BHAGIRATHI BAL SHIKSHA SADAN SEC SCHOOL

II Week

CLASS- X

Subject- Science

Topic - Chemical Reactions and chemical Equations.

SubTopic - Types of Chemical Reaction.

Types of Chemical Reactions :→

- **Combination Reaction**:— The reaction in which two or more reactants combine to form a single product is called combination reaction.

eg (i) Burning of coal :—

$$C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)}$$

(ii) formation of water :—

$$2H_{2(g)} + O_{2(g)} \rightarrow 2H_2O_{(l)}$$

- **Exothermic Reaction**:— Reaction in which heat is released along with formation of products

e.g - Burning of Natural gas :—

$$CH_{4(g)} + O_{2(g)} \rightarrow CO_{2(g)} + 2H_2O_{(g)} + \text{Heat}$$

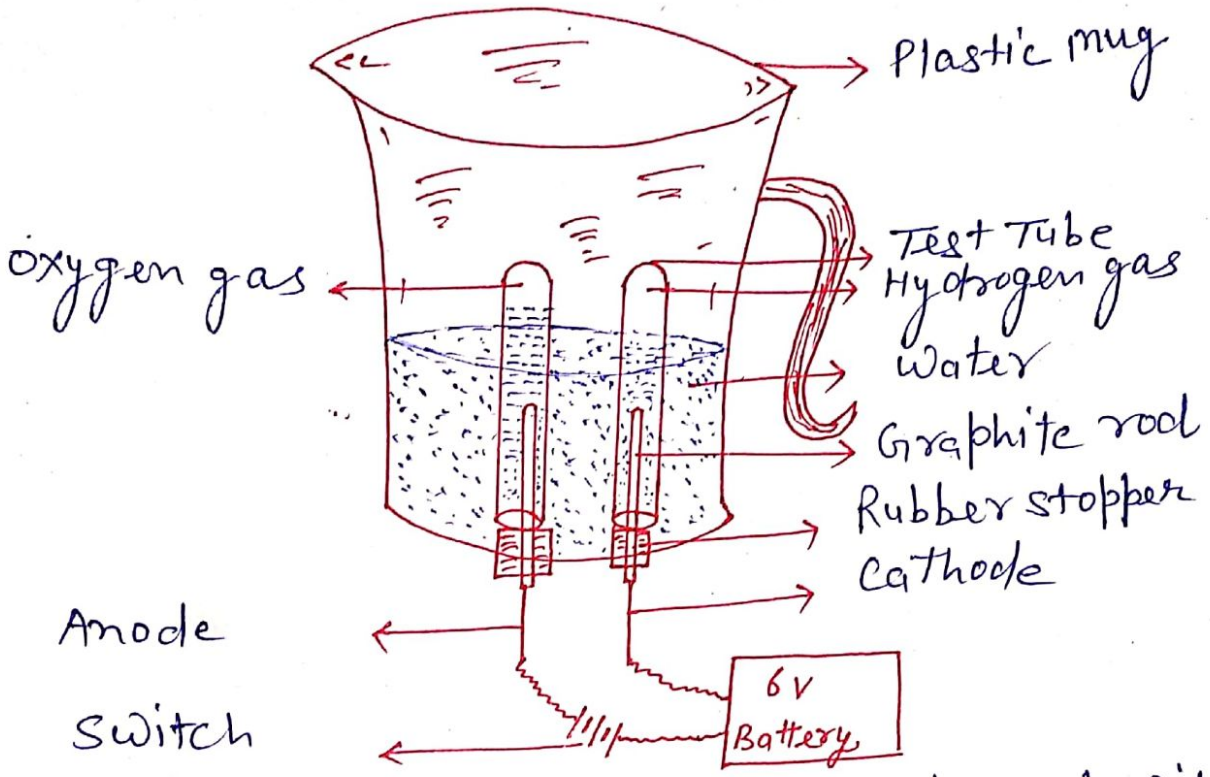
- **Decomposition Reaction**:— The reaction in which a compound splits into two or more simple substances is called decomposition reaction.

$$A \rightarrow B + C$$

- **Thermal Decomposition** (Endothermic Reaction):- The reaction in which heat is requid to carry out the reaction.

e.g $CaCO_{3(s)} \xrightarrow{\text{Heat}} CaO_{(s)} + CO_{2(g)}$

(2) **Electrolytic Decomposition:** — when decomposition is carried out by passing electricity, is called electrolytic decomposition. e.g. — $2H_2O \xrightarrow{\text{Electric current}} 2H_2 + O_2$



- **Phototytic De Composition:** — when decomposition is carried out in presence of sunlight, is called Pholytic decomposition.
  e.g. — $2AgCl(s) \xrightarrow{\text{sunlight}} 2Ag(s) + Cl_2(g)$
  Above reaction is used in black and white Photography.
- **Displcement Reaction:** — The reaction in which more reactive element displaces less reactive element from its salts solution, is called displacement reaction.
  e.g: — $Fe(s) + CuSO_4(aq) \rightarrow FeSO_4(aq) + Cu(s)$
  The Iron nails become brownish in colour by deposition of Cu and blue colour of $CuSO_4$ changes to dirty green colour due to formation of $FeSO_4$.

③ • Double Displacement Reaction:— A reaction in which new compounds are formed by mutual changes of ions between two compounds. eg —

$Na_2SO_4(aq) + BaCl_2(aq) \rightarrow BaSO_4(s) + 2NaCl(aq)$

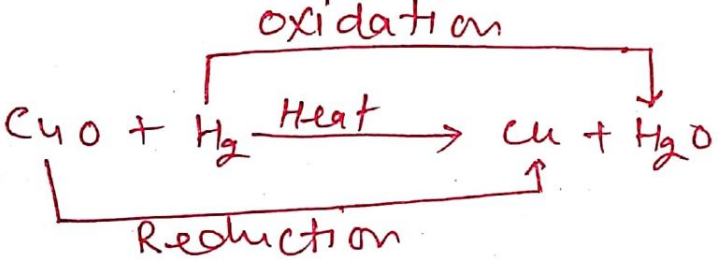
White precipitate of $BaSO_4$ is formed, so it is also called precipitation reaction.

• Oxidation Reaction:— The addition of oxygen or removal of Hydrogen in the chemical reaction is called oxidation reaction.

e.g - $2Cu + O_2 \xrightarrow{Heat} 2CuO$

$CuO + H_2 \xrightarrow{Heat} Cu + H_2O$

• Reduction Reaction:— The addition of Hydrogen or removal of oxygen in the chemical Reaction is called reduction reaction



In this reaction CuO is reduced to Cu and H_2 is oxidised. So oxidation and reduction are taking place together is redox Reaction.

• Corrosion:— when a metal is exposed to moisture air, acid etc, for some time, a layer of hydrated oxide is formed which weakens the metal and hence metal is said to be corroded.

• Rusting of Iron, black coating on silver and green coating on copper examples of corrosion.

• Corrosion can be prevented by galvanization, electroplating, or by putting paints, oils or grease.

Rancidity:— The oxidation of fats and oils when exposed to air is known as rancidity. It leads to bad smell and bad taste of food.

Methods To Prevent Rancidity

(i) By adding antioxidants.
(ii) By filling N_2 gas in Containers.
(iii) By keeping food in air tight Containers.

Assignment to do

Q NO1:- Define Combination reaction. Give two examples of decomposition reaction.

Q NO2:- In electrolysis of water, which gas is collected at cathode and which gas at Anode?

Q NO3:- What types of reactions are represented by following:—

(i) $CaCO_3 \longrightarrow CaO + CO_2$.

(ii) $2Ca + O_2 \longrightarrow 2CaO$.

(iii) $Pb + CuCl_2 \longrightarrow PbCl_2 + Cu$.

(iv) $2FeSO_4 \longrightarrow Fe_2O_3 + SO_2 + SO_3$.

(v) $Na_2SO_4 + BaCl_2 \longrightarrow BaSO_4 + 2NaCl$.

Q NO4:- Why is respiration considered as exothermic chemical reaction?

Q NO5:- What is corrosition? write its preventive measures.

Q NO6:— Define rancidity. write its methods to prevent it.

Q NO7:- Why do copper vessels lose shine, when exposed to air?