Changes Around Us: Physical and Chemical Changes — Solutions

Olympiad Preparation Worksheet | Class 7 Science

Name: _____ Roll No.: _____ Class: 7

Date: _____ Marks: ____ / 13

INSTRUCTIONS

1. Read each question carefully and answer all questions.
2. For Assertion–Reason questions, choose the correct standard option.
3. Give clear reasons where asked; use the answer space provided.

LEARNING OBJECTIVES

- Distinguish between physical and chemical changes.
- Apply the properties of physical and chemical changes to everyday situations.
- Use evidence to reason about changes in materials.

Section A — Multiple Choice

Choose the best answer for each question.

1 A student cuts a sheet of aluminium foil into small pieces. Which statement best describes the change? [1]

(a) A new substance is formed.

(b) **Only the size and shape change.** ✓

(c) The aluminium changes into a gas.

(d) The pieces cannot be joined or melted again.

> **Explanation:** Cutting changes the foil's size and shape, but it remains aluminium.

2 Which observation gives the strongest evidence that a chemical change has occurred when vinegar is mixed with baking soda? [1]

(a) The mixture takes the shape of its container.

(b) The solid particles become smaller.

(c) **Bubbles of gas are produced.** ✓

(d) The mixture can be stirred.

> **Explanation:** The bubbles show that a gas is formed, which is evidence of a chemical change.

3 A student melts candle wax and lets it cool until it solidifies. Which conclusion is most accurate? [1]

(a) It is a chemical change because heat is involved.

(b) **It is a physical change because the wax changes state but remains wax.** ✓

(c) It is a chemical change because solid wax can never be obtained again.

(d) It is both a physical and chemical change because the wax changes shape.

> **Explanation:** Melting and solidifying change the state of the wax; no new substance is formed.

4 An iron gate is left outdoors in damp air. It slowly develops a reddish-brown coating. Which statement best explains this change? [1]

(a) The iron has only changed its shape.

(b) **A new substance, rust, has formed.** ✓

(c) The iron has melted and then solidified.

(d) The reddish-brown coating is iron dust.

> **Explanation:** Rusting forms a new substance when iron reacts with oxygen and moisture.

5 A student crushes ice and then melts it. Which statement is correct about the material before and after these changes? [1]

(a) It changes from water into a new substance.

(b) **It remains water, though its size, shape or state changes.** ✓

(c) It becomes a mixture of ice and oxygen.

(d) It cannot be changed back into ice.

> **Explanation:** Ice and liquid water are the same substance; crushing and melting are physical changes.

Section B — True or False

Write True or False for each statement.

6 When sugar dissolves in water, the sugar disappears and a new substance is formed. ☐ True ☒ False [1]

> **Explanation:** Dissolving sugar is a physical change; sugar can be recovered by evaporating the water.

7 Cooking an egg is a chemical change because the cooked egg has properties different from the raw egg and cannot easily be changed back. ☒ True ☐ False [1]

> **Explanation:** Cooking produces lasting changes in the egg's properties, so it is a chemical change.

Section C — Match the Following

Match each change in Column A with its best description in Column B.

8 Match each change in Column A with its best description in Column B. [4]

Column A		Column B
1. Tearing paper	1→d	a. New substances such as ash and gases are formed
2. Burning paper	2→a	b. A change of state that can be reversed
3. Freezing water	3→b	c. A new substance with different properties is formed
4. Souring milk	4→c	d. A change in size and shape

Section D — Assertion–Reason

Choose the correct standard option for each Assertion–Reason pair.

9 **Assertion (A):** A puddle of water disappears on a warm day. [1]

Reason (R): During evaporation, liquid water changes into water vapour.

(a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A). ✓

(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true, but Reason (R) is false.

(d) Assertion (A) is false, but Reason (R) is true.

> **Explanation:** The puddle disappears as liquid water evaporates into water vapour.

10 **Assertion (A):** Burning a piece of wood is a physical change. [1]

Reason (R): A physical change does not produce a new substance.

(a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true, but Reason (R) is false.

(d) Assertion (A) is false, but Reason (R) is true. ✓

> **Explanation:** Burning wood forms new substances, including ash and gases, so it is a chemical change. The reason states a correct feature of physical changes.