

<b>LESSON PLAN</b>		
<b>Name of Teacher : Dr. Manjeet Singh</b>		<b>Class: B. Sc. 1st Semester</b>
<b>Subject: Physics</b>		<b>Session: 2022-23</b>
		<b>Nomenclature of Paper: MECHANICS-I</b>
		<b>Paper Code: CPL-102</b>
<b>Week</b>	<b>Month &amp; Year</b>	<b>Topic</b>
1	22AUG-27 AUG 2022	Scalar and vector fields, Derivatives of a vector with respect to a parameter
2	29 AUG-03 SEP 2022	Gradient of a scalar field and its geometrical interpretation , Divergence and curl of a vector field, Laplacian operator
3	05 SEP-10 SEP 2022	Vector identities, Line, surface and volume integrals of Vector fields
4	12 SEP-17 SEP 2022	Flux of a vector field, Gauss's divergence theorem, Stokes Theorem and their applications
5	19 SEP -24 SEP 2022	Time derivative of vectors with examples , Concepts of cartesian, polar and spherical coordinates
6	27 SEP-01 OCT 2022	Motion in plane Polar Coordinates, velocity and acceleration in polar coordinates , Dynamics Using Polar Coordinates
7	03 OCT- 08 OCT 2022	Momentum, Conservation of momentum, Centre of mass, Centre of mass coordinates
8	10 OCT-15 OCT 2022	Motion of rockets , Work and energy, Conservation of energy
9	18 OCT -21 OCT 2022	Elastic and inelastic collisions between particles , Centre of Mass and Laboratory frames
10	27 OCT- 29 OCT 2022	Angular velocity and angular momentum , Moment of inertia and parallel and perpendicular axis theorem
11	04NOV-12NOV2022	Moment of inertia of (a) thin uniform wire (b) Thin rectangular sheet (c) Rectangular slab (d) ring (e) disc (f) spherical shell (g) solid sphere (h) hollow sphere,Torque , Conservation of angular momentum , Angular momentum as vector
12	14 NOV- 19 NOV 2022	Coriolis forces and its effect on motion
13	21 NOV- 26 NOV 2022	Basics properties of central forces, Two body problem equivalent to one body problem
14	28 NOV -03 DEC 2022	concept of reduced mass, Motion of a particle in a central force field
15	05 DEC- 10 DEC 2022	Hooke's law - Stress-strain diagram - Elastic moduli, Poisson's Ratio, Relation between four elastic constants
16	12 DEC - 17 DEC 2022	Bending moments, Bending of cantilever and centrally loaded beams
17	19 DEC 2022 ONWARDS	REVISION PRACTICE

<b>LESSON PLAN</b>		
<b>Name of Teacher:</b> Dr. Manjeet Singh		<b>Class:</b> B. Sc. 1st Semester
<b>Subject:</b> Physics		<b>Nomenclature of Paper:</b> Electricity and magnetism
		<b>Session:</b> 2022-23
		<b>Paper Code:</b> CPL-103
Week	Month & Year	Topic
1	16AUG-27 AUG 2022	Electrostatics: Electrostatic Field, Electric flux
2	29 AUG-03 SEP 2022	Gauss's theorem of electrostatics, Applications of Gauss theorem , Divergence and curl of electrostatic field and their physical significance
3	05 SEP-10 SEP 2022	Electric potential, Electric potential as line integral of electric field , Calculation of electric field from potential, Energy stored in electrostatic field per unit volume
4	12 SEP-17 SEP 2022	Application of Electrostatics: Laplace and Poisson's equations for the electrostatic field , Multi-pole expansion of potential due to arbitrary charge distribution
5	19 SEP -24 SEP 2022	Dielectric medium, Polarization , Bound charges in a polarized dielectric and their physical interpretation
6	27 SEP-01 OCT 2022	Electric displacement, Gauss's theorem in dielectrics , Parallel plate capacitor completely filled with dielectric
7	03 OCT- 08 OCT 2022	Susceptibility, Permittivity and dielectric constants and numericals
8	10 OCT-15 OCT 2022	Magnetism: Lorentz force law, Magnetic forces , Divergence and curl of magnetic field .
9	18 OCT -21 OCT 2022	Magnetostatics: BiotSavart's law & its applications (1) straight conductor (2) circular coil (3) solenoid carrying current,
10	27 OCT- 29 OCT 2022	Ampere's circuital law and it's applications for simple current configurations , Magnetic vector potential
11	04Nov-12 NOV 2022	Magnetization: The field of a magnetized object, bound currents, physical interpretation of bound currents.
12	14 NOV -19 NOV 2022	The Auxiliary field (H) ,Magnetic properties of materials, Permeability, Magnetic susceptibility, diamagnetism, paramagnetism and numericals
13	21 NOV- 26 NOV 2022	ferromagnetism, B-H Curve , Currie point
14	28 NOV -03 DEC 2022	Ampere's law for magnetized objects and practice test
15	05 DEC 2022 ONWARDS	Revisions and practice test

<b>LESSON PLAN</b>		
<b>Name of the Teacher:</b> Dr. Manjeet Singh		<b>Class:</b> BSc IIIrd Semester
<b>Subject:</b> Physics		<b>Nomenclature of Paper:</b> Heat & Thermodynamics
		<b>Session :</b> 2022-2023
		<b>Paper Code:</b> CPL-302
Week	Month & Year	Topic
1	16 AUG-20 AUG 2022	Zeroth and First Law of Thermodynamics: Extensive and intensive thermodynamic variables, Thermodynamic equilibrium, Zeroth law and Concept of Temperature
2	22 AUG-27AUG 2022	Work and heat, State functions, First law of thermodynamics, Internal energy, Applications of first law.
3	29 AUG-03 SEP 2022	General relation between Cp and Cv, Workdone during isothermal and adiabatic Processes.
4	05 SEP-10 SEP 2022	Second Law of Thermodynamics: Reversible and Irreversible process with examples, Conversion of Workinto Heat and Heat into Work, Heat Engines.
5	12 SEP-17 SEP 2022	Carnot's Cycle, Carnot engine & efficiency, Refrigerator & Coefficient of performance.
6	19 SEP -24 SEP 2022	2nd Law of Thermodynamics: Kelvin-Planck and Clausius Statements and their Equivalence, Carnot's Theorem

7	27 SEP-01 OCT 2022	Entropy and Third law of Thermodynamics: Concept of entropy, Clausius theorem, ClausiusInequality,Second Law of Thermodynamics in terms of Entropy
8	03 OCT- 08 OCT 2022	Entropy of a Perfect Gas and Universe,Entropy Changes in Reversible and Irreversible Processes, Principle of Increase of Entropy, Third Law of Thermodynamics
9	10 OCT-15 OCT 2022	Revision Practice
10	18 OCT -21 OCT 2022	T-S Diagrams, Phase Change, Classification of Phase Changes
11	27 OCT- 29 OCT 2022	Thermodynamic Potentials :- Extensive and Intensive Thermodynamic Variables, Internal Energy, Enthalpy,Gibbs, Helmholtz function and Their definitions
12	04NOV-12 NOV 2022	Properties and Applications : Maxwell's Thermodynamic Relations: - Derivations of Maxwell's Relations, Applications of Maxwell's Relations: (1) Clausius Clapeyron equation (2) Values of CP – CV, (3) Energy equations (4) Change of temperature during adiabatic process.
13	14 NOV- 19 NOV 2022	Real gases: - Behaviour of Real Gases, Deviations from the Ideal Gas Equation. The Virial Equation, Critical .
14	21 NOV- 26 NOV 2022	Constants. Continuity of Liquid and Gaseous State. Vapour and Gas, Boyle Temperature, Van der Waal's Equation of State for Real Gases. Values of Critical Constants.
15	28 NOV -03 DEC 2022	Law of Corresponding States. Comparison with Experimental Curves, p-V Diagrams, Joule's Experiment, Free Adiabatic Expansion of a Perfect Gas
16	05 DEC 2022ONWARDS	Revision practice

<b>LESSON PLAN</b>		
<b>Name of Teacher: Dr. Manjeet Singh</b>		<b>Class: B. Sc. 3rd Semester</b>
<b>Subject: Physics</b>		<b>Session: 2022-23</b>
		<b>Nomenclature of Paper: Semiconductor Devices</b>
		<b>Paper Code: CPL-303</b>
Week.	Month & Year	Topic
1	16AUG-20 AUG 2022	Semiconductor Diodes and applications: p and n type semiconductors. Barrier Formation in PN Junction Diode, Drift and Diffusion Currents. Current flow mechanism in Forward and Reverse biased PN Junction Diodes mentioning the roles of drift and diffusion currents.
2	22 AUG-27AUG 2022	V-I characteristics of PN Junction Diode, Static and Dynamic Resistance, Applications of PN Junction Diode as Half-wave rectifier, Full-wave Rectifier (both center-tapped and bridge FWR)
3	29 AUG-03 SEP 2022	Calculation of ripple factor and rectification efficiency, Zener Diode, Applications of Zener Diode as DC voltage Regulator, Principle and structure of LEDs, Photodiode, Solar Cell
4	05 SEP-10 SEP 2022	Semiconductor Transistors: Bipolar Junction transistors: n-p-n and p-n-p Transistors, Biasing of transistors in Active, Cutoff, and Saturation Modes,
5	12 SEP-17 SEP 2022	Circuit configurations of CB ,CE and CC transistors,
6	19 SEP -24 SEP 2022	characteristics of transistors in CB,CE and CC.
7	27 SEP-01 OCT 2022	Current gains $\alpha$ and $\beta$ . Relations between $\alpha$ and $\beta$ , Current gain and power gain, DC Load line and Q- point,
8	03 OCT- 08 OCT 2022	Amplifiers and Their Biasing: Voltage Divider Bias Circuit for CE Amplifier.
9	10 OCT-15 OCT 2022	Bias stabilization, Class-A, B&C amplifiers, RC coupled amplifiers and its frequency response.
10	18 OCT -21 OCT 2022	Feedback in amplifiers, positive and negative feedback in amplifiers, Advantages of negative feedback in amplifiers.

11	27OCT- 29 OCT 2022	Sinusoidal Oscillators: Barkhausen's Criterion for Self-sustained oscillations, Circuit and working of Hartley oscillator
12	04 NOV 2022-12 NOV 2022	Circuit and working of Colpit's oscillator, Uses of oscillator. Operational Amplifiers (Black Box approach): Qualitative idea of differential amplifier, CMRR, Characteristics of an Ideal and Practical Op-Amp (IC 741)
14	14 NOV- 19 NOV 2022	Open-loop & Closed-loop Gain. concept of Virtual ground, Applications of Op-Amps as Inverting Amplifier
15	21 NOV- 26 NOV 2022	Noninverting Amplifier, Differentiator, Integrator.
16	28 NOV -03 DEC 2022	Revision Practice
17	05 DEC 2022 ONWARDS	Revision Practice

<b>LESSON PLAN</b>		
<b>Name of the Teacher: Dr. Manjeet Singh</b>		<b>Class: B. Sc. 5 th Semester</b>
<b>Subject: Physics</b>		<b>Session: 2022 -23</b>
		<b>Nomenclature of Paper: Elements of Modern Physics</b>
		<b>Paper Code: CPL-501</b>
<b>Week</b>	<b>Month &amp; Year</b>	<b>Topic</b>
1	16AUG-20 AUG 2022	Properties of Thermal Radiation, Spectral Distribution of Blackbody Radiation,
2	22 AUG-27AUG 2022	Kirchhoff's Law, Stefan-Boltzmann Law and Wien's Distribution and Displacement law, Rayleigh-Jean's Law,
3	29 AUG-03 SEP 2022	Photo-electric effect and Compton scattering; Pair production and annihilation,
4	05 SEP-10 SEP 2022	Bremsstrahlung effect, Cherenkov radiation, Production of X-rays.
5	12 SEP-17 SEP 2022	Drawbacks of Rutherford model, Bohr atomic model; Bohr's quantization rule and atomic stability;
6	19 SEP -24 SEP 2022	Calculation of energy levels for hydrogen like atoms and their spectra, Effect of nuclear mass on spectra, Correspondence principle.
7	27 SEP-01 OCT 2022	Frank-Hertz, Davison and Germer experiment, phase velocity, group velocity and their relations
8	03 OCT- 08 OCT 2022	Heisenberg Uncertainty Principle; Estimating minimum energy of a confined particle using uncertainty principle;
9	10 OCT-15 OCT 2022	Revision Practice
10	18 OCT -21 OCT 2022	Energy-time uncertainty principle, Properties of wave-function, Physical Interpretation of wave-function
11	27 OCT- 29 OCT 2022	Schrodinger Equation: Momentum and Energy operators, Stationary states, Physical interpretation of a wave function
12	04 NOV 2022-12 NOV 2022	Stationary states, Physical interpretation of a wave function probabilities and normalization, Schrodinger Equation, Particle in 1-dimension infinite potential well.
13	14 NOV- 19 NOV 2022	Population inversion; Resonance cavity; laser pumping; threshold condition for laser emission; Einstein's Co-efficient,
14	21 NOV- 26 NOV 2022	3 level and 4 level system, Basic principle and working of He-Ne LASER
15	28 NOV -03 DEC 2022	Revision Practice
16	05 DEC 2022 Onward	Revision Practice

<b>Lesson Plan</b>		
<b>Name of Teacher:- Dr. Manjeet Singh</b>		<b>Class: B. Sc. 5 th Semester</b>
<b>Subject: Physics</b>		<b>Session: 2022-23</b>
		<b>Nomenclature of Paper : Nuclear Physics</b>
		<b>Paper Code: CPL-502</b>
<b>Week</b>	<b>Month &amp; Year</b>	<b>Topic</b>
1	16AUG-20 AUG 2022	Nuclear composition, Nuclear properties; Nuclear mass, size,spin, parity, magnetic dipole moment,quadruple moment (shape concept)
2	22 AUG-27AUG 2022	Binding energy, nuclear binding energy curve, Radioactivity: Law of Radioactive Decay, Half-life, Radioactive Series
3	29 AUG-03 SEP 2022	$\alpha$ -decay: Range of $\alpha$ -particles, GeigerNuttal law and $\alpha$ -particle Spectra, $\beta$ -decay, Energy Spectra and Neutrino Hypothesis, $\gamma$ -decay : Origin of $\gamma$ -ray
4	05 SEP-10 SEP 2022	Similarity between nuclear matter and liquid drop, Liquid Drop Model, Semi-classical Mass formula, Limitations of liquid drop model
5	12 SEP-17 SEP 2022	Magic number, Experimental signature of shell structure in nuclei
6	19 SEP -24 SEP 2022	, Nuclear Shell Model (qualitative only) and its application, Meson Theory of Nuclear Forces.
7	27 SEP-01 OCT 2022	Interaction of heavy charged particles(Proton & Alpha Particle, Energy loss of heavy charged particle, Range of alpha particles
8	03 OCT- 08 OCT 2022	Interaction of light charged particle (Betaparticle), Interaction of Gamma Ray
9	10 OCT-15 OCT 2022	Revision Practice
10	18 OCT -21 OCT 2022	Passage of Gamma radiations through matter(Photoelectric, Compton and pair production effect), Absorption of Gamma rays
11	27 OCT- 29 OCT 2022	Types of nuclear reactions, Concept of reaction cross-section, Concept of Compound and Direct Reactions.
12	04 NOV 2022 -12 NOV 2022	Gas filled counters; Ionization chamber, proportional counter, G.M. Counter (detailed study), Basic principle of scintillation counter and semiconductor detectors.
13	14 NOV- 19 NOV 2022	General aspects of reactor design, Nuclear fission reactor (Principle, construction, working and use)
14	21 NOV- 26 NOV 2022	Particle Accelerator facilities in India, Linear Accelerator, Cyclotron, Synchrotron
15	28 NOV -03 DEC 2022	Revision Practice
16	05 DEC 2022 ONWARD	<b>Revision Practice</b>