

**5BSC5-MATHEMATICAL ANALYSIS****UNIT-I**

Cardinality reviewed, The number systems, Cauchy sequences, Real numbers, Complex numbers.

**UNIT-II**

Elements of metric spaces, Real numbers as a complete metric space, Bolzano-Weierstrass theorem.

**UNIT-III**

Sequences and series of real numbers, Convergence, Cauchy criterion, Ratio and root test for convergence of series.

**UNIT-IV**

Continuity, Relation to compactness, Statement of Heine-Borel theorem, Maxima and minima of a continuous function.

**UNIT-V**

Differentiability, Relation to continuity, Chain rule, Taylor's theorem, Infinite differentiability distinguished from analyticity, Example of an infinitely differentiable function which is not analytic, Complex analytic functions.

**UNIT-VI**

Riemann integral and its basic properties, Fundamental theorems of calculus.

**UNIT-VII**

Sequences and series of functions, Uniform convergence, Fourier coefficients and Fourier series.

**TEXT & REFERENCE BOOKS :**

- PRINCIPLES OF MATHEMATICAL ANALYSIS by RUDIN .
- INTRODUCTION TO MATHEMATICAL ANALYSIS by ROYDEN .