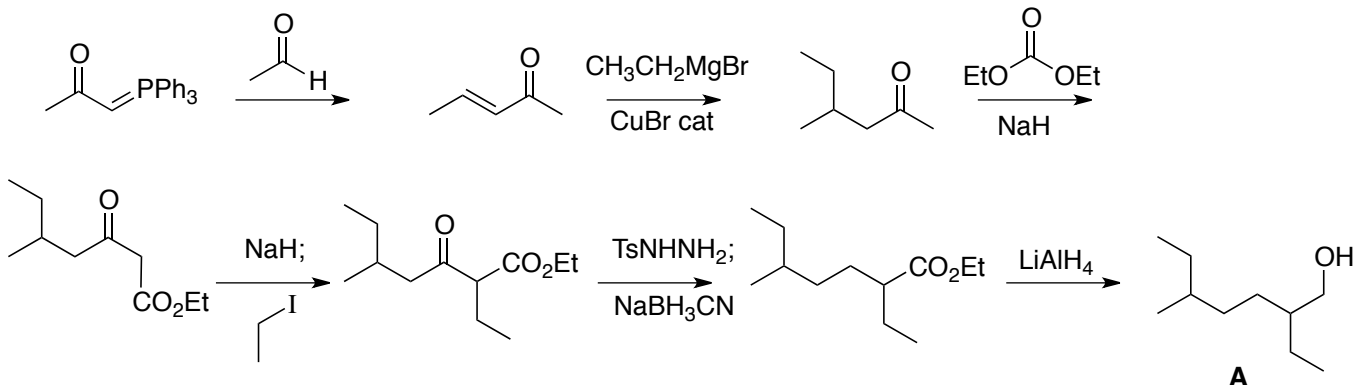
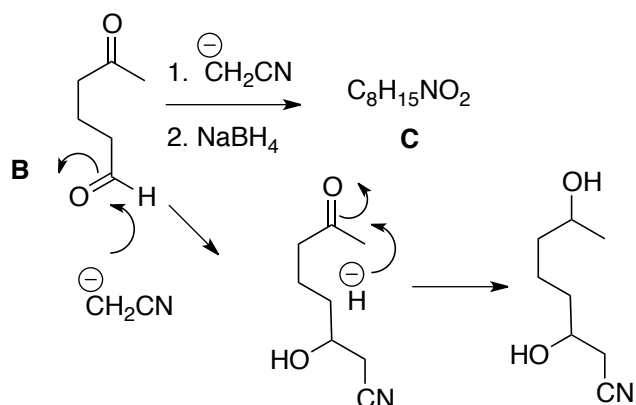


1. (10 points) Using any piece that contributes three or fewer carbons to the final product, outline a synthesis of **A**.



2. (10 points) Deduce the structure of **C**, and draw an arrow-pushing mechanism for its formation.



**<sup>13</sup>C NMR**

21.5, q  
 23.8, t  
 26.2, t  
 36.1, t  
 38.2, t  
 67.4, d  
 67.8, d  
 117.8, s

**<sup>1</sup>H NMR**

1.20, d, J=6.2 Hz, 3H  
 1.4-1.7, m, 6H  
 2.50, dd, J=5.1, 16.6 Hz, 1H  
 2.56, dd, J=6.3, 16.6 Hz, 1H  
 3.1, m, 2H (exchanges)  
 3.83, m, 1H  
 3.95, m, 1H

3. (10 points) Draw an arrow-pushing mechanism for the conversion of **D** to **E**.

