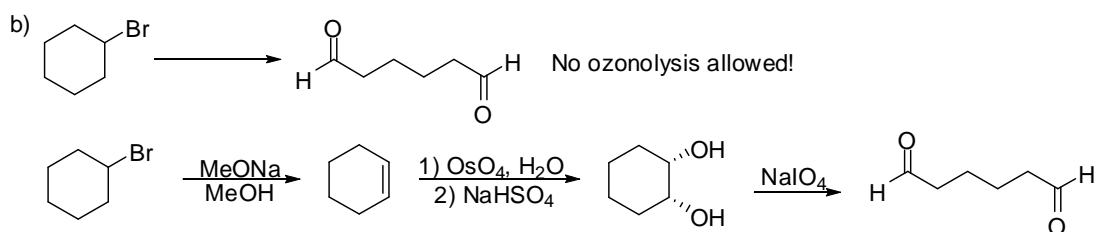
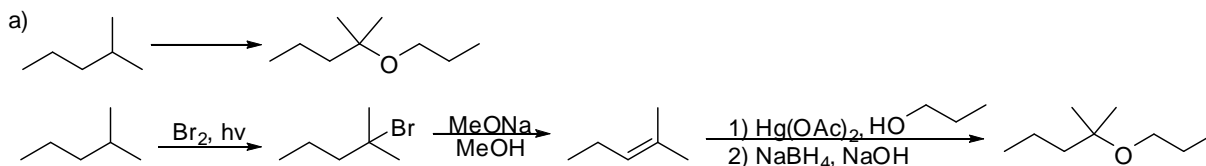
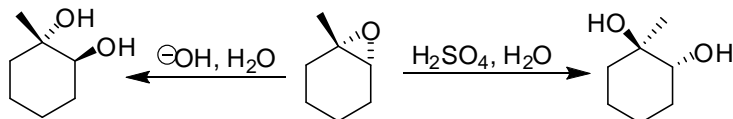


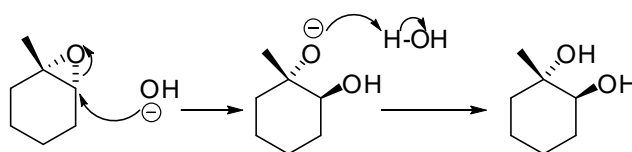
1) Provide synthetic routes for the following transformations:



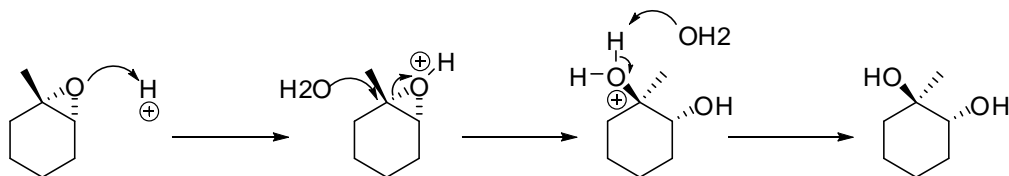
2) Show the complete mechanism and products to the following reactions:



With $\text{OH}^-/\text{H}_2\text{O}$, attack happens at less substituted carbon:



With $\text{H}_2\text{SO}_4/\text{H}_2\text{O}$, attack happens at more substituted carbon after epoxide is protonated:



In both cases, the attack is $\text{S}_{\text{N}}2$ -like and happens with inversion of stereochemistry at the attacked carbon.