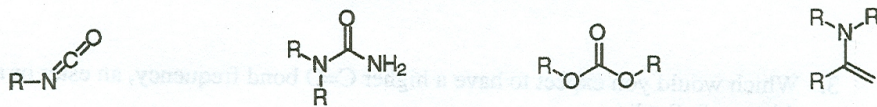


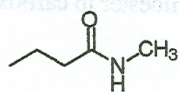
Dr. Davies
Organic II lecture
Review for exam 4

I. Nomenclature

1. Name the following functional groups.



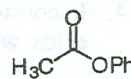
2. Provide an IUPAC and/or common name for each of the following:
(I = IUPAC / C = Common)



I:
C:



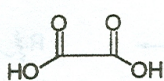
I:
C:



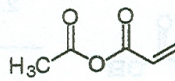
I:
C:



I:
C:



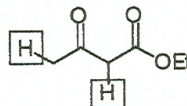
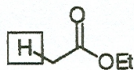
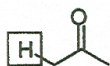
C:



C:

II. Theory

1. Give the pKa values of each of the following.



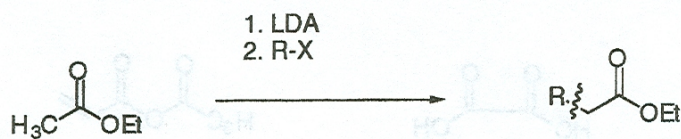
2. Explain why the C=O bond of conjugated esters have lower vibrational frequencies and lactones have higher frequencies than unconjugated acyclic esters.

3. Which would you expect to have a higher C=O bond frequency, an ester or a thioester? Explain.

4. In considering the rate of hydrolysis of an ester and a thioester to carboxylic acids, which would proceed most rapidly?

III. Reactions

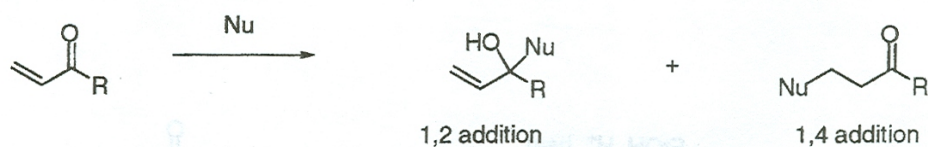
1. What might be a side reaction associated with the direct alkylation of an ester?



2. In the Claisen ester condensation reaction, why do only two molecules condense and not several to form a polymer?



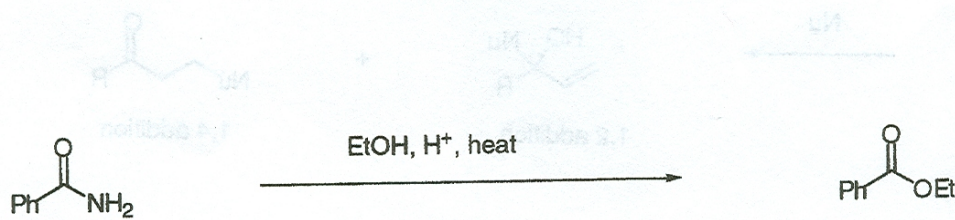
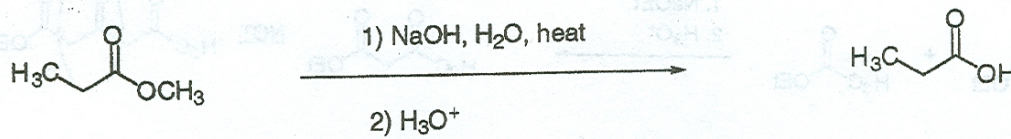
3. In nucleophilic addition to a conjugated ketone, explain the factors favoring 1,2 addition versus 1,4 addition. Draw out intermediates.

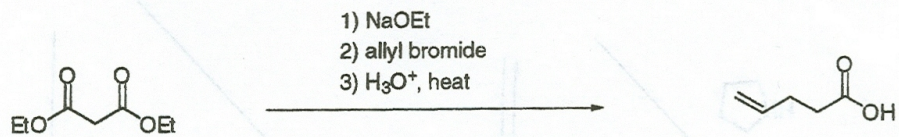
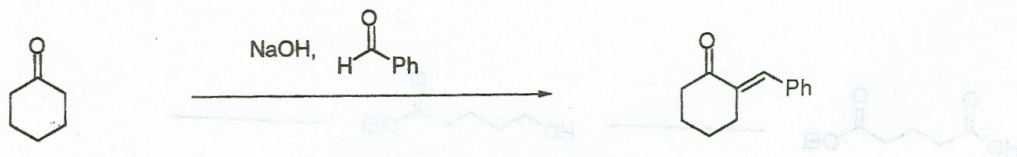


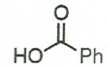
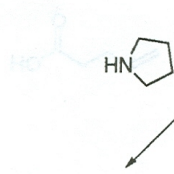
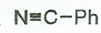
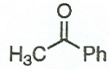
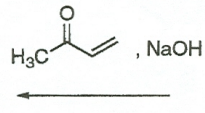
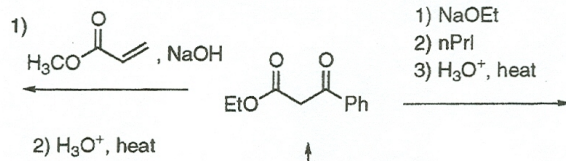
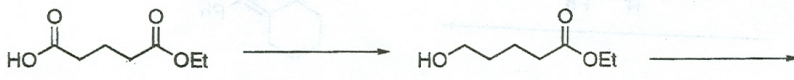
4. Provide the starting material, reagent, or product of the reactions on last page.

IV. Mechanisms

1. Provide the mechanisms of the following reactions:







3 ways

