Question bank

Chapter 2 Solution.

Q1. Mole fraction of glycerine $C_3H_5(OH)_3$ in solution containing 36 g of water and 46 g of glycerine is
(a) 0.46
(b) 0.40
(c) 0.20
(d) 0.36

Q2. Out of molality (m), molarity (M), formality (F) and mole fraction (x), those which are independent of temperature are
(a) M, m
(b) F, x
(c) m, x
(d) M, x

Q3. Which of the following condition is not satisfied by an ideal solution?
(a) $\Delta H_{mixing} = 0$
(b) $\Delta V_{mixing} = 0$
(c) Raoult's Law is obeyed
(d) Formation of an azeotropic mixture

Q4. The boiling point of an azeotropic mixture of water and ethanol is less than that of water and ethanol. The mixture shows
(a) no deviation from Raoult's Law.
(b) positive deviation from Raoult's Law.
(c) negative deviation from Raoult's Law.
(d) that the solution is unsaturated.

Q5. Which has the lowest boiling point at 1 atm pressure?
(a) 0.1 M KCl
(b) 0.1 M Urea
(c) 0.1 M $CaCl_2$
(d) 0.1 M $A1Cl_3$

Q6.Osmotic pressure of a solution is 0.0821 atm at a temperature of 300 K. The concentration in moles/litre will be
(a) 0.33
(b) 0.666
(c) 0.3×10^{-2}
(d) 3

Q7. People add sodium chloride to water while boiling eggs. This is to
(a) decrease the boiling point.
(b) increase the boiling point.
(c) prevent the breaking of eggs.
(d) make eggs tasty.

Q8. The molal elevation constant depends upon
(a) nature of solute.

(b) nature of the solvent.
(c) vapour pressure of the solution.
(d) enthalpy change.

Q9. If 2 gm of NaOH is present is 200 ml of its solution, its molarity will be
(a) 0.25
(b) 0.5
(c) 5
(d) 10

Q10. The atmospheric pollution is generally measured in the units of
(a) mass percentage
(b) volume percentage
(c) volume fraction
(d) ppm

Q11. A 5% solution of cane-sugar (molecular weight = 342) is isotonic with 1% solution of substance A. The molecular weight of X is
(a) 342
(b) 171.2
(c) 68.4
(d) 136.8

Q12. 234.2 gm of sugar syrup contains 34.2 gm of sugar. What is the molal concentration of the solution.
(a) 0.1
(b) 0.5
(c) 5.5
(d) 55

Q13. H_2S is a toxic gas used in qualitative analysis. If solubility of H_2S in water at STP is 0.195 m. what is the value of K_H?
(a) 0.0263 bar
(b) 69.16 bar
(c) 192 bar
(d) 282 bar

Q14. The law which indicates the relationship between solubility of a gas in liquid and pressure is
(a) Raoult's law
(b) Henry's law
(c) Lowering of vapour pressure
(d) Van't Hoff law

Q15. Among the following substances the lowest vapour pressure is exerted by
(a) water
(b) alcohol
(c) ether
(d) mercury

Q16. Partial pressure of a solution component is directly proportional to its mole fraction. This is known as

(a) Henry’s law
(b) Raoult’s law
(c) Distribution law
(d) Ostawald’s dilution law

Q17. Which of the following solutions shows positive deviation from Raoult’s law?
(a) Acetone + Aniline
(b) Acetone + Ethanol
(c) Water + Nitric acid
(d) Chloroform + Benzene

Q18. A plant cell shrinks when it is kept in a
(a) hypotonic solution
(b) hypertonic solution
(c) isotonic solution
(d) pure water

Q19. The relative lowering in vapour pressure is proportional to the ratio of number of
(a) solute molecules to solvent molecules
(b) solvent molecules to solute molecules
(c) solute molecules to the total number of molecules in solution
(d) solvent molecules to the total number of molecules in solution

Q20. A solution containing 10.2 g glycerine per litre is isotonic with a 2% solution of glucose. What is the molecular mass of glycerine?
(a) 91.8 g
(b) 1198 g
(c) 83.9 g
(d) 890.3 g

Q21. The osmotic pressure of a solution can be increased by
(a) increasing the volume
(b) increasing the number of solute molecules
(c) decreasing the temperature
(d) removing semipermeable membrane

Q22. Sprinkling of salt helps in clearing the snow covered roads in hills. The phenomenon involved in the process is
(a) lowering in vapour pressure of snow
(b) depression in freezing point of snow
(c) melting of ice due to increase in temperature by putting salt
(d) increase in freezing point of snow

Q23. For carrying reverse osmosis for desalination of water the material used for making semipermeable membrane is
(a) potassium nitrate
(b) parchment membrane
(c) cellulose acetate
(d) cell membrane

Q24. Which of the following units is useful in relating concentration of solution with its vapour pressure?
(a) Mole fraction
(b) Parts per million
(c) Mass percentage
(d) Molality

Q25. At equilibrium the rate of dissociation of a solid solute in a volatile liquid solvent is
(a) less than the rate of crystallisation
(b) greater than the rate of crystallisation
(c) equal to the rate of crystallisation
(d) zero