



Mid Term (Odd) Semester Examination October 2024

Roll no. 22 94038

Name of the Course and semester: B.Tech CSE 5th semester.

Name of the Paper: Computer Based Numerical & Statistical Techniques.

Paper Code: TMA-502

Time: 1.5 hour

Maximum Marks: 50

Note:

- Answer all the questions by choosing any one of the sub questions
- Each question carries 10 marks.
- Please specify COs against each question.

Q1. (10 Marks)

- (i) If $\Delta x = 0.005$, $\Delta y = 0.001$ be the absolute errors in $x = 2.11$ and $y = 4.15$, find the relative and percentage error in the computation of $x + y$.
(ii) Let $x = 0.458529 \times 10^{-2}$. Find the absolute, relative & percentage error if x is rounded-off to 3 decimal places. (CO1)

OR

- Obtain the root of the equation $x^3 + x^2 + x + 7 = 0$ correct to 3 decimal places by bisection method. (CO1)

Q2. (10 Marks)

- Find the real root of the equation $2x = \cos x + 3$ using Newton Raphson method correct to 3 decimal places. (CO1)

OR

- Find the real root of the equation $2x - \log_e x = 6$ using Regula falsi method correct to 3 decimal places. (CO1)

Q3. (10 Marks)

- Solve the following system of linear equations by Gauss Jordan Method: $x + y + 2z = 4$; $3x + y - 3z = -4$; $2x - 3y - 5z = -5$. (CO1)

OR

- Solve the following system of linear equations by Gauss Seidal Method: $10x + y + z = 9$; $2x + 10y + z = 13$; $2x + 2y + 10z = 14$. (CO1)

Q4. (10 Marks)

- In an examination, the number of candidates who secured marks between certain limits were as follows:

Marks:	0-19	20-39	40-59	60-79	80-99
No. of Students:	41	62	65	50	17

Estimate the number of candidates getting marks less than 70. (CO2)

OR

- Compute the value of Y when $X = 0.6538$ by using Gauss Forward formula, given that

X:	0.62	0.63	0.64	0.65	0.66	0.67	0.68
Y:	0.619411	0.627046	0.634857	0.642029	0.649376	0.656628	0.663782

(CO2)



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Q5.

(10 Marks)

- a. Use Newton's Divided Difference formula to find the value of $F(5.60275)$ from the following table:

X:	5.600	5.602	5.605	5.607	5.608
F(X):	0.775566	0.776827	0.778712	0.779966	0.780591

(CO2)

OR

- b. Use Lagranges formula of interpolation to find the value of $Y(5.5)$, given that:

X:	0	3	4	6
Y:	1	19	49	181

(CO2)