

Cambridge International School, Mohal, Kullu

Class - XII

Subject – Physics

Subject Code(042)

Curriculum

Session 2020-21

Unit / Month	Chapter Name	Practical	Methodology	Assessment
Unit 1/ -	<p>Electrostatics After completion of this chapter students will be able to: Define Coulomb’s law-force between two point charges and force between multiple charges. State and explain Electric field, electric field due to a point charge, electric field lines; electric dipole, torque on a dipole in a uniform electric field.</p> <p>Define electric flux, statement of Gauss’ theorem and its applications.</p> <p>Evaluate Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two point charges and of electric dipoles in an electrostatic field.</p> <p>Conductors and insulators, free charges and bound charges inside a conductor.</p>	<p>1.To determine the resistance per cm of a given wire by plotting a graph between voltage and current.</p> <p>2. To verify the laws of combination (series/parallel combination) of resistances by ohm’s law.</p> <p>3. To find the resistance of a given wire / standard resistor using a meter bridge.</p> <p>4. To compare the e.m.f of two given primary cells using a potentiometer.</p>	<p>Discussion/ Explanation through examples/ Video demonstration/ Notes making</p>	<p>Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.</p>
Unit 2/	<p>Current electricity After the end of this chapter students will be able to: Define electric current, flow of electric charges in a metallic conductor, drift velocity and mobility and their relation with electric current; Ohm’s law</p> <p>Explain Internal resistance of a cell, potential difference and e.m.f of a cell, combination of cells in series and in parallel.</p>		<p>Discussion/ Explanation through examples/ Video demonstration/ Notes making</p>	<p>Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.</p>

	<p>State Kirchhoff laws and simple applications. Wheatstone bridge, meter bridge. Potentiometer-principle and applications to measure potential difference , and for comparing e.m.f of two cells.</p>			
Unit 3/	<p>Magnetic effect of current and magnetism After the end of this chapter students will be able to: Explain the Concept of magnetic field. Oersted's experiment.</p> <p>State Biot-Savart's law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long straight wire, straight and toroidal solenoids. Define force on a moving charge in uniform magnetic and electric fields. Describe force on a current-carrying conductor in a uniform magnetic field.</p> <p>Describe current loop as a magnetic dipole and its magnetic dipole moment.</p> <p>Electromagnetic induction and alternating current</p> <p>After the end of this chapter students will be able to:</p>		<p>Discussion/ Explanation through examples/ Video demonstration/ Notes making</p>	<p>Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.</p>
Unit 4 -	<p>Define Electromagnetic induction; Faraday's law, induced e.m.f and current; Lenz's law, Eddy currents. Self and mutual inductance.</p>		<p>Discussion/ Explanation through examples/ Video demonstration/ Notes making</p>	<p>Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.</p>
Unit 5	<p>Electromagnetic waves After the end of this chapter students will be able to: Explain Need for displacement of current. Electromagnetic waves and their characteristics (qualitative ideas only).</p>			

Unit 6	<p>Define Transverse nature of electromagnetic waves.</p> <p>Explain Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.</p> <p>Optics After the end of this chapter students will be able to: Define total internal reflection and applications, optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lens-maker's formula.</p> <p>Explain Magnification, power of a lens and combination of thin lenses in contact, combination of lens and mirror.</p> <p>Describe refraction and dispersion of light through a prism.</p> <p>Evaluate Optical instruments: Human eye, image formation and accommodation, correction of eye defects (myopia, hypermetropia) using lenses.</p> <p>Explain Wave optics: Wave front and Huygens' principle, reflection and refraction of plane wave at a plane surface using wave fronts.</p> <p>Give Proof of laws of reflection and refraction using Huygen's principle. Interference, young's double slit experiment and expression for fringe width.</p>		<p>Discussion/ Explanation through examples/ Video demonstration/ Notes making</p>	<p>Oral Test/ Class test/ Quizzes on google forms/ lab activity through virtual links.</p>
Unit 7	<p>Dual matter of radiation After the end of this chapter students will</p>	<p>5. To determine the resistance of a galvanometer by half deflection</p>		

	<p>be able to: Explain Dual nature of radiation. Photoelectric effect, Hertz and lenard's observation.</p> <p>State Einstein's photoelectric equation- particle nature of light.</p> <p>Describe Matter waves-wave nature of particles, de Broglie relation.</p>	<p>method.</p> <p>6. To identify a resistor, capacitor, inductor and diode from a mixed collection of such items.</p> <p>7. To observe the difference between</p> <p>(i) a convex lens and a concave lens</p> <p>(ii) a convex mirror and a concave mirror and to estimate the likely difference between the power of two given convex /concave lenses.</p> <p>8. To design an inductor coil and to know the effect of</p> <p>(i) change in the number of turns</p> <p>(ii) Introduction of ferromagnetic material as its core material on the inductance of the coil.</p>		
Unit 8	<p>Atoms and nuclei After the end of this chapter students will be able: Explain Alpha-particle scattering experiment.</p> <p>State Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum.</p> <p>Give composition and size of nucleus, atomic masses, isotopes, isobars; isotones.</p>			
Unit 9	<p>Electronic devices After the end of this chapter students will be able to: Describe energy bands in solids (qualitative) conductors, insulators and semiconductors; semiconductor diode I-V characteristics in forward and reverse bias, diode as a rectifier.</p> <p>Define junction transistor, transistor</p>			

	action, characteristics of a transistor. Create logic gates (OR, and, not, nand and nor). Transistor as a switch.			
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PRACTICALS

Evaluation Scheme

Maximum Marks: 30

One Major Experiment	5 Marks
One Minor Experiment	4 Marks
Slide preparation	5 Marks
Spotting	7 Marks
Practical Record + Viva Voce	4 Marks
Project Record + Viva Voce	5 Marks
Total	30 Marks