Board – CBSE	Class – 12th	Topic – Solid State

1. Differentiate between amorphous and crystalline solids with reference to
   (a) Melting point (b) Cleavage property (c) Nature
2. How are crystalline solids classified on the basis of nature of bonding? Explain with examples.
3. In crystalline solid, anions C are arranged in cubic close – packing, cations A occupy 50% of tetrahedral voids and cations B occupy 50% of octahedral voids. What is the formula of solid?
4. Silver crystallizes in fcc lattice. If edge length of the cell is 4.07×10^{-8} cm and density is $10.5\ \text{gcm}^{-3}$, calculate the atomic mass of silver.
5. A cubic solid is made of two elements P and Q. Atoms of Q are at the corners of the cube and P at the body-center. What is the formula of the compound? What are the coordination numbers of P and Q?
6. 'Stability of a crystal is reflected in the magnitude of its melting point'. Comment. Collect melting points of solid water, ethyl alcohol, diethyl ether and methane from a data book. What can you say about the intermolecular forces between these molecules?
7. Calculate the efficiency of packing in case of a metal crystal for
   (a) Simple cubic
   (b) Body-centered cubic
   (c) Face-centered cubic (with the assumptions that atoms are touching each other)
8. What is a semiconductor? Describe the two main types of semiconductors and contrast their conduction mechanism.
9. Explain the following terms with suitable examples:
   (a) Schottky defect (b) Frenkel defect
   (c) Interstitials and (d) F-centers
10. Explain the following with suitable examples:
    (a) Ferromagnetism (b) Paramagnetism
    (c) Ferrimagnetism (d) Antiferromagnetism
    (e) 12-16 and 13-15 group compounds
11. What makes a glass different from a solid such as quartz? Under what conditions could quartz be converted into glass?
12. Define the term 'amorphous'. Give a few examples of amorphous solids.

13. Explain:
    (i) The basis of similarities and differences between metallic and ionic crystals.
    (ii) Ionic solids are hard and brittle.
14. In terms of band theory, what is the difference
    (i) Between a conductor and an insulator
    (ii) Between a conductor and a semiconductor
15. Gold (atomic radius = 0.144 nm) crystallizes in a face-centered unit cell. What is the length of a side of the cell?
16. Classify each of the following as being either a p-type or an n-type semiconductor:
    (i) Ge doped with In (ii) B doped with Si.
17. Ferric oxide crystallizes in a hexagonal close-packed array of oxide ions with two out of every three octahedral holes occupied by ferric ions. Derive the formula of the ferric oxide.
18. Give two application of p – type and n – type semiconductors.
19. Classify solids on the basis of their conductivities.
20. Define the terms – Intrinsic semiconductor and extrinsic semiconductor.