

Lesson Plan

Name of the Assistant/ Associate Professor: Mr. JASVINDER

Class and Section: B.Sc. (I. Sem. I)

Subject: PHYSICS

Week	Date	Topics
1	August	Scalars and vectors, dot and cross product,
week 1		Triple vector product, scalar & vector fields
week 2		Differentiation of a vector
		Gradient of a scalar and its physical significance,
		Integration of a vector (line, surface & volume integral).
week 3		Gauss's divergence theorem and Stokes theorem, Derivation of field E from potential as gradient, derivation of Laplace and Poisson's eqn
2		Electric flux, Gauss's law and its application to spherical shell, uniformly charged infinite plane
week 4		Uniformity charged straight wire, mechanical force of charged surface
September		Energy per unit vol. Magnetic induction, magnetic flux, solenoidal nature of vector field of induction
week 1		
week 2		
3		week 3 Doubt classes
		week 4 Revision
October		Properties of B (i) $\nabla \cdot B = 0$ (ii) $\nabla \times B = \mu_0 J$,
week 1		Electronic theory of dia and para magnetism, Domain theory of ferromagnetism, cycle of magnetisation - Hysteresis (Energy dissipation, Hysteresis loss and importance of Hysteresis curve)
4		week 2
		week 3 Maxwell eqn and their derivations. Displacement current: vector and scalar potentials; boundary conditions.
		week 4 Propagation of electromagnetic wave (Basic idea, no derivation) Poynting vector and Poynting theorem
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		November
week 1		Revision of Unit - I, II, III
		Doubt Class
		week 2 Test

(BAM)

Lesson Plan

Name of the Assistant/ Associate Professor

MR. JASVINDER

Class and Section: BSC I (Sem II)

Subject: PHYSICS

Week	Date	Topics
1	January	Growth and Decay of current in a circuit with (a) capacitance and resistance (b) resistance and inductance (c) capacitance and inductance
week 2		(d) capacitance, resistance and inductance
week 3		AC circuit variables with (a) capacitance & resistance (b) resistance & inductance (c) capacitance & inductance
2	February	(d) capacitance and inductance, resistance
week 1		Series and parallel resonant circuit
week 2		Quality factor, energy bands in solids, intrinsic and extrinsic semiconductor, Hall effect
week 3		P-N junction diode and their V-I characteristics, Zener and avalanche breakdown, Resistance of a diode, LED
3	week 4	Photo conduction in semiconductor, photodiode, Solar cell, P-N junction half wave & full wave rectifier
March		Types of filter circuit, Zener diode as voltage regulator, simple regulated power supply
week 1		induction transistors, bipolar transistors
week 2		working of NPN & PNP, Transistor connections, constants of transistors
4	week 3	Transistor characteristics curves, advantages of C-B configuration, C.R.O, load line
April		Common base and common-emitter amplifier
week 1		common base and common-emitter transistor biasing, classification of amplifiers
week 2		R-C coupled amplifier, feed-back in amplifier
week 3		Advantage of negative feedback, emitter follower, oscillator, principle
5	week 4	Self sustained oscillation, Tuned collector common emitter oscillator, Hartley oscillator, Colpitt's oscillator

(JBM)

Lesson Plan

Name of the Assistant/ Associate Professor: MR. JASVINDER

Class and Section: BSc. II (Sem. III)

Subject: PHYSICS

Week	Date	Topics
1	July	
week 1		Computer programming: Computer organization, Binary representation, Flow charts, Algorithm development & their interpretations.
August week 1		FORTRAN Preliminaries, Integer & floating point arithmetic expression, built-in functions, executable and non-executable statements, input & output statements, format, IF, DO, Go To statements, Dimension arrays, statement function and function subprogram
week 2		
week 3		
week 4		Second law of thermodynamics, Carnot theorem, Absolute scale of temp, Absolute 0, Entropy, $dQ/T = dS$
2	September	
week 1		T-S diagram, Nernst heat law, Joule's free expansion
week 2		Joule Thomson effect, liquification of gases, Air pollution due to internal combustion engine
week 3		Derivation of Clausius - Clapeyron latent heat eqn, Phase diagram & triple point.
week 4		Development of Maxwell relations. Application of Maxwell relations in derivation of relations b/w Entropy.
3	October	
week 1		Specific heat and thermodynamic variables. Thermodynamic functions - Internal energy (U), Helmholtz function (F)
week 2		Enthalpy (H), Gibbs's free energy (G).
week 3		Revision
4	November	
week 4		Class Test
5	week 1	Revision of Unit - II
	week 2	Revision of Unit III

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Lesson Plan

Name of the Assistant/ Associate Professor: MR. JASVINDER

Class and Section: B.Sc. II (Sem-IV)

Subject: PHYSICS

Week	Date	Topics
1	January	
	week 3	Probability, some probability considerations, combinations possessing maximum probability, combinations possessing minimum probability, Phase space.
	week 4	Distribution of particles in 2 boxes, microstates and macrostates, Statistical fluctuations.
2	February	Constraints
	week 2	Accessible states, Thermodynamical probability
	week 3	Postulates of statistical physics, Division of phase space into cells
	week 4	Condition of eqm between two systems in thermal contact, β -Parameter, Entropy and probability.
3	March	week 1 Boltzmann's distribution law: Evaluation of A and B.
	week 2	Bose-Einstein statistics, Application of B-E statistics to Planck's radiation law.
	week 3	Bose-Einstein gas, Fermi-Dirac statistics.
	April week 1	M-B law as limiting case of B-E degeneracy and B-E condensation
4	week 2	F-D gas
	week 3	Electron gas in metals, zero point energy, specific heat of metals and its solution.
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Lesson Plan

Name of the Assistant/ Associate Professor: Mr. Jasvinder
 Class and Section: B.Sc. III (Sem. V.)
 Subject: PHYSICS

Week	Date	Topics
1	July week-1	Failure of CM Theory. Quantum theory of radiations, Photon. Photoelectric effect.
	August week-1	Einstein photoelectric eq ⁿ , Compton effect, Inadequacy of old quantum theory, de-Broglie hypothesis.
	week 2	Phase velocity, group velocity, Heisenberg principle
	week 3	Time-energy and angular momentum, position uncertainty, Uncertainty principle from de-Broglie wave
2	week 4	Gamma-ray microscope, e ⁻ diffraction from slit
	September week 1	Derivation of time dependent Schrodinger wave eq ⁿ , eigen values, eigen functions.
	week 2	Wave function, significance, Normalisation of wave function.
	week 3	operator, Solution of Schrodinger eq ⁿ for harmonic oscillator ground states and excited states.
3	October week 1	Application of Schrodinger eq ⁿ in the sol ⁿ of following one dimensional problems
	week 2	Free particles in 1-D box, Sol ⁿ of Schrodinger eq ⁿ , eigen functions, eigen values, nodes & Anti-nodes, Zero point energy
	week 3	Revision And Doubt classes
	week 4	Sessional Test
4	November week 1	Quantization of energy and momentum (i) one-dimensional potential barriers $E > V_0$.
	week 2	(Reflection & Transmission coefficient) $E < V_0$ (Reflection coefficient, penetration of leakage coefficient, penetration depth). Doubt taken class for exam.
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(Jasvinder)

Lesson Plan

Name of the Assistant/ Associate Professor.....MR. JASVINDER.....
 Class and Section: BSC III (Sem. VI)
 Subject: PHYSICS

Week	Date	Topics
1	January week 2	Nuclear mass and binding energy, systematic nuclear binding energy, nuclear stability, nuclear size, spin parity, statistics
	week 3	Magnetic dipole moment, quadrupole moment, Determination of charge by Bain Bridge & Jordan mass Spectrograph.
	week 4	Moseley law, Rutherford back scattering, Interaction of heavy charged particles, alpha disintegration and its theory, Energy loss.
2	February week 1	Energetics of alpha decay, range and straggling of α particles, Geiger Nuttal law, Introduction of light charged particles.
	week 3	origin of continuous beta spectrum, types of beta decay and energetics of β -decay, Energy loss, absorption of β -particles.
	week 4	Range of e^- , Interaction of gamma ray, Nature of gamma ray, Energetics of γ -ray, passage of gamma radiations through matter.
3	March week 1	e^- - positron annihilation, absorption of γ -ray, & its application. Nuclear reactions, Elastic scattering, Inelastic scattering
	week 2	Nuclear disintegration, photonuclear reaction, Radioactive capture, Direct rxn, Heavy ion reaction
	week 3	Spallation reaction, Conservation laws, Q-value and e_{th} threshold.
	April week 1	Nuclear reactors, General aspects of Reactor design, Nuclear fission and fusion reactors. Linear accelerator. Tandem accelerator.
	week 2	Cyclotron, Betatron accelerator, ionization chamber
5	week 3	Proportional counter, G.M counter, scintillation counter and semiconductor detector.

(J304)