

Average = 62

High = 100

Low = 14

CHEM 3311-200 Fall 2006

Exam 3

Professor R. Hoenigman

I pledge to uphold the CU Honor Code:

Signature _____

Name (printed) _____

Last four digits of your student ID number _____

Recitation TA _____

Recitation number, day, and time _____

You have 1 hour and 30 minutes to complete this exam.

No model kits or calculators allowed.

Periodic table and scratch paper are attached.

DO NOT TURN THIS PAGE UNTIL INSTRUCTED TO DO SO.

Recitation Sections:

#	Day	Time	TA
211	Monday	8 am	Noel
251	Monday	2 pm	Carolynn
291	Monday	5 pm	Heather
252	Tuesday	12 pm	Sam
293	Tuesday	5 pm	Carolynn
212	Wednesday	8 am	Noel
253	Wednesday	1 pm	Tom
292	Wednesday	5 pm	Heather
213	Friday	8 am	Heather

Score:

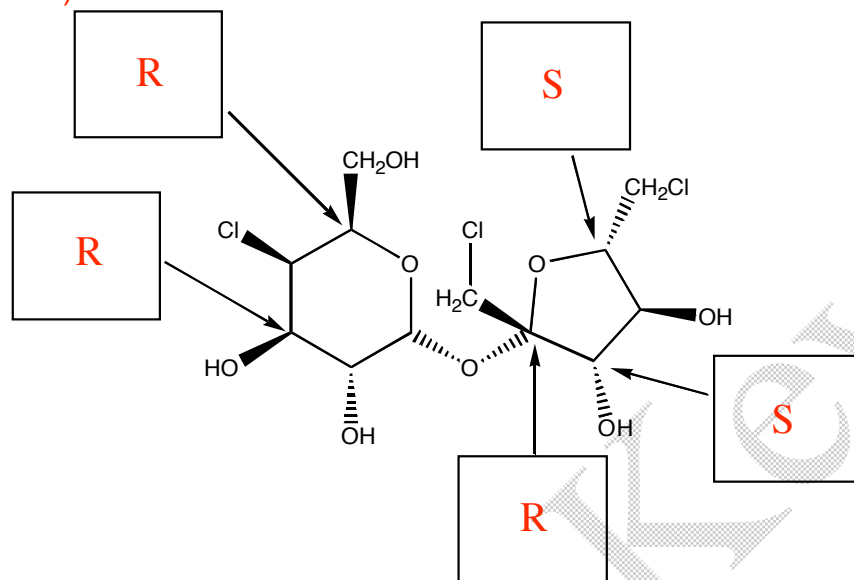
Page 1 _____/16 Page 4 _____/25

Page 2 _____/10 Page 5 _____/10

Page 3 _____/25 Page 6 _____/14

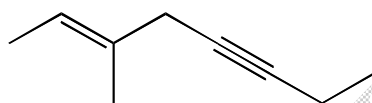
TOTAL _____/100

1. (10 pts) Sucralose is an artificial sweetener with the structure shown below. Label the configuration of each indicated chirality center in sucralose. (2 points each)



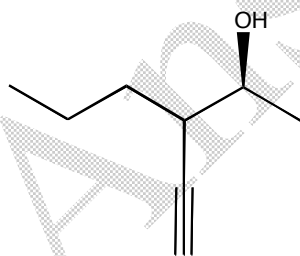
2. (6 pts) Give the IUPAC name for each of the following compounds. (2 points each, -1 point if no stereochemical label or wrong numbers)

A.



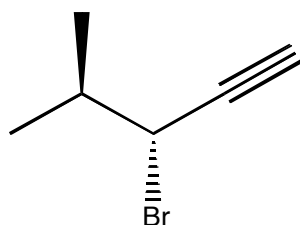
(E)-3-methyl-2-octen-5-yne

B.



(2S)-3-propyl-4-pentyn-2-ol

C.

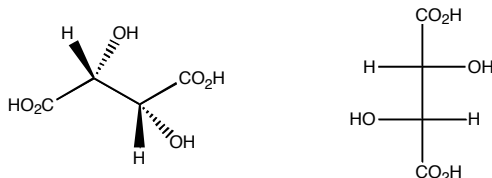


R-3-bromo-4-methyl-1-pentyne

3. (10 pts) Circle the stereochemical relationship between the following pairs of compounds.

(2 points each)

A.



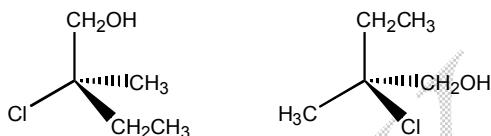
identical

constitutional isomers

enantiomers

diastereomers

B.



identical

constitutional isomers

enantiomers

diastereomers

C. Book Problem 7.33c



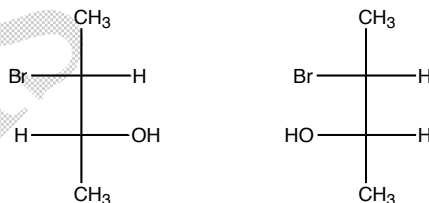
identical

constitutional isomers

enantiomers

diastereomers

D.



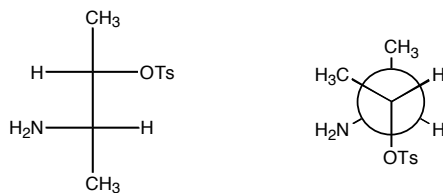
identical

constitutional isomers

enantiomers

diastereomers

E.



identical

constitutional isomers

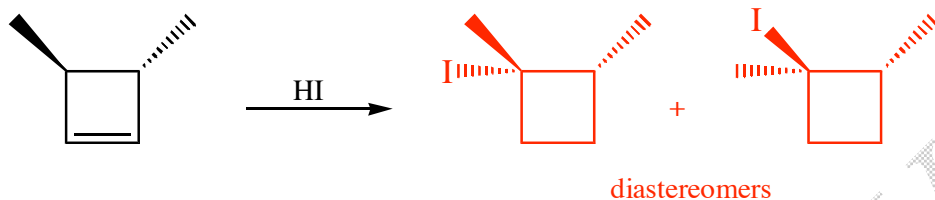
enantiomers

diastereomers

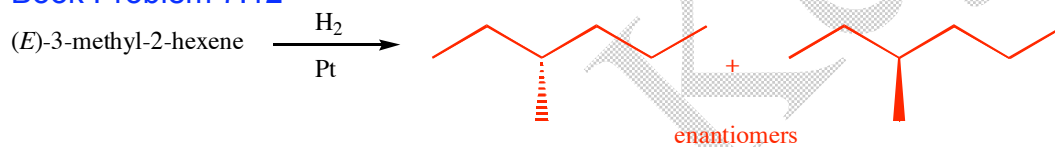
4. (50 pts) Give the major organic product(s) of the following reactions. Be sure to clearly show stereochemistry using dashes and wedges. Write NR if no reaction occurs. **Clearly label any enantiomers, diastereomers, or meso compounds.**

(5 points each)

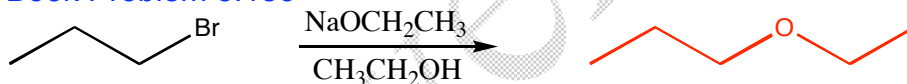
A.



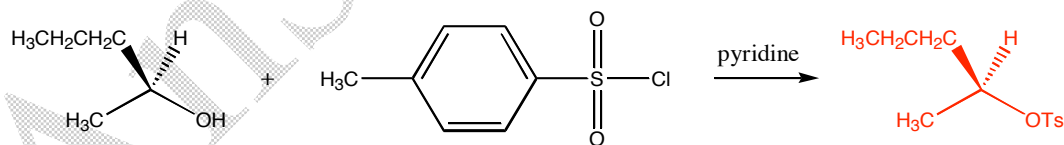
B. Book Problem 7.12



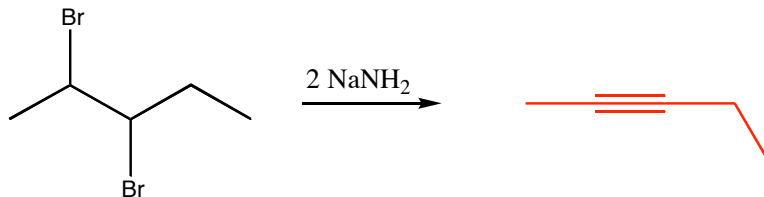
C. Book Problem 8.18c



D.

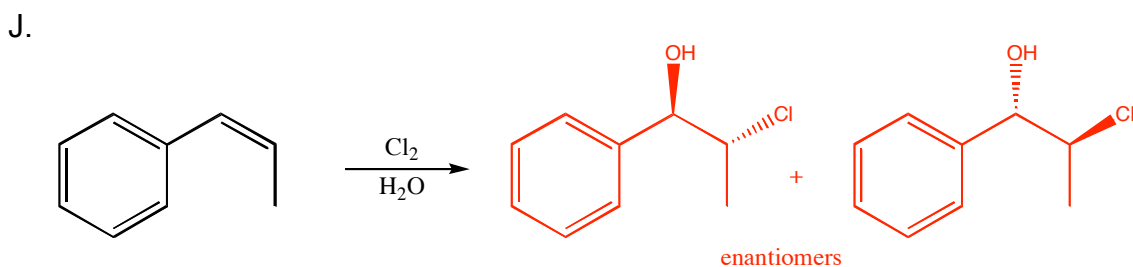
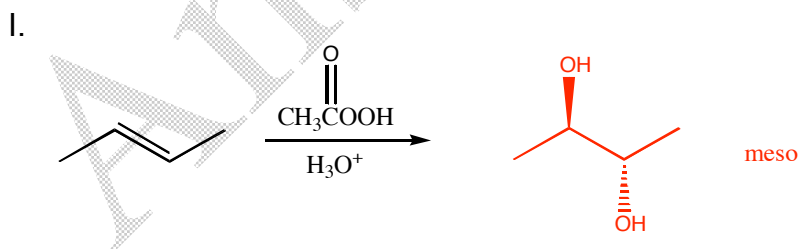
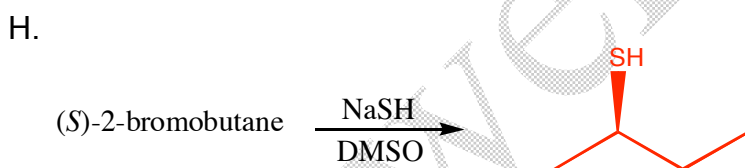
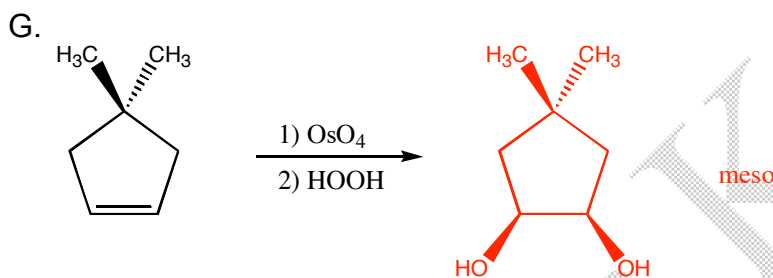
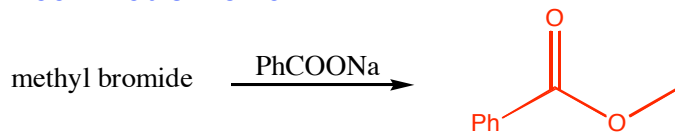


E.

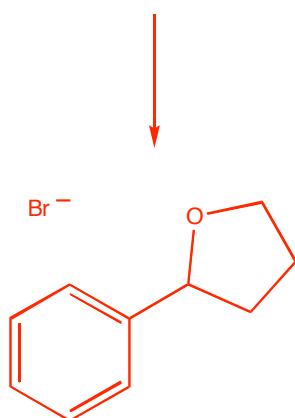
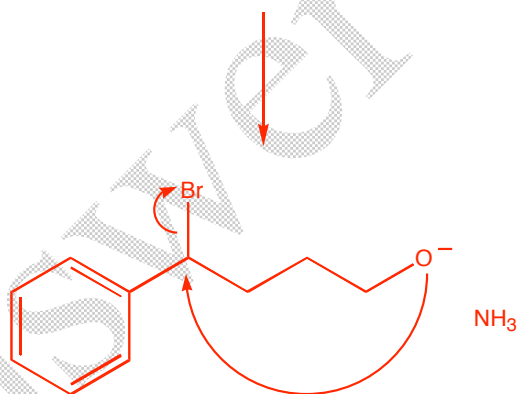
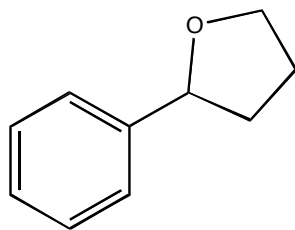


4. continued. [Be sure to clearly show stereochemistry using dashes and wedges. Write NR if no reaction occurs. Clearly label any enantiomers, diastereomers, or meso compounds.]

F. **Book Problem 8.1c**



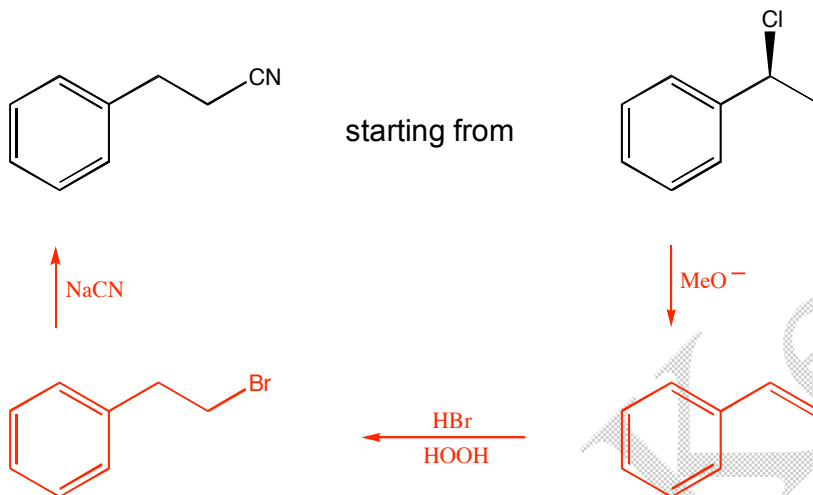
5. (10 pts) If 4-bromo-4-phenyl-1-butanol is allowed to react with sodium amide, a cyclic ether is formed (shown below). Using curved arrows to show the flow of electrons, propose a mechanism for this reaction.



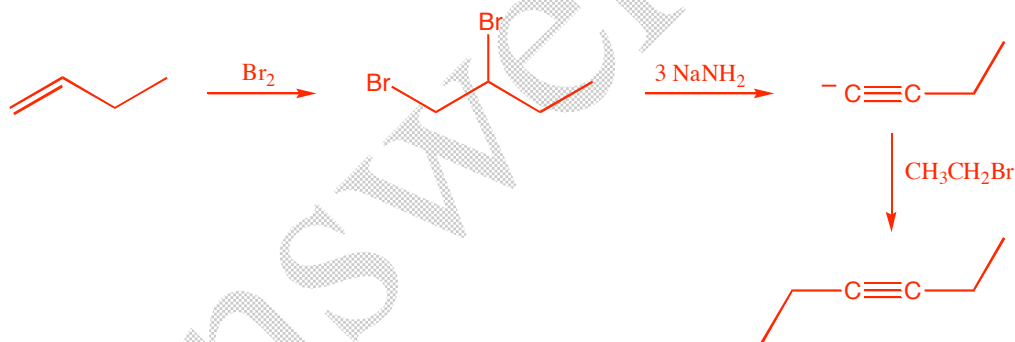
6. (14 pts) Propose an efficient synthesis for the following transformations. You may use any reagents you like. Be sure to show any intermediates. (Do not draw a mechanism.)

(5 points each)

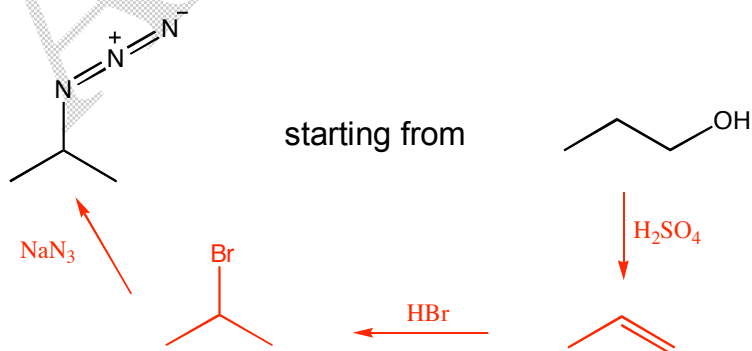
A.



B. 3-hexyne starting from 1-butene [Book Problem 9.23a](#)



C. [Book Problem 8.32h](#)



Scratch Page

Answer Key

Scratch Page

Answer Key