

SYLLABUS

B.A./B.Sc. (GENERAL)

SEMESTER-IV

PAPER III: DYNAMICS

Max. Marks : 30

Time : 3 Hours

Int. Assessment : 3 Marks

- 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 6 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 in a Semester.

UNIT-I

Motion of a particle with constant acceleration, acceleration of falling bodies, motion under gravity, motion of a body projected vertically upwards : Newton's Laws of Motion, Motion of two particles connected by a string, motion along a smooth inclined plane, constrained motion along a smooth inclined plane. Variable acceleration : Simple harmonic motion, elastic string.

UNIT-II

Curvilinear motion of a particle in a plane : Definition of velocity and acceleration, projectiles, motion in a circle.

Work, power, conservative fields and the potential energy, work done against gravity, potential energy of a gravitational field.

Relative motion, relative displacement, velocity and acceleration, motion relative to a rotating frame of reference.

Linear momentum, angular momentum, conservation of angular momentum, impulsive forces, principle of impulse and momentum, motion with respect to centre of mass of a system of particles, collisions of elastic bodies, loss of energy during impact.