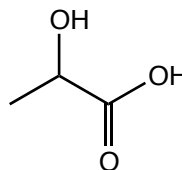
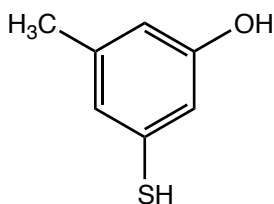


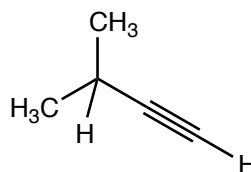
Completion (6 pts)		Name	
Random Sample(s) (4 pts)		BID	
Total (10 pts)		Section-CRN	
Additional Recommended Problems from McMurray (8 th Ed.)		2.58, 2.57, 2.56, 2.55, 2.54, 2.53, 2.51, 2.49, 2.50, 2.40, 2.44, 3.22, 3.23, 3.24, 3.25, 3.26, 3.28, 3.29, 3.30, 3.31, 3.32, 3.33, 3.35, 3.36, 3.37, 3.38, 3.40	

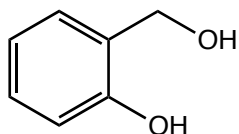
1. Draw the conjugate **base** for each molecule below. Include all electron lone-pairs and charges where applicable. If there is more than one type of proton in the molecule, you must choose the most acidic proton.

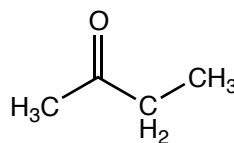


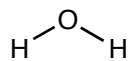


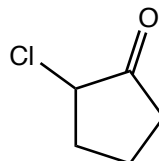


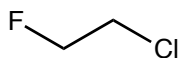


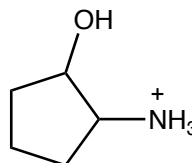








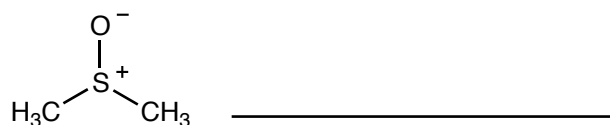
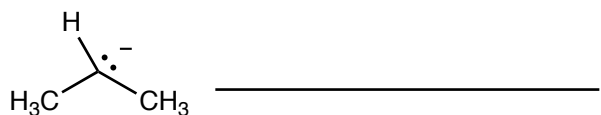
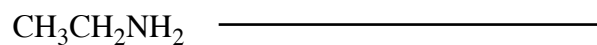
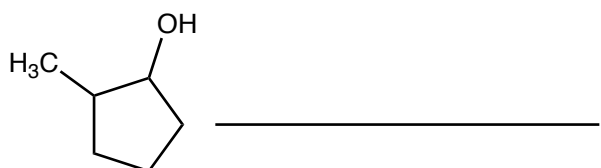
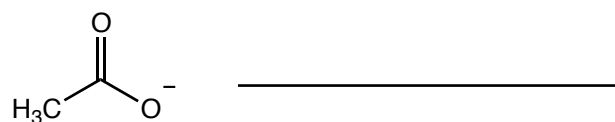
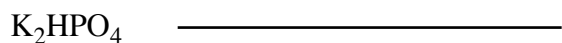
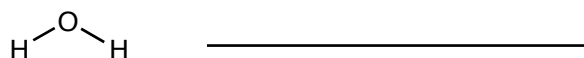
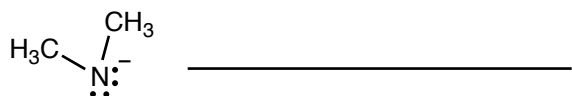
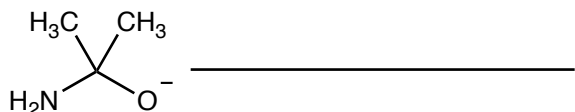




2. Using complete sentences, state the meaning of a conjugate base (i.e., what was your thought process above?).

Homework Two Organic Chemistry I (223) Prof. Landrie • Spring 2013	Name	
	OCC ID	
	Section CRN	

3. Draw the conjugate **acid** for each molecule below. Include all electron lone-pairs and charges. If there is more than one basic atom in the molecule, you must choose the most basic atom to protonate.



4. Using complete sentences, state the meaning of a conjugate base (i.e., what was your thought process above?).

5. Draw a neutralization reaction between benzoic acid, $C_6H_5CO_2H$, and sodium hydride (NaH). Label the conjugate acid and conjugate base on each side of the reaction.

Homework Two Organic Chemistry I (223) Prof. Landrie • Spring 2013	Name	
	OCC ID	
	Section CRN	

6. Propose structures that meet the following descriptions. Use bond-line notation to draw your structural formulas.

a. ketone with five carbons and one alcohol

c. alkane (no double bonds) with the formula, C_6H_{12}

e. nitrile with the formula, C_5H_9N

g. phenol with an adjacent carboxylic acid group

i. amide with the formula, C_3H_7NO

k. a secondary thiol with 3 carbons

m. a primary alcohol with five carbons

b. α -ketoester (i.e., a molecule with a ketone one carbon away from an ester)

d. dialdehyde with the formula, $C_4H_6O_2$

f. β -ketocarboxylic acid (i.e. a molecule with a ketone two carbons away from a carboxylic acid)

h. amino acid (i.e. a carbon atom attached to both a carboxylic acid and an amine)

j. ether with the formula, $C_4H_{10}O$

l. alkane with five carbons, one of which is a quaternary carbon

n. conjugated alkynyl imine (i.e., an imine one carbon away from an alkyne)

Homework Two Organic Chemistry I (223) Prof. Landrie • Spring 2013	Name	
	OCC ID	
	Section CRN	

7. Draw an example of a molecule with each of the following functional groups. Then, predict the hybridization of the carbon atom in each.

a. Ketone

b. Nitrile

c. Carboxylic acid

8. There are seven constitutional isomers with the formula $C_4H_{10}O$. First, draw all seven. Second, state the meaning of a constitutional isomer.

9. Draw and name (using IUPAC nomenclature) three monobromo derivatives of pentane, $C_5H_{11}Br$.

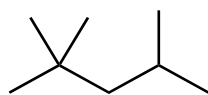
10. Draw structures for the following:

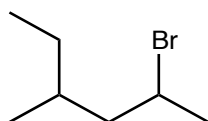
a. 2-methylheptane

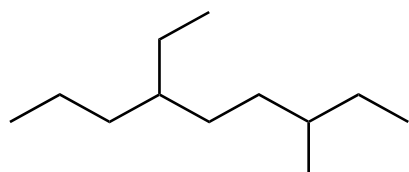
b. 4-ethyl-3,4-dimethylnonane

c. 4-isopropyl-3-methylheptane

11. Give IUPAC names for the following compounds:







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	OCC ID	
	Section CRN	

12. On notebook paper (do not print out the slides), complete each of the questions from the skillbuilder 1 activity. You do not need to rewrite the question. Answers should be complete and explanations given where required. Be sure to label each question for my reference (e.g. "Question One"). All of the skillbuilder questions can be found at the end of lecture 4 posted on the course website.