MAY 2022 **P/ID 77931/RMB2G**

Time : Three hours Maximum : 80 marks

SECTION A — (10 × 2 = 20 marks)

Answer any TEN questions in 50 words each

1. What are the steps involved in OR?

2. Write short notes on Feasible solution.

3. What is Transportation problem?

4. State any three times in PERT.

5. What is meant by graphical solution to LPP?

6. What is degeneracy in a Transportation problem?

7. What is an Unbalanced Assignment Problem?

8. What is the procedure for obtaining an initial solution to Transportation problem?

9. Define Dummy Activity.

10. Define mixed strategy.

11. What is meant by queuing model?

12. Define payoff.

SECTION B — (5 × 6 = 30 marks)

Answer any FIVE questions in 250 words each

13. Explain the limitation of OR.

14. Solve the following linear programming problem.

Maximize $z = 7x_1 + 3x_2$

Subject to constraints

$2x_1 + 6x_2 \leq 24$
$6x_1 + 2x_2 \leq 24$
$x_1, x_2 \geq 0$

15. Explain with one example an LP problem which has no feasible solution.

16. Explain Vogel's approximation method with an example.

17. Differentiate transportation problem and assignment problem.

18. Discuss the basic terms used in PERT/CPM application.

19. What are the rules for determining saddle point?

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions in 500 words each.

20. List out the applications of OR.

21. Write the primal of the following dual.

$\text{Min } z = 10y_1 + 8y_2$

Subject to

$y_1 + y_2 \geq 5$

$2y_1 - y_2 \geq 12$

$y_1 + 3y_2 \geq 4$ and

$y_1 \geq 0,\ y_2$ is unresticted.

22. A Company has three plants. A,B and C, 3 warehouses XYZ. The number of units available in the plants 60,70,80 and the demand at XYZ are 50,80,80 respectively. The unit cost of the transportation is given in the following table.

	X	Y	Z
A	8	7	3
B	3	8	9
C	11	3	5

Find the allocation so that the total transportation cost is minimum.

23. A and B play the game as follows. They simultaneously and independently write one of the three numbers 1,2,3. If the sum of the number is even, B pays to A their sum in rupees. If it is odd A pays the sum to B in rupees. Form the matrix of the game for A and solve it.

24. For the following project network. Calculate for each activity its early start, early finish, late start, late finish, total float and free float and also identify the critical path.

