



BQ-19MBA102

Seat No. _____

M. B. A. (Sem. I) (CBCS) Examination

March - 2021

Quantitative Techniques in Management

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) Attempt any **5 (five)** questions out of 10 (ten).
 (2) All the questions carry equal marks.

- 1 What are the essential characteristics of operations research ? Also explain how operations research can be helpful in solving the various problems that managers might encounter with the help of suitable examples.
- 2 A company has two plants. Orders from four customers have been received. The number of units ordered by each customer and the shipping cost from each plant are shown in the following table.

Customer	Units Ordered	Shipping Cost (Rs.) / unit	
		From Plant 1	From Plant 2
A	500	15	40
B	300	20	30
C	1,000	30	25
D	200	35	20

Each unit of the product must be machined and assembled. These costs, together with the capacities at each plant, are shown below:

	Hours / Unit	Cost (Rs.) / Hour	Hours available
Plant 1			
Machining	0.10	40	120
Assembling	0.20	30	260
Plant 2			
Machining	0.11	40	140
Assembling	0.22	30	250

Formulate this as a linear programming problem to minimize cost.

- 3 What is a "model" ? Explain the various types of models and their usefulness with the help of suitable examples.
- 4 What is a game theory ? State the assumptions underlying it. Discuss its importance to business decisions.

- 5 Explain and illustrate the following principles of decision making
(a) Laplace, (b) Maximin, (c) Maximax, (d) Hurwicz, (e) Savage.
- 6 Discuss the various Qualitative Models of Forecasting.
- 7 From the following information Draw a Network Diagram and obtain critical path and total duration of Project.

Activity	A	B	C	D	E	F	G	H	I
Nodes	1-2	2-3	2-4	3-6	3-5	4-6	5-7	6-7	7-8
Duration	8	10	10	22	20	12	10	4	9

- 8 Solve the following Transportation problem using VAM method and obtain an initial feasible solution.

From	To					Supply
	1	2	3	4	5	
A	68	57	91	52	49	16
B	35	88	60	53	28	20
C	4	91	75	24	82	24
D	74	3	45	7	13	12
E	15	8	60	82	7	12
Demand	20	18	22	10	14	

- 9 Five Jobs are to be assigned to Five persons. Time taken by each person to complete respective job is given in the following table. Employ the Hungarian method of assignment and find the optimal assignment to minimize the total time taken by all persons. Is the solution unique? If not, then provide alternate solution.

Person	Jobs				
	J ₁	J ₂	J ₃	J ₄	J ₅
P ₁	14	8	6	18	6
P ₂	6	22	18	25	10
P ₃	5	19	13	16	9
P ₄	24	8	5	10	10
P ₅	17	13	6	11	7

- 10 Write short notes on :
(1) Northwest Corner Approach.
(2) Classification of Solutions.