

Chem 1062

Note Title

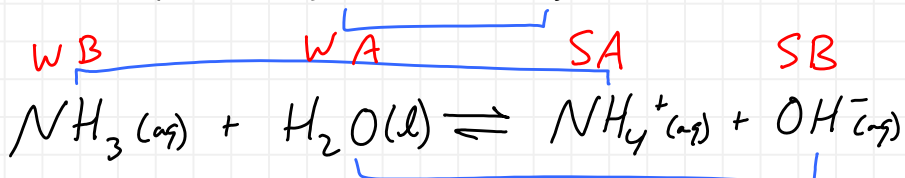
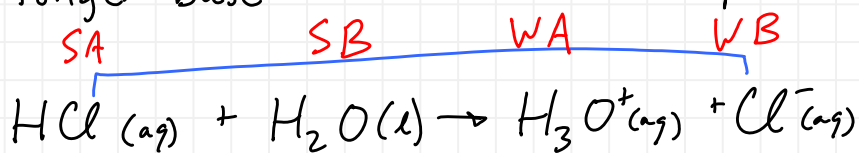
7/22/2008

* I plan to have exams graded and returned to you by class tomorrow, but will make no promises. Scores will be posted to D2L if completed early enough.

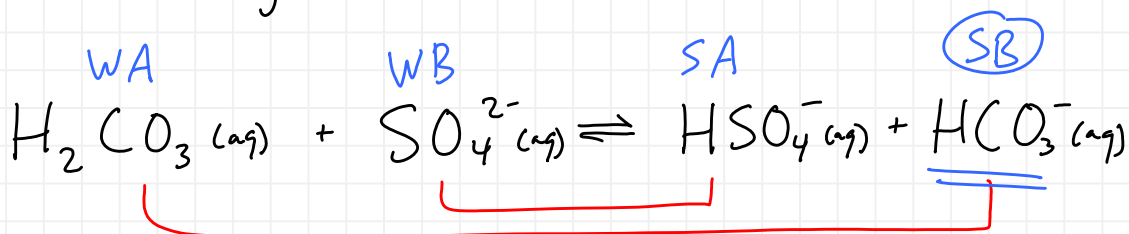
* D2L Quizzes - due Tues, July 29 @ 2 am

Ch. 16, 17, 18

* see p. 668 for a table of acid/base strengths
stronger acid - more likely to donate a proton
stronger base - " " " accept " "

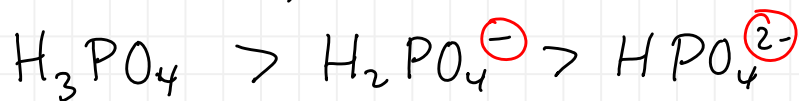


Without consulting the text and given that the reactant side is avored, identify the strongest base in the following equilibrium. Check your answer with the table on p. 668 when you are finished.



Molecular Structure & Acid Strength (pp 670-73)

- ✓ 1) size of the atom to which H is bonded
- ✓ 2) electronegativity of the atom to which H is bonded



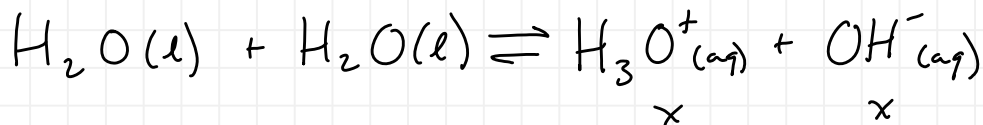
Acid-Base Theory

1. Arrhenius
2. Bronstad-Lowry
3. Lewis

Lewis Theory

acid - electron-pair acceptor
base - electron pair donor

Self-ionization of water



$$K_w = [\text{H}_3\text{O}^+][\text{OH}^-] = 1.0 \times 10^{-14} @ 25^\circ\text{C}$$

self-ionization constant
of water

$$\sqrt{1.0 \times 10^{-14}} = \sqrt{x^2} = x = 1.0 \times 10^{-7} \text{ M} = [\text{H}_3\text{O}^+] = [\text{OH}^-]$$

$$\text{pH} = -\log[\text{H}_3\text{O}^+]$$

$$\text{pH} = -\log(1.0 \times 10^{-7}) = 7.00$$

$$\text{pH} = -\log[\text{H}^+]$$

used to be defined

$$\text{pOH} = -\log[\text{OH}^-]$$

$$\text{pOH} = -\log(1.0 \times 10^{-7}) = 7.00$$

$$\text{pH} + \text{pOH} = 14.00$$

@ 25°C
 $K_w = 1.0 \times 10^{-14}$

a solution has $[\text{H}_3\text{O}^+] = 5.4 \times 10^{-3} \text{ M}$

$$\text{pH} = -\log(5.4 \times 10^{-3}) = 2.27$$

$$[\text{H}_3\text{O}^+] = 5.4 \times 10^{-4} \text{ M} \Rightarrow \text{pH} = 3.27$$

$$[\text{H}_3\text{O}^+] = 5.4 \times 10^{-5} \text{ M} \Rightarrow \text{pH} = 4.27$$

$$[\text{H}_3\text{O}^+] = 5.5 \times 10^{-5} \text{ M} \Rightarrow \text{pH} = 4.26$$

$$[\text{H}_3\text{O}^+] = 5.3 \times 10^{-5} \text{ M} \Rightarrow \text{pH} = 4.28$$