Quiz: Ch 17 **Name:**
Version A (33 pts) **Period (circle): 6 7**
AP Chemistry **Date:**

Show your work for all questions; answer all parts of all questions. No work = no credit. If you are making an assumption, be sure to note what your assumption is.

1. (11 pts) A buffer solution contains 0.40 mole of formic acid, HCOOH, and 0.60 mole of sodium formate, NaHCOO, in 1.00 L of solution. The ionization constant, K_a, of formic acid is 1.8×10^{-4}.
    a. (3 pts) Calculate the pH of this solution.

    b. (2 pts) If 100. mL of this buffer solution is diluted to a volume of 1.00 L with pure water, the pH does not change. Briefly discuss why the pH remains constant on dilution.

    c. (3 pts) A 5.00 mL sample of 1.00 M HCl is added to 100. mL of the <u>original</u> buffer solution. Calculate the pH of the resulting solution.

    d. (3 pts) A 800. mL sample of 2.00 M formic acid is mixed with 200. mL of 4.80 M NaOH. Calculate the pH of the resulting solution.

2. (4 pts) Will a precipitate form when 75.0 mL of 0.020 M $BaCl_2$ and 125 mL of 0.040 M Na_2SO_4 are mixed together? (K_{sp} $BaSO_4 = 1.5 \times 10^{-9}$)

3. (18 pts) A 100.0 mL sample of 0.100 M H_2NNH_2 ($K_b = 3.0 \times 10^{-6}$) is titrated with a 0.200 M HNO_3 solution. Calculate the pH after the following volumes of acid have been added:
   a. 0.0 mL

   b. 20.0 mL

   c. 25.0 mL

   d. 40.0 mL

   e. 50.0 mL

   f. 100.0 mL.