Ch. Bansi Lal Govt. College for Women, Tosham (Bhiwani)

Lesson Plan (2020-21)

Name of the Assistant Professor: Dr. REKHA BAI

Class: B.Sc. 1st (1st Sem) **Subject - Physics**

Month	Topics
November 2020	**Paper – II (Electricity and Magnetism)** **Unit 1st** – Introduction, Introduction to Scalars and Vectors, Dot Product, Cross Product, Triple Vector Product, Scalar and Vector fields, Differentiation of a vector, Gradient of a scalar & its Physical Significance, Integration of a vector (Line, Surface and Volume Integral and their Physical Significance), Importance of Gradient, Divergence & its Physical Significance, and Some Numerical Problems, Gauss's Divergence Theorem, Curl and its Physical Significance with Numericals, Comparison of Divergence, Curl & Gradient, and Some important relations, Stoke's Theorem, Test of 1st Chapter, Derivation of field E from Potential as Gradient, Electric flux, Derivation of Laplace and Poisson equations, Gauss's Law and Application to Uniformly Charged Straight wire, Application to Spherical shell, Uniformly charged infinite plane, Mechanical force of charged surface, Energy per unit Volume, and Some Numerical Problems.
December 2020	**Unit 2nd -** Magnetic Induction, Magnetic Force on Moving Charge, Solenoidal nature of Vector field of Induction, Properties of B, Electronic Theory of Dia & Paramagnetism, Domain theory of Ferromagnetism (Langevin's Theory), Cycle of Magnetisation – Hysteresis loop, Difference b/w Soft and Hard Magnetic Materials, **Unit 3rd** - Maxwell Equations & their Derivation, Displacement Current, Vector and Scalar Potentials, Boundary conditions at Interface between two different media, Propagation of EM wave, Poynting Vector & Poynting Theorem.
January 2021	**Paper – I (Mechanics)** **Unit 1st** – Introduction, Mechanics of Single and System of Particles, Conservation Laws of Linear Momentum, Angular Momentum and Mechanical Energy, Centre of Mass and Equation of Motion, Constrained Motion, Degree of Freedom. **Unit 2nd –** Generalised Coordinates, Displacement, Velocity, Acceleration, Momentum, Force and Potential, Hamilton's Variational Principle.
February 2021	**Unit 2nd –** Lagrange's Equation of Motion from Hamilton's Principle, Linear Harmonic Oscillator, Simple Pendulum, Atwood's Machine. **Unit 3rd** – Rotation of Rigid Body, Moment of Inertia, Torque, Angular Momentum, Kinetic Energy of Rotation, Perpendicular and Parallel Axis Theorem, Moment of Inertia of Solid Sphere, Hollow Sphere, Spherical Shell, Solid Cylinder, Hollow Cylinder and Solid Rectangular Bar, Acceleration of a Body Rolling Down on an Inclined Plane, Some Problems and Revision.

Ch. Bansi Lal Govt. College for Women, Tosham (Bhiwani)

Lesson Plan (2020-21)

Name of the Assistant/Associate Professor: Praveen Kumar

Class: B.Sc. 2nd (3rd Sem) Subject: **Physics**

Month	Topics
October 2020	**Paper – II (Thermodynamics and computer programming)** **Unit 1st** – Computer Programming: Computer organization, Binary representation, Algorithm development, flow charts and their interpretation. Fortran Preliminaries; Integer and floating-point arithmetic expression, built in functions executable and non-executable statements, input and output statements, Formats, I.F. DO and GO TO statements, Dimension arrays statement function and function subprogram.
November 2020	**Unit 2nd -** Thermodynamics-I: Second law of thermodynamics, Carnot theorem, Absolute scale of temperature, Absolute Zero, Entropy, show that dQ/T=O, T-S diagram Nernst heat law, Joule's free expansion, Joule Thomson (Porous plug) experiment. Joule - Thomson effect. Liquefication of gases. Air pollution due to internal combustion Engine.
December 2020	Thermodynamics-II: Derivation of Clausius - Claperyron latent heat equation. Phase diagram and triple point of a substance. Development of Maxwell thermodynamical relations. Application of Maxwell relations in the derivation of relations between entropy, specific heats and thermodynamic variables. Thermodynamic functions: Internal energy (U), Helmholtz function (F), Enthalpy (H), Gibb's function (G) and the relations between them.
January 2021	**Paper – I (Optics)** **Unit 1st** – Fourier Analysis and Fourier Transforms: Speed of transverse waves on a uniform string. Speed of longitudinal waves in a fluid, superposition of waves (physical idea), Fourier Analysis of complex waves and its application for the solution of triangular and rectangular waves, half and full wave rectifier out puts. Fourier transforms and its properties. Application of fourier transform to following function. (I) (II) f(x) = f(x) = e-x2/2 I [x] a **Unit 2nd –** Geometrical Optics: Matrix methods in paraxial optics, effects of translation and refraction, derivation of thin lens and thick lens formulae, unit plane, nodal planes, system of thin lenses, Chromatic, spherical coma, astigmatism and distortion aberrations and their remedies. Physical Optics
February 2021	**Unit 3:** Interference: Interference by Division of Wavefront: Fresnel's Biprism and its applications to determination of wave length of sodium light and thickness of a mica sheet, Lioyd's mirror, phase change on reflection.