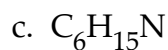
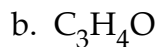
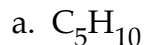


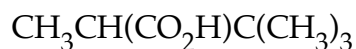
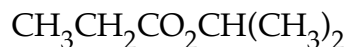
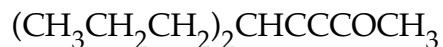
Review Problems for Exam 1

1. Practice recognizing and categorizing the functional groups by using structures from Chapter 4 of *Understanding Medicinal Plants* or the tables from the Houghton article distributed on the first day of class.

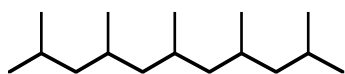
2. Draw 5 possible isomers for each of the following molecular formulas. Where the IHD is greater than 0, make sure that you have examples of several possible combinations of rings, double bonds, and triple bonds, as appropriate.



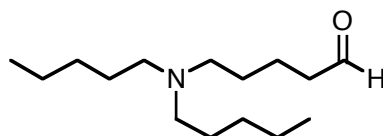
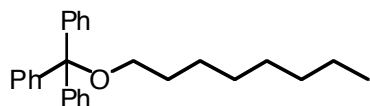
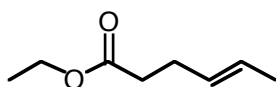
3. In the following condensed formulas, circle and categorize the functional groups present. Then redraw the condensed formulas in expanded and bond-line styles.



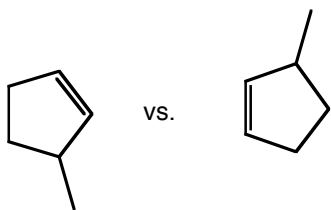
4. Add lone-pairs as needed on the following structures. Then convert them to condensed formulas, and give their molecular formulas.



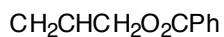
(you can really condense this one if you think about it)



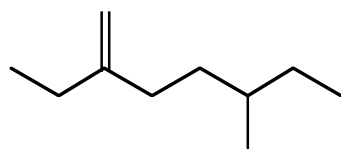
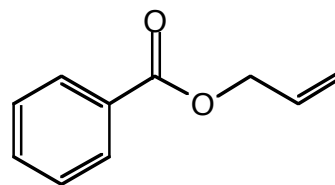
5. For each pair of molecules below, determine if they are different drawings of the same molecule, or whether they are really different molecules.



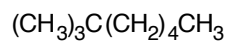
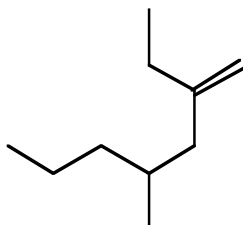
vs.



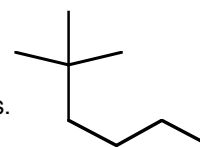
vs.



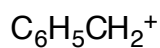
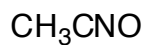
vs.



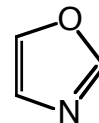
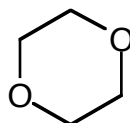
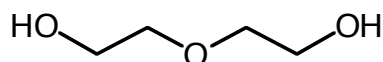
vs.



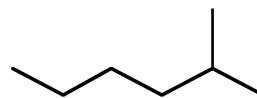
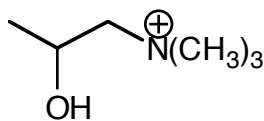
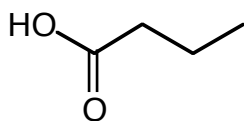
6. Draw expanded structures for each of the following molecules, including lone pairs and formal charges (any charge shown refers to the *net* charge).



7. Rank the following molecules with respect to solubility in water. Use 1 for the most soluble.



8. Rank the following molecules with respect to solubility in "oil." Use 1 for the most soluble.



9. Rank the following molecules with respect to polarity. Use 1 for the most polar.

