DECEMBER 2024 **U/ID 46515/UCC5C**

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer any TEN questions.

1. What is Operation Research?

2. What is Pay-off Matrix?

3. What is Duality?

4. What is Assignment Problem?

5. What is Simplex Method?

6. Define : Linear Programming.

7. What is Game Theory?

8. Define : Optimum solution.

9. Write any two advantages of CPM.

10. What is PERT?

11. What is Graphical Method?

12. What is Assignment Model?

PART B — (5 × 5 = 25 marks)

Answer any FIVE questions.

13. Explain the characteristics of O.R.

14. Discuss the characteristics of Assignment Model.

15. Explain the nature of Travelling Salesman Problem.

16. Explain the Simplex Method of Solving a Linear programming problem.

17. Discuss about Vogel's Approximation Method in detail.

18. Discuss Monte – Carlo techniques for simulation.

19. Explain about PERT and CPM Method.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

20. Use duality and solve the following L.P.P.

$$\text{Minimize} \quad z = 2x_1 + 2x_2$$

$$\text{Subject to} \quad 2x_1 + 4x_2 \geq 1$$

$$x_1 + 2x_2 \geq 1$$

$$2x_1 + x_2 \geq 1$$

$$x_1, x_2 \geq 0$$

21. Explain the difference between a Transportation problem and Assignment problem.

22. Discuss in detail about PERT Estimation Techniques.

23. Solve the following sequencing problem of 4-Jobs on 6 Machines (processing Time in hrs).

Machine

JOBS	M_1	M_2	M_3	M_4	M_5	M_6
A	19	8	8	3	11	24
B	18	6	9	6	9	18
C	12	5	8	5	7	15
D	20	5	3	4	8	11

24. Find the critical path for the following network.

