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

OPTIMIZATION TECHNIQUES

MAS 3203 **TIME: 2 Hour**

TOTAL: 60 Marks

PART A

Answer any FOUR Questions: $\mathbf{4 \times 15 = 60}$

1. Use graphical method to solve the following LPP:
Maximize $z = 2x_1 + 3x_2$
Subject to the constraints:
$x_1 + x_2 \leq 30$, $x_1 - x_2 \geq 0$, $x_2 \geq 3$, $0 \leq x_1 \leq 20$ and $0 \leq x_2 \leq 12$.

2. Obtain an initial basic feasible solution to the following transportation problem using Vogel's Approximation method:

	D	E	F	G	**Available**
A	11	13	17	14	**250**
B	16	18	14	10	**300**
C	21	24	13	10	**400**
Requirement	**200**	**225**	**275**	**250**	

3. Determine the optimum assignment schedule:

	a	**b**	**c**	**d**	**e**
A	85	75	65	125	75
B	90	78	66	132	78
C	75	66	57	114	69
D	80	72	60	120	72
E	76	64	56	112	68

4. Solve the following Travelling Salesman problem:

From item	**To item**					
		A	**B**	**C**	**D**	**E**
	A	∞	4	7	3	4
	B	4	∞	6	3	4
	C	7	6	∞	7	5
	D	3	3	7	∞	7
	E	4	4	5	7	∞

5. Solve the following 2×2 game graphically:

$$\begin{array}{c} \\ \text{Player A} \end{array} \begin{array}{c} \text{Player B} \\ \begin{bmatrix} 1 & 3 & -3 & 7 \\ 2 & 5 & 4 & -6 \end{bmatrix} \end{array}$$

6. Solve the following by dominance method:

	I	**II**	**III**	**IV**	**V**	**VI**
A	4	2	0	2	1	1
B	4	3	1	3	2	2
C	4	3	7	−5	1	2
D	4	3	4	−1	2	2
E	4	3	3	−2	2	2