6.3 PERIODIC TRENDS

Section Review

Objectives

- Describe trends among elements for atomic size
- Explain how ions form
- Describe and explain periodic trends for first ionization energy, ionic size, and electronegativity

Vocabulary

- atomic radius
- anion
- ion
- ionization energy
- cation
- electronegativity

Part A Completion

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

Atomic radii generally ___**1**___ as you move from left to right in a period. Atomic size ___**2**___ with atomic number within a group because there are more occupied ___**3**___ and an increased shielding effect, despite an increase in nuclear ___**4**___.

The energy required to remove an electron from an atom is known as ___**5**___ energy. This quantity generally ___**6**___ as you move left to right across a period. Ions form when ___**7**___ are transferred between atoms. Cations are always ___**8**___ than the atoms from which they form. The ability of an atom to attract electrons when it is in a compound is called ___**9**___, and this value ___**10**___ as you move from left to right across a period.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
7. _____
8. _____
9. _____
10. _____

Part B True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

_____ **11.** Compounds are composed of particles called ions.

_____ **12.** Removing one electron from an atom results in the formation of a
positive ion with a 1+ charge.

_____ **13.** An anion has more electrons than protons.

_____ **14.** Elements with a high electronegativity value tend to form positive ions.

Part C Matching

Match each description in Column B to the correct term in Column A.

	Column A		**Column B**
_____	**15.** ion	**a.**	half the distance between the nuclei of two atoms of the same element when the atoms are joined
_____	**16.** ionization energy	**b.**	a negatively charged ion
_____	**17.** electronegativity	**c.**	the energy required to remove an electron from an atom in its gaseous state
_____	**18.** atomic radius	**d.**	an atom or group of atoms that has a positive or negative charge
_____	**19.** cation	**e.**	a positively charged ion
_____	**20.** anion	**f.**	the ability of an atom of an element to attract electrons when the atom is in a compound

Part D Questions and Problems

Answer the following in the space provided.

21. For the following pairs of atoms, tell which one of each pair has the largest
ionic radius.

   a. Al, B _____

   b. S, O _____

   c. Br, Cl _____

   d. Na, Al _____

   e. O, F _____

22. Indicate which element of the following pairs is the most electronegative.

   a. calcium, gallium _____

   b. lithium, oxygen _____

   c. chlorine, sulfur _____

   d. bromine, arsenic _____