1. Given the molecular formula CSN-
   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 \_\_\_\_\_\_\_2\_\_\_\_\_\_ pi bonds \_\_\_\_\_2\_\_\_\_\_

1. Predict the orbital or molecular geometry of the numbered atoms:



Orbital geometry P1 \_\_\_\_tetrahedral\_\_

Molecular geometry S2\_\_\_\_bent\_\_\_\_\_\_\_

Bond angle S2 \_\_\_\_\_<109.5\_\_\_\_\_\_\_

Orbital geometry N3 \_\_\_\_\_trigonal planar\_\_\_\_\_\_\_\_

Hybridization N3 \_\_\_\_\_\_\_\_\_sp2\_\_\_\_\_\_\_\_\_\_

Molecular geometry C4\_\_\_\_\_\_linear\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Identify each of the organic functional groups indicated in the following molecule.



1. Given the following molecules

1. CH3CH2OH 2. CO2 3. CH3OCH3  4. CCl4

Place the following substances in order of decreasing boiling points:

Boiling Point

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