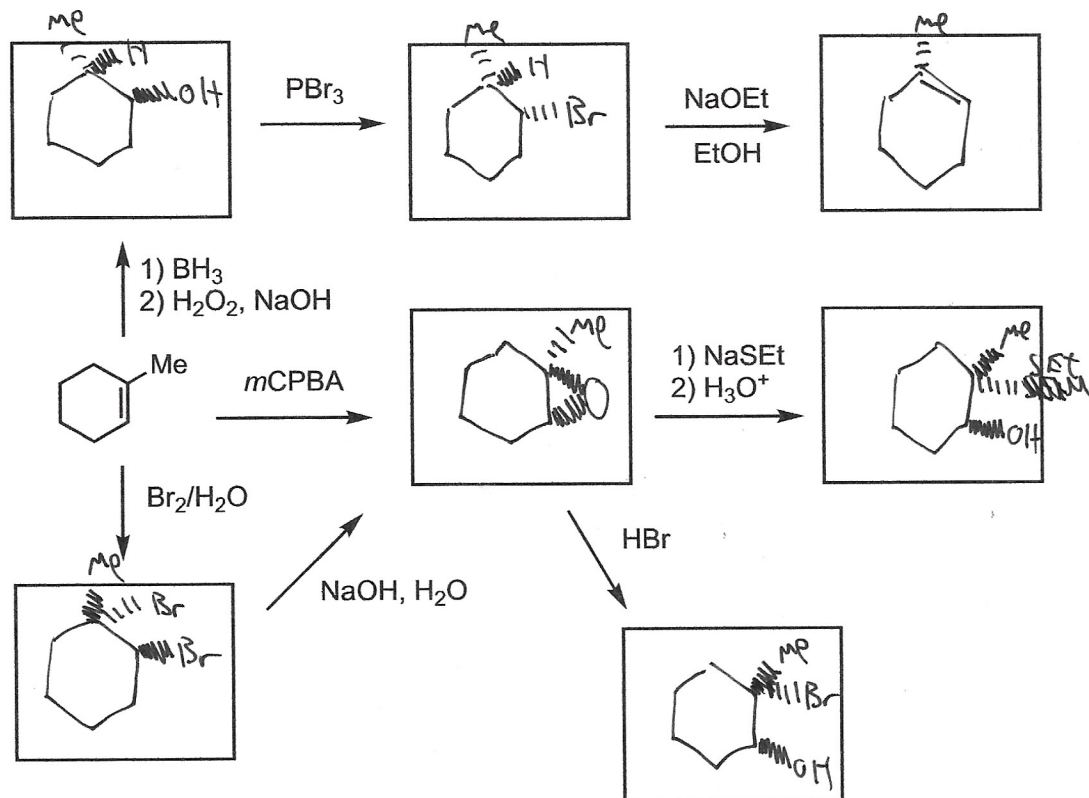


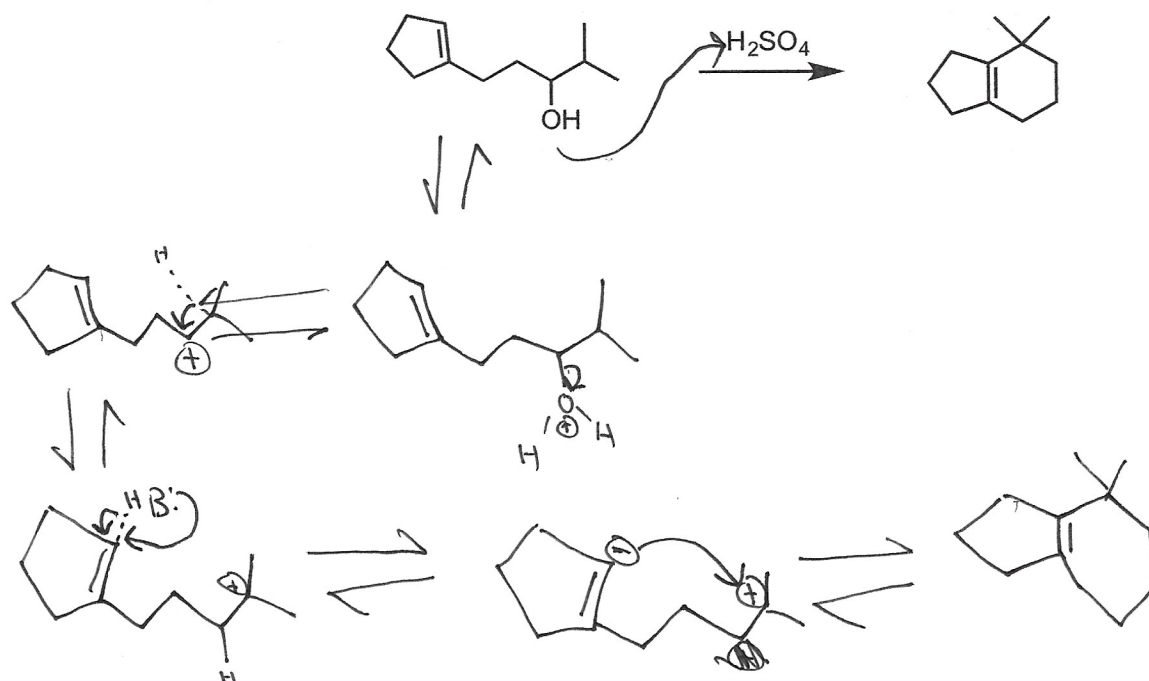
Name: Josh Whitehead ID: U1069343

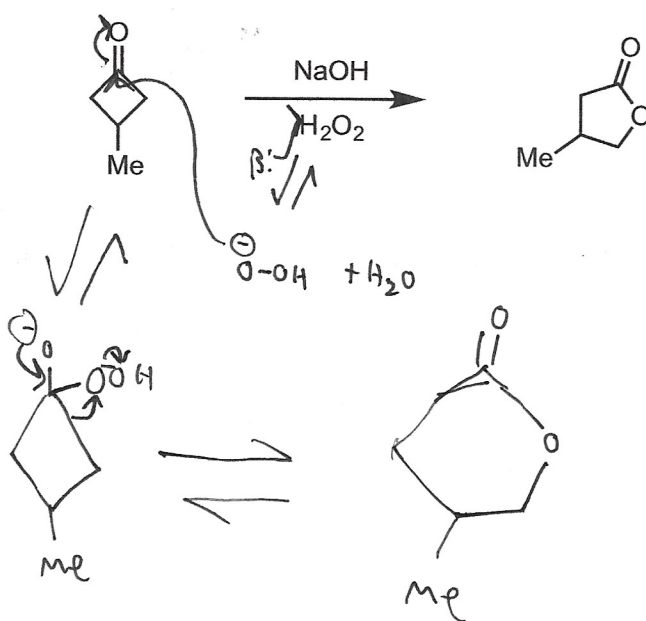
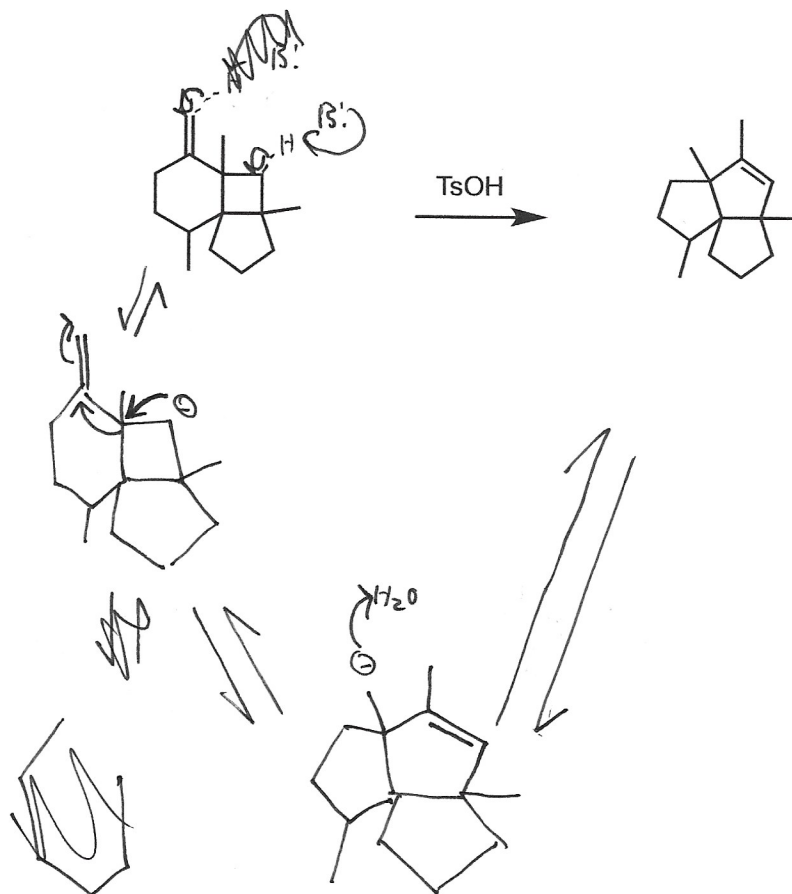
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1. Predict the missing products.

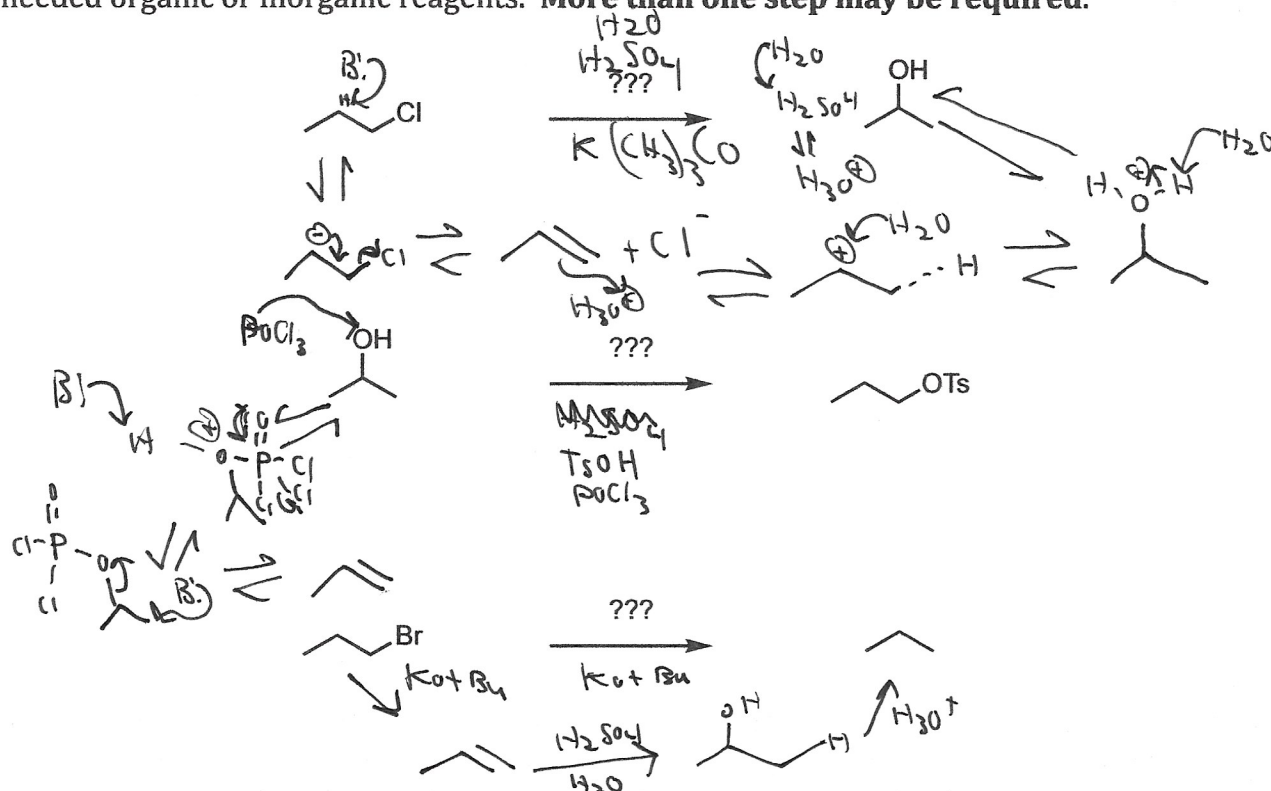


2. **Mechanisms:** Provide a detailed, stepwise mechanism for the following transformations. Use curved arrows to show the movement of electrons.

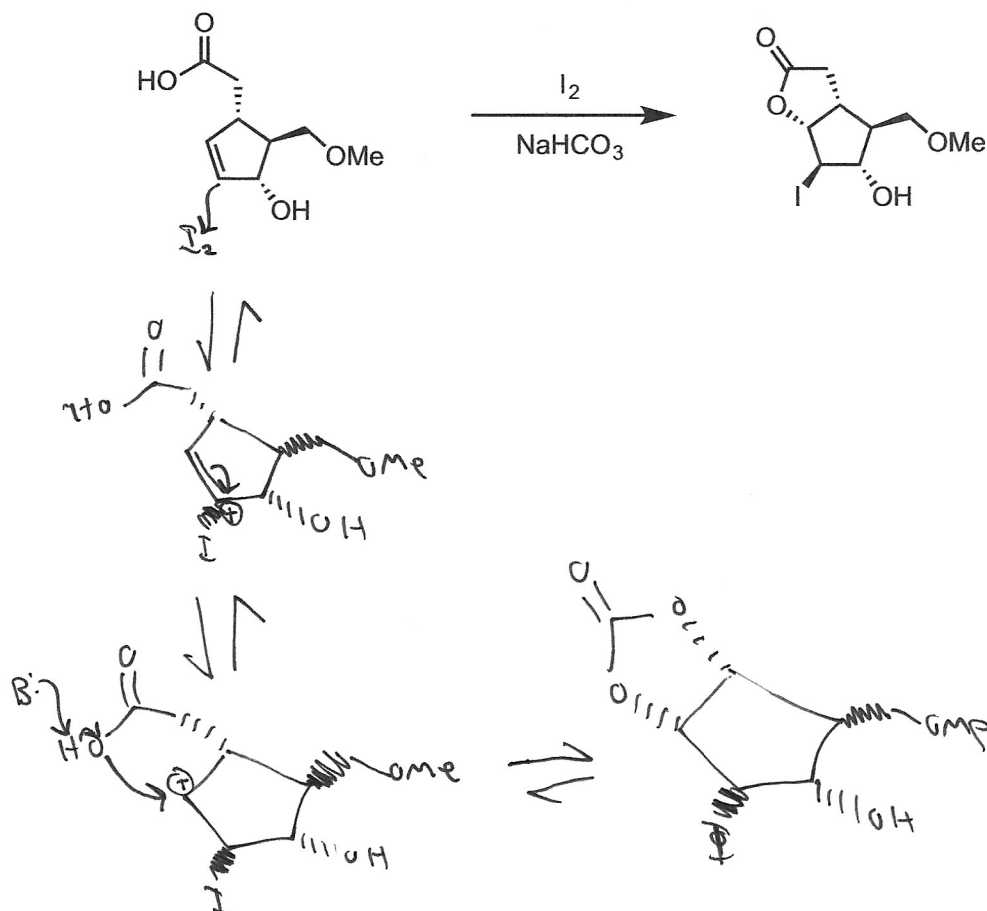




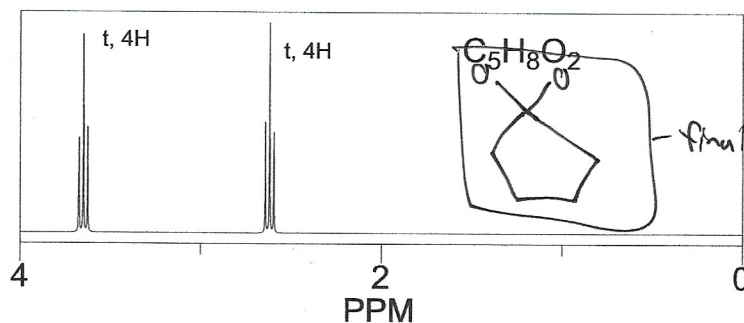
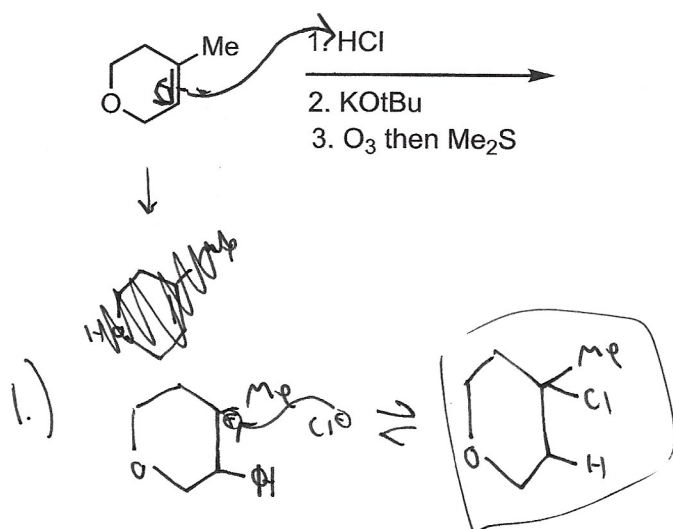
3. Devise a synthesis of each compound from the given starting material. You may use any needed organic or inorganic reagents. **More than one step may be required.**



4. **Mechanism:** Provide a detailed, stepwise mechanism for the following transformations. Use curved arrows to show the movement of electrons.



5. Predict the product of the following reaction sequences. A ^1H NMR spectrum has been provided for the final product.



6. Devise a synthesis of the following compound from the given starting materials. You may use any other organic or inorganic reagents you deem necessary but you must use the given starting materials as your only source of carbon in the final compound.

