					
		1	2	3	4	5
	A	8	2	x	5	4
	B	10	9	2	8	4
	C	5	4	9	6	x
	D	3	6	2	8	7
	E	5	6	10	4	3

- b) A Company produces two special types of soaps X and Y for which the following data is available :

Per Unit	X	Y
Selling Price	Rs.18	Rs.25
Direct Material		
A	2 units @ Rs 2/unit	3 units @ Rs 2/unit
B	1 unit @ Rs 4/unit	2 units @ Rs 4/unit
C		1 unit @ Rs 1/unit
Direct Labor	1 Man hour @ Rs 2.5/hr	1 Man hour @ Rs 2.5/hr
Variable overhead	Rs.1	Rs.1.5

The fixed Overheads are Rs.1500 per month. The quantities of materials A,B,C available for the production are 500, 400 and 200 respectively per month. There are 2 workers who work for 8 hours a day for 25 days in a month. The per month market demand for X and Y is at least 200 and 150 units respectively. Formulate this as a LPP.

Q4) Solve Any One :

[10]

- a) Find the value of the game and the optimal actions for the players :

Player A	Player B	
	B ₁	B ₂
A ₁	11	7
A ₂	9	10

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) We have five jobs, each of which must go through the two machines A and B in the order AB. The Processing times in hours are given below. Determine an optimal sequence for these five jobs which will minimize the total elapsed time. Find the total time elapsed. If cost of unused machine is Rs. 50 and Rs. 40 per hour for A and B respectively. How much is the total machine idle time cost?

Job Number	1	2	3	4	5
Machine A	10	2	18	6	20
Machine B	4	12	14	16	6

- b) An urn contains 8 white and 3 red balls. If two balls are drawn at random, what is chance that :

- Both are white
- Both are red
- One is of each color
- Both are red or both are white

