CHEM 121 Pre-Unknown Acid Molecular Weight Determination Worksheet

1) Your first titration (Trial 1) of 0.04963 g of oxalic acid dihydrate with 0.1 N NaOH reached its visual endpoint (using phenolphthalein) with 13.4 mL 0.1 N NaOH. Using this information, if your second and third trials consisted of 0.05143 g and 0.04275 g, respectively apiece, how many mL 0.1 N NaOH will you most likely need to reach the visual endpoint in the 2d and 3d trials?

2) If oxalic acid ($H_2C_2O_4$) has a MW of 90 g/mol and water has a molecular weight of 18, what's the formula of and the molecular weight of oxalic acid dihydrate?

3) What percent of oxalic acid dihydrate is oxalic acid?

4) Using your masses from Question 1 and your results from Question 3, how many mg of oxalic acid were in each sample?

5) Using the information from Question 1, how many mEq of NaOH were used to titrate each trial to its visual endpoint?

6) Using your results from Question 5, how many mEq of oxalic acid were in each sample?

7) Based on your results from Question 4 and Question 6, what's the equivalent weight of oxalic acid for each trial?

8) Using your results from Question 7 and knowing the formula for oxalic acid, what's the molecular weight of oxalic acid based on your experimental results.

9) If the theoretical molecular weight of oxalic acid is 90 g/mol, what's your AVERAGE % error from your three trials?

10) What concepts were applied in this worksheet in advance of the experiment?