DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : CHEMISTRY**
DATE : **DPP No. : 10**

Topic :-SOLUTION

1. Osmotic pressure of blood is 7.65 atm at 310 K. An aqueous solution of glucose that will be isotonic with blood is …….wt./vol.
   a) 5.41% b) 3.54% c) 4.53% d) 53.4%

2. A substance is completely trimerised on dissolution in a solvent. The van't Hoff factor (i) for such change is :
   a) 1 b) 2 c) 3 d) 1/3

3. A liquid is kept in a closed vessel. If a glass plate (negligible mass) with a small hole is kept on top of the liquid surface, then the vapour pressure of the liquid in the vessel is :
   a) More than what would be if the glass plate were removed
   b) Same as what would be if the glass plate were removed
   c) Less than what would be if the glass plate were removed
   d) Cannot be predicted

4. The amount of ice that will separate out on cooling a solution containing 50 g of ethylene glycol in 200 g water to -9.3 C is : ($K'_f = 1.86$ K molality^{-1})
   a) 38.71 g b) 38.71 mg c) 42 g d) 42 mg

5. The number of moles of a solute in its solution is 20 and total number of moles are 80. The mole fraction of solute is
   a) 0.25 b) 0.50 c) 1.00 d) 1.25

6. The order of osmotic pressure of isomolar solution of $BaCl_2$, NaCl and sucrose is
   a) $BaCl_2$ >NaCl>sucrose b) NaCl> $BaCl_2$> sucrose
   c) Sucrose>NaCl> $BaCl_2$ d) $BaCl_2$ >sucrose>NaCl

7. At STP, a container has 1 mole of Ar, 2 moles of CO_2, 3 moles of O_2 and 4 moles of N_2. Without changing the total pressure if one mole of O_2 is removed, the partial pressure of O_2 is
   a) Changed by about 16% b) Halved
   c) Changed by 26% d) Unchanged

8. A solute is soluble in two immiscible liquids which are present in a mixture. The concentration of the solute in the upper layer will be :
   a) Same as in the lower layer
   b) Less than in the lower layer
   c) More than in the lower layer
   d) In fixed ratio with that in the lower layer

9. During osmosis, flow of water through a semipermeable membrane is :
   a) From both sides of semipermeable membrane with unequal flow rates
   b) From solution having lower concentration only
   c) From solution having higher concentration only
   d) From both sides of semipermeable membrane with equal flow rates

10. According to distribution law, the distribution of solute in two phases is given by the expression,
    $K = \frac{\text{concentration of solute in phase I}}{\text{concnetration of solute in phase II}}$,
    the numerical Value of constant K depends upon :
    a) The temperature of the system
    b) The nature of solute distributed
    c) The nature of two immiscible solvents used
    d) All of the above

11. The experimental molecular weight of an electrolyte will always be less than its calculated value because the value of van't Hoff factor, 'i' is :
    a) Less than one b) Greater than one c) One d) Zero

12. The freezing point of 1% solution of lead nitrate in water will be
    a) 2°C b) 1°C c) 0°C d) Below 0°C

13. The osmotic pressure of a solution at 0°C is 2 atm. What will be its osmotic pressure at 273°C under similar conditions?
    a) 0.5 atm b) 2×273 atm c) 4 atm d) $273/2$ atm

14. Which of the following statements is false?
    a) Two sucrose solution of same molality prepared in different solvent will have the same freezing point depression
    b) Osmotic pressure (π) of a solution is given by $\pi = MRT$ where M is molarity of the solution
    c) The correct order of osmotic pressure for 0.01 M aqueous solution of each compound is $BaCl_2 > KCl > CH_3COOH > Sucrose$
    d) Raoult's law states that the vapour pressure of a component over a solution is proportional to its mole fraction

15. When 25 g of a non-volatile solute is dissolved in 100 g of water, the vapour pressure is lowered by 2.25×10^{-1}mm. If the vapour pressure of water at 20°C is 17.5 mm, what is the molecular weight of the solute?
a) 206 b) 302 c) 350 d) 276

16. The volume of water to be added to $\frac{N}{2}$ HCl to prepare 500 cm^3 of $\frac{N}{10}$ solution is
a) 450 cm^3 b) 100 cm^3 c) 45 cm^3 d) 400 cm^3

17. Lowering of vapour pressure is highest for
a) 0.1 M $BaCl_2$ b) 0.1 M glucose c) 0.1 M $MgSO_4$ d) Urea

18. One component of a solution follows Raoult's law over the entire range $0 \leq x_1 \leq 1$. The second component must follow Raoult's law in the range when x_2 is
a) Close to zero b) Close to 1 c) $0 \leq x_2 \leq 05$ d) $0 \leq x_2 \leq 1$

19. The mole fraction of water in 20% aqueous solution of H_2O_2 is
a) $\frac{20}{80}$ b) $\frac{80}{20}$ c) $\frac{68}{77}$ d) $\frac{77}{68}$

20. What will be the molality of a solution having 18 g of glucose (mol. wt. = 180) dissolved in 500 g of water?
a) 1 m b) 0.5 m c) 0.2 m d) 2 m