

PH-112 Applied Physics

Electrostatics and Magnetism: Coulombs Law, Electrostatic potential energy of discrete charges, Continuous charge distribution, Gauss's Law, Electric field around conductors, Magnetic fields, Magnetic force on current, Hall effect, Biot-Savart Law, Ampere's Law, Fields of rings and coils, Magnetic dipole. Diamagnetism, Para magnetism and Ferromagnetism.

Semiconductor Physics: Energy levels in a semiconductor, Hole concept, Intrinsic and Extrinsic regions, Law of Mass Action, P-N junction, Transistor

Waves and Oscillations: Simple Harmonic Oscillator, Damped Harmonic Oscillation, Forced Oscillation and Resonance, Type of Waves, Superposition Principle, Wave Speed on a stretched string.

Optics and Lasers: Two-slit interference, Huygens Principle, Single-slit diffraction, Resolving power of optical instruments, Principals for laser action, Types of laser, Application of laser.

Modern Physics: Planck's explanations of black body radiation Photoelectric effect, Compton effect, Bohr's theory of Hydrogen atom, atomic spectra, Reduce mass, De-Broglie hypothesis, Electron microscope, Atomic Nucleus and Properties of Nucleus, Radioactive Decay, Radioactive Dating, Radiation Detection Instruments, Nuclear Reactions and Nuclear Reactor, Nuclear Fusion

Recommended Books:

1. D. Halliday, R. Resnick and Krane, "Physics", John Wiley & Sons, volume 1, 11th ed. 2020.
2. D. Halliday, R. Resnick and Krane, "Physics", John Wiley & Sons, volume 2, 11th ed. 2020.
3. R. A. Serway and J. W. Jewett, "Physics for Scientists and Engineers", Golden Sunburst Series, 10th ed. 2019.
4. Electronic Devices, Thomas L. Floyd, Pearson, 2019.