Post-lab Report Guideline for the Vitamin C Analysis Experiment
This due on May 5, 2016 & May 6, 2016 depending on when your section meets
This is an individual report

1. ABSTRACT

Summarize the goal(s) and technique(s) for the experiment plus a summary of your experimental result(s).

2. DATA AND OBSERVATIONS

Organize all your data and observations in a tabulated format for the standardization of sodium thiosulfate and the analysis of vitamin C. Your data should include the weights of various solid reagents and/or chemicals, all the volumes for the titrations as well as the color of the solutions before and after the addition of the starch.

3. DATA ANALYSIS (SHOW ALL YOUR WORK AND REASONING)

Note: Endpoint volume for this experiment refers to the titrant volume that is required to change the color of the solution from blue to colorless after adding the starch.

Period 1 – Standardization of the Sodium Thiosulfate Solution

a. Calculate the molar concentration of the standard KIO_3 solution
b. Using the initial volume and the end point volume, calculate the molar concentration of $Na_2S_2O_3$ for each trial of the standardization
c. Calculate the average molar concentration of $Na_2S_2O_3$ solution

Period 2 – Analysis of the Vitamin C Tablet

Note: *From here on,* **USE** *the* **AVERAGE concentration for the sodium thiosulfat***e solution for the following calculations.*

d. Using the initial volume and the end point volume, calculate the number of moles of $Na_2S_2O_3$ added to the vitamin C solution for each trial of the analysis
e. Calculate the moles of I_3^- **(in excess)** reacted with $Na_2S_2O_3$ for each trial of the analysis
f. Calculate the moles of I_3^- **generated** from IO_3^- in Eq. 1 (see handout)
g. Determine the moles of vitamin C presented in the solution for each trial of the analysis
h. Determine the grams of vitamin C presented in the solution for each trial of the analysis
i. Based on your result in (viii), calculate the percentage by mass of ascorbic acid in the vitamin C sample for each trial of the analysis
j. Calculate the average percentage by mass of ascorbic acid in the Vitamin C sample.

4. ERROR ANALYSIS (SHOW ALL YOUR WORK AND REASONING)

<u>*Note:*</u> You may assume the absolute error for the 250 mL volumetric flask to be ±0.20 mL. Absolute errors for other common laboratory glassware are listed on page 27 of the lab manual.

a.   Calculate the percentage RAD for the sodium thiosulfate solution ($Na_2S_2O_3$).
b.   Calculate the percentage inherent error in the KIO_3 solution.
c.   Calculate the percentage inherent error in the sodium thiosulfate solution for ONE of your standardization trials.
d.   Calculate the inherent error in the percentage of ascorbic acid you determined in the tablet.
e.   Calculate the percentage RAD for percentage by mass of ascorbic acid in the vitamin C sample.

5. DISCUSSIONS

Does your error account for any "impurities" in the vitamin C tablet? If not, why not?

6. CONCLUSIONS

Summarize your results

Comment on the percentage inherent error in the sodium thiosulfate solution. ***Hint:*** Based on the percentage inherent error in the sodium thiosulfate solution, what can you conclude in terms of the precision of the standardization? Explain your reasoning

Comment on the percentage RAD for the percentage by mass of ascorbic acid in the vitamin C sample. *Hint:* Based on the percentage RAD for the percentage by mass ascorbic acid, what can you conclude in terms of the precision of the standardization? Explain your reasoning