

## CBSE NCERT Solutions for Class 7 Science Chapter 6

### Back of Chapter Questions

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

**Solution:**

- (A) Photosynthesis is a chemical reaction that takes place inside a plant, producing food for the plant to survive. Carbon dioxide, water and light are all needed for photosynthesis to take place. Photosynthesis happens in the leaves of a plant. it is an irreversible nature- it cannot be reversed.
- (B) Dissolving sugar in water is a Physical change If you evaporate the water from a sugar- water solution, left with sugar, as it is a reversible change and sugar can be separated from water easily.
- (C) Burning of coal is a Chemical change new substance such as carbon dioxide and water form when we are burning coal. Due to the formation of new substances, burning coal is classified as a chemical change. as it is irreversible in nature and a new substance is formed which cannot be made into coal.
- (D) Melting of wax is a Physical change as no new substance is formed during this process.
- (E) Beating aluminum to make aluminum foil is a Physical change as no new substance is formed during this process. and it is irreversible process.
- (F) Digestion is considered a chemical change because enzymes in the stomach and intestines break down large macromolecules into simpler molecules so that the body can more easily absorb the food, it is irreversible in nature- it cannot be reversed.

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, as cutting a log of wood into pieces is a physical change as no new substance is formed during this process.
- (B) False, as formation of manure from leaves is a chemical change as it is a new product form - it cannot be reversed.
- (C) True, as zinc acts as a protective layer over iron which prevents rusting.
- (D) False, as iron and rust are two different things. Iron is a substance while rusting is a chemical process which occurs on iron when its exposed to air for a long duration of time.
- (E) True, as condensation of steam is not a chemical change as no new substance is formed during this process and only phase change takes place.

**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) is Calcium carbonate

- (A) Calcium carbonate ( $\text{CaCO}_3$ ). When carbon dioxide is passed through lime water i.e. Calcium oxide it reacts with it and forms Calcium carbonate.

**Solution:** (B) Sodium hydrogen carbonate

- (B) Sodium hydrogen carbonate. The chemical name of baking soda is Sodium hydrogen carbonate.

**Solution:** (C) Galvanization and painting.

- (C) Galvanization is a process of covering iron with a layer of zinc which helps in protecting iron from rusting. Painting iron objects with a layer of oil

paints also protects iron from rusting as it forms a layer between the iron and air interface.

**Solution:** (D) Physical.

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

**Solution:** (E) Chemical.

(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?

**Solution:**

When baking soda also known Sodium hydrogen carbonate is mixed with lemon juice which contains citric acid, bubbles are formed. These bubbles are formed due to the evolution of carbon dioxide gas. This is a chemical change which involves the formation of new substances.

Lemon juice + Baking soda → Carbon dioxide + salt

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 the chemical and physical changes take place.

**Solution:**

When a candle burns, both physical and chemical changes take place. Melting of wax is a physical change as solid wax converts to liquid wax and no new substance is formed while burning of wax is a chemical change as it is an irreversible change and wax cannot be obtained back. Eating of food is another example where both physical and chemical changes occur simultaneously. Breaking down of large food particles into smaller particles is a physical change as no new substance is formed while digestion of food is a chemical change as the food particles undergo changes in their chemical composition and its an irreversible process.

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

**Solution:**

Setting of curd is a chemical change as once the curd is formed, milk cannot be re-obtained from it. Also, both milk and curd have different properties. Since these are the properties of a chemical change, setting of curd is a chemical change.

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

**Solution:**

When wood is burnt, a new substance is formed. Therefore, it is a chemical change. However, when we cut wood, only the shape and size of the wood are changed, and no new substance is formed. Therefore, it is a physical change.

8. Describe how crystals of copper sulphate are prepared.

**Solution:**

Crystals of copper sulphate are prepared by the method of crystallization. The process of crystallization is as follows.

- (i) Take a cupful of water in a beaker.
  - (ii) Add few drops of dilute sulphuric acid to this.
  - (iii) The water is then heated and when it starts boiling, copper sulphate powder is added with stirring.
  - (iv) Copper sulphate powder should be added till the solution becomes saturated. It is then filtered into a china dish and allowed to cool.
  - (v) The solution should be kept undisturbed. Slowly, the crystals of copper sulphate separate out.
9. Explain how painting of an iron gate prevents it from rusting.

**Solution:**

Rusting is aided by both moisture(water) and air(oxygen). By painting an iron material, we prevent its contact from the air and moisture present in the atmosphere. Hence, rusting is prevented.

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

**Solution:**

Both air and moisture are required for rusting to take place. In coastal areas, the quantity of moisture present in the air is more than that in deserts. In desert areas, the amount of moisture in the air is even lower. Therefore, rusting of iron objects is faster in coastal areas than in deserts.

11. The gas we use in the kitchen is called liquefied 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:**

- (ii) Process - B is a chemical change as a new substance is formed which is different from LPG.
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:**

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

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