

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN  
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)

Chromepet, Chennai - 600 044.

B.Sc.Physics - END SEMESTER EXAMINATIONS - APRIL 2025

SEMESTER - VI

**20UPHCT6013 - Solid State Physics**

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

### Section B

Answer any **SIX** questions ( $6 \times 5 = 30$  Marks)

1. Explain the structure determination of face centred cubic crystal.
2. Elaborate on
  - (i) Bragg's Law in one Dimension and
  - (ii) Concept of reciprocal lattice.
3. Illustrate the comparison of para, dia, and ferromagnetic materials.
4. Explain in brief
  - (i) Determination of dielectric constants and
  - (ii) Applications of dielectric materials.
5. Write the notes on
  - (i) Meissner effect and
  - (ii) Temperature dependence of critical field.
6. Illustrate the Seven classes of crystals and the Bravais Lattice.
7. Explain the Weiss Theory of Paramagnetism.
8. Discuss in brief
  - (i) Structure of Simple cubic Crystal and
  - (ii) Dielectric loss.

### Section C

Answer any **THREE** questions ( $3 \times 10 = 30$  Marks)

9. Explain the structures of Body centred cubic crystal and Hexagonal closed packed crystal.
10. Describe the rotating crystal method of X-ray diffraction analysis and point out its significance.
11. Explain the Classical theory of Diamagnetism using the Langevin's theory.

**Contd...**

12. Derive the Clausius-Mossotti relation and comment on the significance of this relation.
13. Illustrate the brief account on
  - (i) Type I and Type II Superconductors,
  - (ii) BCS Theory, and
  - (iii) High temperature Superconductors.

\*\*\*\*\*