**Chem 3514: Organic 1**

**Crash Review of the Basic Lewis Model: the `pre-valence bond’ theory**

1. Name the three chief subatomic particles in isolated atoms.
2. Which of these particle(s) make(s) chemistry happen ?
3. There are two kinds of atomic electrons. What are they called?
4. Which is atomic electron type responsible for chemistry?

5) Describe the complete and abbreviated electronic configuration of:

Complete Abbreviated

a) O

b) Al

c) Ca

6) How do we abbreviate the above using Lewis dot structures?

Equivalent Lewis dot structure

a) O

b) Al

c) Ca

7) Is the neutral state for Ca and O the `best state’ for them ? Why or why not ?

If not, what should the best state be for them?

8) If we combine Ca and O, what happens to the Lewis dot structures and what do

they look like in the end ? [hint: the difference of electronegativity between Ca and O exceeds 1.7 …at 2.5 so they make ionic bonds…]

9)Covalent bonding means what ?

10) Use curved arrow notation to show how electrons form a bond between 2 F

**Crash review (continued)**

11)Name the different kinds of electrons in the final F2 compound.

12) Use curved arrow notation to show how electrons move to turn 2 atomic O into O2.

13) Given that C is central to COCl­­2 and all the other atoms bind to the C, write down the best Lewis structure for COCl2.

14) Is there another way to draw COCl2 with the same connections that also

satisfies the Lewis octet rule ?

15) Given the following electronegativities, assign partial ( ± δ) charges to each

atom in the best structure for COCl2.

C 2.5 O 3.5 Cl 3.0