

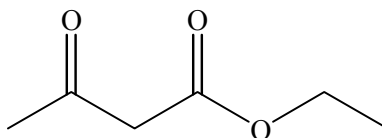
Name: \_\_\_\_\_

## Organic Chemistry - CHEM 231B

Test #4

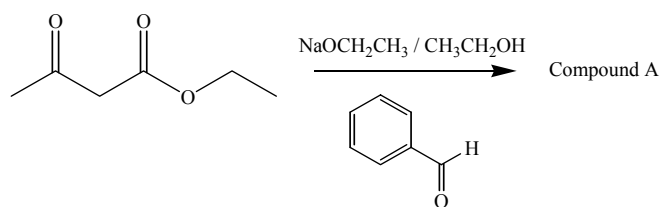
May 10, 2002

1. Consider ethyl acetoacetate:



- 1a. Explain the types of reactivity that this molecule exhibits. If there is more than one of the same reactivity types, explain the difference between the different centers. (15 points)
- 1b. What simple inorganic reagents could you mix with ethyl acetoacetate to change its reactivity? Explain briefly what reaction would occur and how it would change the reactivity. (5 points)

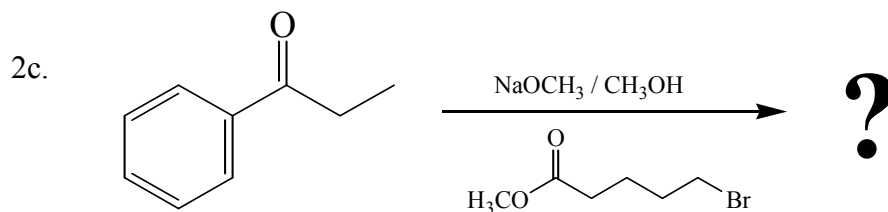
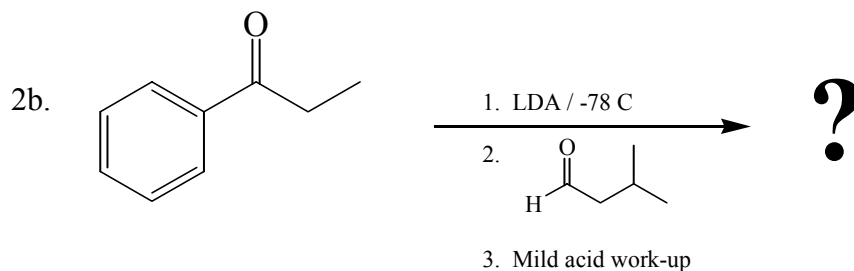
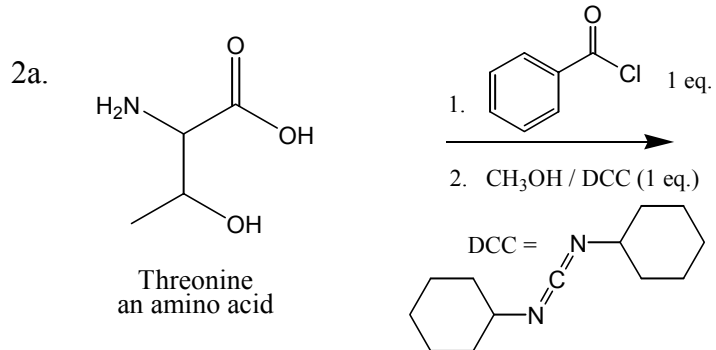
1c. Consider the following reaction:



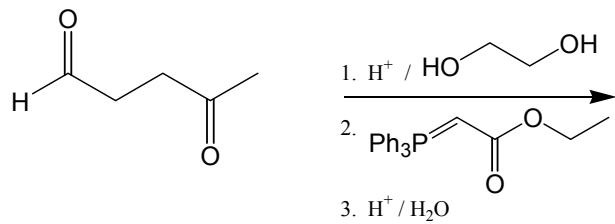
What is the product formed in this reaction (Compound A)? (4 points)

1d. Bob decided he wanted to perform the above reaction, but he could not find sodium methoxide and methanol in the lab, so he used sodium hydroxide and water instead. Furthermore, he accidentally spilled some acetone in his reaction. All of the ethyl acetoacetate was consumed in his reaction. His reaction resulted in the formation of a complex mixture of products. He also noticed that one of the minor byproducts of the reaction was carbon dioxide. Predict what three of the products might be. (6 points)

2. Predict the major product formed for the following reactions and briefly comment on the important factors to consider in order to predict the products for the reaction. Mechanisms are NOT required. (5 @ 8 pts = 40 points)

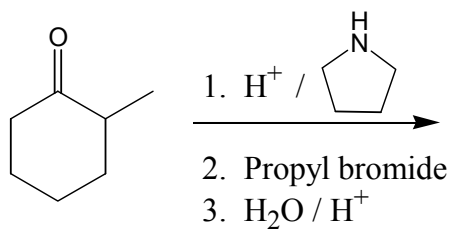


2d.



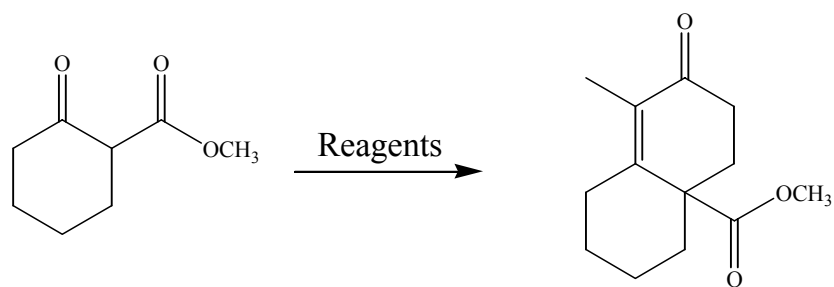
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2e.



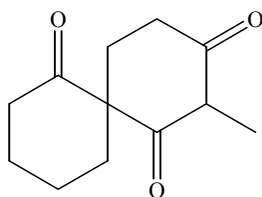
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3. Consider the following reaction: (30 points)



3a. Provide reagents and write a mechanism that accounts for the formation of the observed product. (24 pts)

3b. A possible alternative product of the previous reaction (same reagents and conditions) may have been the following:



Provide two reasons why this product is not formed. (hint: consider where this product may have arisen within your mechanism) (6 points)

