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

**Topic : Solution (upto Raoult’s Law)**

1. Multiple choice questions : [ 1 X 5 = 5 ]
2. 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 |

1. 6.02 x 1020 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 |

1. 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 |

1. Among the following, the azeotropic mixture is :

|  |  |
| --- | --- |
| a) CCl4 + CHCl3 | b) C6H14 + C7H16 |
| c) C2H5Br + C2H5Cl | d) Chlorobenzene + Bromobenzene |

1. Which of the following is an example of solid solution?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Sea water | b) Sugar solution | c) Smoke | d) 22 carot gold |

1. Why are the aquatic species more comfortable in cold water in comparison to warm water? [ 1 ]
2. Henry’s law constant for the molality of methane in benzene at 298 K is 4.27 x 105 mm Hg. Calculate the solubility of methane in benzene at 298 K under 760 mm Hg. [ 2 ]
3. Define Azeotropes. What type of azeotrope is formed by negative deviation from Raoult’s law? Give an example. [ 2 ]
4. 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 ]

1. Write two differences between a solution showing positive deviation and a solution showing negative deviation from Raoult’s law. [ 2 ]
2. Calculate the mass of urea (NH2CONH2) required in making 2.5 kg of 0.25 molal aqueous solution.

[ 2 ]

1. Define : (a) Molarity (b) Mole fraction (c) Molality [ 3 ]
2. Define Raoult’s law with positive deviation with example. [ 3 ]
3. 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)**