

**CHEM 36**  
**General Chemistry**  
**Quiz #6**

March 29, 2002

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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

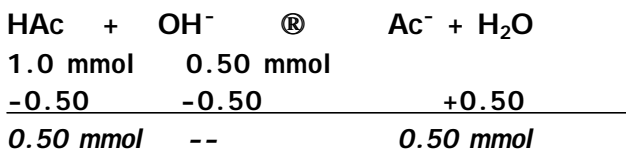
Weak Base (Ac<sup>-</sup>)

Strong Base (excess OH<sup>-</sup>)

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



Mixture of a weak acid (HAc) and its conjugate base (Ac<sup>-</sup>): **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<sup>-</sup>). Thus, the solution is basic.**

3. The pH of a solution prepared by dissolving solid NH<sub>4</sub>Cl in water will be:

7.00            < 7.00            > 7.00            (Circle your answer)

Briefly explain how you arrived at your answer.

**NH<sub>4</sub><sup>+</sup> is the conjugate acid of ammonia (NH<sub>3</sub>) - it's a weak acid, so the solution will be acidic.**