ATOMIC SIZE, IONIZATION ENERGY AND ELECTRON AFFINITY KEY

1. Complete the following table by writing the symbol for the element in each pair that has the largest atomic size, highest ionization energy, and most favorable electron affinity. If they are about the same, write “neither”.

<table>
<thead>
<tr>
<th></th>
<th>Largest atomic size</th>
<th>Highest ionization energy</th>
<th>Most favorable electron affinity</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. P or Bi</td>
<td>Bi</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>b. Mg or S</td>
<td>Mg</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>c. Cr or Mo</td>
<td>Mo</td>
<td>Cr</td>
<td>xxxxxx Cr</td>
</tr>
<tr>
<td>d. V or Ni</td>
<td>neither</td>
<td>neither Ni</td>
<td>xxxxxx Ni</td>
</tr>
</tbody>
</table>

2. Identify each of the following as: (A) always negative (exergonic), (B) always positive (endergonic), or (C) sometimes positive and sometimes negative.

B a. the first ionization energy
B b. the second ionization energy
C c. the first electron affinity
B d. the second electron affinity

3. Write the formulas for three cations and three anions that are isoelectric with argon and arrange them in the order of increasing ionic size.

\[ \text{Se}^{3+} < \text{Ca}^{2+} < \text{K}^+ < \text{Ar} < \text{Cl}^- < \text{S}^{2-} < \text{P}^{3-} \]

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ATOMIC SIZE, IONIZATION ENERGY AND ELECTRON AFFINITY KEY

1. Complete the following table.

<table>
<thead>
<tr>
<th></th>
<th>Higher ionization energy</th>
<th>Larger size</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. B or F</td>
<td>F</td>
<td>B</td>
</tr>
<tr>
<td>b. Na or Cs</td>
<td>Na</td>
<td>Cs</td>
</tr>
<tr>
<td>c. Ti or Ni</td>
<td>About the same Ni</td>
<td>About the same Ti</td>
</tr>
<tr>
<td>d. Mg(^+) or Mg</td>
<td>Mg</td>
<td>Mg</td>
</tr>
<tr>
<td>e. Y(^+) or Y(^2+)</td>
<td>Y(^+)</td>
<td>Y(^2+)</td>
</tr>
<tr>
<td>f. S(^2-) or Cl(^-)</td>
<td>Cl(^-)</td>
<td>S(^2-)</td>
</tr>
</tbody>
</table>

2. Circle the formula in each pair that represents the atom with the most favorable electron affinity.

a. Cl or I
b. P or Cl