

W.e.f - 1996-97 AB

Paper III - Analysis

4-107

UNIT 1: Metric spaces, compact sets, connected sets, convergent sequences, subsequences, Cauchy sequences, upper and lower limits, some special sequences, series, series of non-negative terms, the number e , the Root and ratio tests, power series, Summation by parts, Absolute convergence, Addition and multiplication of series, Rearrangements (ch.2: 2.15 to 2.42 and 2.45 to 2.47; ch.3: 3.1 to 3.55 of Prescribed Text book).

UNIT 2: Limits of functions, continuous functions, continuity and compactness, continuity and connectedness, Discontinuities, Monotonic functions, infinite limits and limits at infinity, the derivative of a real function, Mean value theorems, the continuity of derivatives, L'Hospital's rules, Derivatives of higher order, Taylor's theorem, Differentiation of vector valued functions (Ch.4: 4.1 to 4.34 and ch.5: 5.1 to 5.19 of the prescribed Text book).

UNIT 3: Definition and existence of Riemann-Stieltjes integral, Properties of the integral, Integration and Differentiation, Integration of vector-valued functions, ; Rectifiable curves, Uniform convergence, Uniform convergence and continuity, Uniform convergence and Integration, Uniform convergence and differentiation, equicontinuous families of functions, the Stone Weierstrass theorem, Power series, the exponential and logarithmic functions, the trigonometric functions, the algebraic completeness of the complex field (Ch.6: 6.1 to 6.27; ch.7: 7.1 to 7.33; ch. 8: 8.1 to 8.8 of the Prescribed Text book).

UNIT 4: Linear transformations, differentiation, the contraction principle, the inverse function theorem, the implicit function theorem, set functions, Rank theorem, Extrema of real-valued functions of one variable, Extrema of real valued functions of several variables, extremum problems with side conditions (ch.9: 9.1 to 9.32; of Prescribed Text Book; and Ch.13: 13.5 to 13.7 of the Reference Book).

Prescribed Textbook : Principles of Mathematical Analysis (3rd ed) by Walter Rudin, McGraw Hill Int. Editions, Math Series.

Reference Book : Mathematical Analysis, (2nd ed) By T.M. Apostol, Narosa Publishing House, New Delhi.

* PLEASE SET TWO DIFFERENT
QUESTION PAPER.
* KINDLY ADHERE TO THE
SYLLABUS STRICTLY.