



Syllabus

PANJAB UNIVERSITY, CHANDIGARH

B.A./B.Sc. Sem. I

Paper II : CALCULUS-I

Max. Marks : 50

Theory : 45 marks

Internal Assessment : 05 marks

Time : 3 hrs.

- 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 question will carry 9 marks.
 3. The teaching time shall be five periods (45 minutes each) per paper per 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 per paper in a Semester.

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 :

ϵ - δ 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.

Curvature :

Curvature of a curve at a point, radius of curvature of cartesian, parametric, polar curves and for implicit functions, evolute and involute, chord of curvature. Asymptotes.