

CHEMISTRY STUDY MATERIALS FOR CLASS 10

(NCERT Based notes of Chapter -01)

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DATE:- 19/04/2021

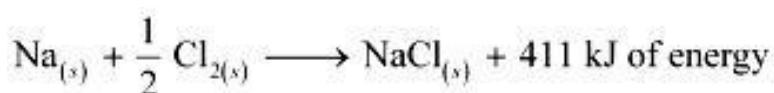
CHEMICAL REACTIONS AND EQUATIONS

EXERCISE QUESTIONS PAGE NO. 14, 15 and 16

Question 9: What does one mean by exothermic and endothermic reactions? Give examples.

Answer : Chemical reactions that release energy in the form of heat, light, or sound are called exothermic reactions.

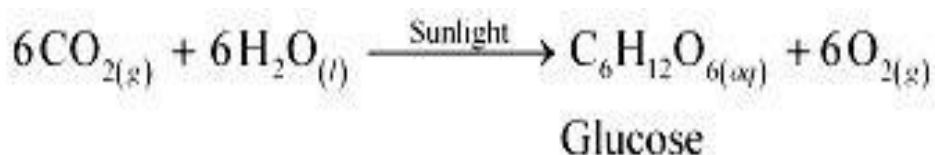
Example: Mixture of sodium and chlorine to yield table salt



In other words, combination reactions are exothermic.

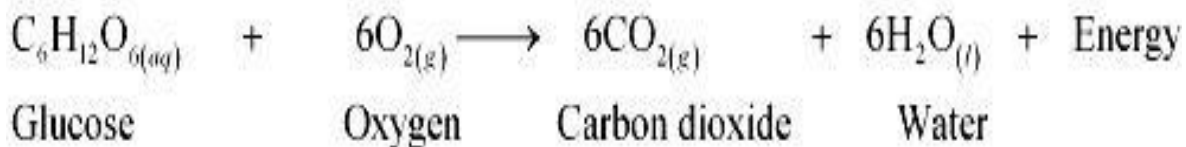
Reactions that absorb energy or require energy in order to proceed are called endothermic reactions.

For example: In the process of photosynthesis, plants use the energy from the sun to convert carbon dioxide and water to glucose and oxygen.



Question 10: Why is respiration considered an exothermic reaction? Explain.

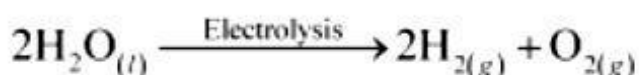
Answer : Energy is required to support life. Energy in our body is obtained from the food we eat. During digestion, large molecules of food are broken down into simpler substances such as glucose. Glucose combines with oxygen in the cells and provides energy. The special name of this combustion reaction is respiration. Since energy is released in the whole process, it is an exothermic process.



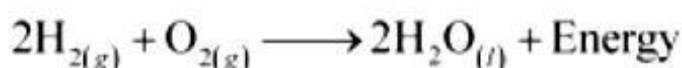
Question 11: Why are decomposition reactions called the opposite of combination reactions? Write equations for these reactions.

Answer : Decomposition reactions are those in which a compound breaks down to form two or more substances. These reactions require a source of energy to proceed. Thus, they are the exact opposite of combination reactions in which two or more substances combine to give a new substance with the release of energy.

Decomposition reaction: $\text{AB} + \text{Energy} \longrightarrow \text{A} + \text{B}$

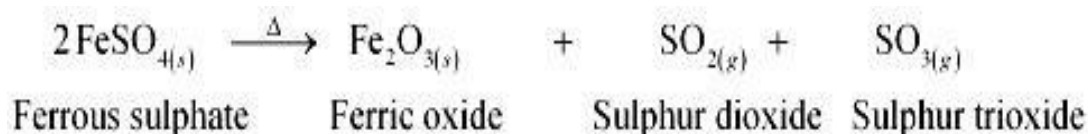


Combination reaction: $\text{A} + \text{B} \longrightarrow \text{AB} + \text{Energy}$



Question 12: Write one equation each for decomposition reactions where energy is supplied in the form of heat, light or electricity.

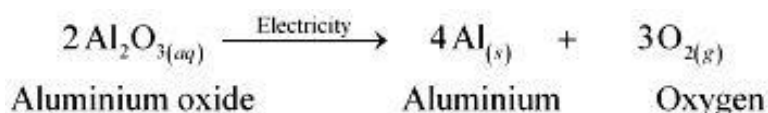
Answer : (a) Thermal decomposition:



(b) Decomposition by light:



(c) Decomposition by electricity:



Question 13: What is the difference between displacement and double displacement reactions? Write equations for these reactions.

Answer : In a displacement reaction, a more reactive element replaces a less reactive element from a compound.



Where A is more reactive than B

In a double displacement reaction, two atoms or a group of atoms switch places to form new compounds.



For example:

Displacement reaction:

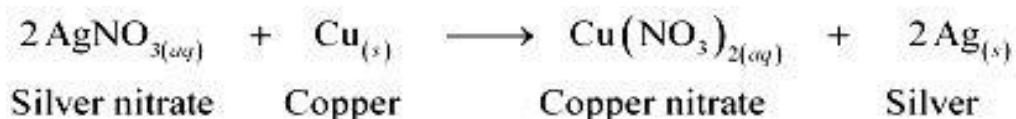


Double displacement reaction:



Question 14: In the refining of silver, the recovery of silver from silver nitrate solution involved displacement by copper metal. Write down the reaction involved.

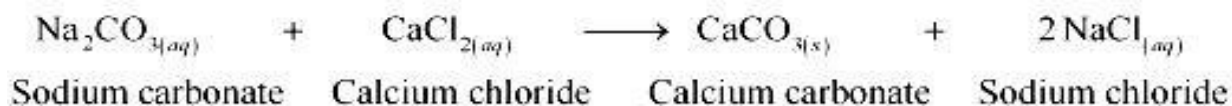
Answer :



Question 15: What do you mean by a precipitation reaction? Explain by giving examples.

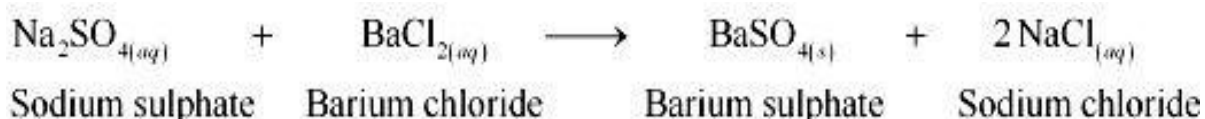
Answer : A reaction in which an insoluble solid (called precipitate) is formed is called a precipitation reaction.

For example:



In this reaction, calcium carbonate is obtained as a precipitate. Hence, it is a precipitation reaction.

Another example of precipitation reaction is:



In this reaction, barium sulphate is obtained as a precipitate.

Question 19: Oil and fat containing food items are flushed with nitrogen. Why?

Answer : Nitrogen is an inert gas and does not easily react with these substances. On the other hand, oxygen reacts with food substances and makes them rancid. Thus, bags used in packing food items are flushed with nitrogen gas to remove oxygen inside the pack. When oxygen is not present inside the pack, rancidity of oil and fat containing food items is avoided.

Question 20: Explain the following terms with one example each.

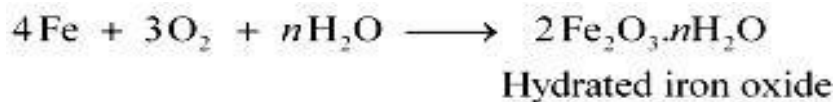
(a) Corrosion (b) Rancidity

Answer :

(a) Corrosion:

Corrosion is defined as a process where materials, usually metals, deteriorate as a result of a chemical reaction with air, moisture, chemicals, etc.

For example, iron, in the presence of moisture, reacts with oxygen to form hydrated iron oxide.



This hydrated iron oxide is rust.

(b) Rancidity:

The process of oxidation of fats and oils that can be easily noticed by the change in taste and smell is known as rancidity.

For example, the taste and smell of butter changes when kept for long.

Rancidity can be avoided by:

1. Storing food in air tight containers
2. Storing food in refrigerators
3. Adding antioxidants
4. Storing food in an environment of nitrogen
