



Chapter- 6

**Physical and Chemical Changes**

**SOLUTIONS:**

**EXERCISES:**

Q1 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

Ans:-

- a) Photosynthesis – Chemical change
- b) Dissolving sugar in water – Physical change
- c) Burning of coal – Chemical change
- d) Melting of wax – Physical change
- e) Beating aluminium to make aluminium foil – Physical change
- f) Digestion of food – Chemical change

Q2 State whether the following statements are true or false. In case a statement is false, write the corrected statement in your notebook.

- a) Cutting of log of wood into pieces is a chemical change.
- b) Formation of manure from leaves is a physical change
- c) Iron pipes coated with zinc do not get rusted easily
- d) Iron and rust are the same substance
- e) Condensation of steam is not a chemical change.

Ans:-

- a) False  
Cutting of log of wood into pieces is a physical change
- b) False  
Formation of manure from leaves is chemical change.
- c) True

d) False

Iron and rust are not the same substance

e) True

Q3 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.

Ans:-

- a) Calcium Carbonate
- b) Sodium hydrogen carbonate
- c) Painting and galvanisation
- d) Physical
- e) Chemical

Q4 When baking soda is mixed with lemon juice, bubbles are formed with the evolution of a gas. What type of changes is it? Explain.

Ans:- It is a chemical change. Because mixing of baking soda with lime juice produce carbon dioxide gas and other substance which is a completely new substance.

Q5 When a candle burns, both physical and chemical changes take place. Identify these changes. Give another example of a familiar process in which both the chemical and physical changes take place.

Ans:- Burning of wax is both physical and chemical changes.

Melting of wax is a physical change while burning of wax to give carbon dioxide, heat and light is chemical change.

Another familiar example is cooking gas LPG (Liquefied petroleum gas).

Inside the cylinder it exists in liquid state when comes out, it becomes a gas. This is a physical change. Burning of gas into flame gives out carbon dioxide, heat and light which is a chemical change.

Q6 How would you show that setting of curd is a chemical change?

Ans:- We can say setting of curd is a chemical change because a new substance is formed with different taste, smell etc. which is different from the original milk.

Q7 Explain why burning of wood and cutting it into small pieces are considered as two different types of changes.

Ans:- Burning of wood is a chemical change because it forms new substances like charcoal, smoke, ashes etc. while cutting of wood into pieces is a physical change because it does not form a new substance. It only changes its shape and size.

Q8 Describe how crystals of copper sulphate are prepared.

Ans:- A cupful of water is taken in a beaker and a few drops of sulphuric acid is added to it and start heating. When it starts, boiling, copper sulphate powder is added slowly while stirring continuously till no powder can be dissolved. After that the solution is filtered and let it cooled. Thus crystal of copper sulphate is prepared.

Q9 Explain how painting of an iron gate prevents it from rusting.

Ans:- Painting prevents iron gates from direct contact with the oxygen present in moist air. As for rusting of iron the presence of oxygen and moisture is essential.

Q10 Explain why rusting of iron objects is faster in coastal than in deserts.

Ans:- The moisture content in air is higher in coastal area than that of deserts. That is why rusting of iron objects is faster in coastal areas than deserts.

Q11 The gas we use in the kitchen is called liquefied petroleum gas (LPG). In the cylinder it exits 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.

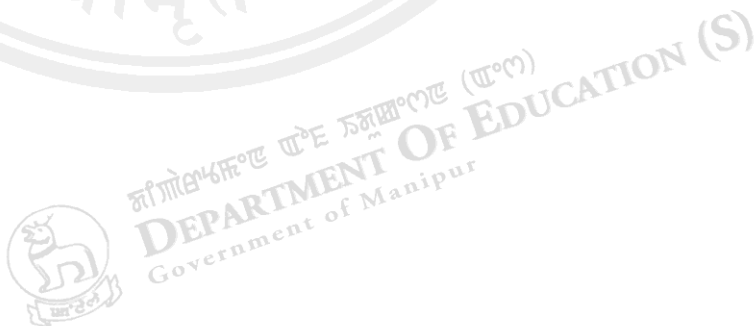
- i. Process – A is a chemical change
- ii. Process – B is a chemical change
- iii. Both processes A and B are chemical changes.
- iv. None of these processes is a chemical change.

Ans:- ii. Process – B is a chemical change.

Q12 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.

Ans:- iii. Both processes A and B are chemical changes.



## **EXTRA QUESTIONS AND ANSWERS.**

Q1 What is physical change?

Ans:- Physical change is a change in which a substance changes in shape, size, colour and state without any change in its properties of substance.

Eg. cutting of wood into pieces.

Q2 Is all physical changes are reversible? Give one example and explain.

Ans:- No, all physical changes are not reversible.

Example:

Cutting of wood log into pieces is a physical change as it does not change its property as wood but we cannot get the original wood log. It is irreversible.

But in melting of ice into water, we can get back the ice by putting the water into refrigerator. It is reversible.

Q3 What is Chemical change? Give examples.

Ans:- Chemical change is a change in which a substance changes its properties of a substance and formed a completely new substance.

Example:

Formation of curd from milk, ripening of fruit, photosynthesis, digestion of food etc.

Q4 Give one example of a chemical change that produce more than one substance.

Ans:- Explosion of fire crackers.

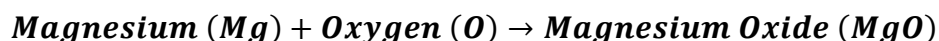
In explosion of fire crackers, light, heat, sound and unpleasant gases are produced that pollute the air.

Q5 Write three points of difference between physical and chemical change.

Physical change	Chemical change
1. It is a change in shape, size colour or state of substance	1. It is a change in its properties of substance and formed a completely new substance
2. No new substance is formed.	2. One or more new substances are formed
1. It may be reversible or not.	3. It is irreversible.

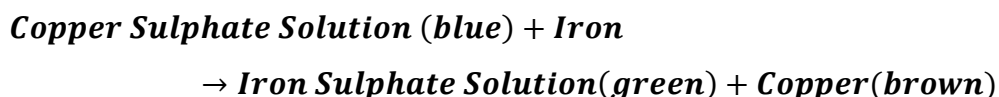
Q6 What product is given out given out when magnesium ribbon is burnt in presence of air?

Ans:- When magnesium ribbon is burnt in presence of air it gives out magnesium oxide in the form of ash. The change can be represented by the following equation:



Q7 Write down the equation for the reaction of Copper Sulphate solution and iron.

Ans:- The reaction can be represented by the following equation:



Q8 Name the substance which is deposited on the iron after dipping the iron nail in Copper Sulphate solution.

Ans:- The brown colour deposited on the iron nail is Copper.

Q9 What is rust?

Ans:- The brownish layer deposited on an iron object after exposure to moist air is called rust.

Q10 What is rusting?

Ans:- The process of depositing a brownish colour layer called rust on an iron object after exposure to moisture for long is called rusting.

Q11 What are the essential components for rusting?

Ans:- Presence of oxygen and water or water vapour are the essential components for rusting.

Q12 How can you prevent rusting?

Ans:- We can prevent rusting of iron objects by preventing direct contact from Oxygen or water or both with iron objects.

Another way of preventing rusting is by depositing a layer of a metal like Chromium or Zinc on it.

Q13 Why stainless steel does not get rust?

Ans:- Stainless steel does not get rust because stainless steel is made by mixing iron with carbon and metal like chromium, nickel and manganese.

Q14 Write some advantages and disadvantages of Chemical change in our daily life.

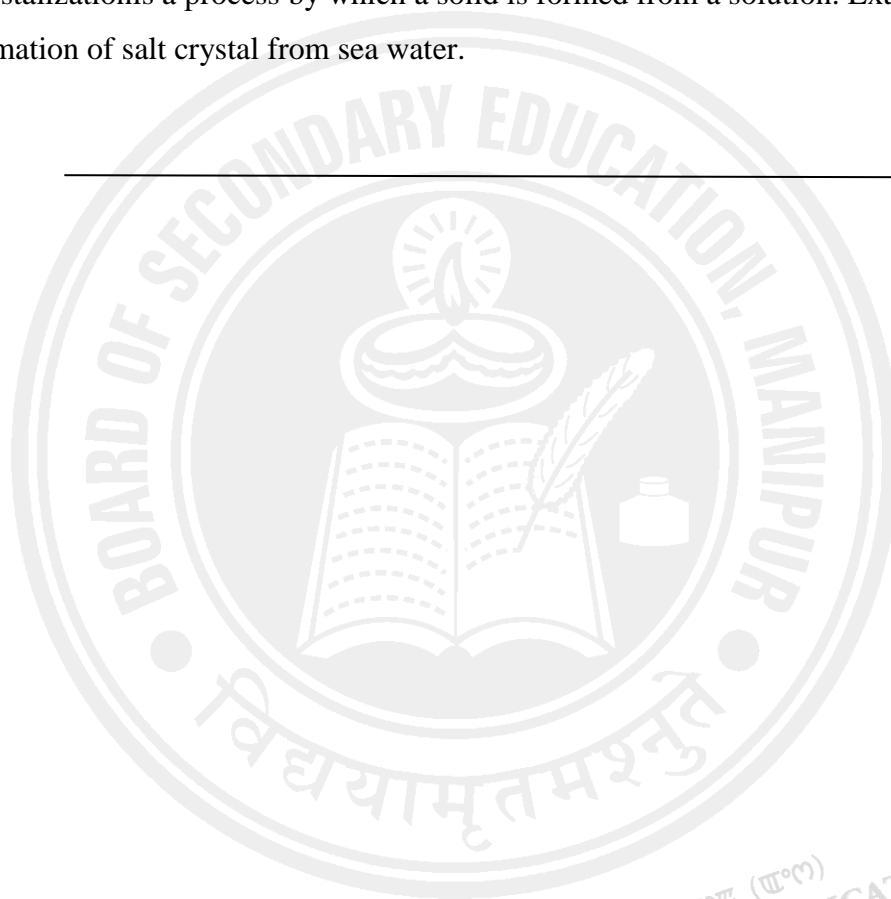
Ans:- Some advantages of chemical change are digestion of food, photosynthesis, decomposition of waste food to form manure, ripening of fruits etc.  
Some disadvantages of chemical change are spoiling of food, global warming, rusting of metal object, formation of acid rain.

Q15 What is galvanisation?

Ans:- Galvanisation is a process of depositing a layer of Zinc on iron.

Q16 What is Crystalization? Give one example.

Ans:- Crystalization is a process by which a solid is formed from a solution. Example, formation of salt crystal from sea water.



मानिपुरसंगठन शिक्षा विभाग (अ.म.)  
**DEPARTMENT OF EDUCATION (S)**  
Government of Manipur