Syllabus

Paper: A STATISTICAL PHYSICS AND THERMODYNAMICS-I

Semester-III (PANJAB UNIVERSITY)

UNIT-I

Basic ideas of Statistical Physics, Scope of Statistical Physics, basic ideas about probability, distribution of four distinguishable particles in two compartments of equal size. Concept of macrostates, microstates, thermodynamic probability, effects of constraints on the system, distribution of n particles in two compartments, deviation from the state of maximum probability, equilibrium state of dynamic system, distribution of distinguishable n particles in k compartments of unequal sizes.

UNIT-II

Phase space and its division into elementary cells, three kinds of statistics. The basic approach in the three statistics. Maxwell-Boltzman statistics applied to an ideal gas in equilibrium, experimental verification of Maxwell-Boltzman's law of distribution of molecular speeds.

Need of quantum statistics--B.E. statistics, derivation of Planck's law of radiation, deduction of Wien's displacement law and Stefan's law from Planck's law, F.D. statistics, Comparison of M.B., B.E. and F.D. statistics.