

Pre-Laboratory Assignment

The Chemistry of Acids and Bases

Name _____

1. Write the balanced, net ionic equation for the ionization of acetic acid, $\text{CH}_3\text{CO}_2\text{H}$, in aqueous solution.

2. If K_a for acetic acid is 1.8×10^{-5} , what is the value of $\text{p}K_a$? _____
3. What is the predicted pH of a 0.10 M solution of acetic acid?

4. The value of K_a for the ammonium ion, NH_4^+ , is 5.6×10^{-10} . Which is the stronger acid, acetic acid or ammonium ion? Explain briefly

5. On the back of this sheet is the titration curve for the organic acid benzoic acid. That is, we have titrated 50 mL of 0.050 M benzoic acid with 0.05 M NaOH. The plot shows how the pH changes as NaOH is added (and the acid is consumed).
 - a) What is the original pH of the acid solution? _____
 - b) What is the pH at the equivalence point? _____ Explain why this value is greater than 7.

 - c) What is the value of $\text{p}K_a$ for benzoic acid? (See the experimental write-up, page 6, to learn how to find this from a titration curve.) Explain how you arrived at your value.

Is benzoic acid a stronger or weaker acid than acetic acid? _____

