

Exam 1
October 17, 2012
Organic Chemistry 334



Please do not open the exam until it begins.

This exam is 65 minutes long (9-10:05). I will post a key on D2L when I have all the exams back. There will be no make-up exams. Please be considerate of your fellow classmates when leaving. Don't stand by the doors and discuss the exam. If you open the exam and/or write on the exam before or after time has been called, you will get a 0/100.

All cell phones and personal audio devices must be turned off and put away. The use of calculators, notes, the text book, or **your neighbor's test** is not permitted during the exam. You may use molecular models but they can not be shared during the exam.

I will not accept answers on scratch paper. All answers must be on the exam.

You may tear the cover page off and use it for scratch paper. If your exam becomes unstapled, please let me know.

Please put your in-class number and your name on the second page **and** the back of the exam.

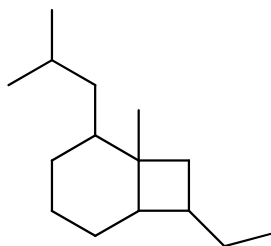
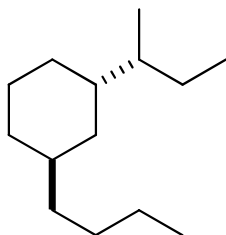
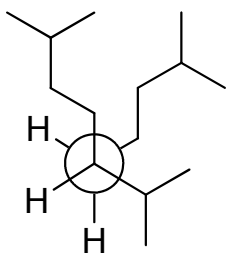
Good Luck!!!!

Exam 1
Organic Chemistry CH 334
October 17, 2012

In-class number _____

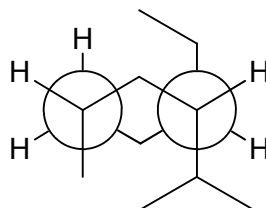
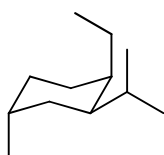
Name (last, first) _____

1. Name the following compounds. (15 pts)



2. Draw 1,7-diethyl-1,9-dimethylspiro[4.5]decane in bond line. (5 pts)

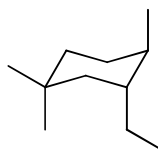
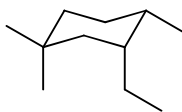
3. The following compounds are _____. (circle your answer) 9 pts



constitutional/structural
isomers

conformational
isomers

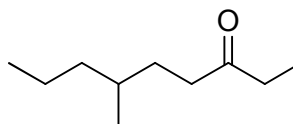
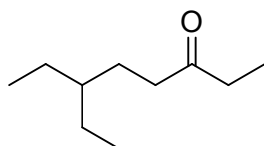
stereoisomers



constitutional/structural
isomers

conformational
isomers

stereoisomers



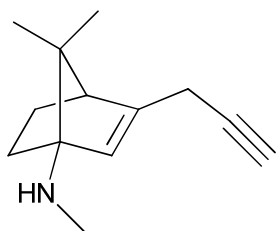
constitutional/structural
isomers

conformational
isomers

stereoisomers

4. Answer the following questions about compound X.

a. What is the molecular formula (mf) for compound X? (3 pts)

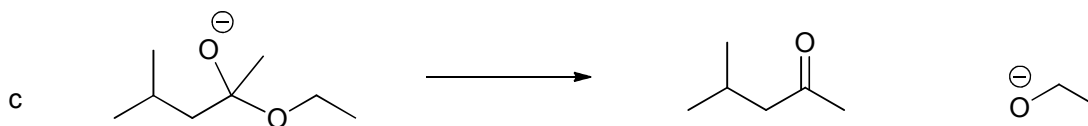
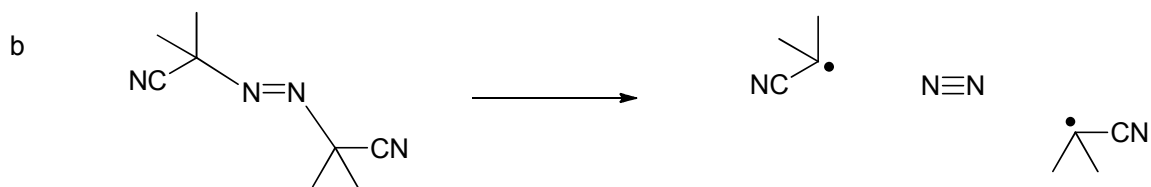
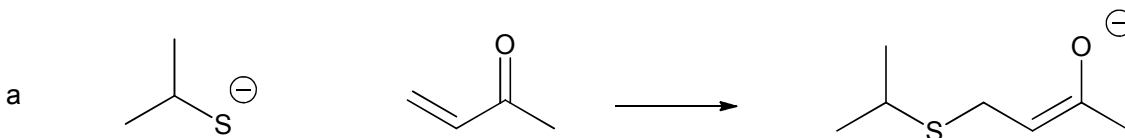


compound X

b. Compound X has _____ sp^3 atoms (2 pts)

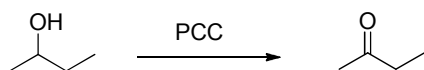
c. Compound X has _____ sp atoms (2 pts)

5. Fill in in the missing curved arrows (electron pushing) for the following reactions. (18 pts)



6. Draw, in bond line, all the structural isomers that have the molecular formula $C_4H_{10}O$.
(14 pts)

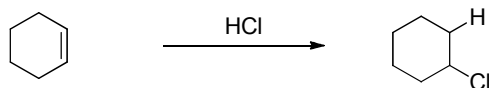
7. In the following reactions, decide if the organic molecule (not just a single atom) is oxidized, reduced, or is at the same oxidation state. Please circle your answer. (9 pts)



oxidized

reduced

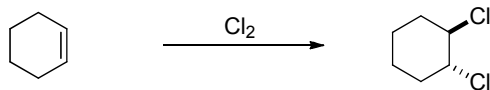
same oxidation state



oxidized

reduced

same oxidation state



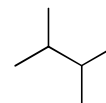
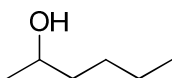
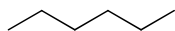
oxidized

reduced

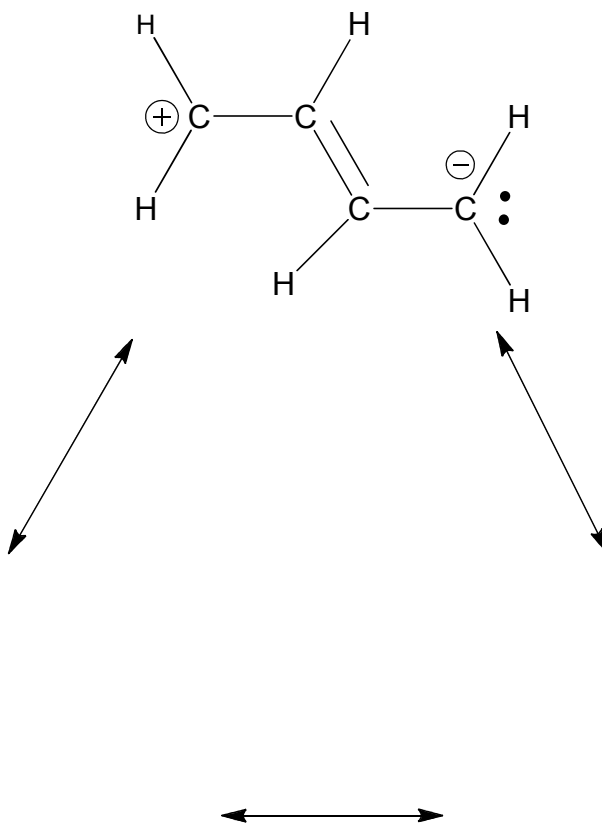
same oxidation state

8. Draw *cis*-1-tert-butyl-3-ethylcyclohexane in its **least** stable conformation. (4 pts)
*** Poorly drawn chairs and bad bond angles **will cost points*****

9. Arrange the following compounds according to their boiling points by writing highest bp, middle bp, and lowest bp under the structure. (3 pts)

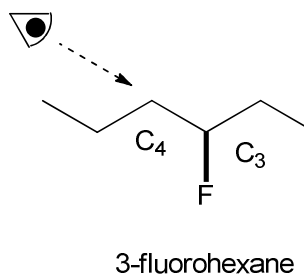


- 10 a. Draw two additional resonance structures for the following compound. (6 pts)
b. Decide which is the better resonance structure and explain why you picked this structure. (3 pts)



11. a. Write Newman projections for the three staggered conformations of 3-fluorohexane, looking down the C4 - C3 bond. (6 pts)

b. write most stable under the most stable conformation. (1 pt)



*****Insurance Question (5 pts)*****

Circle the structural isomers of $C_{12}H_{20}O$. All molecules have 12 carbons.

