Solution and Solubility

A. Choose the Correct Answer:

1. What is a solution?

A) A mixture in which the substances remain separate

B) A mixture where one substance dissolves completely in another

C) A solid substance only

D) A gas that cannot be dissolved

2. Which of the following is an example of a soluble substance in water?

A) Sand

B) Oil

C) Salt

D) Wood

3. What term is used for the substance that dissolves in a solution?

A) Solvent

B) Solute

C) Mixture

D) Residue

B. Fill in the Blanks:

1. A _____ is a mixture where a solute dissolves in a solvent.
2. _____ is the ability of a substance to dissolve in a liquid.
3. When no more solute can dissolve in a solvent, the solution is said to be _____.

C. Case Study:

Rahul performed an experiment with water and different substances.

- He added sugar to one glass of water and stirred it until it completely dissolved.
- In another glass, he added sand and noticed that it did not dissolve.
- When he kept adding sugar to the first glass, it eventually stopped dissolving, and the extra sugar settled at the bottom.
- His teacher explained that this was because the solution became saturated.

Case Study Questions:

1. Why did the sugar dissolve in the water?
2. Why did the sand not dissolve?
3. What does it mean when the solution became saturated?
4. What term is used for the substance that dissolved in the water?

D. Short Answer Questions:

1. What is solubility?
2. What is the difference between solute and solvent?
3. What is a saturated solution?

E. Long Answer Questions:

1. Explain the process of making a solution and describe its components with examples.
2. What factors affect the solubility of a substance in water? Explain in detail.
3. How can you identify whether a substance is soluble or insoluble in water?