

Name _____ Date _____ Class _____

CHAPTER 19 STUDY GUIDE FOR CONTENT MASTERY

Section 19.4 Neutralization
In your textbook, read about neutralization and titration.

For each item in Column A, write the letter of the matching item in Column B.

| | |
|--|--|
| <p>Column A</p> <p>a _____ 1. A chemical dye that changes color based on the pH of a solution</p> <p>g _____ 2. A method for using a neutralization reaction to determine the concentration of a solution</p> <p>d _____ 3. A reaction in which an acid and a base react to produce a salt and water</p> <p>f _____ 4. A solution of known concentration</p> <p>e _____ 5. An ionic product of an acid-base reaction</p> <p>b _____ 6. The point in a titration in which an indicator changes color</p> <p>c _____ 7. The stoichiometric point of a titration</p> | <p>Column B</p> <p>a. acid-base indicator</p> <p>b. end point</p> <p>c. equivalence point</p> <p>d. neutralization</p> <p>e. salt</p> <p>f. standard solution</p> <p>g. titration</p> |
|--|--|

Complete the following table, indicating the formula and name of the salt formed by a neutralization reaction between the listed acid and base.

| Acid | Base | Salt formula | Salt name |
|------------------------------------|---------------------|---|--------------------|
| 8. HCl | KOH | KCl | potassium chloride |
| 9. H ₂ SO ₄ | Mg(OH) ₂ | MgSO ₄ | Magnesium sulfate |
| 10. H ₃ PO ₄ | NaOH | Na ₃ PO ₄ | Sodium phosphate |
| 11. HNO ₃ | Fe(OH) ₃ | Fe(NO ₃) ₃ | Iron(III) nitrate |
| 12. H ₃ PO ₄ | Ca(OH) ₂ | Ca ₃ (PO ₄) ₂ | Calcium phosphate |

In the space at the left, write 1 through 4 to show the correct sequence of the steps in performing a titration using a pH meter. Then, write 5 through 8 to sequence the steps used to calculate the concentration of the unknown solution.

Sequence of Steps

4 _____ 13. Continue adding the standard solution to the solution of unknown concentration until the equivalence point is reached.

2 _____ 14. Fill a buret with the standard solution.

3 _____ 15. Start adding the standard solution slowly, with mixing, to the solution of unknown concentration, reading the pH at regular intervals.

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Section 19.4 continued

1 _____ 16. Use a pH meter to check the pH of a solution of known volume but unknown concentration.

6 _____ 17. Calculate the number of moles of acid or base in the volume of standard solution added.

7 _____ 18. Use the mole ratio from the balanced equation to calculate the number of moles of reactant in the unknown solution.

8 _____ 19. Use the number of moles and volume of the unknown solution to calculate molarity.

5 _____ 20. Write the balanced chemical equation for the neutralization reaction.

In your textbook, read about salt hydrolysis.

Complete the following concept map, using the terms *acidic*, *basic*, and *neutral*.

In your textbook, read about buffer solutions.

For each statement below, write *true* or *false*.

_____ **true** 24. Buffers resist change in pH.

_____ **true** 25. A buffer can be a mixture of a weak acid and its conjugate base.

_____ **true** 26. An example of a buffer solution is a mixture of acetic acid and sodium acetate.

_____ **false** 27. A buffer solution changes pH only a small amount even if large amounts of acid or base are added.

_____ **false** 28. A buffer system should contain considerably more acid than base.

_____ **true** 29. Specific buffer systems should be chosen based on the pH that must be maintained.

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