

REAL ANALYSIS

UNIT I

Real Number system – Field axioms –Order relation in \mathbb{R} . Absolute value of a real number & its properties –Supremum & Infimum of a set – Order completeness property – countable & uncountable sets.

UNIT II

Continuous functions –Limit of a Function – Algebra of Limits – Continuity of a function –Types of discontinuities – Elementary properties of continuous functions –Uniform continuity of a function.

UNIT III

Differentiability of a function –Derivability & Continuity –Algebra of derivatives –Inverse Function Theorem – Daurboux’s Theorem on derivatives.

UNIT IV

Rolle’s Theorem –Mean Value Theorems on derivatives- Taylor’s Theorem with remainder- Power series expansion .

UNIT V

Riemann integration –definition – Daurboux’s theorem –conditions for integrability –Integrability of continuous & monotonic functions - Integral functions –Properties of Integrable functions - Continuity & derivability of integral functions –The First Mean Value Theorem and the Fundamental Theorem of Calculus.

TEXT BOOK(S)

- [1] M.K,Singhal & Asha Rani Singhal , A First Course in Real Analysis, R.Chand & Co., June 1997 Edition
- [2] Shanthi Narayan, A Course of Mathematical Analysis, S. Chand & Co., 1995
 - UNIT – I - Chapter 3 of [1]
 - UNIT – II - Chapter 7 of [1]
 - UNIT – III - Chapter 8 of [1]
 - UNIT – IV - Chapter 9 of [1]
 - UNIT – V - Chapter 6 of [2]

REFERENCE(S)

- [1] Gold Berge, Richar R, Methods of Real Analysis, Oxford & IBHP Publishing Co., New Delhi, 1970.