

SYLLABUS

PAPER II : CALCULUS-I

(P.U.)

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.

UNIT-I

Properties of Real Numbers : Order property of real numbers, bounds, l.u.b. and g.l.b. order completeness property of real numbers, Archimedian property of real numbers.

Limits : $\varepsilon - \delta$ definition of the limit of a function, basic properties of limits, infinite limits, indeterminate forms.

Continuity : Continuous functions, types of discontinuities, continuity of composite functions, continuity of $|f(x)|$, sign of a function in a neighborhood of a point of continuity, intermediate value theorem, maximum and minimum value theorem.

UNIT-II

Mean Value Theorems : Rolle's Theorem, Lagrange's mean value theorem, Cauchy's mean value theorem, their geometric interpretation and applications, Taylor's theorem, Maclaurin's theorem with various form of remainders and their applications.

Hyperbolic, inverse hyperbolic functions of a real variable and their derivatives, successive differentiation Leibnitz's theorem.