

Chemistry 333

Examination #3

May 2, 2005

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.

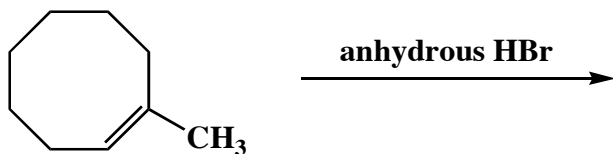
Molecular models are allowed for this examination. All electronic devices, including calculators, are unnecessary and are not allowed.

Name: _____

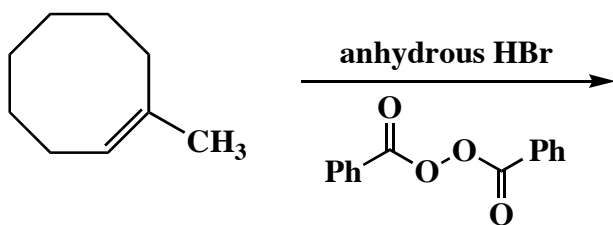
1. (25 points)

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

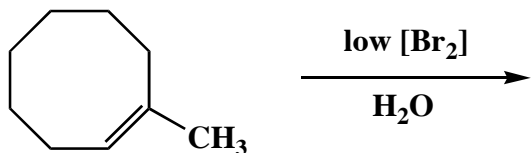
A.



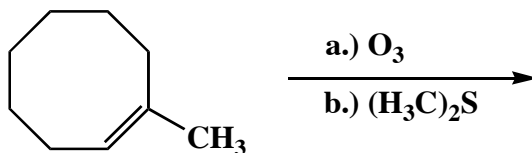
B.



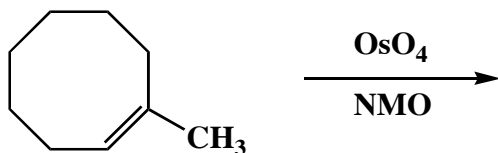
C.



D.



E.



Name: _____

2. (25 points)

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

A. The reaction of (*S*)-hexan-3-ol with thionyl chloride (SOCl_2) affords the corresponding alkyl chloride

1. as a racemic mixture
2. with inversion of configuration
3. with retention of configuration

B. The reaction of pentan-2-one ($\text{H}_3\text{CCH}_2\text{CH}_2\text{COCH}_3$) with lithium aluminum hydride (LiAlH_4) affords the corresponding alcohol. This reaction is an example of

1. an oxidation
2. a reduction
3. a hydration

C. Which of the following compounds will not react with pyridinium chlorochromate (PCC)?

1. pentan-1-ol
2. pentan-3-ol
3. 2-methylpentan-2-ol

D. Hydroboration of alkenes involves

1. anti addition of a hydrogen and a boron species
2. syn addition of a hydrogen and a boron species
3. both syn and anti addition of a hydrogen and a boron species

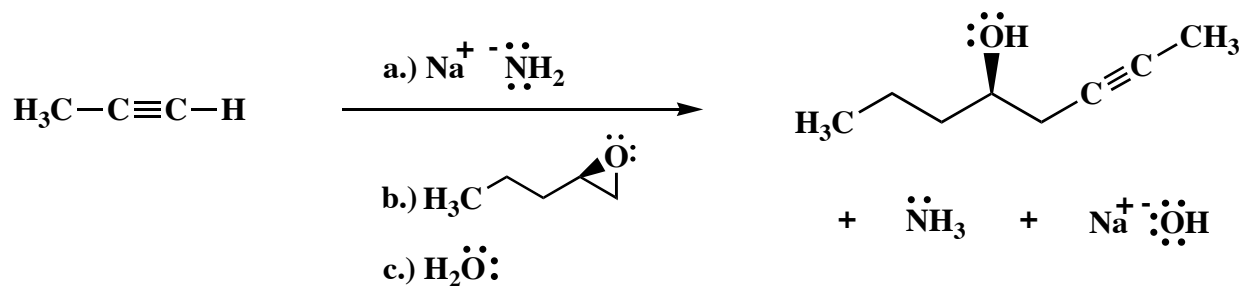
E. Rank the following compounds from most to least acidic.

1. pent-1-yne; 2-methylpent-1-ene; 2-methylpentane
2. pent-1-yne, 2-methylpentane, 2-methylpent-1-ene
3. 2-methylpent-1-ene; pent-1-yne; 2-methylpentane

Name: _____

3. (25 points)

Draw the mechanism of the following transformation, using the curved-arrow notation to indicate the reorganization of electron density. Show all intermediates. Denote all unshared electrons, charges and countercharges. Explain why the observed regiochemical result is obtained. Finally, explain why the product is enantiomerically pure.

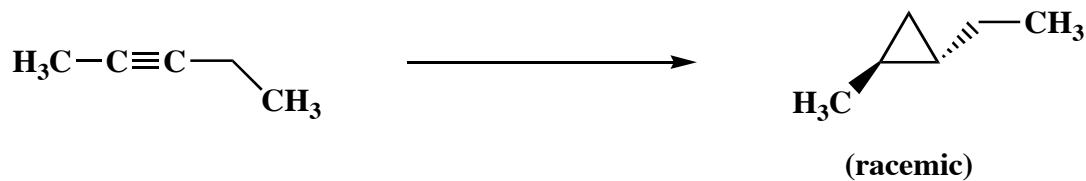


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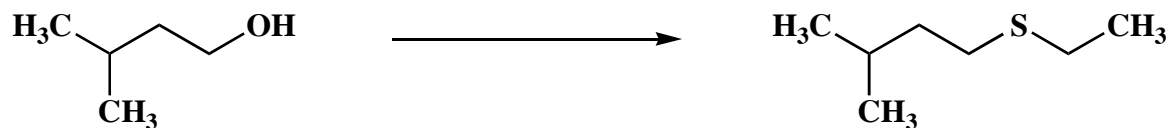
4. (25 points)

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.

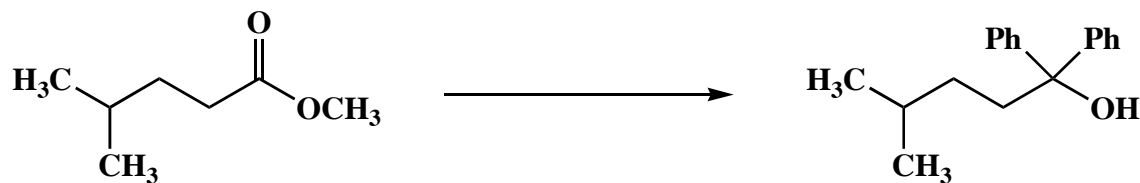
A.



B.



C.



Congratulations!

1	/25
2	/25
3	/25
4	/25
Total:	/100