Arrhenius Theory

Acids → H^+

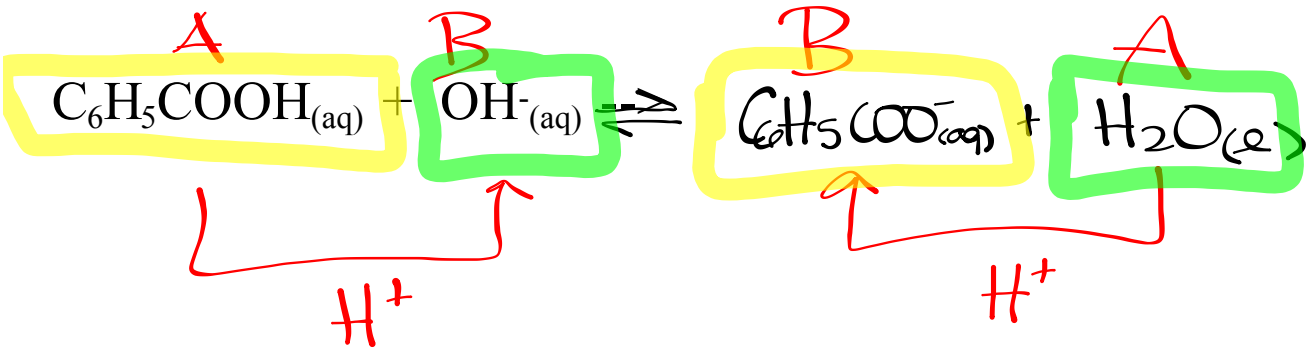
Bases → OH^-

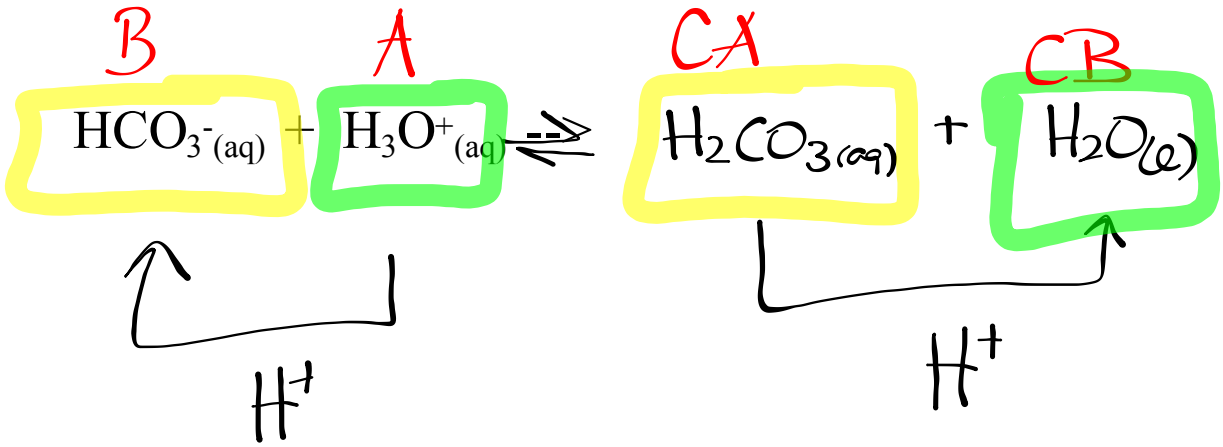
Bronsted-Lowry Theory

Acids → H^+ donor

Bases → H^+ acceptor

Predict the products for the following reaction, and identify each reactant as an acid or a base.





$NH_4^+ \longrightarrow NH_3$

Conjugate Acid-Base Pairs

$$CH_3COOH_{(aq)} + H_2O_{(l)} \qquad CH_3COO^-_{(aq)} + H_3O^+_{(aq)}$$

Acid-Base reactions are at equilibrium !

(Look at forward reaction and reverse reaction)

- Every acid-base reaction at equilibrium has two acids and two bases.
- Acid on 'product' side is formed by addition of proton to base on 'reactant' side
- Base on 'product' side is formed by removal of a proton from acid on 'reactant' side

Conjugate acid-base pair
A pair of substances that differ by only a proton

Ex.

See Appendix F, p. 611

amphoteric (amphiprotic) - substance that can act as a Bronsted-Lowry acid in some reactions and a Bronsted-Lowry base in other reactions.

$$HSO_3^-{}_{(aq)} + H_3O^+{}_{(aq)} \rightleftharpoons H_2SO_{3(aq)} + H_2O_{(l)}$$

$$HSO_3^-{}_{(aq)} + OH^-{}_{(aq)} \rightleftharpoons SO_3^{2-}{}_{(aq)} + H_2O_{(l)}$$

Worksheet