

MMS/M-16  
MANAGEMENT SCIENCE  
PAPER-CP-201

Time Allowed: 3 Hours

Maximum Marks: 70

Note: Attempt any eight questions from part-A. And any three Questions from part-B.

**Part-A**

1. Which are the assumptions of linear programming models? 5
2. What is saddle point in a game problem? 5
3. What are the different costs involved in the inventory management problems? 5
4. How linear programming, integer programming and goal programming are similar and different? Explain. 5
5. What is sensitivity analysis? Explain. 5
6. Explain the least-cost method of obtaining initial feasible solution of transportation problem. 5
7. What is the difference between decision making under risk and under uncertainty? Explain. 5
8. How PERT and CPM techniques are similar and different? Explain. 5
9. Describe some of the important performance measures of a queuing system. 5
10. List some of the important applications of simulation. 5

**Part-B**

11. Describe the management science approach to decision making. Discuss some of the applications of management science approach. 10
12. A person wants to invest up to an amount of Rs. 30,000 in fixed income securities. His broker recommends investing in two bonds: Bond A yielding 10% and Bond B yielding 7%. After some consideration, he decides to invest at most Rs. 12,000 in Bond A and at least Rs. 6,000 in Bond B. He also wants the amount invested in Bond B to be at least equal to the amount invested in Bond A. Formulate the problem as a linear programming problem and solve it. 10

13. What is game theory? Solve the following game:

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	B's Strategy			
	B1	B2	B3	B4
A1	2	0	4	3
A2	4	4	2	3
A3	2	0	4	4
A4	4	8	0	0

14. What is assignment problem? with the help of an example involving four jobs and five workers, explain the Hungarian method of solving the assignment problem.

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15. XYZ Corporation has been presented with a new product development proposal. The cost of the development project is Rs. 500,000. The probability of successful development is projected to be 0.70. If the development is unsuccessful, the project will be terminated. If it is successful, the corporation must then decide whether to begin manufacturing the product on a new production line or a modified production line. If the demand for the new product is high, the incremental revenue for a new production line is Rs. 1, 2000,000, and the incremental revenue for the modified production line is Rs. 850,000. If the demand is low, the incremental revenue for the new production line is Rs. 7000,000, and the incremental revenue for the modified production line is Rs. 150,000. All of these incremental revenue values are gross figures, i.e., before subtracting the Rs. 5000,000 development cost, Rs.3000, 000 for the new production line and Rs. 100,000 for the modified production line. The probability of high demand is estimated at 0.40 and that of that of low demand as 0.60. Draw up a decision tree diagram to represent the above information, also evaluate it to decide about the proposal.

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