Hour Exam #3 (PM)
Chemistry 343
Professor Gellman
5 December 2011

Last Name _____

First Name _____

General Instructions:

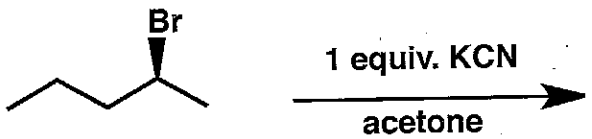
(i) Use scratch paper at back of exam to work out answers; final answers must be recorded at the proper place on the exam itself for credit. Models are allowed.

(ii) Print your name on each page.

(iii) Please keep your paper covered and your eyes on your own work. Misconduct will lead to failure in the course.

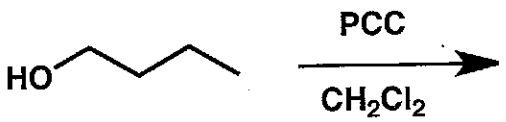
1. (20 points) Show the major product(s) expected from the reactions below.

(a)



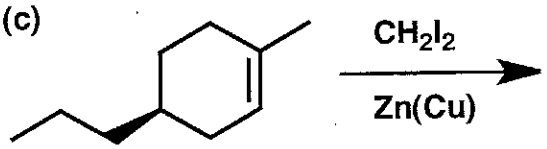
(Single enantiomer)

(b)



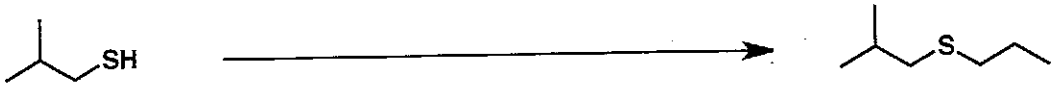
(PCC = pyridinium chlorochromate)

(c)

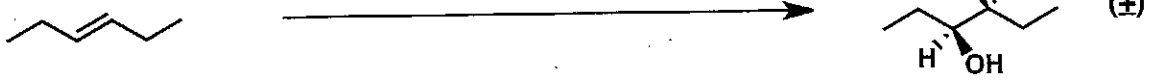


(Racemic)

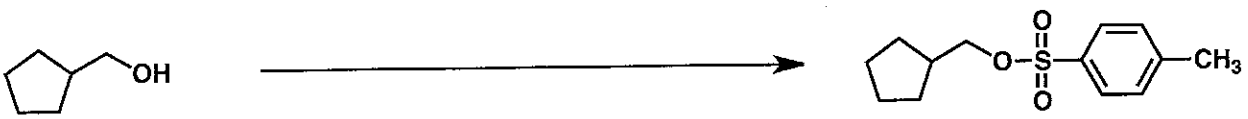
2. (23 points) Show the reagents required to convert the starting molecule to the indicated product. If necessary, be sure to differentiate clearly between distinct steps, by using "1)", "2)", etc. over the arrow.

(a) 

(b) 

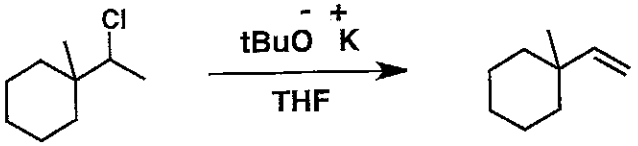
(c) 

(±)

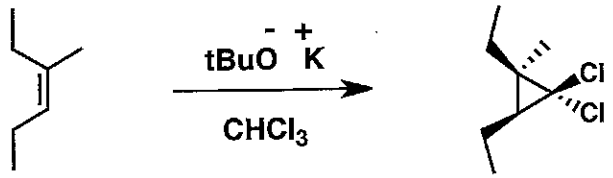
(d) 

3. (20 points) Provide a mechanism (curved arrows) for each of the reactions shown below.

(a)

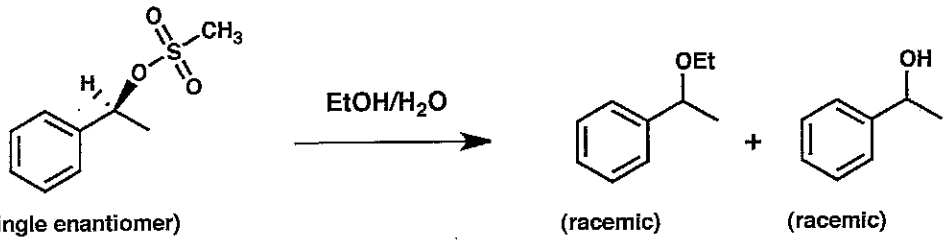


(b)



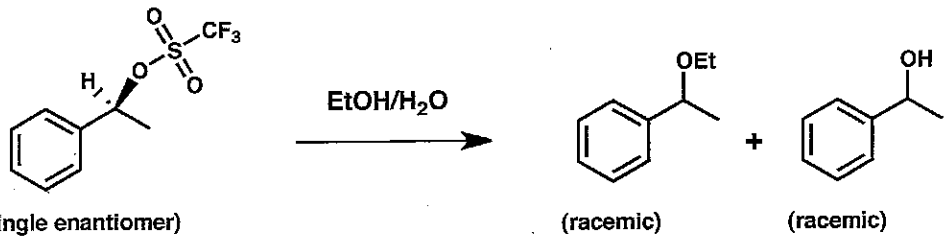
4. (12 points) The following questions pertain to the two reactions shown below.

(i)



(single enantiomer) (racemic) (racemic)

(ii)



(single enantiomer) (racemic) (racemic)

(a) What is the mechanism of these reactions? (Write the answer in the box.)

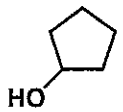
(b) The second reaction occurs approximately 5000 times more rapidly than the first. Provide a BRIEF explanation for this difference in rate (no more than two sentences).

Name _____

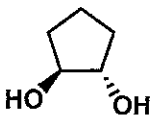
5. (25 points) Suggest a synthetic route (i.e., a specific sequence of reactions) that would be expected to produce each of the "target" molecules from the indicated starting material. You may use any other starting materials and reagents in each proposed route. Try to reach each target with the fewest possible reactions, and try to choose reactions that are as selective as possible for one product (rather than a mixture of products).

(a)

Starting Material



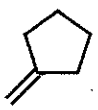
Target



(racemic)

(b)

Starting Material



Target