ODD-MID SEMESTER EXAMINATION 2023

Name of the Program: MCA **Semester: III**

Name of the Course: Optimization Techniques **Course Code: TMC 303(3)**

Time: 1-1/2 Hour **Maximum Marks: 50**

Note:

i. Answer **all the questions** by choosing ***any one of the subquestions***.
ii. Each question carries 10 marks.

Q1	**(10 Marks)**	**Specify CO/Cos**
(a)	What is Operation Research? Explain in brief the applications ofOperation Research in Management.	CO-1
	OR	
(b)	What are the different phases in solving an Optimisation Research problem?	
Q2	**(10 Marks)**	CO-1
(a)	Explain the role of ~~compute~~ computers in Optimisation Research.	
	OR	
(b)	What is the quantitative technique of Operation Research?	
Q3	**(10 Marks)**	CO-2
(a)	Find a geometrical interpretation and solution as well for the following LP problem: Maximize $z = x_1 \quad x_2$ subject to the constraints. $x_1 + 2x_2 <= 2000$, $x_1 + x_2 <= 1500$, $x_2 <= 600$ and $x_1, x_2 >= 0$.	
	OR	
(b)	Solve the following LP problem using Simplex Method: Maximize $z = 3x_1 + 2x_2$ subject to the constraints, $x_1 + x_2 <= 4$, $x_1 - x_2 <= 2$ and $x_1, x_2 >= 0$.	
Q4	**(10 Marks)**	CO-2
(a)	Solve the following LP problem using Big-M method: Minimize $z = 4x_1 + 8x_2 + 3x_3$ subject to the constraints, $x_1 + x_2 >= 2$, $2x_1 + x_3 >= 5$ and $x_1, x_2, x_3 >= 0$.	
	OR	

(b)	Explain Transportation problem and show that it can be considered as an LPP.	
Q5	**(10 Marks)**	CO-1 & CO-2
(a)	Solve the following system of equations using appropriate method: $20x-y-2z=17$ $3x+20y-z=-18$ $2x-3y+20z=25$	
OR		
(b)	Explain the features of Operation Research.	