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CLASS-10
SECTION-D
ROLL NO.-23



“CHEMICAL REACTIONS AND EQUATIONS”

BY MOHUA



WHAT ARE CHEMICAL REACTIONS?

Chemical reaction is the process in which one or more substances react to form new substances with new chemical properties and compositions.

The substance which take place in a chemical reaction are called reactants.

The new substance produced as a result of a chemical reaction are called products.

HOW TO IDENTIFY A CHEMICAL REACTIONS?

A Chemical reactions is identified by any of these four factors:

- 1. Change in state*
- 2. Change in colour*
- 3. Evolution of gas*
- 4. Change in temperature*

TYPES OF CHEMICAL REACTIONS

Chemical reactions can be grouped into various types on the basis of their nature.

Some common chemical reactions are:

- 1. Combination reactions*
- 2. Decomposition reactions*
- 3. Displacement reactions*
- 4. Double displacement reactions*
- 5. Oxidation-Reduction reactions*
- 6. Precipitation reactions*
- 7. Exothermic and Endothermic reactions*

COMBINATION REACTIONS

When two or more substances (elements or compounds) combine to form a single product, the reactions are called combination reactions.



DECOMPOSITION REACTIONS

Chemical decomposition, or chemical breakdown, is the process or effect of simplifying a single chemical entity into two or more fragments. Chemical decomposition is usually regarded and defined as the exact opposite of chemical synthesis.



DISPLACEMENT REACTION

A displacement reaction is the one wherein the atom or a set of atoms is displaced by another atom in a molecule. For instance, when iron is added to a copper sulphate solution, it displaces the copper metal.



DOUBLE DISPLACEMENT REACTION

A double displacement reaction is a type of reaction in which two reactants exchange ions to form two new compounds. Double displacement reactions typically result in the formation of a product that is a precipitate.

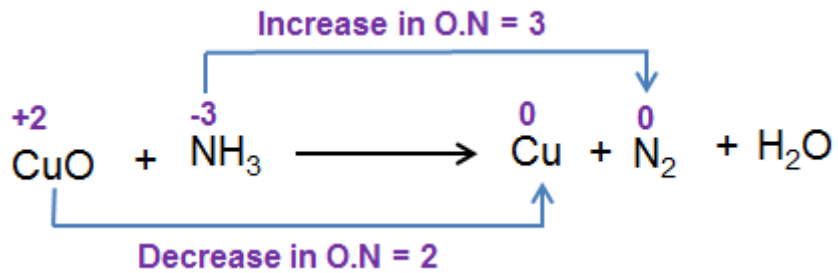


PRECIPITATION REACTION

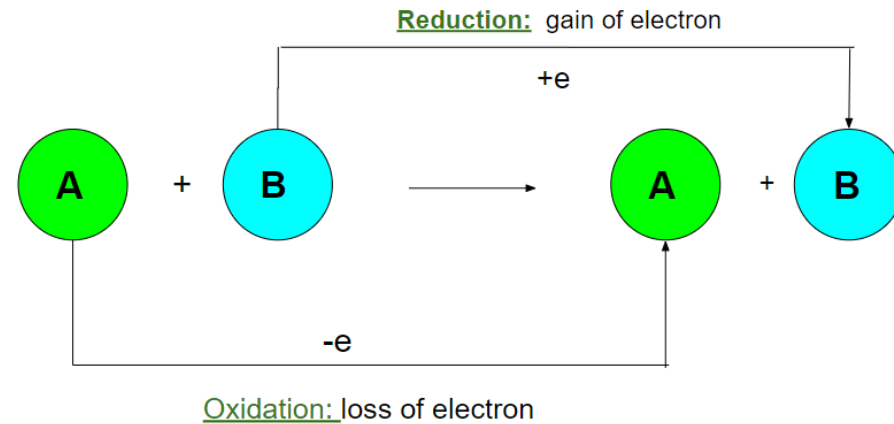
A precipitation reaction is one in which dissolved substances react to form one (or more) solid products. Many reactions of this type involve the exchange of ions between ionic compounds in aqueous solution and are sometimes referred to as double displacement, double replacement.

OXIDATION REACTION

When a reactant loses electrons during a reaction, it is called oxidation. When a reactant accumulates electrons during a reaction, it is called reduction. When metals react with acid, this is a common occurrence. When a reactant loses electrons during a reaction, it is called oxidation.



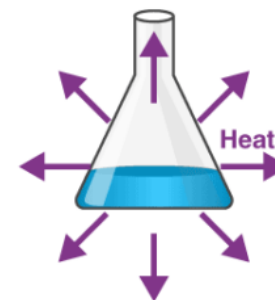
REDUCTION REACTION



Redox is a type of chemical reaction in which the oxidation states of substrate change. Oxidation is the loss of electrons or an increase in the oxidation state of a chemical or atoms within it. Reduction is the gain of electrons or a decrease in the oxidation state of a chemical or atoms within it.

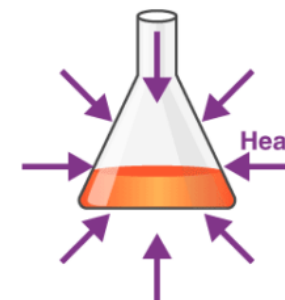
EXOTHERMIC AND ENDOTHERMIC REACTIONS

An exothermic process releases heat, causing the temperature of the immediate surroundings to rise. An endothermic process absorbs heat and cools the surroundings



Exothermic Reactions

A reaction that releases energy from the system in the form of heat.



Endothermic Reaction

A reaction that the system absorbs energy from its surrounding in the form of heat.

REDOX REACTION

- *A redox reaction can be defined as a chemical reaction in which electrons are transferred between two reactants participating in it. This transfer of electrons can be identified by observing the changes in the oxidation states of the reacting species.*
- *An illustration detailing the electron transfer between two reactants in a redox reaction is provided below.*
- *In the illustration provided below, it can be observed that the reactant, an electron, was removed from reactant *A* and this reactant is oxidized. Similarly, reactant *B* was handed an electron and was therefore reduced.*
- *The loss of electrons and the corresponding increase in the oxidation state of a given reactant is called oxidation. The gain of electrons and the corresponding decrease in the oxidation state of a reactant is called reduction.*
- *Electron-accepting species which tend to undergo a reduction in redox reactions are called oxidizing agents. An electron-donating species which tends to hand over electrons can be referred to as a reducing agent. These species tend to undergo oxidation. It can be noted that any redox reaction can be broken down into two half-reactions, namely the oxidation half-reaction and the reduction half-reaction.*

REDOX REACTION DAILY LIFE EXAMPLES

- *Respiration.* Cellular respiration which is the ultimate source of energy in human beings encompasses a series of redox reactions
- *Combustion.*
- *Photosynthesis.*
- *Photography.*
- *Bleach.*
- *Corrosion.*
- *Breathalyzer/Breath Analyzers.*
- *Medicine.*

WHAT ARE CHEMICAL EQUATIONS?

A chemical equation is the symbolic representation of a chemical reaction in the form of symbols and formulae, wherein the reactant entities are given on the left-hand side and the product entities on the right-hand side with a plus sign between the entities in both the reactants and the products and an arrow that points towards the products, and shows the direction of the reaction.

TYPES OF CHEMICAL EQUATIONS

There are two types of chemical equation: -

1. Skeletal equation- Equation which is not balanced is called skeletal equation.

2. Balanced equation- Equation which is balanced and follow law of conservation of mass are called balanced equation.



THANK YOU 😊

