

Total No. of Questions : 5]

PD-2768

SEAT No. : LIBRARY

[Total No. of Pages : 3

[64301]-302

M.B.A.

GC - 12 : 302 : DECISION SCIENCE
(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 options.*
- 4) *Use of simple calculator is allowed.*

Q1) Solve Any Five questions :

[10]

- a) What is the formula for Combination in Probability?
- b) Define balanced assignment problem & unbalanced assignment problem.
- c) What are the uses of Markov's chain?
- d) What is Mixed strategy Game?
- e) Define baling & jockeying.
- f) What is CPM & PERT?
- g) List techniques of initial solution for Transportation problem.
- h) List the drawbacks of graphical solution in LPP.

Q2) Solve Any Two out of the Three questions :

[10]

- a) What are the assumptions of Single Server Queuing Model?
- b) The company wants to purchase new shelves for keeping records of office files. Two producers gave their quotations. Shelf X costs Rs. 10 per unit, requires six square feet carpet area, and holds eight cubic feet of files. Shelf Y costs Rs. 20 per unit, requires eight square feet of carpet area, and holds twelve cubic feet of files. The company has a provision of Rs. 140 for this purchase. The office has room for no more than 72 square feet of cabinets. Formulate LPP to maximize storage volume?
- c) Explain Expected time, Variance & standard deviation in terms of PERT.

P.T.O.

Q3) Solve Any One :

[10]

- a) Maximize $Z = 50x + 30y$

Subject to $2x + y \geq 18$

$$x + y \geq 12$$

$$3x + 2y \leq 34$$

$$x, y \geq 0$$

Solve the LPP by Graphical Method.

- b) The cost (Rs. Lakh) of locating of machines to the places is estimated as follows. find the optimum assignment schedule.

Machines	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 value of the game and the optimal actions for the players:

Player A	Player B			
	I	II	III	IV
I	2	-2	4	1
II	6	1	12	3
III	-3	2	0	6
IV	2	-3	7	1

- b) A single card is drawn at random from a standard deck of 52 playing cards. Find the probability that
- The card is a red king
 - The card is either a red or an ace
 - The card is a king or queen

Q5) Solve Any One :

[10]

- a) Draw the network diagram for the given below. Find critical path and expected project duration of the project.

Activity	Immediate Predecessor activity	Duration (days)
A	-	4
B	A	6
C	A	5
D	B	3
E	C	7
F	D	2
G	E	6
H	F,G	2

OR

- b) Dr. Kelkar has been thinking about starting his own independent nursing home. The problem is to decide how large the nursing home should be. The annual returns will be depending on both size of nursing home and number of marketing factors. after a careful analysis, Dr. Kelkar developed following table:

Size of Nursing home	Good market (Rs.)	Fair market (Rs.)	Poor market (Rs.)
Small	50,000	20,000	-10,000
Medium	70,000	35,000	-25,000
Large	90,000	35,000	-45,000
Very Large	2,00,000	25,000	-1,20,000

Find optimal strategy using

- Maximax
- Maximin
- Laplace
- Hurwicz ($\alpha=0.8$)

