

CHEM 3311-100 Spring 2007

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.

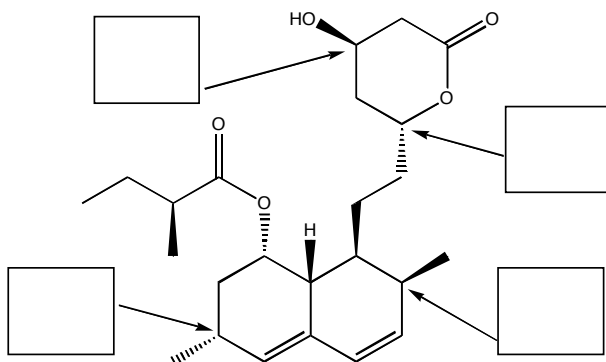
Periodic table and scratch paper are attached.

DO NOT TURN THIS PAGE UNTIL INSTRUCTED TO DO SO.

Recitation Sections:

#	Day	Time	TA	SCORE:	
121	Tuesday	8 am	Kelly	Page 1 _____/18	Page 4 _____/22
131	Tuesday	1 pm	Kelly	Page 2 _____/10	Page 5 _____/26
141	Wednesday	8 am	Greg	Page 3 _____/24	
151	Wednesday	12 pm	Greg		
153	Wednesday	12 pm	Kelly		
152	Wednesday	5 pm	Kelly		
171	Thursday	12 pm	Greg		
				TOTAL _____/100	

1. (8 pts) Lovastatin, shown below, is a cholesterol-lowering drug produced by Merck. In the boxes below give the stereochemical designator for each indicated chirality center.



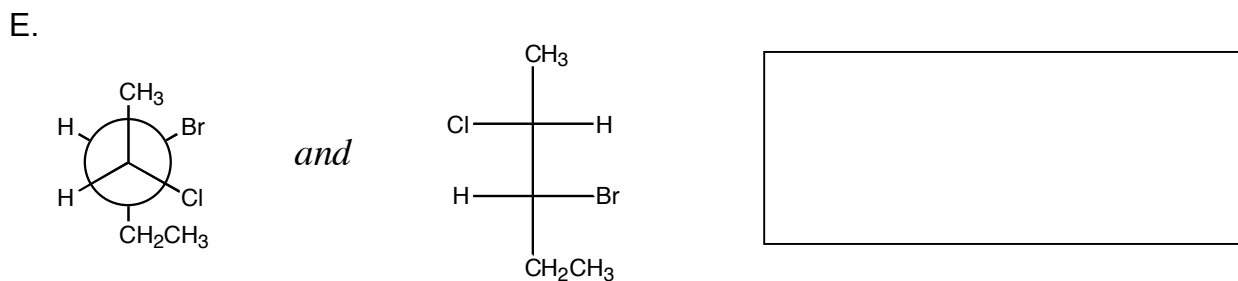
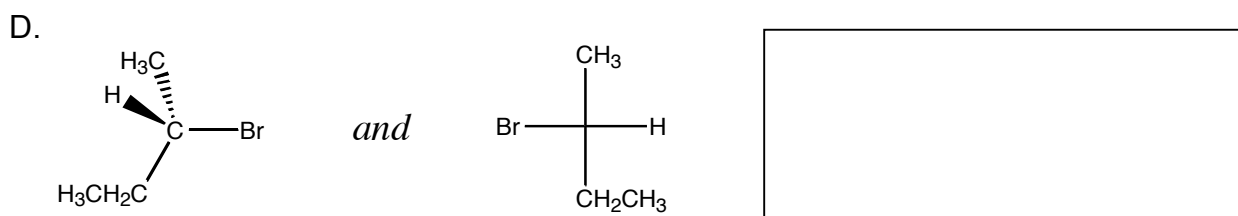
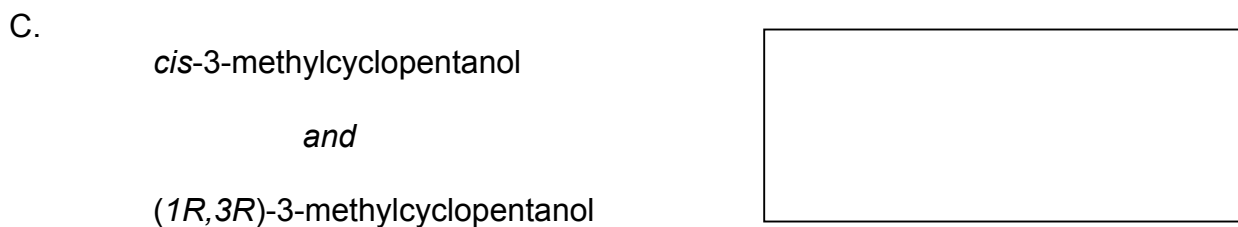
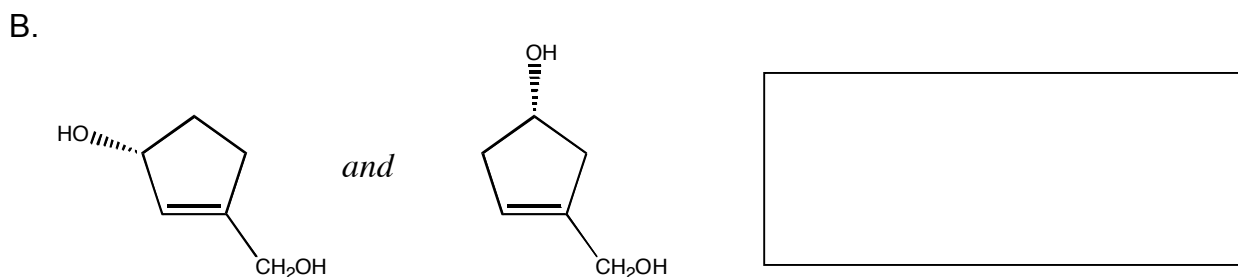
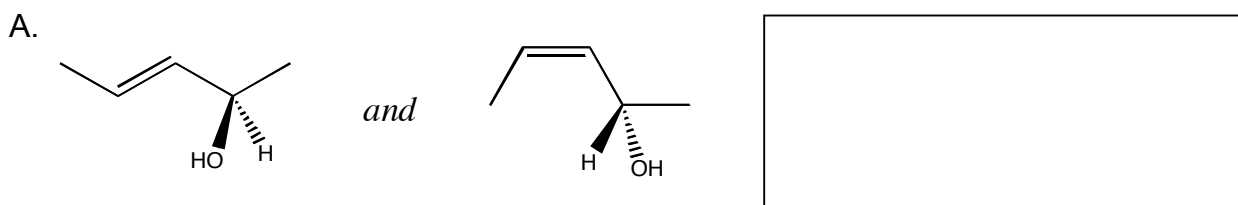
2. (5 pts) The following questions pertain to neopentyl bromide.

A. Draw neopentyl bromide.

B. Does neopentyl bromide undergo an S_N2 reaction? Why or why not?

3. (5 pts) Why is it necessary to allow a geminal dihalide to react with three equivalents of sodium amide in liquid ammonia, followed by an aqueous workup, in order to obtain a terminal alkyne?

4. (10 pts) In the boxes below, indicate whether each pair of compounds are constitutional isomers, diastereomers, enantiomers, the same compound, or have no relation.

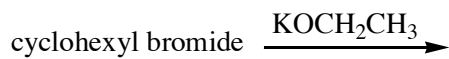


5. (24 pts) Give the major organic product(s) of each of the following reactions. If necessary, clearly show the stereochemistry of the products. If no reaction occurs, write NR.

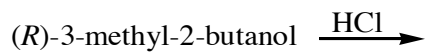
A.



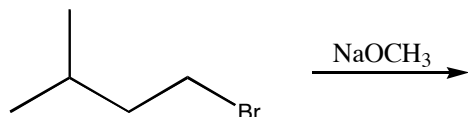
B.



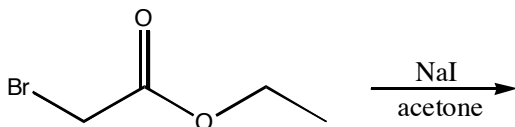
C.



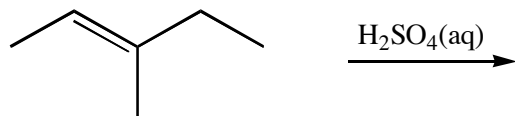
D.



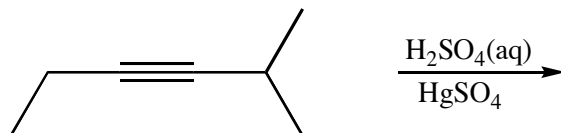
E.



F.



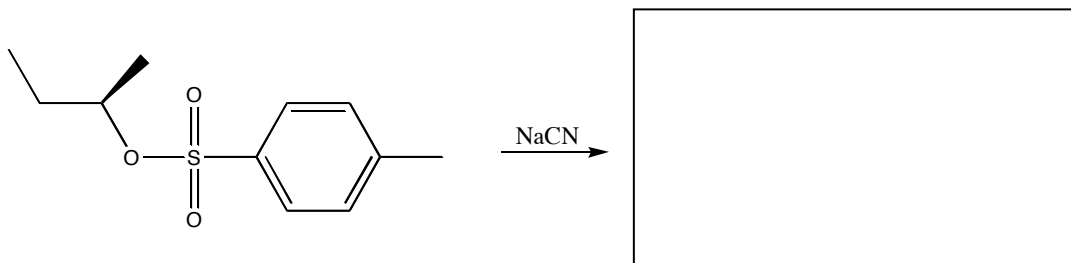
G.



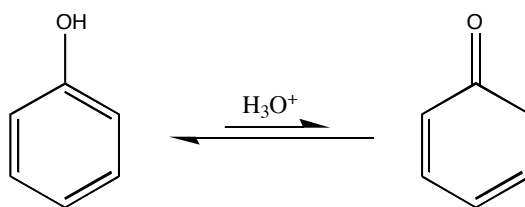
H.



6. (12 pts) Fill in the organic product(s) of the following reaction and, using arrows to show the flow of electrons, draw a mechanism to account for its formation.



7. (10 pts) Using curved arrows to show the flow of electrons, propose a mechanism for the acid catalyzed enol-keto tautomerization shown below.



8. (26 pts) Propose an efficient synthesis for each of the following transformations. You may use any reagents you like. Be sure to show any intermediates. (Do not draw a mechanism.)

A. isobutyl iodide *starting from* *tert*-butyl chloride

B. *trans*-2-hexene *starting from* *cis*-2-butene