

CLASS : XIIth

DATE :

SUBJECT : CHEMISTRY

DPP No. : 1

Topic :-SOLUTION

1. A solution of two liquids boils at a temperature more than the boiling point of either them.
Hence, the binary solution shows
 - a) Negative deviation from Raoult's law
 - b) Positive deviation from Raoult's law
 - c) No deviation from Raoult's law
 - d) Positive or negative deviation from Raoult's law depending upon the composition
2. 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
 - a) 28 mm
 - b) 56 mm
 - c) 70 mm
 - d) 140 mm
3. Abnormal colligative properties are observed only when the dissolved non-volatile solute in a given dilute solution
 - a) Is a non-electrolyte
 - b) Offers an intense colour
 - c) Associates or dissociates
 - d) Offers no colour
4. As a result of osmosis, the volume of the concentrated solution :
 - a) Gradually decreases
 - b) Gradually increases
 - c) Suddenly increases
 - d) None of these
5. At a suitable pressure near the freezing point of ice, there exists :
 - a) Only ice
 - b) Ice and water
 - c) Ice and vapour
 - d) Ice, water and vapours, all existing side by side
6. Which of the following concentration units is independent of temperature?
 - a) Normality
 - b) Molarity
 - c) Molality
 - d) ppm

7. In cold countries, ethylene glycol is added to water in the radiators of cars during winters. It results in :
 - a) Lowering in boiling point
 - b) Reducing viscosity
 - c) Reducing specific heat
 - d) Lowering in freezing point

8. Calculate the molal depression constant of a solvent which has freezing point 16.6°C and latent heat of fusion 180.75 J g^{-1} .
 - a) 2.68
 - b) 3.86
 - c) 4.68
 - d) 2.86

9. The freezing point depression constant for water is $1.86 \text{ K kg mol}^{-1}$. If 45 g of ethylene glycol is mixed with 600 g of water, the freezing point of the solution is
 - a) 2.2 K
 - b) 270.95 K
 - c) 273 K
 - d) 275.35 K

10. The movement of solvent molecules through a semipermeable membrane is called
 - a) Electrolysis
 - b) Electrophoresis
 - c) Osmosis
 - d) Cataphoresis

11. An aqueous solution of methanol in water has vapour pressure
 - a) Less than that of water
 - b) More than that of water
 - c) Equal to that of water
 - d) Equal to that of methanol

12. Which pair shows a contraction in volume on mixing along with evolution of heat?
 - a) $\text{CHCl}_3 + \text{C}_6\text{H}_6$
 - b) $\text{H}_2\text{O} + \text{HCl}$
 - c) $\text{H}_2\text{O} + \text{HNO}_3$
 - d) All of these

13. The vapour pressure of water at 20°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°C , the vapour pressure of the resulting solution will be
 - a) 17.675 mmHg
 - b) 15.750 mmHg
 - c) 16.500 mmHg
 - d) 17.325 mmHg

14. At 80°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°C and 1 atm pressure, the amount of 'A' in the mixture is : (1 atm = 760 mm Hg)
 - a) 50 mol per cent
 - b) 52 mol per cent
 - c) 34 mol per cent
 - d) 48 mol per cent

15. Van't Hoff factor (i):
 - a) Is less than one in case of dissociation
 - b) Is more than one in case of association
 - c) $i = \frac{\text{normal molecular mass}}{\text{observed molecular mass}}$
 - d) $i = \frac{\text{observed molecular mass}}{\text{normal molecular mass}}$

16. Following solutions at the same temperature will be isotonic :
- 3.42 g of cane sugar in one litre water and 0.18 g of glucose in one litre water
 - 3.42 g of cane sugar in one litre water and 0.18 g of glucose in 0.1 litre water
 - 3.42 g of cane sugar in one litre water and 0.585 g of NaCl in one litre water
 - 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
- 3.078 atm
 - 4.078 atm
 - 5.078 atm
 - 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°C will be (K_f for water = $1.86 \text{ K kg mol}^{-1}$, and molar mass of ethylene glycol = 62 g mol^{-1})
- 804.32 g
 - 204.30 g
 - 400.00 g
 - 304.60 g
19. Mole fraction of solute in benzene is 0.2 then find molality of solute
- 3.2
 - 2
 - 4
 - 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 :
- $3c_1 = c_2$
 - $c_1/\sqrt[3]{c_2} = \text{constant}$
 - $c_1/3 = c_2$
 - $c_2/\sqrt[3]{c_1} = \text{constant}$