Prelab Assignment for Vitamin-C Analysis

1. If an average lemon yields 40 mL of juice, and the juice contains 50 mg of Vitamin-C per 100 mL of juice, how many lemons would one need to eat to consume the daily dose of Vitamin-C recommended by Linus Pauling? Show all work.

2. Why are HCl, KI, and starch solution added to each of our flasks before titrating in this experiment? What is the function of each?
   a. HCl:
   b. KI:
   c. Starch:

3. A label states that a certain cold remedy contains 200% of the US Recommended Daily Allowance (RDA) of Vitamin-C per serving, and that a single serving is one teaspoon (about 5 mL). Calculate the number of mg of vitamin-C per serving and per mL for this product. Show all work.

4. Based on the balanced reactions (1) and (2) for the titration of vitamin-C, what is the mole ratio of KIO₃ to Vitamin-C from the combined equations?
   _______ moles KIO₃ : _______ moles Vitamin-C (ascorbic acid)

5. Assuming that you want to use about 35 mL of KIO₃ for your standardization titration in part I, about how many grams of ascorbic acid should you use? (you will need this calculation to start the lab). Show all work.
   Hint: you will need to use the approximate KIO₃ molarity given in the lab instructions and the mole ratio you determined in the prior problem.