Question 1:

Differentiate between homogeneous and heterogeneous mixtures with examples.

Answer 1:

A homogeneous mixture is a mixture having a uniform composition throughout the mixture. For example, mixtures of salt in water, sugar in water, copper sulphate in water, iodine in alcohol, alloy, and air have uniform compositions throughout the mixtures.

On the other hand, a heterogeneous mixture is a mixture having a non-uniform composition throughout the mixture. For example, composition of mixtures of sodium chloride and iron fillings, salt and sulphur, oil and water, chalk powder in water, wheat flour in water, milk and water are not uniform throughout the mixtures.

Question 2:

How are sol, solution and suspension different from each other?

Answer 2:

Sol is a heterogeneous mixture. In this mixture, the solute particles are so small that they cannot be seen with the naked eye. Also, they seem to be spread uniformly throughout the mixture. The Tyndall effect is observed in this mixture.

For example: milk of magnesia, mud

Solution is a homogeneous mixture. In this mixture, the solute particles dissolve and spread uniformly throughout the mixture. The Tyndall effect is not observed in this mixture.

For example: salt in water, sugar in water, iodine in alcohol, alloy

Suspensions are heterogeneous mixtures. In this mixture, the solute particles are visible to the naked eye, and remain suspended throughout the bulk of the medium. The Tyndall effect is observed in this mixture.

For example: chalk powder and water, wheat flour and water

Question 3:

To make a saturated solution, 36 g of sodium chloride is dissolved in 100 g of water at 293 K. Find its concentration at this temperature.

Answer 3:

Mass of solute (sodium chloride) = 36 g (Given)

Mass of solvent (water) = 100 g (Given)

Then, mass of solution = Mass of solute + Mass of solvent

= (36 + 100) g

= 136 g

Therefore, concentration (mass by mass percentage) of the solution

$$= \frac{Mass\ of\ solute}{Mass\ of\ solvent} \times 100\ \%$$

$$= \frac{36}{136} \times 100\ \%$$

$$= 26.4\ \%$$