

CHEMISTRY 3331, Spring 2005
Professor Walba
Second Hour Exam, March 10

scores:

1) 25

2) 25

3) 25

4) 25

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: _____

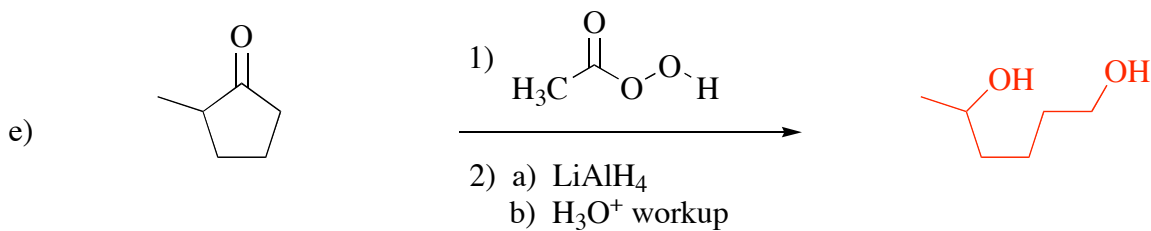
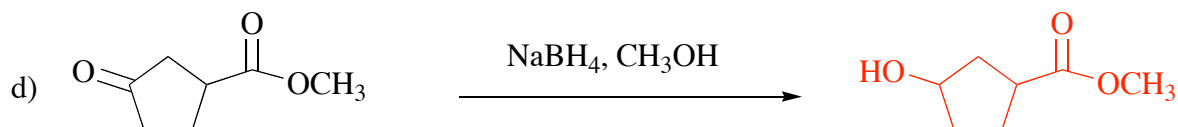
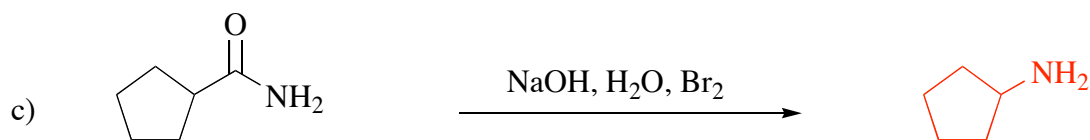
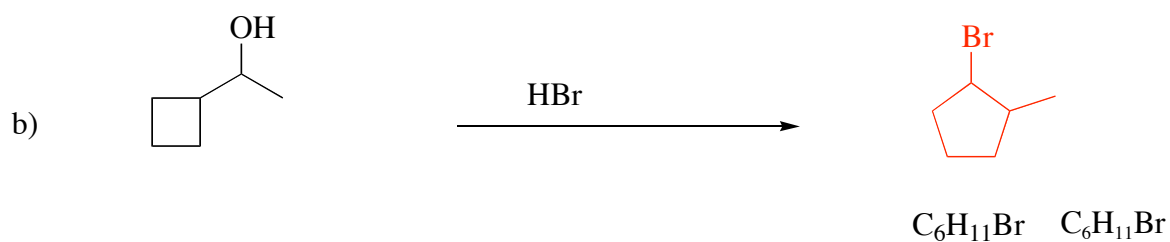
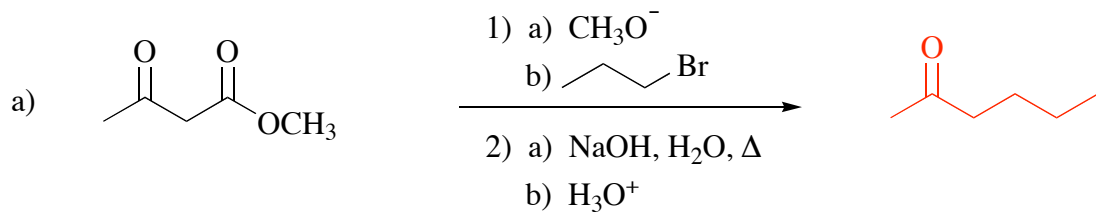
This is a closed-book exam. The use of notes, models, calculators, scratch paper, or any other paraphernalia will not be allowed during the exam. Please put all your answers on the test. Use the backs of the pages for scratch.

PLEASE read the questions very carefully!

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

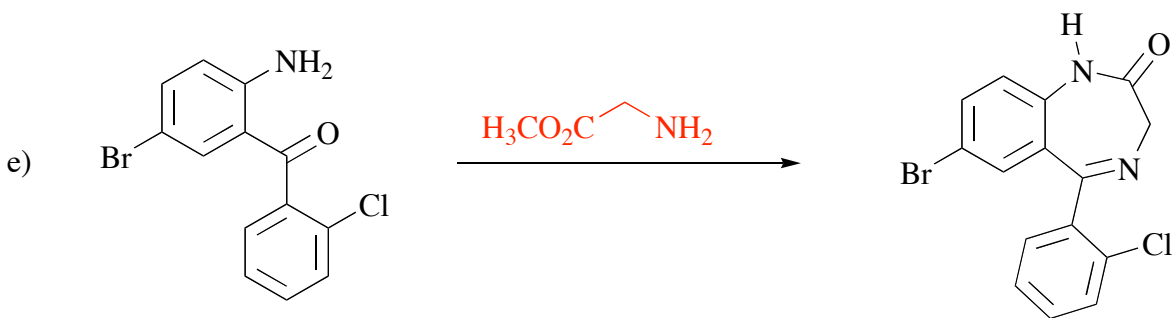
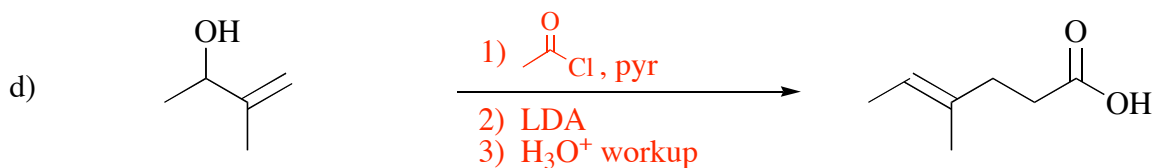
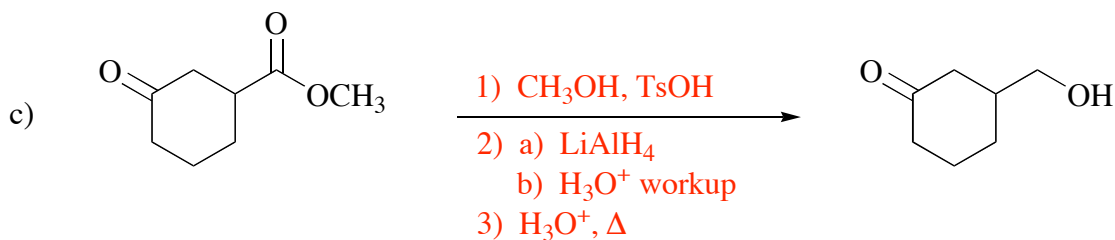
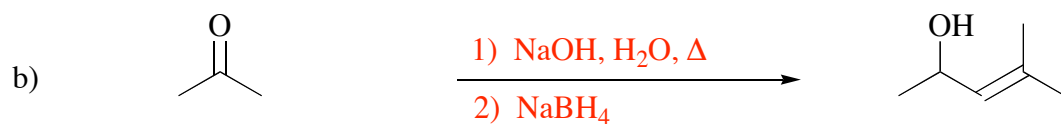
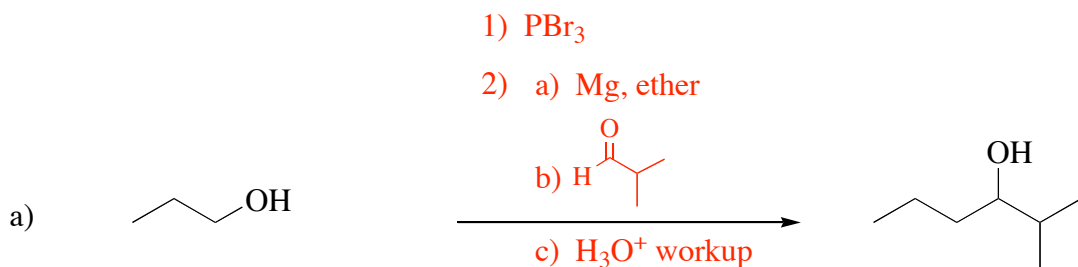
Name: _____

1) (25 pts) Give the single major organic product of each of the following reactions. Ignore stereochemistry for this problem.



Name: _____

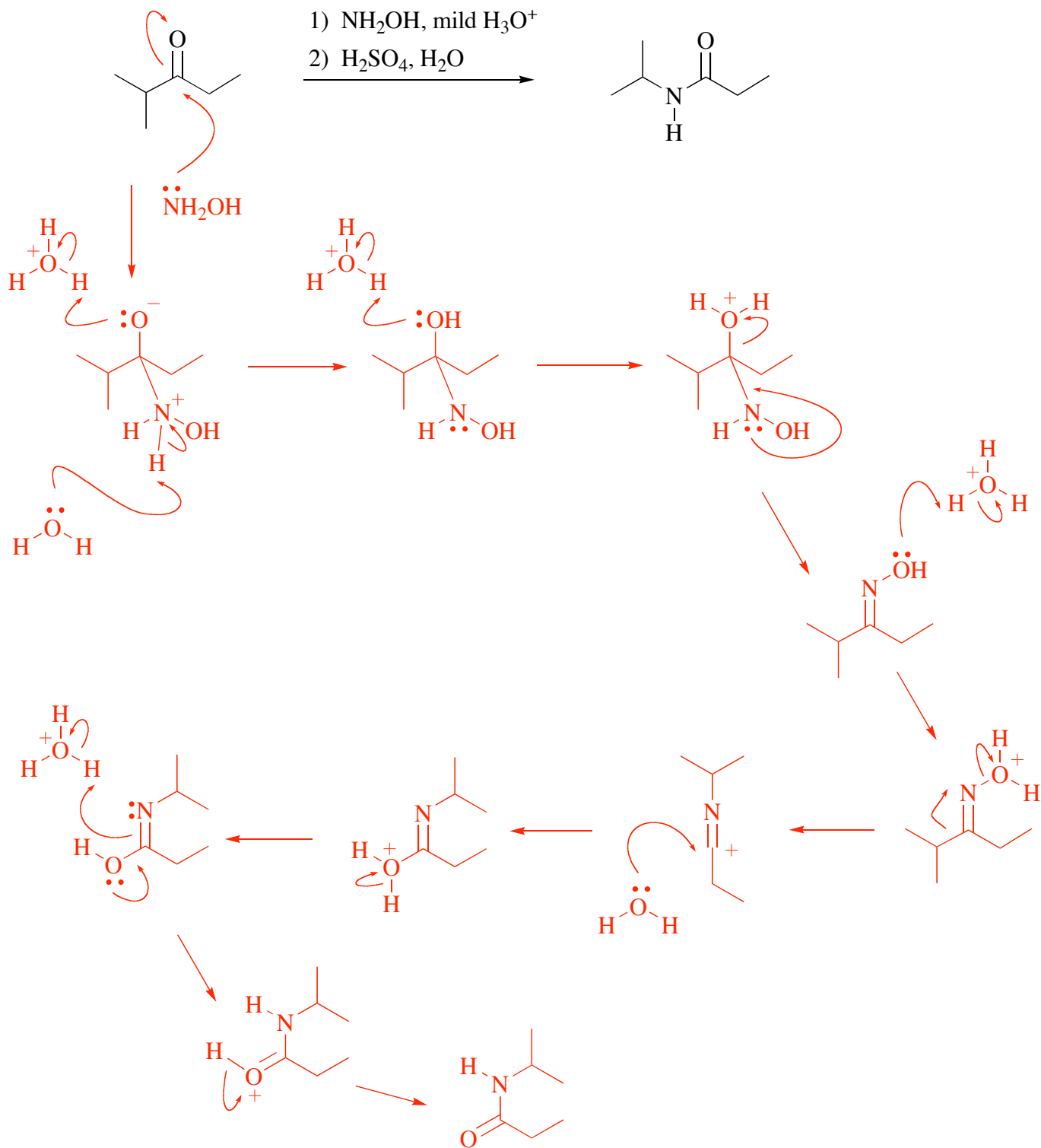
2) (25 pts) Propose reagents for accomplishing the following transformations. More than one step may be required. Ignore stereochemistry for this question.



Phenazepam

Name: _____

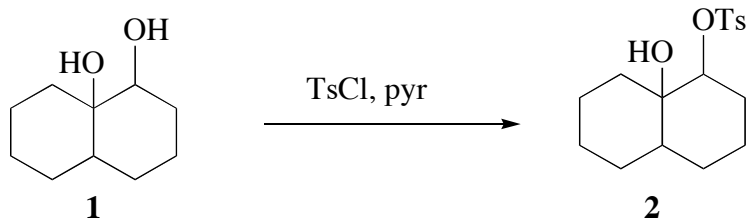
3) (25 pts) (a) Propose an arrow-pushing mechanism for this transformation.



Name: _____

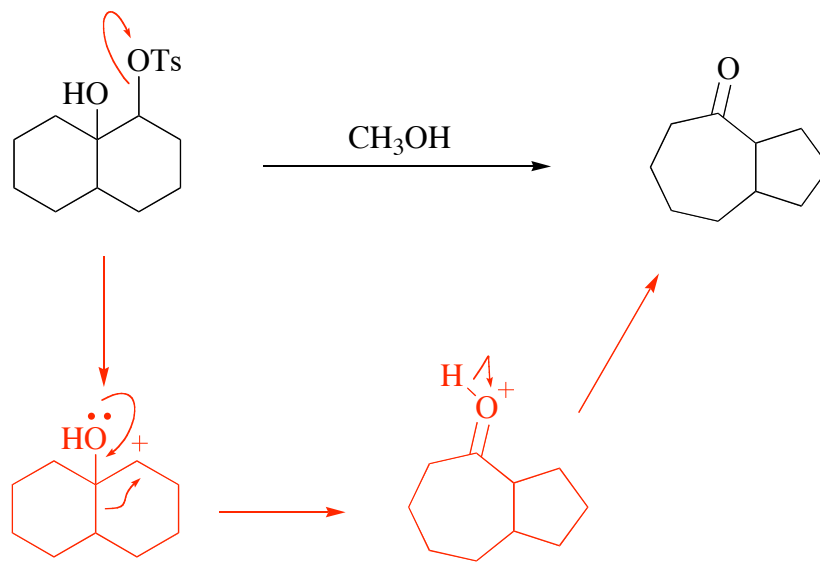
3 – continued

(b) When the diol **1** is allowed to react with p-toluenesulfonyl chloride in pyridine, the 2° tosylate **2** is produced. In one short sentence, explain the regioselectivity of this reaction.



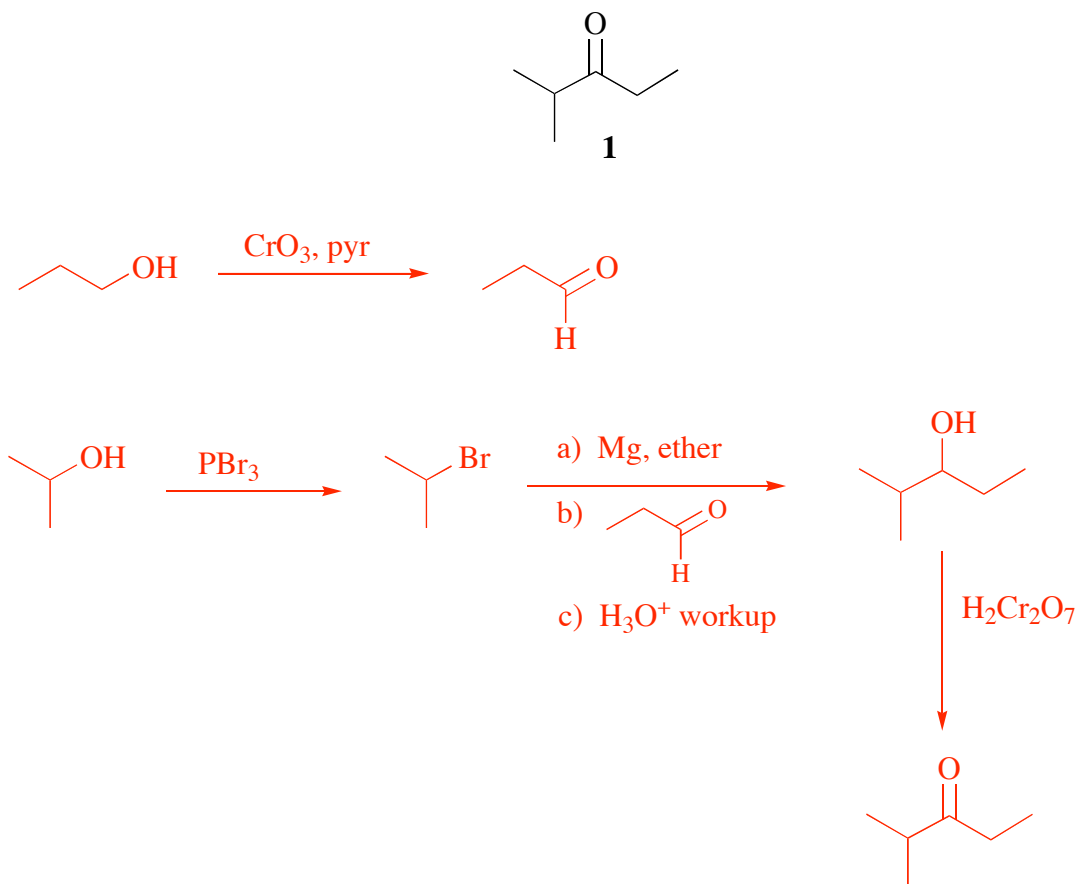
The 2° alcohol has less **steric hindrance** than the 3° alcohol.

(c) Propose an arrow-pushing mechanism for the following transformation.

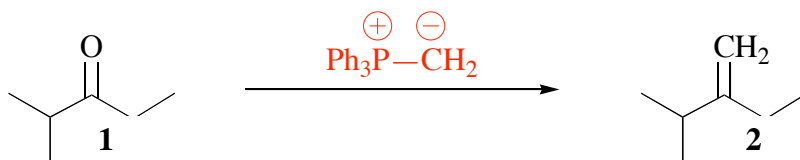


Name: _____

4) (25 pts) (a) Propose a clean synthesis of ketone **1** using only alcohols containing 3 carbons or less as starting materials. No other functional groups are allowed in the starting materials. You may use any inorganic reagents you need.



(b) Propose reagents for converting ketone **1** to alkene **2**. You may use ANY reagents you need (with any number of carbon atoms) for this part of problem 4.



Name: _____

4 – continued

(c) Propose a synthesis of the ketoprofen isomer **2** starting with benzene, any organic starting material with three carbons or less, and any inorganic reagents you need.

