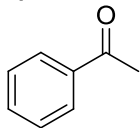


PRACTICE PROBLEMS – UNIT 20

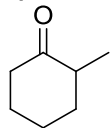
20A. Draw the enol or enolate form of aldehydes and ketones.

20A.1 Draw all possible enol forms for the following compounds.

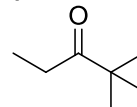
a)



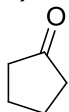
c)



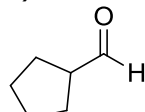
e)



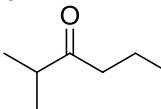
b)



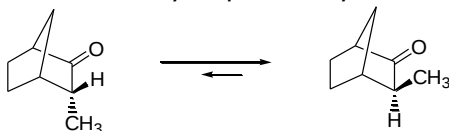
d)



f)

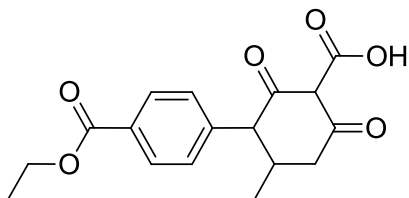


20A.2 Briefly explain why the following isomerization occurs in the presence of an acid or base catalyst.

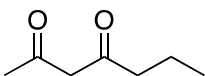


20B. Predict acid-base properties of carbonyl compounds.

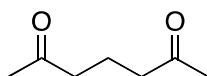
20B.1 Indicate all acidic protons ($pK_a < 25$) on the molecule below.



20B.2. Explain why compound A is more acidic than compound B.



A

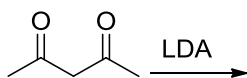


B

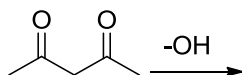
20B.3 What is the advantage of using LDA over $LiNH_2$ as a base?

20B.4 Predict the product. If no reaction write NR.

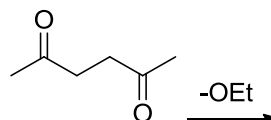
a)



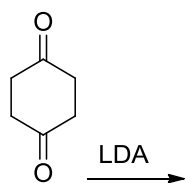
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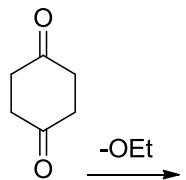
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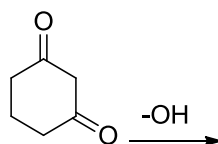
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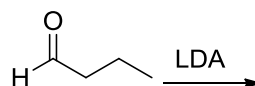
e)



f)

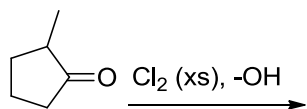


g)

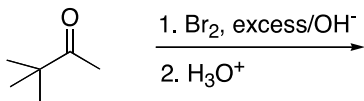


20C. Predict products of α -halogenation, α -alkylation and the haloform reaction.

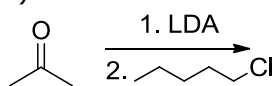
a)



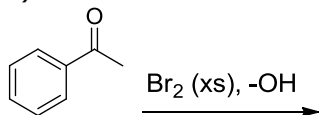
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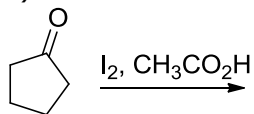
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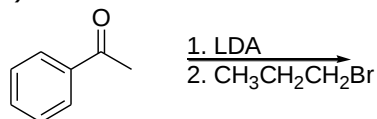
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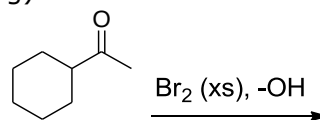
e)



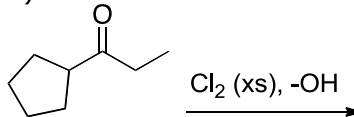
f)



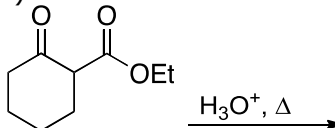
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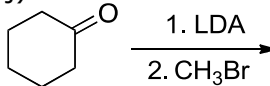
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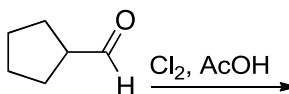
i)



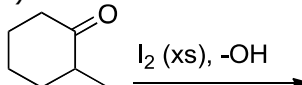
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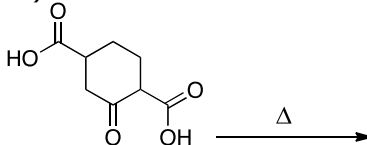
k)

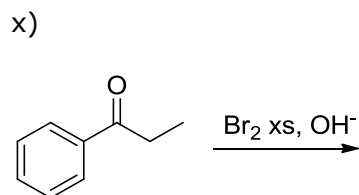
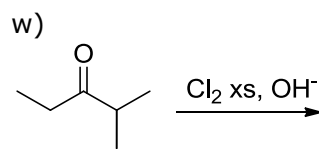
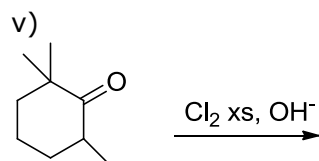
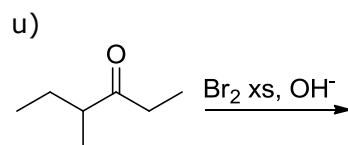
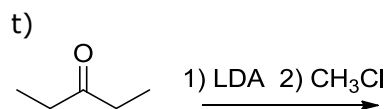
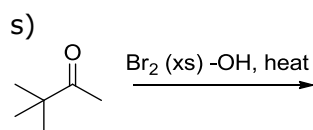
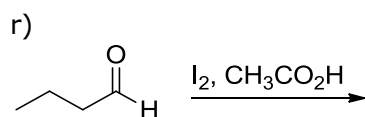
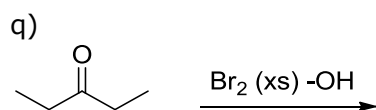
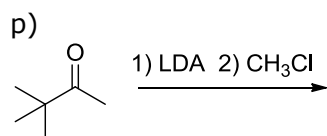
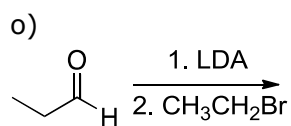
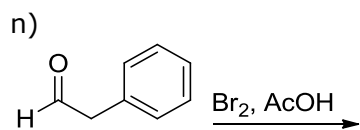


l)

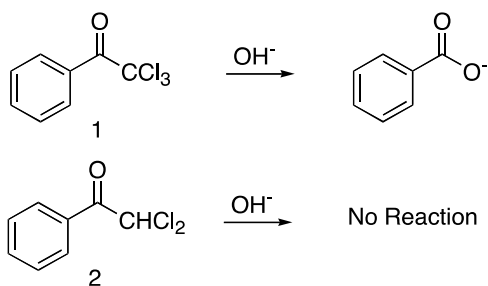


m)



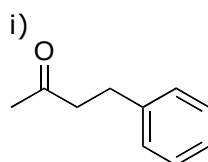
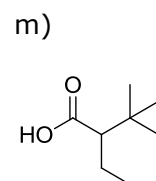
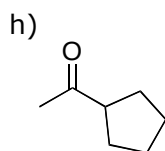
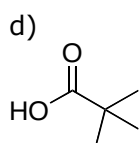
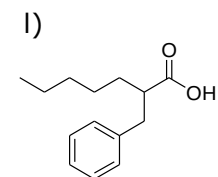
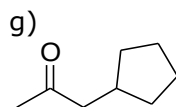
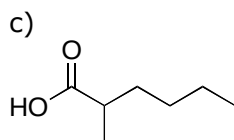
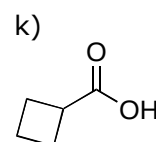
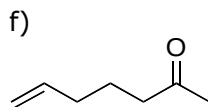
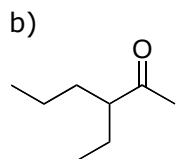
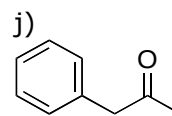
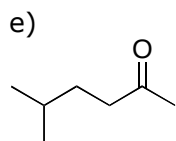
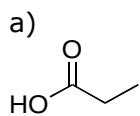


20C.2 Explain why compound 1 is reactive to base but compound 2 is not.



20D. Synthesize substituted carboxylic acids and methyl ketones starting with malonic and acetoacetic ester synthesis.

20D.1 Synthesize the following from acetoacetic ester or malonic ester. Show the starting material and reagents. If the synthesis is not possible, indicate why.



20E. Use α -substitution reactions as part of multistep synthesis.

20E.1 Proposed a multistep synthesis for the following transformations.

