

CBSE Class-VII Science
NCERT Solutions
CHAPTER-06
PHYSICAL AND CHEMICAL CHANGES

Question 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 aluminum to make aluminum foil.
- (f) Digestion of food

Answer: (a) Chemical change

- (b) Physical changes
- (c) Chemical change
- (d) Physical change
- (e) Physical change
- (f) Chemical change

Question 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 same substance. (True/False)
- (e) Condensation of steam is not a chemical change. (True/False)

Answer: (a) False- cutting a log of wood into pieces is a **physical change**.

(b) False- formation of manure from leaves is a **chemical change**.

(c) True

(d) False- Iron and rust are **different** substances.

(e) True

Question 3. Fill in the blanks in the following statements:

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

Answer: Fill in the blanks in the following statements:

- (a) When carbon dioxide is passed through lime water, it turns milky due to 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 **galvanization**.
- (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.

Question 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.

Answer: When baking soda is mixed with lemon juice, the bubbles which are formed with the evolution of a gas is due to the evolution of carbon dioxide gas. Since, there is formation of a new substance in this reaction, it is a chemical change.

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

Answer: The wax of the candle first melt then vaporizes and burns.

Melting of wax is a physical change since melted wax can be solidified back to the wax and there is not new substance is formed.

When wax burns, smoke and carbon dioxide is formed which are new substance. So, it is a chemical change.

Cooking of food is both physical and chemical because raw vegetables get cooked which is a chemical change and the water changes into steam which is a physical change.

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

Answer: The curd is formed from milk. Both curd and milk have different properties. Also, once the curd is formed it cannot be reversed back into milk. So, there is formation of new substance with different properties and also an irreversible process, setting of curd is a chemical change.

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

Answer: Burning of wood produces ash and smoke. Hence the properties of wood are changed and new substances are formed. So, it is a chemical change.

When a log of wood is cut into small pieces, there is no new substance formed. Each small piece bears the properties of wood. So, it is a physical change. Obviously, burning and cutting of wood are two different type of changes.

Question 8. Describe how crystals of copper sulphate are prepared.

Answer: Crystals of copper sulphate are prepared by the method of crystallization.

The process is as followed:

Step 1: A cupful of water in a beaker is taken.

Step 2: Few drops of dilute sulphuric acid is added to it.

Step 3: Water is heated and when it starts boiling copper sulphate powder is added slowly while stirring till no more copper sulphate powder dissolved in it.

Step 4: Solution is filtered and let it cool without disturbance. After some time the crystals of copper can be observed in it.

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

Answer: Painting of an iron gate prevents it from rusting because it cut the direct contact of iron from the environment and therefore there is no further exposure of iron to oxygen in moisture which is the causes for rusting.

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

Answer: In coastal areas there is more moisture in air due to the presence of sea. But, in

desert there is a scarcity of water and hence air is almost dry there. Both air and moisture are necessary conditions for rusting. So, rusting is faster in coastal areas than in desert.

Question 11. The gas we use in the kitchen is called liquefied petroleum gas (LPG). In the cylinder it exists as 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 chemical change.
- (iii) Both processes A and B is a chemical changes.
- (iv) None of these processes is a chemical change.

Answer: (ii) Process –B is a chemical change.

Question 12. Aerobic 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 process is a chemical changes.

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