<u>**Lesson Plan**</u>

Name: **Dr. Mukesh Chander (Ext. Lecturer Physics)**

Class and Section: **B.Sc.-1ˢᵗ (2ⁿᵈ Sem.)**

Subject: **Physics**

Paper 2

Apr 2022	Unit I: Semiconductors	Energy bands in solids, Intrinsic and extrinsic semiconductors, carrier mobility and electrical resistivity of semiconductors, Hall effect, p-n junction diode and their characteristics, Zener and Avalanche breakdown, Zener diode, Zener diode as a voltage regulator. Light emitting diodes (LED), Photoconduction in semiconductors, Photodiode, Solar Cell, p-n junction as a rectifier, half wave and full wave rectifiers (with derivation) filters (series inductor, shunt capacitance L-section or choke, π and R.C. filter circuits).
Apr 2022	Unit 2: Transistors	Junction transistors, Working of NPN and PNP transistors, Three configurations of transistor (C-B, C-E, C-C modes),Common base, common emitter and common collector characteristics of transistor, Constants of a transistor and their relation, Advantages and disadvantages of C-E configuration. D.C. load line Transistor biasing; various methods of transistor biasing and stabilization.
Apr 2022	Unit 3: Transistor Amplifiers	introduction Amplifiers, Classification of amplifiers common base and common emitter amplifiers, coupling of amplifiers various methods of coupling, Resistance- Capacitance (RC) coupled amplifier (two stage concept of band width, no derivation), Feedback in amplifiers advantages of negative feedback, emitter follower, distortion in amplifiers.
May 2022	Unit 4: Oscillators	introduction Oscillators, Principle of oscillation classification of oscillators Condition for self sustained oscillation: Barkhausen criterion for oscillation Tuned collector common emitter oscillator Hartley oscillator C.R.O. Principle and working

Paper 1

May 2022	Unit I:	Moment of inertia Rotation of rigid body, Moment of inertial, Torque, angular momentum, Kinetic Energy of rotation Theorem of perpendicular and parallel axes (with proof), Moment of inertia of solid sphere, hollow sphere, spherical shell, solid cylinder, hollow cylinder and solid bar of rectangular cross–section, Fly wheel, Moment of inertia of an irregular body, Acceleration of a body rolling down on an inclined plane.
May 2022	Unit 2:	Elasticity, Stress and Strain, Hook's law, Elastic constant and their relations, Poisson's ratio, Torsion of cylinder and twisting couple, Determination of coefficient of modulus of rigidity for the material of wire by Maxwell's needle, Bending of beam (Bending moment and its magnitude), Cantilever and Centrally loaded beam, Determination of Young's modulus for the material of the beam and Elastic constants for the material of the wire by Searle's method.
Jun 2022	Unit 3:	Assumption of Kinetic theory of gases, pressure of an ideal gas (with derivation) Kinetic interpretation of Temperature, Ideal Gas equation, Degree of freedom Law of equipartition of energy and its application for specific heat of gas Real gases, Vander wall's equation, Brownian motion(Qualitative)
Jun2022	Unit 4:	Introduction Maxwell's distribution of speed and velocities (derivation required) Experimental verification of Maxwell's law of speed distribution: most probable speed Average and r.m.s. speed, Mean free path Transport of energy and momentum, Diffusion of gases.