BRONSTED-LOWRY THEORY OR ACIDS AND BASES

- **Johannes Bronsted and Thomas Lowry independently focused on the role of an acid or a base in a reaction rather than of the properties on their aqueous solutions**
  - **defines an acid as a proton donor**
  - **defines a base as a proton acceptor**

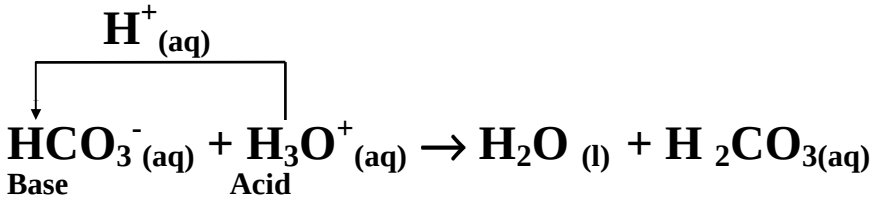
Example:

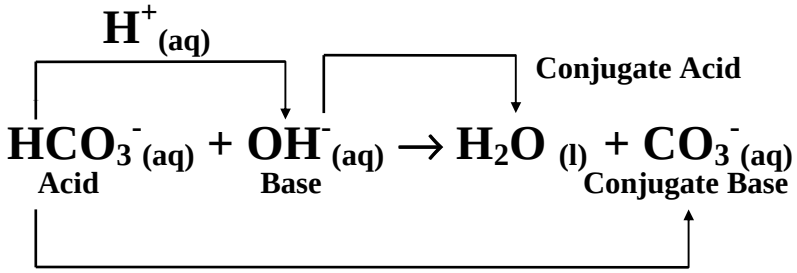
$$\underset{\text{Acid}}{HCl_{(aq)}} + \underset{\text{Base}}{H_2O_{(l)}} \rightarrow H_3O^+_{(aq)} + Cl^-_{(aq)}$$

$$\underset{\text{Base}}{NH_{3(aq)}} + \underset{\text{Acid}}{H_2O_{(l)}} \rightarrow NH_4^+{}_{(aq)} + OH^-_{(aq)}$$

- **A substance can only be described as a Bronsted-Lowry acid or a base for a specific reaction NOT as a general property of the substance**

- **Substances capable of reacting as an acid in one reaction and a base in another reaction are referred to as *AMPHIPROTIC***
- **Example:**





- **When a proton is removed from a Bronsted-Lowry acid, the product formed is referred to as the acid's conjugate base**

- **When a proton is gained by a Bronsted-Lowry base, the product formed is referred to as the base's conjugate acid**

Conjugate Acid	Conjugate Base
$H_2O_{(l)}$	$OH^-_{(aq)}$
$H_3O^+_{(aq)}$	$H_2O_{(l)}$
$NH_4^+{}_{(aq)}$	$NH_{3\,(aq)}$

- **According to the Bronsted-Lowry theory, in a neutralization reaction a proton is transferred form the strongest acid to the strongest base**