Stat-215 Numerical Analysis

50 Marks: 02 Credits

Number of Class: 20-26

Finite Differences: Factorial Notation, Shifting Operator, Difference Operator, Differential Operator and their Relationship, Difference Table.

Interpolation with Equal and Unequal Intervals: Concepts of Interpolation, Newton's Interpolation Formula, Relationship Between Simple Difference and Divided Difference. Newton's General Interpolation Formula, Lagrange's Formula, Inverse Interpolation, Method of Successive Approximations or Iteration and Reversion of Series.

Central Difference Interpolation Formula: Gauss Formula, Stirling's Formula and Bessel's Formula.

Numerical Differentiation and Integration: General Quadrature Formula, Simpson's Rule, Weddle's Rule, Trapezoidal rule, Euler Maclaurin's Formula and their Applications.

Solution of Algebraic and Transcendental Equatins: Bisection Method, Method of False Position, Newton-Rapson Method, Method of Iteration.

Extrapolation: Concept of Extrapolation, Different Methods of Extrapolation.

Text

1. Scarborough, J. B. (1966): *Numerical Mathematical Analysis*, 6th edition, Johns Hopkins Press, Baltimor.

References

1. Narayan, S.: *Mathematical Analysis*, Latest edition.
2. Sastry, S. (1977): *Introductory Methods of Numerical Analysis*, 2nd edition, Prentice Hall, New Delhi.
3. Vasishtha, A. R. and Vasishtha, V. (2007): *Numerical Analysis*, Kedar Nath Ram Nath, New Delhi.