

Chemistry 333

Hour Examination #3

November 23, 1998

Professor Charonnat

Name: _____

Be certain that your examination has five (5) pages including this one.

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

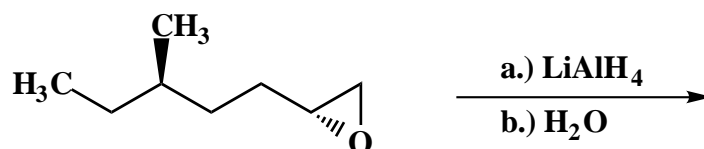
By putting your name on this examination booklet you agree to abide by California State University, Northridge policies of academic honesty and integrity.

Name: _____

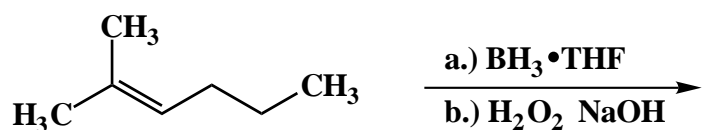
1. (25 points)

For each of the following five (5) questions specify the expected major organic product. If relevant, **clearly** specify the relative and/or absolute stereochemistry of the product.

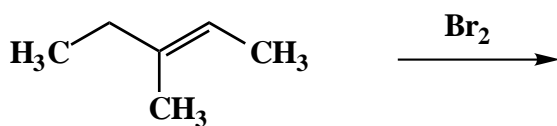
A.



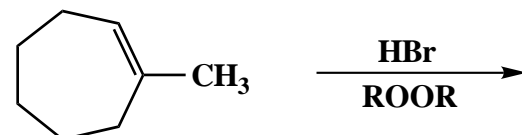
B.



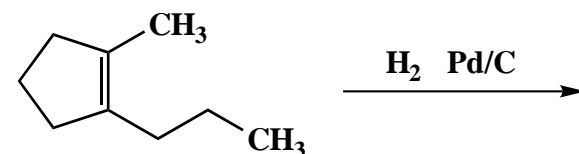
C.



D.



E.



Name: _____

2. (20 points)

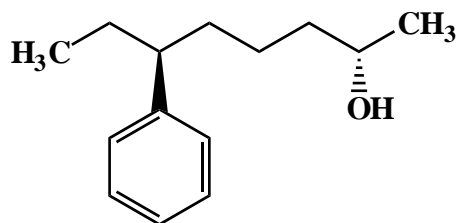
Answer the following two (2) questions precisely, succinctly and with correct grammar.

A. Why does addition of anhydrous HBr to 3,3-dimethyl-1-butene give 2-bromo-2,3-dimethylbutane, not 3-bromo-2,2-dimethylbutane? Draw appropriate intermediates to illustrate your answer.

B. Why is pyridinium chlorochromate, not Jones reagent, used to oxidize a primary alcohol to the corresponding aldehyde?

3. (10 points)

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



Name: _____

4. (20 points)

For each of the following five (5) questions, circle the number that corresponds to the correct answer.

A. Addition of dichlorocarbene to an alkene occurs via:

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

B. Reaction of (*R*)-3-nonanol with phosphorus tribromide affords 3-bromononane with:

1. inversion of configuration
2. partial inversion of configuration
3. retention of configuration

C. Addition of an excess of methylmagnesium bromide to the ester, ethyl acetate, followed by aqueous workup, gives:

1. a primary alcohol
2. a secondary alcohol
3. a tertiary alcohol

D. The oxidation level of a ketone is:

1. one level higher than the corresponding secondary alcohol
2. at the same level as the corresponding secondary alcohol
3. one level lower than the corresponding secondary alcohol

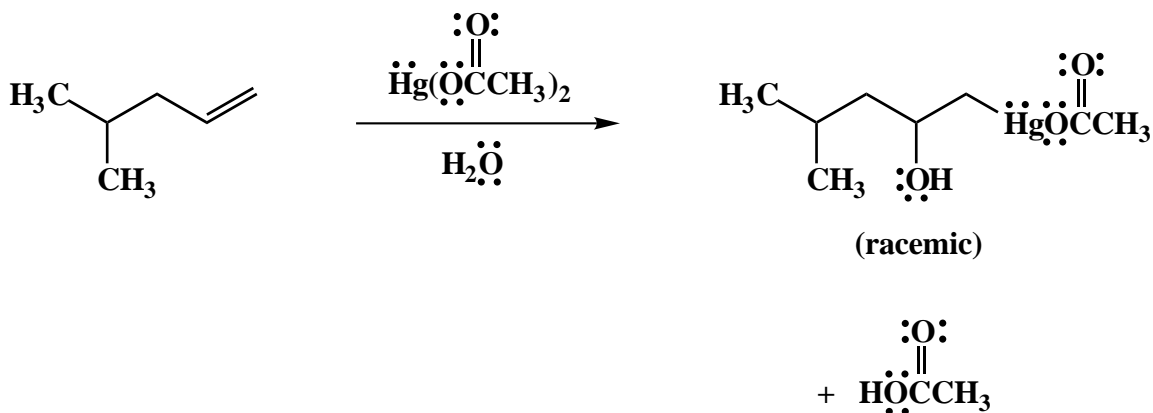
E. Ozonolysis of a trisubstituted alkene, followed by reductive workup, affords:

1. two aldehydes
2. an aldehyde and a ketone
3. two ketones

Name: _____

5. (25 points)

Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show **all** intermediates, lone pairs and formal charges. (N.B. Additional unshared electrons on mercury are not shown for graphical clarity.) Comment briefly why a racemic mixture of the organomercurial product is obtained.



Have a very happy Thanksgiving!

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