DECEMBER 2023 **U/ID 46515/UCC5C**

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer any TEN questions.

1. State any two applications of operations Research.
2. Define L.P.P.
3. What are the characteristics of LPP?
4. Define slack variables.
5. What is simplex method?
6. What is meant by optimum?
7. What is Game Theory?
8. Define: Transportation problem.
9. What is the objective of an Assignment problem?
10. What is graphical method?
11. What is PERT?
12. What is Monte-Carlo method?

PART B — ($5 \times 5 = 25$ marks)

Answer any FIVE questions.

13. Explain the scope of Operations Research.

14. What are the needs and significance of Operations Research?

15. What are the steps involved in formulation of L.P.P.?

16. Discuss any three characteristics of Assignment model.

17. Solve the game whose pay-off matrix is given by

	Player B			
Player A	1	7	3	4
	5	6	4	5
	7	2	0	3

18. Discuss the concept of Travelling sales man problem.

19. Explain the steps involved in Monte-Carlo simulation.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

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

Minimize $Z = 3x_1 + 5x_2$

Subject to $x_1 + x_2 \geq 200$

$x_1 \leq 80$

$x_2 \geq 60$

$x_1, x_2 \geq 0$

21. Solve the following sequencing problem of 4 jobs on 6 machines.

Machines

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

22. Discuss in detail about PERT Estimation Techniques.

23. Solve the game whose pay-off matrices are given below

(a)

$$\begin{array}{c} \\ \text{Player B} \end{array} \begin{array}{c} \text{Player A} \\ \begin{pmatrix} -1 & 2 & -2 \\ 6 & 4 & -6 \end{pmatrix} \end{array}$$

(b)

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

24. Find the critical path for the following network:

