Total No. of Questions : 5]

PA-3623

SEAT No. :

[Total No. of Pages : 3

[5946]- 302

M.B.A.- II

302 -GC-12 : DECISION SCIENCE

(2019 Pattern) (Semester - III)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

1) *Each question carries 10 marks.*

2) *Graph paper will not be provided.*

3) *Use of non-scientific calculator is allowed.*

Q1) Solve any five of the following. [2×5=10]

a) Define transition probability in Markov Chain.

b) Mention condition for balanced transportation problem.

c) Define independent events in probability.

d) Write condition for saddle point in game theory.

e) Define EVPI (Expected value of perfect Information).

f) Write format of LPP (Linear Programming Problem).

g) Define critical path in network diagram.

h) List elements of queuing system.

Q2) Solve any two of the following. [2×5=10]

a) Discuss different decision environment in Decision Theory.

b) Describe role of linear programming problem (LPP) in managerial decision making.

c) Determine the initial solution of following transportation problem using North West Corner Method.

Sources \ Destinations	D1	D2	D3	D4	Supply
S1	19	30	50	10	7
S2	40	8	15	18	9
S3	30	20	20	25	18
Demand	05	08	07	14	

P.T.O.

Q3) Solve any One of the following. [1×10=10]

a) Solve the following game by using principle of dominance.

Player B

		B1	B2	B3	B4
	A1	14	4	8	12
Player A	A2	8	3	2	12
	A3	8	7	−6	16
	A4	6	5	12	10

b) Following data is related to frequency of student absenteeism in a class

No. of students Absent	0	5	10	15	20	25
Frequency	4	22	16	42	10	06

Simulate the students absenteeism for next 10 weeks. Also find out average absenteeism. Use the following random numbers.

87, 05, 30, 53, 89, 61, 19, 55, 23, 58

Q4) Solve any one of following. [1×10=10]

a) A computer centre has got four expert programmes The centre needs four application programmes to be develop. The head of computer centre after studying carefully programmes to be developed estimes computer time (in hrs) required by the respective experts to develop the application programmes as follow.

Programmes

		A	B	C	D
Programmers	1	120	100	80	90
	2	80	90	100	70
	3	120	140	120	100
	4	90	90	80	90

Assign programmers to the programmes in such a way that total computer time is minimize.

b) The profit of organized retail outlet is approximately normally distributed with mean Rs. 4400 & standard deviation Rs. 620

Find associated probability of profit

i) More than 3300

ii) less than 5400

iii) between 3500 & 4400

Given $P[0 < Z < 1.77] = 0.4616$

$P[0 < Z < 1.61] = 0.4463$

$P[0 < Z < 1.45] = 0.4263$

Q5) Solve any One of following. [1×10=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 Dasy	1	4	3	7	6	2	7	9	4
Immediate predecessor	—	A	A	A	B	C	E,F	D	G,H

Draw network diagram. Identify Critical Path.

b) In a bank on an average every 15 minutes one customer arrives for cashing the cheque. The staff at the only payment counter takes 10 minutes for serving a customer on an average.

Find

i) average queue length.

ii) Increase in arrival rate for justifying a second counter.

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