**MASTERS PRE-UNIVERSITY COLLEGE, HASSAN 573201.**

**CHEMISTRY : II PUC Physical Chemistry SOLID STATE**

1. **A Solid AB has NaCl type structure. The radius of A\* is 100pm. What is the radius of B?**

a)190.47 b)540.13 c)525 d)78.12

1. **If we mix a pentavalent impurity in a crystal lattice of germanium, what type of semiconductor formation will occur?**

a)n-type semiconductor b)p-type semiconductor c)both a and b d)none of these.

1. **The pyknometric density of sodium chloride crystal is 2.165X10-3kgm-3 while its X-ray density is 2.178X103kgm-3. The fraction of unoccupied sites in sodium chloride crystal is**

a)5.96 b)5.96X10-2 c)5.96X10-1 d)5.96X10-3

1. **Lithium meal crystallizes in a body-centred cubic crystal. If the length of the side of the unit cell of lithium is 351pm, the atomic radius of lithium will be**

a)151.8pm b)75.5pm c)300.5pm d)240.8pm

1. **AB crystallizes in a body centred cubic lattice with edge length ‘a’ equal to 387pm. The distance between two oppositely charged ions in the lattice is**

a)335pm b)250pm c)200pm d)300pm

1. **Structure of a mixed oxide is cubic close close packed (ccp). The cubic unit cell of mixed oxide is composed of oxide ions. One fourth of the tetrahedral voids are occupied by divalent metal A and the octahedral voids are occupied by a monovalent metal B. The formula of the oxide is**

a)ABO2 b)A2BO2 c)A2B3O4 d)AB2O2

1. **The limiting radius ratio for tetrahedral shape is**

a)0 to 0.153 b)0.225 to 0.414 c)0.155 to 0.225 d)0.414 to 0.732

1. **A substance Ax By crystallizes in a face centred cubic lattice in which A atom occupies each corner of cube and atom B occupies the centres of each face of the cube. Identify the correct composition of the substance AxBy**

a)AB3 b)A4B3 c)A3B d)Composition cannot be specified.

1. **Relationship between atomic radius and the edge length a of a body-centred cubic unit cell is**

a)r=a/2 b)r= c)a d)

1. **The ratio of cationic radius to anionic radius in an ionic crystal is greater than 0.732. Its coordination number is**

a)6 b)8 c)1 d)4

1. **The empty space in the body centred cubic lattice is**

a)68% b)52.4% c)47.6% d)32%

1. **Given:**

**Column-A Column-**B

**A. Ionic solid. I.NaCl**

**B. Metallic solid. II.Fe**

**C.Covalent solid. III. C(graphite)**

**D.Molecilar solid. IV. Dry ice**

a)A-II, B-I,C-IV,D-III b)A-I,B-II,C-III,D-IV c)A-III,B-II,C-I,D-IV d)A-II,B-IV,C-I,D-III

1. **Number of unit cells in 4g of X(atomic mass=40). Which crystallizes in bcc pattern is**

**(NA=Avogadro number)**

a)0.1NA b)2X0.1NA c) d)2XNA

1. **Which of the following is not correct for ionic crystals?**

a)They possess high melting point and boiling point b)All are electrolyte

c)Exhibit the property of isomorphism d)Exhibit directional properties of the bond

1. **The edge length of the unit cell of NaCl crystal lattice is 552pm. If the ionic radius of sodium ion is 95pm, what is the ionic radius of chloride ion?**

a)276pm b)368pm c)181pm d)190pm

1. **Example of unit cell with crystallographic dimesnsions is**

a)rhombic sulphur b)graphite c)calcite d)monochlinic sulphur

1. **Copperr atoms are living on 8 corners and silver atoms on 6 faces while gold at body centre. Find the formula**

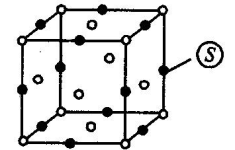
a)CuAg3Au b)Cu3Au3Ag c)CuAgAu d)Cu2AuAg

1. **A molecule contains X and Y so that X occurs at the corners of the cube while Y at the face centre. The formula of the molecule can be**

**a)XY3** b)X3Y c)X2Y d)XY2

1. **Schotty defect generally appears in**

a)NaCl b)KCl c)CsCl d)All of these.

1. **For the structure given below the site marked as S is a**

a)Tetrahedral void b)Cubic void

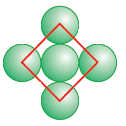
c)Octahedral void d)None of these

1. **The mass of unit cell of CaF2(fluorite structure) corresponds to**

a)Mass of 8 Ca++ ions and 4 F- ions b)Mass of 4 Ca++ ions and 8 F- ions

c)Mass of 4 Ca++ ions and 4 F- ions d)Mass of 1 Ca++ ion and 2 F- ions.

1. **If the unit cell length of sodium chloride crystal is 600 pm, then its density will be**

a) 2.165g/cm3 b)3.247g/cm3 c)1.79g/cm3 d)1.082g/cm3.

1. **The packing of the two dimensional square unit cell shown below is**

a) 39.27% b)68.02% c)74.05% d)78.54%

1. **A crystalline solid has a cubic structure in which tungsten (W) atoms are located at the cube corners of the unit cell, oxygen atoms at the cube edges and sodium atom at the cube centre. The molecular formula of the compound is**

a)Na2WO3 b)NaWO4 c)NaWO3 d)Na2WO4

1. **A metallic crystal crystallizes into a lattice containing a sequence of layers AB AB AB….any packing of spheres leaves out voids in the lattice. What percentage by volume of this lattice is empty space?**

a)74% b)26% c)50% d)None of these.

1. **The number of unit cells in 58.5gms of NaCl is nearly**

a)6X1020 b)3X1022 c)1.5X1023 d)0.5X1024

1. **An element (density=7.20g/cc) exists in the body centred cubic structure whose cell edge is 2.88. The number of atoms in 104g of the element is**

a)2.0X1023 b)1.209X1024 c)2.418X1024 d)6.045X1023

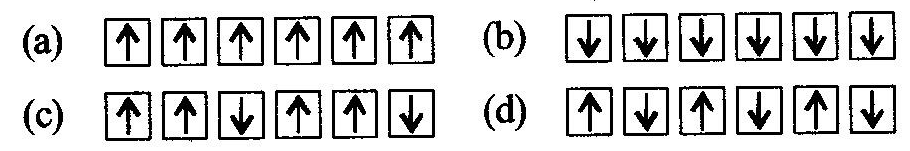
1. **The ratio of cationic radius to anionic radius in an ionic crystals is greater than 0.732. Its coordination number is**

a) 1 b)4 c)6 d)8

1. **If NaCl is doped with 10-3 mol % SrCl2, the concentration of cation vacancies is**

a)6.022X10-23 mol-1 b)6.022X1023mol-1 c)6.022X1018mol-1 d)6.022X10-18mol-1

1. **Which of the following arrangements shows schematic alignment of magnetic moments of antiferromagnetic substances?**

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