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Reg. No.

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II Semester M.B.A (Day and Evening) Degree Examination, December - 2023

MANAGEMENT

PRODUCTION AND OPERATIONS RESEARCH

(CBCS Scheme 2019 Onwards)

Paper : 2.6

Time : 3 Hours

Maximum Marks : 70

SECTION - A

Answer any Five questions from the following. Each question carries 5 marks.

(5×5=25)

1. Explain the factors influencing facility location decision.
2. Explain the importance of EOQ.
3. Write a short note on Breakdown maintenance.
4. Bring out the differences between PERT and CPM.
5. A ready-made garments manufacturer has to process 7 items through two stages of production, viz, cutting and sewing. The time (Hours) taken by each of these items at different stages is given below.

Items	Processing time	
	Cutting	Sewing
1	5	2
2	7	6
3	3	7
4	4	5
5	6	9
6	7	5
7	12	8

Find an order in which these items are to be processed so as to minimize the total processing time.

6. A Steel company has three open-hearth furnaces and four rolling mills. Transportation cost (Rs/quintal) for shipping steel from furnaces to rolling mills are shown in the following table.

		TO				
		P	Q	R	S	Supply
From	A	12	10	12	13	500
	B	7	11	8	14	300
	C	6	16	11	7	200
	Demand	180	150	350	320	1000

What is the optimum shipping schedule?

[P.T.O.]



7. Solve the following linear programming using graphical method.

$$\text{Maximize } Z = 40x_1 + 35x_2$$

$$\text{Subject to, } 2x_1 + 3x_2 \leq 60$$

$$4x_1 + 3x_2 \leq 96$$

$$x_1, x_2 \geq 0$$

SECTION - B

Answer any Three questions from the following. Each question carries 10 marks.

(3×10=30)

8. Briefly explain the types of Production Systems.

9. A Project schedule has the following characteristics;

Activity	1-2	2-3	1-3	2-6	3-4	2-4	4-7	4-5	6-7	5-7
Duration	4	2	2	6	8	4	2	5	8	2

- Construct a network diagram
- Determine the critical path
- Obtain earliest starting and latest finishing time

10. Using the following Cost matrix, determine Optimal job assignment and cost of assignment.

		Jobs				
		1	2	3	4	5
Machinist	A	10	3	3	2	8
	B	9	7	8	2	7
	C	7	5	6	2	4
	D	3	5	8	2	4
	E	9	10	9	6	10

11. Solve the following LPP Simplex method;

$$\text{Maximize } Z = 5x_1 + 10x_2 + 8x_3$$

$$\text{Subject to; } 3x_1 + 5x_2 + 2x_3 \leq 60$$

$$4x_1 + 4x_2 + 4x_3 \leq 72$$

$$2x_1 + 4x_2 + 5x_3 \leq 100$$

$$x_1, x_2, x_3 \geq 0$$

SECTION - C

12. **Compulsory Case Study:**

(1×15=15)

Solve the following transportation problem by VAM and apply MODI method to test its optimality.

From	To	Project A	Project B	Project C	Plant Capacity
Plant W		4	8	8	56
Plant X		16	24	16	82
Plant Y		8	16	24	77
Total Required		72	102	41	215