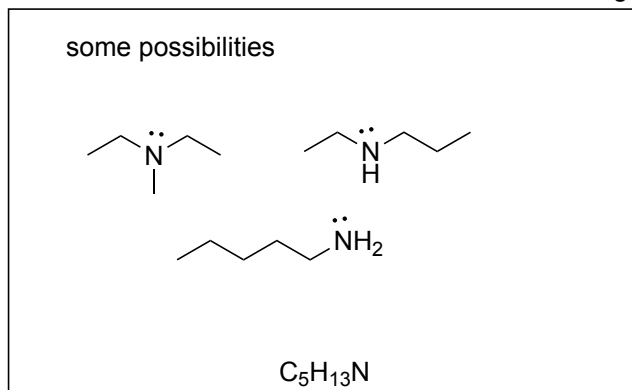
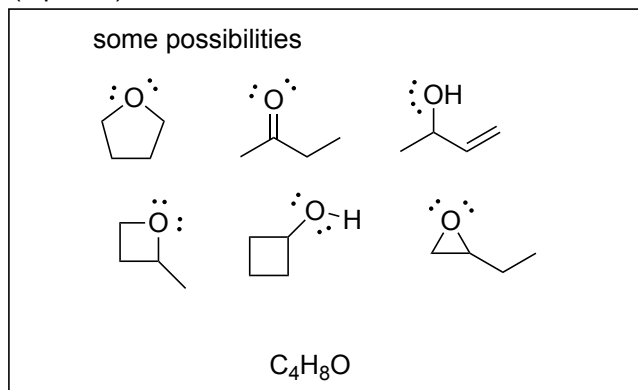
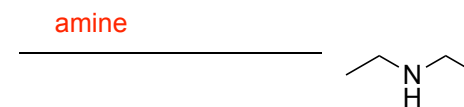
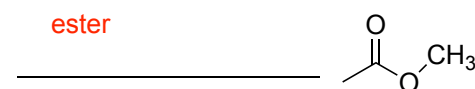
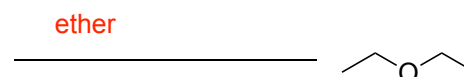


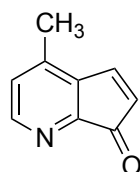
1. (8 points) Draw a valid Lewis structure for the following formulas where none of the atoms have a formal charge.



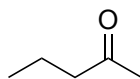
2. (12 pts) Indicate the full name of the functional groups in the following compounds. Full name = designation of 1° etc where appropriate. There is only one functional group in each of these compounds.



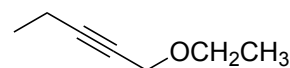
3. (6 points) Indicate the number of carbons and hydrogens in each of the structures below.



9 #C 7 #H

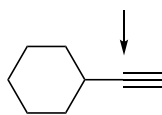


5 #C 10 #H

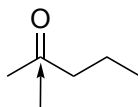


7 #C 12 #H

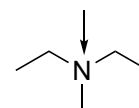
4. (6 points) On the lines below each molecule, give the **hybridization** of the indicated atom.



hybridization: sp

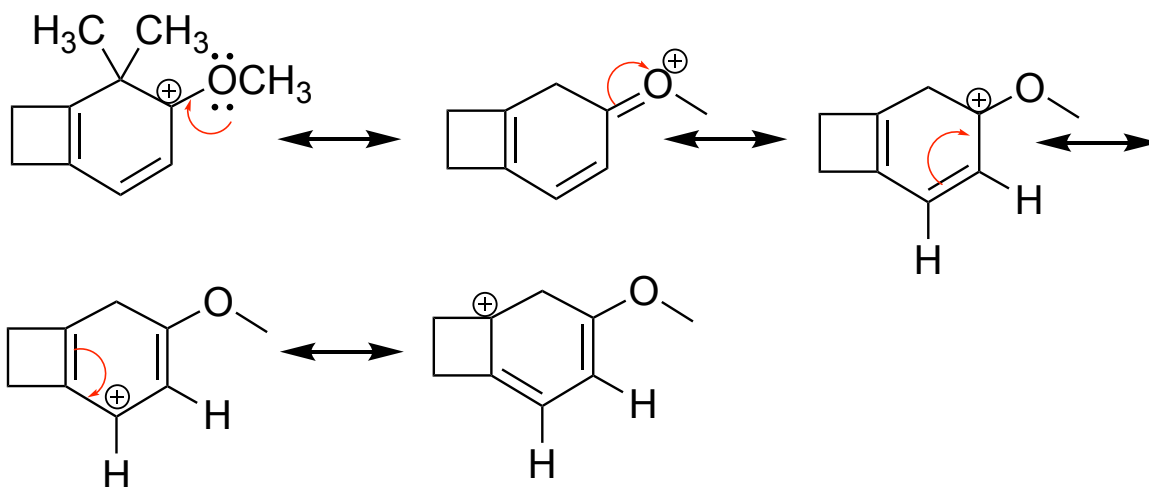
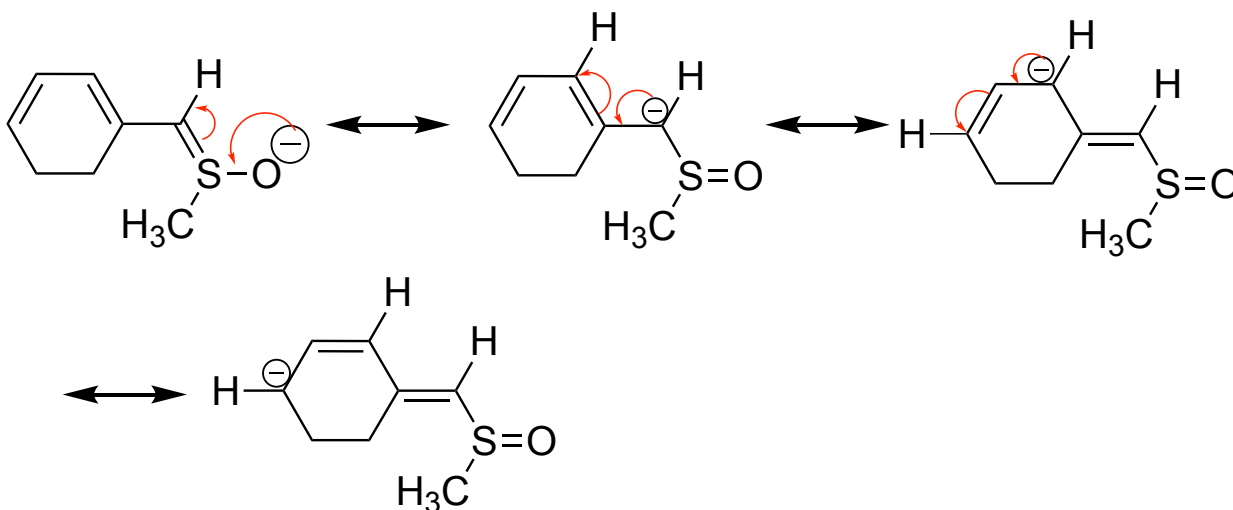


hybridization: sp²

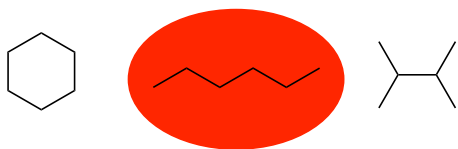


hybridization: sp³

5. (12 points) Complete the additional resonance structures for the following charged organic molecules. Show how **the charge can be distributed onto other atoms**. Be sure to include non-bonding electrons and charges. Partial drawings are provided for your convenience. Moving from left to right, use curly arrows to show the movement of electrons between resonance structures. You may not need to use all the templates.



6. (2 points) Circle the compound with the highest amount of surface area.



7. (4 points) Circle the compound(s) below that will participate in hydrogen bonding.

