

- Week-01 Introduction of 1st chapter with Preliminaries. Riemann Integral Theorems. Darboux's Theorem.
- Week-02 Integrability of Monotonic function, and Theorems related to this and questions. Theorems on Continuity and differentiability of Integrable functions. Mean Value Theorems of Integral Calculus
- Week-03 Definition of Improper integral, Types, convergence of Improper Integrals questions & Theorems. Comparison Test for convergence, Comparison Integral
- Week-04 Cauchy's Test, Comparison Test for convergence at  $\infty$ , I & II Related questions with exercise and Problems. Dirichlet's test for convergence, Frullani's Integral
- Week-05 Introduction of Metric and Metric Space, Discrete, usual, Euclidean Metric Space questions. Bounded sequence, Bounded function. Induced Metric, semi-metric Space and questions and Problems of Exercise.
- Week-06 Open and closed sets in metric spaces Introduction and Theorems Interior of a set all Theorems and questions.
- Week-07 Adherent Point, Limit point definitions and Theorems Related to the definitions
- Week-08 Exterior, Frontier points and sets, and Theorems Related to this Boundary points and set, subspace of a Metric space, Equivalent Metrics. And Problems discuss of this chapters.
- Week-09 Continuity and uniform continuity in Metric spaces - Continuous function Theorems. uniform continuity
- Week-10 Compactness in Metric spaces - Covers, Compact set and Compact Metric Space. Bolzano Weierstrass Property, Countably Compact Spaces Finite Intersection Property

Week-11

E- Net and Total Boundedness, Continuity and Compactness  
Revision, test, Assignments

Week-12

Revision

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