



Date: 08-05-2025

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 PM

SECTION A

ANSWER ANY FOUR OF THE FOLLOWING

4 X10=40 Marks

1. Discuss the limitations of operations Research.
2. Write the steps involved in solving LPP Using Graphical method? And write the applications of Operations Research.
3. Classify the steps involved in solving Assignment problem using Hungarian Method.
4. Determine an initial basic feasible solution to the following transportation problem using NWCR.

Factory	Destination					
		W ₁	W ₂	W ₃	W ₄	Supply
	F ₁	14	25	45	5	6
	F ₂	65	25	35	55	8
	F ₃	35	3	65	15	16
	Requirements	4	7	6	13	T=30

5. Explain sequencing problem in proper details.
6. Distinguish between PERT and CPM,
7. A project schedule has the following characteristics. Draw the network diagram and find the critical path.
8. Determine the different costs that are involved in the inventory problem.

SECTION - B

ANSWER ANY THREE OF THE FOLLOWING

3X 20 =60 Marks

9. Explain the scope of operations research in public utilities and industry.
10. Explain the essential characteristics of a linear programming model.

11. A firm uses lathes, milling machines and grinding machines to produce two machine parts. The following table represents the machining times required for each part, the machining times available on different machines and the profit on each machine part

Types of Machines	Machining time required for the machine (minutes)		Maximum time available Per week (Minutes)
	I	II	
Lathes	12	6	3000
Milling machines	4	10	2000
Grinding machine	2	3	900
Profit per unit	Rs.40	Rs.100	

Formulate LPP Model and find the number of parts I and II to be manufactured per week to maximize profit by using Graphical method.

12. Find an optimal solution to the following transportation problem

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

13. A project schedule has the following characteristics:

Activity	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8	8-9	8-10	9-10
Time	4	1	1	1	6	5	4	8	1	2	1	8	7

Construct the network diagram

Find the critical path and total project duration

14. How will you control the inventories of a manufacturing organization? Explain the various inventory costs associated with the organization.
