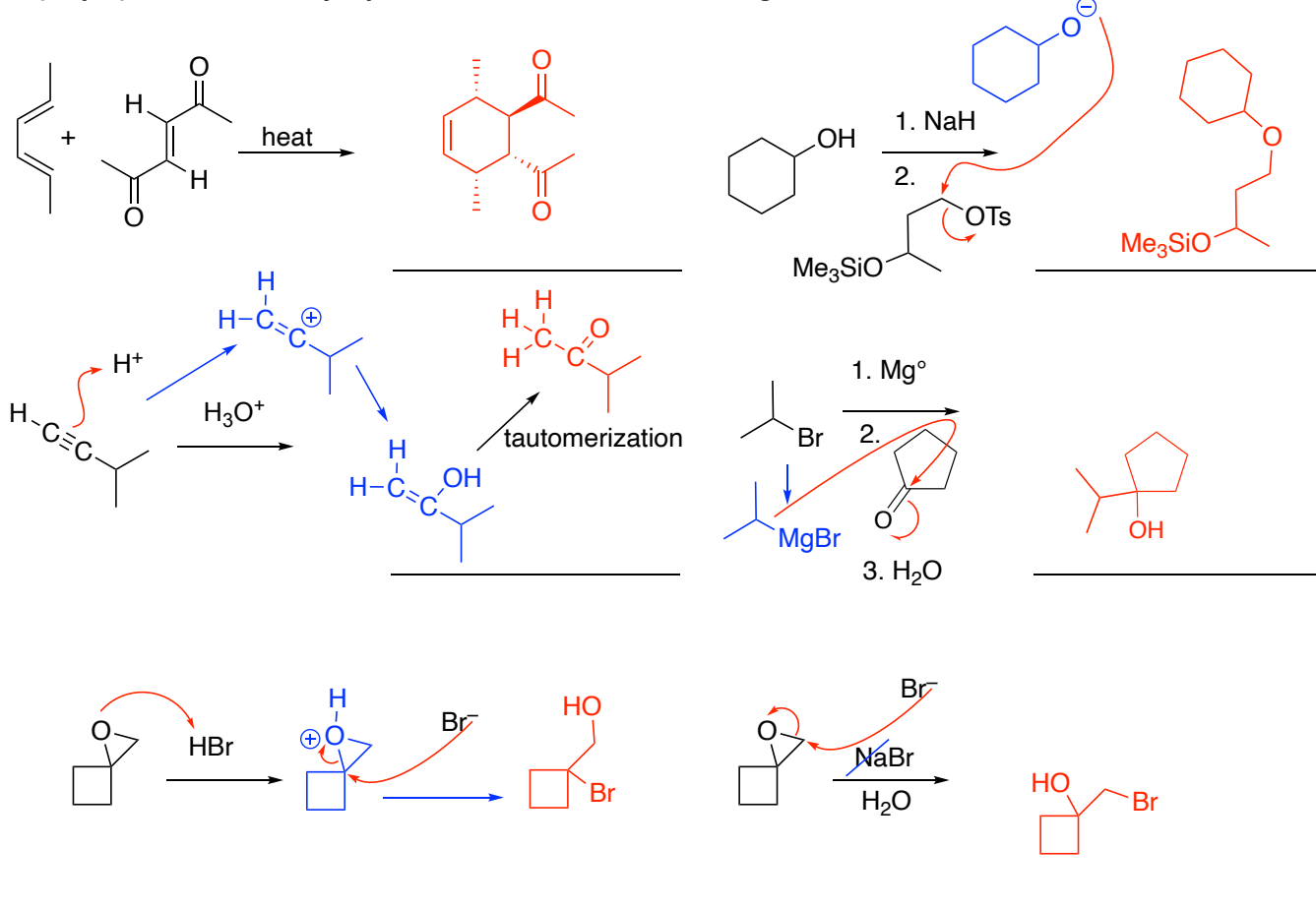
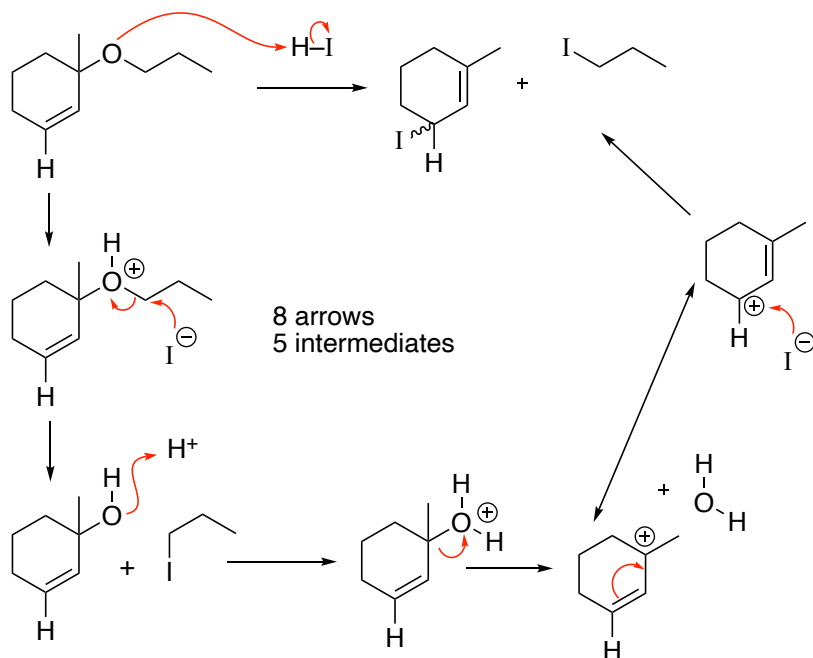


Name: _____ *Key*

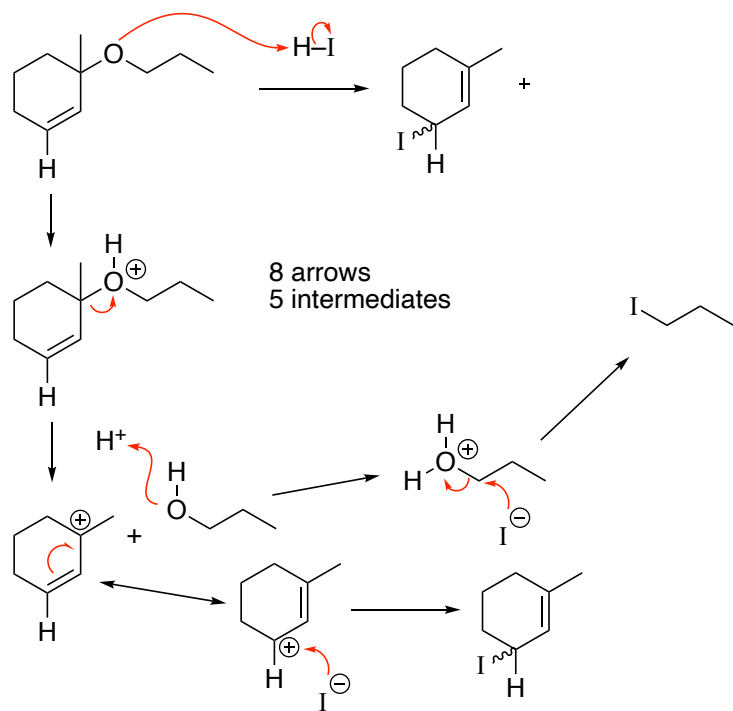
1. (12 pts) Provide the major product for each of the following transformations.



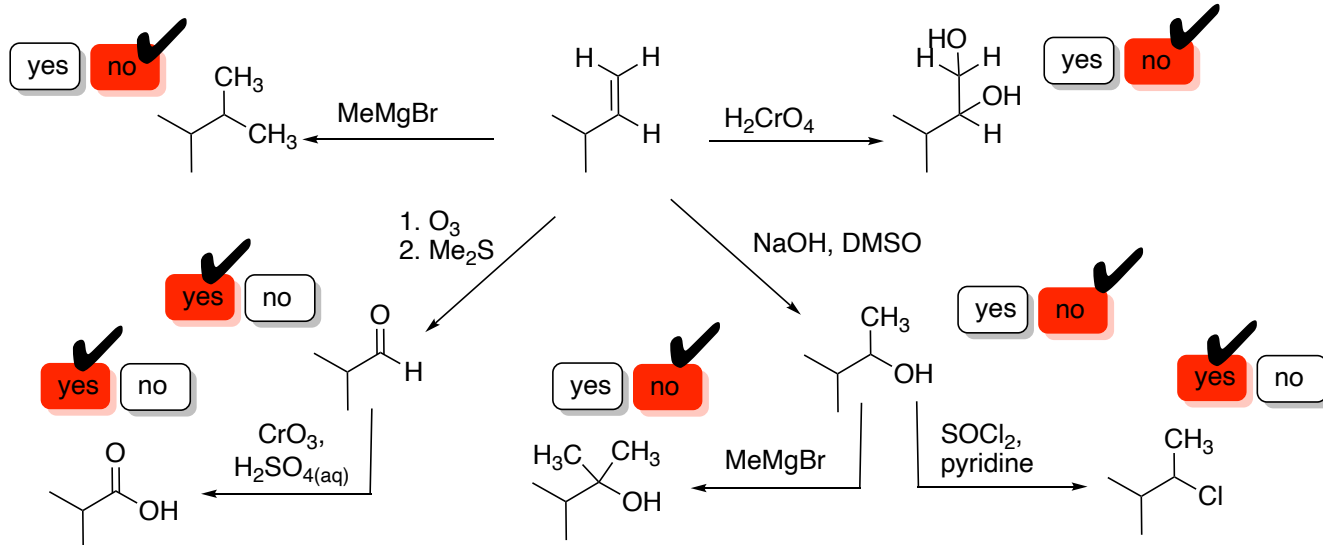
2. (12 pts) Provide a very detailed arrow pushing mechanism for the following reaction. Include all resonance structures that show distribution of charge on the organic intermediate(s).



An alternate (100% correct mechanism)



3. (7 pts) Indicate whether the 7 reactions below will proceed as written (check one box).



4. (16 pts) Complete the retrosynthesis below by adding in reagents and appropriate structures.

