B.Sc. DEGREE EXAMINATION,NOVEMBER 2018
III Year VI Semester
Core Major - Paper XV
SOLID STATE PHYSICS & SEMICONDUCTOR DEVICES

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. Define basis.
2. Define atomic radius.
3. Who was first derived a relation between interplanar spacing & angle of reflection?
4. Give the condition for in-phase scattering by the planes in a crystal.
5. What is diamagnetic?
6. Write any one property of para magnetic material.
7. Define polarizability.
8. Write the expression for Clausius-Mosotti equation.
9. What is called semiconductors?
10. Expand FET and UJT.
11. Expand HCP and FCC.
12. Give the classification of magnetic materials.

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. Define the following terms: i) Crystal Lattice. ii) Bravais Lattices.
14. State and explain Bragg's law in one dimension.
15. What is hysteresis? Explain.
16. Explain the experimental method of determination of dielectric constant.
17. Describe the action of UJT as a relaxation oscillator.
18. Write the procedure for finding Miller indices of a given plane.
19. List out the properties of diamagnetic materials.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Describe the structure of Zinc blende and Sodium chloride.
21. What are the three main experimental X-ray diffraction methods for analysis of crystal structure?
    Explain any two methods in detail.
22. Describe the Weiss theory of paramagnetism.
23. Discuss about the frequency and temperature effects on polarization.
24. Explain the construction and working of Silicon Controlled Rectifier.

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