Syllabus
Class-11th
Subject-Physics

Month	Name of book	Subjects Content	Teaching period	Revision periods	Practical Work
April	Physics Text book Class-XI Part-I	Unit-I Physical World and measurement	10		04
May	Do	Unit-II Kinematics	24	02	16
July	Do	Unit-III Law of Motion Unit-IV Work, Energy & Power	12 12	02	16
August	Do	Unit-V Motion of System of Particle & rigid bodies	18	06	16
September	Revision				
October	Physics text book Class-XI Part-II	Unit-VI Gravitation Unit-VII Properties of bulk Matter	12 10	02	16
November	Do	Unit-VII Properties of bulk Matter Unit-VIII Thermodynamics	12 10	02	16
December	Do	Unit-IX Behaviour of perfect gas & kinetic Theory	12	02	08
January	Do	Unit-X Oscillations & Waves	20	04	16
February	Revision of Complete Syllabus Unit I to X				
March	Annual Examinations				

Detailed Syllabus

Unit-I

Chapter-I: Physical world, Physics, Scope and excitement of Physics, technology and Society, Nature of physical Laws.

Chapter-II: Units and measurement :- Need for measurement unit of measurement, System of units, The international system of units, fundamental and derived units, length, mass and times measurement, Accuracy, Precision of instruments and errors in measurement, Absolute error, relative error and % error, combination of error, significant figures, Rounding of the uncertain digits.

Dimension of physical Quantities, dimensional analysis and its application, checking the dimensional, consistency of equations, deducing relation among the physical quantities, convert one system of unit into another system using dimensional analysis.

Unit-II:Kinematics

Chapter-III: Motion in a straight line:

Frame of reference, Motion in a straight line, path length and displacement, Position-time graph, speed and velocity, average speed and average velocity, instantaneous velocity and speed, Acceleration, uniformly accelerated motion, vel, time and position-time graph for accelerated Motion, Kinematic equations for uniformly accelerated motion, Equation of motion for uniformly accelerated motion using Calculas method.

Chapter-IV: Motion in a plane:

Scalars and vectors, position and displacement vectors, Equality of vectors, addition and subtraction of vector- Graphical Method, Multiplication of vector by real number, Relative Velocity, Unit vectors. Resolution of vector in a plane, rectangular components, Projectile motion, equation of path of projectile, Time of flight, horizontal range, Maximum height attained by projectile uniform circular motion, centripetal acceleration.

Unit-III:

Chapter-V: Laws of Motion:

Intuitive concept of force, Inertia, Newton's first law of Motion, Newton's second Law of Motion, Momentum, impulse, Newton's third Law of motion, Conservation of Momentum and its application. Equilibrium of a particle, Friction-static, limiting and kinetic friction, Laws of friction, Rolling friction, Lubrication circular motion, centripetal force, motion of car on a level road, motion of car on a banked road.

Unit-IV: Work Energy and Power:

Chapter-VI:

Scalar and vector product of vectors, Work done by a constant force and variable force, kinetic energy, Work-Energy Theorem, Concept of potential energy, potential energy of a spring conservation of Mechanical Energy, Conservation and non-conservation forces. The principal of conservation of energy, power, Collisions, Elastic and inelastic Collisions, Collisions in one and two dimensions.

Unit-V: Motion of system of particles & Rigid Body:

Chapter-VII: System of particles and rotational motion:

Centre of mass of two particle system, Motion of centre of mass, Linear momentum of a system of particle, angular vel and its relation with linear velocity, angular acceleration, torque and angular momentum, conservation of angular momentum with some examples, Equilibrium of a rigid body, Moment of Inertia, radius of gyration, Values of Moment of Inertia for simple geometrical objects (No Derivation) statement of theorems of perpendicular and parallel axis & its application. Kinematics of rotational motion about a fixed axis.

Unit-VI: Gravitation:

Chapter-IX: Mechanical Properties of Solids:

Elastic behavior of solids, stress and strain, Hook's Law, stress, strain curve, Young's Modules, Bulk Modules, Shear Modules, Applications of Elastic behavior of materials.

Chapter-X: Mechanical Properties of fluids:

Pressure, Pascal's Law and its application (hydraulic lift, hydraulic brakes) effect of gravity on fluid pressure, streamline flow & turbulent flow, Equation of continuity, Bernoulli's Principle and its application, Viscosity, stoke's Law, Reynold's number, surface tension & surface energy, Angle of contact, Application of surface tension: Drops & bubbles, capillary rise, detergent and surface tension.

Chapter-XI: Thermal Properties of Matter:

Temperature and heat, Thermal expansion, linear expansion, area expansion, volume expansion, specific heat capacity, colorimetry, change of state, Latent heat, Heat transfer- conduction, convection and radiation, Thermal conductivity, Newton's Law of Cooling.

Unit-VIII: Thermodynamics:

Chapter-XII: Thermodynamics:

Thermal Equilibrium and definition of temperature (Zeroth Law of thermodynamics), Heat, internal Energy and Work, First Law of thermodynamics, Specific heat Capacity. Isothermal process, Adiabatic process, isochoric process and isobaric process. Heat Engines, Refrigerators and heat pump, second Law of thermodynamics.

Unit-IX: Behaviour of perfect gas and Kinetic Theory:

Chapter: XIII: Kinetic Theory:

Equation of state of a perfect gas, behavior of gases, Ideal Gas Kinetic theory of gases: Assumptions, concept of pressure, Kinetic interpretation of temperature, rms, speeds of a gas molecule, Laws of equipartition of Energy, Degrees of freedoms. Specific heat capacity- Monatomic gas, diatomic gases, polyatomic gases, concept of mean free path.

Unit-X: Oscillations and Waves:

Chapter-XIV: Oscillations:

Periodic motion and oscillatory motions, Period and frequency displacement as a function of time. Simple Harmonic Motion (SHM) and its equation; Phase, velocity and acceleration in simple harmonic motion, Force Law for SHM, Energy in SHM- Kinetic and potential energies; The simple pendulum- derivation of expression for its time period; free, forced and damped oscillations (qualitative idea only), resonance

Chapter-XV: Waves:

Wave motion, Transverse and longitudinal waves, speed of transverse and longitudinal waves. Displacement relation in a progressive wave. Principle of superposition of waves, reflection of waves, standing waves and normal modes in strings, open & closed organ pipe, Fundamental mode and harmonics. Beats, Doppler effect.

Class-11th
Subject-Physics Practical
Section-A

Experiments:-

1. Use of vernier calipers
   i. to measure diameter of a small spherical/cylindrical body.
   ii. to measure dimensions of a given regular body of known mass and hence find its density.
   iii. to measure internal diameter & depth of a given beaker and find its volume.
2. Use of Screw gauge:-
   i. to measure diameter of a given wire.
   ii. to measure thickness of a given sheet.
   iii. to measure volume of an irregular lamino.
3. To determine radius of curvature of a given spherical surface by a spherometer.
4. To measure the mass of two different objects using a beam balance.
5. To find the weight of a given body using parallelogram law of vector.
6. Using a simple pendulum, plot L-T and L-T^2 graph. Find the effective length of a second's pendulum using appropriate Graph.
7. To study the relationship between free of limiting friction and normal reaction and to find the coefficient of friction between a block and a horizontal surface.
8. To find the downward free along on inclined plane acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination by plotting graph between free and sinq.

   Activities:-

   1. To make a paper scale of given least count e.g. 0.2cm, 0.5cm.
   2. To determine mass of given body using a meter scale by using principle of moments.
   3. To plot a graph for a given set of data with proper choice of scales and error bars.
   4. To measure the force of limiting friction for rolling of a roller on a horizontal plane.

5. To study the variation in the range of jet of water with the angle of projection.
6. To study the conservation of energy of a bar rolling down on an inclined plane.

Section-B

Experiments:
1. To determine young's Modules of elasticity of material of given wire.
2. To find force constant and effective mass of a helical spring by plotting T^2-m graph using Method of oscillations.
3. To study the variation in volume with pressure for a sample of air at constant temperature by plotting graphs between P&V and between P&1/V.
4. To determine surface tension of water by capillary rise method.
5. To determine the coefficient of viscosity of a given viscous liquid by measuring the terminal vel of a given spherical body.
6. To study the relationship between the temper of a hot body and time by plotting cooling curve.
7. To study the relation between length of a given wire and tension for constant frequency using bonometer.
8. To find the speed of sound in air at room temperature using a resonance tube by two resonance position.
9. To determine Specific heat Capacity of a given 1. Solid 2. Liquid by Methods of mixtures.
   Activity:
   1. To observe change of state and plot a cooling curve for molten wave.
   2. To observe explain the effect of heating on a bimetallic strip.
   3. To note the change in level of liquid in a container on heating and interpret the observation.
   4. To study the effect of detergents on surface tension of water by capillary rise.
   5. To study the factors effecting the rate of loss of heat of a liquid.
   6. To study the effect of load on depression of a suitably claimped meter scale loaded 1. at its ends 2. in the middle.