**Karan Arora** **R.L. Chemistry Classes M: 99968-68554**

**Max Time : 1 hr** **Class = 12th Chemistry Test**  **Max Marks : 30**

**SOLUTION**

1. Multiple choice questions : [ 1 X 5 = 5]
2. An example of colligative property :

|  |  |  |  |
| --- | --- | --- | --- |
| a) freezing point | b) boiling point | c) vapour pressure | d) osmotic pressure |

1. In cold countries, ethylene glycol is added to water in the radiators of cars during winters. It results in reducing:

|  |  |  |  |
| --- | --- | --- | --- |
| a) viscosity | b) specific heat | c) freezing point | d) boiling point |

1. Calculate the percentage degree of dissociation of an electrolyte AB2 (normal molar mass = 164) in H2O, if observed molar mass is 65.6

|  |  |  |  |
| --- | --- | --- | --- |
| a) 50 % | b) 25 % | c) 75 % | d) None |

1. Which of the following solution will have highest freezing point :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1 M urea | b) 1 M Na2SO4 | c) 1 M NaCl | d) 1 M Al2(SO4)3 |

1. In a solution of 7.8 g benzene (C6H6) and 46 g toluene (C6H5CH3), the mole fraction of benzene is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1/6 | b) 1/5 | c) 1/2 | d) 1/3 |

1. A sample of drinking water was found to be severely contaminated with chloroform, CHCl3 supposed to be carcinogen. The level of contaminated was 15 ppm (by mass). [ 2 ]

(i) Express this in percentage by mass (ii) Determine the molality of chloroform in the water sample

1. What happens when the external pressure applied becomes more than the osmotic pressure of the solution? [ 2 ]
2. Calculate the freezing point of a solution containing 60 g of glucose in 250 g of water. (Kf for water = 1.86 K/m). [ 2 ]
3. Define the following terms : (a) Osmotic pressure (b) Colligative properties [ 2 ]
4. Write two differences between a solution showing positive deviation and a solution showing negative deviation from Raoult’s law. [ 2 ]
5. How many grams of sucrose (Molar mass = 342) should be dissolved in 100 g water in order to produce a solution with 105˚C difference between the boiling point and the freezing point?

(Kf = 1.86 ˚C/m ; Kb = 0.51 ˚C/m). [ 3 ]

1. Calculate the mass fraction and mole fraction of ethyl alcohol and water in a solution containing 9.2 g of alcohol in 18 g of water. [ 3 ]
2. The Henry’s law constant for oxygen dissolved in water is 4.34 x 104 atm at 25˚C. If the partial pressure of oxygen in air is 0.2 atm under atmospheric conditions, calculate the concentration (in moles per litre) of dissolved oxygen in water in equilibrium with air at 25˚C. [ 3 ]
3. Define : (a) Molarity (b) Mole fraction (c) Molality [ 3 ]
4. Define Raoult’s law with positive deviation with example. [ 3 ]