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

$$\begin{array}{c} A \\ O \\ MgBr \end{array} \begin{array}{c} A \\ O \\ HO \end{array} \begin{array}{c} PBr_3 \\ Pd \ cat \end{array} \begin{array}{c} A \\ Pd \ cat \end{array}$$

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

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