6.2 CLASSIFYING THE ELEMENTS

Section Review

Objectives
- Describe the information in a periodic table
- Classify elements based on electron configuration
- Distinguish representative elements and transition metals

Vocabulary
- alkali metals
- alkaline earth metals
- halogens
- noble gases
- representative elements
- transition metals
- inner transition metals

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.

The periodic table displays the symbols and 1 of the elements along with information about the structures of their 2. The Group 1A elements are called 3, and the Group 2A elements are called 4. The elements in Groups 1A through 7A are called the 5. The nonmetals of Group 7A are 6, and the 7 make up Group 8A. Between Groups 2A and 3A, there are 8 in periods 4 through 7 and 9 in periods 6 and 7.

The atoms of the noble gas elements have their highest occupied 9 s and 10 sublevels filled. The highest occupied s and p sublevels of the representative elements are 11.

Part B True-False
Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

______ 12. Group A elements are representative elements.
13. Chlorine has the electron configuration $1s^22s^22p^63s^23p^7$.

14. The element in Group 4A, period 3, is gallium.

15. There is a relationship between the electron configurations of elements and their chemical and physical properties.

**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>16. alkali metals</td>
<td>a. nonmetals of Group 7A</td>
</tr>
<tr>
<td>17. inner transition metal</td>
<td>b. an element in which the highest occupied $s$ and $p$ sublevels are filled</td>
</tr>
<tr>
<td>18. representative element</td>
<td>c. Group 2A elements</td>
</tr>
<tr>
<td>19. transition metal</td>
<td>d. an element whose highest occupied $s$ sublevel and a nearby $d$ sublevel contain electrons</td>
</tr>
<tr>
<td>20. noble gas</td>
<td>e. an element whose highest occupied $s$ sublevel and a nearby $f$ sublevel generally contain electrons</td>
</tr>
<tr>
<td>21. alkaline earth metals</td>
<td>f. Group 1A elements</td>
</tr>
<tr>
<td>22. halogens</td>
<td>g. an element whose highest occupied $s$ or $p$ sublevels are partially filled</td>
</tr>
</tbody>
</table>

**Part D Questions and Problems**

*Answer the following in the space provided.*

23. List the electron configurations for the highest occupied energy level of the elements in period 3 from left to right.

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24. List the elements of Group 6A. Tell whether each is a solid, liquid, or gas at room temperature and whether it is a metal, nonmetal, or metalloid.

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