

# CHAPTER REVIEW

## History of the Periodic Table

### SECTION 1 REVIEW

1. Describe the contributions made by the following scientists to the development of the periodic table:
  - a. Stanislao Cannizzaro
  - b. Dmitri Mendeleev
  - c. Henry Moseley
2. State the periodic law.
3. How is the periodic law demonstrated within the groups of the periodic table?

## Electron Configuration and the Periodic Table

### SECTION 2 REVIEW

4. a. How do the electron configurations within the same group of elements compare?
  - b. Why are the noble gases relatively unreactive?
5. What determines the length of each period in the periodic table?
6. What is the relationship between the electron configuration of an element and the period in which that element appears in the periodic table?
7. a. What information is provided by the specific block location of an element?
  - b. Identify, by number, the groups located within each of the four block areas.
8. a. Which elements are designated as the alkali metals?
  - b. List four of their characteristic properties.
9. a. Which elements are designated as the alkaline-earth metals?
  - b. How do their characteristic properties compare with those of the alkali metals?
10. a. Write the group configuration notation for each *d*-block group.
  - b. How do the group numbers of those groups relate to the number of outer *s* and *d* electrons?
11. What name is sometimes used to refer to the entire set of *d*-block elements?
12. a. What types of elements make up the *p* block?
  - b. How do the properties of the *p*-block metals compare with those of the metals in the *s* and *d* blocks?
13. a. Which elements are designated as the halogens?
  - b. List three of their characteristic properties.
14. a. Which elements are metalloids?
  - b. Describe their characteristic properties.
15. Which elements make up the *f* block in the periodic table?
16. a. What are the main-group elements?
  - b. What trends can be observed across the various periods within the main-group elements?

### PRACTICE PROBLEMS

17. Write the noble-gas notation for the electron configuration of each of the following elements, and indicate the period in which each belongs.
  - a. Li
  - c. Cu
  - e. Sn
  - b. O
  - d. Br
18. Without looking at the periodic table, identify the period, block, and group in which the elements with the following electron configurations are located. (Hint: See Sample Problem A.)
  - a.  $[\text{Ne}]3s^23p^4$
  - b.  $[\text{Kr}]4d^{10}5s^25p^2$
  - c.  $[\text{Xe}]4f^{14}5d^{10}6s^26p^5$
19. Based on the information given below, give the group, period, block, and identity of each element described. (Hint: See Sample Problem B.)
  - a.  $[\text{He}]2s^2$
  - b.  $[\text{Ne}]3s^1$
  - c.  $[\text{Kr}]5s^2$
  - d.  $[\text{Ar}]4s^2$
  - e.  $[\text{Ar}]3d^54s^1$
20. Without looking at the periodic table, write the expected outer electron configuration for each of the following elements. (Hint: See Sample Problem C.)
  - a. Group 7, fourth period
  - b. Group 3, fifth period
  - c. Group 12, sixth period