

# DPP

DAILY PRACTICE PROBLEMS

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

SUBJECT : CHEMISTRY  
DPP No. : 1

## Topic :-SOLUTION

- A solution of two liquids boils at a temperature more than the boiling point of either them. Hence, the binary solution shows
  - Negative deviation from Raoult's law
  - Positive deviation from Raoult's law
  - No deviation from Raoult's law
  - Positive or negative deviation from Raoult's law depending upon the composition
- Vapour pressure of pure 'A' is 70 mm of Hg at 25°C. It from an ideal solution with 'B' in which mole fraction of A is 0.8. If the vapour pressure of the solution is 84 mm of Hg at 25°C, the vapour pressure of pure 'B' at 25°C is
  - 28 mm
  - 56 mm
  - 70 mm
  - 140 mm
- Abnormal colligative properties are observed only when the dissolved non-volatile solute in a given dilute solution
  - Is a non-electrolyte
  - Offers an intense colour
  - Associates or dissociates
  - Offers no colour
- As a result of osmosis, the volume of the concentrated solution :
  - Gradually decreases
  - Gradually increases
  - Suddenly increases
  - None of these
- At a suitable pressure near the freezing point of ice, there exists :
  - Only ice
  - Ice and water
  - Ice and vapour
  - Ice, water and vapours, all existing side by side
- Which of the following concentration units is independent of temperature?
  - Normality
  - Molarity
  - Molality
  - ppm

7. In cold countries, ethylene glycol is added to water in the radiators of cars during winters. It results in :
- Lowering in boiling point
  - Reducing viscosity
  - Reducing specific heat
  - Lowering in freezing point
8. Calculate the molal depression constant of a solvent which has freezing point  $16.6^{\circ}\text{C}$  and latent heat of fusion  $180.75 \text{ Jg}^{-1}$ .
- 2.68
  - 3.86
  - 4.68
  - 2.86
9. The freezing point depression constant for water is  $1.86 \text{ K kgmol}^{-1}$ . If 45 g of ethylene glycol is mixed with 600 g of water, the freezing point of the solution is
- 2.2 K
  - 270.95 K
  - 273 K
  - 275.35 K
10. The movement of solvent molecules through a semipermeable membrane is called
- Electrolysis
  - Electrophoresis
  - Osmosis
  - Cataphoresis
11. An aqueous solution of methanol in water has vapour pressure
- Less than that of water
  - More than that of water
  - Equal to that of water
  - Equal to that of methanol
12. Which pair shows a contraction in volume on mixing along with evolution of heat?
- $\text{CHCl}_3 + \text{C}_6\text{H}_6$
  - $\text{H}_2\text{O} + \text{HCl}$
  - $\text{H}_2\text{O} + \text{HNO}_3$
  - All of these
13. The vapour pressure of water at  $20^{\circ}\text{C}$  is 17.5 mmHg. If 18 g of glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) is added to 178.2 g of water at  $20^{\circ}\text{C}$ , the vapour pressure of the resulting solution will be
- 17.675 mmHg
  - 15.750 mmHg
  - 16.500 mmHg
  - 17.325 mmHg
14. At  $80^{\circ}\text{C}$ , the vapour pressure of pure liquid 'A' is 520 mm Hg and that of pure liquid 'B' is 1000 mm Hg. If a mixture of solution 'A' and 'B' boils at  $80^{\circ}\text{C}$  and 1 atm pressure, the amount of 'A' in the mixture is : (1 atm = 760 mm Hg)
- 50 mol per cent
  - 52 mol per cent
  - 34 mol per cent
  - 48 mol per cent
15. Van't Hoff factor ( $i$ ):
- Is less than one in case of dissociation
  - Is more than one in case of association
  - $i = \frac{\text{normal molecular mass}}{\text{observed molecular mass}}$
  - $i = \frac{\text{observed molecular mass}}{\text{normal molecular mass}}$

16. Following solutions at the same temperature will be isotonic :
- a) 3.42 g of cane sugar in one litre water and 0.18 g of glucose in one litre water
  - b) 3.42 g of cane sugar in one litre water and 0.18 g of glucose in 0.1 litre water
  - c) 3.42 g of cane sugar in one litre water and 0.585 g of NaCl in one litre water
  - d) 3.42 g of cane sugar in one litre water and 1.17 g of NaCl in one litre water
17. The osmotic pressure of a 5% (wt./vol) solution of cane sugar at 150°C is
- a) 3.078 atm
  - b) 4.078 atm
  - c) 5.078 atm
  - d) 2.45 atm
18. Ethylene glycol is used as an antifreeze in a cold climate. Mass of ethylene glycol which should be added to 4 kg of water to prevent it from freezing at  $-6^{\circ}\text{C}$  will be ( $K_f$  for water =  $1.86 \text{ K kg mol}^{-1}$ . and molar mass of ethylene glycol =  $62 \text{ g mol}^{-1}$ )
- a) 804.32 g
  - b) 204.30 g
  - c) 400.00 g
  - d) 304.60 g
19. Mole fraction of solute in benzene is 0.2 then find molality of solute
- a) 3.2
  - b) 2
  - c) 4
  - d) 3.6
20. When a solute is added in two immiscible solvents, it distributes itself between two liquids so that its concentration in first liquid is  $c_1$  and that in the second liquid is  $c_2$ . If the solute forms a stable trimer in the first liquid, the distribution law suggests that :
- a)  $3c_1 = c_2$
  - b)  $c_1/\sqrt[3]{c_2} = \text{constant}$
  - c)  $c_1/3 = c_2$
  - d)  $c_2/\sqrt[3]{c_1} = \text{constant}$

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