

# DPP

DAILY PRACTICE PROBLEMS

CLASS : XI<sup>th</sup>  
DATE :

SUBJECT : CHEMISTRY  
DPP No. : 4

## Topic :-SOLUTIONS

- The lubricating action of an oil is more if it possess :
  - High vapour pressure
  - Low vapour pressure
  - High surface tension
  - High density
- Maximum lowering of vapour pressure is observed in the case of
  - 0.1 M glucose
  - 0.1 M BaCl<sub>2</sub>
  - 0.1 M MgSO<sub>4</sub>
  - 0.1 NaCl
- The solubility of a gas in liquid at a temperature is directly proportional to its :
  - Density
  - Melting point
  - Boiling point
  - Pressure
- A solution of sucrose (Molar mass = 342 g/mol) is prepared by dissolving 68.4 g of it per litre of solution, what is its osmotic pressure ( $R=0.082 \text{ L atmK}^{-1} \text{ mol}^{-1}$ ) at 273 K?
  - 3.92 atm
  - 4.48 atm
  - 5.92 atm
  - 29.4 atm
- Which of the following concentration factors is affected by change in temperature?
  - Molarity
  - Molality
  - Mole fraction
  - Weight fraction
- Which of the following mixture does not show positive deviation from the Raoult's law?
  - Benzene + acetone
  - Acetone + ethanol
  - Acetone + chloroform
  - Water + ethanol
- The ratio of vapour pressure over solution phase on mixing two immiscible liquids is equal to :
  - Ratio of their weights in mixture
  - Ratio of their mol. weights
  - Ratio of their moles in liquid phase
  - Ratio of their moles in vapour phase
- The vapour pressure of benzene at 80 C is lowered by 10 mm by dissolving 2g of a non-volatile substance in 78 g of benzene. The vapour pressure of pure benzene at 80 C is 750 mm. The molecular weight of the substance will be :
  - 15
  - 150
  - 1500
  - 148

9.  $I_2$  is added to a system of  $H_2O$  and  $CS_2$ . The concentration of  $I_2$  in water and  $CS_2$  is found to be  $c_1$  and  $c_2$  respectively. The ratio of  $c_1/c_2$  will be constant only if :
- The solutions are dilute
  - The temperature remains constant
  - The solute neither changing the immiscibility of solvents nor itself changing in molecular state
  - All of the above
10. The boiling point of an aqueous solution of a non-volatile solute is  $100.15\text{ C}$ . What is the freezing point of an aqueous solution obtained by diluting the above solution with an equal volume of water? The values of  $K_b$  and  $K_f$  for water are  $0.512\text{ C}$  and  $1.86\text{ C K molality}^{-1}$
- $-0.544\text{ C}$
  - $-0.512\text{ C}$
  - $-0.272\text{ C}$
  - $-0.186\text{ C}$
11. A solution has an osmotic pressure of  $0.821\text{ atm}$  at  $300\text{ K}$ . its concentration would be :
- $0.066\text{ M}$
  - $0.66\text{ M}$
  - $0.033\text{ M}$
  - $0.33\text{ M}$
12. Density of a  $2.05\text{ M}$  solution of acetic acid in water is  $1.02\text{ g/mL}$ . The molality of the solution is
- $9\text{ L}$
  - $1.8\text{ L}$
  - $8\text{ L}$
  - $0.9\text{ L}$
13. On adding  $1\text{ g}$  arsenic to  $80\text{ g}$  benzene, the freezing point of benzene is lowered by  $0.19^\circ\text{C}$ . The formula of arsenic is
- $As$
  - $As_2$
  - $As_3$
  - $As_4$
14. The process of getting fresh water from sea water is known as :
- Osmosis
  - Filtration
  - Diffusion
  - Reverse osmosis
15. The statement "the relative lowering of the vapour pressure is equal to the ratio of moles of the solute to the total number of the moles in the solution" refers to
- Decrease the freezing point of water in the winter and increase the boiling point of water in the summer
  - Only decrease the freezing point of water
  - Only increase the boiling point of water
  - Be used for cleaning the radiator in a car
16.  $X$  is dissolved in water. Maximum boiling point is observed when  $X$  is ....( $0.1\text{ M}$  each)
- $CaSO_4$
  - $BaCl_2$
  - $NaCl$
  - Urea
17. What is molarity of  $K^+$  in aqueous solution that contains  $17.4\text{ ppm}$  of  $K_2SO_4$  ( $174\text{ g mol}^{-1}$ )?
- $2 \times 10^{-2}\text{ M}$
  - $2 \times 10^{-3}\text{ M}$
  - $4 \times 10^{-4}\text{ M}$
  - $2 \times 10^{-4}\text{ M}$

18. Which of the following statement is true?
- a) The relative lowering of vapour pressure of a solution is equal to the mole fraction of the solute present in the solution.
  - b) Passage of solute molecules towards solution side through semipermeable membrane is osmosis.
  - c) The boiling point of solution is always lower than the solvent.
  - d) The boiling point of a liquid is the temperature at which its vapour pressure becomes equal to 260 mm.
19. Calculate the molarity of 1 L solution of 93%  $\text{H}_2\text{SO}_4$  (weight/volume). The density of the solution is 1.84 g/mL
- a) 11.05                      b) 12.05                      c) 13.05                      d) 14.05
20. If 0.15 g of a solute dissolved in 15 g of solvent is boiled at a temperature higher by  $0.216^\circ\text{C}$  than that of the pure solvent, the molecular weight of the substance is (molal elevation constant for the solvent is  $2.16^\circ\text{C}$ )
- a) 100                      b) 102                      c) 104                      d) 1.02

PE