

**MIND MAP**

**Indicator:** Substance which shows one characteristic property in one medium and different property in another medium are called indicators.

- **Natural indicator:** Litmus solution, turmeric
- **Synthetic indicator:** Phenolphthalein, methyl orange
- **Olfactory indicator:** Onion, clove oil, vanilla extract.

**Base:** Substances which give  $\text{OH}^-$  ion in solution.

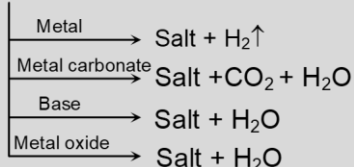
- **Strong base:** dissociate completely, e.g. NaOH, KOH.
- **Weak base:** do not dissociate completely, e.g.  $\text{NH}_4\text{OH}$ .
- **Base**



- The properties of a base are due to  $[\text{OH}^-]$  ion, which it gives in aqueous solution.

**Acid:** Substances which give  $\text{H}^+$  ion in solution.

- **Strong acid:** dissociate completely, e.g.  $\text{HNO}_3$ , HCl,  $\text{H}_2\text{SO}_4$ .
- **Weak acid:** do not dissociate completely, e.g.  $\text{CH}_3\text{COOH}$ ,  $\text{H}_2\text{CO}_3$ .
- **Concentrated acid:** gives more  $\text{H}^+$  ion.
- **Dilute acid:** gives less  $\text{H}^+$  ion.
- **Acid**



- The properties of an acid is due to  $[\text{H}^+]$  ion, which it gives in aqueous solution.

- Strength of an acid or base  $\propto$  Degree of ionization
- Strength of an acid or base  $\propto \frac{1}{\text{dilution of an acid or base}}$

- The properties of an acid or base is due to  $[\text{H}^+]$  ion,  $[\text{OH}^-]$  ion, respectively which they give in aqueous solution.
- Dilution of an acid or base is an exothermic reaction.

**Salt:** The ionic compound consisting of two parts, one containing a positive charge (cation) and the other carrying a negative charge (anion)

- Salt of strong acid and strong base: NaCl, KCl
- Salt of strong acid and weak base:  $\text{NH}_4\text{Cl}$ .
- Salt of weak acid and strong base:  $\text{CH}_3\text{COONa}$ .
- Salt of weak acid and weak base:  $\text{CH}_3\text{COONH}_4$ .

**pH scale:** A scale of numbers from 0 to 14 on which the strength of an acid or base is measured  
 $\text{pH} = -\log[\text{H}^+]$  or  $\text{pH} = -\log[\text{H}_3\text{O}^+]$

- For a neutral solution  
 $[\text{H}^+] = [\text{OH}^-] = 10^{-7} \text{ mol/L}$ ;  $\text{pH} = 7$
- For an acidic solution  
 $[\text{H}^+] > [\text{OH}^-]$ ;  $\text{pH} < 7$
- For a basic solution  
 $[\text{H}^+] < [\text{OH}^-]$ ;  $\text{pH} > 7$

**Some chemical compounds**

- Sodium hydroxide (NaOH)
- Bleaching powder or Calcium Oxychloride ( $\text{CaOCl}_2$ )
- Washing Soda or Sodium Carbonate ( $\text{Na}_2\text{CO}_3$ )
- Baking Soda or Sodium bicarbonate ( $\text{NaHCO}_3$ )
- Plaster of Paris ( $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ )
- Gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ )