

Exam. Code : 103203
Subject Code : 1089

B.A./B.Sc. 3rd Semester
COMPUTER SCIENCE

(Computer Oriented Numerical & Statistical Methods)

Time Allowed—3 Hours] [Maximum Marks—75

Note :—Attempt FIVE questions in all, by selecting at least ONE question from each Section. The fifth question may be attempted from any section.

SECTION—A

1. (a) Draw difference between Numerical method and Numerical analysis. 8
- (b) How bisection method works ? Exemplify with some equation to find the root. 7
2. (a) What is error ? Describe various ways to measure it. 8
- (b) Determine the root of equation $3x^2 + 6x - 45 = 0$ using Newton Raphson method with initial guess $x = 5$. 7

SECTION—B

3. (a) How Matrix Conversion method works ? Explain through example. 8

- (b) Solve the following equations using Gauss Elimination method :

$$x_1 + x_2 + 3x_3 = -5$$

$$4x_1 + x_2 + x_3 = -4$$

$$x_1 + 3x_2 + x_3 = 3 \quad 7$$

4. (a) How equations are solved simultaneously ? Explain any two ways of your choice. 8

- (b) Solve through Gauss Siedel method :

$$(x_1 - x_2 + 2x_3 = 6),$$

$$2x_1 + x_2 + x_3 = 3$$

$$x_1 + 3x_2 + x_3 = 0 \quad 7$$

SECTION—C

5. (a) How Lagrangian Polynomial method works ? Explain in detail. 8

- (b) Evaluate the integral using Simpson's 3/8 Rule

$$\int_0^5 \frac{dx}{(4x+5)} \quad 7$$

6. (a) Explain "Divided Difference Method" to achieve interpolation. 8

- (b) Draw difference between Trapezoidal and Simpson Rules to achieve integration. 7

SECTION—D

7. (a) Explain various measures of Central Tendency. 8
- (b) Draw difference between Bivariate and Multivariate distributions. 7
8. (a) Derive formulas for Arithmetic, Geometric and Harmonic means. 8
- (b) How Trend analysis is performed to calculate linear and non-linear trends. 7