**Subject Code : RSPJ2:4**

## NUMERICAL METHODS.

### UNIT – I : Curve Fitting:

Principle of least squares – fitting a straight line linear regression – fitting a parabola – fitting an exponential curve.

### UNIT – II : Solution of numerical algebraic, transcendental and differential equations:

Bisection method – method of successive approximations – Regula Falsi method – Newton-Raphson method – Horner's method – Euler's method – modified Euler's method – Runge Kutta method.

### UNIT – III : Simultaneous linear algebraic equations.

Gauss – Elimination method – Gauss – Jordon method – Computation of inverse of a matrix using Gauss – elimination method – method of triangularisation.

### UNIT – IV : Finite differences.

First differences – difference tables – properties of the operator A.E.D.

Linear interpolation: Newton forward interpolation formula and backward interpolation formula.Interpolation with unequal intervals: Lagrange's interpolation formula (No derivation).Hermite's – Bessel's interpolating polynomials.

### UNIT – V : Numerical Integration.

Trapezoidal rule – Simpson's 1/3 rule and 3/8 rule – practical applications – Weddle's rule – Gaussian Quadrature formulae.

### Books for Study:

Venkataraman, M.K. (1977) Numerical methods in Science and Engineering, National Publishing Company – Chennai.

Shastry, S.S.Introductory methods of numerical methods – Prentice – Hall Ltd.
Jain, Iyengar, S.R.K. and Jain R.K. Numerical methods for Scientific and Engineering computation –New Age Publishers.