

INTRODUCTION TO BUFFERS

NAME _____

SECTION _____

1. a. A buffer solution is constructed from a weak acid and its conjugate weak base such that both are present in substantial concentrations. List two example buffer solutions. Write a chemical equation that represents the equilibrium on which the buffer is based.

- b. Use one of your examples from the previous question to describe how the pH of the solution would be affected by the addition of a small amount of acid. (Hint: use Le Châtelier's Principle in your explanation.)

- c. Use one of your examples from the previous question to describe how the pH of the solution would be affected by the addition of a small amount of base. (Hint: use Le Châtelier's Principle in your explanation.)

- d. Explain how the behavior you described in the previous questions would have been different with an unbuffered solution.
- e. Explain how a buffered solution consisting of a weak acid and a weak base could be constructed from a weak acid and a strong base or a weak base and a strong acid. Write a chemical equation representing how this can be done.
2. Complete the following problems:
- a. Calculate the pH of a solution prepared by mixing 20.0 mL of 0.300 M $\text{HC}_2\text{H}_3\text{O}_2$ with 20.0 mL of 0.350 M $\text{NaC}_2\text{H}_3\text{O}_2$.
- b. Specify the reagents and the specific concentrations of each reagent needed to prepare a buffer solution which would have a pH of 4.19.