

Chemical Reactions and Equations

- In a chemical reaction, at least one of the following will occur:
 - Change in state
 - Change in colour
 - Evolution of a gas
 - Change in temperature

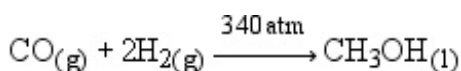
- **Balanced chemical equation**

Reactants → Products

LHS RHS

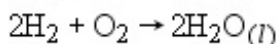
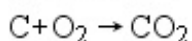
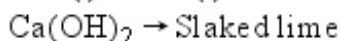
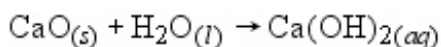
Total number of atoms on the LHS = Total number of atoms on the RHS

- **How to balance an equation**
 - Write reactants and products
 - Balance the max. number of a particular atom on both sides
 - Balance other atoms
 - A complete balanced equation should look like

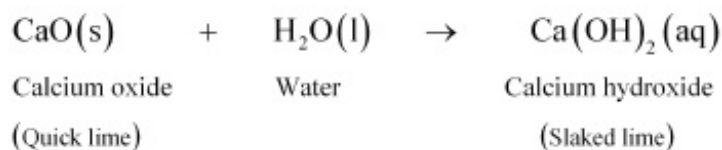


Types of reactions

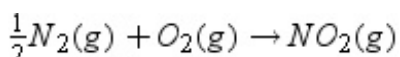
- **Combination reaction**
 - Two or more reactants combine to form one single product.
 - **Examples**



- **Exothermic reaction** – Heat gets released in the reaction. Most combination reactions are exothermic. For example,

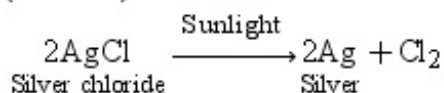
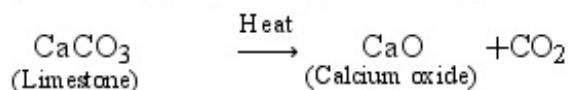
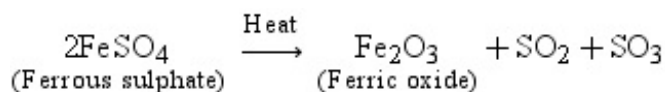


- **Endothermic reaction** – Heat is absorbed in the reaction. Very few combination reactions are endothermic. For example,



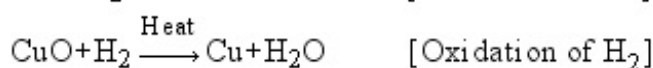
- **Decomposition reaction**

- A single reactant breaks into several simple products.
- **Examples**



- - All decomposition reactions are **endothermic [they absorb heat]**.

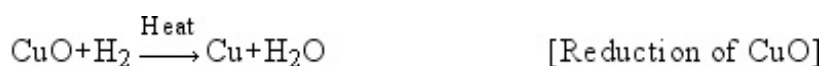
- **Oxidation** → When a substance gains oxygen or loses hydrogen



- **Oxidation in everyday life**

- **Corrosion** – When a metal is oxidised by action of air and moisture [that's why metals are coated]
- **Rancidity** – When fats and oils are oxidised, their smell and taste change [that's why food is kept in air-tight containers]

- **Reduction** → When one substance loses oxygen or gains hydrogen



- **Redox** – Oxidation–reduction reaction

