MA-301 ADVANCED CALCULUS

The real numbers: algebraic and order properties of R; the completeness property; cluster points; open and closed sets in R. Sequences, the limit of a function, limit theorems. **Continuous functions on intervals:** boundedness theorem, maximum-minimum theorem and the intermediate value theorem; uniform continuity.
The derivative: the mean value theorem; Taylor's theorem.
Functions of several variables: Limit and continuity of functions of two and three variables; partial derivatives; differentiable functions.
Multiple Integrals: regions in the x-y plane, iterated integrals, double integrals, change in the order of integration, transformation of double integrals.
Line and surface integrals: Jordan curve, regular region, line integral, Green's theorem, independence of the path, surface integrals, Gauss theorem.

RECOMMENDED BOOKS:

1. Bartle, R.G. and Sherbert, D.R. Introduction to Real Analysis, John Wiley & Sons 1994.
2 . Widder, D.V. Advanced Calculus, Prentice-Hall, 1982.
3. Rudin, W Principles of Real Analysis, McGraw-Hill, 1995.