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| Q.15 | A tetrahedral void in a crystal implies that,<br>(1) shape of the void is tetrahedral<br>(2) molecules forming the void are tetrahedral in shape<br>(3) the void is surrounded tetrahedrally by four spheres<br>(4) the void is surrounded by six spheres   | Q.22 | A compound formed by elements by X and Y crystallizes in a cubic structure in which the X atom are at the corners of a cube and the Y atom are at the face-centres. The formula of the compound is<br>(1) $X_3Y$<br>(2) XY<br>(3) $XY_2$<br>(4) $XY_3$   |
| Q.16 | In a closest packed lattice, the number of octahedral sites as compared to tetrahedral ones will be<br>(1) Equal<br>(2) Half<br>(3) Double<br>(4) None of these   | Q.23 | If 'Z' is the number of atom in the unit cell that represents the closest packing sequence ---A B C A B C ---, the number of tetrahedral voids in the unit cell is equal to<br>(1) Z<br>(2) 2Z<br>(3) $Z/2$<br>(4) $Z/4$   |
| Q.17 | The limiting radius ratio for tetrahedral shape is<br>(1) 0 to 0.155<br>(2) 0.155 to 0.225<br>(3) 0.225 to 0.414<br>(4) 0.414 to 0.732  | Q.24 | Density of Li atom is $0.53 \text{ g cm}^{-3}$ . The edge length of Li is $3.5 \text{ \AA}$ . Find out the number of Li atoms in an unit cell. ( $N_A = 6.023 \times 10^{23}$ ), ( $M = 6.94 \text{ g mol}^{-1}$ )<br>(1) 2<br>(2) 8<br>(3) 4<br>(4) 6   |
| Q.18 | Which one of the following statements is incorrect about rock salt type ?<br>(1) It has fcc arrangement of $Cl^-$<br>(2) $Na^+$ and $Cl^-$ ions have a co-ordination number of 6 : 6<br>(3) A unit cell of NaCl consists of four NaCl units<br>(4) All halides of alkali metals have rock-salt type structure | Q.25 | The $Ca^{2+}$ and $F^-$ are located in $CaF_2$ crystal, respectively at face centred cubic lattice points and in -<br>(1) Tetrahedral voids<br>(2) Half of tetrahedral voids<br>(3) Octahedral voids<br>(4) half of octahedral voids   |
| Q.19 | Each unit cell of NaCl consists of 14 $Cl^-$ ions and,<br>(1) $13 Na^+$<br>(2) $14 Na^+$<br>(3) $6 Na^+$<br>(4) All are wrong   | Q.26 | If 'a' stands for the edge length of the cubic system : simple cubic, body centred cubic and face centred cubic, then the ratio of radii of the spheres in these system will be respectively.<br>(1) $\frac{1}{2}a, \sqrt{3}a : \frac{1}{\sqrt{2}}a$<br>(2) $\frac{1}{2}a : \frac{\sqrt{3}}{2}a : \frac{\sqrt{2}}{2}a$<br>(3) $1a : \sqrt{3}a : \sqrt{2}a$<br>(4) $\frac{1}{2}a : \frac{\sqrt{3}}{2}a : \frac{\sqrt{2}}{2}a$ |
| Q.20 | The co-ordination number of $Cs^+$ and $Cl^-$ ions in CsCl structure is :<br>(1) 4 : 4<br>(2) 6 : 6<br>(3) 8 : 8<br>(4) 4 : 8   |      |  |
| Q.21 | The 8 : 8 type of packing is present in<br>(1) NaCl<br>(2) KCl<br>(3) CsCl<br>(4) $MgF_2$   |      |  |

- Q.27 Lithium metal crystallises in a body centred cubic crystal. If the length of the side of the unit cell of lithium is 351 pm, the atomic radius of the lithium will be :-
- (1) 300.5 pm      (2) 240.8 pm  
 (3) 151.8 pm      (4) 75.5 pm
- Q.28 AB crystallizes in a centred cubic lattice lattice with edge length 'a' equal to 387 pm. The distance between two oppositively charged ions in the lattice is :-
- (1) 300 pm      (2) 335 pm  
 (3) 250 pm      (4) 200 pm
- Q.29 Structure of a mixed oxide is cubic close-packed (c.c.p). The cubic unit cell 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 :
- (1)  $A_2B_3O_4$       (2)  $AB_2O_2$   
 (3)  $BOA_2$       (4)  $A_2BO_2$
- Q.30 In a face centred cubic lattice, atom A occupies the corner positions and atom B occupies the face centre positions. If one atom of B is missing from one of the face centred points, the formula of the compound is :-
- (1)  $A_2B_3$       (2)  $A_2B_5$   
 (3)  $A_2B$       (4)  $AB_2$
- Q.31 The edge length of a face centered cubic cell of an ionic substance is 508 pm. If the radius of the cation is 110 pm, the radius of the anion is :-
- (1) 144 pm      (2) 288 pm  
 (3) 398 pm      (4) 618 pm
- Q.32 In a compound, atoms of element Y from ccp lattice and those of element X occupy  $\frac{2}{3}^{rd}$  of tetrahedral voids. The formula of the compound will be -
- (1)  $X_4Y_3$       (2)  $X_2Y_3$   
 (3)  $X_2Y$       (4)  $X_3Y_4$
- Q.33 An ionic compound has a unit cell consisting of A ions at the corners of a cube and B ions the centres of the faces of the cube. The empirical formula of this compound would be-
- (1)  $A_2B$       (2) AB  
 (3)  $A_3B$       (4)  $AB_3$
- Q.34 How many unit cells are present in a cube-shaped ideal crystal of NaCl of mass 1.00g ?
- (1)  $1.28 \times 10^{21}$  units cells  
 (2)  $1.71 \times 10^{21}$  units cells  
 (3)  $2.57 \times 10^{21}$  units cells  
 (4)  $5.14 \times 10^{21}$  units cells
- Q.35 The no. of per unit cell in B.C.C & F.C.C. is respectively :
- (1) 8, 10      (2) 2, 4  
 (3) 1, 2      (4) 1, 3