

Unit 10 Acids & Bases

Lesson #1 Acid & Base Conjugate Pairs

① Arrhenius Acids & Bases (aqueous soln only)

Acid - Substance that when dissolved in H_2O , increases the concentration of Hydrogen ions $[H^+]$.

Base - Substance that when dissolved in H_2O , increases the concentration of Hydroxide ions $[OH^-]$.

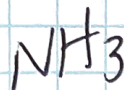


② Bronsted-Lowry Acids & Bases

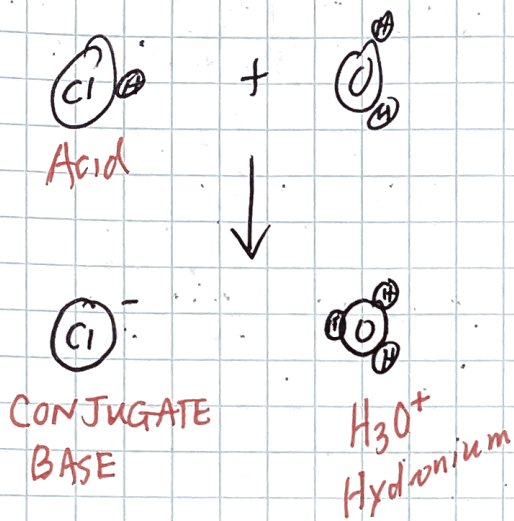
Acid - Proton Donor, Must have a removable (acidic) proton

Base - Proton Acceptor, Must have a pair of non-bonding electrons to accept the proton.

If it is either, = Amphiprotic $H - \overset{\cdot\cdot}{N} - H$
ie H_2O

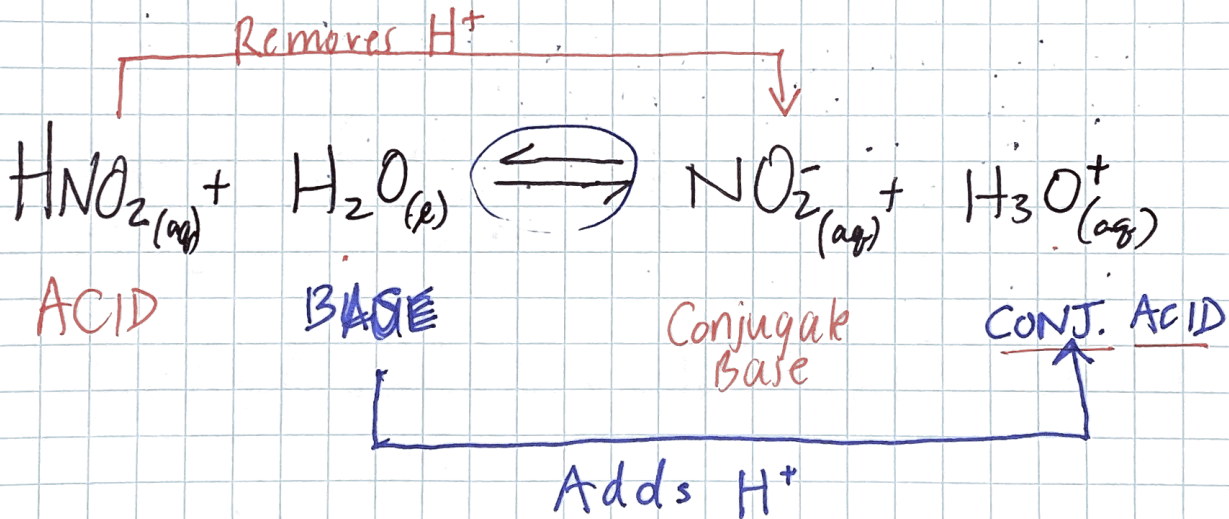


What happens when an acid dissolves in H_2O ?



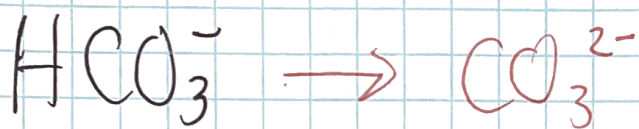
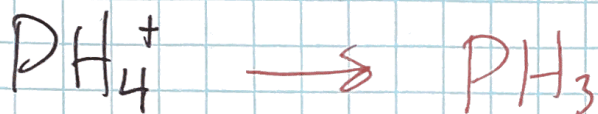
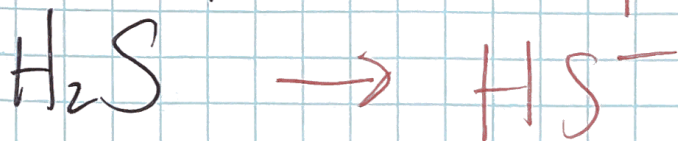
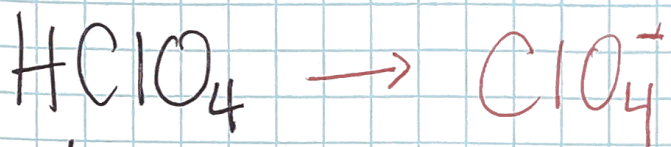
Water acts a B-L Base
-removes proton (H^+) from acid

As a result, the Conjugate Base of the Acid is formed.
E. a Hydronium Ion is formed.



EX

What are the C.B. of each acid?



Strength of Acid & Bases

Strong Acids are completely dissociated
in H_2O

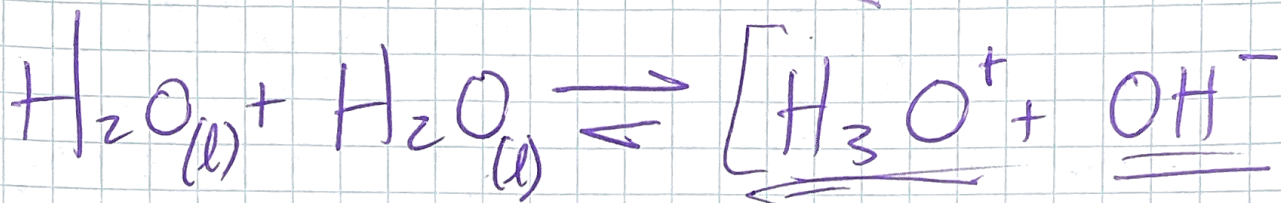
- Conjugate Bases are very weak

Weak Acids dissociate partially

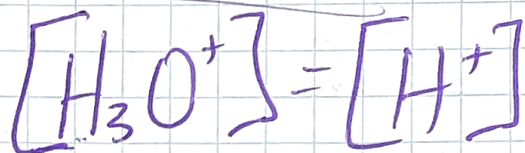
- Conjugate Bases are weak

⊛ Stronger the acid, weaker the conjugate base

Autoionization of H_2O



Ion-Product Constant



$$K_c = \underline{[H_3O^+][OH^-]} = K_w$$

at 25°
 1.0×10^{-14}