General Chemistry II

RR #9

Summer 2022

1. **Are the solutions of the following salts acidic, basic, or neutral? For those which are not neutral, write balanced chemical equations for the reaction causing the solution to be acidic or basic.**

   a. $NaNO_3$
   b. $NaNO_2$
   c. NH_4NO_3
   d. NH_4NO_2

2. Acrylic acid (CH_2=CHCOOH) is a precursor for many important plastics. The K_a for acrylic acid is 5.6×10^{-5}.

   a. Calculate the pH of a 0.10 M solution of acrylic acid. x is negligible.

   b. Calculate the percent dissociation of a 0.10 M solution of acrylic acid

   c. Calculate the pH of a 0.050 M solution of sodium acrylate (CH_2=CHCOONa). x is negligible.

3. Indicate whether each of the following statements is correct or incorrect

(T / F) Every Bronsted-Lowry acid is also a Lewis acid
(T / F) Every Lewis acid is a Bronsted-Lowry acid
(T / F) Conjugate acids of weak bases produce more acidic solutions than conjugate acids of strong bases
(T / F) The K+ ion is acidic in water because it causes hydrating water molecules to become acids

4. **An unknown salt is either NaF, NaCl, or NaOCl. When 0.050 mol of the salt is dissolved in water to form 0.500 L of solution, the pH of the solution is 8.08. What is the identity of the salt? *K_a of HF = 7.2 x 10^{-4} , K_a of HCl = Large , K_a of HOCl = 3.5 x 10^{-8}.* X is not negligible.**

5. For the following acid-base equilibria:

a) Complete the equation by drawing the necessary structures in each of the boxes. b) Identify the acid, base, conjugate acid and conjugate base. c) Determine which side of the equilibria would be favored (Not directly covered in lecture so this is a challenge/critical thinking question.)