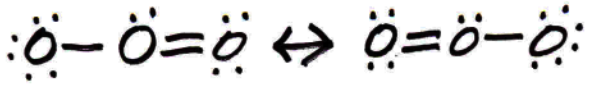
Complete the following assignment in your class notebook with the heading: Covalent compounds

Key

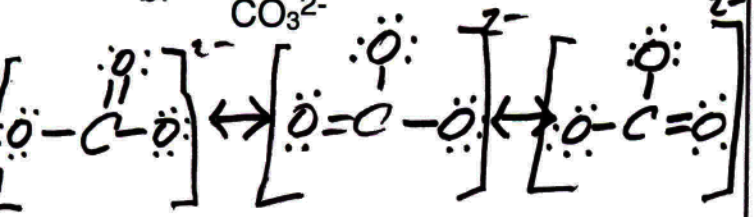
1.) Draw the resonance structures for each of the following compounds:

a. O_3

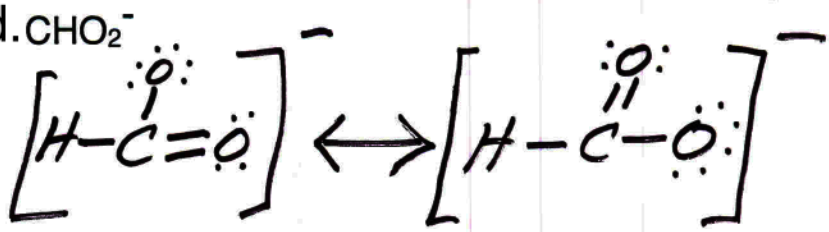


c. SeO_2

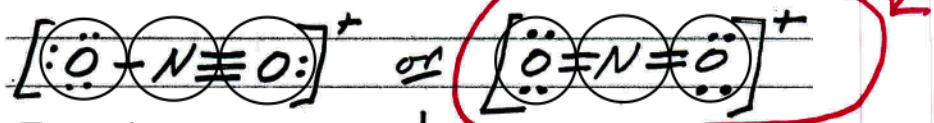
b. CO_3^{2-}



d. CHO_2^-



2.) Use the concept of formal charge to determine the most likely structure for NO_2^+,



$FC(O-) = 6 - 7 = -1$

$FC(N) = 5 - 4 = +1$

$FC(O\equiv) = 6 - 5 = +1$

$\Delta FC = 1 - (-1) = 2$

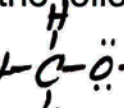
$FC(O) = 6 - 6 = 0$

$FC(N) = 5 - 4 = +1$

$\Delta FC = 1 - (0) = 1$

3.) Use the table of bond energies below to calculate the energy needed to break all the bonds in the following:

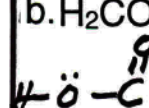
a. CH_3OH



$3(\underset{C-H}{418}) + (\underset{C-O}{358}) + (\underset{O-H}{459}) =$

2071 kJ

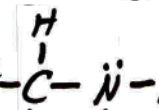
b. H_2CO_3 (an oxyacid)



$2(\underset{O-H}{459}) + 2(\underset{C-O}{358}) + (\underset{C=O}{732}) =$

2366 kJ

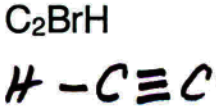
c. H_3NH_2



$3(\underset{C-H}{418}) + (\underset{C-N}{305}) + 2(\underset{N-H}{386}) =$

2331 kJ

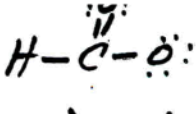
d. C_2BrH



$(\underset{H-C}{418}) + (\underset{C\equiv C}{835}) + (\underset{C-Br}{285}) =$

1538 kJ

e. CHO_2^-



$(\underset{C-H}{418}) + (\underset{C-O}{358}) + (\underset{C=O}{732}) =$

1508 kJ