



INDIAN SCHOOL AL WADI AL KABIR



Class: VII	Department: SCIENCE 2022-2023	Date: 27-10-2022
Worksheet No.: 10 WITH ANSWERS	Topic: PHYSICAL AND CHEMICAL CHANGES	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.

I. VERY SHORT ANSWER (1M):

- 1) Define the following terms:
 - a) Galvanisation [**The process of depositing a thin layer of zinc metal on iron objects.**]
 - b) Crystallisation [**The process of obtaining a substance in its pure crystal form from its saturated solution**]
- 2) List the physical properties of a substance. [**The properties such as state, size, shape and colour of a substance are the physical properties of a substance.**]
- 3) What is meant by the process of rusting?
[**Hint- Process in which iron develops a reddish-brown layer in the presence of oxygen and moisture**]
- 4) Mention the different ways by which rusting of iron can be prevented. [**By oiling, painting, greasing the iron objects, Galvanisation, Chromium plating, Alloying**]
- 5) Why formation of manure from leaves is a chemical change? [**Hint: Formation of manure from leaves is a chemical change because manure formed has a different composition from leaves.**]
- 6) Is cloud formation a chemical or physical change? Explain. [**Hint: Physical change. Clouds are formed by the condensation of water vapours present in the atmosphere. When rainwater goes back to the earth, no new substance is formed.**]
- 7) “Chemical changes are very important in our life.” Give two examples to support it.
[**Hint- extraction of metal from ore, production of medicine**]

For question numbers 8 to 10, 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

8. **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

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

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

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

10. **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.

II. CASE STUDY- 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 gets 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 → Rust (Iron oxide)]

2. In a bowl of ripe fruits a few fresh fruits were placed. The next day it was observed that the fresh fruits had ripened, and the ripe fruits had rotted. What kind of change occurred within the fresh fruits?

i) Physical change fruits the appearance of the fruit alone changes

ii) Physical change as the colour of the fruit changes

iii) Chemical changes as the shape of the fruit changes.

iv) Chemical change as the change cannot be reversed.

3. 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 a new and functional candle be created by this process? Why or why not?

i) Yes; it is a reversible physical change. Only change in the physical 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.

iv) Yes; it is a chemical change causing the wax to change from one state to another

4. A woman mixes flour, milk, eggs and water to create a batter, for baking a cake. The steps in

The process is:

Step 1: Mix flour, water, eggs, sugar and milk in a bowl.

Step 2: Place the batter in a baking tray and bake a cake in the oven.

Which types of changes does each of these steps represent?

i) Step 1: Physical change, Step 2: Chemical change

ii) Step 1: Physical change, Step 2: Physical change

iii) Step 1: Chemical change Step 2: Chemical change

iv) Step 1: Chemical change, Step 2: Physical change

III. PASSAGE-BASED QUESTIONS:

Read the passage given below and answer the following questions:

A chemical change is one in which changes take place on the molecular level. It produces a new substance whereas a physical change does not produce any new substance. To understand how a physical change occurs, take some sugar crystals and dissolve them in water. The water becomes sweet to taste, which shows that molecules of sugar are present in the water. Evaporate the sugar solution in a china dish over a Bunsen burner or a spirit lamp. A white residue is obtained in the china dish. All the properties of this residue are identical to sugar, which was earlier dissolved in water. Thus, we find that in this case no new substance is formed. Hence dissolving of sugar in water is a physical change. Changes in state or phase are physical changes such as melting, freezing, vaporization, condensation and sublimation. A chemical change results in a substance that was not there before.

i. In which of the following changes take place at the molecular level?

- a. Cutting of wood
- b. Chopping of wood
- c. Burning of wood**
- d. None of these

ii. Vaporisation is an example of:

- a. Physical change**
- b. Chemical change
- c. Both of these
- d. None of these

iii. Evaporation of sugar solution to obtain sugar is an example of a:

- a. Physical change**
- b. Chemical change
- c. Both of these
- d. None of these

iv. Identify the physical change /changes from the following:

- a. Melting
- b. Freezing
- c. Condensation
- d. All of these**

IV.a) SHORT ANSWER TYPE QUESTIONS (2 M):

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.

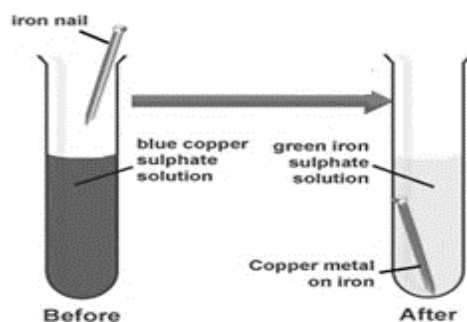
3) A sheet of paper was torn into pieces and then burned. What changes does this sheet of paper undergoes? Explain. **[When the paper is torn into pieces, it undergoes a physical change as only the size of the paper changes and no new substance is formed. whereas when a paper is burned, new substance ash is formed, hence 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. In this way the ozone layer absorbs harmful ultraviolet radiation.]

IV.b) SHORT ANSWER TYPE QUESTIONS (3 M):

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

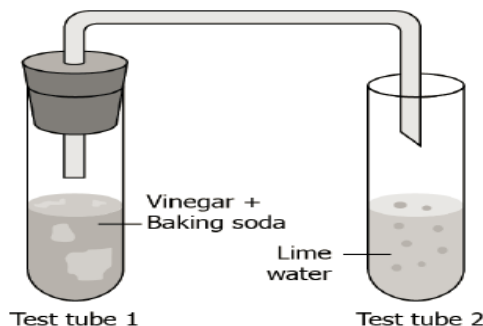
[Hint- a) The moon has no air. In the absence of air, no rust will form. b) Delhi is far away from the sea coast. The amount of water vapour in the air is less. Thus, the rusting process will be slow. c) Mumbai is a coastal region which has more water vapour in the air and rusting will occur faster.]

V.LONG ANSWER TYPE QUESTIONS (5 M):

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

Sl.No.	Activity	Kind of change	Reason
i	Rotting of eggs	Chemical change	Change in composition takes place, 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.	Neutralisation reaction	Chemical change	When an acid reacts with a base, new substances salt and water are formed.
v.	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 used in the 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.

[**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]

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