Chapter - Solutions

1.In comparison to a 0.01 M solution of glucose, the depression in freezing point of a 0.01 M $MgSO_4$
solution is
(a) the same
(b) about twice
(c) about three times
(d) about six times
Asnwer: (b) about twice

2.The value of Henry's Law constant is:
(a) larger for gases with higher solubility
(b) larger for gases with lower solubility
(c) constant for all gases
(d) not related to the solubility of gases
Asnwer: (b) larger for gases with lower solubility

3.Which of the following aqueous solutions should have the highest boiling point?
(a) 1.0 M Glucose
(b) 1.0 M Na_2SO4
(c) 1.0 M KCl
(d) 1.0 M Urea
Asnwer: (b) 1.0 M Na_2SO4

4.If a molecule AB undergoes dimerization in Benzene, its Van't Hoff factor is found to be 0.60. The degree of dissociation of AB is
(a) 20%
(b) 60%
(c) 80%
(d) 50%
Asnwer: (c) 80%

5.12g of Urea is dissolved in 1L of water and 68.4g sucrose is dissolved in 1L of water. Relative lowering of vapour pressure of Urea solution is:
(a) Greater than sucrose solution
(b) Less than sucrose solution
(c) Double that of sucrose solution
(d) Equal to that of sucrose solution
Asnwer: (d) Equal to that of sucrose solution

6.Density of a 2.05 M solution of acetic acid in water is 1.02 g/mL. The molality of the solution is
(a) 3.28 mol kg^{-1}

(b) 2.28 mol kg^{-1}
(c) 0.44 mol kg^{-1}
(d) 1.14 mol kg^{-1}
Asnwer: (b) 2.28 mol kg^{-1}

7.Which is not a colligative property?
(a) Osmotic pressure
(b) Lowering of vapour pressure
(c) Depression in freezing point
(d) Molal elevation constant
Asnwer: (d) Molal elevation constant

8.KH value for Ar(g), CO_2 (g), HCHO (g) and CH_4 (g) are 40.39, 1.67, 1.83×10^{-5} and 0.413 respectively. Arrange these gases in the order of their increasing solubility.
(a) HCHO < CH_4 < CO_2 < Ar
(b) HCHO < CO_2 < CH_4 < Ar
(c) Ar < CO_2 < CH_4 < HCHO
(d) Ar < CH_4 < CO_2 < HCHO
Asnwer: (c) Ar < CO_2 < CH_4 < HCHO

9.An unripe mango placed in a concentrated salt solution to prepare pickles shrinks because
(a) it gains water due to osmosis
(b) it loses water due to reverse osmosis
(c) it gains water due to reverse osmosis
(d) it loses water due to osmosis
Asnwer: (d) it loses water due to osmosis

10.The solution that forms maximum boiling azeotropes is
(a) Carbon disulphide – Acetone
(b) Benzene - Toluene
(c) Acetone – Chloroform
(d) n-Hexane – n-Hectane
Asnwer: (c) Acetone – Chloroform

11.Which of the following is dependent on temperature?
(a) Molality
(b) Molarity
(c) Mole Fraction
(d) Mass percentage
Asnwer: (b) Molarity

12.Osmotic pressure of a solution is 0.0821 atm at a temperature of 300 K. The concentration in moles/lit will be:
(a) 0.33
(b) 0.666
(c) 0.0033

(d) 3
Asnwer: (c) 0.0033

13.The type of intermolecular interaction present in a solution of n- Hexane and n-Octane is:
(a) London dispersion forces
(b) Dipole-dipole interaction
(c) Hydrogen bonding
(d) Ion-dipole interaction
Asnwer: (a) London dispersion forces

14.Colligative properties depend on
(a) the nature of the solute
(b) the number of solute particles in solution
(c) the physical properties of solute
(d) the nature of the solvent
Asnwer: (b) the number of solute particles in solution

15.Which among the following is least soluble in water?
(a) Phenol
(b) Toluene
(c) Ethylene glycol
(d) Pentanol
Asnwer: (b) Toluene