

B.Sc. DEGREE EXAMINATION, APRIL 2020
III Year VI Semester
Solid State Physics and Semi-Conductor Devices

Time : 3 Hours

Max.marks :60

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

Answer any **TEN** questions

1. Convert (236) intercepts into Miller planes.
2. Write a short note on Zinc blende structure.
3. Define - Reciprocal lattice.
4. A beam of X-rays is incident on sodium chloride crystal (lattice spacing = 2.82 \AA). What is wavelength of X-rays, if the first order glancing angle is 30° .
5. Define magnetic susceptibility.
6. What is meant by hysteresis?
7. What is meant by dielectric polarization?
8. What is dielectric loss?
9. What is pinchoff voltage?
10. Write short note on negative resistance region in UJT.
11. Define - Crystal lattice.
12. Name few ferroelectric materials.

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

Answer any **FIVE** questions

13. Explain the seven types of crystal system with their Bravais lattices.
14. Write a note on the crystal structure of sodium chloride.
15. State and explain the Bragg's law of X-ray diffraction.
16. Explain the structure of water molecule with diagram.
17. Write a note on Weiss theory of paramagnetism.
18. Explain different types of electric polarizations.
19. Explain the construction and characteristics of FET as amplifier.

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

Answer any **THREE** questions

20. Deduce the expression for separation between the lattice planes in simple, base centered and face centered cubic system.
21. Discuss the techniques and instrumentation details of rotating crystal method for structure determination.
22. What is diamagnetism? Explain the Langevin theory of diamagnetism.
23. Deduce the Clausius – Mossotti relation for electrical and thermal conductivity.
24. Write the construction, characteristics and working of SCR.

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