

Second Exam

Name (PRINT) KEY, ANSWER
Last, First

Chemistry 3331

Signature _____

October 20, 2006

ID# _____

Please circle class time.

Dr. Bean's 10:00 AM

Dr. Bean's 1:00 PM

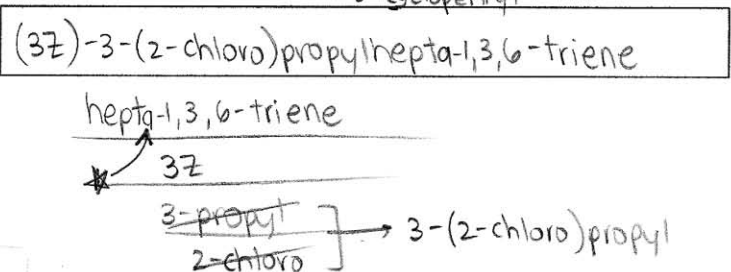
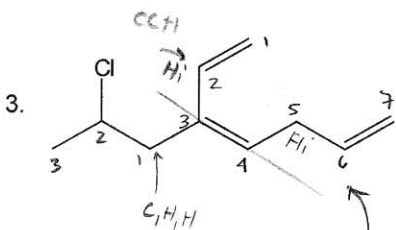
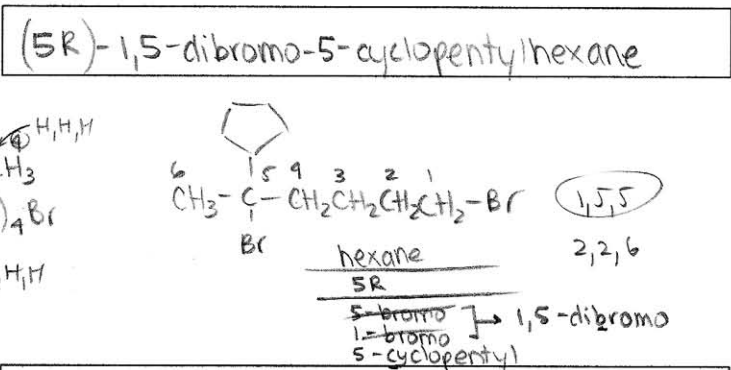
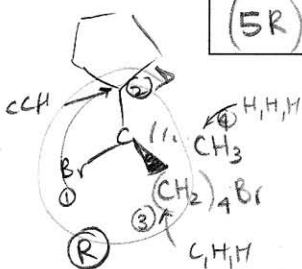
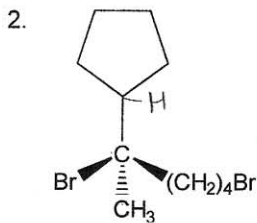
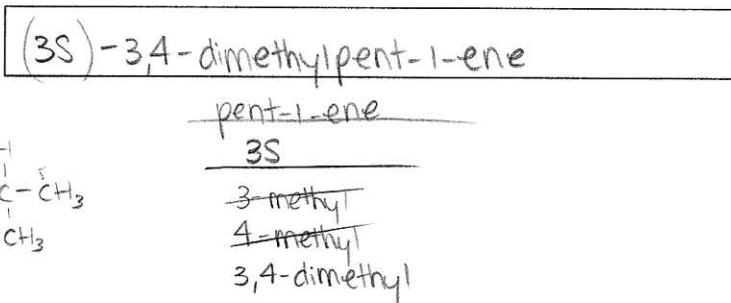
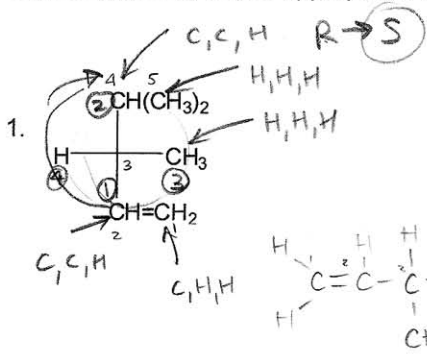
Page #	Score	
1. 16 pts.		
2. 12 pts.		
3. 14 pts.		
4. 18 pts.		
5. 18 pts.		
6. 11 pts.		
7. 11 pts.		

TOTAL _____

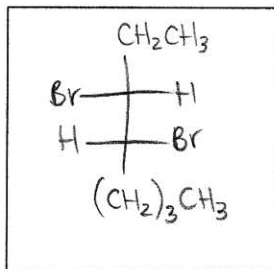
Note: Present your student ID when you return the exam booklet

A. Nomenclature: (16 points)

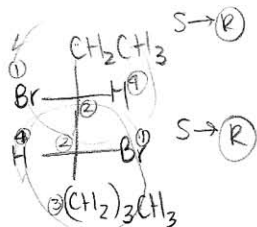
Give an acceptable IUPAC name for compounds 1-3. Be sure to indicate the **Stereochemistry** where appropriate. Draw a proper Fischer projection for compound 4.



TRY to fit as many double bonds in parent chain regardless of length.. BOTH 'Hi's' ON **Z** SAME SIDE

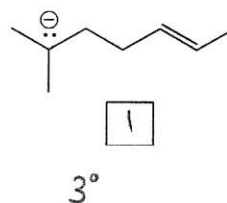
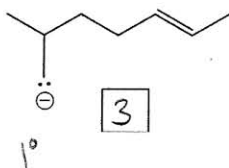
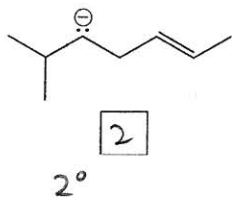


4. (3R, 4R) - 3,4-dibromooctane

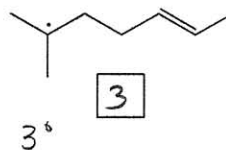
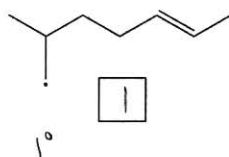
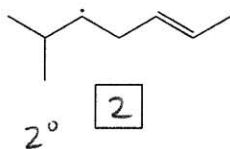


B. Facts: Total points = 26

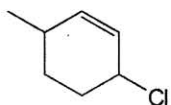
1. Place the following carbanions in order of increasing stability. (1=least stable, 3=most stable) (3pts.)



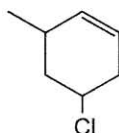
2. Place the following radicals in order of increasing stability. (1=least stable, 3=most stable) (3pts.)



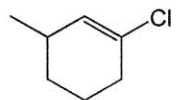
3. Rank the following alkyl chlorides in order of increasing reactivity in an E1 process. (1=least reactive, 3=most) (3 pts.)



3 2° w/ rez

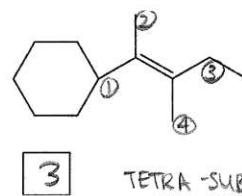
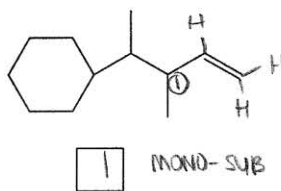
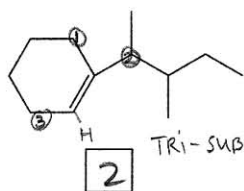


2 2°

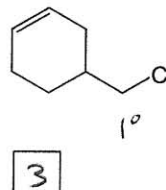
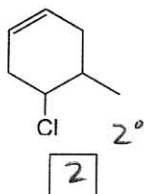
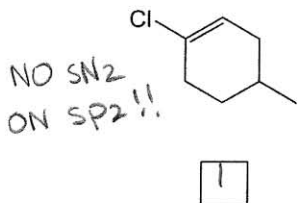


1 NOT HAPPENING

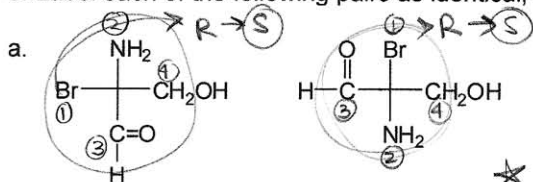
4. Place the following alkenes in order of increasing stability. (1=least stable, 3=most stable) (3 pts.)



5. Rank the following alkyl chlorides in order of increasing reactivity in an S_N2 process. (1=least reactive, 3=most) (3 pts.)

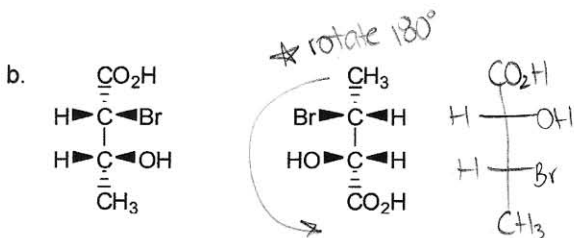


6. Label each of the following pairs as identical, structural isomers, enantiomers or diastereomers. (9 pts.)

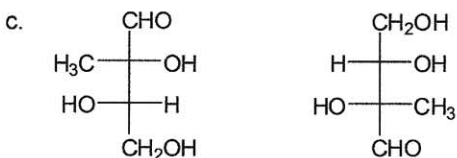


identical

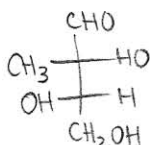
* w/ one chiral carbon, it can only be either identical/enantiomers.



structural

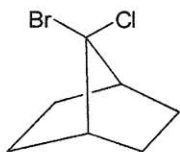


identical

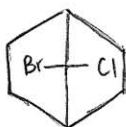


achiral

7. Label any chiral carbons with an asterisk (*). Is the molecule chiral or achiral?

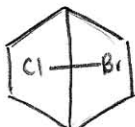


TOP VIEW



MIRROR

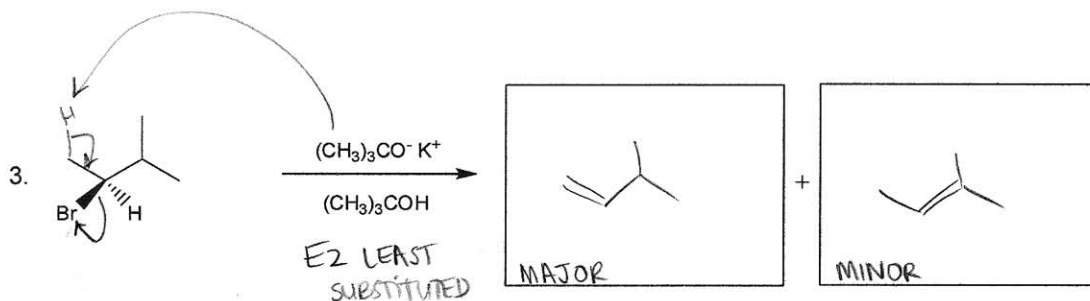
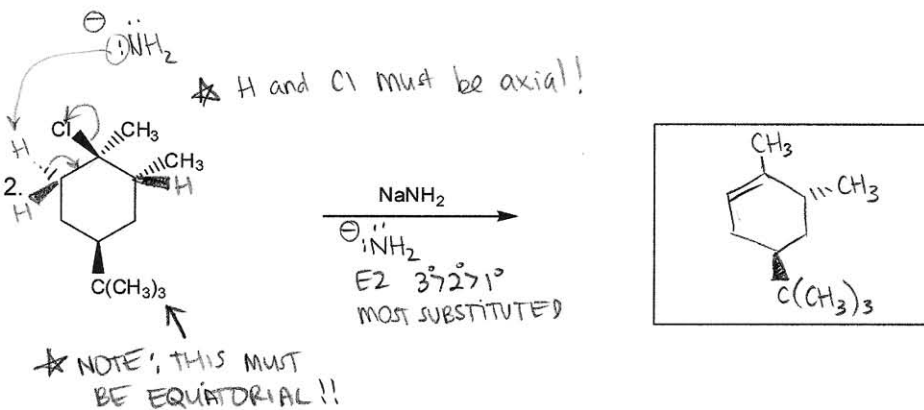
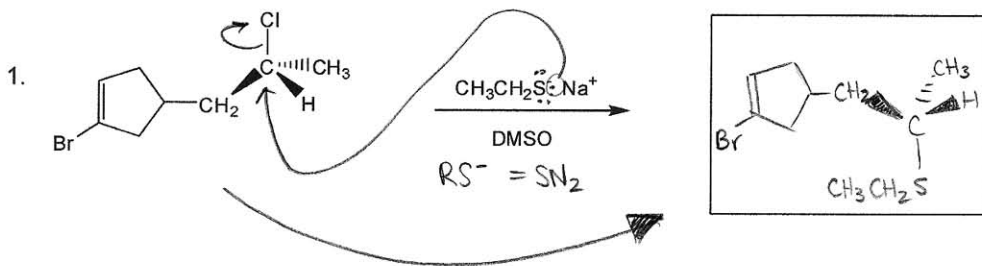
MIRROR IMG



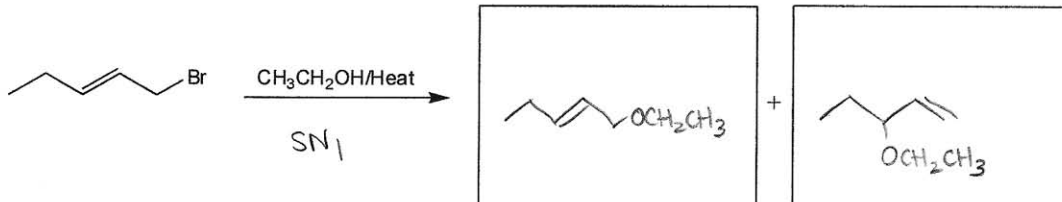
* THE MIRROR IMG IS SUPERIMPOSABLE ON THE ORIGINAL IF YOU ROTATE IT 180° , THEREFORE THE MOLECULE IS ACHIRAL

C. Reactions: Total = 36 points, 6 points each

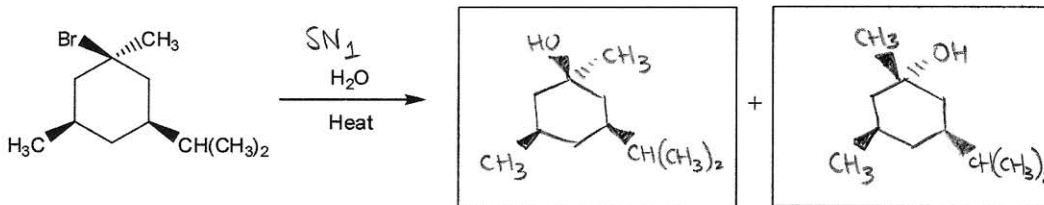
Please provide the major product in the answer box unless otherwise indicated. Be sure your drawing indicates stereochemistry if applicable.



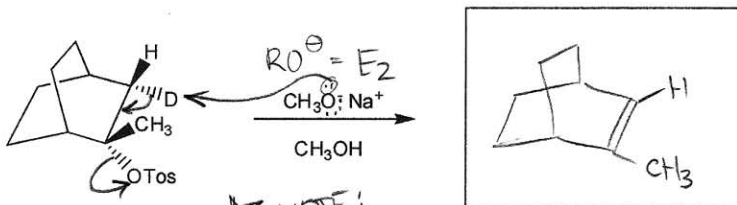
4.



5.



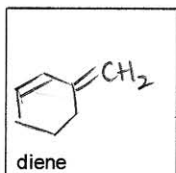
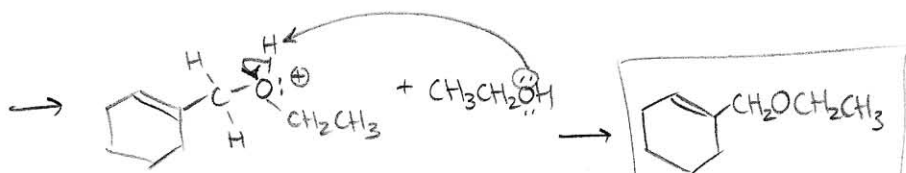
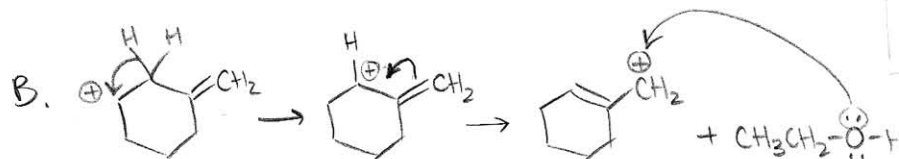
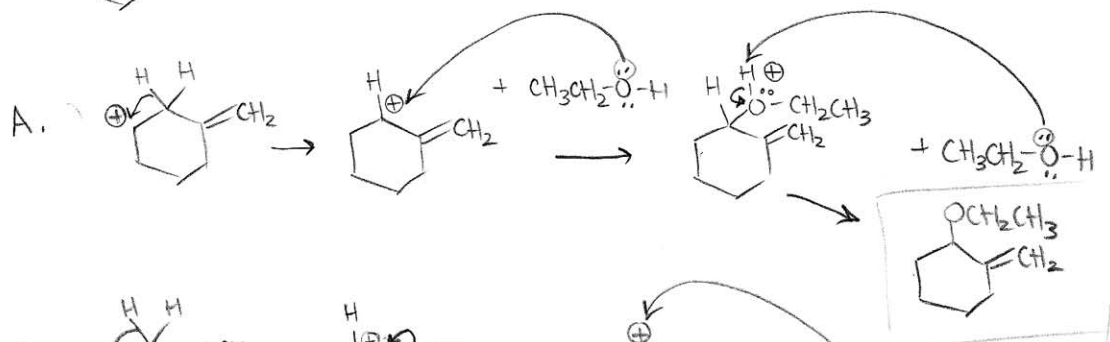
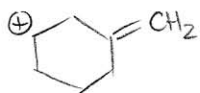
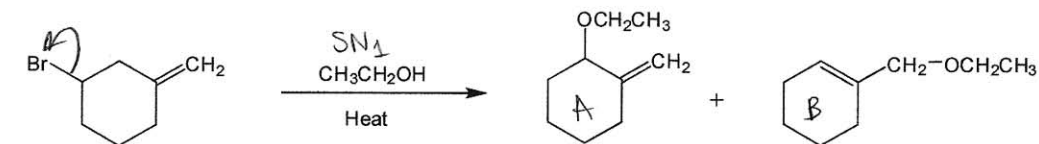
6.



★ NOTE!
ON FIXED
BICYCLIC COMPOUNDS
LIKE THIS, PERFORMING E_2 WILL
ATTACK SYN INSTEAD OF AXIAL
AT THIS POSITION!

D. Mechanisms: (11 points)

The reaction presented below produces several products. Provide clear mechanisms to explain the formation of the two products shown. Use curved arrows to indicate "electron flow". Remember to show only one step at a time. Show all intermediates and all formal charges. Do not show transition states! In the box below, draw the structure of a diene formed in this reaction.



★ recall, $\text{S}_{\text{N}}1$ competes with $\text{E}1$. so you could eliminate the Br to make a double bond. two double bonds in a molecule is a diene.

E. Synthesis: (11 points)

Synthesize the molecule below from any alkane or cycloalkane of five carbons or less and any inorganic reagents. (Please do not include mechanisms!)

