Name _____ Date _____ Class _____

CHAPTER 5 REVIEW

The Periodic Law

MIXED REVIEW

SHORT ANSWER **Answer the following questions in the space provided.**

1. Consider the neutral atom with 53 protons and 74 neutrons to answer the following questions.

_____ **a.** What is its atomic number?

_____ **b.** What is its mass number?

_____ **c.** Is the element's position in a modern periodic table determined by its atomic number or by its atomic mass?

2. Consider an element whose outermost electron configuration is $3d^{10}4s^{2}4p^{x}$.

_____ **a.** To which period does the element belong?

_____ **b.** If it is a halogen, what is the value of x?

_____ **c.** The group number will equal $(10 + 2 + x)$. True or False?

3. _____ **a.** In which block are metalloids found, *s*, *p*, *d*, or *f*?

_____ **b.** In which block are the hardest, densest metals found, *s*, *p*, or *d*?

4. _____ **a.** Name the most chemically active halogen.

_____ **b.** Write its electron configuration.

_____ **c.** Write the configuration of the most stable ion this element makes.

5. Refer only to the periodic table at the top of the review of Section 2 to answer the following questions on periodic trends.

_____ **a.** Which has the larger radius, Al or In?

_____ **b.** Which has the larger radius, Se or Ca?

_____ **c.** Which has a larger radius, Ca or Ca^{2+}?

_____ **d.** Which class has greater ionization energies, metals or nonmetals?

_____ **e.** Which has the greater ionization energy, As or Cl?

_____ **f.** An element with a large negative electron affinity is most likely to form a (positive ion, negative ion, or neutral atom)?

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MIXED REVIEW continued

_____ **g.** In general, which has a stronger electron attraction, a large atom or a small atom?

_____ **h.** Which has greater electronegativity, O or Se?

_____ **i.** In the covalent bond between Se and O, to which atom is the electron pair more closely drawn?

_____ **j.** How many valence electrons are there in a neutral atom of Se?

6. _____ Identify all of the following ions that do not have noble-gas stability.
K^+ S^{2-} Ca^+ I^- Al^{3+} Zn^{2+}

7. Use only the periodic table in the review of Section 2 to give the noble-gas notation of the following:

_____ **a.** Br

_____ **b.** Br^-

_____ **c.** the element in Group 13, Period 5

_____ **d.** the lanthanide with the smallest atomic number

8. Use electron configuration and position in the periodic table to describe the chemical properties of calcium and oxygen.

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9. Copper's electron configuration might be predicted to be $3d^9 4s^2$. But in fact, its configuration is $3d^{10} 4s^1$. The two elements below copper in Group 11 behave similarly. (Confirm this in the periodic table in **Figure 6** on pages 140–141 of the text.)

_____ **a.** Which configuration for copper is apparently more stable?

_____ **b.** Is the *d* sublevel completed in the atoms of these three elements?

_____ **c.** Every element in Period 4 has four levels of electrons established. True or False?

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