Name _____ Test 1 (9/29)
CHEM 0201 (Organic I) Fall 2025

1. Two of the three naturally occurring isotopes of hydrogen are ^{1}H and ^{2}H.
   a. (4 pts.) $^{1}H_2O$ forms when $^{1}H_2$ reacts with O_2. What will form when $^{2}H_2$ reacts with O_2? 1. _____

   b. (2 pts.) Which isotope would react more quickly ^{1}H or ^{2}H? 2. _____

   c. (4 pts.) Subatomic particle wise, how are neutral atoms of ^{1}H and ^{2}H the same? 3. _____

   d. (4 pts.) Subatomic particle wise, what does ^{2}H have that ^{1}H doesn't? 4. _____

2. a. (6 pts.) Provide a brief definition for "electronegativity". 5. _____

6. _____

7. _____

   b. (6 pts.) Briefly explain why N atoms are more electronegative than C atoms. Remember to base the explanation on the makeup of the atom and not simply its position on the periodic table. 8. _____

9. _____

10. _____

11. _____

3. (16 pts.) Draw Lewis dot structures for the following condensed structures.

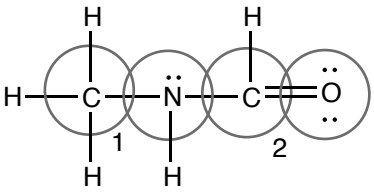
CHF_2CH_2OH	CH_2CHCHO

4. (10 pts.) Determine whether the following bonds are polar and if the bond is polar place a δ^+ at the positive end and a δ^- at the negative end of the bond.

C——F O——C C——S N——Br H——O

5. (10 pts) Determine the hybridization of the circled atoms in the structures drawn below. Lewis Kekulé, and condensed structures have been provided.

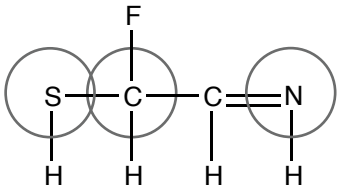
a.



C(1) _____ N _____

C(2) _____ O _____

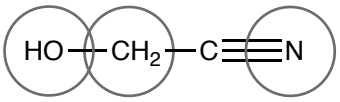
b.



S _____ C _____

N _____

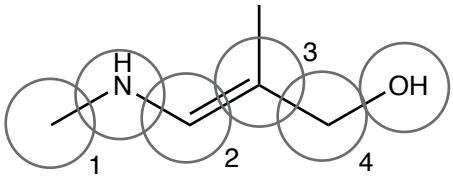
c.



O _____ C _____

N _____

6. a. (6 pts.) Determine the hybridization of the circled atoms in the following skeletal structure.

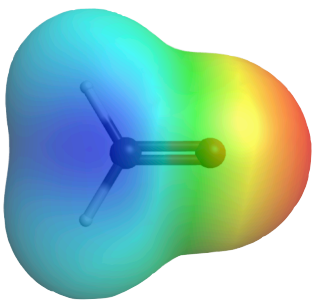


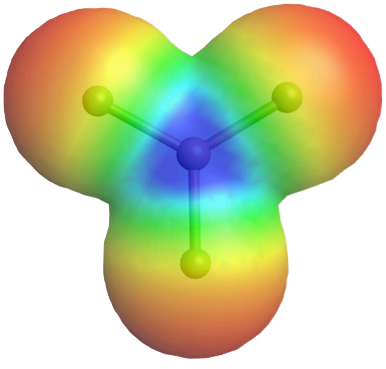
C(1) _____ N _____ C(2) _____

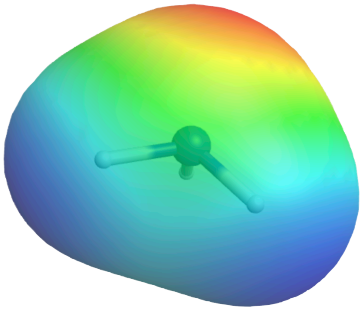
C(3) _____ C(4) _____ O _____

7. (10 pts.) Use valence bond theory to briefly explain why rotation around C to C double bonds does not occur at room temperature. If you wish to draw a diagram to support your explanation, you may do so.

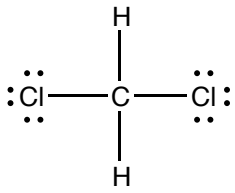
8. (10 pts.) Three electrostatic potential maps are shown below. (**a. 6 pts.**) Label the negative regions with a δ^- and the positive regions with a δ^+. (**b. 6 pts.**) Label the molecules as polar or nonpolar.

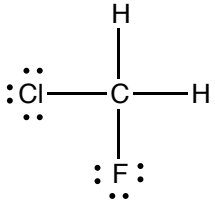






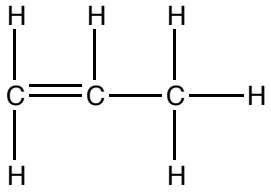
9. (12 pts.) For each of the following Lewis structures, determine whether the molecule would be polar.

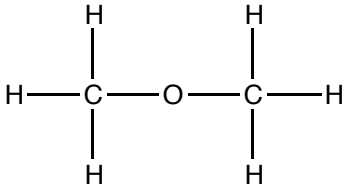




10. (12 pts.) Using wedge (◄) and dashed (┈┈) bonds where appropriate, draw 3-D representations of the following molecules. When drawing the 3-D representations draw all of the atoms. Kekulé structures are provided.

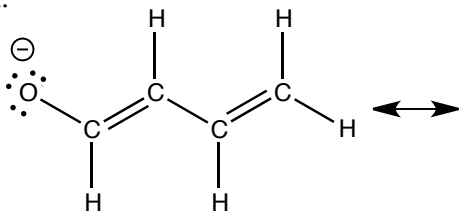
a.





11. (12 pts.) Draw resonance contributors for the following structures. Remember to determine and indicate any formal charges that may form.

a.



b.