(b) Solve the equation $x - \sin x - \frac{1}{2} = 0$ by using fixed point iteration method. 4

(c) Obtain the square root of 12 by Newton Raphson method. 4

9\. (a) State the algorithm used in Simple Gauss elimination method. 4

(b) Solve the following system of equations by using Gauss elimination with partial pivoting.

$$5x_1 + 3x_2 + 7x_3 = 4$$
$$x_1 + 5x_2 + 2x_3 = 2$$
$$7x_1 + 2x_2 + 10x_3 = 5$$
8

OR

10\. (a) Explain the pitfalls occurred in Simple Gauss elimination method. 4

(b) Solve the following system of equation by Simple Gauss elimination method.

$$3x_1 + 6x_2 + x_3 = 16$$
$$2x_1 + 4x_2 + 3x_3 = 13$$
$$x_1 + 3x_2 + 2x_3 = 9$$
8

First Semester Bachelor of Computer Applications (Part – I) Examination

NUMERICAL METHOD

Paper – 1 ST 4

P. Pages : 4

Time : Three Hours] [Max. Marks : 60

Note : (1) All questions are compulsory.
(2) All questions carry equal marks.

1\. (a) What do you mean by mathematical model ? How will you formulate it ? 4

(b) State the characteristics of numerical computing. 4

(c) What are the types of data used in numerical computing ? 4

OR

2\. (a) State the importance of emergence in numerical computing. 4

(b) Describe the phases involved in numerical computing. 4

(c) Define with the help of example analog computing. 4

3. (a) State the different errors involved in numerical computing. 4

(b) Explain the concept of truncation error. 4

(c) Find the truncation error in the result of the following function for $x = \frac{1}{5}$ when we use (i) First three terms, (ii) First four terms. 4

OR

4. (a) Explain what do you mean by blunder error ? In which case it occurs ? 4

(b) Explain how will you approximate a number using rounding off rate. 4

(c) Rounding off the following numbers correct to four decimal places.

(i) 56·243827

(ii) 0·235082

(iii) 0·560012

(iv) 0·005789 4

5. (a) Explain what do you mean by Transcendental equations ? State two examples of it. 6

(b) Solve the equation $x^3 - x - 3 = 0$ by using bisection method. 6

OR

6. (a) Explain how will you find out root of the nonlinear equation by using graphical method. 6

(b) By regula falsi method find the root of an equation $f(x) = x \sin x - 1 = 0$ that is located in the internal [0, 2]. 6

7. (a) Derive the Newton Raphson iterative formula by using Taylor's expansion for solving $f(x) = 0$. 4

(b) Find by Newton Raphson method the root of the equation $x^3 - 5x + 3 = 0$. 4

(c) Use the Secant method to find the root of the equation $x - e^x + 2 = 0$. 4

OR

8. (a) Explain the method of iteration for finding roots of nonlinear equation. 4