CBSE Board	**PARISHRAM PUBLICATIONS** **PUNE** **NAME of Student : _____** **Subject : Chemistry** **Class : XII** **Topic : Solution** **Max. Marks :- 30**	

SECTION – A (10 Marks)

Select the appropriate and answer the following [1 × 5 = 5]

Q. 1. For A and B to form an ideal solution which of the following conditions should be satisfied?

(a) $\Delta H_{(mixing)} = 0$ (b) $\Delta V_{(mixing)} = 0$ (c) $\Delta S_{(mixing)} > 0$ (d) All the three conditions mentioned above

Q. 2. Among the following mixtures, dipole-dipole as the major interaction, is present in

(a) KCl and water (b) Benzene and carbon tetrachloride

(c) Benzene and ethanol (d) Acetonitrile and acetone

Q. 3. Which of the following is dependent on temperature ?

(a) Mole fraction (b) weight percentage (c) Molality (d) Molarity

Q. 4. Which of the following gas mixture ions used by the divers inside the sea ?

(a) O_2^+ He (b)O_2^+ Xe (c) O_2^+ Ar (d) O_2^+ N_2

Q. 5. Which has the least freezing point ?

(a) 1% sucrose (b) 1%NaCl (c) 1%$CaCl_2$ (d) 1% glucose

Answer the following [1×5=5]

Q. 6. Why are the cold drink bottle filled with high pressure?

Q. 7. Predict the Van't Hoff factor (i) is less than 1 or greater than 1 in the following giving suitable reason?

a) CH_3COOH dissolve in water. b) CH_3COOH dissolve in benzene.

Q. 8. Write reason, 'concentration of solution in terms of molality is preferred in comparison with molarity'

Q. 9. Define osmotic pressure ?

Q. 10. Why marine life prefer to stay at lower level during summer

SECTION – B (8 Marks)

Attempt the following

Q. 11. Based on solute-solvent interactions, arrange the following in order of increasing solubility in n-octane and explain. Cyclohexane, KCl, CH_3OH, CH_3CN

Q. 12. State Henry's law and mention some important applications

Q. 13. Calculate the amount of benzoic acid (C_6H_5COOH) required for preparing 250 mL of 0.15 M solution in methanol.

Q. 14. A 5% solution (by mass) of cane sugar in water has freezing point of 271*K*.
Calculate the freezing point constant of 5% glucose in water if freezing point of pure water is 273.15 *K*.

OR

Derive the relation between degree of dissociation and van't Hoff factor.

Hence show $\propto = \frac{M(theoritical) - M(observe)}{M(observe)\,(n^I - 1)}$

SECTION – C (12 Marks)

Attempt any the following

Q. 15. Concentrated nitric acid used in laboratory work is 68% nitric acid by mass in aqueous solution. What should be the molarity of such a sample of the acid if the density of the solution is 1.504 g mL^{-1}?

Q. 16. What is depression of freezing point? How molar mass of non-volatile substance is depend on freezing point?

Q. 17. State Raoult's law for non-volatile substance? And how it is related with Molar mass of non-volatile substance.

Q. 18. What is elevation of boiling point? How it is related with molar mass of non-volatile substance?

OR

What is non-ideal solution? Explain its type giving suitable example?