

B.C.A. (Part—I) Semester—I Examination

NUMERICAL METHODS

Paper—1ST4

Time : Three Hours]

[Maximum Marks : 60

Note :— (1) All questions are compulsory.

(2) All questions carry equal marks.

1. (a) Explain Digital Computing. 4
- (b) What are the different phases involved in numerical computing ? 4
- (c) What do you mean by mathematical model ? How will you formulate it ? 4

OR

2. (a) Distinguish between analog computing and digital computing. 4
- (b) Explain new trends in numerical computing. 4
- (c) Describe with the help of block diagram, the process of Numerical Computing. 4
3. (a) Round off the following numbers correct upto 4 significant digits :
 - (i) 6.5086
 - (ii) 0.42084
 - (iii) 0.005692
 - (iv) 0.89694. 4
- (b) Explain the concept of significant digit with example. 4
- (c) Explain the concept of Inherent errors. 4

OR

4. (a) Differentiate inherent error and numerical error in numerical computing. 4
- (b) State and explain errors involved in numerical computing. Explain any one of them. 4
- (c) State and explain triangular in equality as applied to error propagation. 4
5. (a) Explain false position method to find roots of an equation $f(x) = 0$. 6
- (b) Find roots of the following equation by using bisection method :
 $3x^3 - 6x - 13 = 0$. 6

OR

6. (a) Find graphically the positive root of an equation :
 $x^3 + 3x - 5 = 0$. 6
- (b) Find root of the following equation by using false position method :
 $f(x) = x^3 - x + 4 = 0$. 6
7. (a) Derive the formula to find the roots of the equation in Secant method. 4
- (b) Explain the procedure how you will obtain root of the equation by fixed point iteration method. 4
- (c) What are the limitations of Newton Raphon Method ? 4

OR

8. (a) Obtain roots of equation $f(x) = x^3 + 3x + 5$ by using Newton Raphon Method. 6
- (b) Obtain roots of equation $f(x) = x^3 - x + 4 = 0$ by using Secant method. 6
9. (a) Solve the following system of equation by using Gauss Jordan method :
 $2x - 3y + 4z = 8$
 $x + y + 4z = 15$
 $3x + 4y - z = 8$. 8
- (b) Explain the Gauss Elimination by partial pivoting method. 4

OR

10. (a) Solve the following system of equations by Gauss Elimination method :
 $2x_1 + 3x_2 + x_3 = 9$
 $x_1 + 2x_2 + 3x_3 = 6$
 $3x_1 + x_2 + 2x_3 = 8$ 8
- (b) Explain the basic concept in the Gauss Jordan method. 4