SYLLABUS

MATHEMATICS

PAPER-III : NUMERICAL ANALYSIS

SEMESTER-VI

P.U.

Time : 3 Hours **Max. Marks : 30**

Note :

1. The syllabus has been split into two Units : Unit-I and Unit-II. Four questions will be set from each Unit.
2. A students will be asked to attempt five questions selecting at least two questions from each Unit. Each question will carry 6 marks.
3. The teaching time shall be five periods (45 minutes each) per paper per week including tutorial.
4. If internal assessment is to be conducted in the form of written examinations, then there will be only one written examination in a Semester.

SECTION–A

Solution of Equations : Bisection, Secant, Regula Falsi, Newton's Method, Roots of Polynomials.

Interpolation : Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation Formulas using Differences.

Numerical Differentiation.

Numerical Quadrature : Newton-Cote's Formulas, Gauss Quadrature Formulas, Chebychev's Formulas.

SECTION–B

Linear Equations : Direct Methods for Solving Systems of Linear Equations (Gauss Elimination, LU Decomposition, Cholesky Decomposition), Iterative Methods (Jacobi, Gauss-Seidel, Relaxation Methods).

The Algebraic Eigenvalue problem : Jacobi's Method, Givens' Method, Householder's Method, Power Method, QR Method, Lanczos' Method.

Ordinary Differential Equations : Euler Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods.