

CHAPTER 5 REVIEW*The Periodic Law***MIXED REVIEW****SHORT ANSWER** Answer the following questions in the space provided.

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

_____ a. What is its atomic number?

_____ b. What is its mass in amu?

_____ 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 $3d^{10}4s^24p^x$.

_____ 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. Metalloids are found in which block, s , p , d , or f ?

_____ b. The hardest, densest metals are found in which block, s , p , d , or f ?

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. Referring only to the periodic table at the top of the Section 5-2 Review on page 35, 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 has greater ionization energies as a class, 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, a negative ion, or a neutral atom?

MIXED REVIEW continued

- _____ g. In general, which has a stronger electron attraction, large atoms or small atoms?
- _____ 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 ions below that do not have noble gas stability.
 K^+ S^{2-} Ca^+ I^- Al^{3+} Zn^{2+}
7. Using only the periodic table in Section 5-2 Review on page 35, give the noble-gas notation of the following:
- _____ a. Br
- _____ b. Br^-
- _____ c. the element in Group 13, Period 5
- _____ d. the lanthanide metal with the smallest atomic number
8. Use position in the periodic table and electron configurations to describe the chemical properties of calcium and oxygen.
- _____
- _____
- _____
- _____
- _____
- _____
9. Copper's electron configuration might be predicted to be $3d^94s^2$. 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 5-6 on pages 130–131 of the text.)
- _____ a. Which configuration is apparently more stable?
- _____ b. Is the *d* subshell completed in the atoms of these three elements?
- _____ c. Every element in Period 4 has four levels of electrons established. True or False?