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CHEMISTRY

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CLASS 11 & 12th



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CLASS 11th

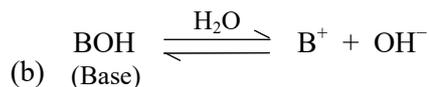
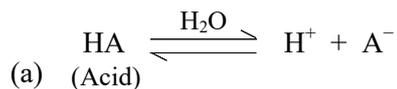
Ionic Equilibrium

miso study



01. Arrhenius Concept (1887)

- (i) According to this concept all substances which give H^+ ions, when dissolved in water are called **Acids**.
- (ii) Those which ionise in water to furnish OH^- ions are called **Bases**.
e.g.



Limitations of Arrhenius concept:

- (i) Applicable only to aqueous solution. Dry HCl shall not act as an acid.
- (ii) The concept does not explain acidic or basic properties in non aqueous solvents.
- (iii) It fails to explain acidic character of non protic compound viz. SO_2, NO_2, CO_2, P_2O_5
- (iv) It fails to explain the basic nature of compounds viz. NH_3, Na_2CO_3
- (v) It fails to explain the acidic nature of certain salts in water e.g. $AlCl_3, FeCl_3$

Basicity or proticity of an Acid:

It is the number of H^+ ions furnished by a molecule of an acid. An acid may be classified according to its basicity. Thus we may have,

- (i) Mono basic or Mono protic acids like HCl, HNO_3, CH_3COOH, HCN etc.
- (ii) Dibasic or Diprotic acids like, $H_2SO_4, H_2CO_3, H_2BO_3$, etc.
- (iii) Tribasic or Triprotic acids like H_3PO_4, H_3AsO_4 , etc.

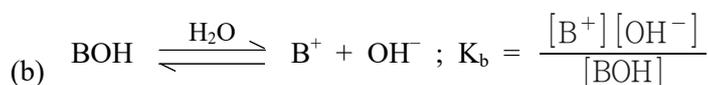
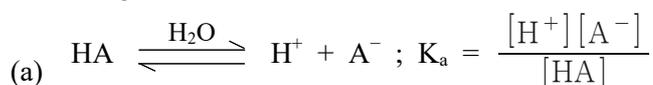
Acidity or Hydroxity of a Base

It may be defined as the number of OH^- ions furnished by a molecular of base. A base can be,

- (i) Mono acidic or monohydroxic like NaOH, $NH_4OH, AgOH$ etc.
- (ii) Diacidic or dihydroxic like $Ba(OH)_2, Mg(OH)_2, Ca(OH)_2, Sr(OH)_2$ etc.
- (iii) Triacidic or trihydroxic like $Fe(OH)_3, Al(OH)_3$ etc.

Strength of Acid or Base:

- (i) Strength of Acid or Base depends on the extent of its ionisation. Hence equilibrium constant K_a or K_b respectively of the following equilibria give a quantitative measure of the strength of acid or base.



- (ii) The larger the value of K_a or K_b , the more complete the ionisation, the higher the concentration of H_3O^+ or OH^- and stronger is the acid or base.

