SRI A S N M GOVERNMENT COLLEGE (A), PALAKOL
CBCS SEMESTER SYSTEM
B.A./B.Sc. SECOND YEAR MATHEMATICS SYLLABUS PAPER-IV
(SEMESTER – IV)
REAL ANALYSIS

UNIT – I (12 hrs) : REAL NUMBERS :

The algebraic and order properties of R, Absolute value and Real line, Completeness property of R, Applications of supreme property; intervals. No. Question is to be set from this portion.

Real Sequences : Sequences and their limits, Range and Boundedness of Sequences, Limit of a sequence and Convergent sequence.

The Cauchy's criterion, properly divergent sequences, Monotone sequences, Necessary and Sufficient condition for Convergence of Monotone Sequence, Limit Point of Sequence, Subsequences and the Bolzano-weierstrass theorem – Cauchy Sequences – Cauchey's general principle of convergence theorem.

UNIT –II (12 hrs) : INFINITIE SERIES :

Series : Introduction to series, convergence of series. Ceanchy's general principle of convergence for series tests for convergence of series, Series of Non-Negative Terms.

1. P-test
2. Canchy's n^{th} root test or Root Test.
3. D'-Alemberts' Test or Ratio Test.
4. Alternating Series – Leibnitz Test.

Absolute convergence and conditional convergence, semi convergence.

UNIT – III (12 hrs) : CONTINUITY :

Limits : Real valued Functions, Boundedness of a function, Limits of functions. Some extensions of the limit concept, Infinite Limits. Limits at infinity. No. Question is to be set from this portion.

Continuous functions : Continuous functions, Combinations of continuous functions, Continuous Functions on intervals, uniform continuity.

UNIT – IV (12 hrs) : DIFFERENTIATION AND MEAN VALUE THEORMS :

The derivability of a function, on an interval, at a point, Derivability and continuity of a function, Graphical meaning of the Derivative, Mean value Theorems; Role's Theorem, Lagrange's Theorem, Cauchhy's Mean value Theorem - Generalized Mean value Theorems

Additional Input: Taylor's Theorem, Maclaurin's Theorem, Expansion of functions with different forms of remainders, Taylor's Maclaurins Seriess, power series representation of functions.

UNIT – V (12 hrs) : RIEMANN INTEGRATION :

Riemann Integral, Riemann integral functions, Darboux theorem. Necessary and sufficient condition for R – integrability, Properties of integrable functions, Fundamental theorem of integral calculus, integral as the limit of a sum, Mean value Theorems.

TEXT BOOK :-

REAL NUMBERS:"Introduction to Real Analysis" by RABERT g BARTELY and .D.R. SHERBART Published by John Wiley.

REFERENCE TEXT BOOKS :

1. A Text Book of B.Sc mathematics by B.V.S.S. Sarma and Published by . S. Chand & Company Pvt. Ltd., New Delhi.

2. Elements of Real Analysis on per UGC Syllabus by Shanthi Narayan and Dr. M.D. Raisingkania Published by S. Chand & Company Pvt. Ltd., New Delhi.