**Investigation: Determining Ka of Acetic Acid pg. 552-553**

**Pre-lab questions #1-6**

**Part A - Standardization of NaOH**

**Purpose:** To determine the exact concentration of the prepared solution of sodium hydroxide

**Procedure**

1. Weigh approximately 1.0g of potassium hydrogen phthalate (KHP – molecular formula KHC8H4O4), and record the mass.
2. Place the KHP into a clean Erlenmeyer flask. Add a bit of deionized water and two drops of phenolphthalein. Swirl to mix.
3. Record the initial volume of NaOH in the burette.
4. Place the Erlenmeyer flask over a sheet of white paper and titrate with the NaOH solution.
5. Record the final volume of NaOH in the burette.

**Analysis**

1. Calculate the concentration of sodium hydroxide for each trial. Use these concentrations to calculate the average concentration of sodium hydroxide. Compare your value to two other classmates before starting Part B.

**Part B – Determine Ka of Acetic Acid**

**Purpose:** To determine the Ka for acetic acid

**Procedure**

1. Measure the pH of the acetic acid using pH paper or a pH meter. Record this value.
2. Rinse a 10mL pipette 3x with water and then 3x with the acetic acid solution.
3. Pipette 10mL of acetic acid into a clean Erlenmeyer flask and add 2-3 drops of phenolphthalein.
4. Record the initial volume of NaOH in the burette.
5. Place the Erlenmeyer flask over a sheet of white paper and titrate with the NaOH solution.
6. Record the final volume of NaOH in the burette.
7. Repeat the titration as time permits until you have two sets of data that agree with each other.

**Analysis**

1. Set up an ICE table for the dissociation of acetic acid.
2. Use the measured pH to determine [H3O+(aq)] of the acetic acid solution (this is the equilibrium [H3O+(aq)] in your ICE table).
3. a. Write the equation for the neutralization reaction between sodium hydroxide and acetic acid.

b. Calculate the concentration of the acetic acid solution (this is the initial [CH3COOH(aq)] in your ICE table )

1. Using your answers from questions 2 and 3, complete your ICE table and determine the Ka of acetic acid.
2. Compare your value for Ka and the accepted value. Sate two sources of error that might account for any differences in the results.**Universal Indicator Colour Chart**



