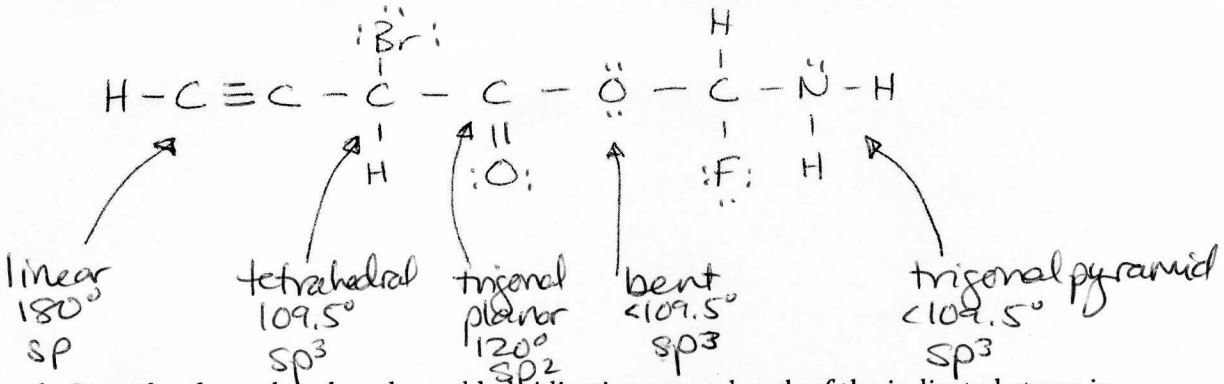
Quiz 9
Chem 1A, Fall 2018
Fossum

Name: Key

1. (5) a. Fill in any lone pairs or multiple bonds in the following structure. Do not add any atoms.

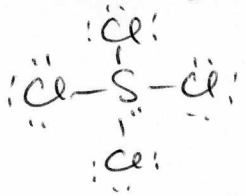


b. State the shape, bond angle, and hybridization around each of the indicated atoms in the above structure.

2. (8) For each of the following molecules or polyatomic ions:
a. draw the Lewis structure
b. state the shape
c. draw a 3-dimensional sketch
d. indicate bond angles
e. state whether it is polar or nonpolar
Remember to minimize formal charge when appropriate. If equivalent resonance structures are possible, show all equivalent structures. If non-equivalent resonance structures are possible, show only the best structure.

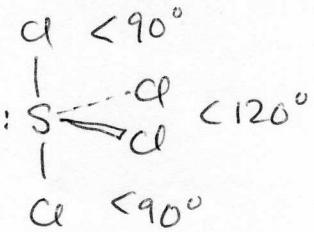
SCl_4

$6 + 4(7) = 34$ ve⁻



5 groups e⁻
See saw

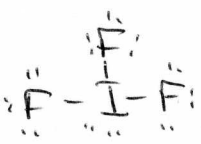
lone pair on equatorial position



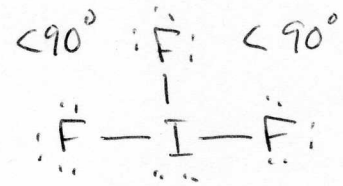
polar (asymmetric)

IF_3

$7 + 3(7) = 28$ ve⁻



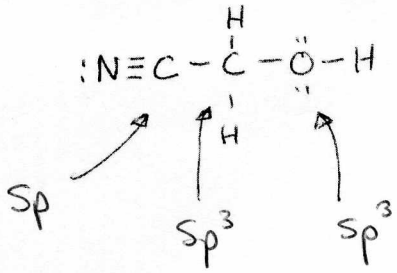
5 groups e⁻
T-shaped



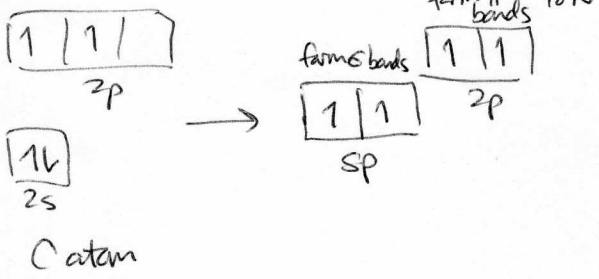
Polar

3. (7) Describe the bonding in the following molecule using valence bond theory. Include labeled ground state and hybridized orbital arrow diagrams for each central atom and pictures showing sigma and pi orbital overlap. Indicate the types of orbitals overlapping in each picture and point out any lone pairs on either of the central atoms.

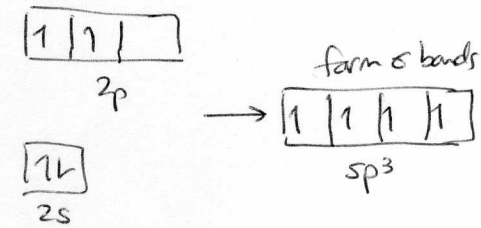
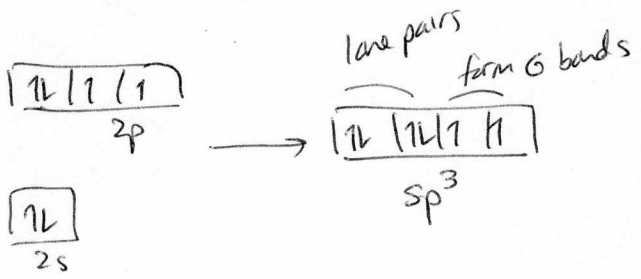
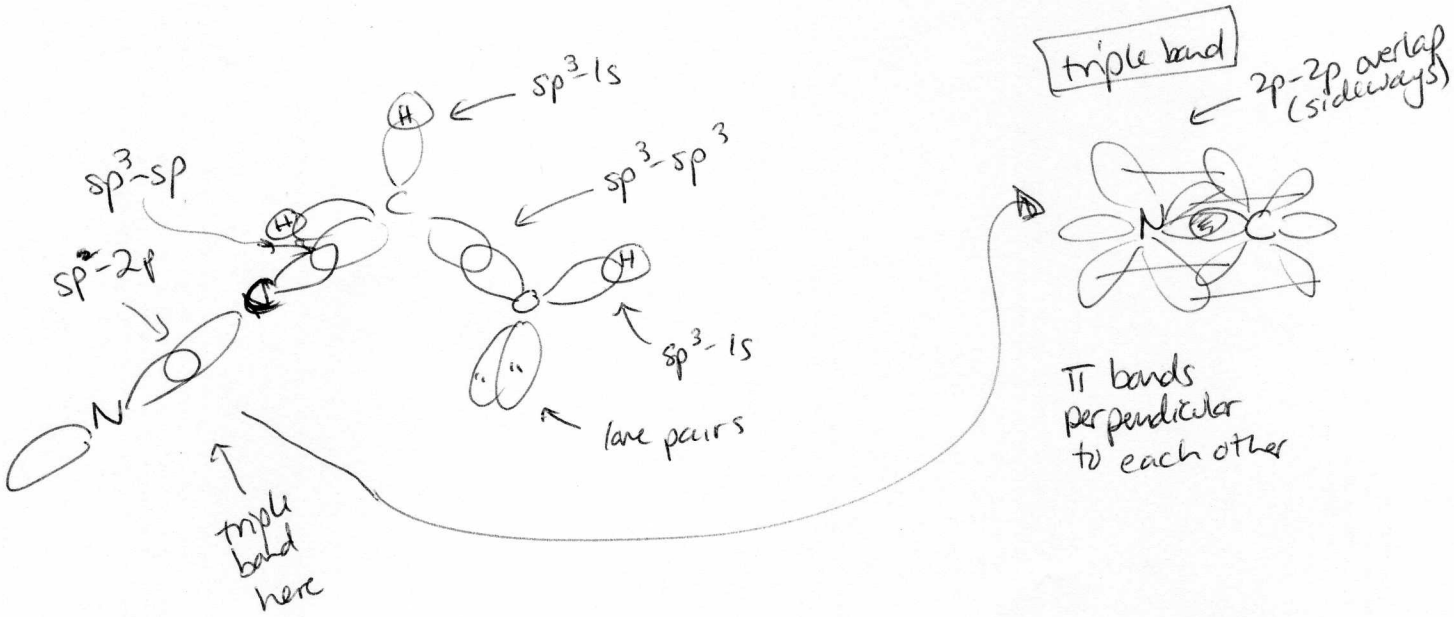
$NCCH_2OH$



C sp^1:



C sp^3



O sp^3