

CLASS : XIth
DATE :

SUBJECT : CHEMISTRY
DPP No. : 9

Topic :-SOLUTION

- At temperature 327°C and concentration C osmotic pressure of a solution is p , the same solutions at concentration $C/2$ and a temperature 427°C shows osmotic pressure 2 atm, value of p will be
a) $\frac{12}{7}$ b) $\frac{24}{7}$ c) $\frac{6}{5}$ d) $\frac{5}{6}$
- Molarity of a solution prepared by dissolving 75.5 g of pure KOH in 540 mL solution is
a) 1.50 M b) 2.50 M c) 3.50 M d) 5.01 M
- The relationship between the values of osmotic pressure of 0.1 M solution of $\text{KNO}_3(p_1)$ and $\text{C}_2\text{H}_5\text{COOH}(p_2)$ is
a) $\frac{p_1}{p_1 + p_2} = \frac{p_2}{p_1 + p_2}$ b) $p_1 > p_2$ c) $p_2 > p_1$ d) $p_1 = p_2$
- At 40°C the vapour pressures of pure liquids, benzene and toluene, are 75 torr and 22 torr respectively. At the same temperature, the partial vapour pressure of benzene in a mixture of 78 g benzene and 46 g toluene in torr assuming the ideal solution should be :
a) 50 b) 25 c) 375 d) 53.5
- The reverse of fusion is freezing and it is :
a) Endothermic
b) Exothermic
c) Neither exothermic nor endothermic
d) May be exothermic or endothermic
- 50 g of an acid is dissolved in one litre aqueous solution. Distribution coefficient in favour of ether is 3. Acid left in aqueous layer when solution is shaken with one litre ether :
a) 25 g b) 12.5 g c) 6.25 g d) None of these

7. When the vapour pressure of solutions of two liquids are less than those expected from ideal solutions, they are said to show :
- Positive deviations from ideal behaviour
 - Negative deviations from ideal behaviour
 - Positive deviations for lower concentrations and negative deviations for higher concentration
 - None of the above
8. Which method cannot be used to find out the molecular weight of non-volatile solute?
- Victor Meyer's method
 - Osmotic pressure method
 - Cryoscopic method
 - Ebullioscopic method
9. The equilibrium in a heterogeneous system can be studied by :
- Distribution law
 - Phase rule
 - Both (a) and (b)
 - None of these
10. At Abu mountains water boils at 96 C. What amount of NaCl be added in 1 kg water so that it boils at 100 C. K_b for $H_2O = 0.52 \text{ K molality}^{-1}$
- 225 g
 - 450 g
 - 200 g
 - 125 g
11. The normality of 0.3 M phosphorous acid (H_3PO_3) is
- 0.2
 - 0.4
 - 0.6
 - 0.8
12. If the various terms in the below given expressions have usual meanings, the van't Hoff factor (i) cannot be calculated by which one of the expressions?
- $\pi V = \sqrt{inRT}$
 - $\Delta T_f = ik_f.m$
 - $\Delta T_b = ik_b.m$
 - $\frac{p^\circ_{\text{solvent}} - p_{\text{solution}}}{p^\circ_{\text{solvent}}} = i\left(\frac{n}{N+n}\right)$
13. Which of the following liquid pairs shows a positive deviation from Raoult's law?
- Water-hydrochloric acid
 - Benzene-methanol
 - Water-nitric acid
 - Acetone-chloroform
14. How much $K_2Cr_2O_7$ (Mol. wt. = 294.19) is required to prepare one litre of 0.1 N solution?
- 9.8063 g
 - 7.3548 g
 - 3.6774 g
 - 4.903 g
15. The boiling point of C_6H_6 , CH_3OH , $C_6H_5NH_2$ and $C_6H_5NO_2$ are 80°C , 65°C , 184°C and 212°C respectively. Which will show highest vapour pressure at room temperature?
- C_6H_6
 - CH_3OH
 - $C_6H_5NH_2$
 - $C_6H_5NO_2$

16. In a pair of immiscible liquids, a common solute dissolves in both and the equilibrium is reached. The concentration of solute in upper layer is :
- a) Same as in lower layer
 - b) Lower than the lower layer
 - c) Higher than the lower layer
 - d) In fixed ratio with that in the lower layer
17. Insulin $(C_2H_{10}O_5)_n$ is dissolved in a suitable solvent and the osmotic pressure (π) of solutions of various concentrations C (g/cm^3) is measured at 20 C. the slope of a plot of π against C is found to be 4.65×10^{-3} . The molecular weight of the insulin is :
- a) 4.8×10^5
 - b) 9×10^5
 - c) 3×10^5
 - d) 5.17×10^6
18. Volume of 0.6 M NaOH required to neutralise 30 cm^3 of 0.4 M HCl is
- a) 20 cm^3
 - b) 40 cm^3
 - c) 45 cm^3
 - d) 30 cm^3
19. The freezing point of the 0.05 molal solution of non-electrolyte in water is
- a) $-0.093^\circ C$
 - b) $1.86^\circ C$
 - c) $0.93^\circ C$
 - d) $0.093^\circ C$
20. A molar solution of NaCl has a density of 1.21 $g mL^{-1}$. The molarity of this solution is
- a) 2.35
 - b) 1.143
 - c) 2.95
 - d) 1.356