

Chemistry 334

Examination #1

July 25, 2011

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.

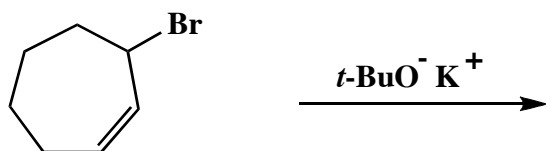
Molecular models are allowed for this examination. All electronic devices, including calculators, are unnecessary and are not allowed.

Name: _____

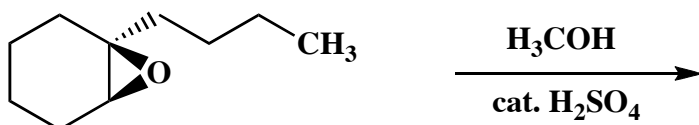
1. (25 points)

Draw the structure of the expected major organic product for each of the following five (5) questions. Specify stereochemistry clearly, if relevant.

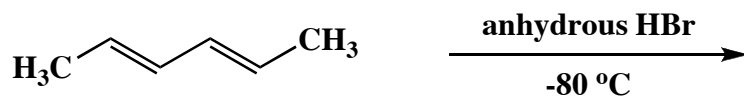
A.



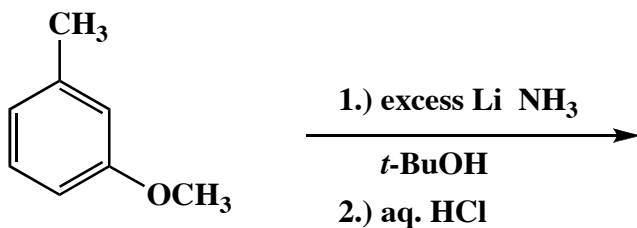
B.



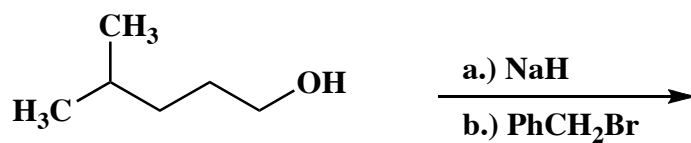
C.



D.



E.

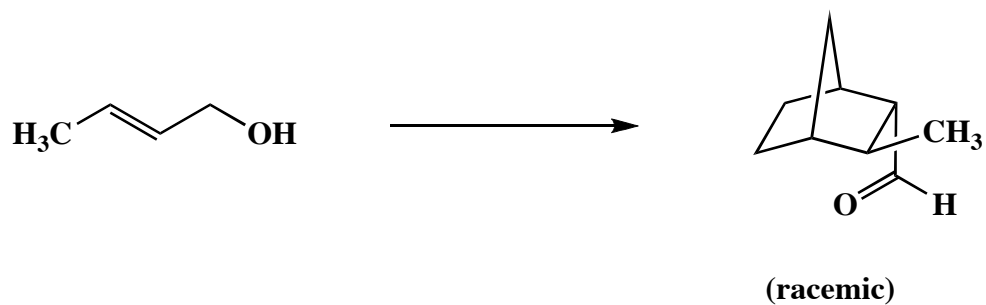


Name: _____

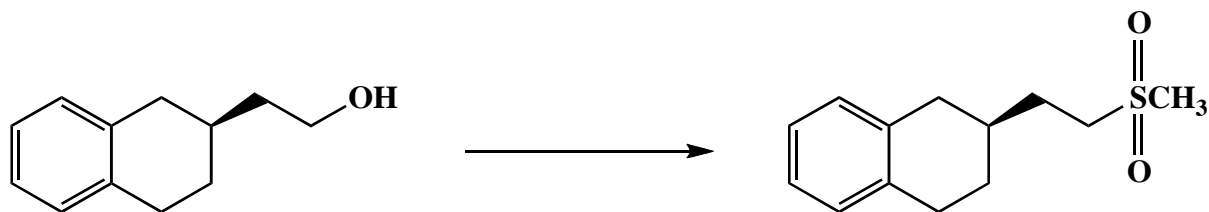
2. (40 points)

Draw the specific reagent(s) necessary to effect the following three (3) transformations. If more than one reaction is involved in an answer, be certain to distinguish the individual steps clearly.

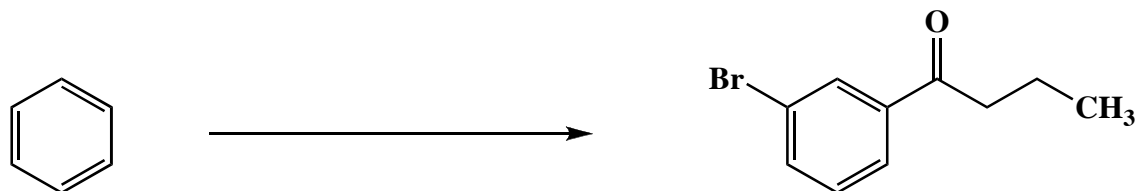
A.



B.



C.



Name: _____

3. (25 points)

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

A. The broadband proton-decoupled ^{13}C NMR spectrum of 1-bromo-3,5-dimethylbenzene has

1. four resonances
2. five resonances
3. eight resonances

B. Diels-Alder reactions proceed via

1. radical intermediates
2. carbocation intermediates
3. a concerted one-step mechanism

C. Which of the following dienes is conjugated?

1. hepta-1,6-diene
2. (2*E*,4*E*)-hepta-2,4-diene
3. (*E*)-hepta-1,5-diene

D. Which reagent can epoxidize an alkene?

1. $\text{F}_3\text{CCO}_3\text{H}$
2. $\text{F}_3\text{CCO}_2\text{H}$
3. $\text{F}_3\text{CCH}_2\text{OH}$

E. The allyl radical

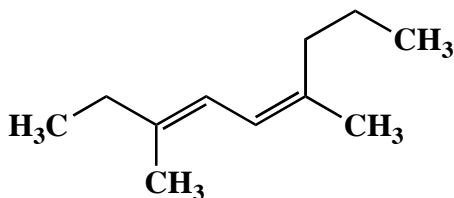
1. has the same stability as a secondary alkyl radical
2. has the same stability as a tertiary alkyl radical
3. is more stable than a tertiary alkyl radical

Name: _____

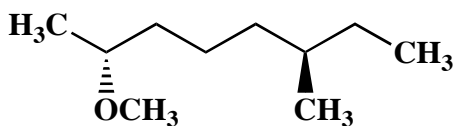
4. (20 points)

Use IUPAC nomenclature to write the systematic names of the following two (2) compounds.

A.



B.



5. (20 points)

A. Specify all the criteria that must be met for a compound to be aromatic.

B. Draw a specific example for each of the following three (3) categories: aromatic, antiaromatic, and nonaromatic (neither aromatic nor antiaromatic).

aromatic

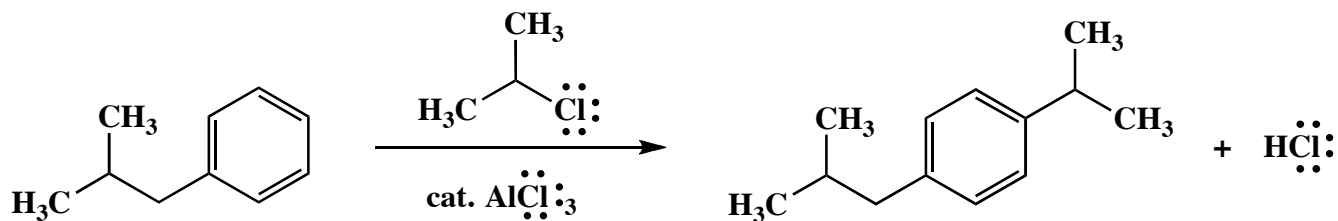
antiaromatic

nonaromatic

Name: _____

6. (20 points)

Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show all intermediates and denote all unshared electrons, nonzero formal charges, and countercharges where appropriate. Draw all important resonance contributors for intermediates.



Congratulations!

1	/25
2	/40
3	/25
4	/20
5	/20
6	/20
Total:	/150