1. (8 points) Given the Condensed formula O-N-C-N
   1. Draw a reasonable Lewis structure showing all lone pairs and formal charges where relevant:



* 1. Draw a resonance form for the above Lewis structure including formal charge and lone pairs where relevant:



* 1. Determine the number of sigma and pi bonds with in the original Lewis structure

Sigma bonds \_\_\_\_\_3\_\_\_\_\_\_\_\_\_ pi bonds \_\_\_\_3\_\_\_\_\_\_

1. (6 points) Answer the following questions:

Molecular geometry C\_\_\_\_Linear\_\_\_\_\_\_\_\_



Orbital geometry S \_\_\_\_tetrahedral\_\_\_\_\_\_\_\_

Bond angle S\_\_\_\_\_\_\_\_<109.5\_\_\_\_\_\_

Molecular geometry N\_\_trigional pyramidal\_\_\_

Hybridization N\_\_\_\_\_\_sp3\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Orbital geometry P\_\_\_\_trigional planar\_\_\_\_\_

1. (3 points) Identify each of the organic functional groups indicated in the following molecule.



1. (3 points) Given the following molecules

1. CH3-O-CH3 2. CF4 3. CH3-NH-CH3  4. SiO2

Place the following substances in order of increasing boiling points:

Boiling Point

Lowest \_\_\_\_4\_\_\_ \_\_2\_\_\_\_\_ \_\_1\_\_\_\_\_ \_\_\_\_3\_\_\_ Highest