

Numerical Techniques [NT]
S.E. Sem. III [ELEC]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical & Oral Exam	–	–
Oral Exam	–	–
Term Work	–	25

SYLLABUS

1. Errors in Numerical Computation

Error types, analysis and estimation, error propagation.

2. Roots of Equations

The bisection method, the false position method, the Newton–Raphson method, The Secant method.

3. System of Linear Algebraic Equations

Gauss–Elimination method, Gauss–Jordan method. LU decomposition and matrix inversion. Gauss–Sedial method.

4. Curve Fitting

Interpolation – Newton’s divided difference, Lagrange Interpolating polynomials, approximation – least square approximation techniques, linear regression and polynomial regression.

5. Numerical Differentiation

Methods based on interpolation and finite differences.

6. Solution to Ordinary Differential Equation

Picard’s method, Euler’s method, Modified Euler’s method, Predictor – corrector method, Adams – Bashforth method.

7. Optimization :

One–dimensional unconstrained– Golden–section search, quadratic interpolation, Newton’s method, linear programming – graphical solution, simplex method.

8. Numerical Integration :

Simpson’s 1/3rd rule, Simpson’s 3/8th rule.

Reference :

1. Numerical Methods for Engineers (*Chappa Seven C., Canale R.P.*) Tata McGraw Hill.
2. Numerical Methods for Engineers (using MATLAB and C), Thomson Asia Pvt. Ltd.

