SYLLABUS

SEMESTER-VI

PAPER-I : ANALYSIS-II

Time : 3 Hours   **Max. Marks : 30**

Note :

1. The Syllabus has been split into two Units : Unit-I and Unit-II. Four questions will be set from each Unit.

2. A student will be asked to attempt five questions selecting at least two questions from each Unit. Each questions will carry 6 marks.

3. The teaching time shall be five periods (45 minutes each) per paper week including tutorial.

4. If internal assessment is to be conducted in the form of written examinations, then there will be only one written examination in a Semester.

UNIT-I

Double and Triple Integrals : Double Integral over A Rectangle, Repeated Integrals in $\mathbf{R}^2$, Double Integrals over Bounded Non-rectangular Regions, Area of Bounded Regions in Plane, Double Integrals as Volumes, Change of Variables in Double Integrals, Change to Polar Coordinates, Area in Polar Coordinates, Triple Integral in Rectangular Coordinates, Triple Integrals over General Regions in $\mathbf{R}^3$, Repeated Integrals in $\mathbf{R}^3$, Volume of a Region in $\mathbf{R}^3$, Change of Variables in a Triple Integral to Cylindrical and Spherical Coordinates.

Vector Integration : Line, Surface and Volume integration. Gauss divergence theorem, Stokes' theorem, Green's theorem.

UNIT-II

Sequences and series of functions : Pointwise and uniform convergence, Cauchy criterion for uniform convergence, Weierstrass M-test, Abel's and Dirichlet's tests for uniform convergence, uniform convergence and continuity, uniform convergence and Riemann integration, uniform convergence and differentiation, Weierstrass approximation theorem (Statement only), Abel's and Taylor's theorems for power series.

Fourier series : Fourier expansion of piecewise monotonic functions, Fourier Series for Odd and Even Function, Half Range Series, Fourier Series in the Intervals $[0, 2\pi]$, $[-1, 1]$ and $[a, b]$.