

Chemistry 172Q
February 23, 2007

Exam 2

1 _____/20

2 _____/15

3 _____/35

4 _____/15

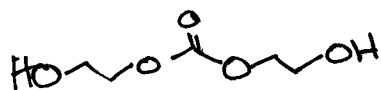
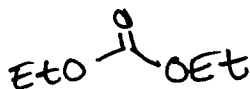
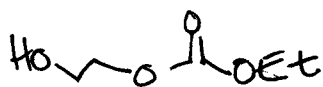
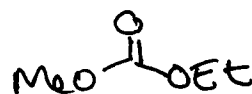
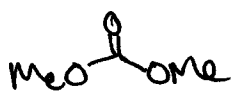
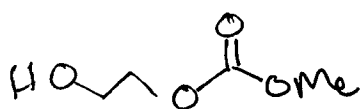
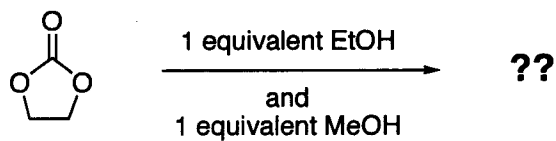
5 _____/40

Total 125 /125

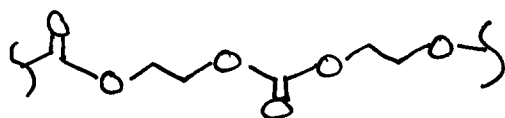
NAME

Answer Key

- 1a. Draw all of the products you'd expect to ISOLATE (nothing unstable) from this reaction mixture. Include all possible monomeric products, even if they'd only be present in small amounts.

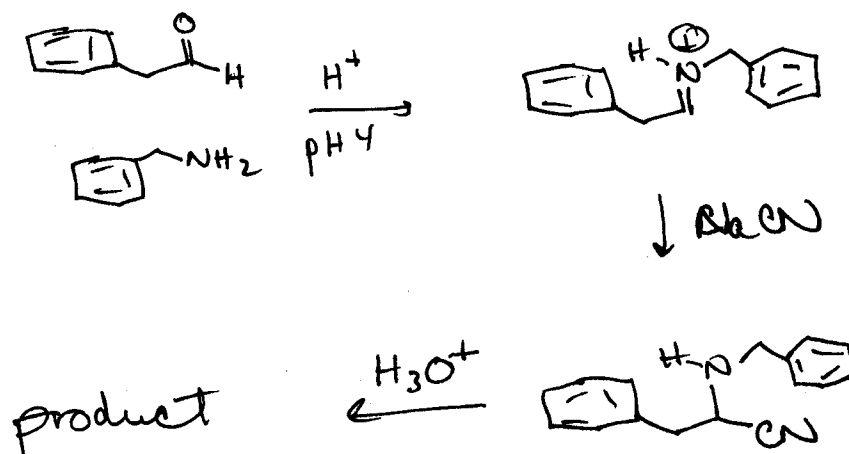
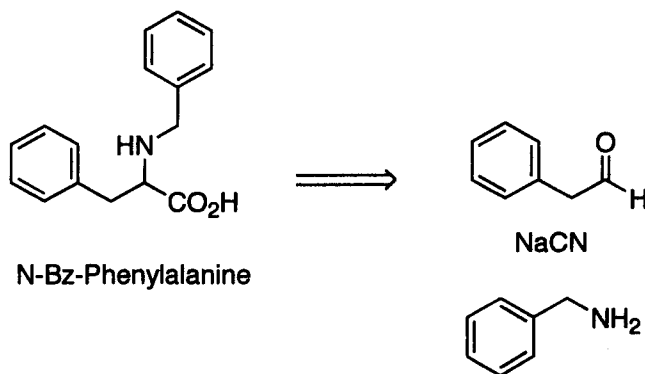


- 1b. Draw the structure of a repeating polymer that you might expect to form if you treated the compound above with \ll 1 equivalent of methanol.



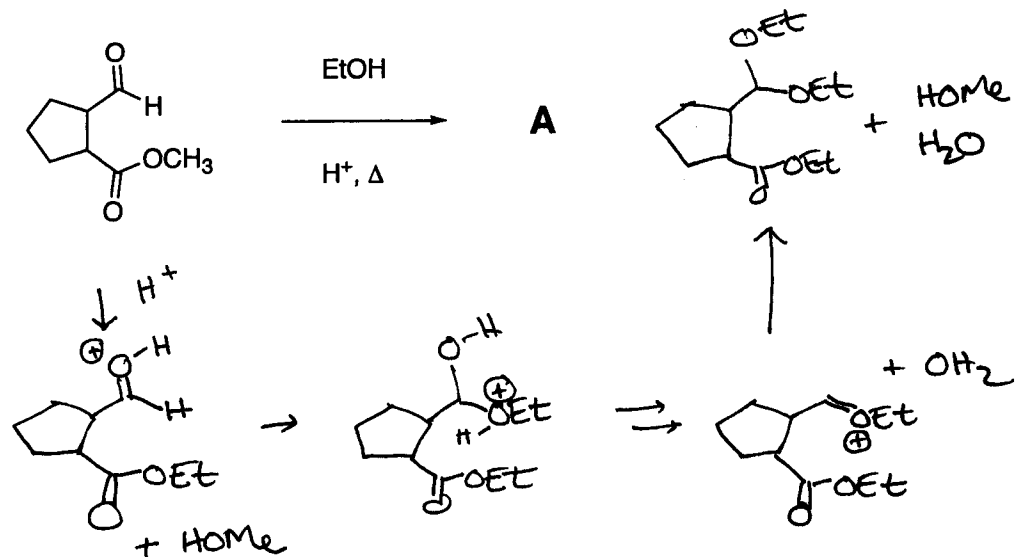
(20 points)

2. Show how N-benzyl protected phenylalanine can be synthesized from the reagents given. You do not need to draw mechanisms, but do provide reaction conditions and indicate any intermediates that will be formed. (Note: This is the Strecker synthesis of amino acids, which we discussed in class.)

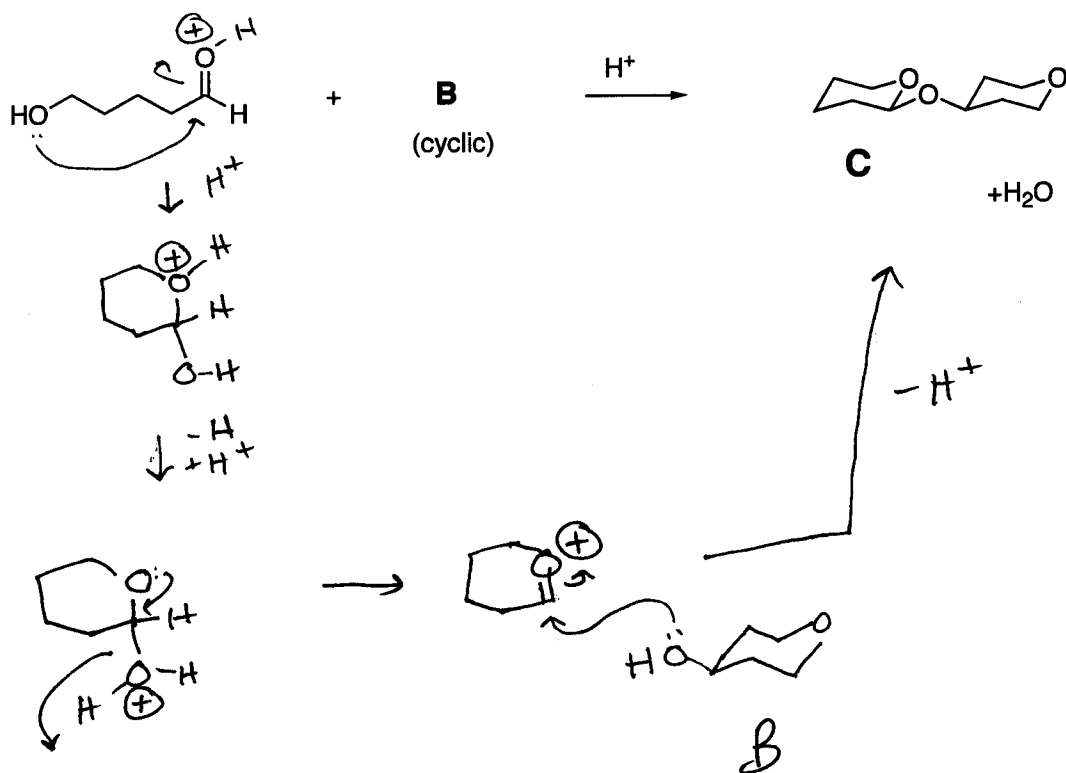


(15 points)

- 3a. Give the structure of product **A**, and list the other organic byproducts (i.e. balance the equation).

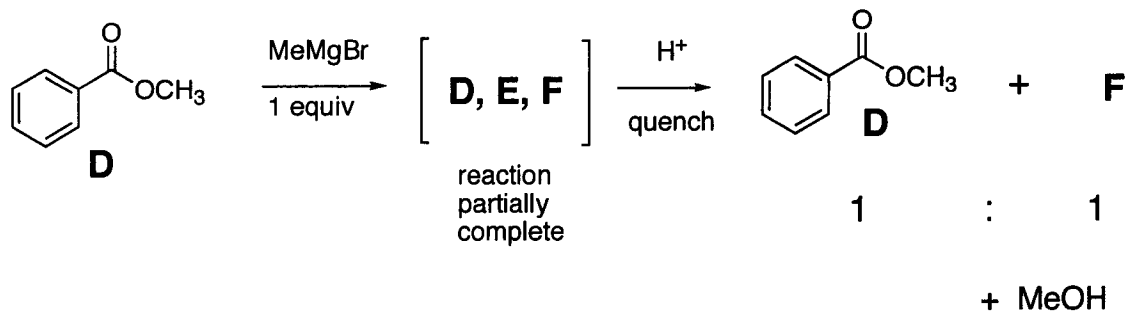


- 3b. Give the structure of **B** and the mechanism for the formation of **C**.

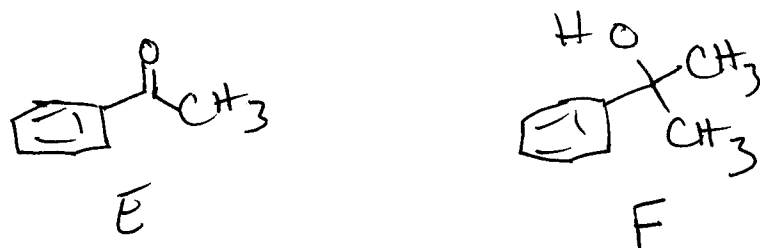


(35 points)

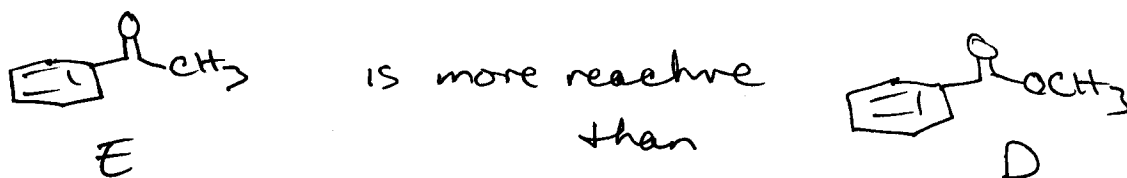
4. The reaction below gives a 1:1 ratio of starting ester **D** to a new product **F**. An intermediate **E** can be detected partway through the reaction, but is not found in the product mixture.



- a) Give the structures of **E** and **F**



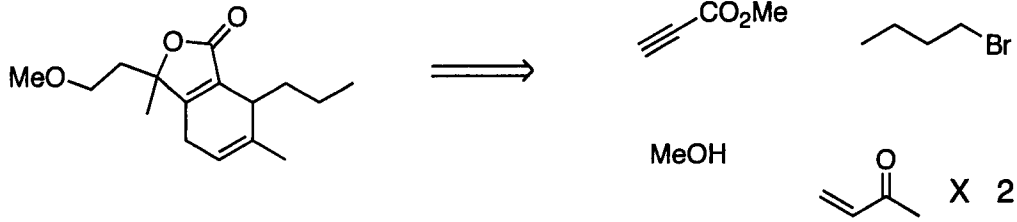
- b) Explain why half of the starting material does not react.



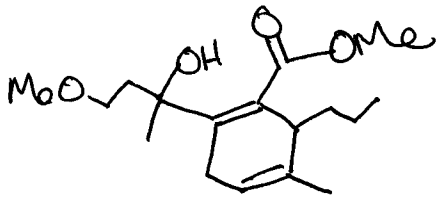
The first molecule of MeMgBr will react with D, to give E but the second molecule will react with E because E is more reactive. So E is immediately consumed and only half an equivalent of MeMgBr reacts with D.

(15 points)

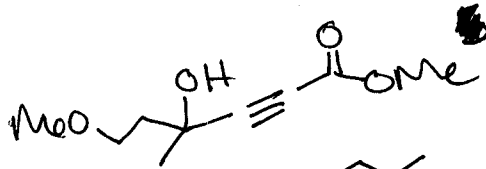
5. Propose a synthesis of the following target from the starting materials given. You may use any reagents you need.



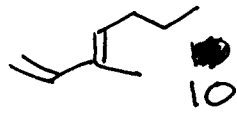
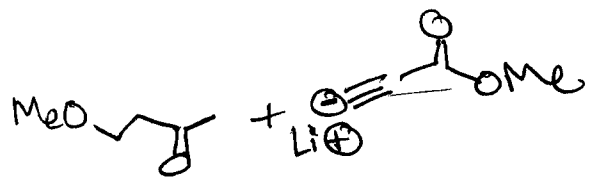
5 \Downarrow H^+ 5



5-10 \Downarrow Δ (D-A)



5 \Rightarrow

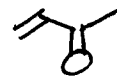


10

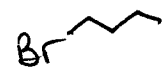
5 \Downarrow H^+

5 \Downarrow $KOtBu$

Home



5 \Downarrow



5 for reagents

(40 points)