

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Acid Equilibrium Practice Test

1. Explain the difference between the terms “concentrated” and “dilute” with respect to both strong and weak acids.
2. A reaction occurs according to the following equation:  
$$\text{HCO}_3^- + \text{HCN} \rightleftharpoons \text{H}_2\text{CO}_3 + \text{CN}^-$$
  - a. Identify the acid, base, conjugate acid and conjugate base.
  - b. Is the base in this reaction an Arrhenius base, a Bronsted-Lowry base or both? How do you know?
  - c. Identify the substance in the reaction that can be amphoteric.
3. What is the pH for  $3.00 \times 10^{-4}$  M barium hydroxide solution?
4. Consider two solutions: 0.035 M solution of  $\text{HNO}_3$  and a 0.035 M solution of HF.
  - a. What is the difference in pH for these solutions? Show all of your work.
  - b. Why is the pH not the same for these solutions, considering they have the same concentration?
5. What is the  $[\text{H}^+]$ ,  $[\text{OH}^-]$ , pH and pOH for a  $8.9 \times 10^{-3}$  M solution of methylamine,  $\text{CH}_3\text{NH}_2$ ?
6. A solution of hydrochloric acid with an unknown concentration and a volume of 25.00 mL is neutralized with 34.20 mL of 0.2463 M sodium hydroxide. What is the pH of the hydrochloric acid?