1. (10 points) Deduce the structures of **A** and **B**, and name **A** and **B**.

OCH₃ LiAlH₄ A
$$\xrightarrow{\text{CrO}_3}$$
 B $C_6\text{H}_{14}\text{O}$ $C_6\text{H}_{12}\text{O}$

13C NMR: 63.5, t 13C NMR: 206.2, d

2. (10 points) Using any starting materials that conribute three or fewer carbons to the final product, outline a synthetic route to C. Absolute configuration is not important, but relative configuration is.

3. (10 points) Deduce the structure of \mathbf{E} , and draw an arrow-pushing mechanism for its formation. NaBH4 can be represented in the mechanism as \mathbf{H}^{-} . Mild acid workup is assumed.

For ¹³C tables beyond the spectroscopy text, see http://www.chem.wisc.edu/areas/reich/Handouts/nmr-c13/cdata.htm