POST-LAB QUESTIONS **Name:** _____

1. Compare the effects of adding the strong acid & base to the pH of water vs. the acetate and phosphate buffers.

2. Discuss the buffer pH vs. the ratio of acetic acid and sodium acetate in the acetate buffers.

3. When the Sorensen's buffer was prepared, equal amounts of the acid and base forms of the buffer system should have been present. However, you likely found that the pH was not equal to the pKa of the buffer. What likely caused this discrepancy?

4. Discuss what happens to the slope of the curve on the pH plot after the pH has changed by ~ 1.2 units and Why this change occurs?

5. Calculate the molar ratio of acetate to acetic acid required to have a buffer with a pH =5.30 .

6. Calculate the pH and $[H^+]$, and $[OH^-]$ concentration for a solution prepared by mixing 20.0 mL of 0.25 *M* acetic acid and 10.0 mL of 0.25 *M* sodium acetate.

7. Calculate the pH of a solution prepared by adding 20.0 mL of 0.25 *M* acetic acid with 2.0 mL of 0.75 *M* potassium hydroxide solution.

In consideration of the Henderson-Hasselbach equation, what would you expect to be the effect on the pH of the buffer if 50.0 mL of carbonate-free water was added to dilute the buffer?