

NO. OF PERIOD	TOPIC	SUB-TOPIC	LEARNING OBJECTIVES / SKILLS TO BE DEVELOPED	ASSESSMENT / ACTIVITIES	LEARNING OUTCOMES
5	<b>Unit 1 Physical World and Measurement</b>	<i>Physics: Scope and excitement; nature of physical laws; Physics, technology and society.</i>	The Objective of this chapter is to make the learners aware of basic fundamentals and derived quantities of Physics.	(1)To measure diameter of a small spherical/cylindrical body using Vernier callipers.	Learners will be able to understand Scope and application of Physics for the betterment of society.
7	<b>Ch 1 Physical world</b>  <b>Ch 2 Units and Measurement</b>	<i>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 measurement; significant figures.</i>  (3)Dimensions of physical quantities, dimensional analysis and its applications.	The Objective of this chapter is to make the learners to know about the different types of measurement system of units and significance & application of dimensional analysis.	(2)To measure internal diameter and depth of a given beaker/calorimeter using Vernier callipers and hence find its volume.  (3)To measure diameter of a given wire using screw gauge.  (4)To measure thickness of a given sheet using screw gauge.  (5)To measure volume of an irregular lamina using screw gauge.  (6)To determine radius of curvature of a given spherical surface by a spherometer.	Learners will be able to understand the Need of measurement along with basics of fundamental and derived units.  Learners will be able to understand the significance and importance of dimensional analysis of any physical quantity.

10	<p><b>Unit 2</b> <b>Kinematics</b></p> <p><b>Ch 3</b> <b>Motion in a straight Line</b></p>	<p>(1)Frame of reference, Motion in a straight line: Position-time graph, speed and velocity. (2)Uniform and non-uniform motion, average speed and instantaneous velocity. Uniformly accelerated motion, velocity-time and position-time graphs. (3) Relations for uniformly accelerated motion (graphical treatment).</p>	<p>The Objective of this chapter is to clear the concept of motion of a body with relating it to real life examples and to have basic concept of calculus method to derive three basic equations of kinematics. Also the learners will know about the graphical treatment of different types of motion.</p>	<ul style="list-style-type: none"> <li>• Differentiated work sheets</li> <li>• CBSE Sample papers</li> </ul>	<p>Learners will be able to understand the term motion as a relative term and classification of motion.</p> <p>Learners will be able to understand the significance of three equations of motion in our daily life along with its mathematical calculus analysis.</p>
15	<p><b>Ch 4 Motion in a Plane</b></p>	<p>(1)Elementary concepts of differentiation and integration for describing motion. <i>Scalar and vector quantities</i>: Position and displacement vectors, general vectors and notation, equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. Relative velocity. (2)Unit vectors. Resolution of a vector in a plane – rectangular components.</p>	<p>The Objective of this chapter is to clear the concept of Vector analysis of a physical quantities and to understand the concept of vector algebra (addition subtraction)</p> <p>The Objective of this chapter is to know about projectile motion of body and calculation of its different parameters with real life examples.</p>	<p>(7)To find the weight of a given body using parallelogram law of vectors.</p> <p>Field study to see different types of projectile motion.</p>	<p>Learners will be able to understand basics of Scalar and Vector quantities along with its Mathematical analysis (Addition, subtraction, Product, Resolution, Projection)</p> <p>Learners will be able to understand the concept of Projectile and its mathematical analysis (Parabolic path, Maximum height attained, Range, Time of flight, Resultant velocity)</p>

18	<p><b>Unit 3</b> <b>Laws of Motion</b></p> <p><b>Ch 5 Laws of Motion</b></p>	<p>(3)Scalar and Vector products of Vectors. Motion in a plane. Cases of uniform velocity and uniform acceleration – projectile motion. Uniform circular motion.</p> <p>(1)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.</p> <p>(2)Equilibrium of concurrent forces. Static and kinetic friction, laws of friction, rolling friction, lubrication.</p> <p>(3)<i>Dynamics of uniform circular motion</i>: Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road).</p>	<p>The Objective of this chapter is to clear the concept of Forces Momentum and different laws of motion given by Sir Newton.</p> <p>The Objective of this chapter is to make the student aware of Dynamics of circular which solves many problems in our society.</p>	<p>(8)To study the relationship between force of limiting friction and normal reaction and to find the coefficient of friction between a block and a horizontal surface.</p> <p>(9)To find the downward force, along an inclined plane, acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination (<math>\theta</math>) by plotting graph between force and <math>\sin \theta</math>.</p>	<p>Learners will be able to understand the Concept of force along all the three Newton’s laws of motion. Learners will be able to understand the Concept of concurrent forces and dynamics of circular motion</p>
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<b>15</b>	<p><b>Unit 4</b>  <b>Work, Energy, Power</b></p> <p><b>Ch 6 Work, Energy, Power</b></p>	<p>(1)Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power.  (2)Notion of 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 and inelastic collisions in one and two dimensions.</p>	<p>The Objective of this chapter is to clear the concept Work, Energy and Power and its application in our daily life which helps us to approach and to solve the Problem technically.</p>	<ul style="list-style-type: none"> <li>• Differentiated work sheets</li> <li>• CBSE Sample papers</li> </ul>	<p>Learners will be able to understand the Basic concept of work done along with its mathematical analysis and Classification of work.  Learners will be able to understand the Concept of mechanical energy, different forms energy and its conservation with necessary mathematical analysis.  Learners will be able to understand the Mechanical power along with its Practical and SI units.</p>

<p><b>15</b></p>	<p><b>Unit 5 Rotational Dynamics</b></p> <p><b>Ch 7 System of Particles and Rigid Bodies</b></p>	<p>(1)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 uniform rod.</p> <p>(2)Moment of a force, torque, angular momentum, conservation of angular momentum with some examples.</p>	<p>The Objective of this chapter is to clear the concept of rotational dynamics by relating it with the motion of body in a straight line.</p> <p>The Objective of this chapter is to clear the concept different parameters of rotating body (Torque, Angular momentum, moment of inertia) and applying different theorems to find the moment of inertia of simple geometrical objects.</p>	<ul style="list-style-type: none"> <li>• Differentiated work sheets</li> <li>• CBSE Sample papers</li> </ul>	<p>Learners will be able to understand the concept of centre of mass and centre of gravity of a body.</p> <p>Learners will be able to understand the Concept of Rotational Dynamics and equations of motion for rotating body.</p> <p>Learners will be able to understand the Analogy between Kinematics and Rotational Dynamics.</p>
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12	<p><b>Ch 7 System of Particles and Rigid Bodies</b></p> <p><b>(Cont.)</b></p>	<p>(3)Equilibrium of rigid bodies, rigid body rotation and equation of rotational motion, comparison of linear and rotational motions; moment of inertia, radius of gyration. Values of M.I. for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorems and their applications.</p>			
	<p><b>Unit 6 Gravitation</b></p> <p><b>Ch 8 Gravitation</b></p>	<p>(1)Kepler’s laws of planetary motion. The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth.</p> <p>(2)Gravitational potential</p>	<p>To make the learners to understand the concept of gravitational force and gravity with laws of planetary motion and detailed mathematical analysis of acceleration due to gravity above and below the surface of</p>	<p>(10)To determine the mass of two different objects using a beam balance.</p>	<p>Learners will be able to understand Concept of gravitational force between two bodies and its conservative nature.</p> <p>Learners will be able to understand the Concept of variation of acceleration due</p>

7	<p><b>Unit 7 Properties of Bulk Matter</b></p> <p><b>Ch 9 Mechanical Properties of Solids</b></p>	<p>energy; gravitational potential. Escape velocity, orbital velocity of a satellite. Geostationary satellites.</p> <p>(1)Elastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity, poisson's ratio; elastic energy.</p>	<p>earth.</p> <p>To make the learners to understand the concept of elasticity and rigidity of a body with stress-strain analysis and applying it to solve real life problems.</p>	<p>(11)To determine Young's modulus of elasticity of the material of a given wire.</p> <p>(12)To find the force constant of a helical spring by plotting a graph between load and extension.</p>	<p>to gravity with height and depth.</p> <p>Learners will be able to understand Practicality of different types of Elastic modulli and Relation between stress and strain.</p>
18	<p><b>Ch 10 Mechanical Properties of Fluids</b></p>	<p>(1)Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes).</p> <p>(2)Effect of gravity on fluid pressure. Viscosity, Stokes' law, terminal velocity, Reynold's number,</p>	<p>To make the learners to understand the concept of Fluid dynamics and its application for our daily life.(Viscosity, types of flows, capillarity and its applications)</p>	<p>(13)To determine the surface tension of water by capillary rise method.</p> <p>(14)To determine the coefficient of viscosity of a given viscous liquid by measuring the terminal velocity of a given spherical</p>	<p>Learners will be able to understand Practicality of Fluid dynamics in real life (Pascal's Law, Bernoulli's theorem, Magnus Effect)</p> <p>Learners will be able to understand Concept of surface Tension and Surface</p>

7	<b>Ch 11 Thermal Properties of Matter</b>	<p>streamline and turbulent flow. (3)Critical velocity, Bernoulli's theorem and its applications. Surface energy and surface tension, angle of contact, excess of pressure, application of surface tension ideas to drops, bubbles and capillary rise.</p> <p>(1)Heat transfer – conduction and thermal conductivity, convection and radiation. Qualitative ideas of Black Body Radiation, Wein's displacement law, and Green House effect. (2)Heat, temperature, thermal expansion; thermal expansion of solids, liquids, and gases. Anomalous expansion. Specific heat capacity: <math>C_p</math>, <math>C_v</math> – calorimetry; change of state – latent heat. (3)Newton's law of cooling and Stefan's law.</p>	To make the learners to understand the concept of heat transfer between the bodies and its different methods along with its mathematical analysis and relating it to our daily life.	<p>body.</p> <p>(15)To study the relationship between the temperature of a hot body and time by plotting a cooling curve.</p> <p>(16)To determine specific heat capacity of a given (i) solid (ii) liquid, by method of mixtures.</p>	<p>energy and will be able to relate it with a daily life.</p> <p>Learners will be able to understand the Different methods of heat transfer, Concept of thermal expansion and Laws of cooling.</p>
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<p><b>12</b></p>	<p><b>Unit 8 Thermodynamics</b></p> <p><b>Ch 12 Thermodynamics</b></p>	<p>Thermal equilibrium and definition of temperature (zeroth law of Thermodynamics). Heat, work and internal energy. First law of thermodynamics. Isothermal and adiabatic processes. Second law of thermodynamics: Reversible and irreversible processes. Heat engines and refrigerators.</p>	<p>To make the learners to understand the concept of Thermodynamics and its different laws along with the concept of engine and refrigerator with different law and process of thermodynamics.</p>	<ul style="list-style-type: none"> <li>• Differentiated work sheets</li> <li>• CBSE Sample papers</li> </ul>	<p>Learners will be able to understand the Concept of Heat, work and Internal energy of the system.</p> <p>Learners will be able to understand the Principle of Heat Engine and Refrigerator.</p>
<p><b>7</b></p>	<p><b>Unit 9 Behavior of Perfect gases and Kinetic Theory of gases</b></p> <p><b>Ch 13 Kinetic theory of gases</b></p>	<p>Equation of state of a perfect gas, work done on compressing a gas.</p> <p>Kinetic energy and temperature; rms speed of gas molecules; degrees of freedom, law of equipartition of energy (statement only) and</p>	<p>To make the learners to understand the concept of Motion of gaseous particles along with mathematical analysis of pressure exerted by a gas and K.E of a gaseous particles.</p>	<p>(17)To study the variation in volume with pressure for a sample of air at constant temperature by plotting graphs between P and V, and between P and 1/V.</p>	<p>Learners will be able to understand theof Pressure exerted by a gas on the walls of the container.</p> <p>Learners will be able to understand the Concept and relation between different specific heat capacities.</p>

		application to specific heat capacities of gases; concept of mean free path, Avogadro's number.			
<b>12</b>	<b>Unit 10 Oscillations and waves  Ch 14 Oscillations</b>	Periodic motion – period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion (SHM) and its equation; phase; oscillations of a spring – restoring force and force constant; energy in SHM – kinetic and potential energies; simple pendulum – derivation of expression for its time period; free, forced and damped oscillations (qualitative ideas only), resonance.	To make the learners to understand the concept of Wave motion and SHM along with its different application and mathematical analysis and also to learn basics of oscillations and its types.	(18)Using a simple pendulum, plot L-T and L-T <sup>2</sup> graphs. Hence find the effective length of a second's pendulum using appropriate graph.	Learners will be able to understand the basic concept of generation of waves along with its Classification and Mathematical analysis and SHM.  Learners will be able to understand the Concept of Different forms of energy possessed by a body executing SHM with its mathematical analysis.  Learners will be able to understand the Concept of Resonance, free oscillations

					and forced oscillations
<b>12</b>	<b>Ch 15 Waves</b>	Wave motion. Longitudinal and transverse waves, speed of wave motion. Displacement relation for a progressive wave. Principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics. Beats. Doppler effect.	To make the learners to understand the concept of Wave motion, beats and doppler's effect relating it to our daily life.	(19)(i) To study the relation between frequency and length of a given wire under constant tension using sonometer.  (ii) To study the relation between the length of a given wire and tension for constant frequency using sonometer.  (20)To find the speed of sound in air at room temperature using a resonance tube by two resonance positions.	Learners will be able to understand the Mathematical analysis of waves along its basic parameters (Amplitude , Frequency and Phase)  Learners will be able to understand the concept of reflection of waves along with concept of harmonics.  Learners will be able to understand the Practicality in variation in frequency of sound due to relative motion between source and observer (Doppler's Effect)
<b>20</b>		<b>REVISION AND EXAMS</b>			