

CHEM 36
General Chemistry
Quiz #7 – Acid/Base Redux

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1. To 10.0 mL of a 0.10 M Acetic Acid solution, 10.0 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

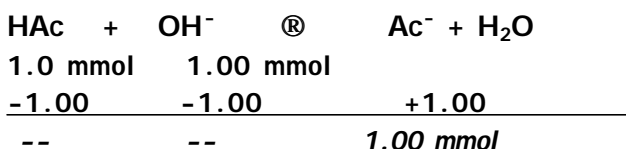
Weak Base (Ac⁻)

Strong Base (excess OH⁻)

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

10.0 mL (0.10 M NaOH) = 1.00 mmol NaOH

Weak acid + Strong Base = COMPLETE REACTION



Just the conjugate base (Ac⁻) of acetic acid: Weak Base!

2. At the equivalence point of a titration of HCl 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 hydrochloric acid (HCl). Since they react completely, we are left with just the conjugate base (Cl⁻) of a *strong acid*, which is a weaker base than water. Thus, the autoionization of water determines the pH: pH = 7.00.

3. The pH of a solution prepared by dissolving solid sodium acetate (NaAc) in water will be:

7.00 < 7.00 > 7.00 (Circle your answer)

Briefly explain how you arrived at your answer.

Ac⁻ is the conjugate base of acetic acid (HAc) – it's a weak base, so the solution will be basic.