

Name \_\_\_\_\_

**Homework 3****Distributed on: Tuesday, October 2, 2001****Due on: Tuesday, October 9, 2001**

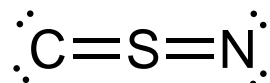
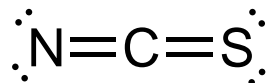
*This assignment assumes that you have completed the suggested problems and readings in the textbook.*

1. For the following molecules, determine the structure and give the complete Lewis structure. Include formal charges, resonance structures and oxidation states when needed. [6 points]



Name \_\_\_\_\_

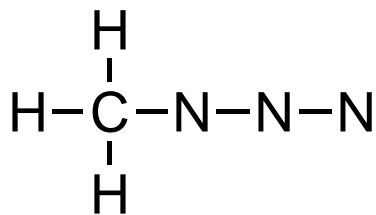
2. Below are three possible Lewis structures for the molecule  $(\text{NCS})^-$ . Compute the formal charges for each molecule and select which is the best structure. [4 points]



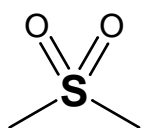
3. A compound is being tested for use as a rocket propellant. Analysis of the compound reveals that it contains 18.54% F, 34.61% Cl, and 46.85% O. [7 points]
- Determine the empirical formula for this compound.
  - Assuming that the molecular formula is the same as the empirical formula, draw a Lewis structure for the molecule.
  - Use VSEPR theory to determine the shape of the molecule.

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4. Complete the Lewis structure for the following molecule and show resonance structures. Circle the best resonance structure. Please note: any formal charges will prefer to be on the terminal nitrogen rather than on the central nitrogens. [4 points]

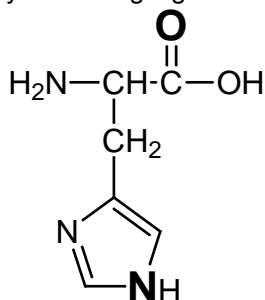


5. Give the hybridization and molecular geometry for the highlighted atoms in the following molecules: [4 points]



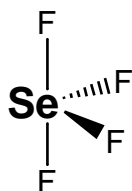
S:  
hybridization:

geometry:



O:  
hybridization:

geometry:



Se:  
hybridization:

geometry:

N:  
hybridization:

geometry:

Problem 1	2	3	4	5	Total
/6	/4	/7	/4	/4	/25