

Name _____ Date _____ Class _____

CHAPTER 14 REVIEW

Acids and Bases

SECTION 1

SHORT ANSWER Answer the following questions in the space provided.

1. Name the following compounds as acids:

- _____ a. H_2SO_4
- _____ b. H_2SO_3
- _____ c. H_2S
- _____ d. HClO_4
- _____ e. hydrogen cyanide

2. _____ Which (if any) of the acids mentioned in item 1 are binary acids?

3. Write formulas for the following acids:

- _____ a. nitrous acid
- _____ b. hydrobromic acid
- _____ c. phosphoric acid
- _____ d. acetic acid
- _____ e. hypochlorous acid

4. Calcium selenate has the formula CaSeO_4 .

- _____ a. What is the formula for selenic acid?
- _____ b. What is the formula for selenous acid?

5. Use an activity series to identify two metals that will not generate hydrogen gas when treated with an acid.

6. Write balanced chemical equations for the following reactions of acids and bases:

- a. aluminum metal with dilute nitric acid

- b. calcium hydroxide solution with acetic acid

CHAPTER 14 REVIEW

Acids and Bases

SECTION 2

SHORT ANSWER Answer the following questions in the space provided.

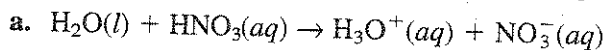
1. a. Write the two equations that show the two-stage ionization of sulfurous acid in water.

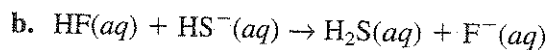
b. Which stage of ionization usually produces more ions? Explain your answer.

2. a. Define a Lewis base. Can OH^- function as a Lewis base? Explain your answer.

b. Define a Lewis acid. Can H^+ function as a Lewis acid? Explain your answer.

3. Identify the Brønsted-Lowry acid and the Brønsted-Lowry base on the reactant side of each of the following equations for reactions that occur in aqueous solution. Explain your answers.



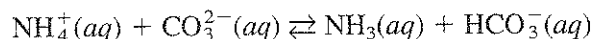


CHAPTER 14 REVIEW*Acids and Bases***SECTION 3****SHORT ANSWER** Answer the following questions in the space provided.

1. Answer the following questions according to the Brønsted-Lowry definitions of acids and bases:

- _____ a. What is the conjugate base of H_2SO_3 ?
- _____ b. What is the conjugate base of NH_4^+ ?
- _____ c. What is the conjugate base of H_2O ?
- _____ d. What is the conjugate acid of H_2O ?
- _____ e. What is the conjugate acid of HAsO_4^{2-} ?

2. Consider the reaction described by the following equation:

a. If NH_4^+ is considered acid 1, identify the other three terms as acid 2, base 1, and base 2 to indicate the conjugate acid-base pairs.

- _____ CO_3^{2-}
- _____ HCO_3^-
- _____ NH_3

b. A proton has been transferred from acid 1 to base 2 in the above reaction. True or False?

3. Consider the neutralization reaction described by the equation: $\text{HCO}_3^-(aq) + \text{OH}^-(aq) \rightleftharpoons \text{CO}_3^{2-}(aq) + \text{H}_2\text{O}(l)$

a. Label the conjugate acid-base pairs in this system.

b. Is the forward or reverse reaction favored? Explain your answer.

CHAPTER 14 REVIEW

Acids and Bases

MIXED REVIEW

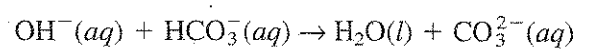
SHORT ANSWER Answer the following questions in the space provided.

1. _____ a. Write the formula for hypochlorous acid.
 _____ b. Write the name for HF(aq).
 _____ c. If Pb(C₂O₄)₂ is lead(IV) oxalate, what is the formula for oxalic acid?
 _____ d. Name the acid that is present in vinegar.

2. Answer the following questions according to the Brønsted-Lowry acid-base theory. Consult Table 6 on page 485 of the text as needed.

- _____ a. What is the conjugate base of H₂S?
- _____ b. What is the conjugate base of HPO₄²⁻?
- _____ c. What is the conjugate acid of NH₃?

3. Consider the reaction represented by the following equation:



If OH⁻ is considered base 1, what are acid 1, acid 2, and base 2?

- _____ a. acid 1
- _____ b. acid 2
- _____ c. base 2

4. Write the formula for the salt that is produced in each of the following neutralization reactions:

- _____ a. sulfurous acid combined with potassium hydroxide
- _____ b. calcium hydroxide combined with phosphoric acid

5. Carbonic acid releases H₃O⁺ ions into water in two stages.

- a. Write equations representing each stage.

- _____ b. Which stage releases more ions into solution?