



INDIAN SCHOOL MUSCAT
SENIOR SECTION
DEPARTMENT OF CHEMISTRY
CLASS XII

CHAPTER - SOLID STATE
WORKSHEET- 1

1. What is meant by forbidden zone in reference to band theory of solids?(2012)
2. Refractive index of a solid is observed to have the same value along all directions. Comment on the nature of this solid. Would it show cleavage property?
3. Write the formula of a compound in which the element Y forms *ccp* lattice and atoms of X occupies $1/3^{\text{rd}}$ of tetrahedral voids. (2015)
4. An alloy of gold and cadmium crystallizes with a cubic structure in which gold atoms occupies the corners and cadmium atoms fit into the face center. Assign formula of this alloy. (2011)
5. Iron has a bcc unit cell with a cell dimension of 286.65pm. The density of Fe is 7.874 g cm^{-3} . Use this information to calculate Avogadro's number. (Fe = 55.845u) (2012)
6. Silver crystallizes in fcc unit cell. If the edge length of Ag atom is $4.07 \times 10^{-8} \text{ cm}$ and density of silver is 10.5 g cm^{-3} calculate the atomic mass of silver. (2010)
7. An element crystallizes in fcc structure with edge length 200pm. Calculate the density if 200g of the element contains 24×10^{23} atoms.
8. How are the following properties of crystal affected by Schottky and Frenkel defect:
 - a) Density
 - b) Electrical conductivity (2010)
9.
 - a) Why does the presence of excess of lithium make LiCl crystals pink?
 - b) Calculate the number of atoms in cube based unit cell having one atom on each corner and two atoms on its each body diagonal. (2013)
10. Account for the following: (2007)
 - a) Phosphorus doped with silicon is a semi-conductor.
 - b) Schottky defect lowers the density of the solid.
 - c) Some of the very old glass objects appear slightly milky instead of being transparent.
11. Explain the following properties giving suitable examples:
 - a) Ferromagnetism
 - b) Para magnetism
 - c) Ferrimagnetism

12. An element A crystallizes in fcc structure. 208g of it have 4.28×10^{24} atoms. Calculate the edge length if the density is 7.2g/cc.
13. An element crystallizes in cubic structure. The edge length of the unit cell is 350pm. If its molar mass is 6.94g/mole, and the density 0.534g/cc, how many atoms are present in one unit cell of the element?
14. Define the following :
- a) Schottky defect
 - b) Frenkel defect
 - c) F-centre (2015)
15. Differentiate between:
- a) Face centered and end centered unit cells
 - b) Ferromagnetic and ferrimagnetic substances
 - c) n-type and p-type semiconductors
 - d) Tetragonal and orthorhombic unit cells
 - e) Crystal lattice and unit cell
