CHAPTER 5 REVIEW

The Periodic Law

SECTION 1

SHORT ANSWER Answer the following questions in the space provided.

1. _____ In the modern periodic table, elements are ordered
   (a) according to decreasing atomic mass.
   (b) according to Mendeleev’s original design.
   (c) according to increasing atomic number.
   (d) based on when they were discovered.

2. _____ Mendeleev noticed that certain similarities in the chemical properties of
   elements appeared at regular intervals when the elements were
   arranged in order of increasing
   (a) density. (c) atomic number.
   (b) reactivity. (d) atomic mass.

3. _____ The modern periodic law states that
   (a) no two electrons with the same spin can be found in the same place
   in an atom.
   (b) the physical and chemical properties of an element are functions of
   its atomic number.
   (c) electrons exhibit properties of both particles and waves.
   (d) the chemical properties of elements can be grouped according to
   periodicity, but physical properties cannot.

4. _____ The discovery of the noble gases changed Mendeleev’s periodic table
   by adding a new
   (a) period. (c) group.
   (b) series. (d) level.

5. _____ The most distinctive property of the noble gases is that they are
   (a) metallic. (c) metalloid.
   (b) radioactive. (d) largely unreactive.

6. _____ Lithium, the first element in Group 1, has an atomic number of 3. The
   second element in this group has an atomic number of
   (a) 4. (c) 11.
   (b) 10. (d) 18.

7. An isotope of fluorine has a mass number of 19 and an atomic number of 9.
   _____ a. How many protons are in this atom?
   _____ b. How many neutrons are in this atom?
   _____ c. What is the nuclear symbol of this fluorine atom, including its
   mass number and atomic number?
8. Samarium, Sm, is a member of the lanthanide series.
   a. Identify the element just below samarium in the periodic table.
   b. By how many units do the atomic numbers of these two elements differ?

   a. What is its atomic number?
   b. What is the mass number of this atom?
   c. What is the name of this element?
   d. Identify two other elements that are in the same group as this element.

10. In a modern periodic table, every element is a member of both a horizontal row and a vertical column. Which one is the group, and which one is the period?

11. Explain the distinction between atomic mass and atomic number of an element.

12. In the periodic table, the atomic number of I is greater than that of Te, but its atomic mass is less. This phenomenon also occurs with other neighboring elements in the periodic table. Name two of these pairs of elements. Refer to the periodic table if necessary.