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

OH
$$CrO_{3} \longrightarrow A \longrightarrow B$$

$$C_{5}H_{10}O \longrightarrow C_{9}H_{16}O_{2}$$

$$^{13}C \text{ NMR: 204, d} \longrightarrow ^{13}C \text{ NMR: 172, s}$$

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 **E**, and draw an arrow-pushing mechanism for its formation.