

AS-201: ENGINEERING PHYSICS - II

Short Question sheet of Unit 1: Crystal Structure

1. Define “nearest neighbor distance” and number of lattice points per unit cell.
2. What is space lattice?
3. What is meant by crystal lattice, basis and crystal structure?
4. Define unit cell.
5. What is primitive cell?
6. What is meant by primitive vectors?
7. What are crystallographic axes?
8. What is Bravais space lattice?
9. Name seven crystal systems.
10. What is simple cubic, body centered cubic and face centered cubic cell?
11. Define coordination number. Write coordination number for bcc, sc and fcc lattice.
12. What are Miller indices how are they calculated?
13. What is meant by atomic radii in a crystal?
14. Explain atomic packing factor in cubic lattice.
15. Show that the packing factor for fcc lattice is $\pi\sqrt{2}/6$.
16. Define crystal planes.
17. Describe inter-planer spacing in crystal structure.
18. Derive a relation between inter-planer distance and cube edge.
19. Derive a relation between lattice constant and density of crystal material.
20. What are the important facts of Laue experiment for X-ray diffraction?
21. Describe briefly diffraction of X-rays by crystal planes.
22. What is Bragg’s law?
23. What was Bragg’s explanation about formation of Laue’s spots in X-ray diffraction?
24. Derive Bragg’s law for X-ray diffraction in crystal.
25. What are the practical applications of X-rays?
26. What is Compton Effect?
27. What is Compton shift?
28. Distinguish between Compton shift and Compton wavelength.
29. What do you mean by angle of scattering and angle of recoil?