EXERCISE

EXERCISE MULTIPLE CHOICE QUESTION ANSWERS

1. **Mist is an example of solution:**
   (a) Liquid in gas   (b) Gas in liquid   (c) Solid in gas   (d) Gas in solid

2. **Which one of the following is a 'liquid in solid' solution?**
   (a) Sugar in water   (b) Butter   (c) Opal   (d) Fog

3. **Concentration is ratio of:**
   (a) Solvent to solute   (b) Solute to solution   (c) Solvent to solution   (d) Both 'A' and 'B'

4. **Which one of the following solutions contains more water?**
   (a) 2M   (b) 1M   (c) 0.5 M   (d) 0.25 M

5. **A 5 percent (w/w) sugar solution means that:**
   (a) 5 g of sugar is dissolved in 90 g of water
   (b) 5 g of sugar is dissolved in 100 g of water
   (c) 5 g of sugar is dissolved in 105 g of water
   (d) 5 g of sugar is dissolved in 95 g of water

6. **If the solute-solute forces are strong enough than those of solute-solvent forces. The solute:**
   (a) Dissolves readily   (b) Does not dissolve
   (c) Dissolves slowly   (d) Dissolves-and precipitates.

7. **Which one of the following will show negligible effect of temperature on its solubility?**
   (a) KCl   (c) $NaNO_3$ (b) KNO_3 (d) NaCl

8. **Which one of the following is heterogeneous mixture?**
   (a) Milk   (b) ink   (c) Milk of magnesia   (d) Sugar solution

9. **Tyndall effect is shown by:**
   (a) Sugar solution   (c) jelly   (b) Paints   (d) Chalk solution

10. **Tyndall effect is due to:**
    (a) Blockage of beam of light   (b) Non-scattering of beam of light
    (c) Scattering of beam of light   (d) Passing through beam of light

11. **If 10 cm^3 of alcohol is dissolved in 100 g of water, it is called:**
    (a) % w/w   (b) %w/v   (c) % v/w   (d) %v/v

12. **When a saturated solution is diluted it turns into:**
    (a) Supersaturated solution   (b) Saturated solution
    (c) A concentrated solution   (d) Unsaturated solution

13. **Molarity is the number of moles of solute dissolved in:**
    (a) lkg of solution   (b) 100 g of solvent   (c) 1 dm^3 of solvent   (d) 1 dm^3 of solution.

ANSWR KEY

1	a	3	b	5	b	7	d	9	c	11	c	13	d
2	b	4	d	6	c	8	c	10	c	12	d		

EXERCISE SHORT QUESTION ANSWERS

Q.1 Why suspensions and solutions do not show Tyndall effect, while colloids do?

Ans: Suspensions and solutions do not show Tyndall effect because in suspensions particles are so big that light is blocked and difficult to pass. But in solution particles are so small

that they cannot scatter the rays of light, thus do not show Tyndall effect. But colloids can show Tyndall effect because particles scatter the path of light rays thus emitting the beam of light i.e., exhibit the Tyndall effect.

Q.2 **What is the reason for the difference between solutions, colloids and suspensions?**

Ans: The differentiation between solutions, colloids and suspensions is based upon the particle size. In colloidal solutions the particles size is intermediate between true solutions and suspensions.

Q.3 **Why does not the suspension form a homogeneous mixture?**

Ans: In suspension particles remain un-dissolved due to their big size. After sometime particles settle down under the action of gravity, therefore suspension does not forma homogeneous mixture.

Q.4 **How will you test whether given solution is a colloidal solution or not?**

Ans: We will pass light in the solution, if the given solution scattered the light then it is a colloidal solution. It solution does not scatter the light then it is not colloidal solution.

Q.5 **Classify the following into true solution and colloidal solution Blood, starch solution, glucose solution, tooth paste, copper sulphate solution, silver nitrate solution.**

Ans:

True Solutions	Colloidal Solution
Glucose solution, Copper sulphate solution, silver nitrate solution	Blood, tooth paste, starch solution

Q.6 **Why we stir paints thoroughly before using?**

Ans: Paints are heterogeneous mixture of un-dissolved particles in a given medium. Particles settle down after sometime. So we stir paints to mix thoroughly before using.

Q.7 and **Which of the following will scatter light and why? Sugar solution, soap solution and milk of magnesia.**

Ans: **Soap solution:**
Soap solution will scatter light (Tyndall effect) because it is colloidal solution and its particles are large enough to scatter the light.

Sugar Solution:
Sugar solution will not scatter light because the particles of sugar solution are so small that they cannot scatter light.

Milk of Magnesia:
Milk of magnesia cannot scatter the light because it is suspension and its particles are so big that light is blocked.

Q.8 **What do you mean by "like dissolves like?" Explain with examples.**

Ans: "Like dissolves like" means that polar substances are dissolved in polar solvents and non polar substances are soluble in non polar solvents.

For example: $NaCl$ (polar) dissolves in water (polar solvent) and does not dissolve in benzene (non polar)

Q.9 **How does nature of attractive forces of solute-solute and solvent-solvent affect the solubility?**

Ans: Solubility depends upon solute solvent attractions. If the attractive forces between solvent are stronger the solubility is greater. If the attractive forces become weaker in solute there will be greater solubility.

If the attractive forces between solute particles are stronger than solute solvent forces, solute remains insoluble and solution is not formed.

Q.10 **How you can explain the solute-solvent interaction to prepare a NaCI solution?**

Ans: When $NaCl$ is added in water it dissolves readily because the attractive forces between the ions of $NaCl$ and polar molecules of water are strong enough to overcome the attractive forces between Na^+ and Cl^- ions in solid $NaCl$ crystal. In this process, positive end of the water dipole is oriented towards the Cl^- ions and the negative end of water

dipole is oriented towards the Na^+ ions. These ion-dipole attractions between Na^+ ions and water molecules, Cl^- ions and water molecules are so strong that they pull these ions from their positions in the crystal and thus $NaCl$ dissolves.
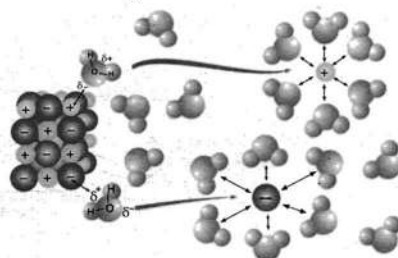

Fig. 6.2 Inter-action of solute and solvent to form solution.

Q.11 **Justify with an example that solubility of a salt increases with the increase in temperature**

Ans: Solubility of some salts which are usually ionic in nature increases with the increase in temperature for such solutes. It means that heat is required to break the attractive forces between the ions of solute. This process is called endothermic.

For example:
Solubility of KNO_3 and KCl can be enhanced by increasing temperature.

Q.12 **What do you mean by volume/volume %?**

Ans: It is the volume in cm^3 of a solute dissolved in 100 g of the solution.

For example:
30% of alcohol solution means 30 cm^3 of alcohol dissolved in sufficient amount of water, so that the total volume of the solution becomes 100 cm^3.

$$\frac{\%Volume}{\%Volume} = \frac{\text{Volume of solute}(cm^3)}{\text{Volume of solutio}(cm^3)} \times 100$$

EXERCISE LONG QUESTION ANSWERS

Q.1 **What is saturated solution and how it is prepared?**
Ans: See Q. No. **3** (Subjective Part, Long Questions Answers)

Q.2 **Differentiate between dilute and concentrated solutions with a common example.**
Ans: See Q. No. **4** (Subjective Part, Long Questions Answers)

Q.3 **Explain, how dilute solutions are prepared from concentrated solutions?**
Ans: See Q. No. **7** (Subjective Part, Long Questions Answers)

Q.4 **What is molarity and give its formula to prepare molar solution?**
Ans: See Q. No. **6** (Subjective Part, Long Questions Answers)

Q.5 **Explain the solute-solvent interaction for the preparation of solution.**
Ans: See Q. No. **8** (Subjective Part, Long Questions Answers)

Q.6 **What is general principle of solubility?**
Ans: See Q. No. **8** (Subjective Part, Long Questions Answers)

Q.7 **Discuss the effect of temperature on solubility.**
Ans: See Q. No. **8** (Subjective Part, Long Questions Answers)

Q.8 **Give the five characteristics of colloid.**
Ans: See Q. No. **10** (Subjective Part, Long Questions Answers)

Q.9 **Give at least five characteristics of suspension**
Ans: See Q. No. **10** (Subjective Part, Long Questions Answers)