Teaching Plan(Session 2020-21)

Class- B.Sc 1 Teacher Name-Balwinder Kaur Subject-Physics

Period No. 2 Name of Paper -Vibrations and waves,Elecricity and Magnetism

Sr. No.	Date	Topics to be covered
1.	03/09/2020-20/09/2020	Simple harmonic motion, energy of a Simple Harmonic Oscillation (SHO). Compound pendulum, Electrical oscillations. Transverse vibrations of a mass on a string, composition of two perpendicular SHM of same period and of period ratio 1 : 2. Anharmonic oscillations.
2.	21/09/2020-10/10/2020	Decay of free vibrations due to damping. Differential equation of motion, types of damping. Determination of damping co-efficient-logarithmic decrement, relaxation time and Q-Factor. Electromagnetic damping (Electrical oscillator).
3.	11/10/2020-30/10/2020	Differential equation for forced mechanical and electrical oscillators. Transient and steady state oscillation. Displacement and velocity variation with driving force frequency, variation of phase with frequency resonance
4.	01/11/2020-20/11/2020	Power supplied to an oscillator and its variation with frequency, Q value of a forced oscillator and band width. Q-value as an amplication factor of low frequency response
5.	21/11/2020-26/11/2020	MST Exams
6.	26/11/2020-10/12/2020	Basic ideas of Vector Calculus, Gradient, Divergence, curl and their physical significance, Laplacian in rectangular. Coulomb's Law for point charges and continuous distribution of charges.
7.	11/12/2020-24/12/2020	Electric field due to dipole line charge and sheet of charge. Electric flux. Gauss's Law and its applications. Gauss's divergence theorem and differential form of Gauss's Law. Green's theorem.
8.	15/03/2021-30/03/2021	Stiffness coupled oscillators. Normal co-ordinates and normal modes of vibration. Inductance coupling of electrical oscillators, Types of waves, Wave equation (transverse) and its solution, The string as a forced oscillator, Characteristic impedance of a string. Impedance matching. Reflection and transmission of energy, Reflection and Transmission Energy, Reflection and transmission of string, wave and group velocity. Standing waves on a string of fixed length. Energy of vibrating energy string,wave and group velocity.
9.	1/04/2021-12/04/2021	Physical interpretation of Maxwell's equations. Electromagnetic waves and wave equation in a medium having finite permeability and permittvity but with conductivity $\sigma=0$. Pointing vector. Impedance of a dielectric to EM waves, EM waves in a conducting medium and skin depth. EM waves velocity in a conductor an anomalous dispersion. Response of a conducting medium of EM waves. Reflection and transmission of EM waves at a boundary of

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		two dielectric media for normal incidence. Reflection of EM waves from the surface of a conductor at normal incidence.
10.	13/04/2021-17/04/2021	MST Exams
11.	18/04/2021-28/04/2021	Current and current density, equation of continuity. Microscopic form of Ohm's Law.(J=oE) and conductivity. Failure of Ohm;s Law. Invariance of charge. E in different frames of reference. Field of a point charge moving with constant velocity. Interaction between moving charges and force between parallel currents. Behaviour of various substances in magnetic field. Definition of M and H and their relation to free and boundcurrents. Permeability and susceptibilities and their inter-relationship. Orbital motion of electrons and diamagnetism. Electron spin and paramagnetism. Ferromagnetism. Domain theory of Ferromagnetism. Hysteresis Loss. Magnetisation curve. Ferrites..