CHAPTER :SOLIDS

1. Which substance will conduct the current in the solid state?

   1. Diamond 2.Graphite 3.Iodine 4.Sodium chloride.

2. Molten sodium chloride conducts electricity due to the presence of ions:

   1.Free electrons 2. Free ions
   3.free molecules 4.atoms of sodium and chlorine.

3. Compounds with identical crystal structure and analogous formula are called

   1. Isomorphous 2. Allotropes 3. Isomers 4.Isotopes.

4. Glass is

   1. Super cooled liquid 2. Metallic crystal
   3. Molecular crystal 4. Face centered cubic

5. Among the following crystal lattices, which one has the largest packing fraction

   1. Body centered cubic 2. Simple cubic
   3. Simple tetragonal 4. Face centered cubic

6. Potassium crystallizes in a BCC lattice , hence the coordination number of potassium in potassium metal is

   1. 0 2. 4 3. 6 4. 8

7. Crystals can be classified in to basic crystal habits equal to

   1. 7 2. 4 3. 14 4. 2

8. In covalent solids, the units which occupy lattice points are

   1. Atoms 2. Ions 3. Molecules 4. Electrons.

9. The range of radius ratio(cationic to anionic) for an octahedral arrangement of ions in an ionic solid is

1.0.155—0.225 2.0.225—0.414
3. 0.414—0.732 4. 0.732—1

10. A compound is formed by elements A and B. This crystallizes in the cubic structure, when atoms A are at the corners of the cube, and atoms B are at the center of the cube. The simplest formula of the compound is

1.AB 2.AB_2 3. A_2B 4.AB_4

11. A solid AB has NaCl type structure. If the radius of the cat ion 'A' is 100pm, then the radius of the anion 'B' will be

1.241pm 2.414pm 3.225 pm 4. 44.4 pm

12. A binary solid (A^+B^-) has a rock salt structure. If the edge length is 400pm and radius of cat ion is 75pm,the radius of anion is

1. 100pm 2. 125pm 3. 250 pm 4. 325pm

13. Which of the following will have the weakest intermolecular forces?

1. P 2. Naphthalene 3. NaF 4. Ice.

14. Solid carbon dioxide is an example of

1. Ionic crystal 2. Covalent crystal
3. Molecular crystal 4. Metallic crystal.

15. Which of the following statements about amorphous solids is incorrect?

1. They melt over a range of temperature
2. There is no orderly arrangement of particles
3. They are rigid and incompressible
4. They are anisotropic.

16. How many molecules are there in the unit cell of sodium Chloride?

1.2 2.4 3. 6 4. 8

17. The three dimensional graph of lattice points which sets the pattern for the whole lattice is called

1. Space lattice 2. Simple lattice
3. Cell lattice 4.Unit cell

18. If the radius ratio is the range of 0.414-0.732, then the co-ordination number will be:

1.2 2.4 3.6 4.8

19. In a solid AB having the NaCl structure, 'A' atoms occupy the Corners of the cubic unit cell. If all the face centered atoms along one of the axis are removed, then the resultant stoichiometry of the solid is :

1.AB_2 2. A_2B 3.A_3B_4 4.A_4B_3

20. The number of unit cell in 58.5 g of NaCl is nearly

1.0.5 x 10^{24} 2. 1.5 x10^{25} 3. 3 x 10^{25} 4. 4 x 10^{25}

CHAPTER :COLLOIDS

1. Which one of the following is not a colloid?

1.Latex 2. Blood 3.Butter 4. Ghee.

2.The colloidal dispersion of solid in a gas is called

1.Foam 2. Aerosol 3. Gel 4. Sol

3.An emulsion is a colloidal dispersion of

1. A liquid in a gas 2. A liquid in a liquid
3.A solid in a liquid 4. A gas in a solid.

4. Which of the following is not a property of hydrophilic sols?

1.High concentration of dispersed phase can be easily attained.
2.Coagulation is reversible
3. Viscosity and surface tension are about the same for water
4. The charge on the particle depends upon the pH value of the medium, it may be positive, negative or even zero.

5. The process of preparation of colloidal sol from a precipitate is called

1. Coagulation 2. Dissolution 3. Dispersion 4.Peptisation.

6. The separation of colloidal particles from those of molecular dimension is called

1. Photolysis 2. Dialysis 3. Pyrolysis 4. Peptisation.

7. The arsenic sulphide is prepared by passing H_2S through arsenic oxide solution. The charge developed on the particles is due to adsorption of

1. H^+ 2.S^{2-} 3. OH^- 4. O^{2-}

8. The charge on the colloidal particle can be determined by

1. Electrophoresis 2. Electrodialysis
3.Geiger-Muller counter 4. Mulliken oil drop experiment.

9. The movement of colloidal particles under the influence of electric field is called

1. Electrophoresis 2.Electrolysis
3.Electro-dialysis 4.Electro-osmosis.

10. Which of the following has maximum flocculation value for a negatively charged sol?

1.NaCl 2. $BaCl_2$ 3.$AlCl_3$ 4. $SnCl_4$

11. Which of the following substance gives a positively charged sol

1. Gold 2. A metal sulphide
3.Ferric hydroxide 4. An acidic dye

12. Colloidal sol found effective in treating eye disease is

1. Colloidal sulphur 2.Colloidal antimony
3.Colloidal gold 4. Colloidal silver

13. The cleaning action of soap is due to

1. Its dissociation in to ions in water
2. The presence of Na^+ ions in soap
3. The formation of associated colloid
4. Its action as an emulsifying agent.

14. Gold number is minimum in case of

1. Gelatin 2. Egg albumin 3. Gum Arabic 4. Starch.

15. Mist is an example of colloidal system of

1. Liquid dispersed in gas
2. gas dispersed in gas
3. Solid dispersed in gas
4.solid disperses in air

16. In which of the following Tyndall effect is not observed?

1. suspension 2. Emulsion 3. Sugar solution 4. Gold sol

17. Colloidal gold is given by injection to act as

1. Disinfectant 2.Anticancer drug
3. germ killer 4. Tonic to raise vitality of human system.

18. Which one is an example of micelles system?

1.Soap +water 2. Rubber + water
3.Protein + water 4. Starch + water

19. Surface tension of the Lyophilic sols is

1. Lower than that of water
2.Higher than that of water
3.Equal to that of water
4.Cannot be predicted.

20. Colloid of which of the following can be prepared by electrical dispersion method?

1. Sulphur 2. Ferric hydroxide
3. Arsenic sulphide 4. Gold.

THEORY OF DILUTE SOLUTIONS

1. Solubility of a gas in a liquid increases with,

   1. Increase of P & T 2.Decrease of P & increase of T
   3. Increase of P & decrease of T 4. Decrease of P &T.

2. Out of Molarity(M),molality (m), formality (F) and mole fraction (x) those independent of temperature are

   1. M,m 2. F, x 3. m, x 4. M, x.

3. The value of osmotic pressure does not depend upon

   1.Concentration 2.Temperature of the solution
   3.No. of particle of the solute 4.Structure of the solute particle.

4. A solution, which has higher osmotic pressure as compared to other solution, is known as

   1. Hypotonic 2. Hypertonic 3. Isotonic 4. Normal.

5. Blood is found to be isotonic with
   1. Conc.NaCl solution 2.Very dilute NaCl solution
   3.0.91% NaCl solution 4. Saturated NaCl solution

6. Which of the following colligative properties can provide molar mass of proteins with greater precision?

   1.Relative lowering of vapour pressure
   2. Elevation of boiling point
   3. Depression in Freezing Point
   4.Osmotic pressure.

7. If dry air is passed through two bulbs one containing solvent & other solution, the decrease in weight will be

   1.More in solvent bulb 2.More in solution bulb
   3.Same in both the bulbs 4.Nil in both the bulbs.

8. Which of the following is not a colligative property?

1.Freezing point 2. lowering of vapour pressure
3.Osmotic pressure 4. Elevation in the boiling point.

9. The lowering of vapour pressure of the solvent takes place
1. Only when solute is non-volatile
2. Only when the solute is volatile
3. Only when the solute is non-electrolyte
4. All

10. For a dilute solution,Raoult's law states that

1. The lowering of vapour pressure = to X_{solute}
2. The relative lowering of vapour pressure = to the X_{solute}
3.The relative lowering vapour pressure is $\acute{\alpha}$ to the amount of solute
4. The vapour pressure is = to the $X_{solvent}$

11. If the osmotic pressure of 1 M urea is π, what will be the osmotic pressure for 0.1M NaCl

1. π, 2. 0.1 π, 3. 2 π, 4. 0.2 π,

12. Which of the following would lose weight on exposure to air?

1. Con. H_2SO_4 2.Anhydrous sodium carbonate
3.Solid NaOH 4. A saturated solution of CO_2

13. The sum of mole fraction of A, B & C in a solution containing 0.1 mole of each of A, B & C is

1. 0.1 2. 0.3 3. 1.0 4. 1/3

14. When attraction between A---B is more than that of A---A and B—B , then it will show --- deviation from Raoults law;

1. Positive 2. Negative
3. No deviation 4. Cannot be predicted.

15. Which of the following solution pairs can be separated in to its pure components by fractional distillation?

1. Benzene—Toluene 2. Water --- HNO_3
3. Water – HCl 4. Water – C_2H_5OH.

16. Which statement is incorrect about osmotic pressure (P), volume (V) and temperature (T)?

1. P ά 1/V if T is constant 2. P ά T if V is constant
3. P ά V if T is constant 4. PV is constant if V is constant .

17. Which of the following is correct for a solution showing positive deviation from Raoults law?

1. ΔV = +ve, ΔH = +ve 2. ΔV = -- ve , ΔH = --ve
3. ΔV = + ve , ΔH = -- ve 4. ΔH = --ve, ΔH = + ve

18. The azeotropic mixture of water and HCl boils at 108.5 ^{0}C. When this mixture is distilled, it is possible to obtain

1. Pure HCl
2. Pure water
3. Pure water as well as pure HCl
4. Neither HCl nor H_2O in their pure states.

19. Which pair from the following will not form an ideal solution ?

1. CCl_4 + $SiCl_4$ 2. H_2O + C_4H_9OH
3. C_2H_5Br + C_2H_5I 4. C_6H_{14} + C_7H_{16}

20. On freezing an aqueous solution of sugar, the solid that starts separating out is

1. Sugar
2. Ice
3. Solution with the same composition
4. Solution with different composition.

21. A glucose solution is to be injected into the blood stream. It must have the same --- as the blood stream

1. Molarity 2.Vapour pressure
3. Osmotic pressure 4. Viscosity

22. Which one of the following is incorrect ?

1. A solution freezes at a higher temp, than the pure solvent .
2. A solution boils at a higher temp, than the pure solvent.
3. 0.1 M NaCl solution and 0.1 M sugar solution
4. Osmosis cannot take place without a semi permeable membrane

23. The molal elevation constant is the ratio of the elevation in the boiling point to

1. Molarity 2. Molality
3. Mole fraction of the solute 4.Mole fraction of the solvent

24. Which of the following will have the highest Freezing point at 1 atm pressure ?

1. 0.1 M NaCl solution 2. 0.1 M sugar solution
3. 0.1 M $BaCl_2$ solution 4. 0.1 M $FeCl_2$ solution.

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

1. 1000 g of the solvent 2. one litre of the solution
3. one liter of the solvent 4. 22.4L of the solution .

26. Addition of common salt to a sample of water will

1. Increase its F.P. and increase the B.P.
2. Decreases the F P and increases the B.P.
3. Increases both F.P. and B.P.
4. Decreases both B.P. and F.P.

27. The relative lowering of vapour pressure is equal to the ratio between the numbers of

1. Solute molecules to the solvent molecules
2. Solute molecules to the total molecules in the solution
3. Solvent molecules to the total molecules in the solution
4. Solvent molecules to the total no. of ions of the solute

28. The molecular weight of sodium chloride determined by osmotic pressure method will be
    1. Equal to 58.5
    2. Greater than 58.5
    3. Less than 58.5
    4. none of these, as this method cannot be used .

29. 12g of urea is dissolved in 1 L of water and 68.4 g of sucrose is dissolved in 1L of water. The lowering of vapour pressure of the first case is
    1. Equal to second
    2. Greater than second
    3. Less than second
    4. Double that of second

30. As a result of osmosis the volume of the solution
    1. Gradually increases
    2. Gradually decreases
    3. Is not affected
    4. Any of the three

31. Which of the following is not correct for ideal solution?
    1. $\Delta S_{mixing} = 0$ 2. $\Delta V_{mixing} = 0$
    3. $\Delta H_{mixing} = 0$ 4. It obeys Raoults law.

32. What happens when isotonic solution of A (mol. Mass. 342) and B (mol. Mass. 60) are put into communication through semi permeable membrane ?
    1. Transfer of solvent from solution of A to that of B
    2. Transfer of solvent from solution of B to that of A
    3. No transfer of solvent from solution of A to that of B takes place
    4. Change in temperature of the solutions takes place

33. Which among the following will show maximum osmotic pressure ?
    1. 1M NaCl 2. 1 M $MgCl_2$ 3. 1 M $(NH_4)_3 PO_4$ 4. 1 M Na_2SO_4.

34. Which one of the following aqueous solution will have the lowest freezing point ?
    1. 0.1 molal solution of urea
    2. 0.1 molal solution of sucrose
    3. 0.1 molal solution of NaCl
    4. 0.1 molal solution of $CaCl_2$

35. The depression of freezing point is directly proportional to
    1. Mole fraction of the solution
    2. Molarity of the solution.
    3. Molality of the solution
    4. molarity of the solvent

36. In a mixture A and B components show negative deviation as
    1. $\Delta V_{mix} > 0$
    2. $\Delta H_{mix} < 0$
    3. A----B interaction is weaker than A—A and B---B interaction
    4. None

37. An aqueous solution of glucose is 10 % in strength.
    The volume in which one-gram mole of it is dissolved will be
    1. 18 L 2. 9 L 3. 0.9 L 4. 1.8 L

38. The vapour pressure of water at room temperature is 23.8 mm of Hg. The vapour pressure of an aqueous solution of sucrose with mole fraction 0.1 is equal to
    1. 23.9 mm of Hg 2. 24.2 mm of Hg
    3. 21.42mm of Hg 4. 21.44 mm of Hg

39. The vapour pressure of a solvent A is 0.80 atm.
    When a non-volatile substance B is added to this solvent its vapour pressure drops to 0.6 atm.
    The mole fraction of B in the solution is
    1. 0.25 2. 0.50
    3. 0.75 4. 0.90.

40. At a particular temperature, the vapour pressure of two liquids A and B are respectively 120 and 180 mm of Hg. If 2 moles of A and 3moles of B are mixed to form an ideal solution, the V P of the solution at the same T will be
    1. 156 mm of Hg 2. 145 mm of Hg
    3. 150 mm of Hg 4. 108 mm of Hg