Total No. of Questions : 5]

SEAT No :

P 1344

[Total No. of Pages :4

[5365]-204
M.B.A.
204 : DECISION SCIENCE
(2013 Pattern) (Semester-II)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt five questions.***

2) ***Each Question has an Internal option.***

3) ***Use of scientific calculator is not allowed.***

4) ***Graph paper will not be provided, draw graph on answer paper.***

Q1) a) Solve the LPP by graphical method **[10]**

Minimize $Z = 12.5x + 15y$

Subject to

$2x + 1.5y \geq 30$

$x + 1.5y \geq 18$

$x, y \geq 0$

OR

b) Solve following maximization transportation Problem by MODI Method, table shows profit per unit at each distribution center W, X, Y & Z.**[10]**

	W	X	Y	Z	Supply
A	12	18	6	25	200
B	8	7	10	18	500
C	14	3	11	20	300
Demand	180	320	100	400	

P.T.O.

Q2) a) Vehicle arrives at Petrol pump with mean rate of 30 per hour. The time required to serve a customer has an exponential distribution with mean of 90 seconds. Find the following. **[10]**

i) Probability that Server is busy

ii) Probability that vehicle should not wait

iii) Average waiting time of customer.

iv) Average number of customer in the system

v) Average queue length?

OR

b) Following is the daily demand to a coca cola bottles as per past experience **[10]**

Daily demand	0	10	20	30	40	50
Probability	0.02	0.19	0.16	0.45	0.13	0.05

Estimate average balance stock, if the manager decides to keep 30 Coca cola bottles. Use following random numbers 47, 88, 15, 91, 57, 67, 11, 54, 60, 89

Q3) a) A businessman has 3 alternative actions, that he can take. Each of these follows 4 possible events. The conditional pay offs for each action event combination are as under **[10]**

Actions	EVENTS			
	W	X	Y	Z
I	4	0	-5	3
II	-2	6	9	1
III	7	3	2	4

Find optimal decision under

i) Maximin criterion

ii) Regret criterion

iii) Laplace criterion

iv) Hurwicz Alpha Criterian (Alpha = 0.55)

OR

b) Find the optimum strategies for A & B in the following game. Also obtain value of game **[10]**

		B's Strategy			
		B1	B2	B3	B4
A's Strategy	Al	2	-2	4	1
	A2	6	1	12	3
	A3	-3	2	0	6
	A4	2	-3	7	1

Q4) a) The activities of the project and estimated time in days for each activity are given below **[10]**

Activity	1-2	2-3	2-4	2-5	3-7	4-5	4-7	5-6	6-7
Duration in days	3	4	4	5	4	2	2	3	2

i) Draw a network diagram

ii) Calculate the project duration and determine critical path

iii) Find latest start and finished times for the activities, Find their total floats.

OR

b) Explain the following in terms of PERT/CPM **[10]**

i) Earliest time

ii) Latest time

iii) Total activity float

iv) Event slack

v) Critical path

Q5) a) An insurance company insured 1500 scooter drivers, 3500 car drivers and 5000 truck drivers. The probability of an accident is 0.05, 0.02, and 0.10 respectively in case of scooter, car and truck drivers. One of the person meet with an accident, what is the probability that he is a car driver? **[10]**

OR

b) The incidence of certain disease is such that on average, 20% of workers suffer from it. If ten workers are selected at random, find the probability that **[10]**

i) Exactly two workers suffer from the disease.

ii) Not more than two workers suffer from the disease.

iii) At least nine workers suffer from the disease.

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