Chapter – 5

Acids, Bases and Salts

- There are three types of Substances: Acids, Bases and Indicators.
- **Acids:** Acids are sour in taste.
- They are corrosive in nature. A concentrated acid cuts through clothes and eats away the wool. If it falls on the skin, it can cause burns.
- They are good conductors of electricity, as they allow the passage of electric current through them.
- Types of Acids:
  (i) **Mineral Acids:** These are acids prepared from minrals present in the earth's crust.
  (ii) **Organic Acids:** These are acids produced by plants and animals (exception, hydrochloric acid).
  (iii) **Weak Acids:** These do not dissociate completely in solution. Example: nitric acid, sulphuric acid.
  (iv) **Strong Acids:** These dissociate completely in solution. Example: tartaric acid, lactic acid.
- **Neutralization**: It is the reaction between an acid and a base which results in formation of salt and water. $Acid + Base \rightarrow Salt + Water$. Example: $HCl + NaOH \rightarrow NaCl + H_2O$
- **Neutralisation in Everyday Life**:
  (i) **Indigestion**: Too much acid in stomach causes indigestion. It is neutralized by taking an antacid like milk of magnesia.
  (ii) **Ant sting**: When an ant bites, it injects formic acid into the skin. The effect is neutralized by rubbing moist baking soda (sodium hydrogencarbonate) or calamine (containing zinc carbonate).
  (iii) **Soil treatment**: When the soil is too acidic, it is neutralized by treating with quicklime (calcium oxide) or slaked lime (calcium hydroxide).
- Acid turns blue litmus red. Bases turn red litmus blue.
- Substances which are neither acidic nor basic are called neutral.
- Solutions of substances that show different colour in acidic, basic and neutral solutions are called indicators.

- An acid and a base neutralise each other and form a salt. A salt may be acidic, basic or neutral in nature.
- **Bases:** Bases are bitter in taste and soapy to touch.
- Two types of Bases:
  (i) **Weak Bases:** These naturally produce less hydroxide ions in solution. Example: magnesium hydroxide, ammonium hydroxide.
  (ii) **Strong Bases:** These produce more number of hydroxide ions on dissolving in water. Example: caustic soda, caustic potash.
- **Indicators:** It is special chemical that changes its colour to indicate the presence of a chemical substance.
- It is used to confirm the presence of an acid, a base or a neutral solution.
- **Classificaiton of Indicators:**

  Natural Indicators:

  (i) **Litmus:** It is extracted from lichens. It is available in the form of strips of paper or in the form of a solution.
  (ii) **Turmeric:** It remains yellow in neutral and acidic solutions but turns red in alkaline solutions.
  (iii) **China rose:** It turns acidic solutions to dark pink (magenta) and basic solution to green.
  (iv) **Red cabbage:** It turns acidic solutions to red and basic solutions to blue.

  Other Indicators:

  (i) **Methyl Orange**: It gives pinkish red colour with acidic solutions and yellow colour with bases.
  (ii) **Phenolphthalein**: It is an acid-base indicator. It is colourless in acidic solutions but turns pink in alkali solutions.