



THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

Re-accredited (2nd Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

BBA 2545/2431/2436/2536

MARKS: 75

QUANTITATIVE TECHNIQUES

TIME: 3HRS

ANSWER ANY FIVE QUESTIONS

5×15=75

1. Solve the following equations by Cramer's rule:

$$x + y + z = 6; x - y + z = 2; 2x + y - z = 1$$

2. Solve the following equations by matrix Inversion method:

$$x + y + z = 3; x + 2y + 3z = 4; x + 4y + 9z = 6.$$

3. Use graphical method to find the minimum value of $z = 20x_1 + 10x_2$ subject to the constraints:

$$x_1 + 2x_2 \leq 40, 3x_1 + x_2 \geq 30, 4x_1 + 3x_2 \geq 60; \text{ and } x_1, x_2 \geq 0.$$

4. Use simplex method to maximize $z = 5x_1 + 3x_2$

Subject to the constraints:

$$x_1 + x_2 \leq 2; 5x_1 + 2x_2 \leq 10; 3x_1 + 8x_2 \leq 12 \text{ and } x_1, x_2 \geq 0.$$

5. Solve the following transportation problem using MODI method:

		Destination				
		A	B	C	D	
Source	1	21	16	25	13	11
	2	17	18	14	23	13
	3	32	27	18	41	19
		6	10	12	15	
		Requirements				

6. Solve the following Travelling salesman problem:

From	To				
	A	B	C	D	E
A	∞	2	5	7	1
B	6	∞	3	8	2
C	8	7	∞	4	7
D	12	4	6	∞	5
E	1	3	2	8	∞

7. Solve the following 2×3 game graphically:

$$\text{Player B} \\ \text{Player A} \begin{bmatrix} 1 & 3 & 11 \\ 8 & 5 & 2 \end{bmatrix}$$
