

**4BSC4-FUNDAMENTALS OF MATHEMATICS - IV  
(NUMERICAL METHODS)****UNIT-I**

Representation of numbers on computer, Differences between floating point and real arithmetic, Different types of errors and their estimates.

**UNIT-II**

Representation of a function on a computer, Discretisation, Table look-up interpolation, Extrapolation, Function evaluation, Numerical differentiation, Numerical Quadrature.

**UNIT-III**

Root finding and numerical maxima and minima, Solutions of nonlinear equations, Conjugate gradient method.

**UNIT-IV**

Solutions of linear equations, Gaussian elimination, Iterative methods, Eigenvalue problems.

**UNIT-V**

Integration of ordinary differential equations, Picard's method of successive approximation, Euler's method, Runge Kutta method, Predictor-Corrector method.

**UNIT-VI**

Introduction to integration of partial differential equations.

**UNIT-VII**

Introduction to integration of stochastic differential equations.

**TEXT & REFERENCE BOOKS :**

- NUMERICAL METHODS by S.S.SASTRY (VOLUME 2)
- NUMERICAL RECIPES IN C.