

CHEMISTRY 3331, Spring 2004
Professor Walba
First Hour Exam, February 12

scores:

1) 20

2) 20

3) 20

4) 20

5) 20

100

CU Honor Code Pledge: On my honor, as a University of Colorado at Boulder Student, I have neither given nor received unauthorized assistance.

Name (printed): _____ **Key**

Signature: _____

Recitation TA Name: _____

Recitation day and time: _____

This is a closed-book exam. The use of notes, models, calculators, and other paraphernalia will not be allowed during the exam. Please put all your answers on the test. Use the backs of the pages for scratch.

PLEASE read the questions carefully!

Partial Periodic Table

1A							8A
1 H							2 He
	2A	3A	4A	5A	6A	7A	
3 Li	4 Be	5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
						35 Br	
						53 I	

Name: _____

1 (20 pts) a) Circle the stronger Bronsted acid in each of the following pairs of structures.

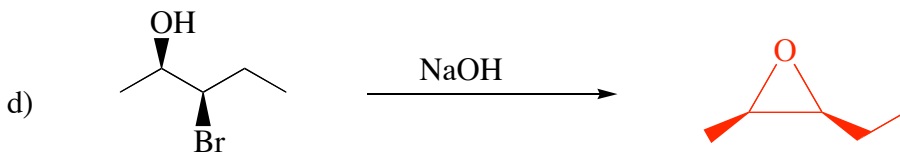
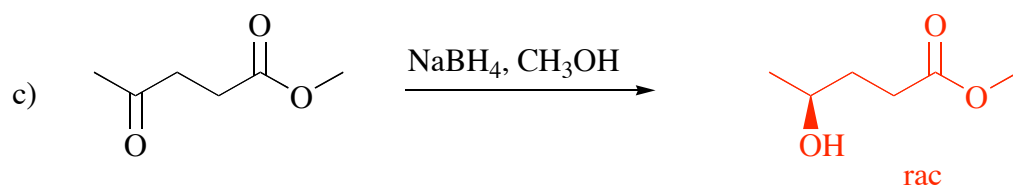
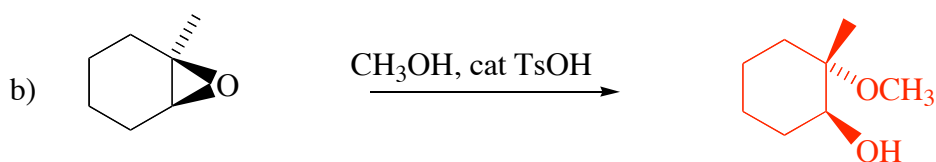
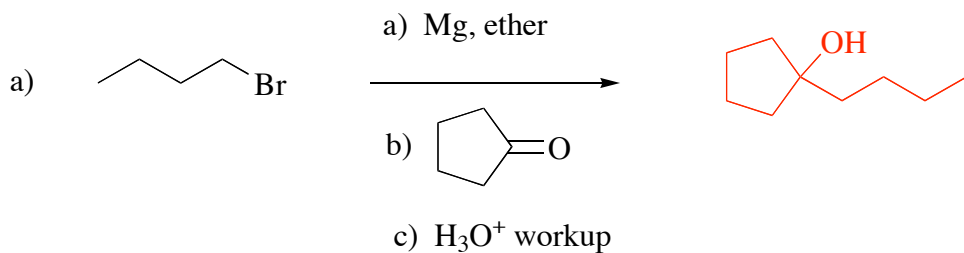
<chem>HCl</chem> <chem>HF</chem>	<chem>CC[NH3+]</chem> <chem>CC[OH2+]</chem>
<chem>CH3OH</chem> <chem>CH3SH</chem>	<chem>CCN</chem> <chem>CCO</chem>
<chem>H3O+</chem> <chem>TsOH</chem>	<chem>CCN</chem> <chem>CC</chem>

b) Circle the compound with the more stable carbonyl group in each of the following pairs of compounds.

<chem>CC=O</chem> <chem>CC(=O)C</chem>	<chem>CC(=O)OC</chem> <chem>CC(=O)NC</chem>
<chem>CC(=O)C</chem> <chem>CC(=O)C(F)(F)F</chem>	<chem>C1CCOC1=O</chem> <chem>C1CCCCC1=O</chem>

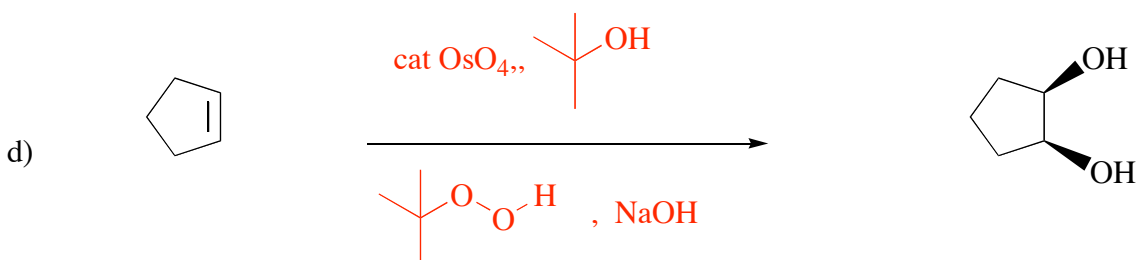
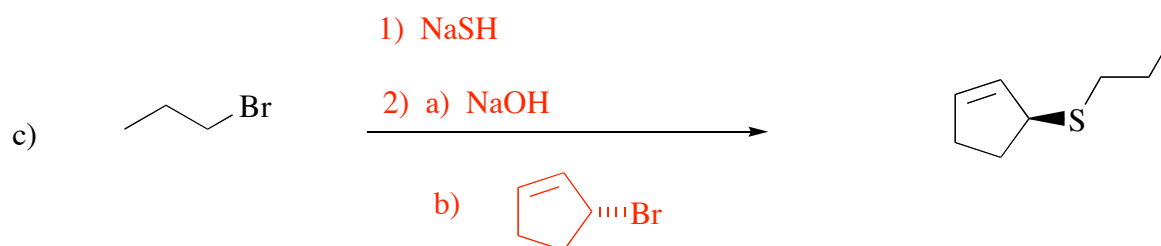
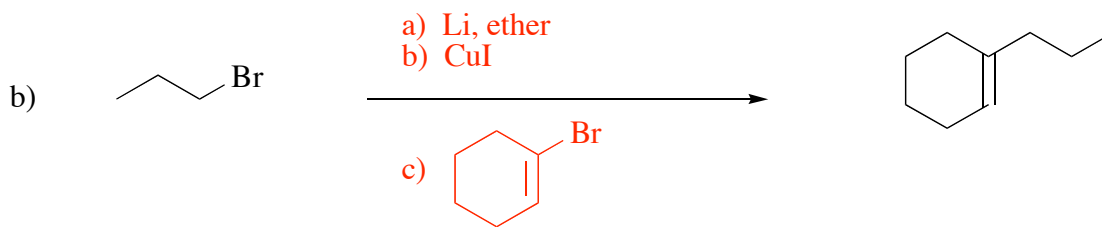
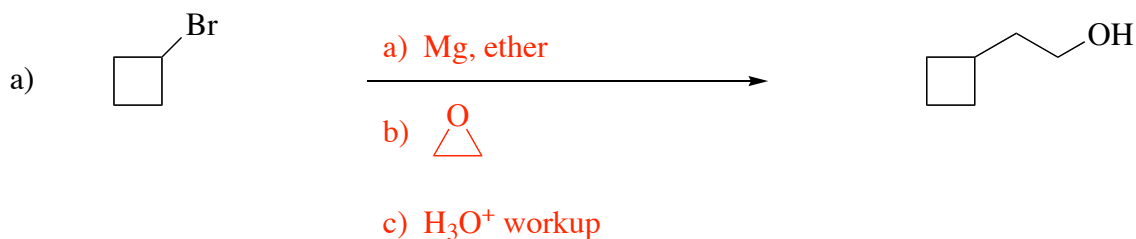
Name: _____

2) (20 pts) Give the single major organic product of each of the following reactions. Carefully indicate the stereochemistry of the product if appropriate. If a racemate is formed, show only one enantiomer and label it "rac."



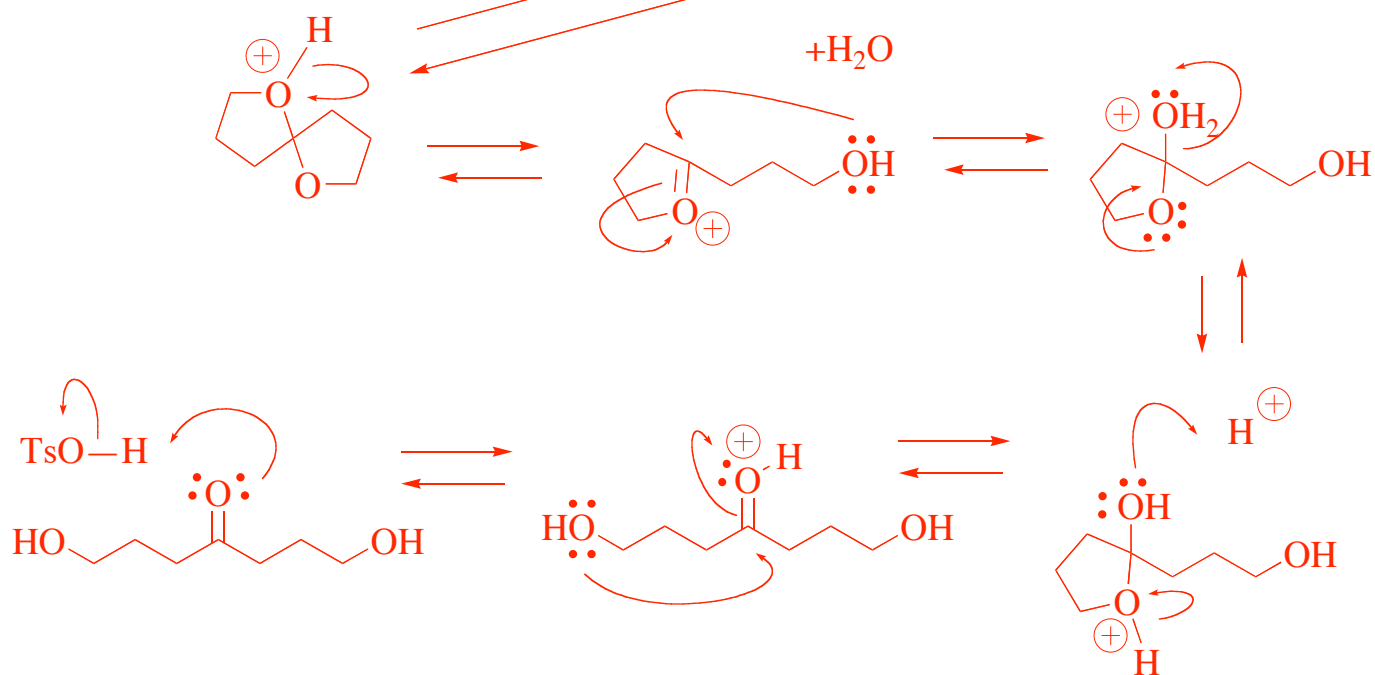
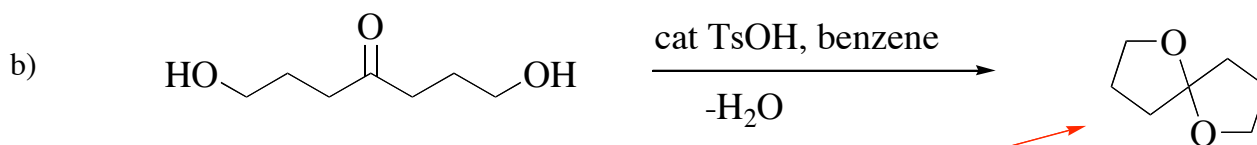
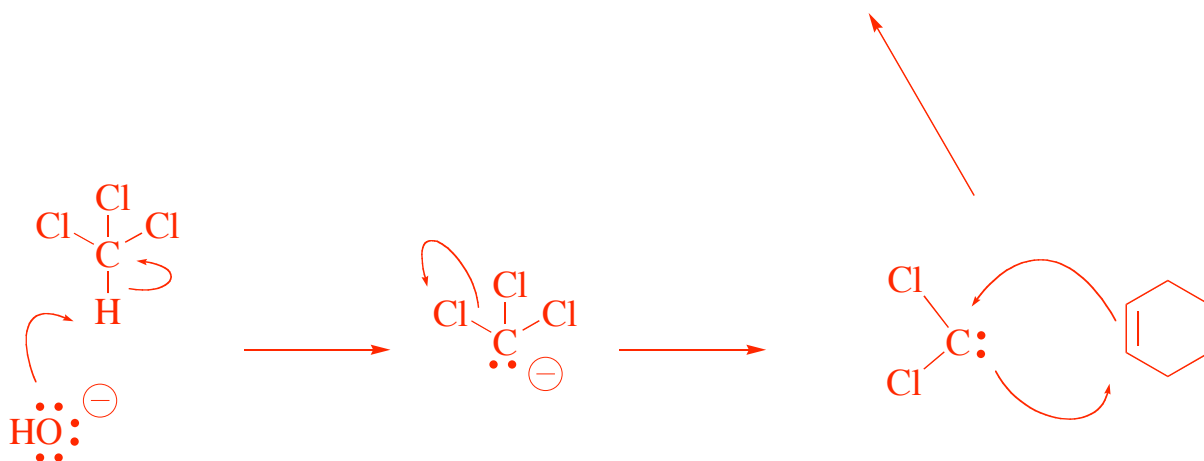
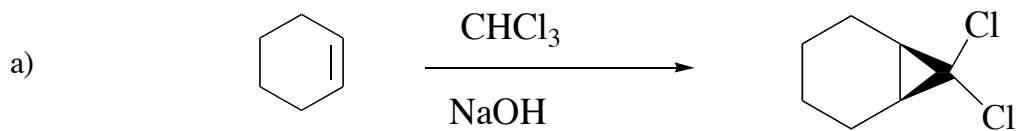
Name: _____

3) (20 pts) Propose reagents for accomplishing the following transformations. NOTE: more than one step may be required! Try to make your synthesis efficient (i.e. the desired product should be the major product, and generally a shorter synthesis is better than a longer one). You must use the starting material given; you may use any other reagents you need.



Name: _____

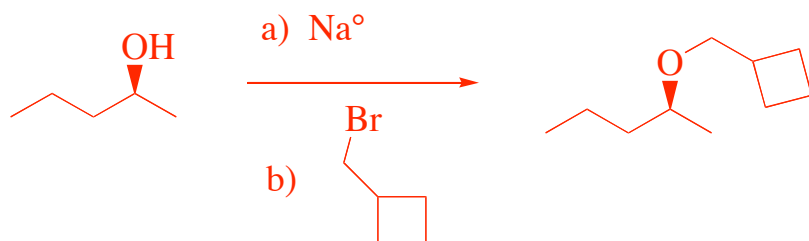
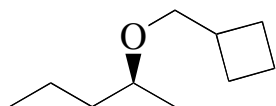
4) (20 pts) Propose an arrow-pushing mechanism for each of the following transformations.



Name: _____

5) (20 pts) Propose a synthesis for each of the following targets using any organic starting materials with FIVE carbons or less, and any inorganic reagents you need. Try to make your synthesis efficient (that is, the desired product in each step should be the major product).

a)



b)

