

ACID-BASE TITRATION: [Neutralization Titration]

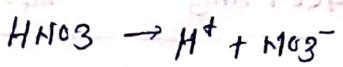
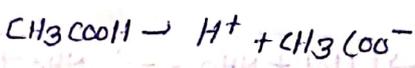
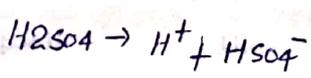
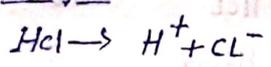
*=> ACID-BASE CONCEPT: ->

-> The following are the concepts that support acid base -

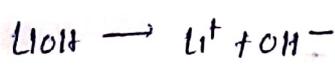
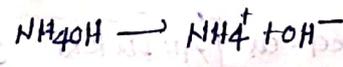
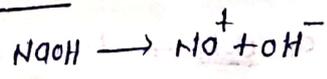
[A] ARRHENIUS-CONCEPT: =>

According to the ARRHENIUS the definitions for the acids and bases are the substance to produce H⁺ ions and OH⁻ ions when dissolved in the water.
↓ ↓
Acids Base

Ex -> Acids



-> BASE



* AN ARRHENIUS Acid should have the following properties

ACID

BASE

① => Should have low pH
[Below -7]

① Should have more pH
[Above -7]

② = Taste - Sour

② Taste - Bitter taste

③ Should turn the litmu - paper - Red colour

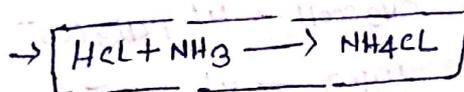
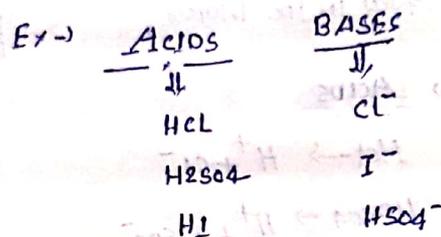
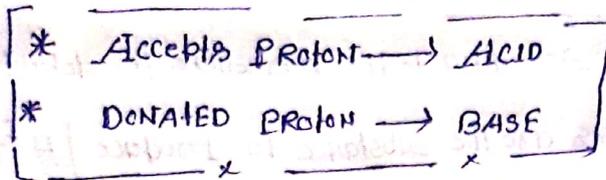
③ Should turn the litmu - paper - Blue colour

[2] BRONSTED-LOWRY CONCEPT →

In 1923 BRONSTED and LOWRY

Proposed that an acid is the substance that accepts proton and the

base is the substance that donates the proton in aqueous media.



* → Proton is transferred from HCl to NH₃. Some substances act as both acids and bases. The compounds are called as Amboteric substance.

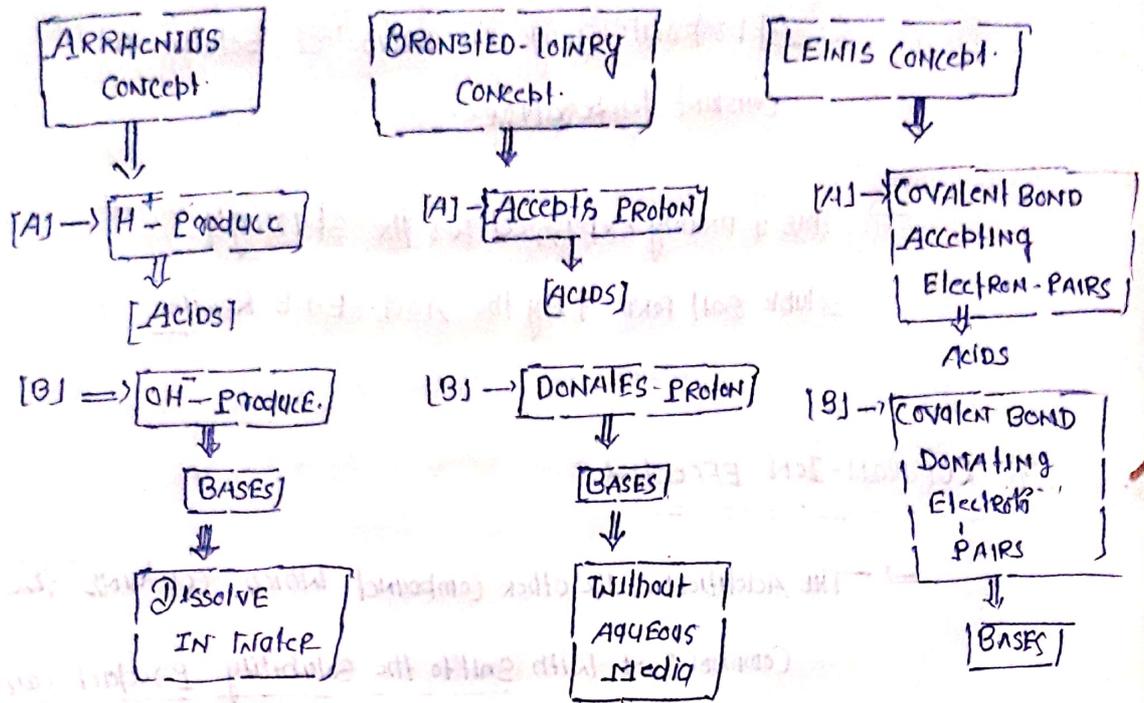
[3] LEWIS CONCEPT →

⇒ Lewis proposed that the acid is the substance that forms the covalent bond by accepting an electron pair from the other substance and base is defined as the substance that forms the covalent bond by donating the electron pairs to the other substance.



\rightarrow BF_3 accepts the electron pairs

from the NH_3 which donated the proton



* THE LAW OF MASS ACTION \Rightarrow



THE RATE OF A CHEMICAL REACTION IS PROPORTIONAL TO THE ACTIVE MASSES OF THE REACTING SUBSTANCE.

* $\text{pH} \Rightarrow$ [THE HYDROGEN IONS EXPONENT] \rightarrow

\Rightarrow pH is defined as the negative logarithm (to base 10) OF THE CONCENTRATION OF HYDROGEN IONS IN SOLUTION.

* \Rightarrow A neutral solution is one in which $\text{pH} = 7$

Acid-solution $\text{pH} < 7$

ALKALINE solution $\text{pH} > 7$

Solubility Products

⇒ Solubility Products is defined as the product of the concentration of the ions increase to the appreciable range in saturated solution at constant temperature.

→ This is mainly expressed for the sparingly soluble salt formed by the acid-base reaction.

* COMMON-ION-EFFECT →

⇒ THE addition of the other compound which contains the common ion with salt to the solubility product causes the precipitation of the salt.

or

In a system in which solid is in equilibrium with its solution, the product of the ion concentration is determined by the solubility product.

APPLICATIONS →

- ① USED IN DETERMINATION OF THE NICOTINIC ACIDS.
- [2] USED IN THE AMINO-ACID DETERMINATION.
- [3] USED IN THE DETERMINATION OF BARBITURATES.
- [4] USED IN THE DETERMINATION OF ASPIRIN.
- [5] USED IN THE ASSAY OF BENZOIC-ACID.

* UNIVERSAL [MULTIPLE RANGE]-INDICATORS: →

By suitably mixing certain indicator change in colour may occur over a considerable portion of the pH range.

→ THE COLOUR CHANGE ARE AS FOLLOWS -

$\text{pH} = 2 \rightarrow \text{Red}$

$\text{pH} = 4 \rightarrow \text{Orange}$

$\text{pH} = 6 \rightarrow \text{Yellow}$

$\text{pH} = 8 \rightarrow \text{Green}$

$\text{pH} = 10 \rightarrow \text{Blue}$.