CHEMICAL EQUATION & REDOX REACTION IN EVERY DAY LIFE

Limitation of chemical equation

- No idea about physical state
- No idea about precipitate
- No idea about concentration
- No idea about heat changes
- No idea about reversibility
- No idea about favourable condition

Specialities of chemical equation

- Idea about weights of reactants & products
- Idea about valency
- Idea about Volume of gases involved
- Idea about molecules
- Idea about reactants & products

Types of chemical equation

- Unbalanced equation: $Mg + O_2 \xrightarrow{\Delta} MgO$
- Symbol equation: $2Mg + O_2 \rightleftharpoons 2MgO$
- Word equation: Magnesium + oxygen $\xrightarrow{Heat}$ Magnesium oxide
- balanced equation: $2Mg + O_2 \xrightarrow{\Delta} 2MgO$

Rectification of chemical equation

- State symbol (s), (ℓ), (g) & (aq)
- Precipitate represented by ppt.
- Concentration represented by dil. & conc.
- Heat evolution represented by + heat in RHS & heat absorbed by - heat in RHS
- Irreversible reaction (-----+)
- Reversible reaction (⇌)
- Favorable conditions represented on arrow

Redox Reaction in every day life

Harms

Rancidity

- Oxidation of fats & oil present in food

Prevention:
- Air tight container
- By N_2
- By antioxidants e.g. BHT, BHA, etc.
- Refrigeration

Pollution

$CH_4(g) + 2O_2(g) \rightleftharpoons CO_2(g) + H_2O(\ell) + heat$

$2S + O_2 \rightleftharpoons 2SO_2$ $\quad 2C + O_2 \xrightarrow{\Delta} 2CO_2$

Generally products of combustion (harmful gases)create pollution

Corrosion

- Corrosion of iron: $4Fe + 3O_2 + xH_2O \longrightarrow 2Fe_2O_3 . xH_2O$ (Reddish brown)
- Corrosion of copper: $2Cu + O_2 + H_2O + CO_2 \longrightarrow Cu(OH)_2 . CuCO_3$ (Green)
- Corrosion of silver: $2Ag + H_2S \longrightarrow Ag_2S + H_2$ (Black)

Prevention:
- Paints
- Greasing & oiling
- Galvanisation (Coating the surface of iron objects with thin layer of zinc)

Uses

Respiration

Important biochemical reaction which releases energy in the cells, accompanied by combustion of glucose

$C_6H_{12}O_6(s) + 6O_2(g) \longrightarrow 6CO_2 + 6H_2O + Energy$

Combustion

Heating in presence of oxygen accompained with evolution of heat & light

e.g. Combustion of LPG

$2C_4H_{10} + 13O_2 \longrightarrow 8CO_2 + 10H_2O + Energy$

Combustion of CNG

$CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O + Energy$