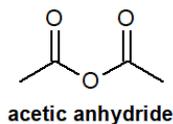


## 22.13: ADDITIONAL EXERCISES

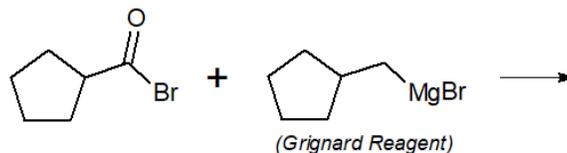
### General Review

22-1 Suggest a carboxylic acid and an acid derivative that could be reacted together to form the following molecule.



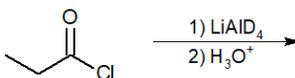
22-2 For the following reaction, predict the product if:

- only one equivalent of the Grignard reagent was used (and the product could be isolated)
- if two equivalents were used (followed by an acid workup)

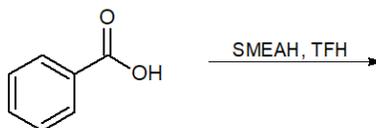


22-3 Provide the final products of the following reactions.

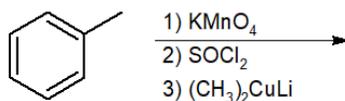
a)



b)



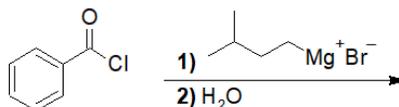
22-4 Predict the final product of the following reaction.



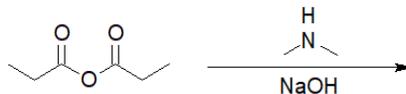
### Interconversion of Acid Derivatives by Nucleophilic Acyl Substitution

22-5 Predict the interconverted acid derivatives of the following reactions.

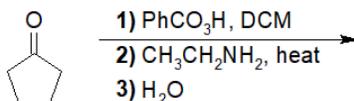
a)



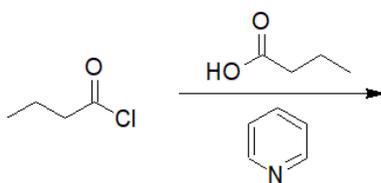
b)



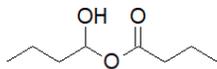
22-6 Predict the structure of the product and give its IUPAC nomenclature.



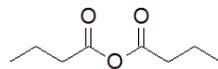
22-7 Choose the correct answer for the product of the following reaction.



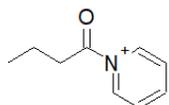
a)



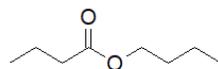
b)



c)

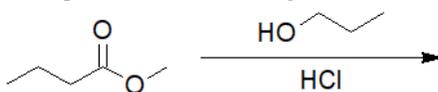


d)



### Transesterification

22-8 Choose the correct IUPAC nomenclature of the product of the following reaction.



- a) ethyl butanoate
- b) propan-2-yl butanoate
- c) dipropyl carbonate
- d) propyl butanoate

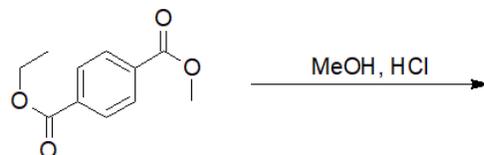
22-9 Explain why transesterification can be done under acidic or basic conditions.

22-10 Give the products of the following transesterification reactions.

a)



b)

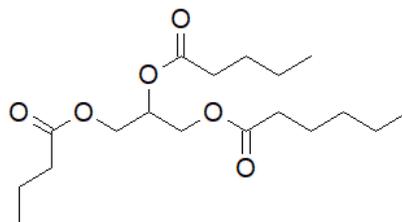


### Hydrolysis of Carboxylic Acid Derivatives

22-11 Provide the correct structure of the product of the following hydrolysis reaction.

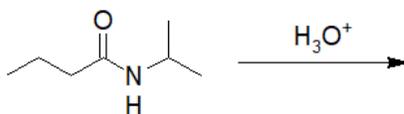


22-12 Provide the structure of all the products resulting from the hydrolysis of the following triglyceride.

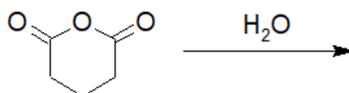


22-13 Provide the structures and IUPAC nomenclature of the products.

a)

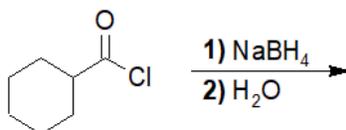


b)

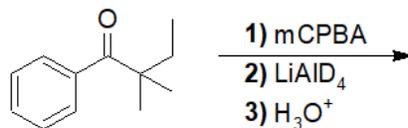


### Reduction of Acid Derivatives

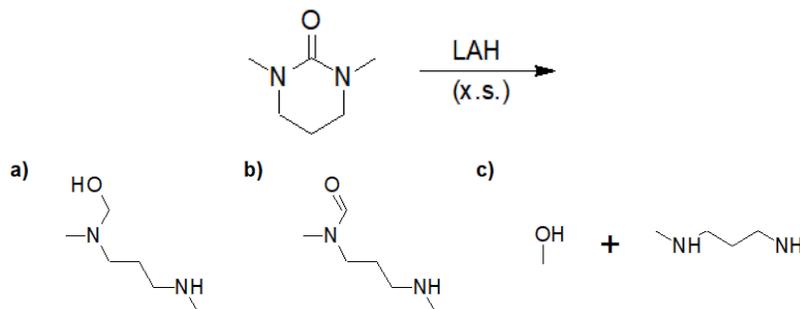
22-14 Give the structure of the product of the following reaction.



22-15 Provide the structure of all the products (including leaving groups) formed in the following reaction.

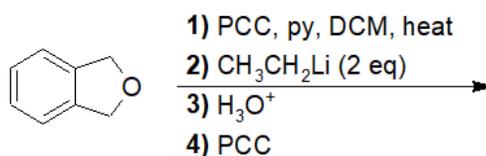


22-16 Choose the correct answer that gives the products of a fully reduced 1,3-dimethyl-1,3-diazinan-2-one.

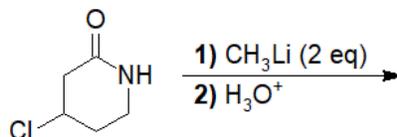


### Reactions of Acid Derivatives with Organometallic Reagents

22-17 Predict the product of the following reaction.

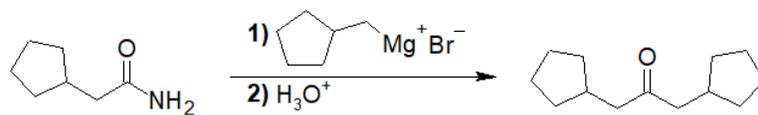


22-18 Choose the correct IUPAC nomenclature of the product of the following reaction.



- a) 6-amino-5-chlorohexan-2-one
- b) 6-amino-5-chloro-2-methylhexan-2-ol
- c) 6-amino-4-chloro-2-methylhexan-2-ol
- d) 4-chloro-2-methylpiperidin-2-ol

22-19 Decide whether or not the following reaction is the best way to obtain the final product. If not, suggest a better route of synthesis.



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