WORKSHEET 2

CHAPTER 2 – IS MATTER AROUND US PURE

A. Tick (✓) the correct option.

1. A mixture of glucose in water is a
   a. colloid. b. suspension. c. solution. d. heterogeneous mixture.
2. In suspensions, the size of particles is greater than
   a. 1 nm. b. 100 nm. c. 10 nm. d. 1000 nm.
3. Which of the following does not belong to the category of foams?
   a. Smoke b. Rubber c. Sponge d. Pumice
4. Which of the following is a physical change only?
   a. Rusting of iron b. Rotting of egg c. Burning of candle d. Cutting of trees
5. Which of the following is a property not shown by metals?
   a. Ductility b. Malleability c. Poor conductance of heat
   d. Lustre

B. Fill in the blanks.

1. A mixture of chalk powder in water is a _____
2. A 30% mass by mass salt solution contains _____ of salt in 100 g of solution.
3. Scattering of light, because of which path of light becomes visible, is known as _____
4. Dyes in black ink can be separated by _____
5. Breaking of glass is a _____ change.

C. State whether the following statements are true or false.

1. The components of a mixture can be separated by chemical methods only.
2. German silver is an alloy of zinc, copper and nickel.
3. The particles of a solution are smaller than 1 nm in diameter.
4. Different gases can be separated from air by using simple distillation.
5. Germanium is a non-metal.

D. Match the following.

1. Air	stable
2. Sulphur and iron filings	emulsion
3. Oil and water	homogeneous mixture
4. Colloid	immiscible liquids
5. Milk	heterogeneous mixture

Name: ..... Teacher's signature: .....

Class: IX Date: .....

E. Answer the following questions.

Very Short Answer Questions

1. What is an unsaturated solution?
2. Why is a solution stable?

Short Answer Questions

1. A 50 mL solution contains 6 g of NaCl. Density of this solution is 1.2 g L^{-1}. Calculate the concentration of this solution in terms of mass by mass percentage.
2. Define crystallisation. Why is it a better technique than evaporation?

Long Answer Questions

1. Which technique is used for the separation of cream from milk? What is the principle of this technique? Give any three applications of this technique.
2. What are the differences between compounds and mixtures?

ANSWERS

WORKSHEET 2

A. Tick (✓) the correct option.

1. c
2. d
3. a
4. d
5. c

B. Fill in the blanks.

1. suspension
2. 30 g
3. Tyndall effect
4. chromatography
5. physical

C. State whether the following statements are true or false.

1. F
2. T
3. T
4. F
5. C

D. Match the following.

1. Air	homogeneous mixture
2. Sulphur and iron filings	heterogeneous mixture
3. Oil and water	immiscible liquids
4. Colloid	stable
5. Milk	emulsion

E. Answer the following questions.

Very Short Answer Questions

1. A solution in which more quantity of solute can be dissolved at a particular temperature and pressure is called an unsaturated solution.
2. In a solution, the solute particles do not settle down when left undisturbed. This is why a solution is stable.

Short Answer Questions

1. The mass by mass percentage of a solution is given by the formula

$$\text{Mass by mass percentage} = \frac{\text{Mass of solute}}{\text{Mass of solution}} \times 100$$

We are given that 6 g of solute is present in 50 mL of solution. Since

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$\text{Therefore, mass of 50 mL of solution} = \text{Density} \times \text{Volume}$$

$$= 1.2 \times 50 = 60 \text{ g}$$

$$\text{Thus, mass by mass percentage of given solution} = \frac{6}{60} \times 100 = 10\%$$

2. Crystallisation is a process that separates a pure solid in the form of its crystals from a solution. Crystallisation is a better technique than evaporation because
   a. some solids decompose or some, like sugar, may get charred on heating to dryness.
   b. some impurities may remain dissolved in the solution even after filtration. On evaporation these contaminate the solid.

Long Answer Questions

1. The technique used for the separation of cream from milk is centrifugation. The principle of this technique is that the denser particles are forced to the bottom and the lighter particles stay at the top when spun rapidly.

   The applications of this technique are as follows:

   a. It is used in diagnostic laboratories for blood and urine tests.

   b. It is used in dairies and homes to separate butter from cream.

   c. It is used in washing machines to squeeze out water from wet clothes.

2. The differences between compounds and mixtures are given in the following table:

Compound	Mixture
1. A compound is a homogeneous substance.	A mixture may be homogeneous (solution) or heterogeneous.
2. The components of a compound do not retain their properties.	The components of a mixture retain their individual properties.
3. The components of a compound are always present in a definite proportion by mass.	A mixture does not have a definite composition.
4. A compound exhibits definite physical constants such as density, melting point, boiling point, etc.	A mixture does not have definite physical constants such as density, melting point, boiling point, etc.
5. When a compound is prepared, energy changes in the form of heat, light and sound are observed.	When a mixture is prepared, energy changes in the form of heat, light and sound are not observed.
6. The components of a compound cannot be separated by physical methods.	The components of a mixture can be separated by physical methods.
7. A compound has a definite formula.	A mixture does not have a definite formula.
8. The constituents in a compound are held together by strong forces of attraction.	The components in a mixture are held together by only weak forces of attraction.