[5070]-2004

M.B.A.

204 : DECISION SCIENCE

(2013 Pattern) (Semester - II)

Time : 2½ Hours]   *[Max. Marks : 50*

Instructions to the candidates:

1) *Attempt 5 (five) questions.*
2) *Each question has an internal option.*
3) *Each question carries equal marks.(10)*
4) *Figures to the right indicate mark for questions.*
5) *Graph will not be provided, Draw a diagram on answer sheet.*
6) *Non scientific calculator is allowed.*

Q1) Find the initial basic feasible solution of the following transportation problem for minimizing using Vogel's Approximation method. The table below.   **[10]**

	D1	D2	D3	D4	Supply
01	10	20	5	7	10
02	13	9	12	8	20
03	4	15	7	9	30
04	14	7	1	0	40
05	3	12	5	19	50
Demand	60	60	20	10	

OR

Q2) Solve the following L.P.P. using graphical method: **[10]**

Minimize Z=80 x +120y

Subject to x+ y $\leq$ 9

x $\geq$ 2

y $\geq$ 3

20x+50y $\leq$ 300

x, y $\geq$ 0

P.T.O.

Q3) A self - service store employs one cashier at its counter. Nine customers arrive on as average 5 minutes while the cashier can serve 10 customers in 5 minutes. Assuming Poisson distribution for arrival rate and exponential distribution for service rate find: **[10]**

    a)   Find the traffic intensity.

    b)   Average number of customers in the system.

    c)   Average number of customers in queue or average queue length.

    d)   Average time a customer spends in the system.

    e)   Average time a customer waits before being served.

<div align="center">OR</div>

Q4) a)   In a cricket season for a one-day match a bowler bowled 50 balls. The frequency distribution of runs scored per ball is as given below: **[5]**

Runs/ball	0	1	2	3	4	5	6
Number of balls	15	10	10	4	8	1	2

        Simulate the system for 2 over's and find average runs given in 2 over's by him. Use the following random numbers: 88,03,05,29,28,48,65,19,55,17,37,82.

    b)   Write a note on Markov Chain. **[5]**

Q5) Solve the following Game, Given the Pay-off matrix as: **[10]**

<div align="center">Player B</div>

	B1	B2
A1	6	-3
A2	-3	0

Player A (A1, A2)

<div align="center">OR</div>

Q6) A businessman has 3 alternative actions that he can take. Each of these follows 4 possible events. The conditional Payoffs for each action event combination are as under.

	Events			
Actions	A	B	C	D
I	4	0	-5	3
II	-2	6	9	1
III	7	3	2	4

Find optimal decision under **[10]**
   a)   Maximin Criterion.
   b)   Minimax Regret Criterion.
   c)   Laplace Criterion.

Q7) 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

   a)   Draw the Network Diagram.
   b)   Find early start time(EST) and early finish time (EFT).
   c)   Identify Critical path. **[10]**

OR

Q8) Write short notes on:
   a)   Role of Network techniques in project management. **[5]**
   b)   Floats and its types with example. **[5]**

Q9) The incidence of a certain disease is such that on an average 20% of workers suffer from it. If 10 workers are selected at random, find the probability that
   a)   Exactly 2 workers suffer from the disease. **[10]**
   b)   Not more than 2 workers suffer from the disease.
   c)   At least 9 workers suffer from the disease.

OR

Q10)a)   A card is drawn at random from a well shuffled pack. Find the probability that **[5]**
   i)   It is not a spade.
   ii)   It is a face card.
   b)   A pair of dice is thrown. Find the probability of getting the sum **[5]**
   i)   More than nine.
   ii)   Multiple of 3.

✡   ✡   ✡