ENGINEERING PHYSICS – II
AS-202

L: 2 T: 1 P: 0 Cr: 3

COURSE OUTCOMES

1. Learning to apply relativity in describing physics of motion
2. Appreciation of the importance of lasers and grasp the physical basis
3. Learn the calculation methods of quantum theory
4. Apply quantum ideas to explain behaviour of materials
5. Appreciation of physics conservation laws and be acquainted with new areas

SYLLABUS

UNIT-1 : RELATIVITY

Difficulties of classical theory, Michelson Morley Experiment, Galilean transformations, postulates of special theory of relativity, Lorentz transformations, Einstein velocity addition theorem, time dilation, length contraction, relativistic mass, momentum and energy, natural units.

UNIT-II : LASERS

Principle of laser action, Einstein's transition probabilities, lifetime of transitions, rate equation for atomic transition, He-Ne laser, general characteristics of lasers, applications of lasers.

UNIT-III : QUANTUM THEORY

Schrodinger equation, time dependent and time independent forms, wave function, probabilistic interpretation, one-dimensional problems, particle in a box, elementary treatment of harmonic oscillator.

UNIT-IV: PHYSICS OF MATERIALS

Bose Einstein statistics, Fermi Dirac statistics, intrinsic and extrinsic semi conductors, carrier concentration, energy gap, semiconductor devices, Electrical properties of semiconductors.

UNIT-V: FRONTIERS OF PHYSICS

Basic interactions, symmetry and conservation laws, elementary particles and their classification, last Nobel prize in Physics, its back ground, significance and directions of future development.

Text Books:

1. Halliday, Resnick: Physics
2. Mani, Mehta: Modern Physics
3. Beiser: Modern Physics
4. Silvfast: Lasers

Reference Books:

1. Resnick: Relativity
2. Ghatak: Optics
3. Garcia, Damask: Physics for computer science students