LESSON PLAN.
Professor:SNEHLATA
BSc. 4TH SEM. (PHYSICS)

Name of assistant

From — [JAN 2025 TO APRIL2025]

PAPER 1—
MECHANICS

STATISTICAL

• **(1JAN- 4JAN)---** Statistical basis, probability and frequency , permutation and combinations, distribution of a n distinguishable and indistinguishable particles in 2 boxes, Macro state and Micro state. Thermodynamic property fluctuations and their dependence on n(narrowing of probability distribution with increasing n).

• **(15JAN-18JAN)------** Constraints of a system, statics and dynamic system. Most probable state, concept of a cell in compartment , concept of Ensembles and type of Ensembles. Universal law in statistics :fundamental postulates of statistical mechanics, density of quantum states of energy of particle. Entropy and thermodynamics probability ,statistical interpretation of second law of thermodynamics , Partition function and relation with Thermodynamics Quantities.

• **(22JAN-25JAN)------** Maxwell Boltzmann Law of distribution of particle speed in an ideal gas and its experimental verification ,mean r.m.s. and most probable speed, molecular collision, mean free path, collision probability, estimates of mean free path.

• **(29JAN-1FEB)** ------Transport phenomenon in ideal gases:1.Viscocity, 2. Thermal conductivity ,3 diffusion, Brownian motion and its significance .equipartition law:Degree of freedom. Low of equipartition of energy and its application to specific heat of monochromatic and diatomic gases and its limitations.

• **(5FEB-8FEB)** ------- Phase space and applications to one dimensions harmonic oscillator and free particle, Division of phase space into cells.Basic approach in three stastics.

• **(12FEB-15FEB)----** Maxwell boltzman distribution law, Thermodynamic function of finite number of energy levels , Negative temperature ,thermodynamic functions of an ideal gas ,Classical Entropy.

• **(19FEB-22FEB)------**Thermodynamic functions of a completely degenerate Bose gas, Bose Einstein condensation,Properties of liquid helium , radiation as photon gas.

• **(26FEB-1MARCH)------** Bose derivation of Planck's law, fermi dirac statistics ,fermi Dirac. distribution law , thermodynamic function of an ideal completely degenerate.

PAPER -2

OPTICS-2

●**(5-8 MARCH)**----- Colour of thin films Wedge shaped film, Newton's ring , interferometers.Michaelson's interferometer and its application to – Standardisation of a metre.,

●**(19-22March)**----- Determination of wavelength, Fresonel's diffraction,Fresnal's half period zones, zone plate, diffraction at a straight edge, rectangular slit and circular aperture.

●**(26-29 March)**------- One slit diffraction, two slit diffraction, N slit diffraction, Plane transmission grating spectrum, Disperse power of a grating.

●**(2-5 APRIL)**------- Resolving power of telescope and grating, Polarization and double retraction, polarization by reflection, polarization by scattering, Malus law.

●**(9-12 APRIL)**------- Phenomenon of double refraction, Huygen's wave Theory of Doble refraction, Analysis of polarised light, Nicol prism, Quarter wave plate and half wave plate.

●**(16-19 APRIL)**------ Production and detection of **1.**plane polarised light. **2.** Circularly polarised light **3.** elliptically polarised light ,Optical cavity, Fresnel's theory of rotation, specific rotation. Polarimeters(half shade and Biquartz).

●**FROM 22 APRIL**------   REVISION AND.

                         TESTS........

                         CONTINUE.....