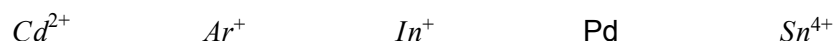


Ch 2: Electron Configurations Worksheet

1. Draw the energy level diagram for Cd^{2+} and indicate whether it is diamagnetic or paramagnetic.

2. All of the following can have the ground state electron configuration $[\text{Kr}]4d^{10}$ except...



3. Which of the following species is isoelectronic with S^{2-} ?



4. For the following, write the abbreviated (short) electron configuration:

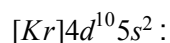
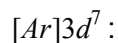
a. Write the ground state electron configuration for Cr^{3+}

b. Write the ground state electron configuration for $\text{I}^-_{(\text{aq})}$

c. Write the ground state electron configuration for Ni^{3+}

d. Write the ground state electron configuration for Pb^{2+}

5. A sample is analyzed and the ground state electron configuration of two unknown metal elements are $[Ar]3d^7$ and $[Kr]4d^{10}5s^2$. The metals are known to be oxidized as $Metal^{2+}$ ions. Identify the two ions with the above configurations.



6. What is the subshell notation (i.e., 1s, 2p, etc.) and the total number of orbitals having the quantum numbers $n=3$, $l=2$ for a given element?

7. Match the following elements with their first ionization energies:

Cl, Ge, K

418 kJ/mol, 1255 kJ/mol, 784 kJ/mol

8. Arrange S^{2-} , Cl^- , P^{3-} in order of increasing ionic radius.

9. In the design of your new zeolite battery you are wondering which anion will pass through the very small channels: O^- or S^{2-}

Which of these anions are larger? Give two reasons for your choice.