**Acids, Bases, Buffers Practice Questions Assignment for Friday, March 26, 2021**

1. A solution is 0.250 M HA (Ka = 1.0 x 10-6) and 0.45 M NaA. What is the pH of the solution?

2. A weak acid, HF, is in a solution with dissolved sodium fluoride, NaF. If HCl is added, which ion will react with the extra hydrogen ions from the HCl to keep the pH from changing?

3. Calculate the [H+] in a solution that is 0.10 M in NaF and 0.20 M in HF.

4. For a solution equimolar in HCN and NaCN, which statement is false?

A. This is an example of the common ion effect.

B. The [H+] is larger than it would be if only the HCN was in solution.

C. The [H+] us equal to Ka.

D. Addition of more NaCN will shift the acid dissociation of HCN to the left.

E. Additions of NaOH will increase [CN-] and decrease [HCN].

5. Calculate the pH of a solution made by mixing 100.0 mL of 0.594 M NH3 with 100.0 mL of 0.100 M HCl. Kb of NH3 = 1.8 x 10-5.

6. Consider a solution of 2.0 M HCN and 1.0 M NaCN (Ka for HCN = 6.2 x 10-10). Which of the following statements is true?

A. The solution is a buffer because [HCN] is not equal to [CN-].

B. The pH will be below 7 because the concentration of the acid is greater than that of the base.

C. [OH-] > [H+]

D. The buffer will be more resistant to pH changes from addition of strong acid than of strong

base.

E. All of the above are false.

7. Calculate the pH of a solution that is 0.2 M in acetic acid (Ka = 1.8 x 10-5) and 0.2 M in sodium acetate.

8. Calculate the pH of a solution that is 0.125 M in sodium acetate. Ka of acetic acid is 1.8 x 10-5.

9. Calculate the pH of a solution that is 0.010 M in HCl and 0.010 M in acetic acid. Ka of acetic acid is

1.8 x 10-5.

10. Calculate the pH of a solution made by mixing 50.0 mL of .100 M NaOH with 25.0 mL of .100 M HC2H3O2. Ka of C2H3O2 = 1.8 x 10-5.

11. Which of the following will be the best buffer at a pH of 9.26?

A. 0.10 M HC2H3O2 and 0.10 M NaC2H3O2

B. 5.0 M HC2H3O2 and 5.0 M NaC2H3O2

C. 0.10 M NH3 and 0.10 M NH4Cl

D. 5.0 M NH3 and 5.0 M NH4Cl

E. 5.0 M HC2H3O2 and 5.0 M NH3