Final Review

1. Fill in the products for the following reactions:

2. Fill in the reagents or products for the following Williamson Ether Synthesis.
3. Fill in the products for the following reactions:

4. Fill in the products for the following reaction:
5. Fill in the product for the following reaction and complete the mechanism.
6. Fill in the product for the following reaction and complete the mechanism.
7. Propose a structure consistent with each set of given data.
   a. C₉H₁₀O₂: IR absorption at 1718 cm⁻¹

![Structure with 5 degrees of unsaturation]

8. Draw the products of the following reactions. Be sure to include arrow pushing in your answer.

- **First Reaction**
  \[ \text{Propene} + \text{Maleic acid} \xrightarrow{\Delta} \text{Product} \]

- **Second Reaction**
  \[ \text{Propene} + \text{1,3-butadiene} \xrightarrow{\Delta} \text{Product} \]

- **Third Reaction**
  \[ \text{Cyclopentene} + \text{Fumaric acid} \xrightarrow{\Delta} \text{Product} \]