SUBJECT NO-MA31005, SUBJECT NAME- REAL ANALYSIS

LTP- 3-1-0,CRD- 4

SYLLABUS :-

Dedekindâs definition of real numbers, field and order axioms, countable and uncountable sets, supremum and infimum of sets of real numbers, bounds and limit points of a set, Bolzano-Weierstrass theorem, open and closed sets. Limit inferior, limit superior and limit of sequence, bounded and monotonic sequences, Cauchy sequence and Cauchyâs general principle of convergence, product and quotient of limits, Cantorâs theorem on nested interval and its applications. Compact sets, Heine-Borel theorem. Limit, limit superior, limit inferior of real functions, limit theorems. Continuity and uniform continuity of real functions, properties of continuous functions, continuity and compactness. Differentiability of real functions, Taylor's and Maclaurinâs theorems. Riemann integration, conditions for integrability, properties of integrable functions, indefinite integral and their properties, fundamental theorem of integral calculus, mean value theorems, improper integrals, convergence at infinity, absolute and conditional convergence. Sequences and series of functions, uniform convergence of sequences and series of functions. Cantorâs definition of real numbers. Metric sets: Definition, real line as an example of a metric set.