Chandigarh Engineering College-CGC
Landran, Mohali, Punjab

Department of Applied Science

Assignment - I

Branch: CSE/IOT/ME **Total marks-10**

Subject & Subject code: Engineering Physics 25C1PHU-101 **Semester: IST**

Date on which assignment is given:29/08/2025 **Date of submission of assignment:05/09/2025**

Course Outcomes:

At the end of this course, students will be able to:

CO1	apply crystallography to analyse crystal structures with X-ray diffraction and infer the behaviour of semiconductor devices like p-n junctions and special diodes.
CO2	interpret the properties of superconductors and apply Maxwell's equations to explain electromagnetic wave propagation and energy transfer in various media.
CO3	examine quantum principles to understand nanoscale behavior and evaluate the synthesis, properties, and applications of nanomaterials like CNTs and nanocomposites.
CO4	explain the principles of laser operation and fibre optics, and analyse their applications in communication and technology.

Bloom's Taxonomy Levels

L1 – Remembering, L2 – Understanding, L3 – Applying, L4 – Analyzing, L5 – Evaluating, L6 -

Assignment related to COs	Marks	Relevance to CO No.	Blooms Levels
Q1. Name the seven crystal systems. Show how unit cell parameters (edge lengths and angles) are used as a basis of classification.	2.5	CO-1	L-1
Q2. Inspect in detail how Fermi level changes in intrinsic, P-type, and N-type semiconductors with the effect of temperature.	2.5	CO-1	L-4
Q3. Contrast the effect of (a) Magnetic field (b) Current (c) heat capacity, and (d) isotopes on superconductors.	2.5	CO-2	L-2
Q4. (i) Apply your understanding of displacement current to explain how current continuity is maintained in a charging capacitor. (ii) If $E = x\,i + y\,j + z\,k$ and $\nabla.E = \rho / \epsilon_0$, calculate the charge density ρ at (2,1,0) given $\epsilon_0 = 8.85 \times 10^{-12}$) F/m.	2.5	CO-2	L-3