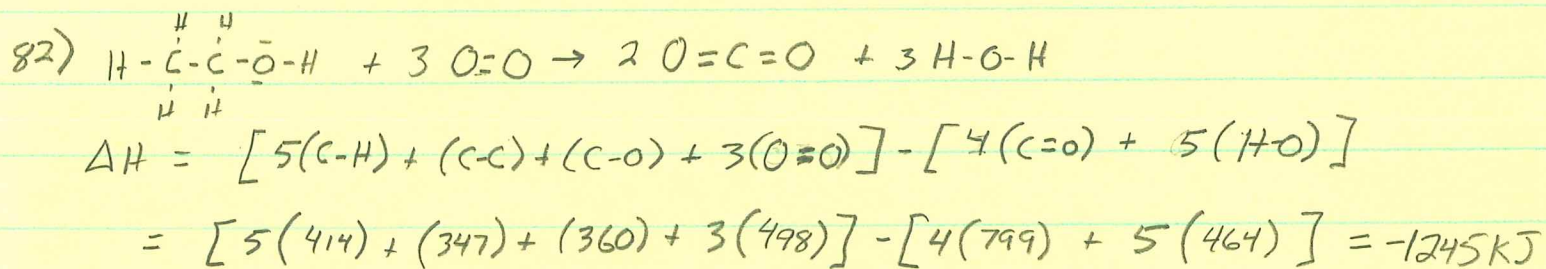
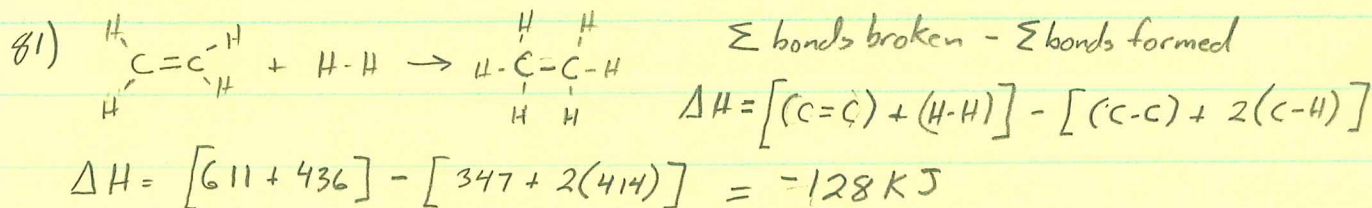
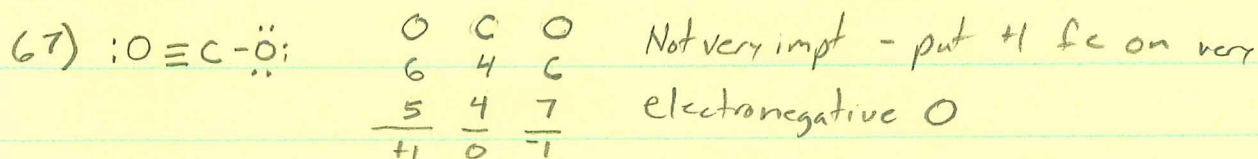
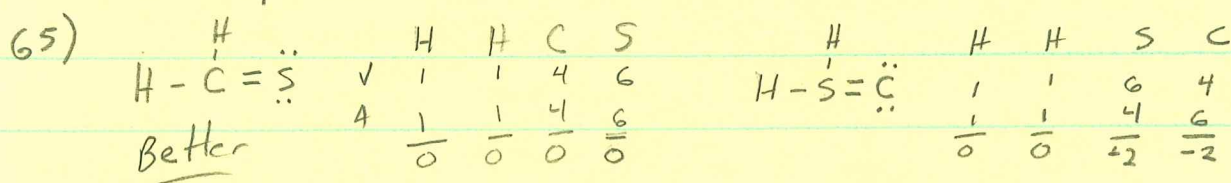


Ch 10 Chemical Bonding I: The Lewis Theory Exercises

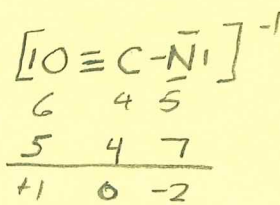
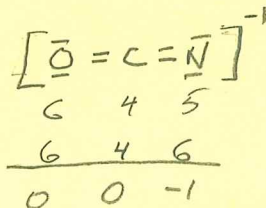
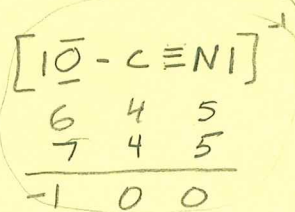
43) As you move down the group the size of the metal cation increases thus the distance between the cation and the oxide ion increases. An increase in distance leads to a decrease in the lattice energy making the formation of oxides less exothermic and the compounds less stable.

45) Cs is slightly larger than Ba but O is slightly larger than F - size cannot be used to explain the diff. in LE. Charges Cs^{+1} F^{-1} Ba^{+2} O^{-2}
 $E = k \frac{Q_1 Q_2}{r^2}$ the product of the charges for BaO is 4x greater



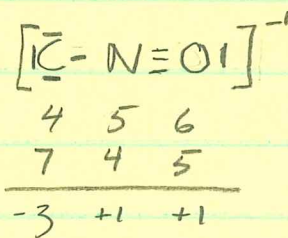
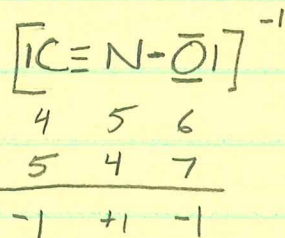
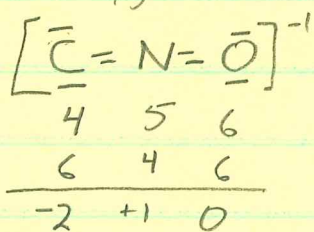
93) Lattice energies $\text{Al}_2\text{O}_3 = -15,916 \text{ KJ/mol}$ $\text{Fe}_2\text{O}_3 = -14,774 \text{ KJ/mol}$
 the thermite rxn is exothermic due to the energy released when Al_2O_3 lattice forms. Al_2O_3 is more negative than Fe_2O_3

97) Cyanate
from Ex 9.8
OCN⁻



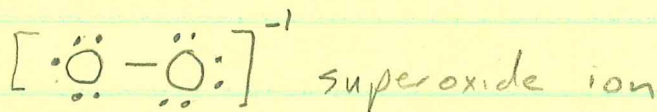
-1 on Oxygen

fulminate
CNO⁻

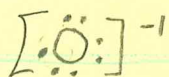


second structure has lowest set of charges, but it has a -1 on C the least EN element. None of the structures are stable

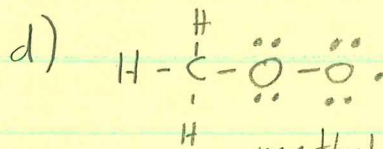
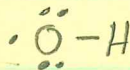
103) a) O₂⁻ 13e⁻



b) O⁻



c) OH



methyl peroxy radical

$$116) 27.8 \text{ mL NaOH} \times \frac{0.100 \text{ mol NaOH}}{1000 \text{ mL}} \times \frac{1 \text{ mol Acid}}{1 \text{ mol NaOH}} = 0.00278 \text{ mol Acid}$$

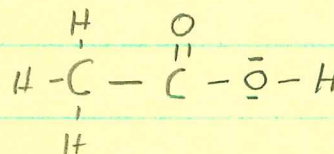
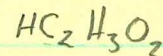
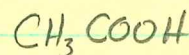
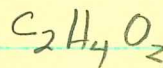
$$\xrightarrow{\frac{0.167 \text{ g}}{\text{mol}}} = 60.1 \text{ g/mol}$$

$$40.00 \text{ g C} \times \frac{1 \text{ mol C}}{12.01 \text{ g}} = 3.331 \text{ mol C} \div 3.331 = 1$$

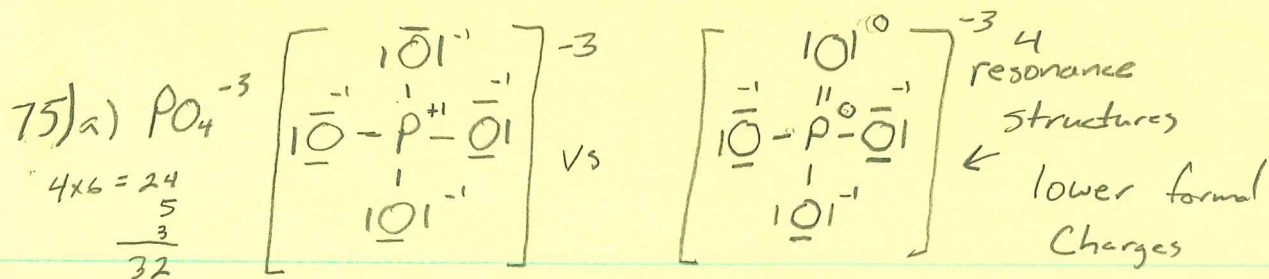
$$6.71 \text{ g H} \times \frac{1 \text{ mol H}}{1.008 \text{ g}} = 6.657 \text{ mol H} \quad \downarrow = 2$$

$$53.29 \text{ g O} \times \frac{1 \text{ mol O}}{16.00 \text{ g}} = 3.331 \text{ mol O} \quad \downarrow = 1$$

$$\text{CH}_2\text{O} = 30.03 \text{ g/mol} \sqrt{60.1}^2$$



acetic acid



expanded octet
eliminates + FC on central atom

