

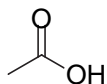
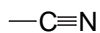
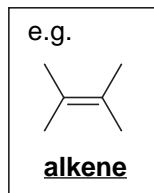
Chem 331
Final exam
December 13, 2002
Prof. Fox
180 minutes

The exam is open book,
Open notes. Models are permitted
Show your work in detail
300 points

WRITE YOUR NAME ON EVERY PAGE

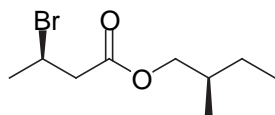
NAME _____

1. Identify the following functional groups (Total 10 points)

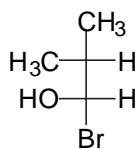


2. Provide IUPAC names for the following (15 points each)

a

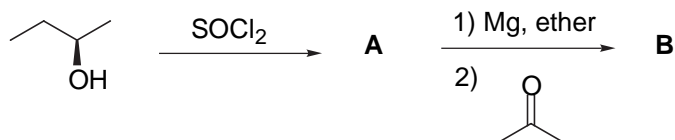


b

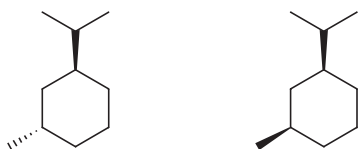


3. Draw the structures of **A** and **B**. You do not need to provide mechanisms. Stereochemistry is important!

(20 points)

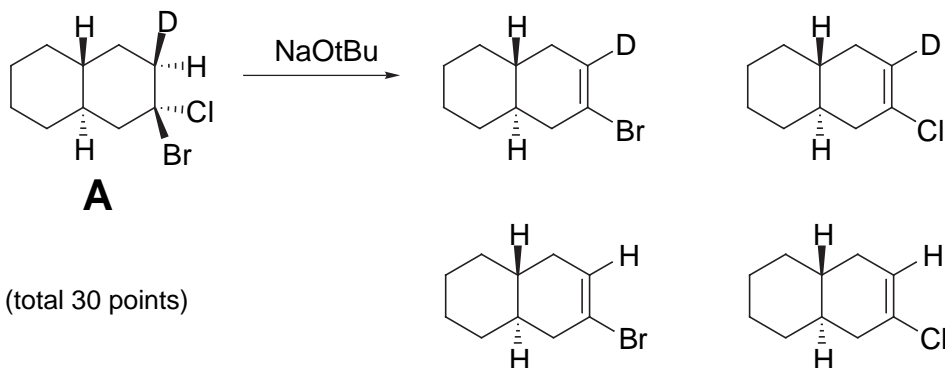


4. Circle the compound that is more stable (0 points). Draw clear 3-D chair representations of the two compounds and describe how your drawings support your answer (20 points).



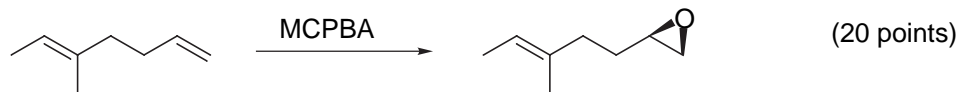
5. Compound **A** would undergo E2 elimination if treated with NaOtBu. Explain which one of the four possible products below would be formed. To receive full credit, you must:

- circle the correct product (5 points)
- draw a clear 3-D representation of the trans-decalin framework **1** (12 points)
- provide a mechanism and description of why only one compound is formed (13 points)

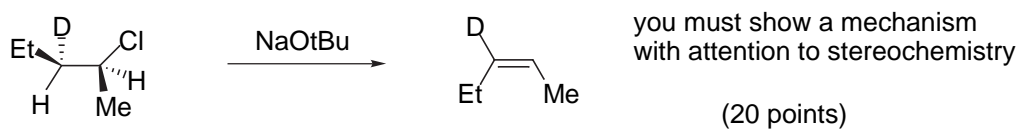


6. The reactions below would not proceed as shown. Explain why (be concise), and indicate which product would be formed instead.

a.

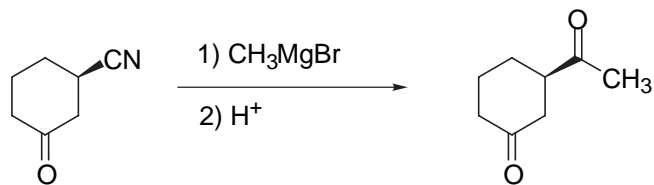


b.



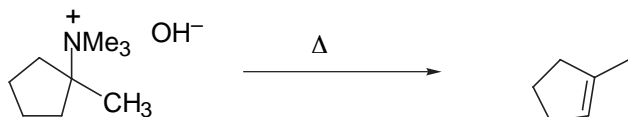
6(continued) The reactions below would not proceed as shown. Explain why (be concise), and indicate which product would be formed instead.

c.



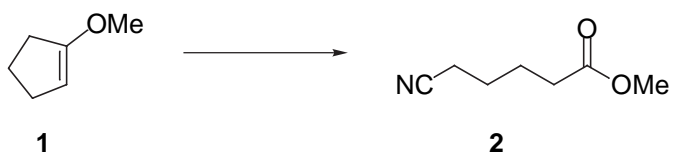
(20 points)

d.

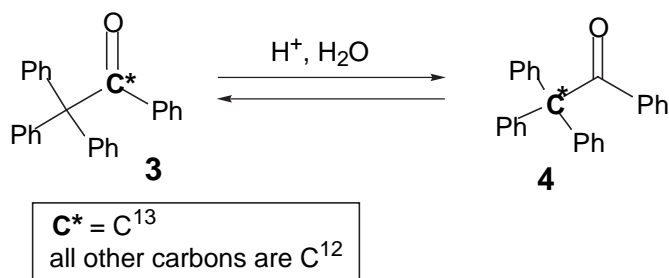


(20 points)

7. Propose a multistep synthesis of **2** using **1** and any other materials. (40 points)



8. Propose a detailed mechanism for the interconversion of **3** and **4**. (35 points)



9. Propose a detailed mechanism

(35 points)

