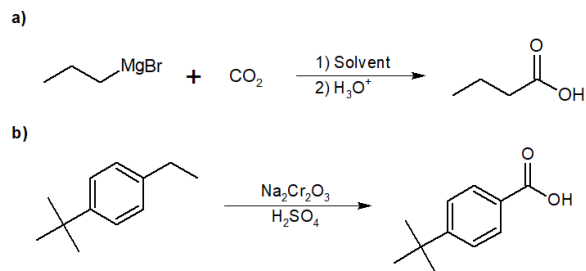


21.12: SOLUTIONS TO ADDITIONAL EXERCISES

General Review

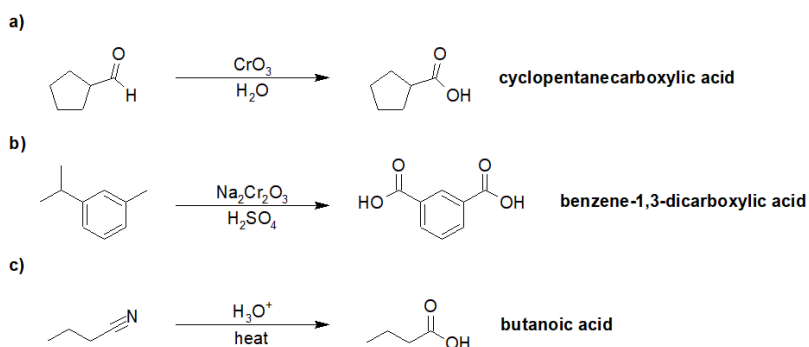
21-1



21-2 1-[4-(hydroxymethyl)phenyl]ethan-1-one

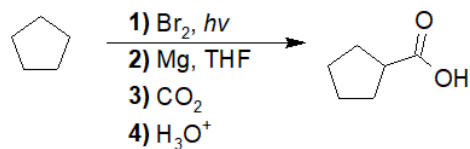
Synthesis of Carboxylic Acids

21-3:



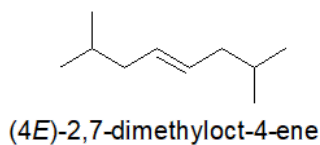
21-4:

Possible route of synthesis:



21-5:

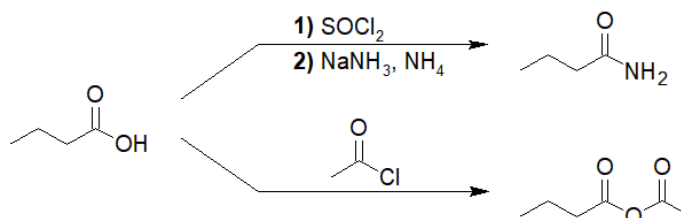
Answer: C



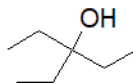
(E or Z orientation allowed)

Reactions of Carboxylic Acids and Derivatives: Nucleophilic Acyl Substitution

21-6:



21-7:

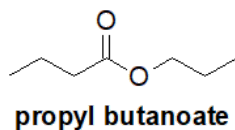


21-8:

Answer: B

Condensation of Acids with Alcohols: the Fischer Esterification

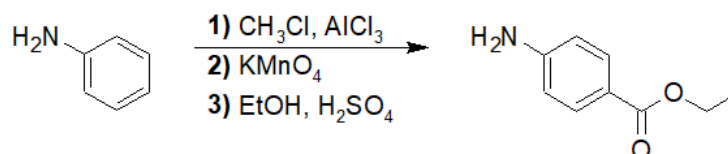
21-9:



21-10:

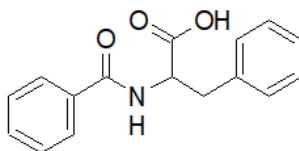
Answer: D

21-11:



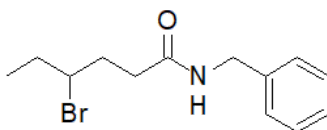
Condensation of Acids with Amines: Direct Synthesis of Amides

21-12:



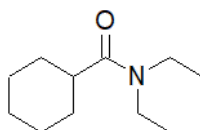
21-13:

Answer: C



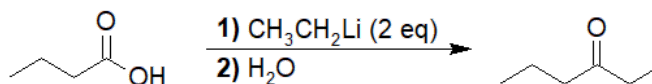
N-benzyl-4-bromohexanamide

21-14:



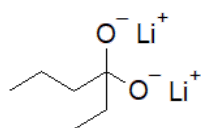
Alkylation of Carboxylic Acids to Form Ketones

21-15:



21-16:

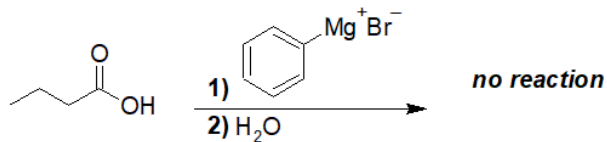
Two equivalents of the organolithium reagent is necessary for the alkylation of carboxylic acids because one equivalent is used to form a salt with the carboxylic acid and the other equivalent is the nucleophile that adds to the carbonyl carbon.



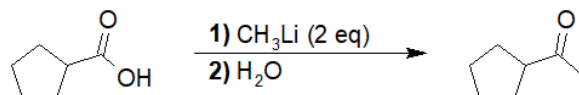
An example of the intermediate from problem 20-1.

21-17:

a)



b)



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