

Week 8a Practice problems

Atomic weights (in g/mole): Na = 23.0, O = 16.0, H = 1.0, Cl = 35.5,

(1) Citric acid is a triprotic weak organic acid which is an important metabolite in all living organisms.

a) If it takes 39.5 mLs of 0.250 M NaOH to completely neutralize 0.632 g of citric acid, what is the molecular weight of citric acid ( $H_3Cit$ )? (ans: 192)

b) Write the net ionic equation for this reaction. [1 pt]

2) Suppose you titrate 30.0 mLs of 0.100M HCl with 0.0750M NaOH,

a) How many grams of HCl are initially in the solution (before you add the NaOH)? (ans: 0.110 g HCl)

b) what is the equivalence point? (ans: 40.0mL)

c) what are the molar concentrations of the following chemical species in the resulting solution if you added a total of 45.0 mLs of NaOH to the 30.0 mLs of 0.100M HCl? (hint: determine the moles and take note of the total resulting volume) (ans:  $[HCl]=0$ ,  $[NaOH]=0.00500M$ ;  $[NaCl]=0.0400M$ )