



Book exercise CHANGES AROUND US Date:

A. Choose the most appropriate answer.

1. In a physical change

(a) the molecules of the substances do not change.

- (b) the molecules of the substances change.
(c) atoms forming the molecules undergo changes.
(d) new substances are formed.

2. Growth in plants and animals is

(a) a physical change.

(b) a chemical change.

- (c) neither a physical change nor a chemical change since it is a life process.
(d) either a physical change or a chemical change depending on how much the growth is.

3. If two substances are brought in contact, it will result in

(a) a physical change only.

(b) a chemical change only.

(c) either a physical change or a chemical change, depending on the conditions.

(d) a chemical change if they are heated together otherwise, a physical change.

4. Chemical changes are

(a) always irreversible

(b) mostly irreversible.

(c) always reversible.

(d) mostly reversible.

5. Which of these is an irreversible change?

(a) melting of ice.

(b) melting of wax

(c) boiling of water.

(d) burning of wax

6. Which of these is a reversible change?

(a) milk turning into curd.

(b) burning of wax

(c) melting of wax.

(d) rusting of iron

7. Which of the following is a physical and reversible change?

(a) heating of iron and sulphur to form iron sulphide

(b) melting of ice to form water

(c) weathering of rocks

(d) cooking of rice

8. Which of these is a physical and irreversible change?

(a) burning of a paper.

(b) evaporation of water

(c) breaking of a glass tumbler

(d) lighting of an electric bulb

B. Very Short Answer Questions.

1. Every change has a cause. **True** or false?

2. Every change can be classified as either physical or chemical. **True** or false?

3. Is dissolving sugar in water a physical change or a chemical change?

ANS : Sugar dissolving in water is a physical change. The sugar can be obtained back by evaporation of water and the water by condensation of water vapour.

4. Is change of state of physical change or a chemical change?

ANS: A change in state is a physical change.

5. Most chemical changes cannot be easily reversed. Such changes are called irreversible change.

6. Is changing of milk into curd a reversible change?

ANS: No, changing of milk is not a reversible change. When the milk changes into curd, the molecules of the milk undergo change resulting in the formation of curd.

7. Can you get burnt paper back to its original form?

ANS: When a paper is burnt, the molecules of paper undergo change forming new substances like smoke and water vapour. The change here is irreversible. So, a burnt piece of paper cannot be brought back to its original form.

8. Substances expand on heating. Is that a physical change or a chemical change?

ANS: Substances which expand on heating, regain their original shape on cooling without forming any new substances. This change is a physical change.

C. Short Answer Questions.

1. Give one example for each of the following types of changes:

- (a) physical changes.
- (b) chemical changes
- (c) reversible changes
- (d) irreversible changes

ANS: (a) Physical changes:

Example: Change in the size of the pencil or eraser with continuous use.

(b) Chemical changes:

Example: Burning of wood.

(c) Reversible changes:

Example: Salt dissolving in water.

(d) Irreversible changes:

Example: Curdling of milk.

2. A potter shapes pots out of clay. He then bakes the pots in an oven. Identify the reversible and irreversible changes taking place in the process.

ANS: A potter shapes pots out of clay. This is a physical change which can be easily reversed. During this change, only the shape of the substance changes, without any change in the texture of the clay.

The potter then bakes the pots in an oven that makes the clay to become hard and brittle. Thus, there is a change in the internal structure of clay which makes soft clay hard and brittle. This is a chemical change which is irreversible.

3. Breaking of a glass tumbler and burning of paper are changes in which we cannot get back the original substances. What is the difference between these two changes?

ANS:

Breaking of glass tumbler	Burning of paper
It results in the change of the shape of the tumbler.	It results in the formation of smoke and water vapour.
The molecules that make up the glass remain the same.	The molecules of paper are converted to the molecules of ash.
This is a physical change, as no new substances are formed.	This is a chemical change, as paper is converted to ash.

4. What kind of change is cooking of food? Why?

ANS: Cooking food is an irreversible, chemical change. During cooking, the molecules that are present in food change to form new substances. Also, cooked food cannot be reverted to the raw state.

5. Do you agree with the statement 'all physical changes are reversible'? If not give the correct statement.

ANS: No, there are some physical changes which are irreversible. For example, tearing of a paper. When a paper is torn, the size and the shape of the paper change, but the molecules of the paper remain the same. Since, no new molecules are formed, tearing paper is a physical change. At the same time, we cannot get back the sheet of paper from the pieces. Thus, the physical change is irreversible.

6. Growth is increase in size. Is it a physical or a chemical change? Give reasons.

ANS: Growth results in increase in size due to the intake of food. The food consumed by a living organism, is absorbed by the body and is used to nourish the cells for growth. Therefore, this is a chemical change, which includes the formation of new substances during the process of growth.

D. Long Answer Questions

1. Explain the difference between physical and chemical changes, giving one example of each.

ANS:

Physical change	Chemical change
No new substance is formed.	New substance is formed.
The molecules of the substances remain the same before and after the change	The new substances formed during the change exhibit different properties from that of the original substances.

Example: Heating of iron. When heated, a piece of iron expands, but it contracts to its original size when cooled.	Example: Curdling of milk. The molecules of milk are changed in the curdling process to give curds.
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2: 'One way changes are classified as reversible and irreversible'. Explain with examples.

ANS: Consider the example, when salt is mixed with water. The salt dissolves in water forming a solution. The salt can be obtained back by the evaporation of water and water by condensation of the water vapour. Such changes which can be easily reversed are called reversible changes.

Consider the example of rusting of iron. When an iron is kept in humid air for some days, a brown substance (rust) deposits on it, which has very different properties from that of iron. There is no simple way to get back the iron from the rust. Such changes which cannot be reversed are called irreversible changes.

3. What is a chemical reaction? Explain with an example.

ANS: A chemical reaction is the process by which reactants react with each other to yield products. In chemical reactions, the reactant molecules are completely different from the molecules of the products formed.

Example: Take some washing soda and mix it with water in a bottle. After making sure that the washing soda is fully dissolved in the water, add a few drops of lemon juice to the contents of the bottle. Hold a lit match stick near the mouth of the bottle. You will see that the match is extinguished showing that the gas produced is carbon dioxide.

4. Give one example to show that when substances are mixed, it may result in a chemical or a physical change depending on the conditions.

ANS: When substances are mixed together, it can result either in a physical change or a chemical change.

Example: If iron and sulphur are mixed, no chemical change occurs. But when the mixture is heated, it glows after some time and a black substance is formed which is different from iron and sulphur. So, heating a mixture of iron and sulphur results in a chemical change.

Similarly, when sugar and water are mixed together, sugar dissolves completely in water. No new substances are formed during the change. The sugar and water can be obtained back from the solution. This is a physical change which can be reversed.

5. When a candle burns, both physical and chemical changes occur. Explain.

ANS: When a candle burns, wax in the candle melts and is then vaporised as it is drawn up the wick. Melting and vaporisation are physical changes. The wax vapours then burn at the wick to leave behind soot and water vapour, while emitting heat and light. The burning of wax vapours is a chemical change. Thus, wax undergoes both physical and chemical changes when a candle burns.

Complete the hot questions in your own words.