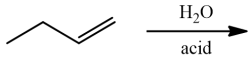
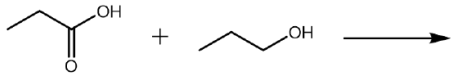
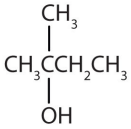
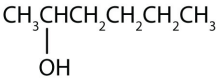
5.E: Organic Chemical Reactions (Exercises)

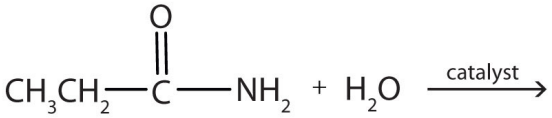
Additional Exercises

1. What would be the ultimate organic product if $CH_3CH_2CH_2OH$ were to react with a solution of $K_2Cr_2O_7$?
2. What would be the major organic product if $CH_3CH_2CHOHCH_2CH_3$ were to react with a solution of $K_2Cr_2O_7$?
3. What alcohol is produced in the reduction of propanal (CH_3CH_2CHO)?
4. Complete each equation.
   a. 

   b. 

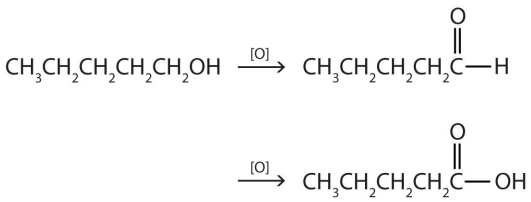
   c. 

5. Write an equation for the oxidation of each alcohol. Use [O] above the arrow to indicate an oxidizing agent. If no reaction occurs, write “no reaction” after the arrow.
   a. $CH_3CH_2CH_2CH_2CH_2OH$
   b. 
   c. 
6. Write the equation for the reaction of acetic acid with each compound.
   a. ethanol
   b. 1-butanol in the presence of a mineral acid catalyst
7. How do acidic hydrolysis and basic hydrolysis of an ester differ in terms of
   a. products obtained?
   b. the extent of reaction?
8. Write an equation for the acid-catalyzed hydrolysis of ethyl acetate.
9. Write the condensed structural formulas and names of the two compounds from which pentanamide is formed.
10. Complete the following equation.

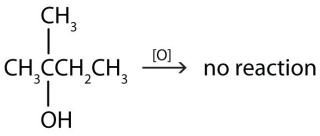


Answers

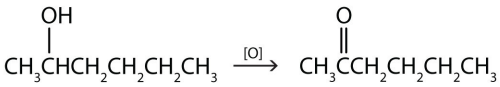
1. CH_3CH_2COOH
3. $CH_3CH_2CH_2OH$
5. a.



b.



c.



7. a. acidic hydrolysis: carboxylic acid + alcohol; basic hydrolysis: carboxylate salt + alcohol
   b. basic hydrolysis: completion; acidic hydrolysis: incomplete reaction
9. $CH_3CH_2CH_2CH_2COOH$ (pentanoic acid) and NH_3 (ammonia)
