25020262

QP CODE: 25020262

Reg No : .....

Name : .....

B.Sc/BCA DEGREE (CBCS)) REGULAR/ IMPROVEMENT/ REAPPEARANCE / MERCY CHANCE EXAMINATIONS , FEBRUARY 2025

Fourth Semester

Complementary Course - MM4CMT03 - OPERATIONS RESEARCH

(Common for B.Sc Cyber Forensic and Bachelor of Computer Applications)

2017 Admission Onwards

8912A7BA

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. What is operation research?
2. Explain the nature of operation research.
3. How OR is useful to the personnel management.
4. What you mean by Iconoc model.? Give any 2 examples.
5. What are the limitations of graphical method of solving a linear programming problem?
6. What you mean by unbounded solution?
7. Why BigM method is called method of penalities?
8. Write the transportation problem in the form of an LPP.
9. What you mean by unbalanced Transportation problem?
10. Cite any two areas where assignment technique is applied.
11. Describe any one method to solve a 2X2 game without saddle point.
12. What do you mean by zero sum game?

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Explain the use of OR in defence and in Industry.

14. Explain the nature of operation research and its limitation.

15. Define LPP. Expalin the application of LPP in Industry and management.

16. A company has two types of pens say A and B. Pen A is superior quality and Pen B is lower quality. Profits on pen A and pen B are Rs.5 and Rs. 3 per pen respectively. Raw materials required for each pen A is twice as that of pen B. The supply of raw material is sufficient only Rs. 1000 pens of B per day. Pen A requires a special clip and only 400 such clips are available per day. For pen B, only 700 clips are available per day. Formulate the problem into LPP.

17. Determine the initial BFS of the transportation problem by lowest cost entry method

Destinations					
Origin	A	B	C	D	Supply
1	1	5	3	3	34
2	3	3	1	2	15
3	0	2	2	3	12
4	2	7	2	4	19
Demand	21	25	17	17	

18. Expalin degeneracy in Transportation problem . Write the method to solve degeneracy.

19. Explain the Hugurian algorithm.

20. The following is a payoff matrix

$$\begin{matrix} & \textbf{\textit{Y}} \\ X & \end{matrix} \begin{bmatrix} 1 & -2 \\ 3 & -1 \end{bmatrix}$$

What is the value of the game?Who will be the winner of the game? Why?

21. Solve the following by game whose pay off matrix is given by

$$\begin{matrix} & \textbf{\textit{Player B}} \\ Player\,A & \end{matrix} \begin{bmatrix} 1 & 7 & 2 \\ 6 & 2 & 7 \\ 5 & 1 & 7 \end{bmatrix}$$

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. A company produces two types of products say type A and B. Product B is superior quality and product A is of lower quality. Profits on the two types of products are rs. 30 and Rs. 40 respectively. The dataon resource required, and available of resources are given below:

	Requirement		Capacity
	Product A	Product B	
Raw materials (kg)	60	120	12000
Machining (hours per piece)	8	5	600
assembly(Man hour)	3	4	500

Solve using Simplex method

23. a) Explain the procedure to find ibfs using VAM.
b)Find the intial basic feasible solution of the following transportation problem using the Vogel's Method

	D1	D2	D3	D4	Supply
O1	6	4	1	5	14
O2	8	9	2	7	16
03	4	3	6	2	5
Demand	6	10	15	4	35

24. The owner of a small machine shop has four machines available to assign to jobs for the day. Five jobs are offered with expected profit in Rupees for each machines on each job as follows:

Jobs					
Machines	A	B	C	D	E
1	62	78	50	101	82
2	71	84	61	73	59
3	87	92	111	71	81
4	48	64	87	77	80

Determine the assignment of machines to jobs that will result in a maximum profit.

25. Define the following terms(i) Competative game (ii) Pay off matrix (iii) Maximin and minimax principle (iv) Saddle point (v) Pay off matrix.

(2×15=30)