Part A: Electron Configuration

1) Write the ground state electron configuration for the following ions. Remember that ions have a change in the total number of electrons (positive have lost electrons and negative have gained).

   a) O^{2-}

   b) Fe^{2+}

   c) B^{3+}

   d) Ni^{2+}

   e) K^{+}

   f) Co^{3+}

Part B: Atomic Size, Ionization Energy, and Electronegativity

2) Atomic Size
   a) Which element has the largest atomic radius?

      Al Si P S Cl

   b) Which element has the smallest radius?

      K Na Rb Mg Cl

3) Ionization Energy
   a) Which element has the lowest first ionization energy?

      F Cl Br I At

   b) Which element has the highest first ionization energy?

      Li Cs Cl I Ar

4) Electronegativity
   a) Which element has the lowest electronegativity?

      H Li Na K Cs

   b) Which element has the highest electronegativity?

      Li N K As Ba

Part C: Oxidation States

5) List the most common (most stable oxidation states for the following transition metals)

   a) Sc

   b) Ti

   c) Mn

   d) Ni

   e) Cu

   f) Z

Part D: Coordination Compounds

6) Complete the following with the correct words from the word bank below:

Word Bank	
coordination	cookie
compounds ligands	yummy cookie
counterions	complex ion

A_____ contains a central metal ion bound to one or more ligands.

_____ is a Lewis base (or electron donor) that forms a bond with the metal.

When a complex ion combine with one or more _____(ions of opposite charge that are not acting as ligands). The resulting neutral compound is called a

_____.

Coordinate Covalent Bonds

7) Ligands that donate only one election pair to the central metal are called _____Provide an example

8) Ligands that have the ability to donate two pairs of electrons (from two different atoms) to the metal; these are called _____. Provide an example.

Part E: Naming Coordination Compounds

9) Name the following coordination compounds:

a) $[Mn(CO)(NH_3)_5]SO_4$

b) $Na_2[PtCl_4]$