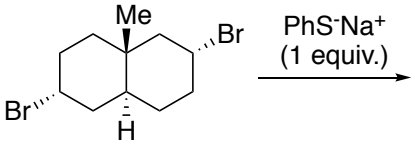
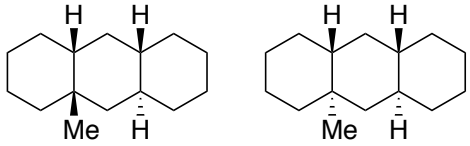
Tutorial 2

1. Predict the major product of the following reaction with correct stereochemistry and rationalize the outcome. Your explanation should contain appropriate conformational diagrams.



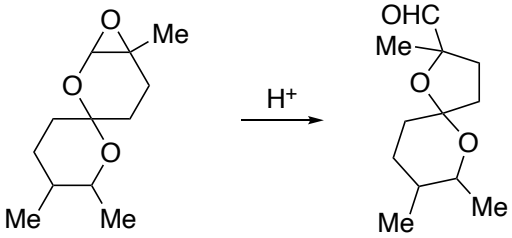
2. Write the most stable conformer of the following molecules **A** and **B**. Calculate the gauche interactions in each and find the difference in their energy.
(Eclipsing interactions: H/H = 1 kcal/mol and H/Me = 1.3 kcal/mol; Me/Me gauche interaction = 0.9 kcal/mol)



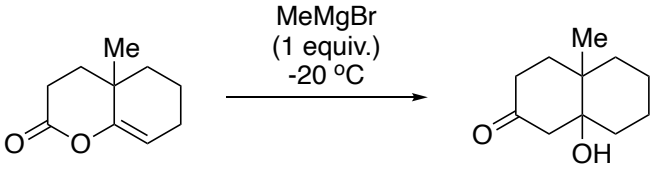
A **B**

3. Provide an arrow-pushing mechanism for the formation of the product in the following reactions.

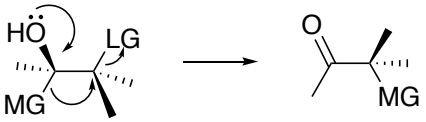
a.



b.

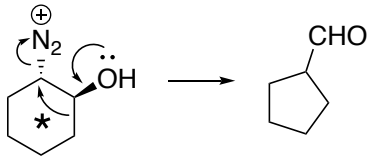


4. Given below is an example of a rearrangement reaction.

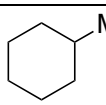
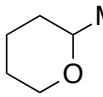
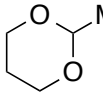
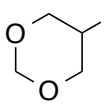


MG = migrating group
LG = leaving group

For the following reaction, identify the MO interactions involved for the arrow marked '*' in the migration step using appropriate conformational drawing.



5. Draw the Newman projection of the most stable conformers of a. 2-methylpentane and b. 3-methylpentane and calculate the energy difference between them.
6. Match the structures in **Column P** with the 'A values' in **Column Q**. (*Take home problem)

	Column P		**Column Q** (kcal/mol)
1.		a.	0.8
2.		b.	1.8
3.		c.	2.9
4.		d.	4.0