



# Final Exam Revision Sheet Term-3 2018-2019

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

**Subject:**

**Chemistry**

**Grade:**

**11 A, B, C**



**Required Materials:**

**Chapter: 14 Section: 1, 2, 3**  
**(Textbook pg. 441- 463)**

**Chapter: 15 Section: 1**  
**(Textbook pg. 471-481)**



Student's name: \_\_\_\_\_ "I can do it" Class/Section: 11 / \_\_\_\_

Subject: Chemistry Date: \_\_\_\_\_ **NGSS: HS-PS1.2, HS-PS1.B**

**Individual Work Objective:**

1. to describe the properties of Acids & Bases
2. to explain the theories of Acids & Bases

**Chemistry Revision Sheet**

**SHORT ANSWER**

**Q. Answer the following questions in the space provided.**

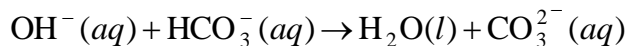
1. \_\_\_\_\_ a. Write the formula for hypochlorous acid.  
 \_\_\_\_\_ b. Write the name for HF(aq).  
 \_\_\_\_\_ c. If Pb(C<sub>2</sub>O<sub>4</sub>)<sub>2</sub> is lead(IV) oxalate, what is the formula for oxalic acid?  
 \_\_\_\_\_ d. Name the acid that is present in vinegar.
2. Answer the following questions according to the Brønsted-Lowry acid-base theory. Consult **Figure** of the text as needed.

\_\_\_\_\_ a. What is the conjugate base of H<sub>2</sub>S?

\_\_\_\_\_ b. What is the conjugate base of HPO<sub>4</sub><sup>2-</sup>?

\_\_\_\_\_ c. What is the conjugate acid of NH<sub>3</sub>?

3. Consider the reaction represented by the following equation:



If OH<sup>-</sup> 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  $\text{H}_3\text{O}^+$  ions into water in two stages.

a. Write equations representing each stage.

\_\_\_\_\_

\_\_\_\_\_ b. Which stage releases more ions into solution?

6. Glacial acetic acid is a highly viscous liquid that is close to 100%  $\text{CH}_3\text{COOH}$ . When it mixes with water, it forms dilute acetic acid.

a. When making a dilute acid solution, should you add acid to water or water to acid? Explain your answer.

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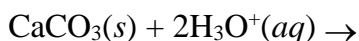
\_\_\_\_\_ b. Glacial acetic acid does not conduct electricity, but dilute acetic acid does. Explain this statement.

\_\_\_\_\_

c. Dilute acetic acid does not conduct electricity as well as dilute nitric acid at the same concentration. Is acetic acid a strong or weak acid?

\_\_\_\_\_

7. The overall effect of acid rain on lakes and ponds is partially determined by the geology of the lake bed. In some cases, the rock is limestone, which is rich in calcium carbonate. Calcium carbonate reacts with the acid in lake water according to the following (incomplete) ionic equation:



a. Complete the ionic equation begun above.

\_\_\_\_\_

b. If this reaction is the only reaction involving  $\text{H}_3\text{O}^+$  occurring in the lake, does the concentration of  $\text{H}_3\text{O}^+$  in the lake water increase or decrease? What effect does this have on the acidity of the lake water?

\_\_\_\_\_

8. Calculate the following values without using a calculator.

\_\_\_\_\_ a. The  $[\text{H}_3\text{O}^+]$  in a solution is  $1 \times 10^{-4}$  M. Calculate the pH.

\_\_\_\_\_ b. The pH of a solution is 13.0. Calculate the  $[\text{H}_3\text{O}^+]$ .

\_\_\_\_\_ c. The  $[\text{OH}^-]$  in a solution is  $1 \times 10^{-5}$  M. Calculate the  $[\text{H}_3\text{O}^+]$ .

- \_\_\_\_\_ d. The pH of a solution is 4.72. Calculate the pOH.  
\_\_\_\_\_ e. The  $[\text{OH}^-]$  in a solution is 1.0 M. Calculate the pH.

9. Calculate the following values.

- \_\_\_\_\_ a. The  $[\text{H}_3\text{O}^+]$  in a solution is  $6.25 \times 10^{-9}$  M.  
Calculate the pH.  
\_\_\_\_\_ b. The pOH of a solution is 2.34. Calculate the  
 $[\text{OH}^-]$ .  
\_\_\_\_\_ c. The pH of milk of magnesia is approximately 10.5.  
Calculate the  $[\text{OH}^-]$ .

**PROBLEMS** Write the answer on the line to the left. Show all your work in the space provided.

10. A 0.0012 M solution of  $\text{H}_2\text{SO}_4$  is 100% ionized.

- \_\_\_\_\_ a. What is the  $[\text{H}_3\text{O}^+]$  in the  $\text{H}_2\text{SO}_4$  solution?  
  
\_\_\_\_\_ b. What is the  $[\text{OH}^-]$  in this solution?  
  
\_\_\_\_\_ c. What is the pH of this solution?

11. Name the following compounds as acids:

- \_\_\_\_\_ a.  $\text{H}_2\text{SO}_4$   
\_\_\_\_\_ b.  $\text{H}_2\text{SO}_3$   
\_\_\_\_\_ c.  $\text{H}_2\text{S}$   
\_\_\_\_\_ d.  $\text{HClO}_4$   
\_\_\_\_\_ e. hydrogen cyanide

12. \_\_\_\_\_ Which (if any) of the acids mentioned in item 1 are binary acids?

13. Write formulas for the following acids:

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

14. Calcium selenate has the formula  $\text{CaSeO}_4$ .

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

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

\_\_\_\_\_

16. 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

\_\_\_\_\_

17. Write net ionic equations that represent the following reactions:

- a. the ionization of  $\text{HClO}_3$  in water

\_\_\_\_\_

- b.  $\text{NH}_3$  functioning as an Arrhenius base

\_\_\_\_\_

18. a. Explain how strong acid solutions carry an electric current.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- b. Will a strong acid or a weak acid conduct electricity better, assuming all other factors remain constant? Explain why one is a better conductor.

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

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

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20. a. Define a Lewis base. Can  $\text{OH}^-$  function as a Lewis base? Explain your answer.

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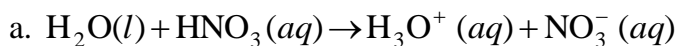
- b. Define a Lewis acid. Can  $\text{H}^+$  function as a Lewis acid? Explain your answer.

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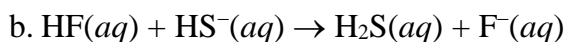
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21. Identify the Brønsted-Lowry acid and the Brønsted-Lowry base on the reactant side of each of the following equations for reactions that occur in aqueous solution. Explain your answers.



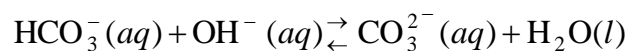
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22. Consider the neutralization reaction described by the equation:



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

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

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23. **Table 6** on page of the text lists several amphoteric species, but only one other than water is neutral.

\_\_\_\_\_ a. Identify that neutral compound.

b. Write two equations that demonstrate this compound's amphoteric properties.

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24. Write the formula for the salt formed in each of the following neutralization reactions:

\_\_\_\_\_ a. potassium hydroxide combined with phosphoric acid

\_\_\_\_\_ b. calcium hydroxide combined with nitrous acid

\_\_\_\_\_ c. hydrobromic acid combined with barium hydroxide

\_\_\_\_\_ d. lithium hydroxide combined with sulfuric acid

**25.PROBLEMS** Write the answer on the line to the left. Show all your work in the space provided.

Calculate the following values.

\_\_\_\_\_ a. The  $[H_3O^+]$  is  $2.34 \times 10^{-5}$  M in a solution. Calculate the pH.

----- b. The pOH of a solution is 3.5. Calculate the  $[OH^-]$ .

Degree	Enhance & Comments	Target	Value
			<u>Tolerance</u>

Keep your school clean!

Done By: Mrs. Madeeha Abdul Latif

