Roll No. .....

Y – 3101(A)

M.Sc. (Second Semester) (SPECIAL) EXAMINATION, August 2021

(SECOND CHANCE)

COMPUTER SCIENCE

Paper–201

(Computer Oriented Numerical and Statistical Methods)

Time : Three Hours

Maximum Marks : 85 *Minimum Pass Marks : 29*

Note : Attempt *all* questions.

1. Solve the equations : 17

$$10x_1 - x_2 + 2x_3 = 4$$
$$x_1 + 10x_2 - x_3 = 3$$
$$2x_1 + 3x_2 + 20x_3 = 7$$

Using the Gauss eliminating method.

2. Find the unique polynomial of degree 2 or less, such that $f(0) = 1, f(1) = 3, f(3) = 55$. Using : 17
   (i) The Lagrange interpolation
   (ii) The Newton divided difference interpolation method.

3. Find the approximate value of : 17

$$I = \int_0^1 \frac{dx}{1+x}$$

Using the :
(i) Trapezoidal rule
(ii) Simpson's $\frac{1}{3}$ rule. Obtain a bound for the errors.

4. Find the three term Taylor series solution for the third order Blasius equation $W''' + WW'' = 0, W(0) = 0, W'(0) = 0, W''(0) = 1$. Find the bound on the error for $A \in [0, 0.2]$. 17

5. Explain Normal distribution. 17