MAY 2024 **U/ID 46515/UCC5C**

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer any TEN questions.

1. What is the necessity of O.R?

2. What is simplex method?

3. What is L.P.P?

4. What are the properties of duality?

5. What is Algebric solution?

6. What is transportation model?

7. What is approximation method?

8. What is sequencing problem?

9. Define: Travelling salesman problem.

10. What is PERT>

11. What are uses of computer simulation?

12. Write any two advantages of Monte Carlo method.

PART B — ($5 \times 5 = 25$ marks)

Answer any FIVE questions.

13. Explain the role of computers in O.R.

14. Discuss the two- phase simplex method with examples.

15. Explain the concept of duality.

16. Explain about assignment model with examples.

17. Explain the concept of sequencing problems with necessary examples.

18. Explain about PERT- CPM networks with examples.

19. List out the congruence random numbers generators and types with examples.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

20. Explain the methodology of O.R.

21. Use simplex method to solve the L.P.P:

Max Z = $3x_1 + 2x_2$

Subject to

$$x_1 + x_2 \leq 4$$
$$x_1 - x_2 \leq 2$$
$$x_1, x_2 \geq 0$$

22. Find the initial solution of transport problem using Vogel's approximation method .

Destination

		D_1	D_2	D_3	D_4	Supply
Factory	F_1	3	3	4	1	100
	F_2	4	2	4	2	125
	F_3	1	5	3	2	75
Demand		120	80	75	25	300

23. Solve the following minimal assignment problem.

	1	2	3	4
A	1	26	17	11
B	13	28	4	26
C	38	19	18	15
D	19	26	24	10

24. Solve the following problem graphically

$$\begin{array}{c} \\ \text{Player B} \end{array} \begin{array}{c} \text{Player A} \\ \begin{pmatrix} 3 & -3 & 4 \\ -1 & 1 & -3 \end{pmatrix} \end{array}$$