Roll No. .... Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (EE/EEE) (Sem.–5)

NUMERICAL ANALYSIS

Subject Code : EE-311/AM-351

Paper ID : [A0418]

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. Write briefly :

a) How Secant method is better than method of False Position?

b) State the conditions when Newton-Raphson method fails.

c) Explain the concept of pivoting.

d) Define the terms interpolation and extrapolation.

e) Give properties of triangular matrices.

f) Give formula for composite Simpson's rule.

g) Define the operators Δ, ∇, E and μ.

h) What is the order of the error in trapezoidal rule?

i) Write down the Simpson's –3/8 rule of integration given (n+1) data.

j) Why Gauss Seidel iteration is a method of successive corrections?

SECTION-B

2. Using Regula Falsi method, $x^3 - x^2 - 2 = 0$ comp following equations correct to three decimal place

3. Explain Picard's method to solve first order ordin

4. Solve the equation by Gauss Jordan method :

$$2x_1 - 3y + 4z = 7$$

$$5x_1 - 2y + 2z = 7$$

$$6x_1 - 3y + 10z = 23$$

5. Using secant method, solve the equation 3x–c three decimal places.

6. Explain LU triangularization method to solve syste equation.

SECTION-C

7. Integrate differential equation $y' = x + y$, y(0) Kutta method from 0 to 0.4.

8. Using Euler's method, find the approximate value

$$\frac{dy}{dx} = \frac{y-x}{y+x}, y(0) = 1.$$

9. Given that :

x	1.0	1.1	1.2	1.3	1.4
y	7.989	8.403	8.781	9.129	9.4

Find $\frac{dy}{dx}$ and d^2y/d^2x at $x = 1.1$.