[5659]-2004

M.B.A.

204 : DECISION SCIENCE

(2016 Pattern) (Semester - II)

Time : 2¼ Hours]   *[Max. Marks : 50*

Instructions to the candidates:

    1)   All questions are compulsory.

    2)   Each Question has an internal options.

    3)   Your answer should be specific and to the point.

    4)   Graph paper will not be provided.

    5)   Simple calculator is permitted.

Q1) Five males are available to do five different jobs from past records. The time in hours that each man takes to do each job is known and given in the following table. **[10]**

Man \ Job	A	B	C	D	E
1	2	9	2	7	1
2	6	8	7	6	1
3	4	6	5	3	1
4	4	2	7	3	1
5	5	3	9	5	1

Find the assignment of male to jobs that will minimize the total time taken.

OR

Find the initial basic feasible solution by. **[10]**

a)   North west corner method

b)   Matrix Minima Method

	D1	D2	D3	D4	Supply
01	23	27	16	18	30
02	12	17	20	51	40
03	22	28	12	32	53
Demand	22	35	25	41	

P.T.O.

Q2) Solve the following LPP Graphically. **[10]**

Maximize z = 3x + 2y

Subject to constraints

$2x + y \leq 40$

$x + y \leq 24$

$2x + 3y \leq 60$

$x, y \geq 0$

OR

b) A confectionary sells items with past data of demand per week with frequency as given below: **[10]**

Demand per week	0	5	10	15	20	25
Frequency	2	11	8	21	5	3

Using the following random numbers, simulate demand for 10 weeks and answers the following questions

i) What is the average number demand per week.

Random Numbers: 35, 52, 90, 13, 23, 73, 34, 57, 35, 83

Q3) A farmer wants to decide which of the three crops he should plant. The farmer has categorized the amount of rainfall as high, medium & low. Estimated profit is given below. **[10]**

Rainfall	Estimated Profit cin Rs.		
	Crop A	Crop B	Crop C
High	8000	3500	5000
Medium	4500	4500	4900
Low	2000	5000	4000

Farmer wishes to plant one crop.

Decide the best crop using.

a) Hurwicz criteria (take degree 0.6)

b) Laplace criteria

c) Minimax Regret criteria

OR

b)   Solve the following game.   **[10]**

Player A	Player B		
	B1	B2	B3
A1	1	7	2
A2	6	2	7
A3	5	1	6

Q4) Solve the following sequencing problem   **[10]**

Tasks / Machine	1	2	3	4	5	6	7
M1	3	8	7	4	9	8	7
M2	4	3	2	5	1	4	3
M3	6	7	5	11	5	6	12

Determine the optimal sequence of jobs and find idle time of each machine.

OR

Following are the activities of a project

Activity	Activity time in weeks		
	Most optimistic	Most Likely	Most Pessimistic
1-2	4	7	13
2-3	6	9	11
2-4	5	7	9
3-5	3	5	7
4-6	7	8	10
5-7	2	3	5
6-7	6	7	8
7-8	2	3	4

a)   Draw the project network diagram and indicate the expected time on each activity.

b)   What is the expected length? Find the critical path.   **[10]**

Q5) a) From 30 tickets marked with the first 30 numerals one is drawn at random. Find the probability that the number on this ticket is a multiple of 3 or 11.**[5]**

b) 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

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

The incidence of occupational disease in an industry such that the workers have a 20% chance of suffering from it. What is the probability that out of six workers less than 3 will contract the disease. **[10]**

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