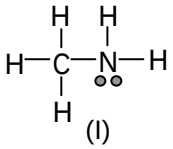
CHAPTER 8 REVIEW WORKSHEET Name:_____ Period:____ Date:_____

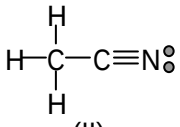
1. Write the complete electron configurations of the following ions:
   a. $Mg^{2+}$ _____ b. $S^{2-}$ _____
   c. $Al^{3+}$ _____ d. $N^{3-}$ _____
2. Write abbreviated electron configurations for the following:
   a. $Mn^{2+}$ _____ b. $Sn^{2+}$ _____
3. Write the pseudonoble gas configuration for $Cd^{2+}$: _____
4. Why isn't LiF composed of $Li^{2+}$ and $F^{2-}$ ions instead of $Li^{+}$ and $F^{-}$ ions?

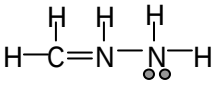
   _____

   _____

5. Write the Lewis symbols for :
   a. Si: b. Sr:
6. Use Lewis symbols to diagram the formation of the bond between Na and O:
7. Write the electron-dot formulas for the following:
   a. $SiCl_4$ c. $SO_4^{2-}$
   b. $ClF_3$ d. CO
8. Consider these compounds:


(I)

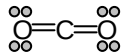

(II)

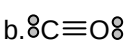

(III)

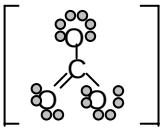
   a. Which would have the longest carbon-nitrogen bond? _____
   b. Which would have the highest carbon-nitrogen vibrational frequency? _____
   c. Which would have the largest carbon-nitrogen bond energy? _____
9. What kind of information is obtained from the Infrared absorption spectrum of a molecule?

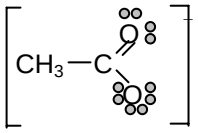
   _____
10. Draw all resonance structures for:
    a. $SO_3$
    b. $N_3^{-}$ (N....N....N)
    c. $SeO_2$

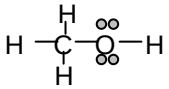
11. Arrange the following order of predicted decreasing C—O bond length. Specify the average C—O bond order in each.

a. 

b. 

c.  (three resonance structures)

d.  (two resonance structures)

e. 

Answer:_____

12. Utilizing formal charges, and showing any possible resonance, determine the best possible Lewis structure that can be drawn for the following:

a. $SOCl_2$ b. $H_2PO_3^-$

13. Draw electron-dot formulas for the following ions showing how the structure can be explained in terms of coordinate covalent bonding:

a. $H_3O^+$ (O is the central atom) b. $BF_4^-$ (B is the central atom)

14. Use Figure 8.5 on page 253 of the text to determine which of the following bonds carries a partial negative charge:

a. Sb—H _____ b. P—S _____ c. C—O _____ d. Br—S _____

15. Without referring to Figure 8.6, but using a periodic table, predict which atom in each of the following sets is most electronegative:

a. Ga, Bi, As, In _____

b. Cl, P, Br, Bi _____

15. Briefly Define the following terms:

a. Lattice energy _____

b. Octet rule _____

c. bond length _____

d. bond energy _____

e. bond order _____

f. vibrational frequency _____

g. covalent bond _____

h. resonance _____

i. resonance hybrid _____

j. formal charge _____

k. coordinate covalent bond _____

l. electronegativity _____

m. dipole _____

n. dipole moment _____

o. polar bond _____

p. electropositive _____