DATE: NAME: CLASS:

CHAPTER 6	Acid-Base Review	BLM 6.3.14
ASSESSMENT		

1. Name the following acids using the classical name:
- **(a)** HClO(aq)
- **(b)** HOOCCOOH(aq)
- **(c)** $HMnO_4$(aq)
- **(d)** HNO_2(aq)
- **(e)** HI(aq)

2. Give the chemical formulas of the following acids:
- **(a)** hydrofluoric acid
- **(b)** nitric acid
- **(c)** sulfurous acid

3. List three empirical characteristics of an acid.

4. List two empirical characteristics of a base.

5. A solution in the lab conducts electricity weakly and slowly reacts with magnesium metal to form a gas. What type of solution is it likely to be?

6. A solution in the lab does not react with magnesium metal. What types of solution could it be? What is a further test you could perform to determine what it is from the available choices?

7. Give a theoretical definition of an acid according to the modified Arrhenius theory and give a chemical equation as an example.

Acid-Base Review (continued)

8. Give a theoretical definition of a base according to the modified Arrhenius theory and give a chemical equation as an example.

9. Draw a picture of the interaction between molecules when a molecule of nitric acid reacts with water to form a hydronium ion and a nitrate ion.

10. Explain three ways that you could distinguish between a strong acid and a weak acid if they both have a concentration of 0.2 mol/L.

11. There are two solutions in the lab. One has a pH of 3 and one has a pH of 5.5. What does this mean in terms of concentration and/or acid strength? Explain.

12. Explain the difference between a strong acid and a concentrated acid.

13. Can a weak acid be concentrated? Explain.

Acid-Base Review (continued)

14. What can you say about the individual particles in solution if a solution is described as a weak base? How is it different than a strong base?

15. Give an example of a polyprotic acid. How is it different from a monoprotic acid?

16. Give an example of a polyprotic base.

17. What is the pH of the following solutions?

(a) $[H_3O^+(aq)] = 4.5 \times 10^{-4}$ mol/L

(b) $[H_3O^+(aq)] = 1.345 \times 10^{-9}$ mol/L

(c) pOH = 3.52

(d) $[OH^-(aq)] = 2.61 \times 10^{-6}$ mol/L

(e) A solution made by dissolving 2.45 g of perchloric acid into 2.5 L of water.

(f) A solution made by dissolving 1.24 g of barium hydroxide into 3.00 L of water.

(g) A 10 L volume of a dilute solution is made from 25 mL of a strong acid solution with a pH of 3.45. What is the pH of the dilute solution?

(h) A 5.00 L volume of a dilute solution is made from 10.0 mL of a strong base solution with a pH of 12.343. What is the pH of the dilute solution?

18. Which of the solutions in Question 18 are acidic?

19. Can you make 10 L of a solution with a pH of 12.5 by diluting a solution with a pH of 11.0? If so, calculate what volume of the concentrated solution you would need to use. If not, explain why not.

20. Can you make 20 L of a solution with a pH of 8.0 by diluting a solution with a pH of 3.0? If so, calculate what volume of the concentrated solution you would use. If not, explain why not.

21. What colour would crystal violet be if added to a solution made by placing 5.63 g of pure hydrochloric acid in 500.0 mL of water? What colour would the solution be if you added bromothymol blue instead?

22. A solution is yellow in methyl orange and green in bromocresol green. What is the pH range possible for the solution? Explain.