CLASS XII

CHAPTER - SOLID STATE

ONE MARK QUESTIONS

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 $1/3^{rd}$ 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)

TWO MARK QUESTIONS

1. Iron has a bcc unit cell with a cell dimension of 286.65pm. The density of Fe is$7.874 gcm^{-3}$. Use this information to calculate Avogadro's number. (Fe = 55.845u) (2012)
2. Silver crystallizes in fcc unit cell. If the edge length of Ag atom is 4.07×10^{-8} cm and density of silver is 10.5 g cm^{-3}calculate the atomic mass of silver. (2010)
3. An element crystallizes in fcc structure with edge length 200pm. Calculate the density if 200g of the element contains 24×10^{23} atoms.
4. How are the following properties of crystal affected by Schottky and Frenkel defect:
   a) Density
   b) Electrical conductivity (2010)
5. 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)

THREE MARKQUESTIONS

1. 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.

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2. Explain the following properties giving suitable examples:
   a) Ferromagnetism
   b) Para magnetism
   c) Ferrimagnetism (2008)
3. An element A crystallizes in fcc structure. 208g of it have 4.28 x 10^{24} atoms. Calculate the edge length if the density is 7.2g/cc.
4. 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?
5. Define the following :
   (i) Schottky defect
   (ii) Frenkel defect
   (iii) F-centre (2015)

FIVE MARKS QUESTIONS

1. 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

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