

4. State the conditions under which the problem of processing of jobs through three machines has been solved. Describe the corresponding algorithm. Find the sequence that minimizes the total time required to complete the following tasks :

Task	A	B	C	D	E	F	G
Machine I	9	8	7	4	3	8	7
Machine II	1	3	2	5	4	4	3
Machine III	5	7	5	11	6	6	12

Unit III

5. Explain the following :
- Briefly state the limitations of the queuing theory.
 - For what type of business problems might game theory be helpful ? Explain.

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(Third/Fourth Semester)

(Main/Re-appear)

MBA-201

APPLIED OPERATION RESEARCH

Time : 3 Hours]

[Maximum Marks : 70

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Briefly describe the graphic and simplex methods of solving a linear programming problem. Why is simplex method considered superior to graphic methods ? Explain.
2. Two product A and B are processed on three machines X, Y and Z. The Processing time per unit, machine availability and profit per unit are as under :

Machine	Processing Time (Hours) X Product	Processing Time (Hours) Y Product	Availability (Hours)
X	2	3	1500
Y	3	2	1500
Z	1	1	1000
Profit per unit	Rs. 20	Rs. 24	

Formulate on appropriate linear Programming Model for this problem and solve it by simplex method. Also state the shadow prices per hour in respect of machine X, Y and Z.

Unit II

3. (a) When do you say a solution to a transportation problem is degenerate ?
(b) A company has three plants X, Y, Z and each producing 50, 100, 150 units of similar products. There are five warehouses W_1 , W_2 , W_3 , W_4 and W_5 having demand of 100, 70, 50, 40 and 40 units respectively. The cost of transporting the products from plants to warehouses is given in the following matrix.

	W_1	W_2	W_3	W_4	W_5
X	20	28	32	55	70
Y	48	36	40	44	25
Z	35	55	22	45	48

Determine the transportation schedule so that the cost is minimized.

Dose per week	20	25	40	60
No. of week	5	15	25	5

Calculate :

- (a) Expected monetary value
- (b) Expected opportunity loss and Expected value of perfect information EVPI.

8. What do you mean by network analysis ?
Explain the different between PERT and CPM.

6. Write short notes on the following :

- (a) A health care organization purchases health article- A at the rate of Rs. 42 per piece from a vendor. The requirements of this Quality management in CSSD and housekeeping services. Health article—A are 1800 per year. What should be the ordering quantity per order, if the cost per placement of an order is Rs. 16 and inventory carrying charges per rupee per year is 20 paise. Computer EOQ .
- (b) Define the scope of Lead Time and Economical lot size.

Unit IV

7. A physician purchases a particular medicine on Monday of each week. The medicine must be used within the week following, otherwise its becomes worthless. The medicine cost Rs. 2 per dose and the physician charges Rs. 4 per dose. In the past 50 week, the records of uses are as follow :