

TERM AND MONTH-WISE SPLIT UP SYLLABUS 2016-17

SUBJECT: PHYSICS

Prescribed Text Books

1. Physics for Class-XI (NCERT)
2. Laboratory Manual Physics – Class XI

TERM I

| Month | Contents | Wt. |
|---|--|-----------|
| JUNE | <p><u>Unit I: Physical World and Measurement</u> Physics - scope and excitement; nature of physical laws; Physics, technology and society. Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; Errors in measurements, significant figures. Dimensions of physical quantities, dimensional analysis and its applications.</p> | 23 |
| JULY | <p><u>Unit II: Kinematics</u> Frame of reference. Motion in a straight line: Position-time graph, speed and velocity. Uniform and non-uniform motion, speed and velocity - average and instantaneous Uniformly accelerated motion, velocity-time graph and position-time graph, equations for uniformly accelerated motion (graphical treatment only). Simple introduction to elementary concepts of differentiation and integration for describing motion. Scalar and vector quantities: vectors, notation, equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. Position and displacement vectors, relative velocity. Unit vector; Resolution of a vector in a plane - rectangular components. Scalar and vector product of vectors. Motion in a plane. Cases of uniform velocity and uniform acceleration. Projectile motion, uniform circular motion.</p> | |
| Aug | <p><u>Unit III: Laws of Motion</u> Intuitive concept of force. Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces.</p> | |
| Revision of 1st SUMMATIVE EXAMINATION | | |
| September | <p>Static and kinetic friction, laws of friction, rolling friction. Uniform circular motion. Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road).</p> | |

TERM II

| | | |
|-----------------|---|-----------|
| October | <p><u>Unit IV: Work, Energy and Power</u> Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power. Notion Potential energy, potential energy of a spring, conservative forces: conservation of mechanical energy (kinetic and potential energies); non-conservative forces: Motion in a vertical circle, elastic collisions and elementary idea of inelastic collisions (in one and two dimensions)</p> <p><u>Unit V: Motion of System of Particles and Rigid Body</u> Centre of mass of a two-particle system, Centre of mass of rigid body. Centre of mass of uniform rod. Momentum conservation and centre of mass motion. Vector product of vectors; moment of a force, torque, angular momentum, conservation of angular momentum with some examples. Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion (cont.)</p> | 17 |
| November | <p><u>Unit V: Motion of System of Particles and Rigid Body</u> comparison of linear and rotational motions; Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorem and their applications.</p> <p><u>Unit VI: Gravitation:</u> Kepler's Laws of planetary motion. The universal law of gravitation; Acceleration due to gravity and its variation with altitude and depth. Gravitational potential energy; gravitational potential; Escape velocity, orbital velocity of a satellite, Geostationary satellites.</p> | |

