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

Max Time : 1 hr **Class = 12th Chemistry Test** **Max Marks : 25**

Topic : Solution (upto Raoult's Law)

Q.1 Multiple choice questions : [1 X 5 = 5]

1) The molarity of a solution obtained by mixing 750 mL of 0.5 M HCl with 250 mL of 2 M HCl will be :
   a) 0.875 M b) 1 M c) 1.75 M d) 0.0975 M

2) 6.02×10^{20} molecules of urea are present in 100 mL of its solution. The concentration of solution is :
   a) 0.02 M b) 0.01 M c) 0.001 M d) 0.1 M

3) If mole fraction of a solute in 1 kg benzene is 0.2, then molality of solute is :
   a) 3.2 b) 2 c) 4 d) 3.6

4) Among the following, the azeotropic mixture is :
   a) $CCl_4 + CHCl_3$ b) $C_6H_{14} + C_7H_{16}$
   c) $C_2H_5Br + C_2H_5Cl$ d) Chlorobenzene + Bromobenzene

5) Which of the following is an example of solid solution?
   a) Sea water b) Sugar solution c) Smoke d) 22 carot gold

Q.2 Why are the aquatic species more comfortable in cold water in comparison to warm water? [1]

Q.3 Henry's law constant for the molality of methane in benzene at 298 K is 4.27×10^5 mm Hg. Calculate the solubility of methane in benzene at 298 K under 760 mm Hg. [2]

Q.4 Define Azeotropes. What type of azeotrope is formed by negative deviation from Raoult's law? Give an example. [2]

Q.5 One litre of N/2 HCl solution is heated in a beaker. It was observed that when the volume of the solution was reduced to 600 mL, 3.25 g of HCl is lost. Calculate the normality of the new solution. [2]

Q.6 Write two differences between a solution showing positive deviation and a solution showing negative deviation from Raoult's law. [2]

Q.7 Calculate the mass of urea (NH_2CONH_2) required in making 2.5 kg of 0.25 molal aqueous solution. [2]

Q.8 Define : (a) Molarity (b) Mole fraction (c) Molality [3]

Q.9 Define Raoult's law with positive deviation with example. [3]

Q.10 How much urea (molar mass 60) should be dissolved in 50 g of water so that its vapour pressure at room temperature is reduced to 25 % . Calculate molality of the solution obtained. [3]

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(Osmotic Pressure , Elevation in B.P. , Depression in F.P. , Van't Hoff)