CHEM95002: Orbitals in Organic Chemistry - Stereoelectronics

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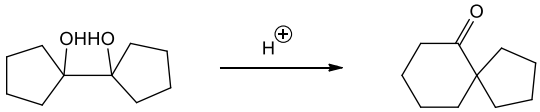
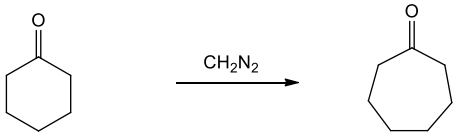
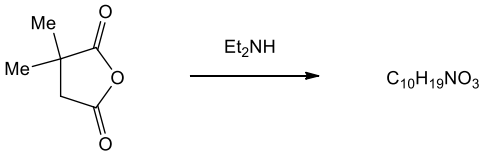
1. Give a mechanism for the following transformation and indicate any stereoelectronic control.



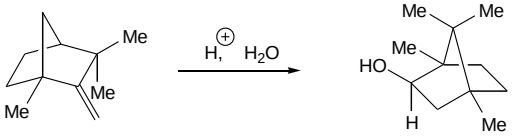
2. Give a mechanism for the following transformation and indicate any stereoelectronic control.



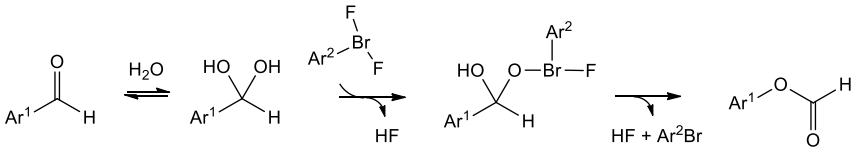
3. Predict the major product of the following reaction and explain your reasoning.



4. Write a mechanism for the following rearrangement reaction. Explain why the stereochemistry of the starting material is important for the success of this transformation including in your answer diagrams of the key orbitals which are involved in the rearrangement steps.



5. The reaction shown below involving a hypervalent bromine(III) reagent offers an alternative to the Baeyer-Villiger reaction and has the advantage that it is successful for converting a wide range of benzaldehydes to their corresponding formate esters.



Give a mechanism for the final step shown. Include in your answer diagrams of the key orbitals which are involved in this fragmentation.