

Total No. of Questions: 08

M.Sc. (FMM) (Sem. – 3) OPERATION RESEARCH Subject Code: MSFMM307-18 M Code: 76716

Date of Examination: 12-12-2022

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- 1. The question paper is divided into FOUR Units, UNIT-I, UNIT-II, UNIT-III & UNIT-IV, each carrying TWO questions.
- 2. Students have to attempt FIVE questions selecting atleast ONE question from each Unit.
- 3. All questions carry equal TWELVE marks

UNIT - I

- 1. What is linear programming problem? List the various requirements and assumptions of Linear Programming problems. What do you understand by deterministic and probabilistic Models in LP?
- 2. a) Discuss the role of Operations Research in improving productivity in Garment industry.
 - b) Briefly explain the scopes of Operation Research.

UNIT - II

3. What are the limitations of graphical method? Solve graphically the following LP problem

Maximize $Z = 5x_1 + 3x_2$

Subject to, $3x_1 + 5x_2 \le 1$

 $5x_1 + 3x_2 \le 10$ and $x_1, x_2 \ge 0$

4. Solve the following L.P. Problem by simplex method.

Minimize: $Z = X_1 - 3X_2 + 3X_3$

Subject to:

$$3X_1 - X_2 + 2X_3 \le 7$$

 $2X_1 + 4X_2 \ge -12$

 $-4X_1 + 3X_2 + 8X_3 \le 10$ and $X_1, X_2, X_3 \ge 0$

UNIT - III

5. How profit maximization problem can be solved by assignment Problem? An ABC company has 5 tasks and 5 persons to perform. Determine the optimal assignment that minimizes the total cost.

Jobs	Machines						
	A	В	С	D	E		
Р	6	7	5	9	4		
Q	7	5	10	9	6		
R	5	4	3	6	5		
S	8	3	5	6	4		
Т	4	7	5	6	6		

6. Briefly explain degeneracy in a transportation model? Transportation problem shown in following table shows transportation cost in INR. Minimize the transportation cost.

	D1	D2	D3	D4	D5	Available
S1	7	6	4	5	9	40
S2	8	5	6	7	8	30
S3	6	8	9	6	5	20
S4	5	7	7	8	6	10
Supply	30	30	15	20	5	

UNIT IV

7. The details of activity and duration are shown below:

Activity	A	В	С	D	E	F	G
Depends upon	Ι	A	A	A	B,C	C,D	E,F
Time, days	10	5	4	7	6	4	7

For the above activities;

- a) Draw a network diagram
- b) Find the critical path
- c) Project duration
- 8. Differentiate between the following:
 - a) Activities on Arrows (AOA) and activities on Nodes (AON) network diagrams
 - b) CPM and PERT techniques.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.