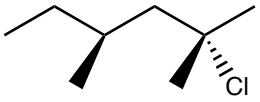
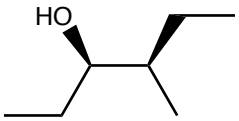
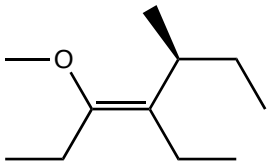
Name _____ Test 2 (10/23)
CHEM 0201 (Organic) Fall 2012

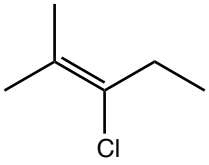
1. (6 pts. each) Provide names for the following molecules, use the *Z* and *E* nomenclature where appropriate.

a. 

b. 

_____ _____

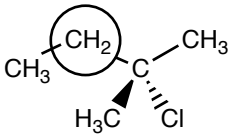
c. 

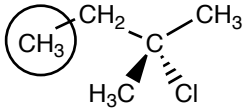
d. 

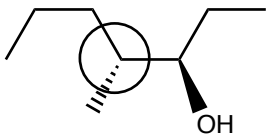
_____ _____

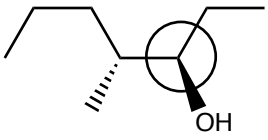
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

2. (12 pts.) Determine the degree of substitution (1°, 2°, 3°, 4°) for the circled C atoms on the structures drawn below.

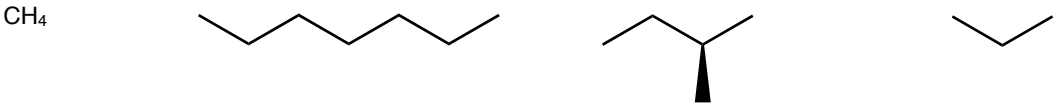






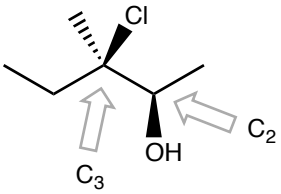


3. (6 pts.) Rank the following in order of increasing boiling point.

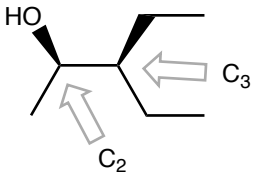


4. (16 pts.) Draw Newman projections along the indicated bonds for the rotamers drawn below.

a. From C_2 to C_3



b. From C_2 to C_3



5. (10 pts) Explain why cyclopropane rings are so reactive. A skeletal structure of cyclopropane is drawn below.

6. (10 pts) Using ideas from valence bond theory as discussed in class, explain why alkenes are nucleophilic.

7. a. (5 pts.) Briefly describe the structural differences between *cis* and *trans* fats.

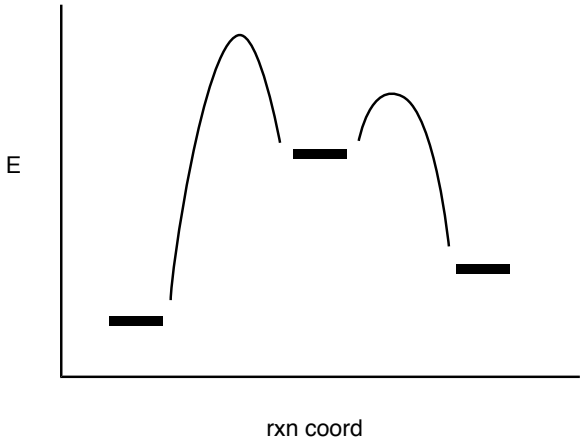
b. (5 pts.) Briefly describe the structural differences between saturated and unsaturated fats.

8. The questions below refer to the reaction coordinate diagram to the right.

a. (2 pts.) Label the parts of the diagram that represent the energies of the reactants and that of the products.

b. (2 pts.) How many steps does this reaction have?

c. (2 pts.) Does this reaction have an intermediate? If it does, label the part of the diagram that represents the intermediate.



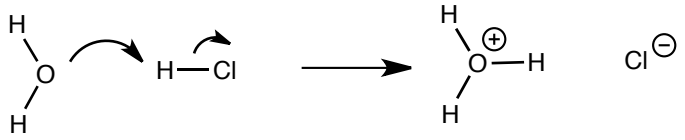
d. (2 pts.) Label all transition states.

e. (2 pts.) Would this reaction absorb or release energy? Explain

f. (2 pts.) Would this reaction have a favorable equilibrium constant.

g. (2 pts.) Would K be a large or small number.

9. (10 pts.) When water reacts with an acid, electron movement arrows can be drawn, as shown below, to explain the reaction.



Draw electron movement arrows to show how $P(CH_3)_3$ reacts with HBr.