**SYLLABUS BREAK -UP [PHYSICS]**
**CLASS: XI [SESSION 2025-26]**
**BOOK: PHYSICS [NCERT]**

| S.N | CHAPTER | SUB TOPICS | PERIODS |
|---|---|---|---|
| | **10th April 2025 to 26th May 2025** | | |
| | **Unit I**<br>**Chapter–1: Units and Measurements** | Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. significant figures. | **6** |
| | | Dimensions of physical quantities, dimensional analysis and its applications | **6** |
| | **CYCLE TEST I**<br>**Chapter–1: Units and Measurements** | | |
| | **1st July 2025 to 08th Sep 2025** | | |
| | **Unit II: Kinematics**<br>**Chapter–3: Motion in a Straight Line** | Frame of reference, Motion in a straight line, Elementary concepts of differentiation and integration for describing motion, uniform and non- uniform motion, average speed and average velocity and instantaneous velocity, | **4** |
| | | Uniformly accelerated motion, velocity - time and position-time graphs. Relations for uniformly accelerated motion (graphical and calculus treatment) | **4** |
| | | **Scalar and vector quantities:** Position and displacement vectors, general vectors and their notations; equality of vectors | **4** |
| | | Multiplication of vectors by a real number; addition and subtraction of vectors, | **4** |
| | | Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors. | **4** |
| | **Chapter–4: Motion in a Plane** | **Motion in a plane**: cases of uniform velocity and uniform acceleration | **4** |
| | | Projectile motion, uniform circular motion. | **4** |
| | **CYCLE TEST II**<br>**Unit II: Kinematics** | | |
| | **Unit III: Laws of Motion**<br>**Chapter–5: Laws of Motion** | 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. | **3** |
| | | Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication. | **7** |
| | | **Dynamics of uniform circular motion:** Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road). | **7** |
| | **Unit IV: Work, Energy and Power Chapter–6: Work, Energy and Power** | Work done by a constant force and a variable force; kinetic energy, work- energy theorem, power. | **3** |

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| | | Notion of potential energy, potential energy of a spring, conservative forces: non-conservative forces, motion in a vertical circle; elastic and inelastic collisions in one and two dimensions. | **7** |
| **HALF YEARLY EXAMINATION**<br>**Unit–1: Units and Measurements**<br>**Unit II: Kinematics**<br>**Unit III: Laws of Motion**<br>**Unit IV: Work, Energy and Power** | | | |
| **1st Oct 2025 to 10th Dec 2025** | | | |
| | **Unit VI: Gravitation**<br>**Chapter–8: Gravitation** | Kepler's laws of planetary motion, universal law of gravitation. | **2** |
| | | Acceleration due to gravity and its variation with altitude and depth. | **3** |
| | | Gravitational potential energy and gravitational potential, escape velocity, | **3** |
| | | orbital velocity of a satellite, energy of an orbiting satellite. | **2** |
| | **Unit V: Motion of System of Particles and Rigid Body**<br>**Chapter–7: System of Particles and Rotational Motion** | Centre of mass of a two-particle system, momentum conservation and Centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod. | **3** |
| | | Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications | **4** |
| | | Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions. | **3** |
| | | Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation). | **3** |
| **CYCLE TEST I TERM II**<br>**Unit VI: Gravitation**<br>**Unit V: Motion of System of Particles and Rigid Body** | | | |
| **15th Dec 2025 to 31st Jan 2026** | | | |
| | **Unit VII: Properties of Bulk Matter Chapter–9: Mechanical Properties of Solids** | Elasticity, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity (qualitative idea only), Poisson's ratio; elastic energy. Application of elastic behavior of materials (qualitative idea only). | **3** |
| | **Chapter–10: Mechanical Properties of Fluids** | Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes), effect of gravity on fluid pressure. | **4** |
| | | Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, | **5** |

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| | | Bernoulli's theorem and its simple applications. (Torricelli's law and Dynamic lift) | **4** |
| | | Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise. | **5** |
| | **Chapter–11: Thermal Properties of Matter** | Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv - calorimetry; change of state - latent heat capacity.<br>Heat transfer-conduction, convection and radiation, thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law | **5** |
| | **Unit VIII: Thermodynamics**<br>**Chapter–12: Thermodynamics** | Thermal equilibrium and definition of temperature, zeroth law of thermodynamics, heat, work and internal energy. First law of thermodynamics, Second law of thermodynamics: Thermodynamic state variable and equation of state. Change of condition of gaseous state - isothermal, adiabatic, reversible, irreversible, and cyclic processes. | **7** |
| | **Unit IX: Behavior of Perfect Gases and Kinetic Theory of Gases**<br>**Chapter–13: Kinetic Theory** | Equation of state of a perfect gas, work done in compressing a gas. Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number. | **5** |
| | **Unit X: Oscillations and Waves**<br>**Chapter–14: Oscillations** | Periodic motion - time period, frequency, displacement as a function of time, periodic functions and their application. | **4** |
| | | Simple harmonic motion (S.H.M) and its equations of motion; phase; oscillations of a loaded spring- restoring force and force constant; | **4** |
| | | Energy in S.H.M. Kinetic and potential energies; simple pendulum derivation of expression for its time period. | **4** |
| | **Chapter–15: Waves** | Wave motion: Transverse and longitudinal waves, speed of travelling wave, displacement relation for a progressive wave | **2** |
| | | Principle of superposition of waves, reflection of waves | **3** |
| | | Standing waves in strings and organ pipes fundamental mode and harmonics | **3** |
| | | Beats. | **1** |

**EXTRA CLASSES MAY BE CONDUCTED AS PER REQUIREMENT.**

## LIST OF EXPERIMENTS

1. **To measure internal diameter and depth of a given beaker/calorimeter using Vernier Callipers and hence find its volume.**
2. **To measure diameter of a given wire using screw Gauge and hence find its volume.**
3. **To find the weight of a given body using parallelogram law of vectors.**
4. **To find the acceleration due to gravity, using a simple pendulum.**
5. **To find the force constant of a helical spring by plotting a graph between load and extension.**
6. **To determine the frequency of given tuning fork using a sonometer.**
7. **To determine mass of a given body using a metre scale by principle of moments.**
8. **To determine the atmospheric pressure using Fortin's Barometer.**