	INDIAN SCHOOL AL WADI AL KABIR	
Class: IX	**Department: SCIENCE 2026 – 27** **SUBJECT: SCIENCE(CHEMISTRY)**	**Date: 02/05/2026**
Worksheet No: 01 WITH ANSWERS	**CHAPTER / UNIT: CHAPTER-5-EXPLORING MIXTURES AND THEIR SEPARATION PART-1**	**Note:** **A4 FILE FORMAT**
CLASS & SEC:	**NAME OF THE STUDENT:**	**ROLL NO.**

I. OBJECTIVE TYPE QUESTIONS (1 MARK):

1. A mixture of sugar and water is called:
   (a) Heterogeneous mixture
   (b) Homogeneous mixture
   (c) Suspension
   (d) Colloid
2. Which of the following is an example of a homogeneous mixture?
   (a) Sand and water
   (b) Oil and water
   (c) Vinegar
   (d) Soil
3. In a homogeneous mixture:
   (a) Components are visible
   (b) Composition is uniform throughout
   (c) Particles settle down
   (d) It has layers
4. Which mixture is likely to show visible particles?
   (a) Salt + water
   (b) Chalk powder + water
   (c) Sugar + water
   (d) All of these
5. The substance that gets dissolved is called:
   (a) Solvent
   (b) Solute
   (c) Solution
   (d) Mixture
6. Sand and water form a:
   (a) Solution
   (b) Suspension

(c) Colloid
(d) Compound

7. What happens to sand in a sand-water mixture after some time?
   (a) Dissolves completely
   (b) Dissolves partially
   (c) Settles down
   (d) Evaporates
8. In which mixture are particles not visible?
   (a) Suspension
   (b) Sand in water
   (c) Solution
   (d) Chalk mixture

For the following questions, two statements are given-one labelled Assertion (A) and the other labelled Reason(R). Select the correct answer to these questions from the options (i) , (ii), (iii) and (iv)as given below:
A) Both A and R are true, and R is the correct explanation of the Assertion.
B) Both A and R are true, but R is not the correct explanation of the Assertion.
C) A is true, but R is false.
D) A is false, but R is true.

9. Assertion (A): A solution is a homogeneous mixture.
   Reason (R): The particles are uniformly distributed throughout the mixture.

10. Assertion (A): Sand and water form a heterogeneous mixture.
    Reason (R): Sand dissolves completely in water.

11. Assertion (A): Concentration of a solution depends on the amount of solute present.
    Reason (R): Concentration is defined as the amount of solute in a given amount of solution.

II.VERY SHORT QUESTIONS (2 MARKS):

12. (i) What is a homogeneous mixture?
    (ii) Give one example of a solution.
13. Why are chalk powder and water considered a different type of mixture than salt and water?
14. Define solute and solvent.
15. Calculate the volume by volume percentage if 1 mL of pesticide is mixed to make a 100 mL solution.

III. SHORT ANSWER QUESTIONS (3 MARKS);

16. (i) Why is the correct proportion important while preparing a solution?
    (ii) Explain mass by mass percentage with a formula.

17. A student says that all clear liquids are homogeneous mixtures. Do you agree? Justify your answer with an example.

18. (i) How can you prove that air is a homogeneous mixture?

(ii) A student observes that light is visible when passed through a mixture. What can you conclude about the mixture?

19. Explain the different types of mixtures with examples.

IV. LONG ANSWER TYPE QUESTIONS (5 MARKS):

20. (i) Differentiate between a solution and a suspension

(ii) Why does chalk powder settle down in water, but milk does not?

21. Compare solutions, suspensions, and colloids in a tabular form using at least five properties.
22. Solve the following problems:
(i) A cake recipe uses dry ingredients, namely 75 g of sugar for 420 g of all-purpose flour and 5 g of sodium hydrogen carbonate. Express the concentration of each component in the mixture using an appropriate method.
(ii) A brass alloy contains 70% copper by mass. Calculate the quantities of copper and zinc present in 120 g of brass.

V. SOURCE BASED/CASE BASED QUESTION (4 MARKS):

23. Riya prepares a glass of sugar solution by dissolving sugar in water. She stirs it well and notices that the solution looks clear. When she tastes the solution from the top and bottom, both tastes equally sweet.

(a) What type of mixture is formed?
(b) Why does the solution taste the same throughout?
(c) What would happen if she stopped stirring before the sugar dissolved completely?

OR

(c) Identify the solute and solvent in the given mixture.

ANSWERS

Q.No.	Answers
1	(b) Homogeneous mixture
2	(c) Vinegar
3	(b) Composition is uniform throughout
4.	(b) Chalk powder + water
5	(b) Solute
6	(b) Suspension
7	(c) Settles down
8	(c) Solution
9	Answer: A
10	Answer: C
11	Answer: A
12	(i) A mixture with uniform composition throughout. (ii) Sugar in water.
13	Chalk does not dissolve and forms a heterogeneous mixture, while salt dissolves completely, forming a homogeneous mixture.
14	Solute- Substance that gets dissolved Solvent- A substance that dissolves the solute
15	volume by volume percentage = (1 / 100) × 100 = **1% v/v**
16	(i) To get the correct concentration and proper functioning (e.g., ORS, medicines) (ii)Mass by mass % = (Mass of solute / Mass of solution) × 100
17	No, not all clear liquids are homogeneous. Some mixtures may appear clear but are not true solutions. For example, a starch solution may appear clear but is a colloid and not a homogeneous mixture, while a sugar solution is homogeneous.
18	(i) Air has a uniform composition throughout, and its components are not visibly distinguishable, showing properties of a homogeneous mixture. (ii) The mixture is either a colloid or suspension, as the light(path) is visible due to scattering of light.
19	Types of Mixtures 1. Homogeneous Mixtures (Uniform Mixtures): - A homogeneous mixture has a uniform composition throughout. You cannot see the different components separately. Examples: • Salt + water (salt solution) • Sugar + water 2. Heterogeneous Mixtures (Non-uniform Mixtures): - A heterogeneous mixture has a non-uniform composition**.** Different components can be seen separately.

Examples:

- Oil + water
- Sand + water

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(i) Solution: homogeneous; Suspension: heterogeneous
Solution: particles not visible; Suspension: particles visible
Solution: does not settle; Suspension: settles on standing.
(ii) Chalk particles are large and heavy → settle down.
Milk particles are very small → remain suspended.

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Property	Solution	Suspension	Colloid
Nature	Homogeneous	Heterogeneous	Heterogeneous (appears homogeneous)
Particle size	Very small	Large	Intermediate
Visibility	Not visible	Visible	Not visible
Settling	No	Yes	No
Filtration	Not possible	Possible	Not by an ordinary filter

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(i) Concentration of components in cake mixture

Step 1: Find the total mass of the mixture

Total mass = Sugar + Flour + Sodium hydrogen carbonate
= 75 + 420 + 5 = 500 g

Step 2: Use Mass Percentage Formula

Mass %=Mass of Solute(component)/ Mass of mixture x100

Step 3: Calculate each component

- Sugar % = (75 / 500) × 100 = 15%
- Flour % = (420 / 500) × 100 = 84%
- Sodium hydrogen carbonate % = (5 / 500) × 100 = 1%

Final Answer:

- Sugar = 15% (by mass)

- Flour = 84% (by mass)
- Sodium hydrogen carbonate = 1% (by mass)

(ii) Given:

	• Brass contains 70% copper • Total mass = 120 g Step 1: Find copper Copper = 70% of 120 g = (70 / 100) × 120 = 84 g Step 2: Find zinc Zinc = Total mass − Copper = 120 − 84 = 36 g Final Answer: • Copper = 84 g • Zinc = 36 g
23	(a)A homogeneous mixture (true solution) is formed. (b) Sugar dissolves completely in water and forms a uniform composition**.** The sugar particles are evenly distributed throughout the solution, so every part has the same concentration**,** giving equal sweetness. (c)Some sugar would remain undissolved and settle at the bottom**.** The mixture would become non-uniform (heterogeneous)**,** so the top would taste less sweet than the bottom. OR (c) Solute: Sugar (the substance that gets dissolved) Solvent: Water (the substance that dissolves the solute)

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