CHEM 3311 Spring 2006

Exam 2

March 16, 2006
Professor Rebecca 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 15 minutes to complete this exam.
No model kits or calculators allowed; periodic table and scratch paper are attached.

DO NOT TURN PAGE UNTIL INSTRUCTED TO DO SO.

Put your name on ALL pages of the exam

Recitation Sections:

Number	**Day**	**Time**	**TA**
121	Tuesday	8 am	Andrew
131	Tuesday	1 pm	Heather
141	Wednesday	8 am	Chris
151	Wednesday	12 pm	Andrew
153	Wednesday	12 pm	Nicole
152	Wednesday	5 pm	Chris
171	Thursday	12 pm	Heather

Score:

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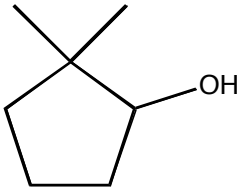
Total _____/100

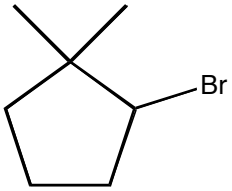
Name: _____

1. (3 pts) Give the molecular formula for three stable inorganic radicals.

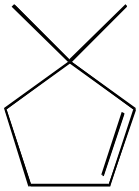
2. (12 pts) You have available 2,2-dimethylcyclopentanol (A) and 2-bromo-1,1-dimethylcyclopentane (B) and wish to prepare 3,3-dimethylcyclopentene (C). Which would you choose as the more suitable reactant, A or B, and with what would you treat it? Give an explanation for your choice.



A



B



C

Name: _____

3. (20 pts) Write a complete stepwise mechanism for the bromination of methylcyclobutane. Label each step.

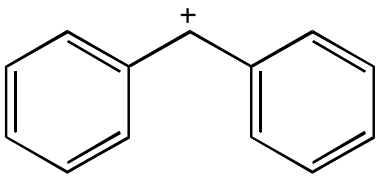
Name: _____

4. (15 pts) Circle the more stable compound in each of the following pairs and give the reason for your choice in the adjacent box.

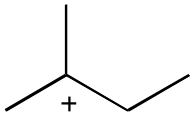
A. 1-methylcyclohexene or 3-methylcyclohexene

B. (*Z*)-cycloheptene or (*E*)-cycloheptene

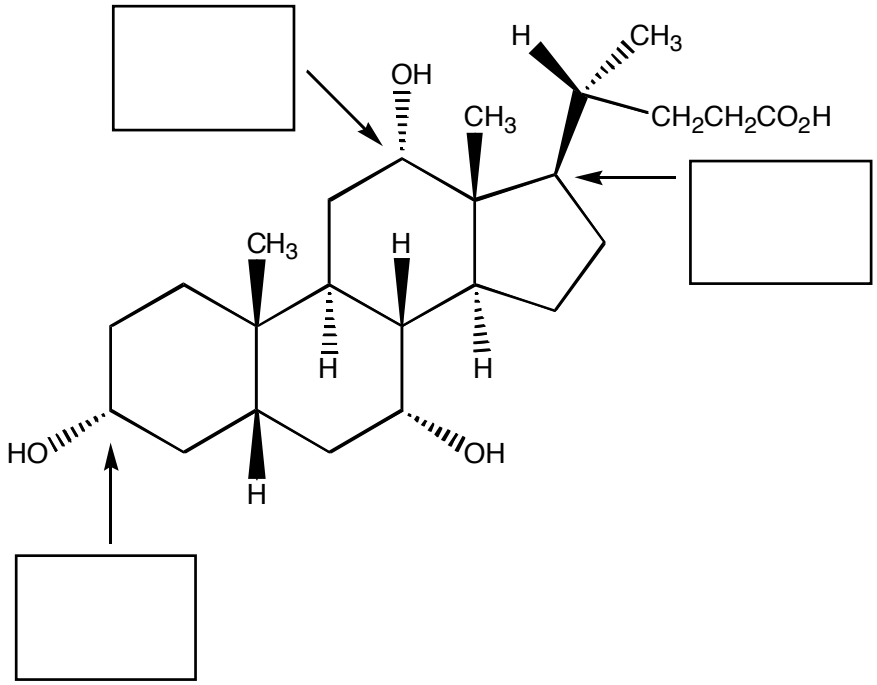
C.



or



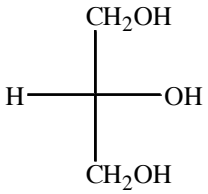
5. (6 pts) There are 11 chiral centers in cholic acid. Give the stereochemical label for the indicated atoms.

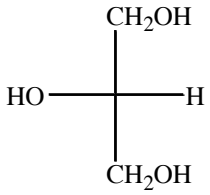


Name: _____

6. (8 pts) Circle the relationship between the following pairs of compounds.

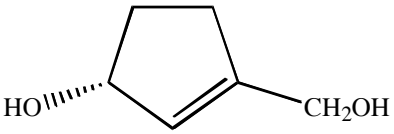
A.

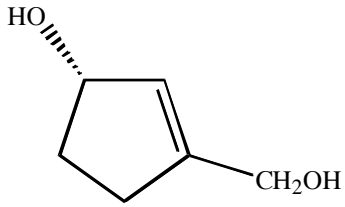




Identical constitutional isomers enantiomers diastereomers

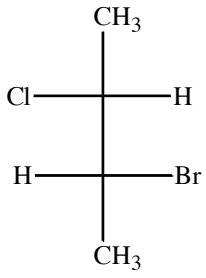
B.

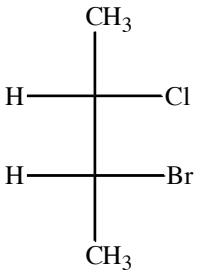




Identical constitutional isomers enantiomers diastereomers

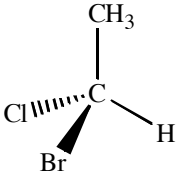
C.

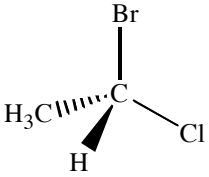




Identical constitutional isomers enantiomers diastereomers

D.





Identical constitutional isomers enantiomers diastereomers

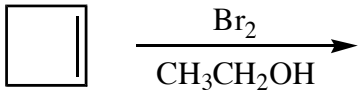
Name: _____

7. (24 pts) Give the organic products for the following reactions. Be sure to clearly label the stereochemistry of the products. If possible, label the major and minor products.

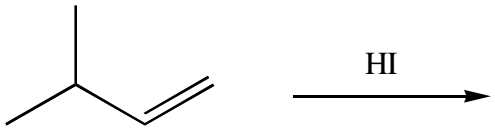
A.

2-*tert*-butyl-3,3-dimethyl-1-butene $\xrightarrow[2)\ HOOH,\ HO^-]{1)\ B_2H_6\ in\ diglyme}$

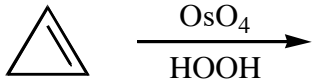
B.



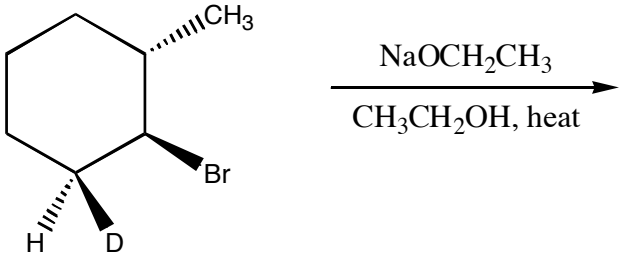
C.



D.



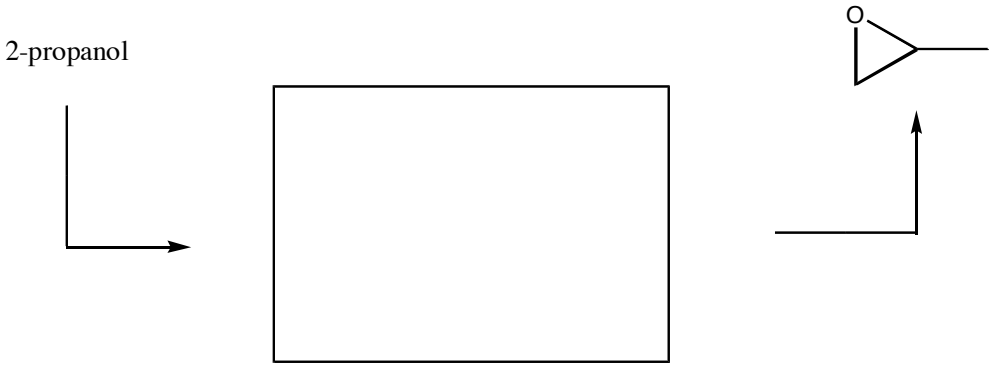
E.



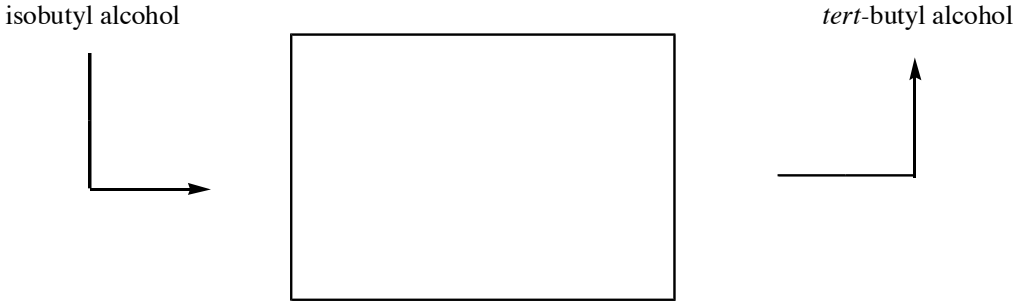
Name: _____

8. (12 pts) Each of the following transformations can be carried out in two or three steps. For each transformation show above and/or below the arrows the necessary reagents and between the arrows show the organic intermediate that is formed in the first reaction and serves as the starting material for the second reaction.

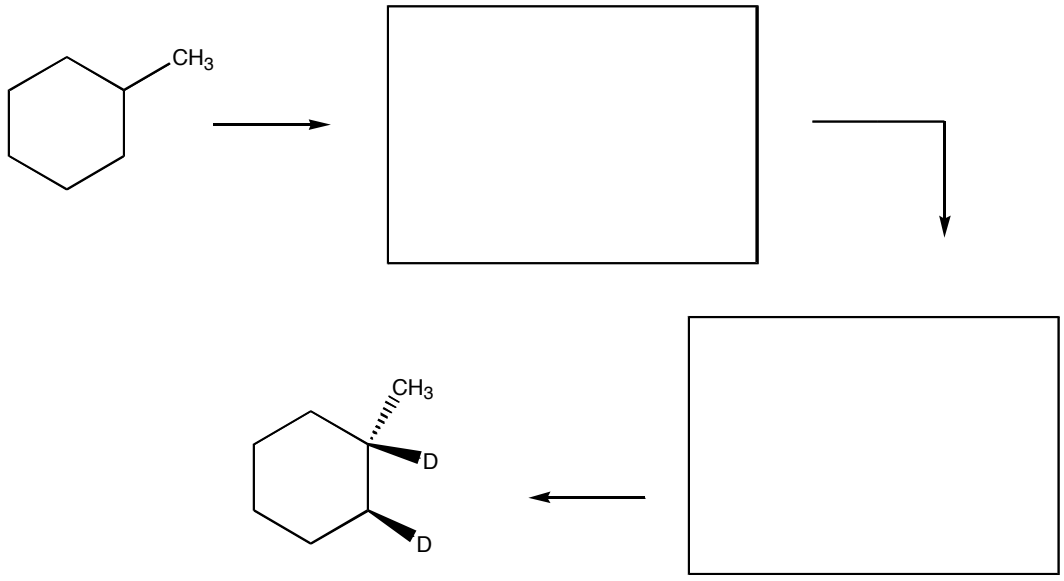
A.



B.



C.



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Scratch Page

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