Chapter 1. (Electricity)

Chemical reactions AND Equations.

➤ PHYSICAL CHANGE

Change in physical properties :

1) Melting
2) Boiling
3) Condensation.

➤ CHEMICAL CHANGE

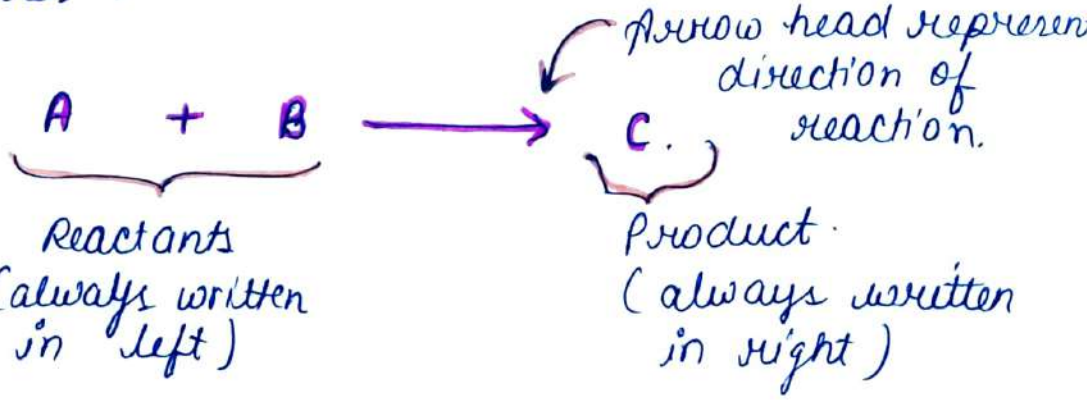
- Old bonds are broken, New bonds formed
- Reactions differ their property to form product of different property.
- Atoms in reactants combine to form more different substance.

$$C + O_2 \longrightarrow CO_2.$$

➤ Chemical equation.

The symbolic representation of chemical change / reaction is known as chemical equation.

features :



Skeletal chemical equation :-

A chemical equation which simply represents the symbol and formulas of reactant and products taking place / part in the reaction is known as skeletal chemical equation.

For example :- $Mg + O_2 \longrightarrow MgO$.

Balanced chemical equation.

A balanced equation is a chemical equation in which no. of atom of each element in reactant and product are equal i.e both side of equation are equal.

eg) $Mg + O_2 \longrightarrow MgO$ (unbalanced).

$2Mg + O_2 \longrightarrow 2MgO$ (balanced).

Combination Reaction :-

The reaction in which two or more substance combine to form a new single substance.

Identification :- $A + B \longrightarrow C$.

eg) $2H_2 + O_2 \longrightarrow 2H_2O$

Decomposition Reaction.

The reaction in which a single substance decompose to give two or more substances.

Identification :- $AB \longrightarrow A + B$.

eg) $CaCO_3 \xrightarrow{\Delta} CaO + CO_2$.

- Decomposition Reaction can be of three types :-

1) Thermal Decomposition Reaction.

When reaction is carried out by heat.

eg). $2FeSO_4 \xrightarrow{Heat} Fe_2O_3 + SO_3 + SO_2$

Heat is symbolise as Δ.

2) Electrolytic decomposition Reaction.

When reaction is carried out by electric current.

eg.) $H_2O \xrightarrow{Current} 2H_2 + O_2$.

3) Photolytic decomposition Reaction.

When reaction is carried out by light.

eg) $2AgBr \xrightarrow{Sunlight} 2Ag + Br_2$.

➤ Exothermic Reaction:

Reaction in which heat is released along with the formation of products or simply those reaction in which heat is evolved.

eg) $CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O \uparrow$.

Respiration is also exothermic reaction.

➤ Endothermic Reaction:

Those reactions in which heat is absorbed is endothermic Reaction.

eg) $2Ba(OH)_2 + NH_4Cl \longrightarrow 2BaCl_2 + NH_4OH$.

Displacement Reaction.

The chemical Reaction in which an element displaces another element from its solution.

Identification : $A + BC_{(aq)} \longrightarrow AC_{(aq)} + B$

eg) $Fe. + CuSO_{4\,(aq)} \longrightarrow FeSO_{4\,(aq)} + Cu.$

*Note : Zinc and lead are more reactive elements then copper they displace copper from its compound.

Double displacement reaction :

The reaction in which two different atoms or group of atoms are mutually exchanged.

Identification : $AB_{(aq)} + CD_{(aq)} \longrightarrow AD_{(aq)} + CB_{(aq)}$

eg) $Na_2SO_4 \longrightarrow$

$Na_2SO_4 + BaCl_2 \longrightarrow BaSO_4 + 2NaCl.$

Sodium Sulphate.	Barium Chloride	Barium Sulphate.	Sodium Chloride.

Oxidation reaction

The reaction in which addition of oxygen, or removal of hydrogen or ~~gain of~~ loss of e^- takes place.

eg) $CuO + H_2 \longrightarrow Cu + H_2O.$

(Oxidation)

Reduction Reaction.

Addition of hydrogen or to removal of oxygen or gain of e^- takes place.

eg) $CuO + H_2 \longrightarrow Cu + H_2O$.

reduction.

Redox reaction

Reaction with both reduction and oxidation is redox reaction.

oxidation.

eg) $CuO + H_2 \longrightarrow Cu + H_2O$.

Reduction.

write same example so that you never forget.

Law of CONSERVATION of MASS.

In a chemical reaction matter is conserved.
Total no of mass = Total no. of atom.

Corrosion :

Process of slowly reacting up of metal due to atmospheric gases like O_2, Co_2 etc.

eg) $2Fe(s) + \frac{3}{2}O_2(g) + XH_2O \longrightarrow Fe_2O_3 \cdot XH_2O$.

Rust (hydrated Iron (III) oxide).

- We can prevent it by Painting, Galvanization e

Rancidity :

Oxidation of oils or fats in food, resulting into bad smell and taste.

- Prevention :
  - By adding anti-oxidants to foods.
  - Using Refrigerator.