**Homework #3: Chemistry 1013 Fall 2017**

**Due Friday 22 September in class 30 pts**

**Your name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Write the complete and abbreviated ground electronic state configuration for: 2 pts each)

*Complete, ground state electronic configuration Abbreviated ground state configuration*

1. S
2. Li
3. Ca

2. Draw the Lewis dot structures for: (3 pts)

1. O
2. Ca
3. P

3. Electron counting (3 pts)

1. How many valence electrons does Cl have ? \_\_\_\_\_\_\_\_
2. How many valence electrons are in the element with the following complete, ground state

electronic configuration ?

1s22s22p63s23p4 \_\_\_\_\_\_\_\_\_\_\_ valence count

1. How many valence electrons does Ga have ? \_\_\_\_\_\_\_

4. There are two main kinds of bonding that glue atoms together to form compounds.

Name them: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_bonding and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonding (2 pts)

5. Problem 3.102 (p. 121):

1. NH3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ b) N2\_\_\_\_\_\_\_\_\_\_\_\_\_\_ c) S8\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. What are the likely charges on stable ionic forms of the elements listed below? (5 pts)

|  |  |
| --- | --- |
| element | Stable charge |
| Ca |  |
| F |  |
| Li |  |
| O |  |
| N |  |

7. Problem 3.15 p. 117 (see page 81 for guidance)

8. Using the method described on pg. 82-85 of your text, determine the likely formula of ionic

compounds formed from the following elements: (3 pts)

1. Li and O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ b) Mg and N \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ c) Fe3+ and O \_\_\_\_\_\_\_\_\_\_\_\_

9. How many electrons are needed to form a covalent bond?? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. In covalent bonding, electrons between bonding atoms are:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. A covalent compound called ethene is drawn below.

1. How many electrons bind the two C to each other ? \_\_\_\_\_\_\_
2. How many electrons total are found in the bonds of ethane ? \_\_\_\_\_



ethene