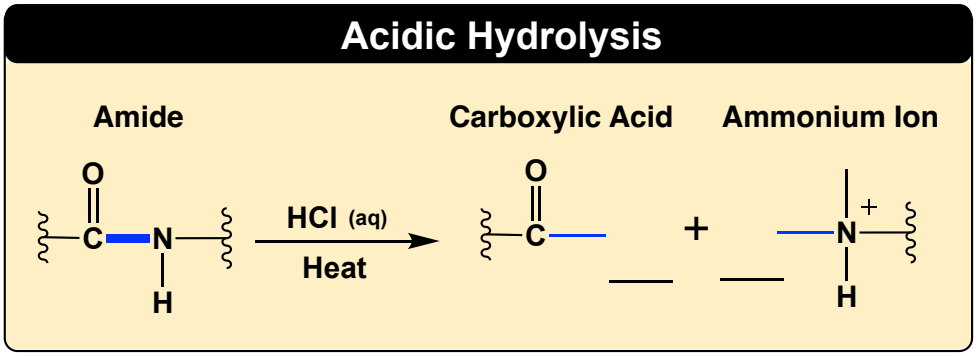
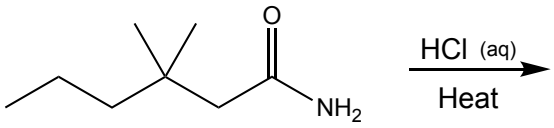
CONCEPT: AMIDE HYDROLYSIS

Acidic Hydrolysis

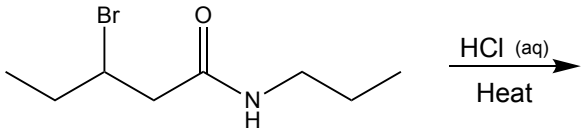
- Under this reaction an amide is _____ into a carboxylic acid and an ammonium ion in acidic medium.
  - □ The carbonyl carbon gains an ____ and the nitrogen gains ___ hydrogen atoms.



EXAMPLE: Determine the products when 3,3-dimethylhexanamide is treated with an aqueous hydrochloric acid solution.



PRACTICE: Name the carboxylic acid formed when the following amide undergoes an acidic hydrolysis reaction.



a) 2-bromopentanoic acid

b) 3-bromohexanoic acid

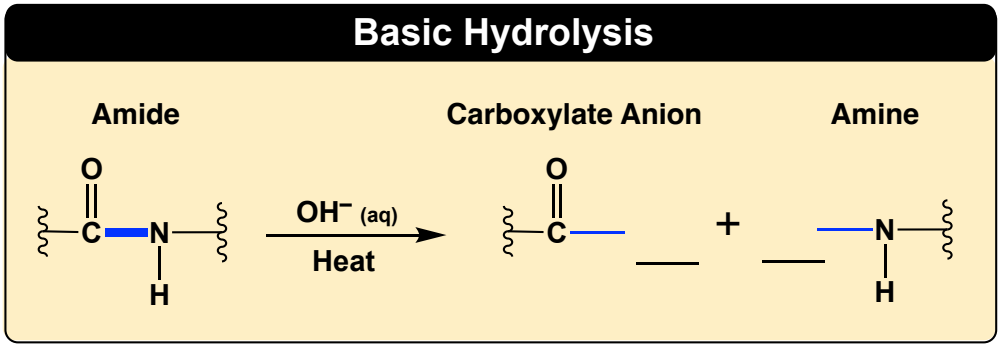
c) 3-bromopentanoic acid

d) 3-bromohexanoate

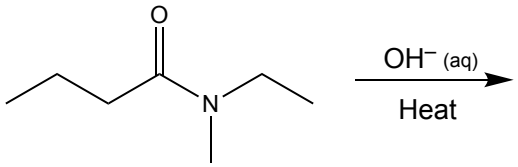
CONCEPT: AMIDE HYDROLYSIS

Basic Hydrolysis

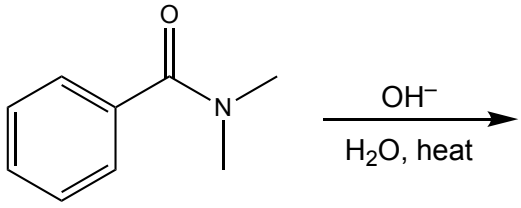
- Under this reaction the _____ ion dissolved in water reacts with an amide.
  - □ This reaction cleaves the amide bond to create a carboxylate anion and an amine.
    - The carbonyl carbon gains an ____ and the nitrogen gains ____ hydrogen atom.

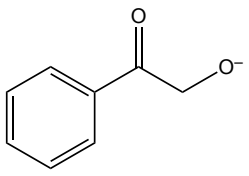


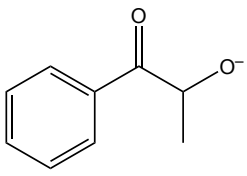
EXAMPLE: Determine the products when *N*-ethyl-*N*-methylbutanamide is treated with an aqueous hydroxide ion solution.

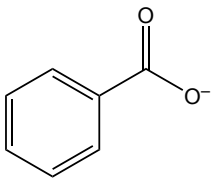


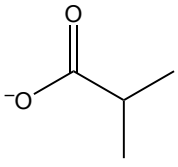
PRACTICE: Determine the carboxylate anion formed in the following reaction between the given amide and aqueous base.



a) 

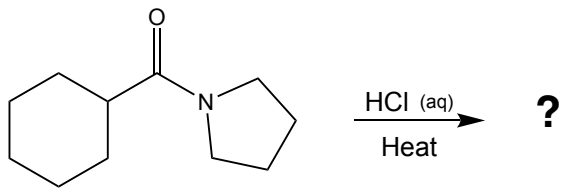
b) 

c) 

d) 

CONCEPT: AMIDE HYDROLYSIS

PRACTICE: Determine the nitrogen product formed when the following amide undergoes acidic hydrolysis.



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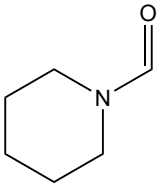

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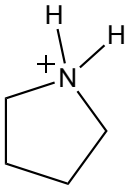

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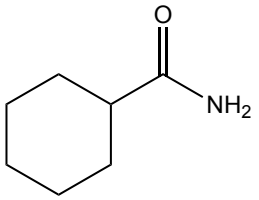

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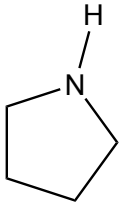
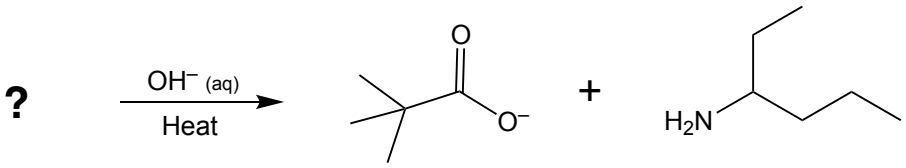


PRACTICE: What was the starting material that created the following products?



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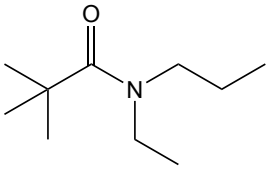

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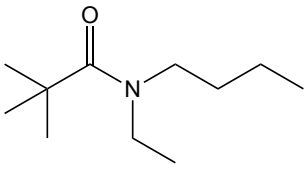

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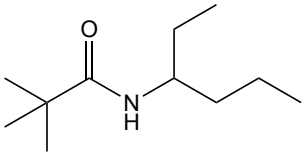

d)