B.Sc. I
MATHEMATICS

Paper I

Algebra

Paper II

Differential Calculus

Integral Calculus
Integration of irrational algebraic functions and transcendental functions, Reduction Formulae, Definite Integrals, Quadrature, Rectification, Volumes and Surfaces of solids of revolution.

Ordinary Differential Equations
Degree and Order of a differential equation, Equations of first order and first degree, Equations in which the variables are separable, Homogeneous equations, Linear equations and the equations reducible to Linear Form, Exact differential Equation, First Order higher degree equations solvable for x, y, p, Clairaut's Form and Singular Solutions, Geometric Meanings of a differential equation, Orthogonal Trajectories, Linear Differential Equations with Constant Coefficients, Homogeneous Linear ordinary differential equation, Linear Differential Equations of the Second Order, Transformation of the equation by changing the dependent variable/ independent variable, Method of variation of parameters, Ordinary Simultaneous Differential Equations.
Paper III
Vector Analysis & Geometry
B.Sc. II

Paper – I

Advance Calculus


PAPER – II

(Differential Equation)


PAPER – III

(Mechanics)

Statistics: Analytical conditions of equilibrium of Coplanar forces, Virtual Work, Catenary. Forces in three dimensions, Point's Central Axis, Wrenches, Null Lines and Planes, Stable and unstable Equilibrium. (20 Marks) Dynamics: Velocities and Accelerations along radial and transverse directions and along tangential and Normal directions. Simple Harmonic Motion. Elastic Strings. Motion on smooth and rough plane curves, Motion in a resisting medium, Motion of particle of
varying mass. Central Orbits, Kepler's Laws of Motion. Motion of particle in three dimensions, acceleration in terms of different coordinate systems. (30 Marks)
B.Sc.III

PAPER – I

(Analysis)


Paper – II

(Numercial Analysis)


Paper– III ( OPTIONAL )

1. Differential Geometry
Transc Extension Theory of Surfaces in R3- Spherical image. Parallel translation for imbedded surfaces in R3. Classification of Compact Connected oriented surfaces in R3 relative to curvature. (10 Marks)

Paper– III ( OPTIONAL )

2. Discrete Mathematics

Paper– III ( OPTIONAL )

3. Mechanics
Dynamics of Rigid Bodies : Moments and Product of Inertia. The Momental Ellipsoid. Equimomenta Systems. Principal Axes D'Alembert's Principle. The General Equations of Motion of a rigid body. Motion of the Centre of Inertia and Motion relative to the Centre of Inertia. Motion

**Paper – III ( OPTIONAL )**

4. Mathematical Modelling


**Paper – III ( OPTIONAL )**

5. APPLICATION OF MATHEMATICS IN FINANCE & INSURANCE

6. Special Theory of Relativity