ARBOR INTERNATIONAL SCHOOL

E-Learning module/file

GRADE: VI MONTH/WEEK/DATE: April/W-1/04.03.22 to 08.04.22

SUBJECT: CHEMISTRY NAME OF THE TEACHER**:** MS. NISHI GUPTA, MS. SIVAPRIYA

Notes for the parents:

- Dear parents, we hope that this learning module for the week serves its purpose with regards to student's understanding and learning.
- The learning content for the week is attached day wise in this module to facilitate learning for your ward.
- For better clarity, kindly zoom the content.
- You can enlarge the content by clicking on the right bottom corner of the screen where the zoom option is given.
- Please refer to the page numbers of the text book mentioned in the module for the learning content which is mentioned in the day wise planning.E-content is attached in the module as well.
- Important notes for the chapter are attached with the learning module and the student must go through those for revision of the concepts.
- By the end of the chapter, the students should be able to understand the following:
- Students will be able to understand the meaning of changes and different types of changes.

Thank you

Nishi, Sivapriya

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Content for the week.

Day 1	**Different types of changes.**
Day 2	**Different types of changes.**

Content

Day 1- Different types of changes.

Teacher will discuss different types of changes by taking examples.

Objective:

- **By observing the surroundings, the students will be able to understand different types of changes.**

Periodic Changes

- Changes which occur again and again after fixed intervals of time are known as periodic changes. For example change of day and night, occurrence of full moon, heart beat and oscillation of pendulum of clock.

Non-Periodic changes

There are some changes which do not repeat themselves at regular intervals. You can not predict when they will reoccur.

For example occurrence of earthquake, train accidents, sneezing, rusting of iron etc.

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Reversible Changes

- If a change can be reversed then it is called reversible change. For example on cooling water to the freezing point it changes into ice and ice changes back into water on heating.

Irreversible Changes

- There are some changes which can not be reversed such changes are called irreversible. For example growth of child into an adult and then from an adult to an old man.

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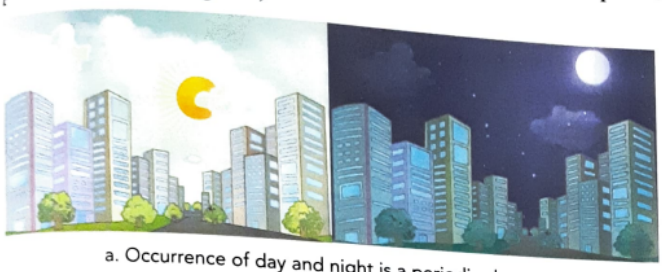
E-book for reference pg no 91,92

Periodic and non-periodic changes Changes that occur at regular intervals of time such as the occurrence of day and night [Fig. 6.5(a)] are periodic changes. Changes that do not occur repeatedly at regular intervals of time such as the occurrence of earthquakes and floods [Fig. 6.5(b)] are non-periodic changes (Fig. 6.5).



a. Occurrence of day and night is a periodic change.

b. Floods are non-periodic changes.

Fig. 6.5 Periodic and non-periodic changes

Table 6.5 Periodic and non-periodic change

Periodic change	Non-periodic change
These are changes that occur at regular intervals of time.	These are changes that do not occur at regular intervals of time.
Examples: Occurrence of day and night	Examples: Occurrence of earthquakes and floods

REVERSIBLE OR IRREVERSIBLE CHANGES

If you take a scoop of ice cream in a bowl and leave it for some time, what do you think would happen? It would melt. Can you change this melted ice cream back into its original form? If you freeze the ice cream, you can change it to its original form. Let us consider a few more activities as listed below.

Fact Store

It is unsafe to eat the ice cream that has melted. Such ice cream should be discarded.

The ice cream that has melted becomes a breeding ground for germs and can cause food-borne illness.

- Making a sketch on a piece of paper with a pencil
- Folding the paper into the shape of a ball
- Rolling the ball of dough into the shape of a roti
- Folding up the trousers to the knees while wading through the water
- Tying a rope around the box

In the above examples, the original material can be obtained back or the products formed can be converted back into their original materials. This means that the sketch on the paper can be erased to get the plain paper, paper can be unfolded into its original form, roti-shaped dough can be again shaped into a ball, trousers can be unfolded back to their original length, and the rope can be untied to get back the original shape. Thus, all these changes can be reversed or undone.

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When a change can be reversed, it is called a ***reversible change***. A reversible change does not produce any new material. The change is observed only in the physical state, size, or shape of a substance.

The three physical states of water, solid ice, liquid water, and gaseous steam, are interchangeable in nature and can be changed from one state to another by either heating or cooling. Solid ice cubes kept at room temperature (25°C approximately) melt into liquid water after absorbing heat from their surroundings. Liquid water when heated, starts boiling and changes into gaseous steam. If this steam is captured and cooled, it would condense into liquid water again. This liquid water can be cooled in a refrigerator and frozen into solid ice. Hence, we can say that melting, boiling, vaporization, condensation, and freezing are all reversible processes.

Other examples of reversible changes are melting of butter or chocolate, blowing of a balloon, and dissolving of salt, sugar, or sand in water. As discussed in Chapter 3, salt, sugar, or sand dissolved in water can be separated by various methods. Another example of reversible change can be seen in the working of a blacksmith or *lohaar*.

Working of a blacksmith

Have you ever observed a blacksmith working with a piece of iron? He transforms and changes the piece of iron into tools of different sizes and shapes. But how does he do that? The piece of iron is heated until red hot, which makes the iron soft. It is then beaten into the desired shape. On cooling, the iron hardens and takes the shape of the tool. This tool can again be heated to soften and acquire another shape. Hence, we can say that it is a reversible change.

Can you explain why elephants sometimes squirt water onto their backs?

Let us consider the same activities being performed in a different way:

- Drawing on a piece of paper with a pen
- Cutting the paper into the shape of ball
- Rolling the ball of dough into the shape of a roti and baking it
- Cutting the trousers to knee length
- Cutting the rope to open the box

In all the above examples the original material cannot be obtained again or the product formed cannot be converted back into their original form. ***When a change cannot be reversed, it is called an irreversible change***. This means that a drawing made with a pen cannot be erased; a paper that is cut cannot be brought back to its original size; a roti once baked cannot be made into dough again; trousers once cut cannot be brought back to their original size; the rope once cut will not get back to its original size. When a change cannot be reversed, it is called an irreversible change.

An irreversible change is a **permanent change** and, generally, a new substance is formed. Other examples of irreversible changes are cooking of food, growth of a baby into adult, digestion of food, burning of wood/paper, ripening of fruits, falling of leaves from trees, blooming of flowers, and milk changing into curd.

……..End of day 1 module……..

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Day 2- Different types of changes

Physical Changes

- Changes in which size or shape of the object may change but the substance of which they are made of remain the same. For example formation of water vapours on heating water.

Chemical Changes

- The changes in which new substances are formed are called chemical changes. For example rusting of iron lead to formation of iron oxide.

$$2Fe + O_2 \text{ ---------} > 2FeO$$
Iron Oxygen Rust

We can not get back iron or oxygen from iron
oxide. So it is a chemical change.

E-book for reference pg no 93

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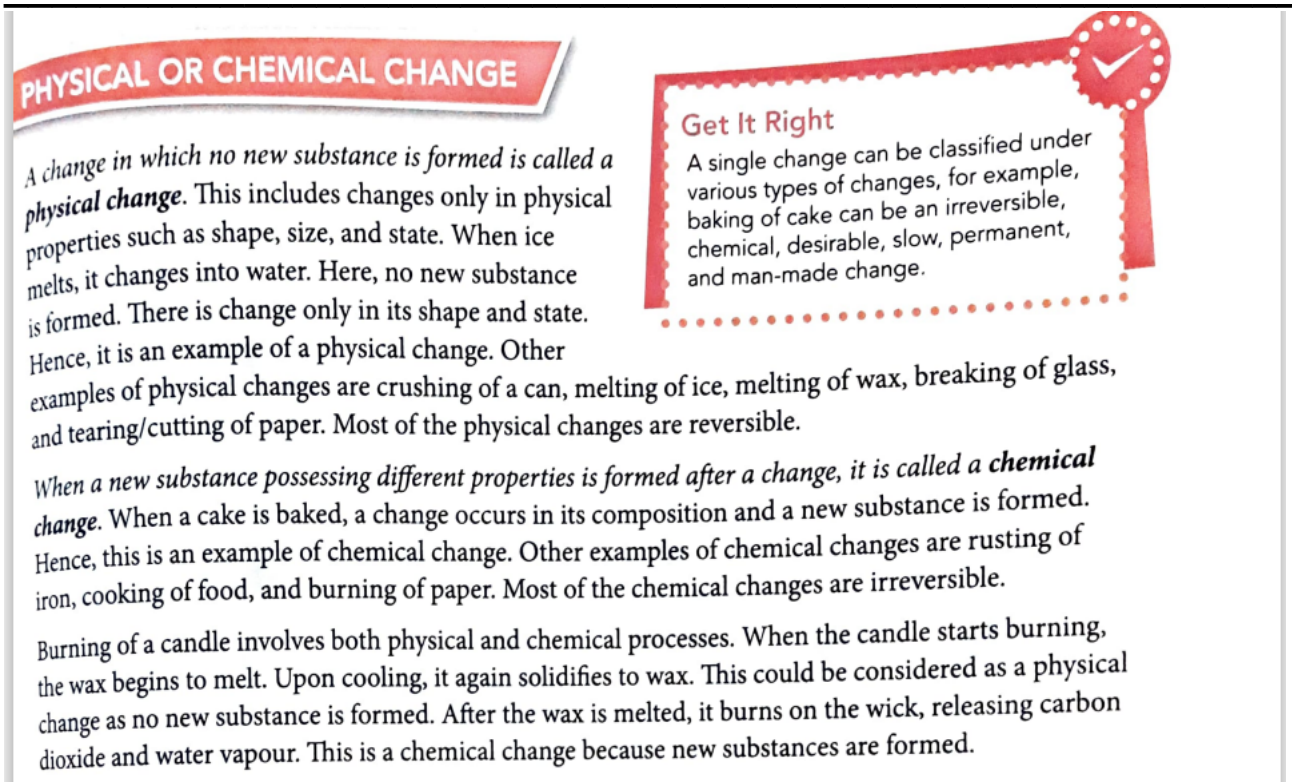

PHYSICAL OR CHEMICAL CHANGE

A change in which no new substance is formed is called a ***physical change***. This includes changes only in physical properties such as shape, size, and state. When ice melts, it changes into water. Here, no new substance is formed. There is change only in its shape and state. Hence, it is an example of a physical change. Other examples of physical changes are crushing of a can, melting of ice, melting of wax, breaking of glass, and tearing/cutting of paper. Most of the physical changes are reversible.

Get It Right

A single change can be classified under various types of changes, for example, baking of cake can be an irreversible, chemical, desirable, slow, permanent, and man-made change.

When a new substance possessing different properties is formed after a change, it is called a ***chemical change***. When a cake is baked, a change occurs in its composition and a new substance is formed. Hence, this is an example of chemical change. Other examples of chemical changes are rusting of iron, cooking of food, and burning of paper. Most of the chemical changes are irreversible.

Burning of a candle involves both physical and chemical processes. When the candle starts burning, the wax begins to melt. Upon cooling, it again solidifies to wax. This could be considered as a physical change as no new substance is formed. After the wax is melted, it burns on the wick, releasing carbon dioxide and water vapour. This is a chemical change because new substances are formed.

Notes

Aim:

- To understand what is change and state of change.
- To be able to identify what are chemical and physical changes, reversible and irreversible changes.

Keywords

- ✓ Earthquake
- ✓ Rotting
- ✓ Flood
- ✓ Irreversible
- ✓ Reversible
- ✓ Chemical
- ✓ Physical
- ✓ Blacksmith
- ✓ Pendulum

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- ✓ Expansion
- ✓ Contraction

Question Answer:

Q1. What are reversible changes and irreversible changes?

Answer 1: **Reversible changes:** The changes that can be reversed are called reversible changes. No new material is formed.

Irreversible changes: The changes which can't be reversed are called irreversible changes. New material is formed.

Q2. Give two examples of reversible and irreversible changes.

Answer 2: Examples of reversible and irreversible changes are:

Reversible changes: Melting of ice, blowing of a balloon

Irreversible changes: Cooking of food, rusting of iron.

Q3. What are physical and chemical changes?

Answer 3: **Physical Changes:** The changes in which no new substance is formed are called physical changes.

Chemical changes: The changes in which new substances are formed are called chemical changes.

Online quiz will be conducted in the class on different types of changes.

……. End of the module……...