Acid Base Equilibria Problem Set

I. Acids, Bases, Salts, pH (you may need to look up Ka and/or Kb value in your book

Hydrolysis reactions:

- Write the general hydrolysis rxn for HA:

- Write the general hydrolysis rxn for A^-:

- Some compounds are added to water to make solutions. Fill in the table with the requested information about the resulting solutions. (HSO_4^-, H_2CO_3, NH_4^+, HF are all weak acids)

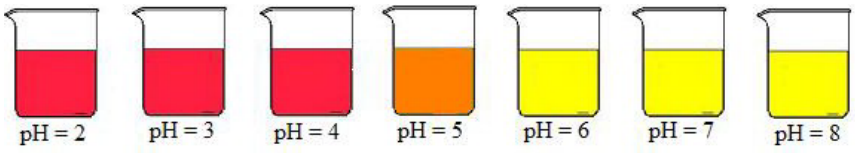
Compound	Ions present	Spectator ions	Ions that hydrolyze to affect pH	pH (<7, 7, >7)	Net ionic equation to explain pH
Na_2SO_4					
Na_2CO_3					
NaCl					
NH_4NO_3					
NaF					
$(NH_4)_2CO_3$					

II.

Why it is, if you need a little bit of OH^- in a solution, that it's smart to use $NH_3(aq)$ instead of NaOH as your source of OH^-? Support your answer with appropriate hydrolysis equations.

III. Indicators

An indicator (**HIn**) is placed in several buffered solutions, pH 2 to 8.



- Which of the beakers contain mostly HIn? Which contains mostly In-?

- What is the ~pKa of the indicator?

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- Write an equation to show the equilibrium of HIn with In^- in water.

IV. Salts

a. What is the pH of a 1.0 M solution of ammonium nitrate?

b. What is the pH of a 1.0 M solution of sodium fluoride?

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