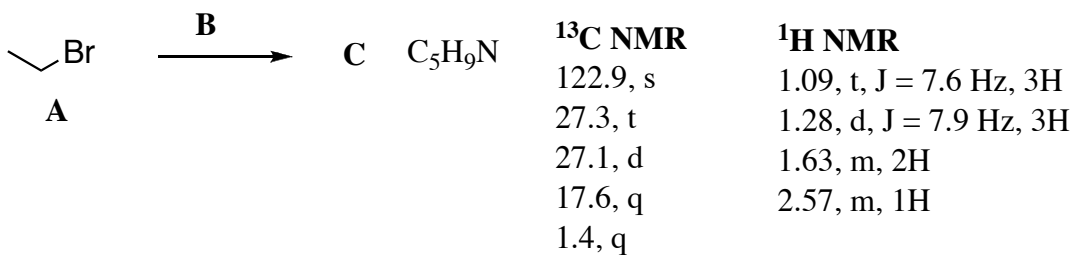
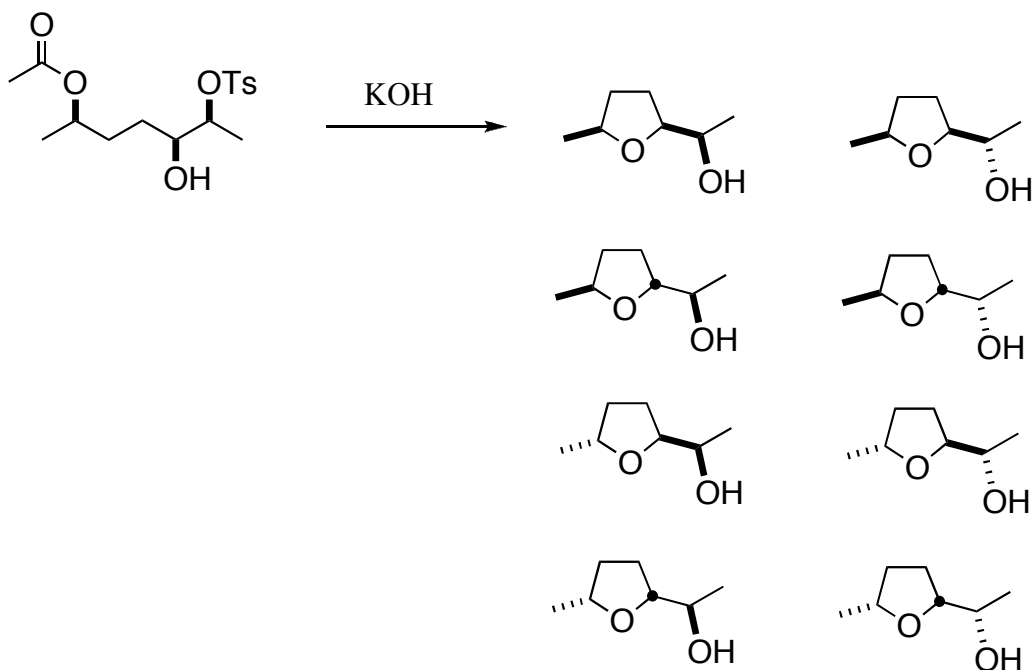


This is an open-book, open notes exam. Please show your work in detail.

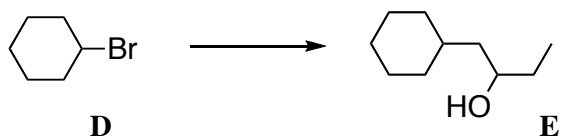
1. (20 points) Draw the structures of **B** and **C**.



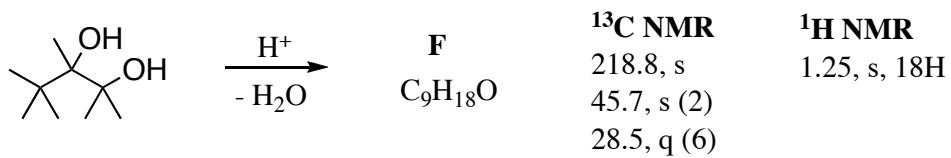
2. (20 points) Indicate the expected major product. Explain your reasoning in detail.



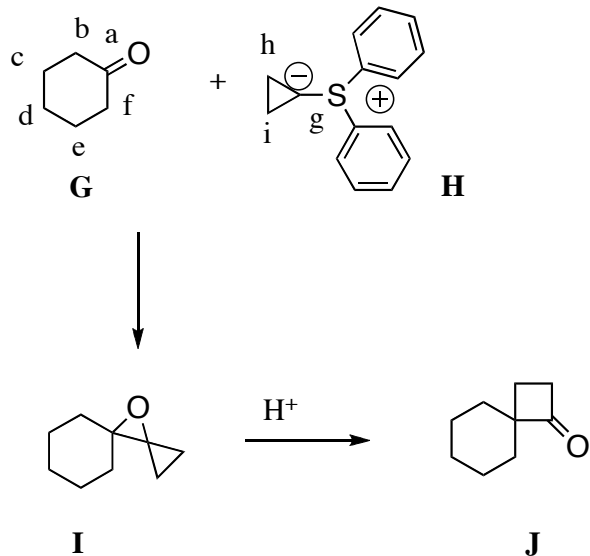
3. (20 points) Outline the synthesis steps to convert **D** into **E**. In addition to **D**, you may use any piece that contributes three or fewer carbons to the final product.



4. (20 points) Deduce the structure of **F**, and draw an arrow-pushing mechanism for the transformation.



5. (20 points) Draw a detailed arrow-pushing mechanism for the following transformations. For each transformation, 3 points for correctly showing the mapping of the starting material onto the product, and 7 points for the arrow-pushing mechanism.



bb	bf
bb	bf