

COURSE – 2 Statistical Mechanics and Quantum Mechanics
Paper code PHY502

Credits - 4

BLOCK – I : INTRODUCTION TO STATISTICAL MECHANICS

- Unit –1 : Statistical Mechanics – Thermo dynamics
- Unit –2 : Ensembles
- Unit –3 : Density Distribution – Liouville’s Theorem
- Unit –4 : Postulates of classical Statistical Mechanics
- Unit –5 : Micro canonical Ensemble
- Unit –6 : Maxwell – Boltzmann Statistics
- Unit –7 : Canonical and grand canonical ensembles

BLOCK – II QUANTUM STATISTICS

- Unit –8 : Postulates of Quantum Statistical Mechanics
- Unit –9 : Quantum Statistics – Be and F-D Statistics

BLOCK – III PRINCIPLES OF QUANTUM MECHANICS

- Unit –10 : Birth of quantum mechanics
- Unit –11 : Eigen values and eigen functions
- Unit –12 : Dirac’s bra and ket vectors
- Unit –13 : Eigen functions and uncertainty principle

BLOCK – IV SCHRODINGER EQUATIONS AND ANGULAR MOMENTUM THEORY

- Unit –14 : Schrodinger wave equation
- Unit –15 : Application of Schrodinger’s equation to one dimensional Problem
- Unit –16 : Angular momentum
- Unit –17 : Application of schrodinger’s equation to three Dimensional problems
- Unit –18 : Hydrogen atom
- Unit –19 : Spin angular momentum
- Unit –20 : Addition angular momenta

BLOCK – V APPROXIMATION METHODS

- Unit –21 : Time independent perturbation theory
- Unit –22 : Variation method
- Unit –23 : Time dependent perturbation theory

BLOCK – VI RELATIVISTIC QUANTUM MECHANICS

- Unit –24 : Klein Gordon relativistic equation and applications
- Unit –25 : Dirac’s relativistic equation and applications