B. Sc. I: Semester I

1S-PHYSICS

Mechanics, Properties of Matter, Waves and Oscillation).

UNIT-I : Kepler's laws of planetary motion, Newton's law of gravitation, acceleration due gravity, variation with altitude and depth, Gravitational field, Gravitational Potential; Gauss's theorem, gravitational potential and intensity due to uniform solid sphere at a point inside and outside the sphere.
Numericals.

UNIT-II : Motion of a Rigid body; rotational motion; moment of inertia; Principle of Perpendicular & Parallel axes, Radius of Gyration; M.I of regular shaped bodies like ring, disc, hollow sphere, solid sphere, cylinder & bar about different axes. Linear momentum, angular momentum, Conservation of Linear Momentum & angular momentum
Numericals.

UNIT-III : Linear S.H.M, Angular S.H.M, Differential equations and solutions. Displacement, Velocity and acceleration, Kinetic and Potential energy. Simple pendulum, compound pendulum, Kater's Reversible pendulum, Spring and mass system, Vibration of a magnet, bifilar oscillations, Damped and forced harmonic oscillations, Resonance.
Numericals.

UNIT-IV : Superposition of two SHM of same frequency along the same line Interference, superposition of two mutually perpendicular SHM of same Frequency, Lissajous figures. Standing waves, velocity of longitudinal waves (Newton's formula) velocity of waves by Kundt's tube, velocity of transverse waves in stretched string, harmonics and overtones.
Production and detection of ultrasonic waves and its applications.
Numericals

UNIT-V :Introduction of Elasticity; Hooke's Law of Elasticity, Three Elastic constants; Relation between,U, s, k and h. Bending of beam and Bending moment; Cantilever, Depression of centrally loaded beam, twisting couple, torsional pendulum; Maxwell's needle.
Numericals.

UNIT-VI : Kinematics of moving fluids; Streamline and turbulent flow, viscous drag, Coefficient of viscosity, equation of continuity; Euler's equation, Bernoulli's theorem, Poiseulle's equation, Reynold's number, Terminal velocity, Stokes' law, Variation of viscosity with temperature.
Surface tension, angle of contact and wetting, Jaeger's method
Numericals

Practical 1S

(Every student will have to perform at least 10 experiments from the following list. At the time of examination, each

student will have to perform 1 (one) experiment)
1. Study of laws of Parallel and perpendiculars axes for moment of inertia.
2. Determination of coefficient of restitution for inelastic collision.
3. Moment of inertia of fly wheel.
4. Study of compound pendulum.
5. To determine moment of inertia of a body using bifilar suspension.
6. Modulus of rigidity by Torsional Pendulum.
7. Acceleration due to gravity by Kater's pendulum.
8. Study of Oscillations of mass under different combinations of springs.
9. Young's modulus by cantilever.
10. Young's Modulus by bending of beam.
11. Modulus of rigidity by statical method.
12. Young's modulus by Vibration Method.
13. Modulus of rigidity by Maxwell's needle.
14. Coefficient of Viscosity by Poiseulle's method.
15. Surface tension by Quincke's method.
16. Determination of Surface tension by Jager's method.

Refernce BOOKS : Semester 1S-PHY

1. Mechanics – Chadha T.K.
2. Waves and Oscillations – Chaudhary R.N.
3. University Physics I Mechanics of Particles waves and Oscillations – Kamal, Anwar
4. Mechanics – Shukla R.K.
5. Mechanics – Shrivastava P.K.
6. Properties of Matter – Murugeshan R
7. Properties of Matter – Brijlal
8. Text book of vibrations and waves – Puri, MacMillan Publisher India Ltd.
9. Barkeley Physics course Vol. I Eno Purcell Ed. (McGraw Hill)
10. The Feymann Lectures in Physics – Vol. I, R.P.Feymann, R.B.Lighton & M. Sands
11. Mechnics & properties of matter – D.S.Mathur
12. Fundamental of Physics – Halliday & Resncik (6th edition)
13. Concepts of Physics Vol I & Vol II by H.C.Varma