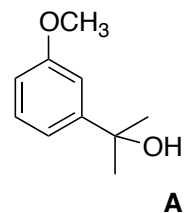
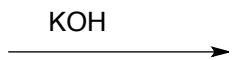
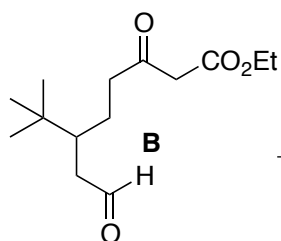


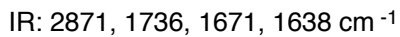
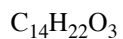
1. (10 points) Using any monosubstituted benzene that contributes six carbons to the final product, and any other piece that contribute three or fewer carbons to the final product, outline a synthesis of **A**.



2. (10 points) Draw the structure of **C**, and the mechanism for its formation from **B**.



C



^{13}C NMR:

188.0, s

164.7, s

149.8, d

135.9, s

61.8, t

43.2, t

32.1, s

28.4, q (3)

27.0, d

23.4, t

22.8, t

14.0, q

1H NMR:

6.97, t, $J = 4.6$ Hz, 1H

4.31, q, $J = 7.1$ Hz, 2H

2.4, m, 2H

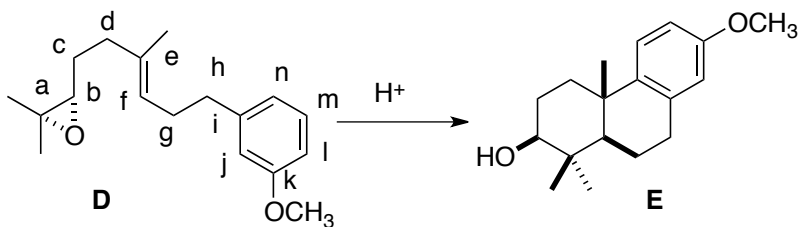
2.1, m, 2H

1.5, m, 3H

1.34, t, $J = 7.1$ Hz, 3H

0.87, s, 9H

3. (10 points) Outline a mechanism for the transformation of **D** to **E**.



bb | bf