LESSON PLAN (2026)

Name of Assistant / Associate Professor : Amit kumar

Class and Section: B.Sc 2nd sem(Non Med)

Subject: Electicity and Magnetism

	Date	Topics
	week 1	Vector Background and Electric Field : Gradient of a scalar and its physical significance, Line, Surface and Volume integrals of a vector and their physical significance, Flux of a vector field, Divergence and curl of a vector and their physical significance
	Week 2	Gauss"s divergence theorem, Stoke"s theorem. Conservative nature of Electrostatic Field, Electrostatic Potential, Potential as line integral of field, potential difference Derivation of electric field E from potential as gradient. Derivation of Laplace and Poisson equations.
	Week 3	Electric flux, Gauss"s Law, Differential form of Gauss"s law and applications of Gauss"s law. Mechanical force of charged surface, Energy per unit volume.
	Week 4	Test and doubt of Unit I Magnetic Field: Biot-Savart law and its simple applications: straight wire and circular loop, Current Loop as a Magnetic Dipole and its Dipole Moment, Ampere"s Circuital Law and its applications to (1) Solenoid and (2) Toroid, properties of B: curl and divergence.
	Week 5	Magnetic Properties of Matter: Force on a dipole in an external field, Electric currents in Atoms, Electron spin and Magnetic moment, types of magnetic materials, Magnetization vector (M), Magnetic Intensity (H), Magnetic Susceptibility and permeability, Relation between B, H and M, Electronic theory of dia and paramagnetism.
	Week 6	Domain theory of ferromagnetism (Langevin"s theory), Cycle of Magnetization- B-H curve and hysteresis loop: Energy dissipation, Hysteresis loss and importance of Hysteresis Curve
	Week 7	Test and doubt of Unit II , Time varying electromagnetic fields: Electromagnetic induction, Faraday"s laws of induction and Lenz"s Law, Self-inductance, Mutual inductance, Energy stored in a Magnetic field, Derivation of Maxwell"s equations, Displacement current,
	Week 8	Derivation of Maxwell"s equations, Displacement current, Electromagnetic Waves: Electromagnetic waves, Transverse nature of electromagnetic wave
	Week 9	Maxwell"s equations in differential and integral form and their physical significance.Electromagnetic Waves: Electromagnetic waves, Transverse nature of
	week 10	energy transported by electromagnetic waves, Poynting vector, Poynting"s theorem. Propagation of Plane electromagnetic waves in free space & Dielectrics
	week 11	DC current Circuits: Electric current and current density, Electrical conductivity and Ohm"s law (Review), Kirchhoff"s laws for D.C. networks, Network theorems: Thevenin"s theorem, Norton theorem, Superposition theorem.
	Week 12	Alternating Current Circuits: A resonance circuit, Phasor, Complex Reactance and Impedance, Analysis for RL, RC and LC Circuits, Series LCR Circuit: (1) Resonance, (2) Power Dissipation (3) Quality Factor and (4) Band Width, Parallel LCR Circuit.
	Week 13	Test and doubt of Unit 4 , Revision and solution of previous year question paper

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LESSON PLAN (2026)

Name of Assistant / Associate Professor : Amit kumar

Class and Section: B.Sc 4th sem(Non Med)

Subject: Wave and optics

	Date	Topics
	week 1	Interference by Division of Wave front: Young‟s double slit experiment, Coherence, Conditions of interference, Fresnel's biprism and its applications to determine the wavelength of sodium light and thickness of a mica sheet, phase change on reflection.
	Week 2	Interference by Division of Amplitude: Plane parallel thin film, production of colors in thin films, classification of fringes in films, Interference due to transmitted light and reflected light
	Week 3	wedge shaped film, Newton's rings Test and revision of unit 1
	Week 4	DIFFRACTION : Fresnel‟s diffraction: Huygens-Fresnel‟s theory, Fresnel‟s assumptions, rectilinear propagation of light, diffraction at a straight edge, rectangular slit and diffraction at a circular aperature
	Week 5	Diffraction due to a narrow slit, diffraction due to a narrow wire. Fraunhoffer diffraction: Single slit diffraction, double slit diffraction
	Week 6	plane transmission grating spectrum, dispersive power of grating, limit of resolution, Rayleigh's criterion, resolving power of telescope and a grating
	Week 7	Test and revision of unit 2nd Unit POLARIZATION Polarization: Polarisation by reflection, refraction and scattering, Malus Law, Phenomenon of double refraction, Huygens‟s wave theory of double refraction (Normal and oblique incidence), Analysis of polarized Light. Nicol prism, Quarter wave plate and half wave plate
	Week 8	production and detection of (i) Plane polarized light (ii) Circularly polarized light and (iii) Elliptically polarized light. Optical activity,
	Week 9	Fresnel's theory of optical rotation, Specific rotation, Polarimeters (half shade and Biquartz) Test and problems of Unit 3rd
	week 10	Lasers: Basic concept of absorption and emission of radiations, amplification and population inversion; Main components of lasers: (i) Active Medium (ii) Pumping (iii) Optical Resonator;
	week 11	Properties of laser beam: Monochromaticity, Directionality, Intensity, Coherence (Spatial & Temporal coherence); Metastable state, Excitation mechanism and Types of Lasers (He-Ne Laser & Ruby Laser), Applications of Lasers
	Week 12	Lasers (He-Ne Laser & Ruby Laser), Applications of Lasers Fibre optics: Optical fibres and their properties, Principal of light propagation through a optical fibre, Acceptance angle and numerical aperture, Types of optical fibles,Single mode and multimode fibres, Advantages and Disadvantages of optical fibres, Applications of optical fibres, Fibre optic sensors: Fibre Bragg Grating
	Week 13	Revision and tests of Previous question papers

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LESSON PLAN (2026)

Name of Assistant / Associate Professor : Amit kumar

Class and Section: B.Sc 6th Sem

Subject: Electronics

Course Code B23-PHY-601

	Date	Topics
	week 1	Semi-Conductor Diodes:Semiconductors: Intrinsic and Extrinsic, P-N Junction diode and its V-I characteristics, Ideal Diode, Zener and Avalanche Breakdown, Zener Diode and its application as Voltage regulator
	Week 2	Photo-Diode, Light Emitting Diode, Solar Cell. P-N Junction as Half Wave and Full Wave Rectifiers: Efficiency and Ripple Factor, Comparison of Rectifiers
	Week 3	Clipping and Clamping circuits, Voltage Multiplier Circuits: Doubler and Tripler. Test and Numerical Practice of unit 1st
	Week 4	The Bipolar Transistor: The Bipolar Junction Transistor, Transistor Action and Working (PNP and NPN transistor), Transistor Circuit configurations: Common Base (CB), Common Emitter (CE) and Common Collector (CC) configurations.
	Week 5	Current Amplification Factors (α, β and γ) and Relationship between them, Comparison of characteristics of Transistor in different configurations. Amplifiers: CB, CC and CE amplifiers.
	Week 6	Transistor Biasing: selection of operating point, Load line analysis and operating point. Methods of Transistor biasing and stabilization (Fixed Base Bias, Bias with emitter resistor and voltage divider circuit), Test and Numerical Practice of unit 2nd Unit
	Week 7	Multistage Transistor amplifiers: RC Coupled amplifier (two-stage, concept of bandwidth, no derivation), Classification of amplifiers: Class A, B, AB and C amplifiers.
	Week 8	Feedback in Amplifiers: Principle, Types of feedback, voltage gain, Advantages of negative feedback: Stabilization of gain, reduction in frequency distortion
	Week 9	reduction in non-linear distortions, reduction in noise, Effect of negative feedback on Input impedance, output impedance and bandwidth, Emitter follower circuit. Test and Numerical Practice of unit 2nd Unit
	week 10	Oscillators: Oscillations: Damped and Undamped Oscillations, Oscillatory circuit, Principle of Oscillation, Condition for self-sustained oscillation: Barkhausen Criteria for sustained oscillations, Essentials of Transistor oscillator
	week 11	Selection of an Oscillator, Classification of oscillators, LC oscillators: Tuned collector, Tuned Base, Hartley Oscillator, Colpitt's Oscillator, RC oscillators: Phase Shift and Wein Bridge Oscillator.
	Week 12	revison and Doubt of all unit, Numerical problems of all units

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