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Total No. of Pages : 02

Total No. of Questions : 07

B.Sc.(IT) (Sem.-4)
COMPUTER ORIENTED NUMERICAL METHODS
Subject Code : BS-208
Paper ID : [B0416]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and a student has to attempt any FOUR questions.

SECTION-A**1. Answer briefly :**

- a. What are the consequences of normalized floating point numbers?
 - b. Differentiate between absolute and relative error.
 - c. What is binary representation of numbers?
 - d. Explain linear regression.
 - e. Define Predictor-Corrector Method.
 - f. Write an algorithm for Gauss-Seidal Method.
 - g. Explain Numerical Integration.
 - h. Write formula for Simpson's 1/3 Integration.
 - i. Define Pivoting.
 - j. Difference between bisection and false-position method.
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SECTION -B

2. Find the solution of the following equations by Gauss Elimination method:

$$3x+y-z=3$$

$$2x-8y+z=-5$$

$$x-2y+9z=8$$

3. Find $\sqrt{25}$ using Bisection Method.
4. Using Lagrange's Interpolation, find from data given below, the number of workers earning between Rs 30 and Rs 40.

Earning (Rs.)	15-20	20-30	30-45	45-55	55-70
No. of workers	73	97	110	183	140

5. Apply Runge-Kutta fourth-order method to find the solution of differential equation $\frac{dy}{dx} = x^2 + y^2$ at $x=1.2$ in steps of 0.1, given that $y=1.5$, when $x=1$.
6. Fit a least square geometric curve $y=ax^b$ to the following data:

X	1	2	3	4	5
Y	0.5	2	4.5	8	12.5

7. Compute $\int_2^1 \frac{dx}{x}$ using Simpson's $1/3^{\text{rd}}$ rule by dividing $[1,2]$ into 4 equal parts. Hence obtain the approximate value of $\log_e 2$.