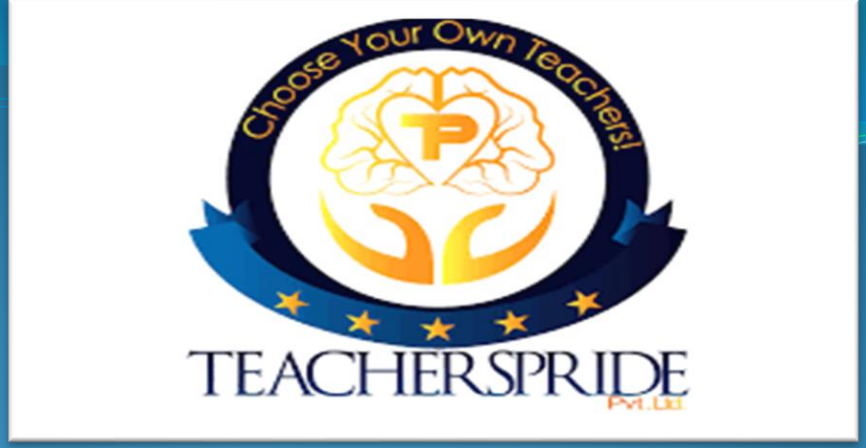

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Class 10th Chapter 1

Chemical Reactions and Equations

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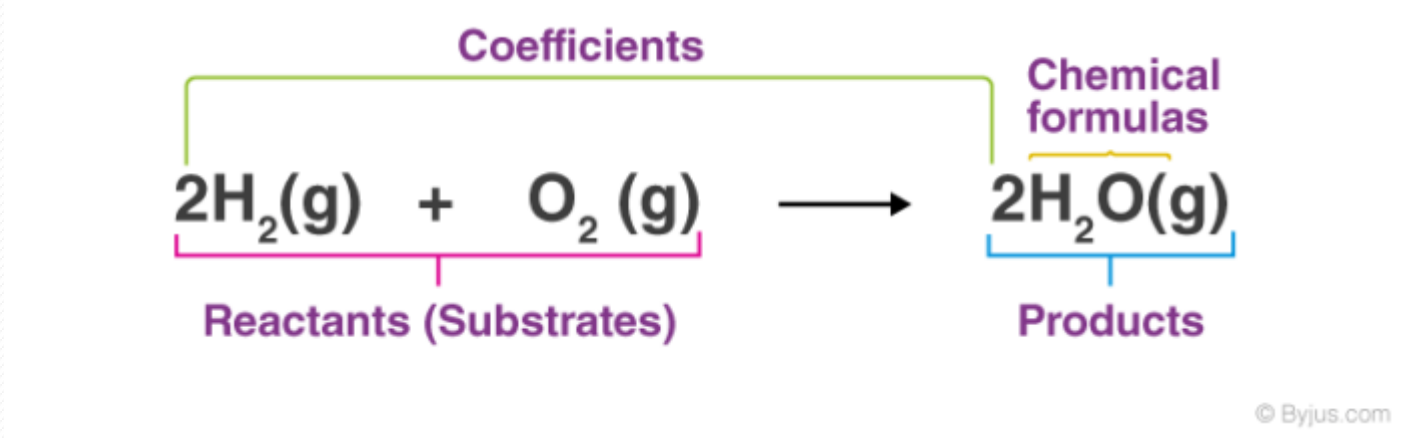
Chemical Reactions

- A process in which one or more substance that is called reactants are converted in to one and more substance is know as product. This process is called chemical reaction.

Chemical Equations

- When a magnesium ribbon is burnt in oxygen , it gets converted to magnesium oxide. This description of a chemical reaction in a sentence form is quite long. It can be written in a shorter form. The simplest way to do this is to write it in the form of a word –equation.



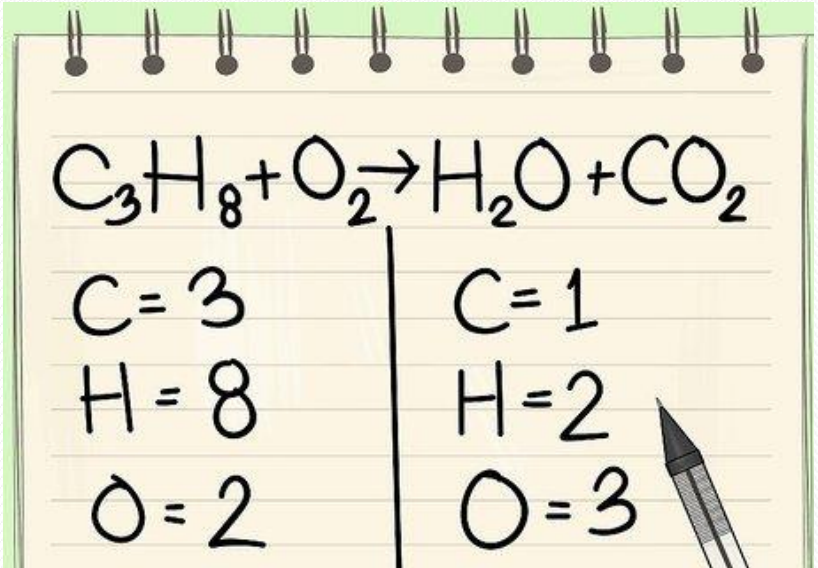
Writing a chemical equation

- Is there any other short way for representing chemical equations ? Chemical equations can be made for more concise and useful if we use chemical formulae .

Reactant(s)				Product(s)
$2H_2(g)$	+	$O_2(g)$	→	$2H_2O(l)$
$Zn(s)$	+	$Cl_2(g)$	→	$ZnCl_2(s)$
$HCl(aq)$	+	$NaOH(aq)$	→	$NaCl(aq) + H_2O(l)$

Steps To Write A Chemical Equations

- These are the steps: First, count the atoms on each side. Second, change the coefficient of one of the substances. Third, count the numbers of atoms again and, from there, repeat steps two and three until you've balanced the equation.



Exothermic reaction

- An exothermic reaction is a reaction in which energy is released in the form of light or heat. Thus in an exothermic reaction, energy is transferred into the surroundings rather than taking energy from the surroundings as in an endothermic reaction.

Endothermic reaction

- In thermochemistry, an endothermic process is any thermodynamic process with an increase in the enthalpy H of the system. In such a process, a closed system usually absorbs thermal energy from its surroundings, which is heat transfer into the system.

Types Of Chemical Reactions

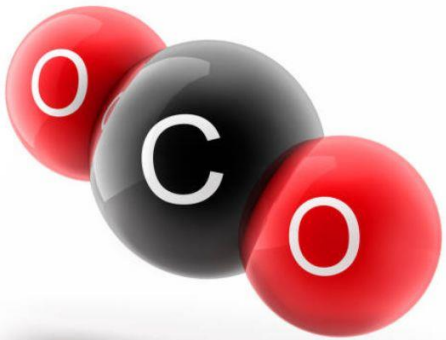
- Combination reaction .
- Decomposition reaction .
- Displacement reaction .
- Double displacement reaction.
- Oxidation and reduction reaction .

Combination Reaction

- In this reaction two or more compounds react with each other and form a single product .

$$CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)$$

(Quick lime) (Slaked lime)



Decomposition Reaction

- In this reaction one or more reactant decomposes and makes a other type of product its called the decomposition reaction .

$$2FeSO_4(s) \xrightarrow{Heat} Fe_2O_3(s) + SO_2(g) + SO_3(g)$$

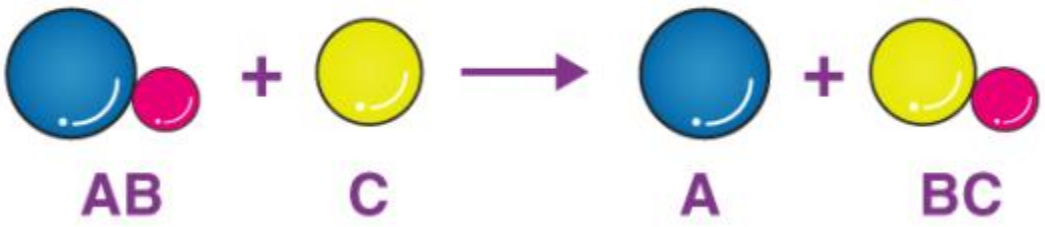
(Ferrous sulphate) (Ferric oxide)

Displacement Reaction

- In this reaction one compound displaces other less reactive compound and made a product .

$$Fe(s) + CuSO_4(aq) \rightarrow FeSO_4(aq) + Cu(s)$$

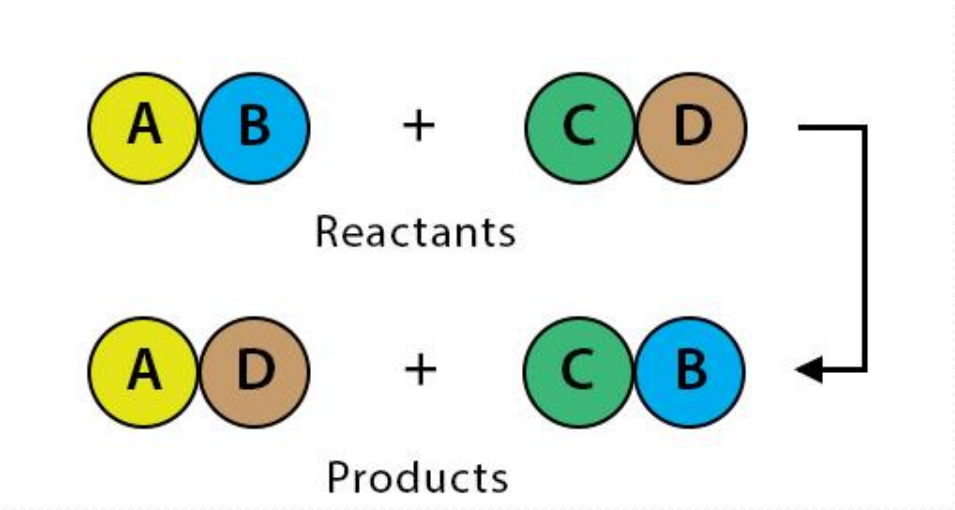
(Copper sulphate) (Iron sulphate)



Double Displacement Reaction

- In this reaction two compounds reacts and displaces two compounds and make a new product its called a double displacement reaction .

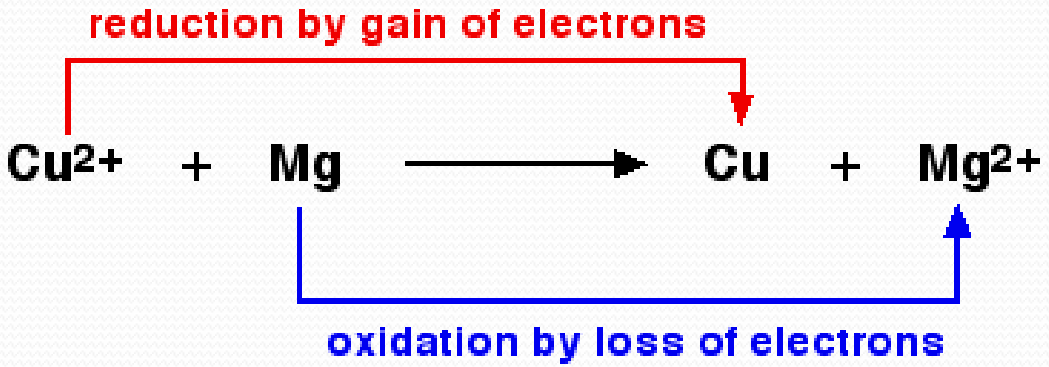
$$\underset{\text{(Sodium sulphate)}}{Na_2SO_4(aq)} + \underset{\text{(Barium chloride)}}{BaCl_2(aq)} \rightarrow \underset{\text{(Barium sulphate)}}{BaSO_4(s)} + \underset{\text{(Sodium chloride)}}{2NaCl(aq)}$$



Oxidation and Reduction

- Oxidation is a process in which the substance gain oxygen and reduces the hydrogen . Reduction is the process in which a substance gain hydrogen and reduces the oxygen .

$$ZnO + C \rightarrow Zn + CO$$

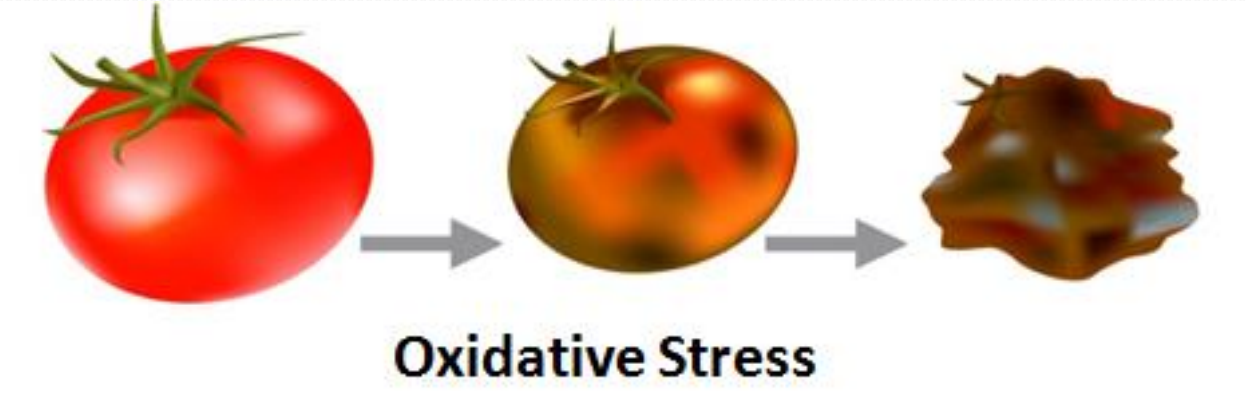


Corrosion

- When any substance performs the process of reduction and then it gets corrosion

Rancidity

- When a substance performs the process of oxidation like oil gains oxygen then that object gets rancidised .



Balance The Following

1. $CO_2 + H_2O \rightarrow C_6H_{12}O_6 + O_2$
2. $SiCl_4 + H_2O \rightarrow H_4SiO_4 + HCl$
3. $Al + HCl \rightarrow AlCl_3 + H_2$
4. $Na_2CO_3 + HCl \rightarrow NaCl + H_2O + CO_2$
5. $C_7H_6O_2 + O_2 \rightarrow CO_2 + H_2O$
6. $Fe_2(SO_4)_3 + KOH \rightarrow K_2SO_4 + Fe(OH)_3$
7. $Ca(PO_4)_2 + SiO_2 \rightarrow P_4O_{10} + CaSiO_3$
8. $KClO_3 \rightarrow KClO_4 + KCl$
9. $Al_2(SO_4)_3 + Ca(OH)_2 \rightarrow Al(OH)_3 + CaSO_4$
10. $H_2SO_4 + HI \rightarrow H_2S + I_2 + H_2O$

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