Key

Worksheet 8

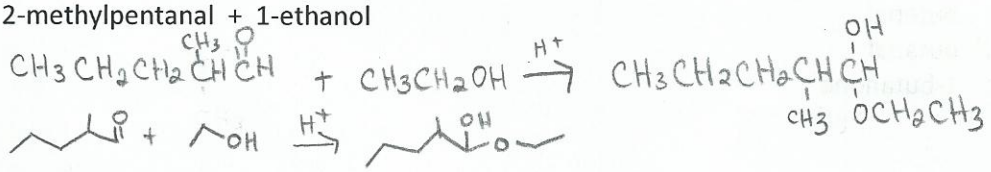
7 February 2014

**Part 1: Fill in the Blank**

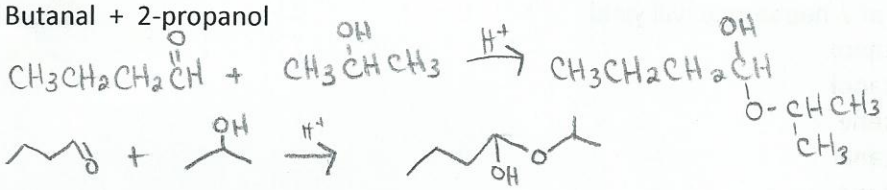
1. Aldehyde + alcohol → hemiacetal
2. Hemiacetal + alcohol → acetal + $H_2O$
3. Write the general "c" formula for a hemiacetal C-O-C-OH
4. Write the general "c" formula for an acetal C-O-C-O-C
5. A cyclic hemiacetal is formed from a hydroxyaldehyde or a hydroxyketone.

**Part 2: Hemiacetal formation (not cyclic)**

6. 2-methylpentanal + 1-ethanol

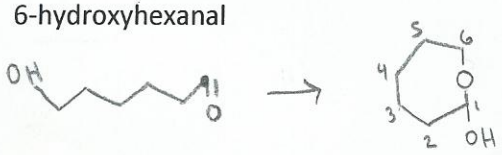


7. Butanal + 2-propanol

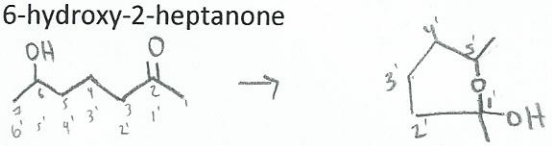


**Part 3: Cyclic hemiacetal formation** (just put it into a ring)

8. 6-hydroxyhexanal

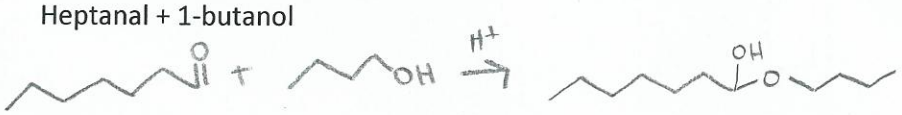


9. 6-hydroxy-2-heptanone

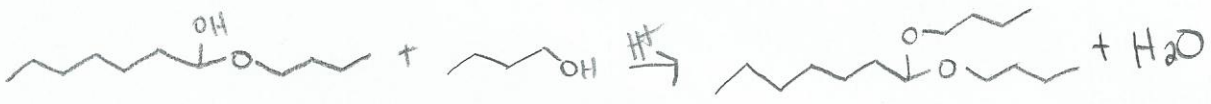


**Part 4: Acetal formation**

10. Form an acetal from heptanal and 1-butanol (This is a 2 step reaction)
    1. Form the hemiacetal:
       Heptanal + 1-butanol



    2. Form the acetal:
       Hemiacetal product from part 1 + more 1-butanol



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Multiple Choice Practice

1. Secondary alcohols will oxidize to: c
   a. Alkanes
   b. Aldehydes
   c. Ketones
   d. Ethers
   e. Esters

2. What is the name of $CH_3CH_2CH_2CHO$ d
   a. 1-butenal
   b. 1-butanol
   c. butenal
   d. butanal
   e. 1-butanone

3. The reduction of 2-heptanone will yield b
   a. 1-heptanol
   b. 2-heptanol
   c. 2-heptene
   d. 1-heptanal
   e. 3-heptene

4. What is the molecular formula for 3-octanone? d
   a. $C_8H_{16}OH$
   b. $C_8H_{18}O$
   c. $C_8H_{16}$
   d. $C_8H_{16}O$
   e. $C_8H_{18}$