

**Chapter  
Test****Atomic Structure and Chemical Bonds****I. Testing Concepts**

**Directions:** Write the letter of the term that best completes the sentence in the blank at the left.

- \_\_\_\_\_ 1. A noble gas has \_\_\_\_\_.
- a. twice as many neutrons as protons      c. no nucleus  
b. a stable outer energy level                d. an ionic bond
- \_\_\_\_\_ 2. At the center of an atom is a nucleus containing \_\_\_\_\_.
- a. molecules                                        c. neutrons and electrons  
b. electrons                                         d. protons and neutrons
- \_\_\_\_\_ 3. When an atom gains an electron and becomes negatively charged, we refer to it as a(n) \_\_\_\_\_.
- a. negative ion      b. electron              c. positive ion      d. molecule
- \_\_\_\_\_ 4. A molecule consisting of two hydrogen atoms joined in a covalent bond would be written as \_\_\_\_\_.
- a. HO<sub>2</sub>                      b. H<sub>2</sub>                      c. HYD<sub>2</sub>                      d. H<sub>2</sub>O
- \_\_\_\_\_ 5. For a neutral atom of an element, the number of \_\_\_\_\_ is always the same.
- a. ions and electrons                              c. neutrons and protons  
b. protons and electrons                         d. atoms and molecules
- \_\_\_\_\_ 6. Removing electrons that are closer to the nucleus takes \_\_\_\_\_ than removing electrons that are farther away from the nucleus.
- a. more energy                                      c. less energy  
b. an equal amount of energy                    d. more time
- \_\_\_\_\_ 7. A sodium atom that is positively charged is written as \_\_\_\_\_.
- a. Na<sup>-</sup>                      b. Na<sup>+</sup>                      c. S<sup>+</sup>                      d. Na<sub>2</sub>
- \_\_\_\_\_ 8. The bond that forms between atoms when they share electrons is called a(n) \_\_\_\_\_ bond.
- a. ionic                      b. covalent                      c. atomic                      d. shared
- \_\_\_\_\_ 9. Atoms form \_\_\_\_\_ with other atoms and become more stable.
- a. chemical bonds      b. neutrons                      c. acids                      d. bases
- \_\_\_\_\_ 10. An ion is an atom that has \_\_\_\_\_ or \_\_\_\_\_ an electron.
- a. shared; lost                                      c. borrowed; shared  
b. multiplied; divided                            d. gained; lost
- \_\_\_\_\_ 11. A(n) \_\_\_\_\_ is a pure substance that contains two or more elements.
- a. molecule                      b. particle                      c. compound                      d. ion
- \_\_\_\_\_ 12. When a positively charged ion and a negatively charged ion are attracted to each other, the bond they form is referred to as a(n) \_\_\_\_\_ bond.
- a. ionic                      b. covalent                      c. atomic                      d. shared

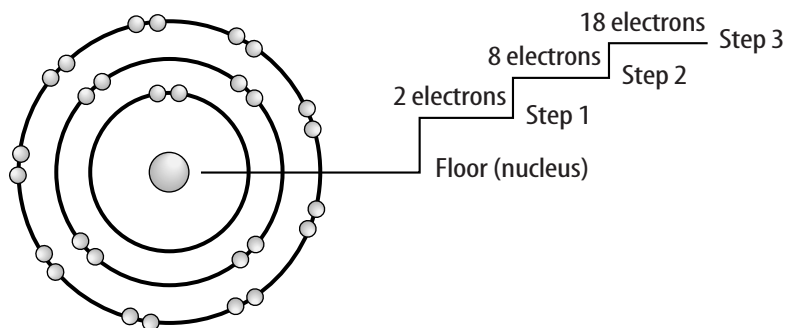
## Chapter Test (continued)

- \_\_\_\_\_ 13. When two or more atoms share electrons unevenly, resulting in a positive charge on one end and a negative charge on the other, they are held together by a(n) \_\_\_\_\_ bond.  
 a. neutral                      b. polar                      c. ionic                      d. nonpolar
- \_\_\_\_\_ 14. A \_\_\_\_\_ is a covalent bond involving two pairs of electrons.  
 a. double bond              b. dioxide                      c. single bond              d. double ion
- \_\_\_\_\_ 15. A molecule of carbon monoxide, CO, has \_\_\_\_\_ atoms.  
 a. one                      b. fourteen                      c. two                      d. three
- \_\_\_\_\_ 16. A(n) \_\_\_\_\_ is a combination of chemical symbols and numbers that tells which elements are present in a molecule and how many atoms of each element are present.  
 a. formula                      c. periodic table  
 b. electron dot diagram              d. elemental chart
- \_\_\_\_\_ 17. A molecule is the neutral particle formed when \_\_\_\_\_.  
 a. an atom is neutral                      c. an atom ionizes  
 b. atoms share electrons                      d. atoms share neutrons

## II. Understanding Concepts

### Skill: Predicting

**Directions:** *The following diagram shows energy steps of electrons arranged around the nucleus of an atom. Use the diagram to answer questions 1 and 2.*



1. Predict which electrons will have the higher energy. (Step 1, Step 2, Step 3)

\_\_\_\_\_

2. Predict which electrons have a stronger attraction to the nucleus. (Step 1, Step 2, Step 3)

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