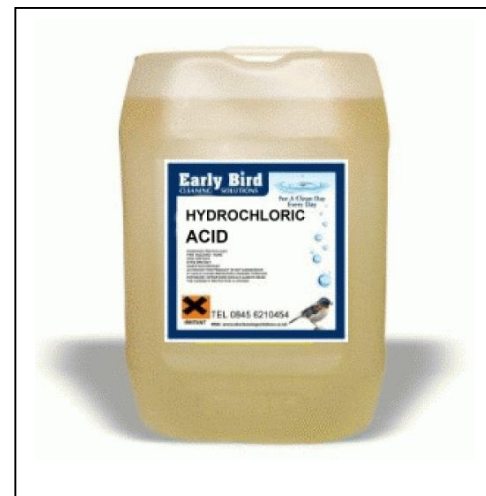**Friday Worksheet   Volumetric 5**

Name: ……………….

1. The active ingredient in brick cleaner is hydrochloric acid, HCl. To find the concentration of HCl in the brick cleaner, a pipette is used to deliver 20.0 mL of the cleaner into a 250 mL, volumetric flask and made to the mark with distilled water. A 20.0 mL aliquot of this diluted solution is then titrated with a standardised solution of 0.100 M sodium carbonate in a burette.

a. Write the equation to the reaction between the carbonate and hydrochloric acid.

b. If an average titre of 21.10 mL was obtained, what is the concentration in gL^- of HCl in the cleaner.

2. In another investigation, a student delivers a 20.00 mL aliquot of undiluted brick cleaner with a concentration of HCl of 3.65 gL^- into a conical flask and places two drops of indicator into the flask. The student then makes up a standard solution by carefully weighing a pure sample of Na_2CO_3 and placing it in a 250 mL volumetric flask.

a. If the student needs to obtain a titre of 12.25 what should the mass of Na_2CO_3, placed into the volumetric flask be?

b. Why is Na_2CO_3 considered to be a primary standard and NaOH is not?

c. The student accidentally placed three drops of indicator into the conical flask. How will this influence the mass of sodium carbonate calculated, in 3) above?