

Chemistry 333

Examination #2

July 5, 2005

Professor Charonnat

Name: _____

Be certain that your examination has six (6) pages including this one.

Put your name on **each** page of this examination booklet.

By putting your name on this examination booklet you agree to abide by California State University, Northridge policies of academic honesty and integrity.

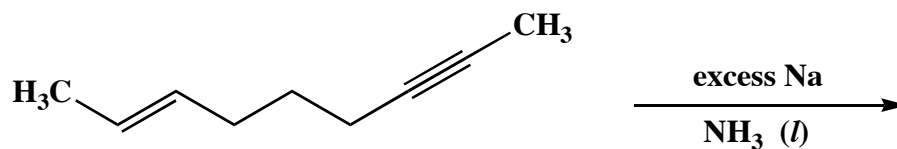
Molecular models are allowed for this examination. All electronic devices, including calculators, are unnecessary and are not allowed.

Name: _____

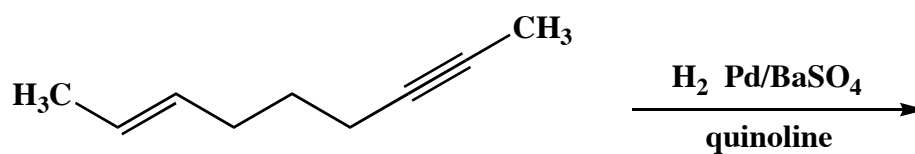
1. (25 points)

Draw the major organic product for each of the following five (5) reactions. Clearly specify stereochemistry, if relevant.

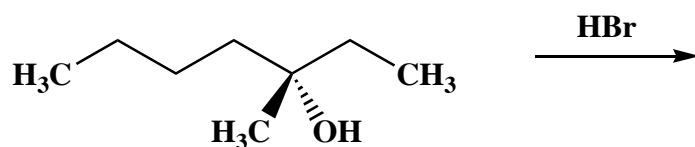
A.



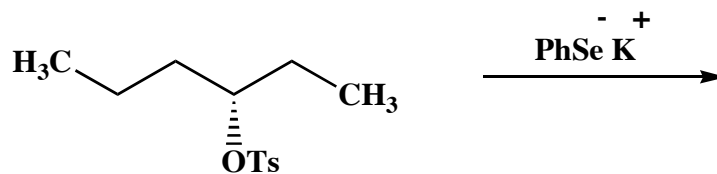
B.



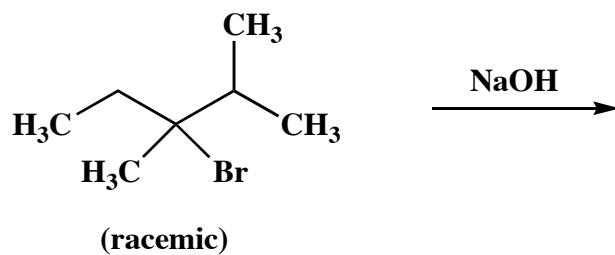
C.



D.



E.



Name: _____

2. (30 points)

Answer the following three (3) questions precisely, succinctly and with correct grammar. Draw diagrams to illustrate each answer.

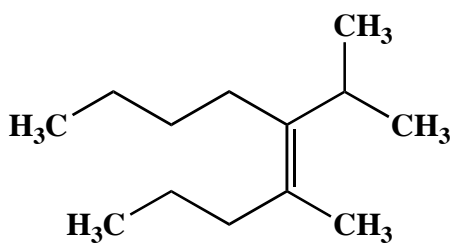
A. Explain how an S_N1 mechanism differs from an S_N2 process.

B. Explain how an E1 mechanism differs from an E1cB process.

C. Explain why alkyl iodides are good substrates for nucleophilic substitutions, but alkyl fluorides are not.

3. (10 points)

Use IUPAC nomenclature to write the systematic name of the following alkene.



Name: _____

4. (25 points)

Circle the number that corresponds to the correct answer for each of the following five (5) questions.

A. (2*R*,5*R*)-5-bromo-2-chloroheptane and (2*S*,5*R*)-5-bromo-2-chloroheptane are

1. identical
2. enantiomers
3. diastereomers
4. regioisomers
5. different compounds that are not isomeric

B. (2*R*,5*R*)-5-bromo-2-chloroheptane and (2*S*,5*S*)-5-bromo-2-chloroheptane are

1. identical
2. enantiomers
3. diastereomers
4. regioisomers
5. different compounds that are not isomeric

C. (2*R*,5*R*)-5-bromo-2-chloroheptane and (2*R*,5*R*)-2-bromo-5-chlorohexane are

1. identical
2. enantiomers
3. diastereomers
4. regioisomers
5. different compounds that are not isomeric

D. (2*R*,5*R*)-5-bromo-2-chloroheptane and (2*R*,4*S*)-4-bromo-2-chloroheptane are

1. identical
2. enantiomers
3. diastereomers
4. regioisomers
5. different compounds that are not isomeric

E. Which of the following compounds is the most reactive in E2 eliminations?

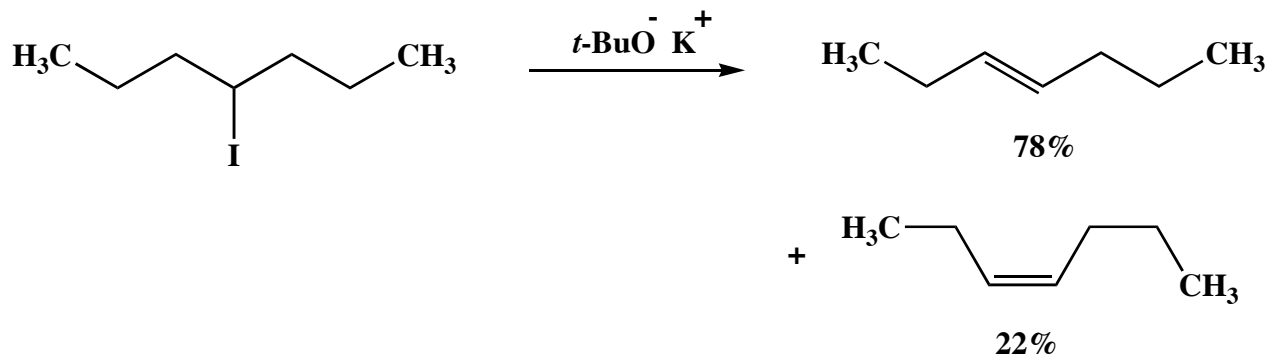
1. 2-bromo-2-methylpentane
2. 2-bromopentane
3. 3-bromo-2-methylpentane

Name: _____

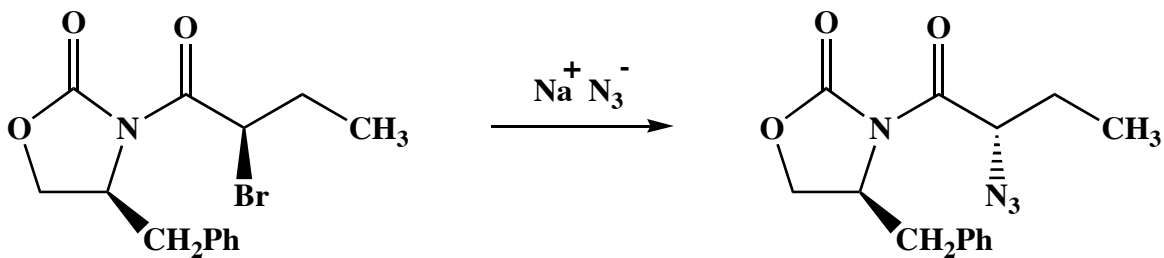
5. (30 points)

State whether each of the following three (3) reactions is non-enantioselective, partially enantioselective, completely enantioselective, non-diastereoselective, partially diastereoselective or completely diastereoselective. Describe your reasoning clearly and succinctly.

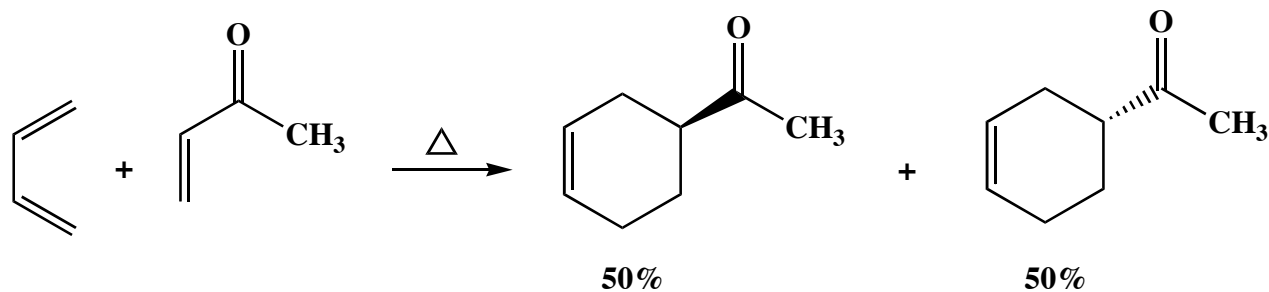
A.



B.



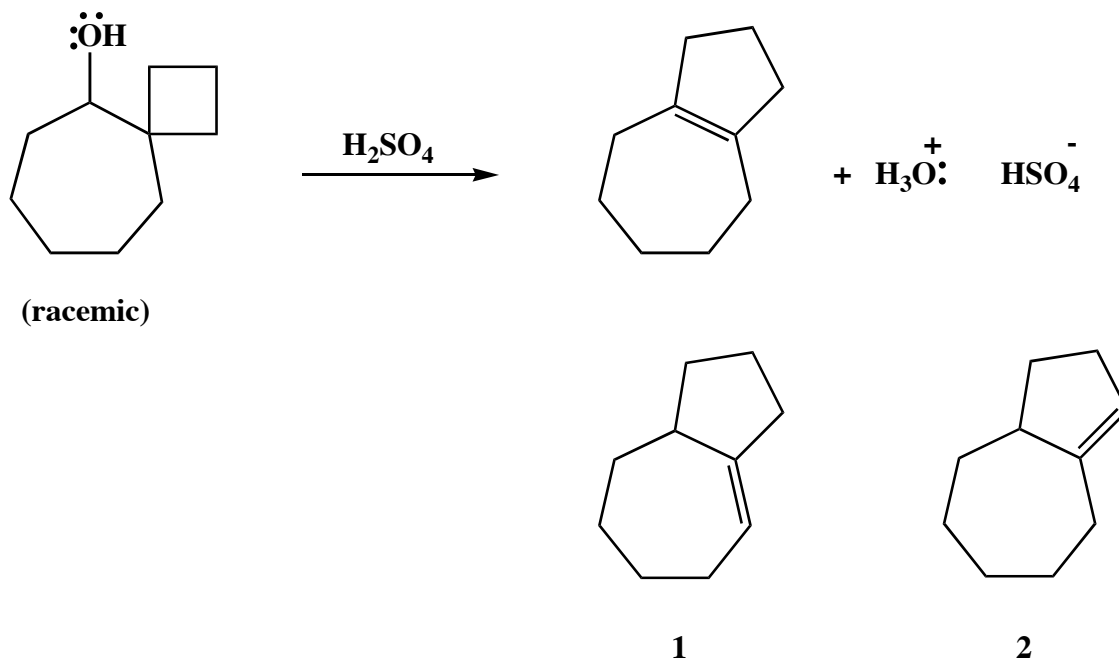
C.



Name: _____

6. (30 points)

Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Denote **all** lone pairs, nonzero formal charges, countercharges, and reversibility or nonreversibility. Explain clearly why the regioisomeric alkenes **1** and **2** could be formed, but are not.



Congratulations!

1	/25
2	/30
3	/10
4	/25
5	/30
6	/30
Total:	/150