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Reg. No. | | | | | | | | |

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

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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.

From \ TO	P	Q	R	S	Supply
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.

Maximize $Z = 40\,x_1 + 35\,x_2$

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

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

$x_1, x_2 \geq 0$

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

a) Construct a network diagram

b) Determine the critical path

c) Obtain earliest starting and latest finishing time

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

Machinist \ Jobs	1	2	3	4	5
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

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11. Solve the following LPP Simplex method;

Maximize $Z = 5x_1 + 10x_2 + 8x_3$

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