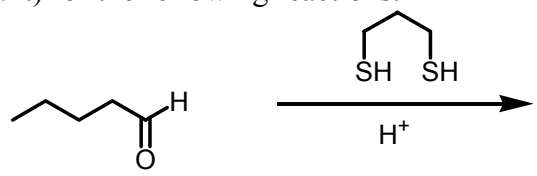
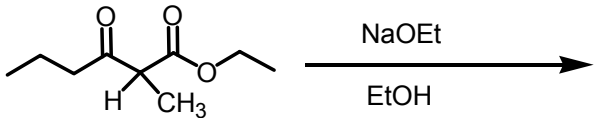
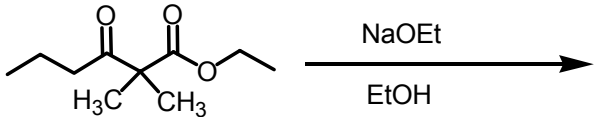
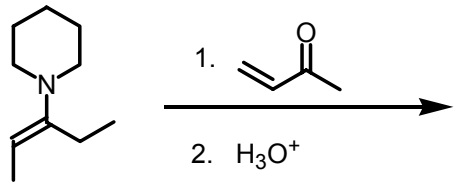
Old Exam Questions for Ch. 19

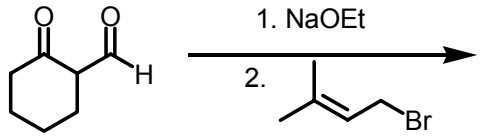
1. Show the major product (or products if more than one will be formed in significant amount) for the following reactions:

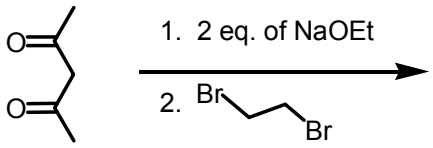
a. 

b. 

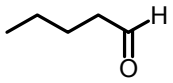
c. 

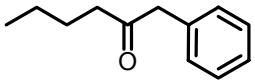
d. 

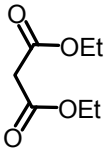
e. 

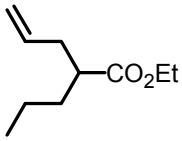
f. 

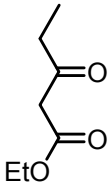
2. Show regents and any intermediate compounds which would be isolated for the following conversion. Any reagents stable enough to buy may be used.

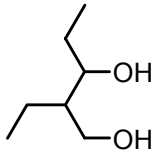
a. 

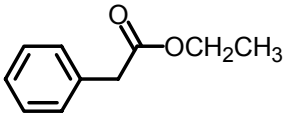


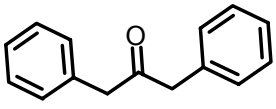
b. 



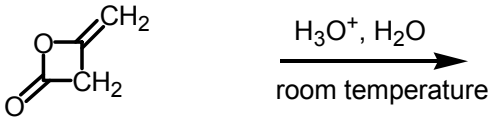
c. 

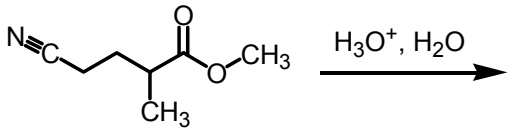


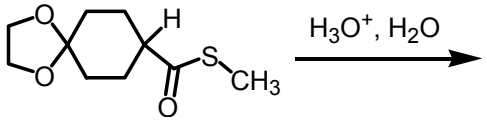
d. 



3. Draw structures of the complete acidic hydrolysis products of the following compounds:

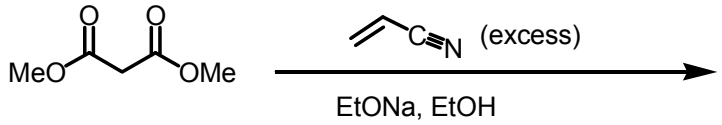
a. 

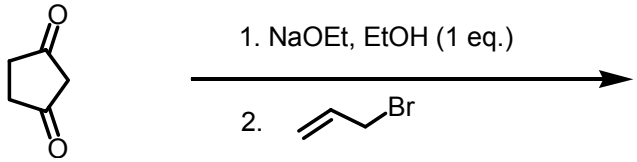
b. 

c. 

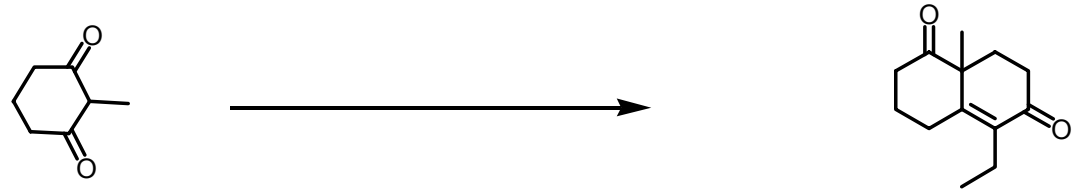
d. One of the above compounds is not completely hydrolyzed with $NaOH/H_2O$. Which one, what is the product of basic hydrolysis, and why doesn't it hydrolyze completely in base?

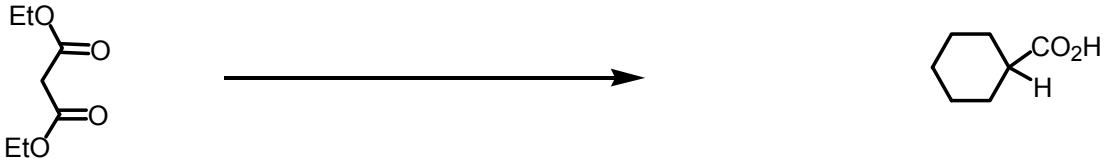
Give the major product(s):

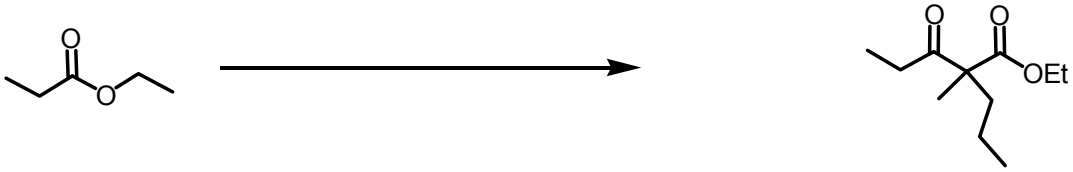
e. 

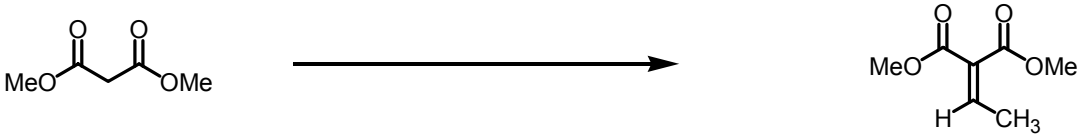
f. 

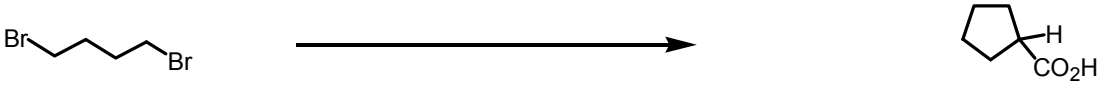
4. Show the reagents necessary for the following conversions. Number the steps if the reagents cannot be mixed, but <u>do not</u> show intermediate compounds or mechanisms.

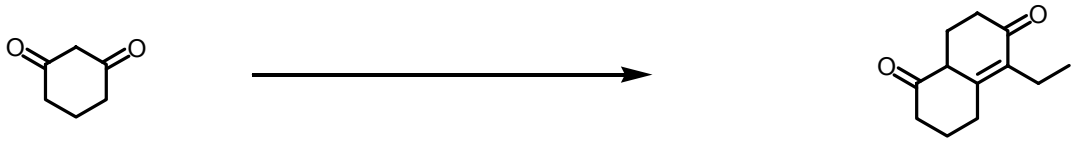
a. 

b. 

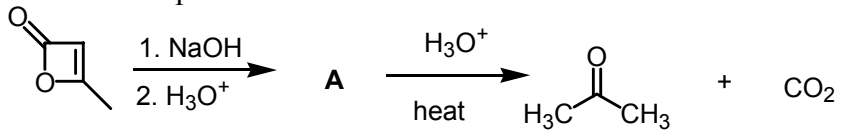
c. 

d. 

e. 

f. 

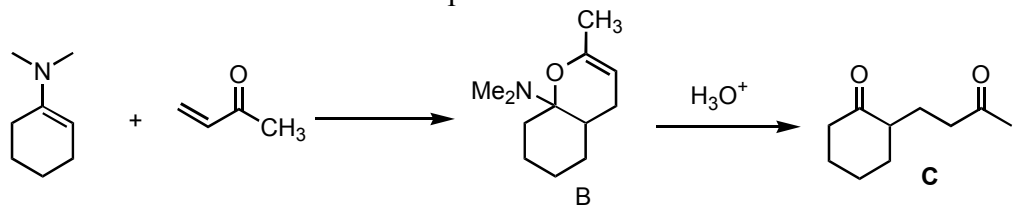
5. Write reasonable arrow pushing mechanisms for the following reactions. Explicitly show the arrows for each proton transfer.



a) Show the formation of **A**, being sure to indicate what is present after step 1.

b) Show the conversion of **A** to the final products.

c) For this reaction of an enamine with an alpha, beta unsaturated ketone, give the mechanisms for formation of each product:

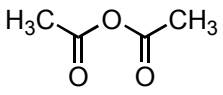


i. Formation of **B**:

ii. Conversion of **B** to **C**:

6.Miscellaneous

a. Put in order: strongest acid=1, weakest = 4.



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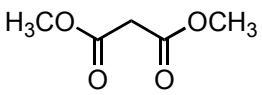

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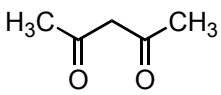

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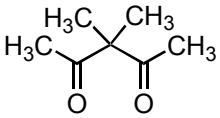

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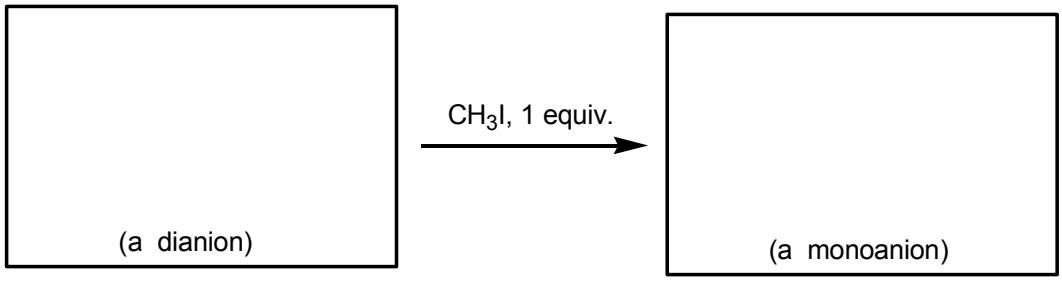
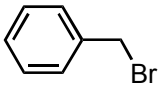
b. Two equivalents of LDA at -78°C will deprotonate methyl acetoacetate twice. Draw the best resonance form of the dianion in the left box and its methylation product in the right box. (Hint: methylation gives the most stable methylated monoanion)



c. Write yes under compounds that react with diethylmalonate anion to form a C-C bond and no under those that do not:



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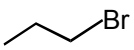

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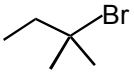

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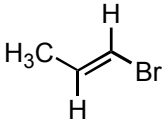

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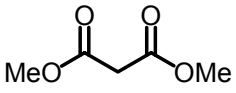
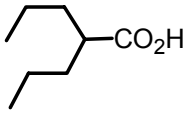
d. Show how to carry out the following transformation:





e. Draw two resonance forms of the most stable protonated product for each (assume no nucleophile is present).