NAVRACHANA UNIVERSITY
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School: School of Engineering and Technology
Program/s: Civil Engineering, SET
Year: 3rd   **Semester:** 5th
Examination: End Semester Examination
Examination year: November-2023

Course Code: CE 427   **Course Name:** Numerical methods with programming

Date: 29/11/2023   **Total Marks:** 40
Time: 01:00 pm to 03:00 pm   **Total Pages:** 2

	Answer the following questions	Marks	CO	BT
Q.1	Solve the following equations with gauss Elimination with partial pivoting method. $$4X1 + X2 - X3 = -2$$ $$5X1 + X2 + 2X3 = 4$$ $$6X1 + X2 + X3 = 6$$	6	CO1	BT3 BT4
Q.2	Solve the following equations with LU Decomposition method. Substitute your answer into original equation and check your answer. $$X1 + X2 + 6X3 = 7$$ $$-X1 + 2 X2 + 9X3 = 2$$ $$X1 - 2X2 + 3X3 = 10$$	6	CO2	BT2 BT3, BT4
Q.3	$x^3 - 2x - 5 = 0$, find the roots of the equation False position method for points (1,2).	5	CO3	BT2
	OR			
Q.3	$X^3 - 3x - 5 = 0$, find the roots of the equation using Newton-Raphson method in the vicinity of x = 0.	5	CO3	BT3, BT4
Q.4	f(X) = X sinx-2 Use bisection method to find the Roots of the equation	5	CO3	BT3, BT4
Q.5	Solve the following Linear equations by relaxation method and check your answer. $$8X + Y - Z = 8$$ $$2X + Y + 9Z = 12$$ $$2X - 7Y + 2Z = -4$$	6	CO2	BT3, BT4 BT2

Q.6	Approximate the area beneath $f(x) = X^3+5X+8$ on the interval $[0,3]$ using the Trapezoidal rule with n=6 subintervals	6	CO4	BT3. BT4 BT2
Q.7	Solve the following Linear equations by Gauss Seidal method. $$5X - Y + Z = 10$$ $$2X + 8Y - Z = 11$$ $$-X + Y + 4Z = 3$$	6	CO4	BT1 BT2