

c) **Rust**

d) None of these

6. Which of the following is not a chemical change-

a) Digestion of food

b) Photosynthesis

c) Burning of coal

d) Melting of ice

For the questions that follow, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

i) Both A and R are true and R is the correct explanation of the assertion.

ii) Both A and R are true but R is not the correct explanation of the assertion.

iii) A is true but R is false.

iv) A is false but R is true.

7. **Assertion (A)** - Tearing paper into small pieces is a chemical change.

Reason(R) - It is not possible to rejoin small paper bits to get back the original paper.

Ans: iv) A is false but R is true

8. **Assertion (A)** - Taps and bicycle handles are usually chromium-plated.

Reason(R) - Coating a layer of chromium prevents the rusting of iron articles.

Ans: i) Both A and R are true and R is the correct explanation of assertion.

9. **Assertion (A)** – The change of water from liquid to steam is a physical change.

Reason(R)-When water changes from liquid to a gaseous state the chemical composition of water changes.

Ans: iii) A is true but R is false.

10. **Assertion (A)** – Chemical change is always an irreversible change.

Reason(R) - Lime water turns milky by passing carbon dioxide gas into it.

Ans. ii) Both A and R are true but R is not the correct explanation of the assertion.

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

1) Give two examples for each of the following cases:

(a) Physical changes which are reversible. [**Blowing a balloon, folding paper**]

(b) Physical changes which are not reversible. [**Chopping of vegetables, breaking of a glass tumbler**]

2) Justify the following statement- Photosynthesis and digestion of food are chemical changes.

[Hint: During Photosynthesis, plants use carbon dioxide and water in the presence of sunlight and chlorophyll to form new substances- glucose and oxygen.

During digestion, various food materials are broken down to form new substances which can be absorbed by the body.

3) A sheet of paper was torn into pieces and then burned. What changes does this sheet of paper undergo? Explain.

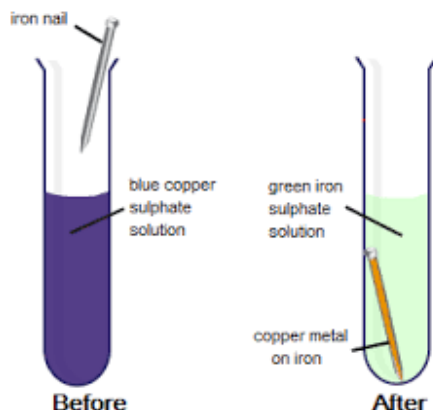
[Hint: When the paper is torn into pieces, it undergoes a physical change as only the size of the paper changes and no new substance is formed whereas when a paper is burned, a new substance ash is formed, it is a chemical change]

4) How does the ozone layer act as a protective shield?

[Hint: The Ozone layer protects us from ultraviolet radiation which comes from the sun. Ozone absorbs ultraviolet radiation and breaks down to form oxygen. If not absorbed by ozone, it would reach the earth's surface and cause harm to us and other life forms. In this way, the ozone layer absorbs harmful ultraviolet radiation.]

III. SHORT ANSWER TYPE QUESTIONS (3M):

1) Observe the given picture and answer the questions.



- What change will you observe in the colour of the solution after dropping an iron nail into it? [Hint: blue to green]
- Why do we observe the colour change in the solution? [Hint- formation of iron sulphate]
- What causes brown deposition on the iron nail? [Hint- formation of copper]
- Write the word equation involved in the above reaction.



2) Give an example of a chemical reaction for each of the following situations:

- A change in colour is observed. [Browning of an apple]

(b) A gas is evolved. [**During a reaction between vinegar and baking soda, carbon dioxide gas is evolved**]

(c) Sound is produced. [**Bursting of firecrackers**]

(d) A change in smell. [**Spoilage of food**]

(e) Heat is given out. [**Bursting of firecrackers**]

3) Write three differences between physical and chemical changes.

[Hint: Physical- no new substance is formed, usually temporary and mostly reversible in nature, heat or light is generally not involved. Chemical- one or more new substances are formed, usually permanent and irreversible in nature, heat or light is absorbed or released.]

4) The same iron wires are kept in the following different places-

a) On the moon. b) Near the beach in Mumbai. c) In Delhi.

Compare the degree of rust formation in the three places.

[Hint- a) The moon has no air. In the absence of air, no rust will form. b) Mumbai is a coastal region which has more water vapour in the air and rusting will occur faster. c) Delhi is far away from the sea coast. The amount of water vapour in the air is less.

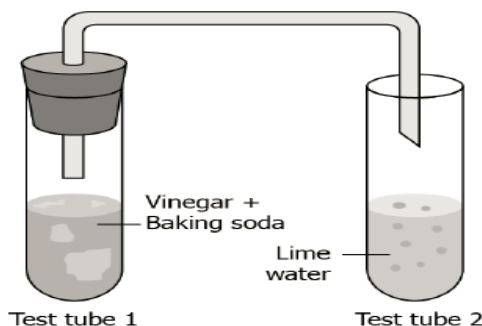
Thus, the rusting process will be slow.]

IV. LONG ANSWER TYPE QUESTIONS (5M):

1) Classify the following changes as physical or chemical changes and give a reason for it-

SL.No.	Activity	Kind of change	Reason
I	Rotting of eggs	Chemical change	Change in composition takes place and is an irreversible process. The smell of rotten eggs is different from fresh eggs.
ii	Burning of coal	Chemical change	When coal is burnt, a new substance carbon dioxide is formed.
iii	Evaporation of seawater	Physical change	When water evaporates, it changes from the liquid state to the gaseous state, but it is still water; it has not changed into any other substance.
iv.	Crystallisation	Physical change	In forming a crystal no change occurs in the chemical properties of the substance only the shape changes.

2) Observe the given activity and answer the questions-



- Name the acid present in vinegar used in this activity. [**Acetic acid**]
- Which gas is produced when baking soda reacts with vinegar? [**Carbon dioxide**]
- What change will you observe in lime water and why? [**Lime water turns milky on passing carbon dioxide gas through it due to the formation of calcium carbonate**]
- Write word equations for both chemical changes.

[Hint: Carbon dioxide gas is given off in the reaction between vinegar (acetic acid) and baking soda (sodium hydrogen carbonate).]

Acetic acid + sodium hydrogen carbonate \longrightarrow carbon dioxide + other substances

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

Calcium hydroxide + carbon dioxide \longrightarrow calcium carbonate + water]

V. CASE STUDY- BASED QUESTIONS/ PASSAGE-BASED QUESTIONS-

1. Rahul was a student of Class VII. His father purchased a new bicycle for him on his birthday. After a few months, he found that the cycle chain and even the handle were rusted. His father advised him to apply a coating of paint to the cycle and not to keep it in the open in future. Why does his cycle get rusted?

[Hint Rahul's cycle was kept in the open for a longer time, as air contains both oxygen and moisture. Thus, in the presence of oxygen and water, his cycle slowly gets rusted.]

Iron + Oxygen + Water \rightarrow Rust (hydrated Iron oxide)]

2. A student collects wax from a burning candle. He melts it and then adds a new wick to it and leaves it to cool. Can this process create a new and functional candle? Why or why not?

i) **Yes; it is a reversible physical change in the state of wax.**

ii) No; it is a physical change that cannot be reversed.

iii) No; it is an irreversible chemical change with the formation of a new substance.

