

### 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:

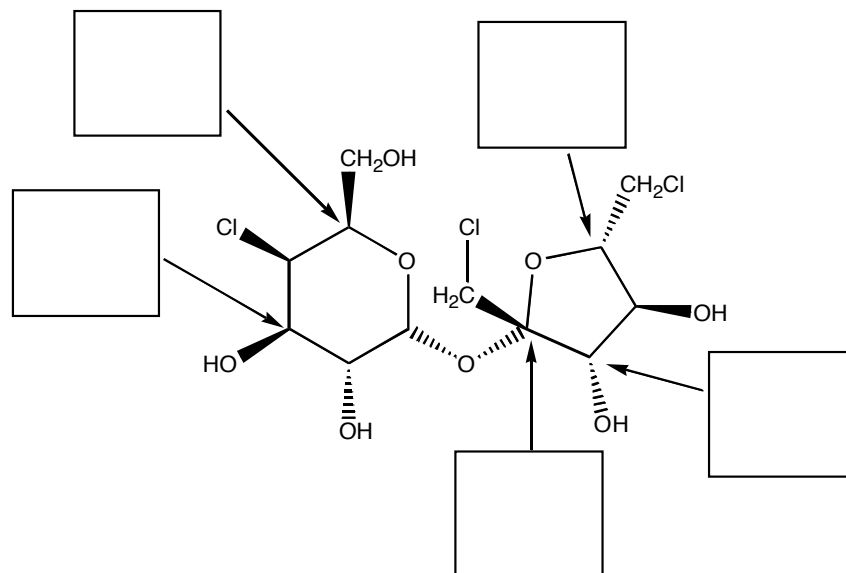
Page 1 \_\_\_\_\_/16      Page 4 \_\_\_\_\_/25

Page 2 \_\_\_\_\_/10      Page 5 \_\_\_\_\_/10

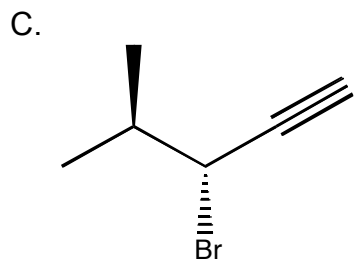
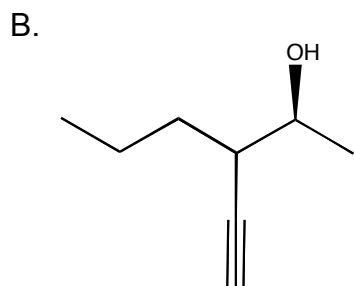
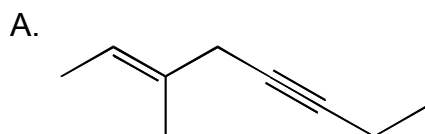
Page 3 \_\_\_\_\_/25      Page 6 \_\_\_\_\_/14

**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.

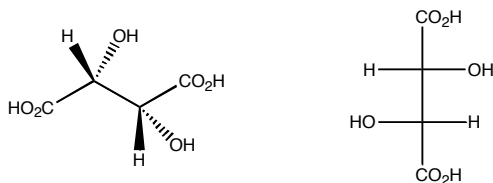


2. (6 pts) Give the IUPAC name for each of the following compounds.



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

A.



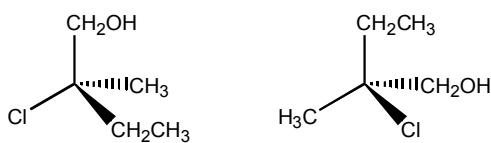
identical

constitutional isomers

enantiomers

diastereomers

B.



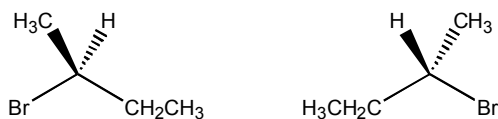
identical

constitutional isomers

enantiomers

diastereomers

C.



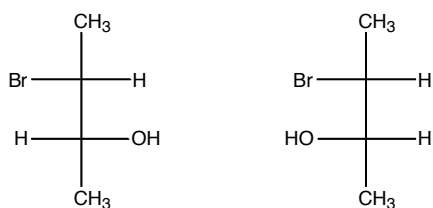
identical

constitutional isomers

enantiomers

diastereomers

D.



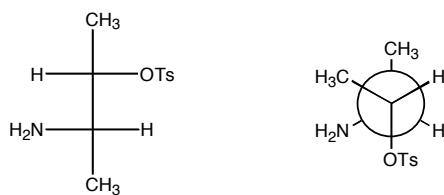
identical

constitutional isomers

enantiomers

diastereomers

E.



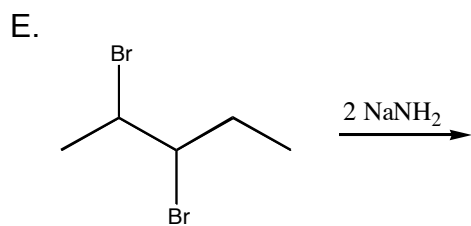
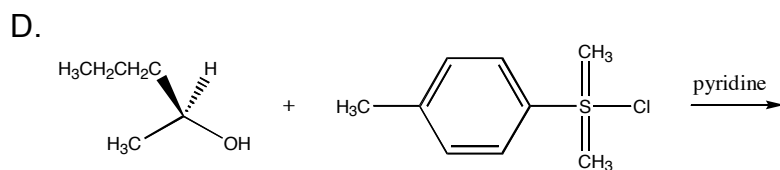
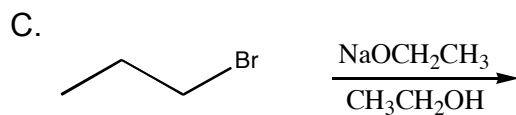
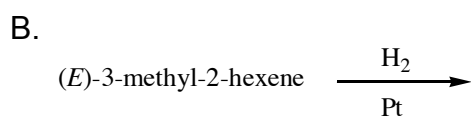
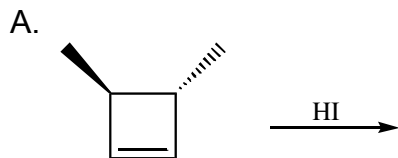
identical

constitutional isomers

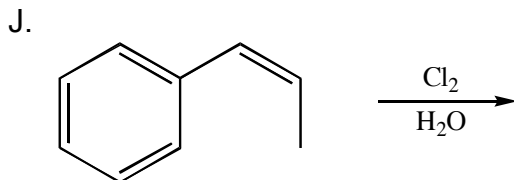
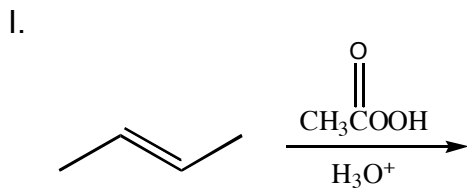
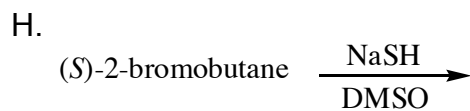
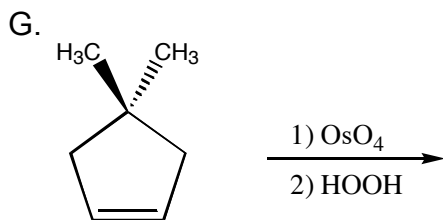
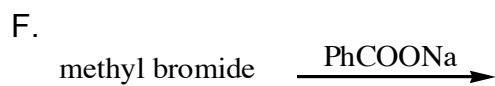
enantiomers

diastereomers

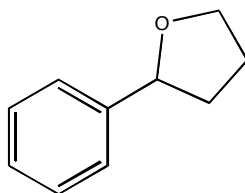
4. (50 pts) Give the major organic product(s) of the following reactions. Be sure to clearly show stereochemistry using dashes and wedges. Write NR if no reaction occurs. **Clearly label any enantiomers, diastereomers, or meso compounds.**



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.]

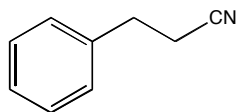


5. (10 pts) If 4-bromo-4-phenyl-1-butanol is allowed to react with sodium amide, a cyclic ether is formed (shown below). Using curved arrows to show the flow of electrons, propose a mechanism for this reaction.

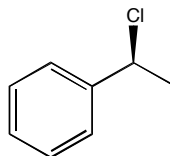


6. (14 pts) Propose an efficient synthesis for the following transformations. You may use any reagents you like. Be sure to show any intermediates. (Do not draw a mechanism.)

A.

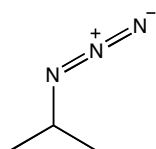


starting from

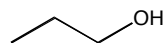


B. 3-hexyne starting from 1-butene

C.



starting from



## Scratch Page



## Scratch Page