

Roll No. ....

**12915**  
**MBA Executive (evening)**  
**2nd Semester**  
**Examination – July, 2022**

**OPERATIONS RESEARCH**

Paper : 20IME22C5

Time : Three Hours ]

[ Maximum Marks : 80

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

*Note : Section-A is compulsory. Attempt four questions from Section-B (one question from each Unit).*

**SECTION – A**

1. Write short notes on the following :

- (i) Mixed strategy in a competitive game.
- (ii) Expected value of perfect information.
- (iii) Laplace criteria of decision making under uncertainty.
- (iv) Transportation problem.
- (v) Two person Zero-sum game.

- (vi) Basic feasible solution.
- (vii) Travelling salesman problem.
- (viii) Applications of LPP in management.

**SECTION – B**

**UNIT – I**

2. Solve the following LPP :

Maximize :  $Z = 30 X_1 + 40 X_2$ .

Subject to constraints :

$$60 X_1 + 120 X_2 \leq 12,000$$

$$8 X_1 + 5 X_2 \leq 600$$

$$3 X_1 + 4 X_2 \leq 50$$

$$X_1, X_2 \geq 00$$

3. What are the important areas of applications of operations research techniques in Operations Management ?

**UNIT – II**

4. There are five jobs to be assigned, one each to 5 machines and the associated cost matrix (in Rs.) is as follows :

		Machines			
		I	II	III	IV
Jobs	A	1	4	6	3
	B	9	7	10	9
	C	4	5	11	7
	D	8	7	8	5
	E				

Assign the jobs so that the total cost is minimised.

5. Find an optimal solution to the following transportation problem :

Sources	Destination			Supply
	X	Y	Z	
A	2	7	4	50
B	3	3	7	70
C	5	4	1	80
D	1	6	2	140
Demand	70	90	180	340

### UNIT - III

6. A project consists of nine activities and the details about them are given below. Draw the project network number the events identify critical path and determine duration of this project.

Activity	A	B	C	D	E	F	G	H	I(Last)
Duration in weeks	8	6	3	7	5	6	3	10	5
Predecessor (s)	-	A	B	C	D	B	B	G	EFH

12915- (P-4)(Q-9)(22) (3)

P.T.O.

7. A project scheduled has following characteristics :

### Project Schedule

Activity	Name	Time (days)	Activity	Name	Time (days)
1-2	A	4	5-6	G	4
1-3	B	1	5-7	H	8
2-4	C	1	6-8	I	1
3-4	D	1	7-8	J	2
3-5	E	6	8-10	K	5
4-9	F	5	9-10	L	7

Construct the project network and total project duration citing critical path activities.

### UNIT - IV

8. What are the advantages and disadvantages of simulation ? Describe Monte Carlo method of simulation.
9. Obtain the optimal strategies for both persons and the value of the game for Zero-sum two person game whose payoff matrix is given below :

3	2	4	0
2	4	4	2
4	2	4	0
0	4	0	8

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