

CLASS XII (2025-26)
PHYSICS (THEORY)

Time: 3 hrs.

Max Marks: 70

UNIT	CHAPTERS	MARKS
Unit-I	Electrostatics	16
	Chapter-1: Electric Charges and Fields	
	Chapter-2: Electrostatic Potential and Capacitance	
Unit-II	Current Electricity	
	Chapter-3: Current Electricity	
Unit-III	Magnetic Effects of Current and Magnetism	17
	Chapter-4: Moving Charges and Magnetism	
	Chapter-5: Magnetism and Matter	
Unit-IV	Electromagnetic Induction and Alternating Currents	
	Chapter-6: Electromagnetic Induction	
	Chapter-7: Alternating Current	
Unit-V	Electromagnetic Waves	18
	Chapter-8: Electromagnetic Waves	
Unit-VI	Optics	
	Chapter-9: Ray Optics and Optical Instruments	
	Chapter-10: Wave Optics	
Unit-VII	Dual Nature of Radiation and Matter	12
	Chapter-11: Dual Nature of Radiation and Matter	
Unit-VIII	Atoms and Nuclei	
	Chapter-12: Atoms	
	Chapter-13: Nuclei	
Unit-IX	Electronic Devices	7
	Chapter-14: Semiconductor Electronics: Materials, Devices and Simple Circuits	
Total		70

PHYSICS (PRACTICALS)

The record, to be submitted by the students, at the time of their annual examination, has to include:

- Record of at least 8 Experiments [with 4 from each section], to be performed by the students.
- Record of at least 6 Activities [with 3 each from section A and section B], to be performed by the students.
- Report of the project carried out by the students.

EVALUATION SCHEME

Time 3 hours

Max. Marks: 30

Topic	Marks
Two experiments one from each section	7+7
Practical record (experiment and activities)	5
One activity from any section	3
Investigatory Project	3
Viva on experiments, activities and project	5
Total	30

Monthly Planner

Month	Chapter	Topic	Practical's and Activities
April	Ch 1: Electric Charges and Fields Ch 2: Electrostatic Potential and Capacitance	Electric Charges, Coulomb's law, forces between multiple charges, continuous charge distribution. Electric field, electric field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field. Electric flux, Gauss's theorem and its applications to find field. Electric potential, potential difference, system of charges, Equipotential surfaces, electrical potential energy of a system of two point charges, Dielectrics and electric Polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between	<ul style="list-style-type: none">• To assemble the components of a given electrical circuit.• Assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.

		the plates, energy stored in a capacitor.	
May	Ch 3: Current Electricity Ch 4: Moving Charges and Magnetism	Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility, Ohm's law, electrical resistance, V-I Characteristics, electrical energy and power, electrical resistivity and conductivity; temperature dependence of resistance. Internal resistance of a cell, combination of cells in series and in parallel, Kirchhoff's laws, Wheatstone bridge, meter bridge, Potentiometer. Magnetic field, Biot - Savart law and its application. Ampere's law and its applications Solenoids. Force on a moving charge in uniform magnetic, Force on a current-carrying conductor in a uniform magnetic field, force between two parallel current-carrying conductors, moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.	<ul style="list-style-type: none"> • To determine resistivity of two / three wires by plotting a graph for potential difference versus current. • To find resistance of a given wire / standard resistor using metre bridge.
June		Summer vacation	
Term 1 Examination			
July	Ch 5: Magnetism and Matter. Ch 6: Electromagnetic Induction.	Current loop as a magnetic dipole, moment of a revolving electron, bar magnet as an equivalent solenoid, magnetic field lines; Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Eddy currents. Self and mutual induction.	<ul style="list-style-type: none"> • To determine resistance of a galvanometer by half-deflection method and to find its figure of merit. • To find the frequency of AC mains with a sonometer.
August	Ch 7: Alternating Current Ch 8: Electromagnetic Waves	Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LC oscillations, LCR series circuit, resonance; power in AC circuits AC generator and transformer. After studying students are able to understand the concept of Electromagnetic waves, their characteristics, their Transverse nature Electromagnetic spectrum.	<ul style="list-style-type: none"> • To study the variation in potential drop with length of a wire for a steady current. • To study the effect of intensity of light on LDR. • To find refractive index of a liquid by using convex lens and plane mirror.
September		Half Yearly Examination	

October	Ch 9: Ray Optics and Optical Instruments Ch 10: Wave Optics	<p>Reflection of light, Refraction of light, total internal reflection and its applications, optical fibers, refraction at spherical surfaces, lenses, thin lens formula, lens maker's formula, magnification, power of a lens.</p> <p>Microscopes and astronomical telescopes.</p> <p>Wave front and Huygen's principle, Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light, diffraction due to a single slit.</p>	<ul style="list-style-type: none"> • To observe diffraction of light due to a thin slit. • To find the value of v for different values of u in case of a concave mirror and to find the focal length. • To find the focal length of a convex lens by plotting graphs between u and v or between $1/u$ and $1/v$.
November	Ch 11: Dual Nature of Radiation and Matter Ch 12: Atoms Ch 13: Nuclei Ch 14: Semiconductor	<p>Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation- particle nature of light. Experimental study of photoelectric effect</p> <p>Matter waves-wave nature of particles, de-Broglie relation</p> <p>Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum.</p> <p>Composition and size of nucleus</p> <p>Mass-energy relation, mass defect, nuclear fission, nuclear fusion. Energy bands in conductors,</p> <p>Semiconductor diode - I-V characteristics in forward and reverse bias, diode as a rectifier;</p>	<ul style="list-style-type: none"> • To draw the I-V characteristic curve for a p-n junction diode in forward bias and reverse bias. • To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items.
December	1st Pre-Board Examination		
January	Practical Examination		
February	2nd Pre-Board Examination		
March		Annual Examination	