Chemistry: II^th T 4.2 Solutions and colligative property

Name: .....

Marks Obtained: Each correct answer carries +4 marks
Time: 30 min, Max. Marks: 80
Date: 16.12.2021

1. What will be the normality of a solution containing 4.9 g. H_3PO_4 dissolved in 500 ml water **[PMT 2003]**
(a) 0.3 (b) 1.0
(c) 3.0 (d) 0.1

2. Mole fraction (X) of any solution is equal to
(a) $\frac{\text{No. of moles of solute}}{\text{Volume of solution in litre}}$
(b) $\frac{\text{No. of gram equivalent of solute}}{\text{Volume of solution in litre}}$
(c) $\frac{\text{No. of moles of solute}}{\text{Mass of solvent in kg}}$
(d) $\frac{\text{No. of moles of any constituent}}{\text{Total no. of moles of all constituents}}$

3. The number of moles of solute per kg of a solvent is called its **[PMT 1983]**
(a) Molarity (b) Normality
(c) Molar fraction (d) Molality

4. 10 N and $\frac{1}{10}$ N solution is called
(a) Decinormal and decanormal solution
(b) Normal and decinormal solution
(c) Normal and decanormal solution
(d) Decanormal and decinormal solution

5. The unit of molality is
(a) Mole per litre
(b) Mole per kilogram
(c) Per mole per litre
(d) Mole litre

6. The statement " The mass of a gas dissolved in a given mass of a solvent at any temperature is proportional to the pressure of the gas above the solvent" is
(a) Dalton's Law of Partial Pressures
(b) Law of Mass Action
(c) Henry's Law
(d) None of these

7. Colligative properties are used for the determination of
(a) Molar Mass
(b) Equivalent weight
(c) Arrangement of molecules
(d) Melting point and boiling point
(e) Both (a) and (b)

8. Among the following substances the lowest vapour pressure is exerted by
(a) Water (b) Mercury
(c) Kerosene (d) Rectified spirit

9. Which one of the following is the expression of Raoult's law
(a) $\frac{P-P_s}{P} = \frac{n}{n+N}$ (b) $\frac{P_s-P}{P} = \frac{N}{N+n}$
(c) $\frac{P-P_s}{P_s} = \frac{N}{N-n}$ (d) $\frac{P_s-P}{P_s} = \frac{N-n}{N}$
P = vapour pressure of pure solvent
P_s = vapour pressure of the solution
n = number of moles of the solute
N = number of moles of the solvent

10. Determination of correct molecular mass from Raoult's law is applicable to
(a) An electrolyte in solution
(b) A non-electrolyte in a dilute solution
(c) A non-electrolyte in a concentrated solution
(d) An electrolyte in a liquid solvent

11. In mixture A and B components show –ve deviation as
(a) $\Delta V_{mix} > 0$
(b) $\Delta H_{mix} < 0$
(c) A-B interaction is weaker than A-A and B-B interaction
(d) A-B interaction is strong than A-A and B-B interaction

12. Azeotropic mixture are **[PMT 1982]**
(a) Constant temperature boiling mixtures
(b) Those which boils at different temperatures
(c) Mixture of two solids
(d) None of the above

13. Semipermeable membrane is that which permits the passage of
(a) Solute molecules only
(b) Solvent molecules only
(c) Solute and solvent molecules both
(d) Neither solute nor solvent molecules

14. The osmotic pressure of solution increases, if **[PMT 1985, 87, 91]**
(a) Temperature is decreased
(b) Solution concentration is increased
(c) Number of solute molecules is increased
(d) Volume is increased

15. Solvent molecules pass through the semipermeable membrane is called **[PMT 1983; PMT 1987; PET 2000]**
(a) Electrolysis (b) Electrophoresis
(c) Cataphoresis (d) Osmosis

16. Pressure cooker reduces cooking time for food because **[PMT 1987; PMT 1991; AIEEE 2003]**
(a) Heat is more evenly distributed in the cooking space
(b) Boiling point of water involved in cooking is increased
(c) The higher pressure inside the cooker crushes the food material
(d) Cooking involves chemical changes helped by a rise in temperature

17. When common salt is dissolved in water **[PMT 1988; PET 1995]**
(a) Melting point of the solution increases
(b) Boiling point of the solution increases
(c) Boiling point of the solution decreases
(d) Both melting point and boiling point decreases

18. Solute when dissolved in water
(a) Increases the vapour pressure of water
(b) Decreases the boiling point of water
(c) Decreases the freezing point of water
(d) All of the above

19. In equimolar solution of glucose, NaCl and $BaCl_2$, the order of osmotic pressure is as follow **[PMT 1988, 93; PMT/PET 1988; PET 1997, 2003]**
(a) Glucose > NaCl > $BaCl_2$
(b) NaCl > $BaCl_2$ > Glucose
(c) $BaCl_2$ > NaCl > Glucose
(d) Glucose > $BaCl_2$ > NaCl

20. Van't Hoff factor of $Ca(NO_3)_2$ is **[PMT 1997]**
(a) 1 (b) 2
(c) 3 (d) 4