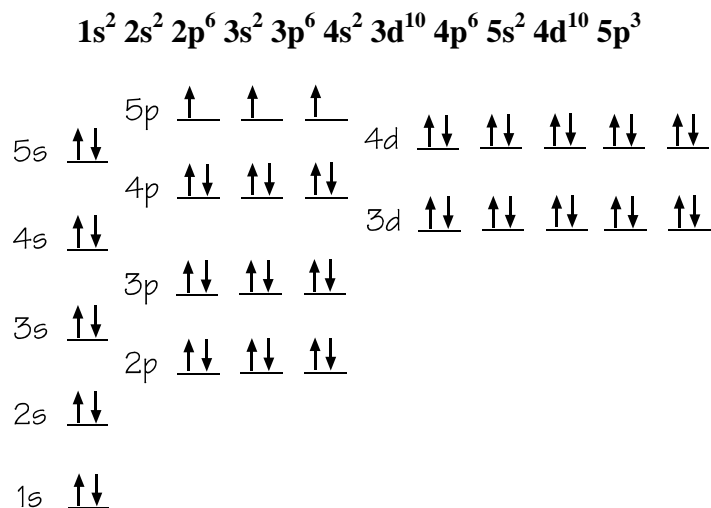


Chapter 7 Exercise Key

Exercise 7.1 – Complete Electron Configuration and Orbital Diagram: Write the complete electron configuration and orbital diagram for antimony, Sb.



Exercise 7.2 – Abbreviated Electron Configurations: Write the abbreviated electron configurations for each of the following.

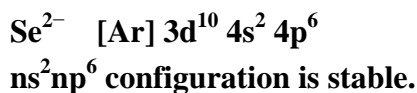
- rubidium, Rb $[\text{Kr}] 5s^1$
- nickel, Ni $[\text{Ar}] 3d^8 4s^2$
- bismuth, Bi $[\text{Xe}] 4f^{14} 5d^{10} 6s^2 6p^3$

Exercise 7.3 – Abbreviated Electron Configurations for Monatomic Ions: Write the abbreviated electron configurations for each of the following cations.

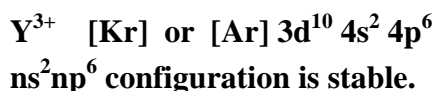
- cadmium ion, Cd^{2+} $[\text{Kr}] 4d^{10}$
- lead(II) ion, Pb^{2+} $[\text{Xe}] 4f^{14} 5d^{10} 6s^2$

Exercise 7.4 – Predicting and Explaining Monatomic Ions Charges: Predict the charge or charges for the ions that atoms of each of the following elements can form. Write an electron configuration for each ion and use it to explain why the ion forms the charge or charges it does.

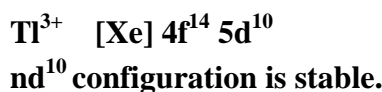
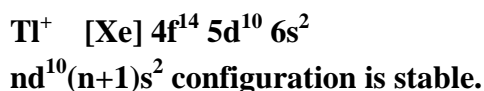
a. selenium, Se



b. yttrium, Y



c. thallium, Tl



Exercise 7.5 – Effective Charge: What is the effective charge on the highest energy electrons of each of the following?

a. Na +1 b. Al +3 c. Sc +2 d. Ni +2

Exercise 7.6 – Atomic Size and Ionization Energy: Complete the following table by writing the symbol for the element in each pair that has the largest atomic size and the highest ionization energy. If they are about the same, write "neither".

	Largest atomic size	Highest ionization energy
S or Se	Se	S
C or F	C	F
Ni or Pt	Pt	Ni
Mn or Co	neither	neither

Exercise 7.7 – Electron Affinity: Circle the symbol in each pair that represents the element that has the most favorable electron affinity.

a. **Cl** or I

b. C or **F**

Exercise 7.8 – Isoelectronic Series: Write the formulas for three cations and three anions that are isoelectric with krypton and arrange them in the order of increasing ionic size.

