

Revised August 2011

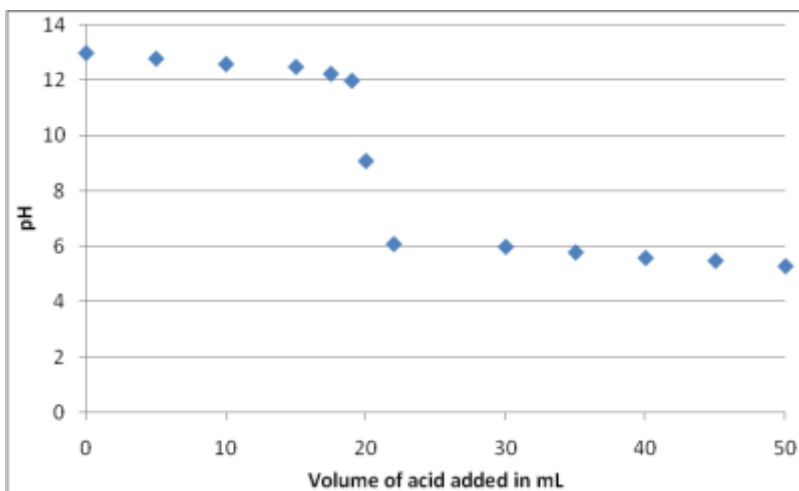
HONORS WORKSHEET 12a: Acids and Bases I

1. Calculate the pH of the following.

(a) $\text{HCl}_{(\text{aq})}$ with a concentration of 0.200 M. (1)

(b) A solution of aqueous potassium hydroxide with a concentration of 0.0100 M. (1)

2. The figure below shows the variation of pH when titrating 25.0 mL of 0.100 M NaOH with a weak acid that has the generic formula, 'HA'. The reaction takes place in a 1:1 ratio.



(a) Estimate the pH of the solution at the equivalence point and suggest a suitable indicator for the titration. (2)

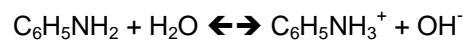
(b) Is the acid strong or weak? Explain your answer. (2)

(c) What volume of acid is needed to neutralize all of the sodium hydroxide? (2)

(d) Write an equation for the reaction taking place. (2)



3. Consider the following reaction



- (a) Identify and explain the role of $\text{C}_6\text{H}_5\text{NH}_2$ in the reaction. (2)
- (b) Explain the significance of the \rightleftharpoons sign and what it means in relation to your answer to (a). (2)
- (c) Comment on the role of water in the forward (left to right) reaction. (2)
- (d) Identify **both** acid/base conjugate pairs. (2)

Revised August 2011



4. Sketch the titration curve that one would expect to find if 40.0 mL of $\text{HNO}_{3(\text{aq})}$ (a strong acid) is added to 25.0 mL of $\text{NH}_{3(\text{aq})}$ (a weak base) in a titration. (4)