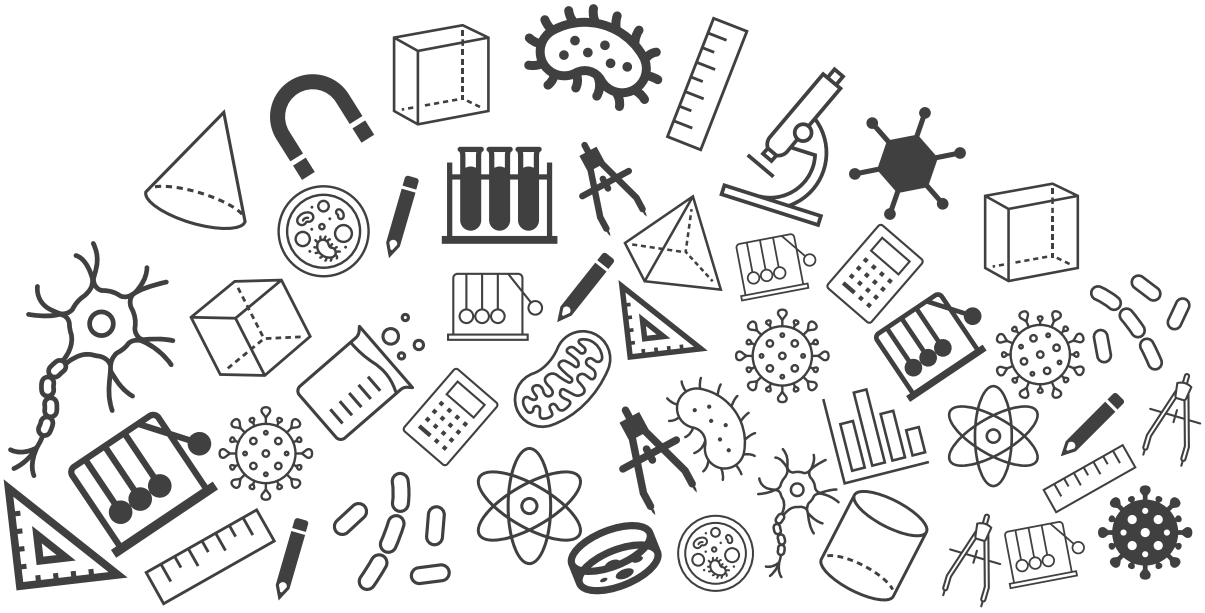
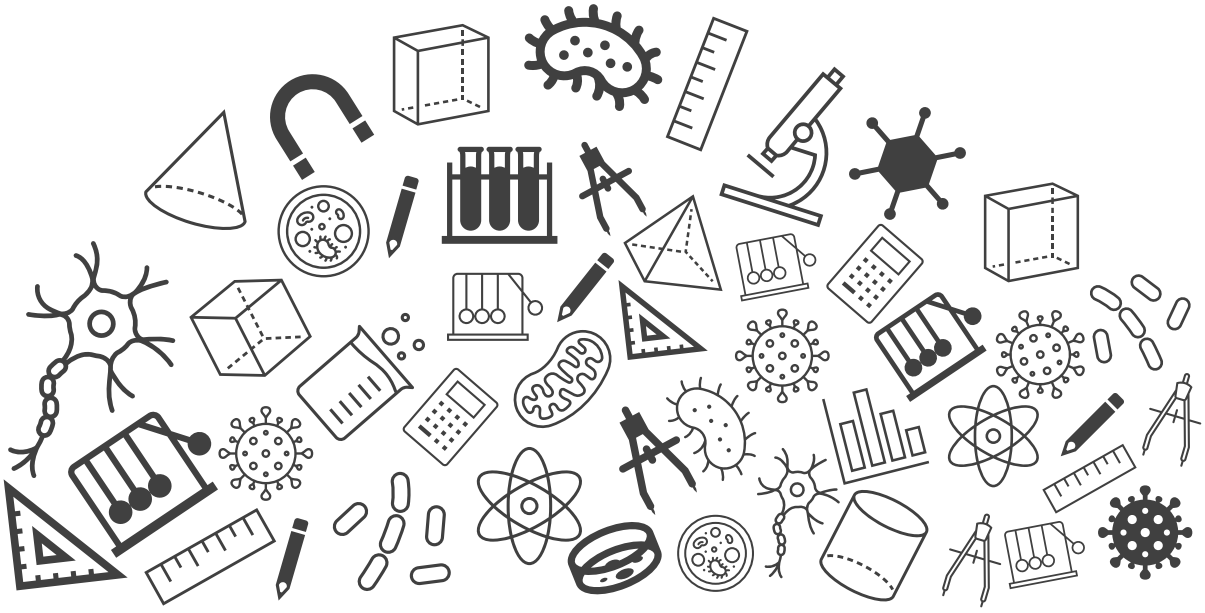
Grade 07 : Science
Exam Important Questions



Physical and Chemical Changes



Physical and Chemical Changes

1. If you leave a piece of iron in the open for a few days, it acquires a film of brownish substance, called rust.
   (a) Do you think rust is different from iron?
   (b) Can you change rust back into iron by some simple method.
   (c) Do you think formation of rust from iron is a chemical change?
   (d) Give two other examples of a similar type of change.

   [4 marks]
   [NCERT Exemplar Q.21]
   [Rusting]

   Solution:

   (a) Rust is hydrated iron oxide and it is not the same as iron. [1 mark]

   (b) Rusting of iron leads to the transformation of iron into a new substance called rust. It cannot be reversed by any simple method. [1 mark]

   (c) Yes, rusting of iron is a chemical change. During the rusting of iron, it combines with oxygen in the presence of water (moisture) to form a new substance called rust. [1 mark]

   (d) Burning of paper and cooking of vegetables are two other examples of chemical change. [1 mark]

2. Explain how the painting of an iron gate prevents it from rusting. [1 mark]

   Painting of an iron gate prevents it from rusting because it cuts the direct contact of iron from the air (oxygen) and moisture which are necessary for rusting to take place. [1 mark]

3. Liquefied petroleum gas is used in kitchens. When the gas is in a cylinder, it is in the liquid state. When it comes out of the cylinder it becomes a gas (change A), then it burns (change B). Identify the processes A and B with proper explanation. [3 marks]

• LPG is in a liquid state inside the cylinder. However, when it comes out of the cylinder it becomes a gas. So, it is a physical change, because no new substance is formed. It is only a change in state. [1 mark]
• When the gas comes out and burns, it is a chemical change, because the LPG gas burns with oxygen and forms carbon dioxide. Heat is also released while burning the gas.[1 mark]
So, change A is a physical change while change B is a chemical change. [1 mark]

4. Give two examples for each of the following cases:
(a) Physical changes that are reversible
(b) Physical changes that are not reversible
(c) Chemical changes
[3 marks]

Solution:
- The two examples of physical change that can be reversed are folding of paper and melting of ice. [1 mark]
- The two examples of physical change that cannot be reversed are tearing of paper and breaking of glass. [1 mark]
- The two examples of chemical changes are burning of wood and rusting of iron. [1 mark]

5. What kind of change is shown by tearing of paper? (1 mark)

Tearing of paper is a physical change that cannot be reversed because there is no alteration in the chemical composition of paper.

Physical and Chemical Changes

6. What are reversible and irreversible changes? Give one example for each. [2 marks]

   Reversible change : When a change in a substance can be reversed by changing the conditions, it is said to be a reversible change. Example : Melting of ghee or wax. [1 mark]

   Irreversible change : When a substance can not be brought back to its original state after a change, it is said to be an irreversible change. Example : Souring of milk. [1 mark]

7. Give examples to explain the difference between changes that can or cannot be reversed. [3 Marks]

   Examples of reversible changes:
   - Melting of ice into water: By freezing the water, we can obtain ice again. [0.5 Mark]
   - Folding of paper: By unfolding it, we can undo the change. [0.5 Mark]
   - Stretching of rubber band: By releasing the band, it comes back to its original form. [0.5 Mark]

   Example of irreversible changes:
   - Burning of paper: When paper is burnt, it turns into ash. The ash cannot be turned back into paper. [0.5 Mark]
   - Bursting of balloon: Once bursted, it cannot get back into its original shape. [0.5 Mark]
   - Cutting of tree: After cutting down of tree, we cannot get back the tree in the original form. [0.5 Mark]

8. When baking soda is mixed with lemon juice, bubbles of a gas are formed. What type of change is it? Explain.
   [2 marks]

   - When baking soda is mixed with lemon juice, carbon dioxide gas is formed along with other substances. The reaction is represented as:
   - Lemon juice + Baking soda $\rightarrow$ Carbon dioxide + other substances [1 mark]
   - Since carbon dioxide gas is one of the new substances formed, this is a chemical change.[1 mark]