

Syllabus for B.A/B.Sc., Mathematics, Semester - V

Course Name: Advanced Calculus and Laplace Transformation (4 Credits)

Course No: BMM-SEC-16501

Unit I

Limit, Continuity and differentiability of functions of two or more variables, Total and second derivatives, Sufficient conditions for validity of reversal in the order of derivation, Young's theorem, Schwarz's theorem.

Unit II

Change of variables, Extreme values of functions of two or more variables, Restricted maxima and minima, Lagrange's method of multipliers. Jacobians, curvilinear integrals, Beta and Gamma functions and relation between them.

Unit III

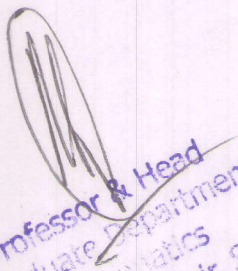
Multiple integrals, Integral over plane areas in xy-plane, Double integrals, evaluation, change of order of integration for two variables, Double integrals in polar co-ordinates, Integrals over regions in xyz-space, Triple integrals, evaluation in Cartesian, spherical and cylindrical co-ordinates.

Unit IV

Laplace transform-definition, Laplace transform of some elementary functions, piecewise continuity, functions of exponential order, sufficient conditions for existence of Laplace transform, linearity property, first and second translation (shifting property), Laplace transform of derivatives, Laplace transform of integrals, periodic functions, initial and final value theorems.

Books Recommended

1. Kochar & Chopra, Advanced Calculus
2. S.C. Malik, Mathematical Analysis.
3. Murrey R. Spiegel, Laplace Transforms, Schaum's outline series.


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