Third 2-Hour Exam

By printing your name below, you pledge that

"On my honor, as a University of Colorado at Boulder student,
I have neither given nor received unauthorized assistance on this work."

Name _____

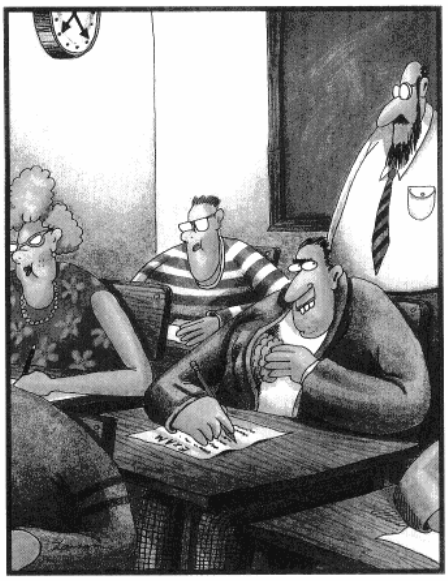
Recitation TA's Name:_____
Recitation Day and Time: _____

Points:

Problem #	Max. Points	Your Score
1	10	
2	30	
3	30	
4	30	
		_____ TOTAL (out of 100)

General Instructions:

- You have 2 hours to complete the exam
- Please write your name on the top of each page
- Use the back of pages for scratch paper
- Don't cheat!

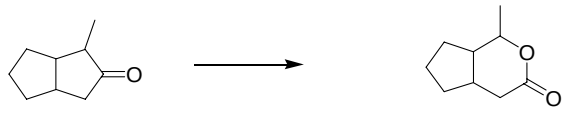


Midway through the exam, Allen pulls out a bigger brain.

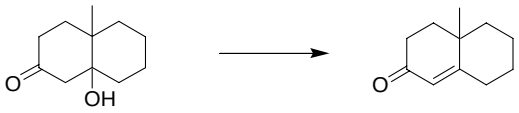
Question # 1 **10 pts total**

For each of the reactions below provide the reagent(s) required to form the indicated product:

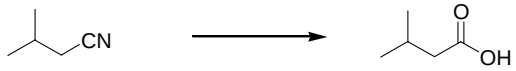
a)



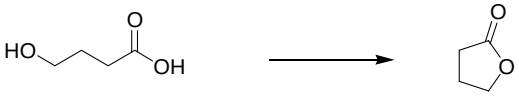
b)



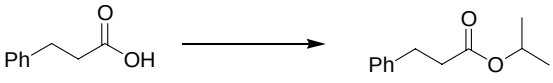
c)



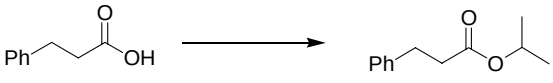
d)



e)



f)

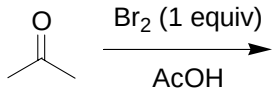


DO THIS A DIFFERENT WAY FROM PART (E)!

Question # 2 **30 pts total**

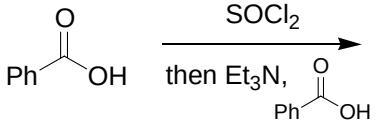
Draw the major product of the following reactions/reaction sequences. For parts (d), (f), and (g) you should indicate the stereochemistry of the product.

a)



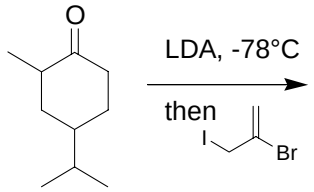
3 pt

b)



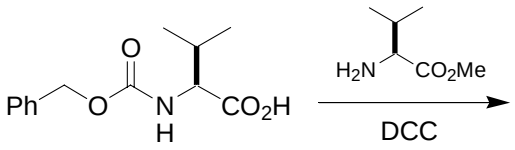
3 pt

c)



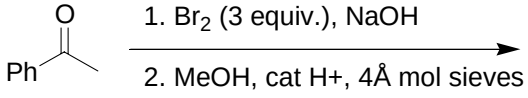
3 pt

d)



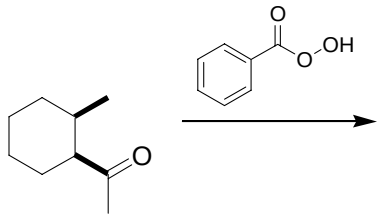
4pt

e)



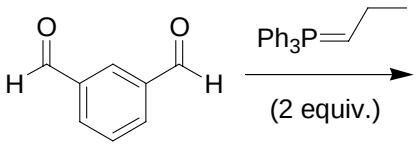
3pt

f)



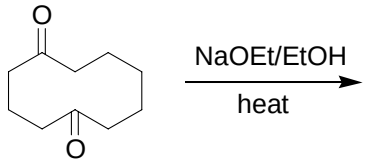
4pt

g)



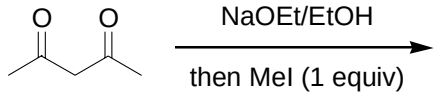
4pt

h)



3pt

i)



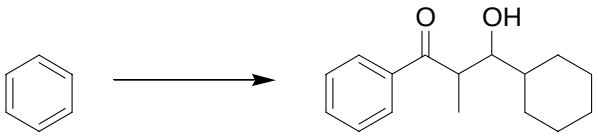
3pt

Question # 3 **30 pts total**

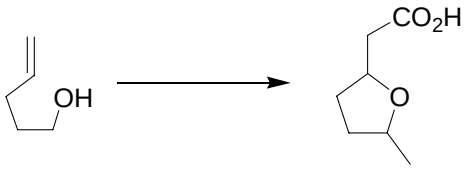
Do any three of the four following options. YOU MUST CROSS OUT THE ONE YOU DO NOT WANT GRADED. If you answer all four without crossing one out we will not count the highest score!

How would you synthesize the following molecules from the starting materials shown using any inorganic reagents you chose plus organic compounds of less than 8 carbons? Be sure to show the products of each step if your synthesis requires more than one step.

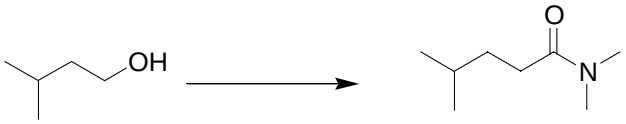
a)



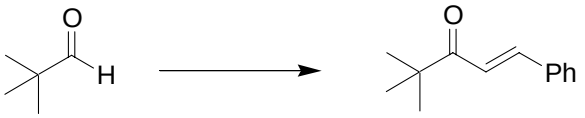
b)



c)



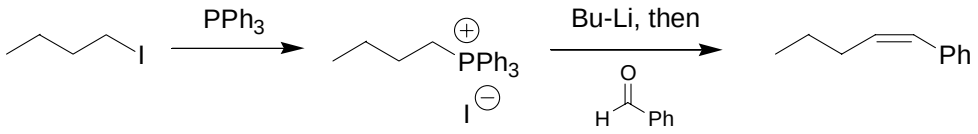
d)



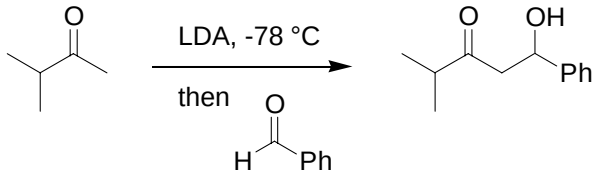
Question # 4 **30 pts total**

Write mechanisms for the following three reactions/reaction sequences. *Be sure to show all the intermediates and all the arrows required for each step [including aqueous workup if it is required].*

a) (10 pts)



b) *Make sure you show the mechanism for the deprotonation!* (10 pts)



c) (10 pts)