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Printed Pages : 3

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MMS/M- 13
MANAGEMENT SCIENCE

Paper- CP- 201

Time allowed : 3 hours] [*Maximum marks : 70*

***Note** : Student is required to attempt any 8 questions from*

Part- A *and any* 3 *questions from* **Part –B.**

Section-A (each question carry 5 marks)

1. **Write short notes on any *eight*:**

   (i) Significance of Artificial variable in linear programming
   (ii) **Methods of obtaining basic feasible solution in Transportation model**
   (iii) **Degeneracy in Transportation problem**
   (iv) **State Vs Transit State in Queuing**
   (v) **Significance of Queuing Theory**
   (vi) **Duality in LPP**
   (vii) **Saddle Point of a Game**
   (viii) **Sensitivity Analysis**
   (ix) **QT models**
   (x) **Dominance Rule in Game Theory.**

Section – B (each question carries 10 marks)

2. **Solve the following LPP by simplex method**
   Minimize z = 8x1 – 2x2
   Subject to – 4x1 + 2x1 $\leq$ 1
   5x1 – 4x2 $\leq$ 3
   X1, x2 $\geq$ 0

3. **Solve the following game using dominance property**

Player B

Player A		I	II	III
	I	1	7	2
	II	6	2	7
	III	5	2	6

4. **Lyengar bakery keeps stock of a popular brand of cake. Previous experience indicates the daily demand as given here :**

Daily demand :	0	10	20	30	40	50
Probability :	0.01	0.20	0.15	0.50	0.12	0.02

   Consider the following sequence of random numbers :

   48, 78, 19, 51, 56, 77, 15, 14, 68, 09

   Using the sequence, simulate the demand for the next 10 days. Find out the stock situation if the owner of the bakery decides to make 30 cakes every day. Also, estimate the daily average demand for this cake on the basis of stimulated data.

5. **A manager has a choice between**

   (i) **risky contract promising Rs. 7 lakhs with probability 0.6 and Rs. 4 lakhs with probability 0.4.**

   (ii) **a diversified portfolio consisting of two contracts with independent outcomes each promising Rs. 3.5 lakhs with probability 0.6 and Rs. 2 lakhs with probability 0.4.**

   Construct a decision tree for using EMV criteria. Can you arrive at the decision using EMV criteria?

6. **The production department for a company requires 3,600 kg of raw material for manufacturing a particular item per year. It has been estimated that the cost of placing an order is Rs. 36 and the cost of carrying inventory is 25% of the investment in the inventories. The price is Rs. 10 per kg. The purchase manager wishes to determine an ordering policy for the raw material.**