Exercise Questions **Page Number 65-67**

1. Classify the changes involved in the following processes as physical or chemical changes.

(a) Photosynthesis

(b) Dissolving sugar in water

(c) Burning of coal

(d) Melting of wax

(e) Beating aluminium to make aluminium foil

(f) Digestion of food

Solution:

a) Chemical change

b) Physical Change

c) Chemical change

d) Physical Change

e) Physical Change

f) Chemical change

2. State whether the following statements are true or false. In case a statement is false, write the corrected statement in your notebook.

(a) Cutting a log of wood into pieces is a chemical change. (True/False)

(b) Formation of manure from leaves is a physical change. (True/False)

(c) Iron pipes coated with zinc do not get rusted easily. (True/False)

(d) Iron and rust are the same substances. (True/False)

(e) Condensation of steam is not a chemical change. (True/False)

Solution:

a) False

b) False

c) True

d) False

e) True

3. Fill in the blanks in the following statements:

(a) When carbon dioxide is passed through lime water, it turns milky due to the formation of _____.

(b) The chemical name of baking soda is _____.

(c) Two methods by which rusting of iron can be prevented are _____ and _____.

(d) Changes in which only _____ properties of a substance change are called physical changes.

(e) Changes in which new substances are formed are called _____ changes.

Solution:

(a) When carbon dioxide is passed through lime water, it turns milky due to the formation of **Calcium carbonate**.

(b) The chemical name of baking soda is **Sodium hydrogen carbonate.**

(c) Two methods by which rusting of iron can be prevented are **painting** and **galvanisation**.

(d) Changes in which only **physical** properties of a substance change are called physical changes.

(e) Changes in which new substances are formed are called **chemical** changes.

4. When baking soda is mixed with lemon juice, bubbles are formed with the evolution of a gas. What type of change is it? Explain.

Solution:

When baking soda is mixed with lemon juice, bubbles are formed with the evolution of a carbon dioxide gas. This is a chemical change.

Lemon juice + Baking soda → Carbon dioxide + other substances

5. When a candle burns, both physical and chemical changes take place. Identify these changes. Give another example of a familiar process in which both chemical and physical changes take place.

Solution:

Candle Burning

Physical change is the melting of the wax.

The chemical change is the burning of gas with the evolution of CO_2.

Digestion of Food

Physical change is the breakdown of larger food molecules into simpler ones.

The chemical change is the digestion of food by the action of HCl and enzymes.

6. How would you show that the setting of curd is a chemical change?

Solution:

The setting of curd is a chemical change because curd cannot be turned back to milk. The properties of milk and curd are different.

7. Explain why burning wood and cutting it into small pieces are considered two different types of changes.

Solution:

Cutting wood is a physical change as it does not change the nature of the wood. On the other hand, the burning of wood is a chemical change as wood is converted to charcoal with the liberation of CO_2.

8. Describe how crystals of copper sulphate are prepared.

Solution:

Crystals of copper sulphate are prepared using the crystallisation method, which is described as follows:

- Take a cupful of water in a beaker.
- Add a few drops of dilute sulphuric acid to this.
- Heat the water, and when it starts boiling, add copper sulphate powder while still stirring.
- Add the copper sulphate powder till the solution becomes saturated. Filter into a china dish and allow it to cool.
- The solution should be kept undisturbed. Slowly, the crystals of copper sulphate separate out.

9. Explain how painting an iron gate prevents it from rusting.

Solution:

Rusting of iron requires contact with water (moisture) and oxygen. By painting an iron gate, we prevent contact between iron, Oxygen and water (moisture); this helps in preventing rusting of iron.

10. Explain why rusting of iron objects is faster in coastal areas than in deserts.

Solution:

Rusting of iron requires contact with water (moisture) and oxygen. In coastal areas, humidity is more in comparison to that in deserts; hence, rusting of iron objects is faster in coastal areas than in deserts.

11. The gas we use in the kitchen is called liquified petroleum gas (LPG). In the cylinder, it exists as a liquid. When it comes out from the cylinder, it becomes a gas (Change – A) then it burns (Change – B). The following statements pertain to these changes. Choose the correct one.

(i) Process – A is a chemical change.

(ii) Process – B is a chemical change.

(iii) Both processes A and B are chemical changes.

(iv) None of these processes is a chemical change.

Solution:

The answer is (ii) Process – B is a chemical change.

12. Anaerobic bacteria digest animal waste and produce biogas (Change – A). The biogas is then burnt as fuel (Change – B). The following statements pertain to these changes. Choose the correct one.

(i) Process – A is a chemical change.

(ii) Process – B is a chemical change

(iii) Both processes A and B are chemical changes.

(iv) None of these processes is a chemical change.

Solution:

The answer is (iii) Both processes A and B are chemical changes.