



11-12 + JEE/GUJCET
CHEMISTRY
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GUJCET CRASH COURSE

SEM- 3 - Ch- 1,2

SOLID STATE & SOLUTION

- (1)is not a property of solid?
(a) Rigid and incompressible
(b) Definite shape
(c) Fluidity
(d) Definite volume
- (2) Which is an amorphous substance?
(a) NaCl (b) KCl
(c) Rubber (d) H₂O
- (3) When constituent particles are arranged on the four points of four corners of the unit cell then it is called...
(a) Primitive unit cell (b) FCC
(c) BCC (d) All of these
- (4) In cubic solid, all axial angles are.....
(a) $\alpha = 90^\circ, \beta = 90^\circ, \gamma = 120^\circ$
(b) $\alpha = \beta = \gamma = 90^\circ$
(c) $\alpha = \beta = \gamma \neq 90^\circ$
(d) $\alpha \neq \beta \neq \gamma \neq 90^\circ$
- (5) Which is the example of hcp?
(a) Graphite (b) ZnO (c) CdS (d) All of these
- (6) The packing efficiency of BCC is.....
(a) 40% (b) 68% (c) 72% (d) 74%
- (7) The co-ordination number in one dimensional close packing is.....
(a) 2 (b) 3 (c) 4 (d) 5
- (8) The ABABAB stacking pattern in two dimension is known as.....
(a) square close packing
(b) hexagonal close packing
(c) cubic close packing
(d) None of these
- (9) The ABABAB stacking pattern in two dimension, the co-ordination number is.....
(a) 2 (b) 4
(c) 6 (d) 8
- (10) In ccp arrangement the number of tetrahedral voids per unit cell is....
(a) 2 (b) 4
(c) 6 (d) 8
- (11) In ccp, the number of octahedral voids on the body centre is....
(a) 1 (b) 2
(c) 3 (d) 4
- (12) In ccp, octahedral voids arranged on each edge and unit cells.
(a) 12, 2 (b) 12, 4 (c) 6, 4 (d) 6, 2
- (13) In 1 mole constituent particles, there aredefects of constituent particles in arrangement.
(a) 10^6 (b) 10^{12}
(c) 10^{18} (d) 10^{21}
- (14) In which defect, the density of the crystal increases?
(a) Vacancy defect (b) Interstitial defect
(c) Both (a) and (b) (d) None of these
- (15) In interstitial defect, the number of atoms for unit volume.....
(a) increases
(b) decreases
(c) remains constant
(d) increases or decreases
- (16)shows both Schottky and Frenkel defect?
(a) NaCl (b) KCl (c) AgBr (d) KI
- (17) What type of solid is sodium chloride?

- (a) Ionic (b) Molecular
(c) Covalent (d) Metallic
- (18) The melting points of ionic solids are
(a) Very high (b) Normal
(c) Very low (d) Abnormal
- (19) What type of solid is quartz?
(a) Ionic (b) Molecular
(c) Covalent (d) Metallic
- (20) What type of crystal structure is of silver metal?
(a) fcc (b) Simple cube
(c) bcc (d) Metallic
- (21) What is the percentage packing efficiency of simple cube?
(a) 53.26 (b) 68.0
(c) 74.0 (d) 52.36
- (22) How many times is the number of octahedral voids as compared to tetrahedral voids?
(a) 4 (b) 8 (c) 2 (d) 0.5
- (23) What is the number of atoms in the unit cell of body centred cube?
(a) 2 (b) 1 (c) 4 (d) 6
- (24) What is the number of atoms in face centred cube?
(a) 2 (b) 1 (c) 4 (d) 6
- (25) In which of the following compounds Schottky defect is present?
(a) NaCl (b) ZnS
(c) SiO₂ (d) SrCl₂
- (26) In which of the following compounds Frenkel defect is present?
(a) NaCl (b) ZnS
(c) SiO₂ (d) SrCl₂
- (27) Which of the following compounds show metal deficiency defect?
(a) Fe_{0.95}O (b) Fe₂O_{3.6}
(c) Fe₃O₄ (d) FeS_{1.6}
- (28) Which of the following elements is a semiconductor?
(a) Na (b) Al (c) Fe (d) Ge
- (29) Which type of semiconductor is obtained by doping Si with B?
(a) n-type (b) p-type
(c) pnp-type (d) npn-type
- (30) With which element, the conductivity of ReO₃ is matching?
(a) Copper (b) Zinc (c) Iron
(d) Aluminium
- (31) Which of the following will be paramagnetic?
(a) O₂²⁻ (b) Cr³⁺
(c) Na⁺ (d) Cu⁺
- (32) Which theory is useful in explaining electrical conductivity in conductors and semiconductors?
(a) Pauli's principle
(b) Avogadro's theory
(c) Band theory
(d) Hybridisation theory
- (33) In one crystal structure sodium (Na) atom are at each corner, oxygen (O) atom at every edge and Tungsten (W) atom is at the centre of the cube, then the molecular formula of the solid is....
(a) NaW₂O₃ (b) Na₂W₃O
(c) NaWO₃ (d) NaW₃O₅
- (34) Lithium forms body centred cubic structure the length of the side of its unit cell is 351 pm. Atomic radius of the lithium will be....
(a) 300 pm (b) 240 pm
(c) 152 pm (d) 75 pm
- (35) In a face centred cubic lattice, atom A occupies the corner positions and atom B occupies the face centred points, the formula of the compound is...
(a) AB₂ (b) A₂B₃
(c) A₂B₅ (d) A₂B
- (36) Which crystal defect is found in the following figure?

Na ⁺	Cl ⁻	Na ⁺	<input type="checkbox"/>	Na ⁺	Cl ⁻
Cl ⁻	<input type="checkbox"/>	Cl ⁻	Na ⁺	<input type="checkbox"/>	Na ⁺
Na ⁺	Cl ⁻	<input type="checkbox"/>	Cl ⁻	Na ⁺	Cl ⁻

(a) Frenkel (b) Schottky
(c) Both (a) and (b) (d) No defect
- (37) Volume of atoms present in a unit cell having fcc structure (r = radius of atom)
(a) $\frac{12}{3}\pi r^3$ (b) $\frac{16}{3}\pi r^3$
(c) $\frac{20}{3}\pi r^3$ (d) $\frac{24}{3}\pi r^3$
- (38) In one solid, A atoms are at face-centres while B atoms are at the edges of sides then the formula of the solid is...
(a) AB₂ (b) A₂B (c) A₄B₃ (d) A₃B₂
- (39) Number of unit cells in 1 gm NaCl is (Na = 23, Cl = 35.5)
(a) 1.28×10^{21} (b) 5.14×10^{21}
(c) 2.57×10^{21} (d) 5.14×10^{22}
- (40) In ionic solid having fcc arrangement of value of $\frac{r^+}{r^-}$ is.....
(a) less than 0.22 (b) 0.22 to 0.41
(c) 0.73 to 1 (d) 0.41 to 0.73
- (41) One cubic structure contains X, Y and Z atoms. X-atoms are at the corner of the cube, Y atoms are at the centre and Z atoms are at the face-centre then the formula of the solid is..

- (a) XY_2Z_3 (b) XYZ_3
(c) $X_2Y_2Z_3$ (d) X_8YZ_6

1. Colligative properties of a solution depends upon

- (a) Nature of both solvent and solute
(b) The relative number of solute and solvent particles
(c) Nature of solute only
(d) Nature of solvent only

2. A molal solution is one that contains one mole of a solute in

[NCERT 1983; DPMT 1983; CPMT 1985; IIT 1986;
MP PMT 1987; EAMCET 1990; MP PET 1994, 99]

- (a) 1000 gm of the solvent
(b) One litre of the solvent
(c) One litre of the solution
(d) 22.4 litres of the solution

3. Colligative properties are used for the determination of

[Kerala CET (Engg.) 2002]

- (a) Molar Mass
(b) Equivalent weight
(c) Arrangement of molecules
(d) Melting point and boiling point
(d) Both (a) and (b)

4. What does not change on changing temperature

- (a) Mole fraction (b) Normality
(c) Molality (d) None of these

5. The vapour pressure of pure liquid A is 0.80 atm. On mixing a non-volatile B to A, its vapour pressure becomes 0.6 atm. The mole fraction of B in the solution is [MP PET 2003]

- (a) 0.150 (b) 0.25
(c) 0.50 (d) 0.75

5. The relative lowering of the vapour pressure is equal to the ratio between the number of

[EAMCET 1991; CBSE PMT 1991]

- (a) Solute molecules and solvent molecules
(b) Solute molecules and the total molecules in

the solution

(c) Solvent molecules and the total molecules in the solution

(d) Solvent molecules and the total number of ions of the solute

7. Which of the following is incorrect [J & K 2005]

- (a) Relative lowering of vapour pressure is independent
(b) The vapour pressure is a colligative property
(c) Vapour pressure of a solution is lower than the vapour pressure of the solvent
(d) The relative lowering of vapour pressure is directly proportional to the original pressure

8. When a non-volatile solute is dissolved in a solvent, the relative lowering of vapour pressure is equal to [BHU 1979; IIT 1983]

- (a) Mole fraction of solute
(b) Mole fraction of solvent
(c) Concentration of the solute in grams per litre
(d) Concentration of the solute in grams 100 ml

9. 60 gm of Urea (Mol. wt 60) was dissolved in 9.9 moles, of water. If the vapour pressure of pure water is P_o , the vapour pressure of solution is [DCE 2000]

- (a) $0.10 P_o$ (b) $1.10 P_o$
(c) $0.90 P_o$ (d) $0.99 P_o$

10. For a dilute solution, Raoult's law states that [CPMT 1987; BHU 1979; IIT 1985; MP PMT 2004; MNR 1988; AMU 2002]

- (a) The lowering of vapour pressure is equal to mole fraction of solute
(b) The relative lowering of vapour pressure is equal to mole fraction of solute
(c) The relative lowering of vapour pressure is proportional to the amount of solute in solution

- (d) The vapour pressure of the solution is equal to the mole fraction of solvent
11. Which property is shown by an ideal solution
[MP PET 2002]
- (a) It follows Raoult's law (b) $\Delta H_{mix} = 0$
(c) $\Delta V_{mix} = 0$ (d) All of these
12. When $W_B gm$ solute (molecular mass M_B) dissolves in $W_A gm$ solvent. The molality M of the solution is
- (a) $\frac{W_B}{W_A} \times \frac{M_B}{1000}$ (b) $\frac{W_B}{M_B} \times \frac{1000}{W_A}$
(c) $\frac{W_A}{W_B} \times \frac{1000}{M_B}$ (d) $\frac{W_A \times M_B}{W_B \times 1000}$
13. The vapour pressure of benzene at a certain temperature is $640 mm$ of Hg . A non-volatile and non-electrolyte solid weighing $2.175 g$ is added to $39.08 g$ of benzene. The vapour pressure of the solution is $600 mm$ of Hg . What is the molecular weight of solid substance
[CBSE PMT 1999; AFMC 1999]
- (a) 49.50 (b) 59.6
(c) 69.5 (d) 79.8
14. $60 gm$ of Urea ($Mol. wt$ 60) was dissolved in $9.9 moles$, of water. If the vapour pressure of pure water is P_o , the vapour pressure of solution is [DCE 2000]
- (a) $0.10 P_o$ (b) $1.10 P_o$ (c) $0.90 P_o$ (d) $0.99 P_o$
15. The vapour pressure of a solvent decreased by $10 mm$ of mercury, when a non-volatile solute was added to the solvent. The mole fraction of the solute in the solution is 0.2. What should be the mole fraction of the solvent, if decrease in the vapour pressure is to be $20 mm$ of mercury
- (a) 0.8 (b) 0.6
(c) 0.4 (d) 0.2
16. In osmosis [DPMT 1985]
- (a) Solvent molecules move from higher concentration to lower concentration
(b) Solvent molecules move from lower to higher concentration
(c) Solute molecules move from higher to lower concentration
(d) Solute molecules move from lower to higher concentration
17. Two solutions A and B are separated by semi-permeable membrane. If liquid flows from A to B then [MH CET 2000]
- (a) A is less concentrated than B
(b) A is more concentrated than B
(c) Both have same concentration
(d) None of these
18. The average osmotic pressure of human blood is $7.8 bar$ at $37^\circ C$. What is the concentration of an aqueous $NaCl$ solution that could be used in the blood stream [AIIMS 2004]
- (a) $0.16 mol/L$ (b) $0.32 mol/L$
(c) $0.60 mol/L$ (d) $0.45 mol/L$
19. The osmotic pressure of a solution is given by the relation [CPMT 1983, 84, 87, 93, 94]
- (a) $P = \frac{RT}{C}$ (b) $P = \frac{CT}{R}$
(c) $P = \frac{RC}{T}$ (d) $\frac{P}{C} = RT$
20. The concentration in gms per $litre$ of a solution of cane sugar ($M = 342$) which is isotonic with a solution containing $6 gms$ of urea ($M = 60$) per $litre$ is [Orissa PMT 1989]
- (a) 3.42 (b) 34.2
(c) 5.7 (d) 19
21. The molal elevation constant is the ratio of the elevation in B.P. to [CPMT 1982]
- (a) Molarity (b) Molality
(c) Mole fraction of solute
(d) Mole fraction of solvent
22. At higher altitudes the boiling point of water lowers because [NCERT 1972; CPMT 1994; J & K 2005]

- (a) Atmospheric pressure is low
- (b) Temperature is low
- (c) Atmospheric pressure is high
- (d) None of these

(23) When 10g of a non-volatile solute is dissolved in 100 g of benzene, it raises boiling point by 1°C then molecular mass of the solute is (K_b for benzene $=2.53\text{k}\cdot\text{m}^{-1}$) [BHU 2002]

- (a) 223 g
- (b) 233 g
- (c) 243 g
- (d) 253 g

24. Molal depression constant for water is 1.86°C . The freezing point of a 0.05 molal solution of a non-electrolyte in water is

[MNR 1990; MP PET 1997]

- (a) -1.86°C
- (b) -0.93°C
- (c) -0.093°C
- (d) 0.93°C

25. Van't Hoff factor of $\text{Ca}(\text{NO}_3)_2$ is [CPMT 1997]

- (a) 1
 - (b) 2
 - (c) 3
 - (d) 4
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