

9. (a) Explain the Gauss-Jordan method. Solve the following system of equation using Gauss Jordan method.

$$10x + 2y + z = 9$$

$$x + 10y - z = -22$$

$$-2x + 3y + 10z = 22 \quad 6$$

- (b) Describe the pitfalls of elimination method. 6

OR

10. (a) Solve the following system using Gauss Elimination method.

$$10x + y + z = 12$$

$$2x + 10y + z = 13$$

$$x + y + 5z = 7 \quad 6$$

- (b) Find the inverse of the matrix by Gauss Elimination of the following.

$$A = \begin{bmatrix} 2 & -1 & 1 \\ -15 & 6 & -5 \\ 5 & -2 & 2 \end{bmatrix} \quad 6$$



AP – 539

First Semester B.C.A. (Part – I) Examination

NUMERICAL METHODS

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) Explain simple mathematical model. 4
- (b) Explain the four characteristics of numerical computing. 4
- (c) Explain Analog computing. 4

OR

2. (a) Explain new trends in numerical computing. 4
- (b) Explain the process of Numerical computing. 4
- (c) Explain Digital computing. 4
3. (a) Explain how you will approximate a number using rounding off rule. 4

(b) Explain following with example :—

(i) Numerical error.

(ii) Modelling error. 4

(c) Explain the taxonomy of error in numerical computing. 4

OR

4. (a) How does a Truncation error occurs ? Give one example. 4

(b) Round off the following numbers to four significant figures.

(i) 0.0063123

(ii) 0.20018

(iii) 37.196

(iv) 0.53268 4

(c) Explain the following with example.

(i) Absolute error

(ii) Relative error. 4

5. (a) Find a root of the equation $x^3 - 3x - 5 = 0$ by the method of false position method. 6

(b) Explain Graphical method with example. What are its limitations ? 6

OR

6. (a) Find the root of the equation $x^3 - 4x - 9 = 0$ by using Bisection method. 6

(b) Describe how you will find out root of an equation $f(x) = 0$ by false position method. 6

7. (a) Explain the method of Newton Raphson to find real roots of the equation $\cos x = 3x - 1$ up to three decimal places. 6

(b) Describe secant method to find the root of the equation $f(x) = 0$. Find the root of the equation $\cos x - xe^x = 0$ using secant method upto four decimal places. 6

OR

8. (a) Explain how you will find out root of an equation by using simple fixed point method. Find the root of the equation $x^3 - 4x^2 + x + 6 = 0$ by using simple fixed point method. 6

(b) Derive the formula for Newton-Raphson method. State and explain how it is used to obtain real root of equation. 6