

**Part I Matching: Write the letter of the description that best matches each term.**

- |                                |   |
|--------------------------------|---|
| _____ 1. monoprotic acids      | a. a Brønsted-Lowry acid  |
| _____ 2. triprotic acids       | b. an electron-pair donor   |
| _____ 3. hydrogen-ion donor    | c. particle that remains when an acid has donated a hydrogen ion      |
| _____ 4. hydrogen-ion acceptor | d. acids that contain three ionizable hydrogens                       |
| _____ 5. conjugate acid        | e. description of a substance that can act both as an acid and a base |
| _____ 6. conjugate base        | f. acids that contain one ionizable hydrogen                          |
| _____ 7. amphoteric            | g. an electron-pair acceptor  |
| _____ 8. Lewis base            | h. a Brønsted-Lowry base  |
| _____ 9. Lewis acid            | i. particle formed when a base gains a hydrogen ion                   |

**Part II Fill in the Blank**

Compounds can be classified as acids or bases according to

\_\_ 10 \_\_ different theories. An Arrhenius acid yields \_\_ 11 \_\_ ions in aqueous solution. An \_\_ 12 \_\_ base yields hydroxide in aqueous solution. A Brønsted-Lowry acid is a \_\_ 13 \_\_ donor. A Brønsted-Lowry base is a proton \_\_ 14 \_\_. In the Lewis theory, an acid is an \_\_ 15 \_\_ acceptor. A Lewis base is an electron-pair \_\_ 16 \_\_.

An acid with one ionizable hydrogen atom is called a \_\_ 17 \_\_ acid, while an acid with two ionizable hydrogen atoms is called a \_\_ 18 \_\_ acid.

A \_\_ 19 \_\_ is a pair of substances related by the gain or loss of a hydrogen ion. A substance that can act as both an acid and a base is called \_\_ 20 \_\_.

10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_

**Part III Short Answer** Circle your final answer and show ALL of your work

21. What is the pH of a  $4.5 \times 10^{-3}$  M HBr solution?

22. What is the pOH of a  $4.5 \times 10^{-3}$  M HBr solution?

23. What is the pH of a solution made by diluting 75 mL of 5.0 M HCl until the final volume is 1.75 L?