

SYLLABUS

CLASS : 11

SUBJECT : PHYSICS

TEACHER'S NAME : MANOJ KUMAR SRIVASTAVA

<u>TERM – I</u>			
<u>CHAPTER'S NAME</u>	<u>TOPIC'S NAME</u>	<u>MONTH</u>	<u>NO. OF PERIODS</u>
1. INTRODUCTION	What is science? Scope and Excitement of Physics, Physics, Technology and Society, Fundamental Forces in Nature, Nature of Physical laws	SEPTEMBER	6
2. UNITS AND MEASUREMENTS	Need of Measurement, The international system of units, Measurement of length, Measurement of mass, Measurement of time, Accuracy, precision of instruments and errors in measurement, significant figures, Dimensions of physical quantities, Dimensional formulae and dimensional equations, Dimensional analysis and its applications.	SEPTEMBER	
3. MOTION IN A STRAIGHT LINE	Introduction, Position, path length and displacement; Average velocity and average speed; Instantaneous velocity and speed; Acceleration; Kinetic equations for uniformly accelerated motion; Relative velocity.	SEPTEMBER	16
4. MOTION IN PLANE	Scalars and vectors; Multiplication of vectors by real numbers; Addition and subtraction of vectors – graphical method; Resolution of vectors; Vector addition – analytical method; Motion in a plane; Motion in a plane with constant acceleration; Relative velocity in two dimensions; Projectile motion; Uniform circular motion.	OCTOBER	
5. LAWS OF MOTION	Introduction; Aristotle's fallacy; Conservation of momentum; Equilibrium of a particle; Common forces in mechanics; Circular motion; Solving problems in mechanics.	OCTOBER	10
6. WORK, ENERGY AND POWER	The work energy theorem; Work; Kinetic energy; Work done by a variable force; The work – energy theorem for a variable force; The concept of potential energy; The potential energy of a spring; Various forms of energy; the law of conservation of energy; Power; Collisions.	OCTOBER	12
7. SYSTEM OF PARTICLES AND ROTATIONAL MOTION	Centre of mass; Motion of centre of mass; Linear momentum of a system of particles; Vector product of two vectors; Angular velocity and its relation with linear velocity; Torque and angular momentum; Equilibrium of a rigid body; Moment of inertia; Kinematics of rotational motion about a fixed axis; Dynamics of rotational motion about a fixed axis; Angular momentum in case of rotations about a fixed axis; Rolling motion.	NOVEMBER	16
8. GRAVITATION	Universal law of gravitation; The gravitational constant; Gravitational potential energy; Escape speed; Earth satellite; Energy of an orbiting satellite; Geostationary and polar satellites; Weightlessness.	NOVEMBER/DECEMBER	8
<u>TERM - II</u>			
9. MECHANICAL PROPERTIES OF SOLIDS	Stress and strain; Hooke's Law; Elastic Moduli; Applications of Behaviour of Materials; Elastic after effect; Elastic fatigue; Factors affecting Elasticity	DECEMBER	22
10. MECHANICAL PROPERTIES OF FLUIDS	Pressure; Stream-line flow; Bernoulli's theorem or Principle; What is viscosity? Reynold's Number; Force of cohesion; Surface tension; Capillarity.	DECEMBER	
11. THERMAL PROPERTIES OF MATTER	Ideal gas equation & absolute temperature; Thermal expansion; Heat capacity or thermal capacity; Calorimetry; Change of state: fusion and vaporization; Phase diagram of water; Newton's law of cooling; Perfectly black body and body radiation; fery's black body; Absorption, reflection and emission of radiation; Emissivity; Kirchhaff's law; Stefan's law; Energy distribution in black body radiation; Wien's displacement law; Green house effect; Solar constant.	JANUARY	10
12. THERMODYNAMICS	Thermal equilibrium; Zeroth law of thermodynamics; Heat, work and internal energy; First law of thermodynamics; Thermodynamics processes; Application of first law of thermodynamics; Second law of thermodynamics; Carnot's Reversible engine.	JANUARY	
13. BEHAVIOUR OF PERFECT GAS AND KINETIC THEORY	Behaviour of gases; Perfect or ideal gas equation; Kinetic theory of an ideal gas; Degrees of freedom; Mean free path; Brownian motion; Avogadro's number.	JANUARY/FEBRUARY	8

14. OSCILLATIONS	Periodic motion; Oscillatory motion; Oscillation or vibration; Time period and frequency; displacement; Periodic functions; Relation between simple harmonic motion and uniform circular motion; Characteristics of S.H.M.; Phase relationship between displacement, velocity and acceleration of a particle executing S.H.M.; Graphical representation of the particle's displacement, velocity and acceleration; Expression for time period and frequency of a particle executing for S.H.M.; Restoring force and force constant; Oscillations of mass attached with a vertical spring; Motion of a body suspended by two springs connected in parallel; Motion of a body suspended by two springs connected in series; Second's pendulum; Time period of simple pendulum of infinite length; Energy in simple harmonic motion; Damped simple harmonic motion; Free oscillations, forced oscillations and resonance; Coupled oscillations.	FEBRUARY	23
15. WAVES	Transverse waves and longitudinal waves; Displacement relation in a progressive wave; Speed of a transverse wave; The principle of superposition of waves; Reflection of waves; Beats;	FEBRUARY	