CHEM 36
General Chemistry
Quiz #6

March 29, 2002

Name: ***Sir Anne Key***

1. To 10.0 mL of a 0.10 M Acetic Acid solution, 5.0 mL of a 0.10 M NaOH solution is added. Classify the resulting solution by circling one of the following (but remember, you must show your work to get any credit!):

Weak Acid (HAc)
(Buffer)
Weak Base (Ac^-)
Strong Base (excess OH^-)

10.0 mL (0.10 M Acetic Acid) = ***1.00 mmol Acetic Acid***

5.0 mL (0.10 M NaOH) = ***0.50 mmol NaOH***

Weak acid + Strong Base = COMPLETE REACTION

HAc	**+**	**OH^-**	**®**	**Ac^- + H_2O**
1.0 mmol		**0.50 mmol**		
-0.50		**-0.50**		**+0.50**
0.50 mmol		***--***		***0.50 mmol***

Mixture of a weak acid (HAc) and its conjugate base (Ac^-): *BUFFER!*

2. At the equivalence point of a titration of acetic acid with NaOH, the pH is:

7.00 < 7.00 (> 7.00) (Circle your answer)

Briefly explain how you arrived at your answer.

At the equivalence point of a titration, one has added a *equivalent* amount of base (NaOH) to the acetic acid (HAc). Since they react completely, we are left with just the conjugate base of the acetic acid (Ac^-). Thus, the solution is *basic*.

3. The pH of a solution prepared by dissolving solid NH_4Cl in water will be:

7.00 (< 7.00) > 7.00 (Circle your answer)

Briefly explain how you arrived at your answer.

NH_4^+ is the conjugate acid of ammonia (NH_3) – it's a weak acid, so the solution will be *acidic*.