Exam. Code : 103203
Subject Code : 1093

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

COMPUTER SCIENCE

(Computer Oriented Numerical & Statistical Methods)

Time Allowed—3 Hours] [Maximum Marks—75

Note :—(1) Attempt any **five** questions.

(2) Use of Non-programmable calculator is allowed.

1. (a) Which types of errors can occur in numerical and statistical methods ? Also explain various measures of errors. 8

(b) Write how iterative solutions are adapted and utilized to solve equation. Explain through any method of your choice. 7

2. (a) Why false position method is used ? Draw its comparison with bisection method. 12

(b) What is the use of non-linear equations ? 3

3. (a) Solve the following through Gauss Siedel method :

$3x + 2y + z = 0$

$2x + y + z = 0$

$6x + 2y + 4z = 0.$ 12

(b) Why curve fitting is required ? Explain in brief. 3

4. (a) Explain Matrix Inversion method through suitable example. 10

   (b) Define Integration. How trapezoidal rule is explored to find integration ? Explain. 5

5. (a) Fit a third-order interpolating polynomial using the Newton Backward difference method for where h = 20 :

x = Temp	40	60	80	100
f(x) = Elasticity	205	201	195	190

   10

   (b) Explain various measures of Central Tendency. 5

6. (a) Integrate $f(x) = 0.3 + 1.6x + 0.027x^2$ between the limits x = 0 and x = 0.9 with stepsize h = 0.3 through Simpson's 3/8 rule. 10

   (b) Draw difference between Bivariate and Multivariate distribution. 5

7. (a) Determine mean deviation, standard deviation and co-efficient of variation for the following data :

Data	32	26	28	34	30
Frequency	2	1	4	2	3

   10

   (b) What is the significance of trend analysis ? Draw difference between linear and non-linear trends. 5

8. Write short notes on any two.

   (a) Regression

   (b) Skewness and Kurtosis

   (c) Gauss Jordan Method. 7.5×2=15