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
• ion
• cation
• anion
• ionization energy
• 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.

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

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

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