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# **NON AQUEOUS TITRATION CONCEPT AND TYPES OF SOLVENTS**

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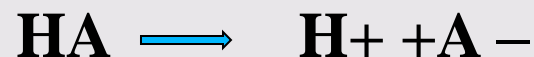


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## NON AQUEOUS TITRATION CONCEPT

- **concepts of the Lowry-Bronsted theory may explain the various reactions that take place during many non-aqueous titrations.**
- **Thus, an acid is a proton donor and a base is a proton acceptor. Therefore, when an acid HA undergoes dissociation it gives rise to a proton and the conjugate base A of the acid :**





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➤ **In other words, the liberated base A shall unite with a proton to give the corresponding conjugate acid HA of the base A because every base has its conjugate acid and vice versa.**

➤ **Hence, from the above definitions it may be implied that :**

**(a) an acid : could be either an electrically neutral molecule e.g.,  $\text{HNO}_3$  ; or a negatively charged anion e.g.,  $\text{HSO}_4^-$  ; or a positively charged cation e.g.,  $\text{C}_6\text{H}_5\text{NH}_2^+$ ,  $\text{H}_3\text{O}^+$  ;**

**(b) a base : could be either an electrically neutral molecule e.g.,  $\text{C}_6\text{H}_5\text{NH}_2$  ; or an anion e.g.,  $\text{Cl}^-$ ,  $\text{NO}_3^-$ .**



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## SOLVENTS

- **These are of three types and they will be discussed briefly here :**

**(a) Protophilic Solvents :** They are essentially basic in nature and normally react with acids to form solvated protons :

**Example :**



- **Perchloric acid displays more strongly acidic characteristics than a weak acid, for instance : acetic acid when dissolved in a weakly basic solvent.**



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## **b) Protogenic Solvents :**

- **They are acidic in nature and character e.g., sulphuric acid.**
- **They exert a 'levelling effect' on bases i.e., they become indistinguishable in strength when dissolved in strongly basic solvents due to their enhanced affinity of strong bases for protons.**

## **(c) Amphiprotic Solvents :**

- **They possess both protophilic and protogenic characteristics.**
  - **Examples : Acetic acid, water and alcohols.**



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• They undergo dissociation to a very less extent.

Acetic acid is mostly employed as a solvent for the titration of basic substances and its dissociation can be depicted as shown below :



### (D) APROTIC SOLVENTS:

- include those substances which may be considered to be chemically neutral and unreactive.
- Carbon tetrachloride and benzene come in this group, they possess low dielectric constants, do not cause ionisation in solutes and do not undergo reactions with acids and bases.



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**THANK YOU**