

**Chemistry 101 – Unit 11  
Practice Problems**

1. Fill in the following Tables:

Energy Level	Number of Sublevels	Name(s) of Sublevel(s)	Maximum # of Electrons Per Level = $(2n^2)$
1	1		
2		s, p	
	3		18
4		s, p, d, f	

Sublevel Name	Number of Degenerate Orbitals*	Orbital Shape	Number of Electrons per Orbital	Number of Electrons Sublevel
	1	spherical	2	
p	3			6
d		-----	2	
		-----		14

(\*Degenerate orbitals: Orbitals of the same energy)

2. Write the electron configurations of:

- a. Bromine
- b. Calcium
- c. Aluminum
- d. Fluorine
- e. Argon

3. Write the valence level electron configuration for:
  - a. Nitrogen
  - b. Barium
  - c. Selenium
  
4. Write the Lewis symbol for:
  - a. Phosphorus
  - b. Potassium
  - c. Chlorine
  
5. Write the electron configuration for each of the following ions. State which noble gas is isoelectronic with each ion.
  - a.  $S^{-2}$
  
  - b.  $Mg^{+2}$
  
  - c.  $Br^{-}$

6. Using the electronegativity values in your textbook, identify each of the following bonds as ionic, polar covalent or nonpolar covalent. If the bond is polar or ionic, identify the positive and negative ends.

a. Ca-Cl bond

b. H-C bond

c. N – F bond

d. N – Cl bond

e. Li – F bond

f. O – P bond

Rank the above chemical bonds in order of increasing polarity.