

- A compound is formed by element A and B and is cubic. A atoms are at the corners and B atoms are at the face centre. The formula of the compound is

(a) AB (b) AB₂
 (c) AB₃ (d) A₃B
- In solid ammonia, each NH₃ molecule has six other NH₃ molecules as nearest neighbors. ΔH of sublimation of NH₃ at the melting point is 30.8 kJ mole⁻¹ and the estimated ΔH of sublimation in the absence of hydrogen bonding is 14.4 kJ mole⁻¹. Strength of H-bond in solid NH₃ is approximately

(a) 5.5 kJ mole⁻¹ (b) 16.4 kJmole⁻¹
 (c) 2.7 kJ mole⁻¹ (d) - 2.7 kJmole⁻¹
- The number of unit cells in 936 amu of sodium chloride is

(a) 4 (b) 16
 (c) 8 (d) 4N
- A solid has a structure in which W atoms are located at the corners of the cubic lattice, O atoms at the centre of the edges and Na atom at the centre of the cube. The formula of the compound is

(a) NaWO₂ (b) Na₂WO₃
 (c) NaWO₃ (d) NaWO₄
- The edge length of face centered unit cubic cell is 508 pm. If the radius of the cation is 110 pm, the radius of the anion is

(a) 144 pm (b) 288 pm
 (c) 618 pm (d) 398 pm
- The number of unit cells in 58.5 g of NaCl is approximately

(a) 6×10^{20} (b) 1.5×10^{23}
 (c) 6×10^{23} (d) 0.5×10^{24}
- In a solid AB having NaCl structure, A atoms occupy the corners of the cubic unit cell. If all the face-centered atoms along one of the axes are removed, then the resultant stoichiometry of the solid is

(a) AB₂ (b) A₂B
 (c) A₄B₃ (d) A₃B₄
- Following properties will decrease with increase in temperature except

(a) surface tension (b) viscosity
 (c) density (d) vapour pressure
- Edge length of a cube is 400 pm. Its body diagonal would be

(a) 600 pm (b) 566 pm
 (c) 693 pm (d) 500 pm
- In antifluorite structure co-ordination number of anion is

(a) 4 (b) 6
 (c) 8 (d) 12
- In a hcp lattice the number of nearest neighbours for a given lattice point is

(a) 6 (b) 4
 (c) 8 (d) 12

12. In a compound oxide, ions have ccp arrangement. Cations A are present in one-eighth of the tetrahedral holes and cations B occupy half the octahedral holes. The simplest formula of the compound is
 (a) AB_2O_4 (b) A_2BO_4
 (c) ABO_2 (d) ABO_4
13. In a compound XY_2O_4 , oxide ions are arranged in ccp and cations X are present in octahedral voids. Cations Y are equally distributed between octahedral and tetrahedral voids. The fraction of the octahedral voids occupied is
 (a) $1/2$ (b) $1/4$
 (c) $1/8$ (d) $1/6$
14. The volume of 2.8 g of carbon monoxide at 27°C and 0.0821 atm. is
 (a) 30 L (b) 3 L
 (c) 0.3 L (d) 1.5 L
15. Surface tension of water is 73 dynes cm^{-1} at 20°C . If surface area is increased by 0.10 m^2 , work done is
 (a) 7.3 ergs (b) 73×10^3 ergs
 (c) 73 joules (d) 0.73 joules
16. $\text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{H}_2\text{O}(\text{g})$, $\Delta H_{\text{vap}} = 10\text{ k cal mole}^{-1}$.
 If pressure is increased,
 (a) steam is liquefied
 (b) boiling point of H_2O is elevated
 (c) more steam is formed
 (d) a, b are correct
17. If heat is removed from a liquid, it tends to super cool, its temperature drops below the freezing point and then rises suddenly. What is the source of the heat which causes the temperature rise?
 (a) the enthalpy of vapourisation
 (b) the enthalpy of liquefaction
 (c) the enthalpy of fusion
 (d) the entropy of fusion
18. One mole of ethyl alcohol was treated with one mole of acetic acid at 25°C . Two third of the acid changes into ester at equilibrium. The equilibrium constant for the reaction will be
 (a) 1 (b) 2
 (c) 3 (d) 4
19. One mole of $\text{N}_2\text{O}_4(\text{g})$ at 300 K is kept in a closed container under one atmospheric pressure. It is heated to 600 K when 20% by mass of $\text{N}_2\text{O}_4(\text{g})$ decomposes to $\text{NO}_2(\text{g})$. The resultant pressure is
 (a) 1.2 atm. (b) 2.4 atm.
 (c) 2.0 atm. (d) 1.0 atm.
20. For the reaction,
 $\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$ at 721 K, the value of equilibrium constant (K_C) is 50. When the equilibrium concentration of both is 0.5M, the value of K_P under the same conditions will be

(a) 0.002
(c) 50.0

(b) 0.2
(d) 50/RT

Answer Keys

1. (c) 2. (a) 3. (c) 4. (b) 5. (a) 6. (b) 7. (d) 8. (d) 9. (c) 10. (c)
11. (d) 12. (a) 13. (a) 14. (a) 15. (b) 16. (d) 17. (c) 18. (d) 19. (b) 20. (c)