Veer Narmad South Gujarat University, Surat

Syllabus

For

B. Sc. Semester IV

Physics (Major)(NEP-2020)

Effective from the Academic Year 2024-25

Paper: MJ-PH (TH) – 403 (2 Credits)

UNIT 1 Dielectrics

Dielectrics (6.1), dielectric and atomic view (6.2), forces and torque on dipoles (6.3), polarization and charge density (6.4), potential and filed outside of dieletric (6.5), induced charge on the dielectric in an electric field (6.6), Gauss' law in a dielectric (6.7), three electric vectors (6.8), boundary conditions at the dielectric surface (6.9), effects of dielectric (6.10).

UNIT 2 Crystal Structure and Crystal Vibrations

Periodic array of atoms, fundamental types of lattices, index systems for crystal planes, simple crystal structures, direct imagining of atomic structure, non-ideal crystal structures Chapter 1 (includes subtopics).

Diffraction of waves by crystals, Brillouin zones Chapter 2 (includes subtopics).

Vibrations of crystals with monoatomic bases, two atoms per primitive bases Chapter 4 (includes subtopics).

Reference books:

1. Electricity and Magnetism by D. C. Tayal, 4th Ed., Himalaya Publishing House.
2. Introduction to Electrodynamics by D. J. Griffiths, 4th Ed., Pearson India Education.
3. Introduction to Solid State Physics by C. Kittel, 8th Ed., John Wiley and Sons, 2005.

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