Physical and Chemical Changes

1. **What is called Natural Changes?**
   Ans. Changes that occur naturally by their own and are not under the control of human being are called Natural Changes.
   Ex: Formation of coal from decaying matter, volcanic eruption, growth of seed into plant, change in weather etc.

2. **What is Man made changes?**
   Ans. Changes that takes place due to human being are called man made changes.
   Ex: Dissolving salt and sugar in water.

3. **What is Periodic Change?**
   Ans. The changes which take place after certain interval f time is called Periodic Change.
   Ex: Change of Season, Movement of Pendulum.

4. **What is Non-periodic Change?**
   Ans. The change which do not occur after a certain period of time are called Non-periodic Change.
   Ex: Rusting of Iron, Volcano Eruption, Change of weather. Etc.

5. **What is Slow Change?**
   Ans. The change which take long time to occur are called Slow Changes.
   Ans. Formation of curd from milk.

6. **What is fast Change?**
   Ans. The change which take place in a short span of time is called Fast Change.
   Ex: Burning of Fuels

7. **What is Reversible Change?**
   Ans. The change that can be reversed into its original form easily is called Reversable Change.
   Ex: Water $\underset{\text{Melting}}{\overset{Freezing}{\Longleftrightarrow}}$ Ice

   When water is cooled, it changes into ice but on heating ice changes into water again. It is a reversable Change.

8. **What is Physical Change?**
   Ans. A change in which composition and chemical properties of a substance are not change and no new substances are formed is called Physical Changes.
   Ex: Sugar is dissolved in water is a physical change because on heating the solution water evaporated and sugar is regained.

9. **Which are the characteristics of Physical Changes?**
   Ans. The characteristics of Physical Changes are,
   a. The change is temporary and reversable.
   b. No new substance is formed.
   c. The properties and the composition of the original substance are not changed.
   d. No net gain or loss of energy takes place.
   e. There is no change in mass of the substance because no matter is added or removed.

10. **What is Chemical Change?**
    Ans. A change in which composition and chemical properties of a substance are change and new substances are formed is called Chemical Changes.
    Ex. Rusting of iron is a chemical change. Rusting is the process of combination of iron with air in presence of Carbon-di-oxide and moisture. In this process a new compound hydrated Ferric Oxide or Iron Oxide is formed.

11. **What are the characteristics of Chemical Changes?**
    Ans. The Characteristics of chemical changes are
    a. The change is permanent and irreversible.
    b. A new substance is formed
    c. The properties and composition of the original substance are entirely from that of new substance.
    d. The exchange of Energy takes place.
    e. There is a change in the mass of the substance because matter is added or removed.

12. **How to know that chemical change has taken place?**
    Ans. A chemical change is usually accompanied by a change in colour, the evolution of gas and release or absorption of energy.

- **Change in colour**: ripening of fruits is a chemical change. The colour of raw fruits changes during ripening. Heating of sugar, burning of paper give a black substance.
- **Evolution of a gas**: on the reaction of metals like zinc with dilute hydrochloric acid, the evolution of hydrogen gas takes place. Heating of sugar results in the evolution of carbon dioxide gas.
- **Release or absorption of energy**: during a chemical change, energy is evolved or absorbed in the form of heat, light or sound. An explosion of a cracker is a chemical change, that produces heat, light and sound energy.

13. **What is Simultaneous Physical and Chemical changes?**
    Ans. A change where both physical and Chemical properties of a substance are changed is called Simultaneous Physical and Chemical changes.
    Ex: The cycle of an internal combustion engine involves both a physical and chemical change. Gasoline is vaporized and the air in the cylinders is compressed, a physical change, before being ignited and combusting, a chemical change.

14. **Burning of candle is a physical or a chemical change?**

Ans. The burning of a candle is an example of simultaneous physical and chemical change.

When a candle is lit, the wax melts and turns into a liquid state. As the molten wax drops on the floor or table, it solidifies again. Therefore, this is a physical change.

Simultaneously, some of the molten wax rises up the wick, turns into vapor and burns with the flame to form two new substances carbon dioxide and water vapor. The amount of wax that gets burn escapes in the form of gases and candle becomes smaller and smaller. This is a chemical change.

Thus, the melting of wax is a physical change and the burning of wax is a chemical change.

15. **Write the differences between Physical and Chemical Changes.**

Ans.

Sl. No.	Differentiating Property	Physical Change	Chemical Change
1	Explanation	In a physical change, the molecules are rearranged while their actual composition remains same.	In a chemical change, the molecular composition of a substance completely changes and a new substance is formed.
2	Example	Some example of physical change are freezing of water, melting of wax, boiling of water, etc.	A few examples of chemical change are digestion of food, burning of coal, rusting, etc.
3	Reversibility	Physical change is easily reversible i.e original substance can be recovered.	Chemical change is irreversible i.e. original substance cannot be recovered.
4	Formation of new substance	In physical change, no new substance is formed.	A chemical change is always accompanied by one or more new substance(s).
5	Type of Change	Physical change is a temporary change.	Chemical change is a permanent change.
6	Energy Production	In a physical change, no energy is produced.	In a chemical change, energy is produced (heat, light, sound, etc.)
7	Absorption of Energy	Physical change involves very little to no absorption of energy.	During chemical reaction, absorption and evolution of energy takes place.
8	Affects	Physical change affects only physical properties i.e. shape, size, etc.	Chemical change both physical and chemical properties of the substance including its composition.