DPP

DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : CHEMISTRY**
DATE : **DPP No. : 6**

Topic :-SOLUTIONS

1. Osmotic pressure of a solution at a given temperature
   a) Increases with concentration
   b) Decreases with concentration
   c) Remains same
   d) Initially increases and then decreases

2. A solution has a 1 : 4 mole ratio of pentane to hexane. The vapour pressures of pure hydrocarbons at 20 C are 440 mm Hg for pentane and 120 mm Hg for hexane. The mole fraction of pentane in vapour phase would be :
   a) 0.786 b) 0.549 c) 0.478 d) 0.200

3. Distribution law cannot be applied for the system in which I_2 is distributed between :
   a) H_2O and CS_2
   b) H_2O and CCl_4
   c) H_2O and ether
   d) H_2O and ethanol

4. The vapour pressure of pure liquid A is 0.80 atm. When a non-volatile B is added to A its vapour pressure drops to 0.60 atm. The mole fraction of B in the solution is
   a) 0.125 b) 0.25 c) 0.5 d) 0.75

5. When a non-volatile solute is dissolved in a solvent, the relative lowering of vapour pressure is equal to
   a) Mole fraction of solute
   b) Mole fraction of solvent
   c) Concentration of the solute in gram per litre
   d) Concentration of the solute in gram per 100 mL

6. The freezing point of one modal NaCl solution assuming NaCl to be 100 % dissociated in water is (modal depression constant=1.86)
   a) $-2.72°C$ b) $-3.72°C$ c) $2.72°C$ d) $3.72°C$

7. On mixing, heptane and octane form an ideal solution. At 373 K, the vapour pressures of the two liquid components (heptanes and octane) are 105 kPa and 45kPa respectively. Vapour pressure of the solution obtained by mixing 25 g of heptanes and 35 g of octane will be (molar mass of heptanes = 100 g mol^{-1} and of octane = 114 gmol^{-1}).
a) 72.0 kPa b) 36.1 kPa c) 96.2 kPa d) 144.5 kPa

8. The van't Hoff factor of $BaCl_2$ at 0.01 M concentration is 1.98. The percentage of dissociation of $BaCl_2$ at this concentration is
a) 49 b) 69 c) 89 d) 98

9. The relative lowering of vapour pressure of an aqueous solution containing non-volatile solute is 0.0125. The molality of the solution is
a) 0.70 b) 0.50 c) 0.60 d) 0.80

10. An aqueous solution of glucose was prepared by dissolving 18 g of glucose in 90 g of water. The relative lowering in vapour pressure is
a) 0.01 b) 0.02 c) 1 d) 20

11. In a 0.2 molal aqueous solution of a weak acid H*X*, the degree of ionisation is 0.3 Taking k_f for water as 1.85, the freezing point of the solution will be nearest to
a) MeV b) Cal c) Cm/s d) Atm

12. The unit of molality is
a) mol L^{-1} b) mol kg^{-1} c) $mol^{-1}\ L^{-1}$ d) mol L

13. An azeotropic solution of two liquids has boiling point lower than either when it
a) Shows a negative deviation from Raoult's lawb) Shows a positive deviation from Raoult's law
c) Shows no deviation from Raoult's law d) Is saturated

14. The statement, "The mass of a gas dissolved in a given mass of a solvent at any temperature is proportional to the pressure of the gas above the solvent" is
a) Henry's law b) Law of mass action c) Dalton's law d) None of these

15. The freezing point of water is depressed by 0.37°C in a 0.01 mol NaCl solution. The freezing point of 0.02 molal solution of urea is depressed by
a) 0.37°C b) 0.74°C c) 0.185°C d) 0°C

16. A solution of protein (extracted from crabs) was prepared by dissolving 0.75 g in 125 cm^3 of an aqueous solution. At 4 C an osmotic pressure rise of 2.6 mm of the solution was observed. Then molecular weight of protein is : (Assume density of solution is 1.00 g/cm^3)
a) 9.4×10^5 b) 5.4×10^5 c) 5.4×10^{10} d) 9.4×10^{10}

17. 2 N HCl solution will have same molar concentration as a
    a) 4.0 N H_2SO_4 b) 0.5 N H_2SO_4 c) 1 N H_2SO_4 d) 2 N H_2SO_4

18. Molarity of a given orthophosphoric acid solution is 3 M. It's normality is
    a) 9N b) 0.3 N c) 3 N d) 1 N

19. Which of the following is a colligative property?
    a) Boiling point b) Freezing point c) Osmotic pressure d) Vapour pressure

20. A liquid is in equilibrium with its vapours at its boiling point. On the average the molecules in the two phases have equal :
    a) Potential energy
    b) Total energy
    c) Kinetic energy
    d) Intermolecular forces