Lesson Plan Session 2022-23 (Odd Semester) **Department** Physics

Month	Class M.Sc.(F)	Class B.Sc. II	Class B.Sc. III	Class B.Sc. III
	Paper Nuclear Physics	Paper Optics	Paper Nuclear Physics	Paper Physics Lab
August 2022				
Week 3	—	—	—	—
Week 4	—	—	—	—
September 2022				
Week 1	Introduction to Nuclear Physics Proton-Electron hypothesis.	Interference of Division of Wavefront Fresnel's Biprism	Properties of Nucleus Size, shape, Mass, Nuclear moments	To determine the diameter of thin wire using He-Ne Laser
Week 2	Neutron-proton hypo. Basic Nuclear properties. Moments & statistics	Determination of wavelength Determination of thickness of thin sheet	Proton-electron & neutron-proton hypothesis Rutherford's exp.	Program to find the product of 2 matrices
Week 3	Fundamental forces of nature. Binding Energy	Lloyd's mirror Applications of Lloyd's mirror	Binding Energy & stability of Nucleus	Using array, find average & standard deviation

Week 4	Isospin, Deuteron Problem Meson theory of Nuclear forces.	Diff. b/w Fresnel's Biprism & Lloyd mirror. Stoke's law.	Bain Bridge & Jordan Mass Spectrograph	Program to evaluate finite integral by simpsan's rule
October 2022				
Week 1	Weizsacher's semi-empirical mass formula & Mass difference	Interference by Division of Amplitude Thin film	Alpha disintegration & its theory, Energetics	Program to arrange marks in ascending order
Week 2	Liquid Drop model, Mass Parabolas	Plane parallel film Wedge shaped film.	Beta decay & neutrino hypothesis. Gamma decay	Program to arrange marks in descending order
Week 3	Shell model of nucleus Evidences & Assumptions	Newton's rings Determination of wavelength	Interaction of heavy & light charged particles	To demonstrate C.R.O.
Week 4	Spin Orbit Coupling Parabolic & Square well potentials.	Michaelsan's Interferometer & its applications.	Range & straggling Applications of γ-decay	Study of B-H curve
November 2022				
Week 1	Spontaneous α-decay & paradox	Huygen's Fresnel Theory, Fresnel's assumptions	Linear Accelerator Tandem & wave-Guide Acc.	Study of Hartley Oscillator
Week 2	Fermi Theory of β-decay & Selection Rules	Fresnel's half period zones, Zone plate	Cyclotron & Betatron Accelerators	Transistor as Voltage Amplifier in CB Conf.

Week 3	Parity Non-Conservation γ-ray emission selection Rules	Diffraction at a straight edge, rectangular slit.	Ionization chamber Proportional Counter	C.E. Configuration
Week 4	Types of Nuclear rxns, Q-value Nuclear fusion, Fission	Circular aperture Narrow slit Narrow Wire	G.M. Counter & Scintillation detector	Diameter of Lycopodium powder
December 2022				
Week 1	Elementary particles Conservation laws & symmetries	Fraunhoffer Diffra. N-slit diffraction Dispersive power	Nuclear reactions Conservation Laws Q-value of rxn	Resolving Power of Prism
Week 2	Quark structure of hadrons. CPT Theorem	Rayleigh's criterion, Resolving power of Telescope & Grating	Nuclear Reactors General aspects of Reactor design	Thickness of thin paper using air wedge.
Preparatory Days				

Dated 20-09-2022

Signature of Teacher

Lesson Plan Session 2022-23 (Odd Semester) **Department** Physics

Month	Class B.Sc.-I	Class B.Sc. Final	Class M.Sc. Final	Class B.Sc. I
	Paper Classical Mechanics	Paper Quantum & Lasers	Paper Classical Electrodynamics	Paper Physics Lab.
August 2022				
Week 3	Basics of classical Mechanics	overview, scale of Quantum physics, photoelectric effect, Compton effect	plasma introduction, Applications	Moment of Inertia of a flywheel.
Week 4	Mechanics of single particle.	de-Broglie hypothesis, uncertainity principle, Applications of U.P.	charged particle Dynamics in various fields.	Moment of Inertia of a given irregular body using torsion P.
September 2022				
Week 1	Thms. for a single particle. Motion.	Gamma Ray microscope, diffraction from a slit.	Theory of Rel. & special Th. of Rel. Spacetime.	Determination of 'g' with the help of a bar pendulum.
Week 2	Mechanics of N-particle system	Time dependent & time ind. Sch. wave Eqn.	4-vector, rel. & momentum,	To find Mod. of rigidity using maxwell's needle method.
Week 3	Thms of N-particle System	orthogonality & Normalization, wave fn. & Its significance	Rel. energy & Mom. Minkowski diagrams	To find the value of elastic const. of a given wire by Searle's method.

Week 4	Constraints & Constrained Motion.	Expectation values of dynamical quantities.	Relativistic motion of a charged particle in diff. $\vec{E}$ & $\vec{B}$ fields.	Determination of Surface tension by Jaeger's Method.
October 2022				
Week 1	Gen. Coordinates Transformation Eqns.	Free particle in 1-D Box.	covariant formulation of electrodynamics & four vectors in ED.	Determination of freq. using Sonometer & electromagnet.
Week 2	Generalized Displacement, vel. & Mom.	One dim. step pot. $E > V_0$.	four current density, four potential	To Draw F.B & R.B. ch. of a Semiconductor diode.
Week 3	Hamilton's variational principle, lagrange's Eqn.	one dim. step pot. $E < V_0$.	Covariant continuity Eqn., Maxwell Eqn. Tr. of EM fields.	voltage regulation char. of a zener diode.
Week 4	Linear H.O., Simple pendulum, Atwood's Machine	one dim. pot. barrier $E > V_0$ $E < V_0$.	Energy Mom tensor of EM fields & conservation laws.	To verify the inverse square law with the help of a photo voltaic cell.
November 2022				
Week 1	Reference frames, Inertial & Non Inertial F.O.R.	Absorption & emission of radiation	Lagrangian & Hamiltonian of charged particle in EM field	To study the ch. of a solar cell.
Week 2	Galilean Invariance and conservation laws.	Main features of laser light	Lienard Wiechart pot., field of charge in arbitrary motion & uniform motion.	To determine the freq. of A.C. ~~mains~~ circuit.

Week 3	M.M. Experiment, Lorentz transformation	Einstein's Coefficients Pumping, resonance cavity	Radiated power from an accelerated charge at low vel.	Revision of flywheel experiment.
Week 4	length contraction, time dilation twin paradox.	He-Ne lasers & Ruby laser	Larmour powers formula.	Revision of Bal pendulum Exp.
December 2022				
Week 1	rel. addition thm. variation of mass with vel.	optical properties of semiconductor, semiconductor laser.	Radiation from a charged particle with Lalthan rel. & acc.	Rev. of Maxwell's needle method. exp.
Week 2	Mass energy Equivalence	Applications of lasers	Radiation from a charged particle in a circular orbit.	Rev. of R.B. & F.B ch. Experiment.
Preparatory Days	Revision.	Revision	Revision	Revision.

17 Sept. 2022
Dated

Marwan
Signature of Teacher

Lesson Plan Session 2022-23 (Odd Semester) **Department** Physics.

Month	Class B.Sc. II	Class M.Sc (Final)	Class B.Sc. II	Class M.Sc. Final
	Paper Computer Programming & Thermodynamics	Paper Material Science-I	Paper Lab	Paper Lab (Mat. Sc-I)
August 2022				
Week 3	Basics of Computer organization, Binary and Decimal Conversions	Crystal Defects :- Zero dimensional & one Dimensional	To find Dispersive power using Spectrometer	To find the Dielectric Constant of Bakelite Plate.
Week 4	Stages of Program Development, Applications of fortran Program	Imperfections :- Surface & volume Defects	To find the Refractive Index of material of prism	Review of above Experiment & viva
September 2022				
Week 1	Fortran Preliminary including Source Code, Object Code, Compiler.	Slip planes and slip directions, Stacking faults	To print out all natural no's between a given limit	To Trace the B-H Curve, find the Retentivity and Energy loss
Week 2	Constants and variables with it's types.	Semiconductor basics :- Indirect & direct Band gap, Motion of e^- in band	To find the Maximum, Range, Minimum from given set.	Continue the above with Tracing on CRO & viva.
Week 3	If, Do and Goto Statements with Examples	Concept of Effective mass, Hall Effect	To find Roots of Quadratic Equation	To find Hall Coefficient using Hall Effect.

Week 4	Statement function & function Subprogram	Cyclotron Resonance for semiConductors & metals	To find the Area of circle	Continue with Hall Effect and it's Viva
October 2022				
Week 1	Thermodynamics-I, Laws of Thermo-dynamics	Hot Electrons & Gun Effect, Optical Absorption	To find the Area of a triangle	To find the Band Gap of SemiConductors.
Week 2	Carnot Theorem & Carnot Engine	Dielectrics:- Loss factor, Local field	To find Integr-ation by the Trapezoidal Rule	Continue with above for different sample.
Week 3	Entropy, it's Relation, T-S-Diagram	Types of Polarizability	To print Even/ odd numbers.	To find the Refractive Index of material
Week 4	Joule Thompson Effect and it's Derivation	Classification of ferroelectrics.	To study Ripple factor.	Continue with Second half of above Experiment
November 2022				
Week 1	Clausius latent heat Equation	Magnetism:- It's Definition & Types.	To Study Series Resonance	Review of Experiment with different groups
Week 2	Maxwell Thermo-dynamic Relation	Langevin's Theory of Diamagnetism	To Study Parallel Resonance	Viva Continues & Basic Queries.

Week 3	Applications of Maxwell Relation.	Paramagnetism & Curie Constant	To find Area of window using Sextant	Practice of Phy. Experiment
Week 4	Liquification of Gases.	Ferromagnetism	To Study Common Emitter	To find the dielectric Constant
December 2022				
Week 1	Thermodynamic function	Curie-Weiss law, Domain Theory	To Study Common Base.	Continue with above Exp.
Week 2	Derivation of Thermodynamic Relations	ferrites, Antiferro.	Newton Ring Experiment	To find mobility using Hall Effect
Preparatory Days	Applications of Program:- Even/odd Matrix	Ferromagnetic Domains.	Practice of fortran Programs	—

Dated 17/Sept/2022

Signature of Teacher

Tanya Mehta
Dept. of Physics