5. (a) What are significant figures ? What are the different methods to convert an approximate number to significant figures ? Explain with examples. If $x = \frac{20}{7}$ is approximated as 2.875, find the absolute, relative and percentage error. 10 (CO1)

OR

(b) Find the roots of the equation $\log x = \cos x$ correct to 3 decimal places by Newton Raphson method. 10 (CO1)

H Roll No. .....

TBC–405

B. C. A. (FOURTH SEMESTER)

MID SEMESTER

EXAMINATION, April, 2023

COMPUTER BASED NUMERICAL & STATISTICAL TECHNIQUES

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Attempt all the questions by choosing any ***one*** of the sub-questions.

(ii) Each question carries 10 marks.

1. (a) Find the roots of the equation $\cos x = 3x - 1$ by Regula Falsi method correct to four decimal places. 10 (CO1)

P. T. O.

OR

(b) Find the roots of the equation $xe^x - 3 = 0$ correct to 3 decimal places by literation method. 10 (CO1)

2. (a) Solve the system of linear equations using Gauss Elimination method. 10 (CO2)

$x + y + 2z = 4; 3x + y - 3z = -4;$

$2x - 3y - 5z = -5$

OR

(b) Solve the equations :

$10x - 5y - 2z = 3; 4x - 10y + 3z = -3;$

$x + 6y + 10z = -3;$

by Matrix inversion method. 10 (CO2)

3. (a) From the following table, estimate the number of students whose weight is between 52 and 60.

Weight	No. of students
0–40	250
40–60	120
60–80	100
80–100	70
100–120	50

OR

(b) Find the cubic polynomial which takes the following values : 10 (CO2)

X	F(X)
1	1
2	– 1
3	1
4	– 1
5	1

4. (a) Find the y (35) using central difference formula : 10 (CO2)

x	y
10	600
20	512
30	439
40	346
50	243

OR

(b) What are the different methods of interpolation for unequal interval ? Given y(1) = 22, y(2) = 30, y(4) 82, y(7) = 106, y(8) = 206, find y(6). 10 (CO2)