


**SINGLE CORRECT :**

1. Which of the following are the correct axial distances and axial angles for rhombohedral system ?  
(A)  $a = b = c, \alpha = \beta = \gamma \neq 90^\circ$  (B)  $a = b \neq c, \alpha = \beta = \gamma = 90^\circ$   
(C)  $a \neq b = c, \alpha = \beta = \gamma = 90^\circ$  (D)  $a \neq b \neq c, \alpha \neq \beta \neq \gamma \neq 90^\circ$
2.  $a \neq b \neq c, \alpha \neq \beta \neq \gamma \neq 90^\circ$  represents  
(A) tetragonal system (B) orthorhombic system  
(C) monoclinic system (D) triclinic system
3. Diamond belongs to the crystal system :  
(A) Cubic (B) triclinic (C) tetragonal (D) hexagonal
4. A match box exhibits -   
(A) Cubic geometry (B) Monoclinic geometry  
(C) Tetragonal geometry (D) Orthorhombic geometry
5. Which of the following solids substances will have same refractive index when measured in different directions?  
(A) NaCl (B) Monoclinic sulphur (C) Rubber (D) Graphite
6. If 'Z' is the number of atoms 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  
(A) Z (B) 2Z (C) Z/2 (D) Z/4
7. The interstitial hole is called tetrahedral because  
(A) It is formed by four spheres.  
(B) Partly same and partly different.  
(C) It is formed by four spheres the centres of which form a regular tetrahedron.  
(D) None of the above three.
8. The size of an octahedral void formed in a closest packed lattice as compared to tetrahedral void is  
(A) Equal (B) Smaller (C) Larger (D) Not definite
9. How many unit cell are there in 1 gram cubic crystal of NaCl  
(A)  $\frac{4 \times N_A}{58.5}$  (B)  $\frac{N_A}{58.5}$  (C)  $\frac{N_A}{58.5 \times 4}$  (D)  $\frac{N_A}{58.5 \times 8}$
10. The density of  $\text{CaF}_2$  (fluorite structure) is  $3.18 \text{ g/cm}^3$ . The length of the side of the unit cell is  $\text{pm}$   
(A) 253 (B) 344 (C) 546 (D) 273
11. The coordination number of cation and anion in Fluorite  $\text{CaF}_2$  and  $\text{CsCl}$  are respectively  
(A) 8:4 and 6:3 (B) 6:3 and 4:4 (C) 8:4 and 8:8 (D) 4:2 and 2:4
12. If the anions (A) form hexagonal closest packing and cations (C) occupy only  $\frac{2}{3}$  octahedral voids in it, then the general formula of the compound is  
(A) CA (B)  $\text{CA}_2$  (C)  $\text{C}_2\text{A}_3$  (D)  $\text{C}_3\text{A}_2$

13. A compound XY crystallizes in 8 : 8 lattice with unit cell edge length of 480 pm. If the radius of Y<sup>-</sup> is 225 pm, then the radius of X<sup>+</sup> is  
 (A) 127.5 pm (B) 190.68 pm (C) 225 pm (D) 255 pm
14. The mass of a unit cell of CsCl corresponds to  
 (A) 1 Cs<sup>+</sup> and 1 Cl<sup>-</sup> (B) 1 Cs<sup>+</sup> and 6 Cl<sup>-</sup> (C) 4 Cs<sup>+</sup> and 4 Cl<sup>-</sup> (D) 8 Cs<sup>+</sup> and 1 Cl<sup>-</sup>
15. Which one of the following schemes of ordering closest packed sheets of equal sized spheres do not generate close packed lattice.  
 (A) ABCABC (B) ABACABAC (C) ABBAABBA (D) ABCBCABCBC
16. An ionic compound AB has ZnS type structure. If the radius A<sup>+</sup> is 22.5 pm, then the ideal radius of B<sup>-</sup> would be  
 (A) 54.35 pm (B) 100 pm (C) 145.16 pm (D) none of these  $\frac{r^+}{r^-} = 0.225$
17. Which of the following is the most likely to show schottky defect  
 (A) CaF<sub>2</sub> (B) ZnS (C) AgCl (D) CsCl
18. In the Schottky defect, in AB type ionic solids  
 (A) cations are missing from the lattice sites and occupy the interstitial sites  
 (B) equal number of cations and anions are missing  
 (C) anions are missing and electrons are present in their place  
 (D) equal number of extra cations and electrons are present in the interstitial sites
19. Edge length of M<sup>+</sup>X<sup>-</sup> (fcc structure) is 7.2 Å. Assuming M<sup>+</sup> - X<sup>-</sup> contact along the cell edge, radius of X<sup>-</sup> ion is (r<sub>M<sup>+</sup></sub> = 1.6 Å): *NaCl like structure*  
 (A) 2.0 Å (B) 5.6 Å (C) 2.8 Å (D) 38 Å  $\rightarrow 0.5$
20. Choose the correct option/options-  
 (A) Two adjacent face centre atom doesn't touch each other in fcc unit cell because they are not nearest atom of face each other in fcc lattice  
 (B) Number of nearest Na<sup>+</sup> ions of another Na<sup>+</sup> in Na<sub>2</sub>O crystal will be 24.  
 (C) Minimum distance between two cubical voids in simple cube unit cell lattice will be a where a is length of edge of unit cell  
 (D) By defects in solids density of solids either remains constant or decreases but it can never increase.