Chemistry 333

Examination #3

May 1, 2006 Professor Charonnat

Name: _____

Be certain that your examination has four (4) 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.

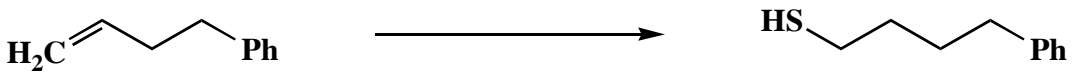
Molecular models are allowed for this examination. All electronic devices, including calculators, are unnecessary and are not allowed.

Name: _____

1. (25 points)

Draw the 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.

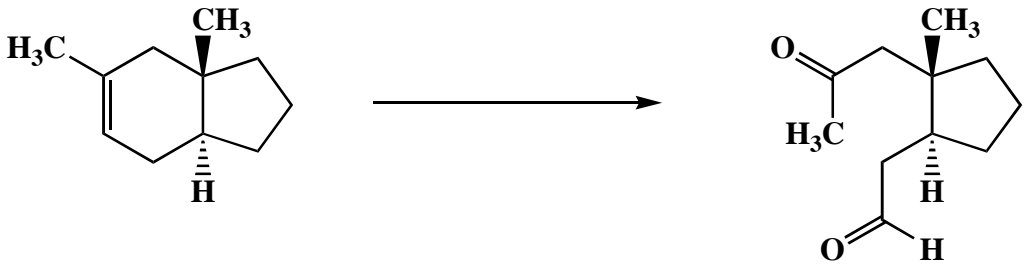
A.



B.

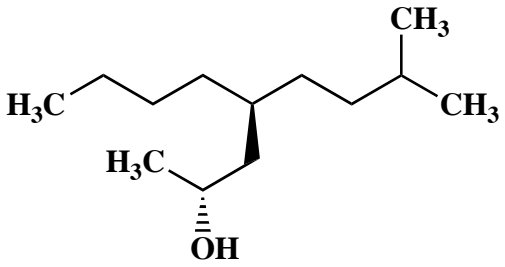
(racemic) **(racemic)**

C.



2. (10 points)

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



Name: _____

3. (20 points)

Circle the number that corresponds to the correct answer for each of the following four (4) questions.

A. The reaction of an alkyl thiol with dilute, aqueous hydrogen peroxide affords

1. a sulfide
2. a disulfide
3. a sulfonic acid

B. The Simmons-Smith cyclopropanation of (*E*)-3-methylpent-2-ene occurs via

1. a multistep ionic mechanism
2. a multistep radical mechanism
3. a concerted cycloaddition mechanism

C. Swern oxidation of (2*S*,4*S*)-4-ethylheptan-2-ol affords

1. a ketone
2. an aldehyde
3. a carboxylic acid

D. The hydroboration of 1-octyne with disiamylborane affords

1. a ketone
2. an aldehyde
3. an alcohol

4. (20 points)

Answer the following two (2) questions precisely, succinctly and with correct grammar.

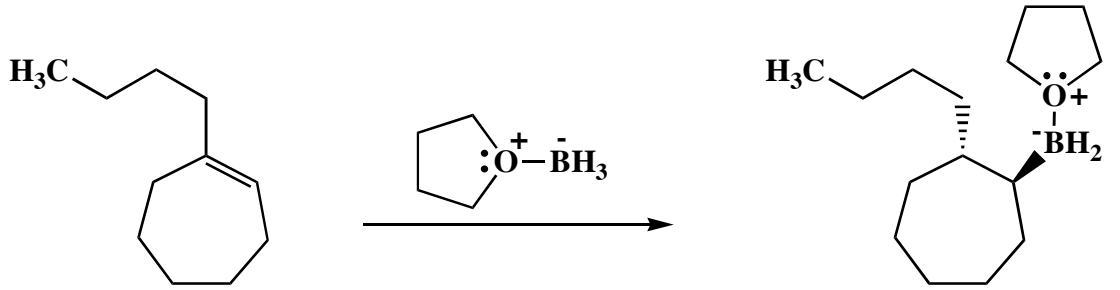
A. Why are terminal alkynes more acidic than terminal alkenes?

B. Why is double dehydrohalogenation of 1,1- or 1,2-dibromoalkanes usually not a satisfactory method to synthesize alkynes?

Name: _____

5. (25 points)

Draw the mechanism of the following transformation, using the curved-arrow notation to indicate the reorganization of electron density. Show **all** primary mechanistic steps and intermediates. Denote **all** unshared electrons, charges and countercharges. Finally, explain why the observed regiochemical and stereochemical results are obtained.



(racemic)

Congratulations!

1	/25
2	/10
3	/20
4	/20
5	/25
Total:	/100