PHYSICS SESSION (20-21)
MONTH: MARCH

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
Ch-1: Electric charges & fields		**Ch-1** ➢ Electric Charges; Conservation of charge ➢ Coulomb's law ➢ force between two point charges forces between multiple charges	➢ Superposition principle ➢ continuous charge distribution ➢ Electric field ➢ electric field due to a point charge ➢ electric field lines, electric dipole ➢ torque on a dipole in uniform electric field	➢ Electric flux statement of Gauss's theorem

MONTH-----APRIL

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
Ch-1: Electric charges & fields **Ch-2: Electric Potential & Capacitance** **Ch-3 : Current Electricity (April)**	**CH-1** ➢ **Applications of Gauss's theorem to find field due to infinitely long straight wire,uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and out side)** **CH-2** ➢ **Electric potential** ➢ **potential difference** **electric potential due to a charge**	➢ **Potential due to a point dipole and system of charges equipotential surfaces** ➢ **electrical potential energy of a system of two point charges and of electric dipole in an electrostatic field** ➢ **Conductors and insulators** ➢ **Free charges and bound charges inside a conductor**	➢ **Dielectrics and electric polarization** ➢ **Capacitors and combination of capacitors in series and in parallel** ➢ **Capacitance of a parallel plate capacitor with and without dielectric medium** ➢ **Energy stored in a capacitor**	**Ch-3 : Current Electricity** ➢ **Electric current** ➢ **Drift velocity** ➢ **mobility** ➢ **Ohm's law** ➢ **electrical resistance** ➢ **Series and parallel combinations of resistors**
Practical	➢ **Ohm's Law experiment** ➢ **Focal length of convex lens**			
Learning Objectives	➢ **To explain the properties of electric field lines.** ➢ **To comprehend the concept of electric flux** ➢ **Todefine the potential difference between two points in an electric field.** ➢ **To understand that capacitor is a device that stores electrical energy**			
Expected Learning Outcomes	**Students would be able to:** ➢ **Obtain electric field intensity at a point due to a point charge, for a system of charges distributed discretely and continuous charge distribution.** ➢ **Apply Gauss's theorem to find electric field due to continuous charge distributions.**			
Teaching Aids	**Chalkboard, charts/power point presentations**			
Assessment	**class assignments, homework assignments**			

MONTH----- MAY

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
Ch-3 : Current Electricity **Ch-4: Magnetic effects of current**	**Ch-3** ➢ Temperature dependence of resistance ➢ V-I characteristics (linear and non- linear) ➢ electrical energy and power **Ch-3** ➢ electrical resistivity and conductivity ➢ Carbon resistors ➢ colour code for carbon resistors ➢ Internal resistance of a cell, potential difference and emf of a cell ➢ Combination of cells in series and in parallel	**CH-3** ➢ Kirchhoff's laws and simple applications Wheatstone bridge ➢ Potentiometer and its applications **Ch-4** ➢ Force on a moving charge in uniform magnetic and electric fields ➢ Cyclotron ➢ Force on a current-carrying conductor in a uniform magnetic field ➢ P.T-1	**Ch-4** ➢ Force between two parallel current-carrying conductors ➢ Biot - Savart law and its applications ➢ Ampere's law and its applications ➢ Straight and toroidal solenoids P.T-1	Torque experienced by a current loop in uniform magnetic field Moving coil galvanometer and its conversion to ammeter and voltmeter
Practical	➢ Focal length of Concave mirror			
Learning Objectives	➢ To differentiate between the emf of a cell and its terminal potential difference. ➢ To understand Ampere's law and its applications ➢ Tounderstand the principle of Wheatstone bridge and use it to measure resistance of a conductor			
Expected Learning Outcomes	Students will be able to: ➢ Apply potentiometer principle to compare emf&find internal resistance of a cell. ➢ analyze circuits containing more than one source of emf using Kirchhoff's laws ➢ Understand that a magnetic force does not produce any change in the speed of a moving charge			
Teaching Aids	Chalkboard, charts/power point presentations			
Assessment	class assignments, homework assignments			

MONTH--------JULY

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
Ch-5: Magnetism **Ch-6: Electromagnetic Induction** **Ch-7: Alternating Currents**	**Ch-5** ➢ Magnetic dipole moment of a revolving electron ➢ Magnetic field intensity due to a magnetic dipole ➢ Torque on a magnetic dipole (bar magnet) in a uniform magnetic field ➢ Earth's magnetic field and magnetic elements **Ch-5** ➢ Para-, dia- and ferro - magnetic substances, with examples **Ch-6** ➢ Electromagnetic induction ➢ Faraday's laws ➢ induced emf and current ➢ Lenz's Law	➢ Eddy currents. **Ch-6** ➢ Self and mutual induction ➢ AC generator	**Ch-7** ➢ Alternating currents ➢ peak and rms value of alternating current/voltage	**Ch-7** ➢ Reactance and impedance ➢ LC oscillations ➢ LCR series circuit ➢ Resonance ➢ power in AC circuits, wattless current ➢ Transformer
Practical	➢ Metre Bridge (unknown resistance & combination of resistances) ➢ Potentiometer (Comparison of EMF)			
Learning Objectives	➢ To Understand the working principle of moving coil galvanometer ➢ To comprehend the origin of Earth's magnetism ➢ To explain Eddy Currents and demonstrate the same through simple experiments			
Expected Learning Outcomes	**Students will be able to:** ➢ explain how a galvanometer can be converted to ammeter and voltmeter ➢ state the basic properties of dia, para&ferro- magnetic materials. ➢ give examples where eddy currents are desirable and undesirable.			
Teaching Aids	**Chalkboard, charts/power point presentations**			
Assessment	**class assignments, homework assignments**			

MONTH----AUGUST

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
Ch-8: **Electromagnetic Waves** **Ch-9: Ray Optics**	**……..** **P.T -2** **Ch-8** ➢ **Need for displacement current** ➢ **Electromagnetic waves and their characteristics** ➢ **Electromagnetic spectrum**	**P.T-2** **Ch-9** ➢ **Reflection of light** ➢ **Spherical mirrors, mirror formula** ➢ **Refraction of light** ➢ **Total internal reflection and its applications**	**Ch-9** ➢ **Refraction at spherical surfaces, lenses, thin lens formula** ➢ **Lens Maker's formula** ➢ **Refraction and dispersion of light through a prism** ➢ **Scattering of light**	**CH-9** ➢ **Microscopes (Simple & Compound microscope)** **Astronomical telescopes (reflecting and refracting) and their magnifying powers**
Practical	➢ **Potentiometer (Internal resistance)** ➢ **Frequency of AC**			
Learning Objectives	➢ **To Understand the working of transformer and AC generator** ➢ **To describe the characteristic properties and uses of each part of EM spectrum.** ➢ **To draw ray diagrams and derive expressions for Mirror formula and Lens formula**			
Expected Learning Outcomes	**Students will be able to:** ➢ **differentiate between step-up and step-down transformer** ➢ **distinguish between the instantaneous value, the peak value and the rms value of an alternating current** ➢ **recognize that the role of impedance in an AC circuit is analogous to the role of a resistance in a DC circuit**			
Teaching Aids	**Chalkboard, charts/power point presentations**			
Assessment	**class assignments, homework assignments**			

MONTH------- SEPTEMBER

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
Ch-10: Wave Optics Ch-11: Dual Nature of Matter & Radiation Ch-12: Atoms	Ch-10 ➢ Wave front and Huygen's principle ➢ reflection and refraction using Huygen's principle Interference and Diffraction of Light Ch-10 ➢ Resolving power of microscopes and astronomical telescope ➢ Polarisation of light ➢ Brewster's law Ch-11 ➢ Dual nature of radiation ➢ Photoelectric effect	Chap-11 ➢ Einstein's photoelectric equation-particle nature of light ➢ Matter waves-wave nature of particles, de Broglie relation Davisson-Germer experiment	Ch-12 ➢ Alpha-particle scattering experiment ➢ Rutherford's model of atom ➢ Bohr model ➢ Energy levels, hydrogen spectrum	REVISION
Practical	➢ Half Deflection			
Learning Objectives	➢ To understand the phenomena based on scattering of light ➢ To understand the working of optical fibres and its applications. ➢ To understand the working of microscope and telescopes.			
Expected Learning Outcomes	Students would be able to: ➢ draw ray diagrams for image formation for different positions of the object in case of mirror & lens. ➢ Derive the equations for refraction at spherical surface. ➢ differentiate between reflecting and refracting type telescopes			
	Chalkboard, charts/power point presentations			

MONTH------OCTOBER

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
Ch-13: Nuclei	**REVISION** **P.B-1**	**P.B-1**	**P.B-1**	**Ch-13** ➢ **Composition and size of nucleus** ➢ **Mass-energy relation, mass defect** **binding energy per nucleon** ➢ **variation of B.E/ N with mass number**
Practical	➢ **Focal length of convex mirror** ➢ **Focal length of concave lens**			
Learning Objectives	➢ **To understand the conditions for observing sustained interference of light** ➢ **To comprehend the phenomenon of photoelectric emission** ➢ **To distinguish between particle nature and wave nature of light** ➢ **To understand properties of alpha particles, β-particles and gamma- rays**			
Expected Learning Outcomes	**Students would be able to:** ➢ **differentiate between interference and diffraction pattern** ➢ **represent the observations of photoelectric effect graphically** ➢ **explain the spectrum of H-atom in terms of energy level diagram** **explain graphical variation of nuclear binding energy/nucleon with the mass number**			
Teaching Aids	**Chalkboard, charts/power point presentations**			
Assessment	**class assignments, homework assignments**			

MONTH-------NOVEMBER

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
Ch-14: Electronic Devices **CH-13**	**CH-13** ➢ **Radioactivity nuclear fission, fusion** **Chap -14** ➢ **Intrinsic & Extrinsic semiconductor Semiconductor diode I-V Characteristics in forward and reverse bias** ➢ **Diode as a rectifier – half wave & full wave**	➢ **LED,** ➢ **Photodiode,** ➢ **Solar cell,** **Zener diode** **REVISION**	**REVISION**	**……..**
Practical	➢ **Angle of minimum deviation** ➢ **Refractive index of water using concave mirror**			
Learning Objectives	➢ **To differentiate conductors, insulators and semiconductors on the basis of their different energy band diagrams** ➢ **To differentiate p-type and n-type semiconductors**			
Expected Learning Outcomes	**Students would be able to:** ➢ **explain the I-V characteristics of a junction diode in forward and reverse bias** ➢ **explain the working of optoelectronic devices**			
Teaching Aids	**Chalkboard, charts/power point presentations**			
Assessment	**class assignments, homework assignments**			

MONTH--------DECEMBER

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
REVISION	REVISION P.B-2	P.B-2	P.B-2	ANSWERSHEET DISTRIBUTION
Practical	➢ Refractive index of water using convex lens and plane mirror ➢ Travelling Microscope to find refractive index of glass			
Learning Objectives	Revision of the difficult topics from the syllabus			
Expected Learning Outcomes	Students would be able to solve sample papers.			
Teaching Aids	Chalkboard, charts/power point presentations			
Assessment	class assignments, homework assignments			

MONTH------ JANUARY

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
Revision	……	Revision of the syllabus and experiments.	Revision of the syllabus and experiments BOARD PRACTICALS	BOARD PRACTICALS
Practical	Practice of experiments			
Learning Objectives	Revision of the difficult topics from the syllabus			
Expected Learning Outcomes	Students would be able to solve sample papers.			
Teaching Aids	Reference books, Sample papers			
Assessment	Pre-board Exams			

MONTH-----FEBRUARY

Content / Topic	1st & 2nd Week	3rd Week	4th Week	5th Week
Revision	**Revision of sample Papers and practice test Practice tests and clearing the doubts & queries.**	**Practice tests and clearing the doubts & queries.**	**Preparation**	**Preparation**
Learning Objectives	**To prepare the students for Board Exam.**			
Learning Outcomes	**Students would be thorough with the revised topics.**			
Assessment/ Activity	**Practice tests.**			
Teaching Aids /Resources	**Sample papers.**			