**Chapter I. Questionnaire**

1. Define short and long range order. Distinguish between single and polycrystalline solids.
2. Define crystal lattice, basis and crystal structure.
3. Describe a unit cell and primitive cell. Define lattice parameters with appropriate diagram.
4. Define Bravais lattice. Explain the seven different crystal systems and fourteen different Bravais lattices in cubic system.
5. Determine atomic radius, effective number of atoms, co-ordination number, atomic packing fraction, void space and density of simple cubic, BCC, and FCC lattices.
6. State the radius ratio rule.
7. What is meant by limiting radius ratio (critical radius ratio)? Calculate the limiting radius ratios (critical radius ratio) for co-ordinations (ligancies) 3, 4 and 6.
8. What are Miller indices? Derive the expression for interplanar distance between consecutive planes described by miller indices (hkl).
9. Derive Bragg’s law of X-ray diffraction.
10. Write short notes on: (a) Laue Method (b) Rotating crystal method (c) Powder method of diffraction.
11. Describe point defects.
12. Describe line defects.
13. Describe planar and volume defects.