Chemistry - 11th Class Chemistry Short Questions Chapter 9 Preparation

Q1. One molal solution of urea is more dilute as compared to its one molar solution.Why?

Ans 1: One molal solution contains one mole of urea per kg of solvent, while one mole solution contains one mole of urea per one dm^3 Of solution.In one molal solution amount of water is greater than one molar solution because amount of solution included in it.

Q2. Define Colligative properties.Name important colligative properties?

Ans 1: Colligative Properties: The properties of a solution which is based upon the number of solute particles and independent of the nature of solute is called colligative properties.Name of some colligative properties are:

1. Lowering of vapour pressure
2. Depression in freezing point
3. Elevation in boiling point
4. Osmotic pressure

Q3. Boiling points of liquid are increased when solute is added to them.Give reason?

Ans 1: Because the vapour pressure of solvent decrease due to the pressure of solute.Therefore,we have to supply high temperature in order to equalized the vapour pressure of solvent to external pressure to boil it. This results in the increase of boiling point of solvent in the presence of solute.

Q4. Differentiate between zeotropic and azeotropic mixture?

Ans 1: Zeotropic Mixtures: The liquid mixtures which distills with change in composition is called zeotropic mixtures,e.g.Methyl Alcohol-water solution.
Azeotropic Mixtures: The liquid mixtures which boil at constant temperature and distill over without changes in composition like a pure compound at any temperature is called azeotropic mixtures.eg, HCl formsazeotropic with water.

Q5. Fractional crystallization technique is used to purify the chemical products.Justify?

Ans 1: The separation of solid substance from a solution one by one on cooling is called fractional crystallization.Solubilities depends upon temperature.
E.g.Solubility of KNO_3 Rapidly changes with temperature but solubility of KCl and Kbr changes gradually.Thus one substance may precipitate earlier by cooling, leaving behind others.

Q6. Calculate percentage by weight of NaCl when 2g of NaCl is dissolved in 20g of water?

Ans 1: Mass of NaCl =2g
Mass of water =20g
Mass of solution= 20+2=22g
%by weight of NaCl=2/22x100=9.09%

Q7. Define percentage weight/weight.Give an example?

Ans 1:

Q8. One molal solution of urea in water is dilute as compared to one molar solution of urea but the number of practices of solute is same.Justify it?

Ans 1: Both one molar and one molal urea solution contains equal number of molecules($6.022x10^{23}$).Number of water molecules are different in both cases.One molal solution contains 1000g or 55.5 moles of water.One Molar solution has less number of water molecules than one molal.

Q9. Define fractional crystallization.How is it useful?

Ans 1: Fractional Crystallization: The separation of solid substances from a solution one by one on cooling is called fractional crystallization.This technique is used for separation of impurities from sample.

Q10. The concentration in terms of molality is independent of temperature but molarity depends upon temperature .Why?

Ans 1: In molality mass of solvent is taken.Mass us independent of temperature.In molarity volume of solution is take.Volume changes by change in temperature.