

## Chapter 8 Quiz

### Part A: Modified True/False

Indicate whether each statement is true or false. If false, change the underlined word or phrase to make the statement true.

- \_\_\_\_\_ 1. Sulfur is a member of the alkaline earth metals chemical family. \_\_\_\_\_
- \_\_\_\_\_ 2. The ion charge of a member of the alkali metals is 2+. \_\_\_\_\_
- \_\_\_\_\_ 3. Iodine, a toxic purple gas when heated, is a member of the halogens. \_\_\_\_\_
- \_\_\_\_\_ 4. The name of the compound  $\text{NH}_4\text{ClO}_3$  is ammonium chlorate. \_\_\_\_\_

### Part B: Completion

Complete the sentence.

5. A metal reacts with water to form hydrogen gas and is very soft. It is a member of the \_\_\_\_\_ family.
6. A chemical family is a group of elements with \_\_\_\_\_ chemical properties.
7. The ion charge of aluminum is \_\_\_\_\_.
8. The ratio of atoms in the compound  $\text{Mg}(\text{NO}_3)_2$  is \_\_\_\_\_ magnesium atoms to \_\_\_\_\_ nitrogen atoms to \_\_\_\_\_ oxygen atoms.

### Part C: Multiple Choice

Circle the letter beside the answer that best completes the statement or answers the question.

9. Bromine is a member of this chemical family:  
(a) halogens (b) alkali metals (c) alkaline earth metals (d) noble gases
10. A compound contains 3 nitrate ions for every 1 aluminum ion. The chemical formula is  
(a)  $3\text{NO}_3\text{Al}$  (b)  $(\text{NO}_3)_3\text{Al}$  (c)  $\text{Al}_3\text{NO}_3$  (d)  $\text{Al}(\text{NO}_3)_3$
11. A metal has only one possible ion charge. Its ion is called a \_\_\_\_\_ metal ion.  
(a) multivalent (b) monovalent (c) multicharged (d) singly charged

**Chapter 8 Quiz (continued)**

12. One possible ion of tungsten has an ion charge of 6+. The name of this ion is
- (a) tungsten(6) (c) tungsten(VI)  
(b) tungsten-6 (d) hexatungstide
13. The members of the alkali metals all share these properties:
- (a) hard, react with water to form hydrogen gas, conduct electricity  
(b) soft, react with water to form hydrogen gas, conduct electricity  
(c) unreactive metals, bright colours, toxic  
(d) reactive metals, bright colours, toxic
14. The chemical formula for sodium carbonate is
- (a)  $\text{NaCO}_3$  (c)  $\text{Na}_2\text{CO}_3$   
(b)  $\text{Na}(\text{CO}_3)_2$  (d)  $\text{Na}_2(\text{CO}_3)$
15. The compound  $\text{KNO}_3$  is called
- (a) krypton nitroxide (c) potassium nitrogen oxygen  
(b) potassium nitrogen oxide (d) potassium nitrate

**Part D: Short Answer**

Use sentences or formulas to answer the following questions.

16. Write the chemical formula for each compound:

- (a) copper(II) chloride \_\_\_\_\_  
(b) sodium carbonate \_\_\_\_\_  
(c) iron(III) nitrate \_\_\_\_\_  
(d) ammonium carbonate \_\_\_\_\_  
(e) lead(IV) bromide \_\_\_\_\_

17. Write the name for each compound:

- (a)  $\text{CuI}$  \_\_\_\_\_  
(b)  $\text{Zn}(\text{NO}_3)_2$  \_\_\_\_\_  
(c)  $\text{Mn}(\text{CO}_3)_2$  \_\_\_\_\_  
(d)  $\text{Ca}_3(\text{PO}_4)_2$  \_\_\_\_\_  
(e)  $\text{NaF}$  \_\_\_\_\_

18. A scientist used electrolysis to separate the elements that make up the compound hydrogen peroxide,  $\text{H}_2\text{O}_2$ , producing hydrogen gas and oxygen gas. What do you expect will be the ratio of the two gases produced?

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### Chapter 8 Quiz (continued)

19. Determine the ratio of atoms of each element in the compound ammonium monohydrogen phosphate,  $(\text{NH}_4)_2\text{HPO}_4$ .

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20. Explain the importance of the Roman numerals in the names of the two compounds copper(I) carbonate and copper(II) carbonate.

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21. If barium and oxygen react in the ratio 1:1, in what ratio will calcium and oxygen react? Explain using the concept of chemical families.

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22. Suppose the newly discovered elements “alpha” and “bravo” are in the same chemical family. The compound “alpha chloride” is a white powder that is soluble in water. The compound “bravo carbonate” is a green powder that does not dissolve in water. Predict the colour and solubility of the compounds “bravo chloride” and “alpha carbonate.”

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