92236

B.Sc. 4th Semester (Hons.) (New Scheme)

Examination, May–2016

PHYSICS

Paper–Phy-406

Computer Fundamental and Programming-II

Time allowed : 3 hours]   *[Maximum marks : 40*

Note : *Attempt **five** questions in all, by selecting **two** questions from each unit. All questions carry equal marks.*

Unit–I

1. Explain the concept of an error. Why an error occur in a computer calculation. Describe various types of error with the help of suitable examples.

2. Find the root of $f(x) = x^3 - 5x - 4$ correct upto four significant digits lying between 2 and 3 by Bisechon method.

3. Give the formula for finding the successive approximate to the root of a polynomial by the Newton-Raphson method. Also state the limitations of the Newton-Raphson Method.

4. Solve the following equation by using Gauss-Seidal iteration method.

   $2x_1 + x_2 + x_3 = 5$

   $3x_1 + 5x_2 + 2x_3 = 15$

   $2x_1 + x_2 + 4x_3 = 18$

92236-P-2-Q-8(16)   [P.T.O.

Unit–II

5. Solve the following differential equation using second order Runge Kutta Method.

$$\frac{dy}{dx} = 2xy, \; y\,(0) = 0.5 \text{ for } 1 \geq x \geq 0$$

6. Solve $\dfrac{dy}{dx} = \dfrac{y - x}{y + x}$ with initial condition $y = 1$ at $x = 0$ find y for $x = 0.1$ by Euler's method.

7. State the principles and procedure of Trapezodial method. Also give an algorithm of the Trapezodial method.

8. What is meant by Numerical Integration ? Enumerate in brief the various methods of numerical Integration. Discuss the advantages of Numerical Integration over analytical Integration.