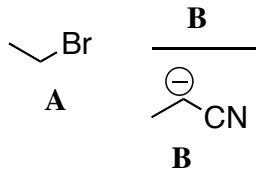
Chem 331

Name _____

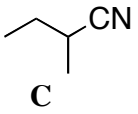
Exam #2
Friday, October 24, 2008

This is an open-book, open notes exam. Please show your work in detail.

1. (20 points) Draw the structures of **B** and **C**.

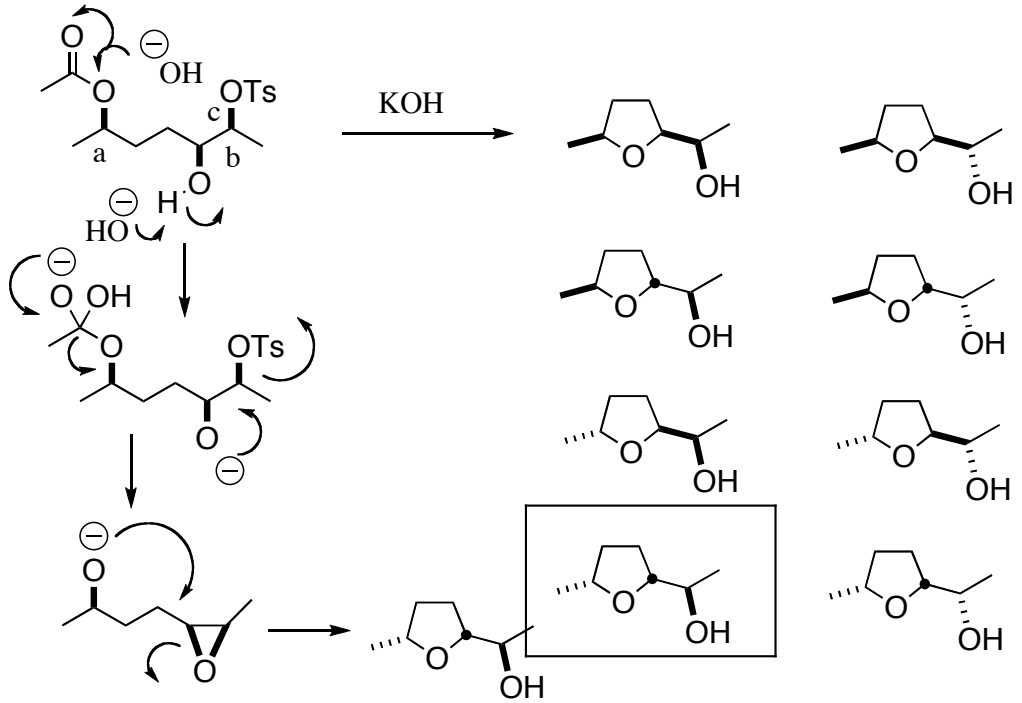


C C_5H_9N



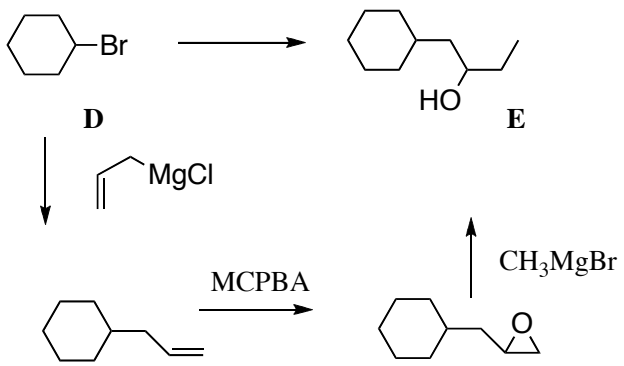
^{13}C NMR	**^{1}H NMR**
122.9, s	1.09, t, J = 7.6 Hz, 3H
27.3, t	1.28, d, J = 7.9 Hz, 3H
27.1, d	1.63, m, 2H
17.6, q	2.57, m, 1H
1.4, q	

2. (20 points) Indicate the expected major product. Explain your reasoning in detail.

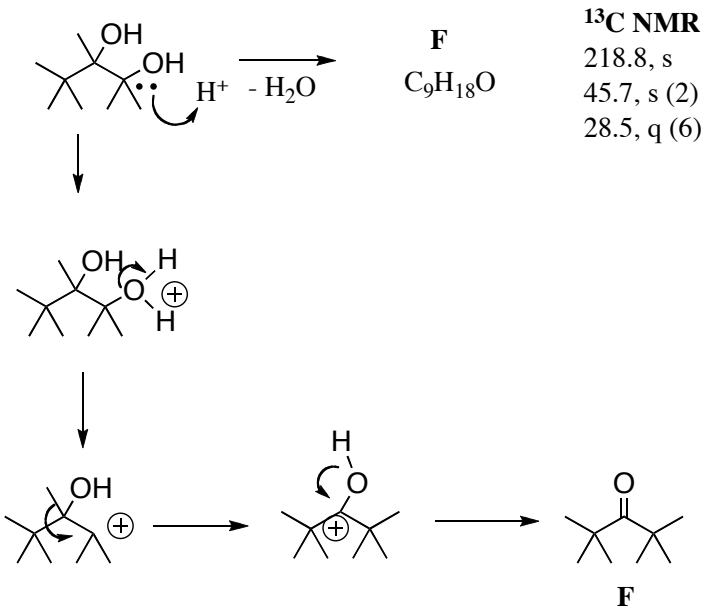


Stereogenic centers: b and c are inverted, a is unchanged

3. (20 points) Outline the synthesis steps to convert **D** into **E**. In addition to **D**, you may use any piece that contributes three or fewer carbons to the final product.



4. (20 points) Deduce the stucture of **F**, and draw an arrow-pushing mechanism for the transformation.



F
$C_9H_{18}O$

^{13}C NMR
218.8, s
45.7, s (2)
28.5, q (6)

^{1}H NMR
1.25, s, 18H

5. (20 points) Draw a detailed arrow-pushing mechanism for the following transformations. For each transformation, 3 points for correctly showing the mapping of the starting material onto the product, and 7 points for the arrow-pushing mechanism.