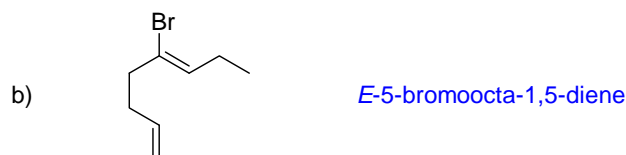
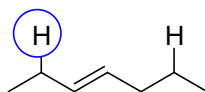


CHM 1321A
Mid Term 2 Version A Answers

1. Name the following compounds (6 points):



2. a. Compare the two hydrogens shown in this compound and circle the one that is more acidic. (1 point)

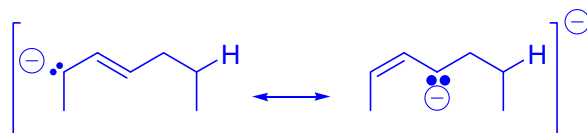


a. Draw the two possible conjugate bases (2 points).



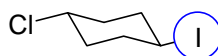
b. For your answer above, identify which of the conjugate bases is more stable and briefly justify your answer (4 points)

resonance is possible with the compound on the left (1)



resonance stabilizes conjugate bases by spreading out the charge (3)

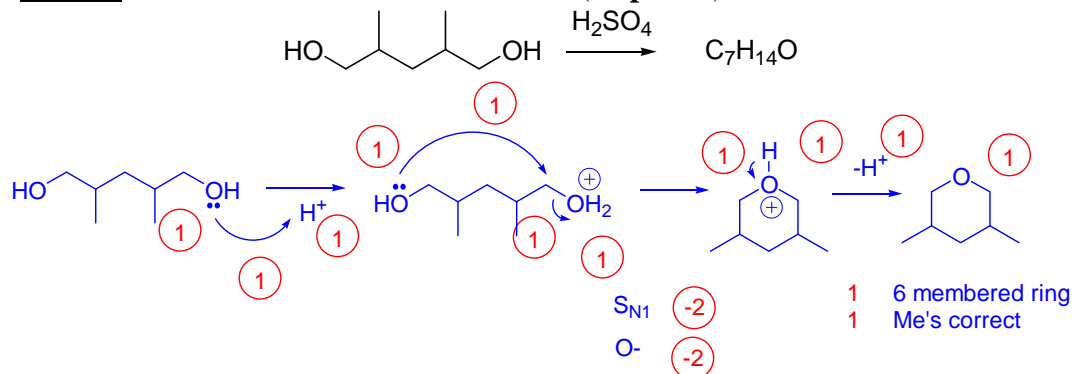
3. a. Compare the two leaving groups shown in this compound and circle the one that is better. (1 point)



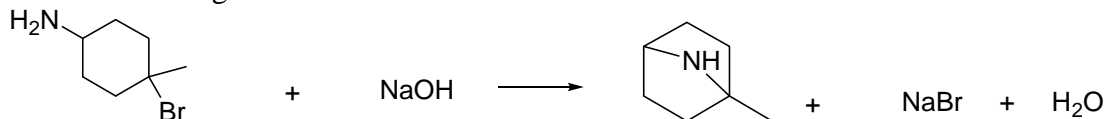
b. Justify your answer for part a (4 points)

- Iodine is lower on the periodic table than Cl
- Iodine is larger than chlorine
- Iodine can spread the negative charge over a larger volume than Cl can
- Dispersing the negative charge will lower then energy of I- relative to Cl- and makes I better leaving group

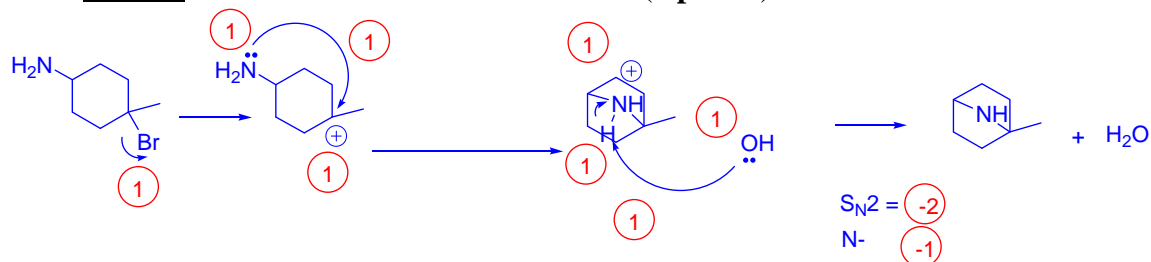
4. Write a detailed mechanism for this transformation (13 points).



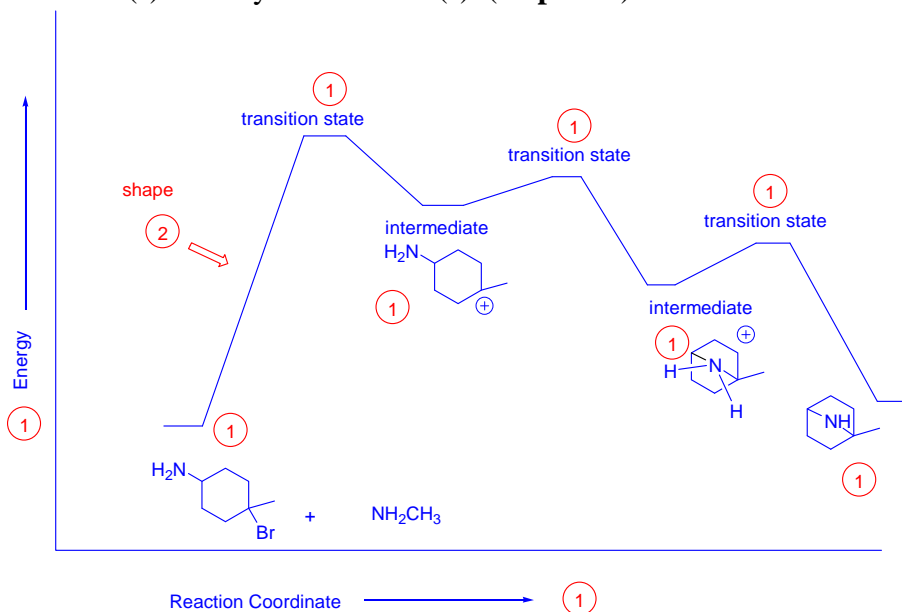
5. Consider the following reaction.



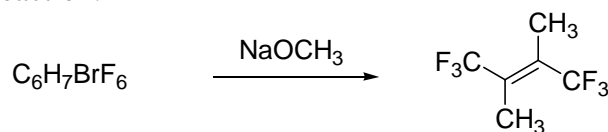
a) Write a detailed mechanism for this transformation (**8 points**).



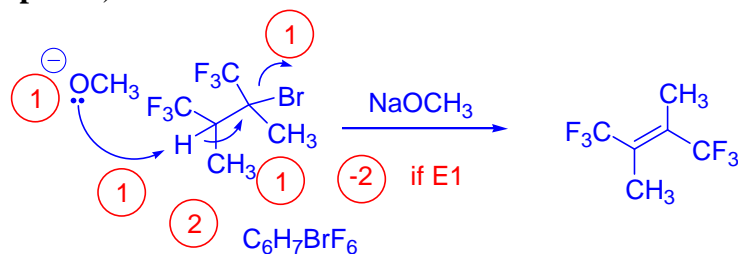
(b) Draw the reaction co-ordinate diagram for the process shown above. Label the starting materials, products, transition state(s) and any intermediate(s). (**11 points**).



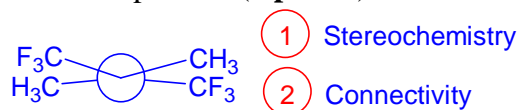
6. Consider the following reaction:



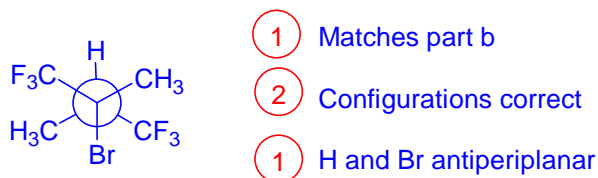
a) Draw the starting material for the process and the mechanism of the reaction, neglecting stereochemistry (**6 points**).



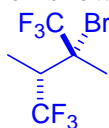
b) Draw the Newman projection of the product (**3 points**).



c) Draw the starting material using a Newman projection. (**4 points**).



d) Draw the starting material using line notation showing correct relative stereochemistry (2 points)



Structure must match structure in part c

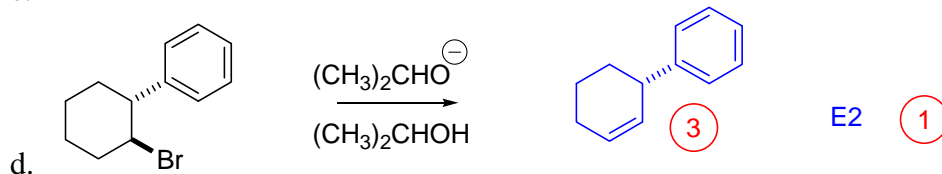
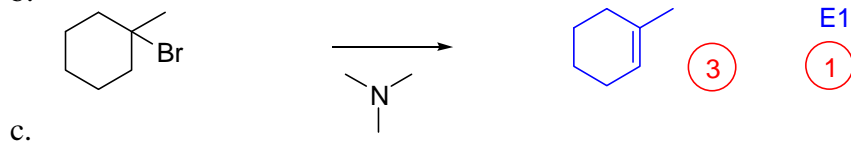
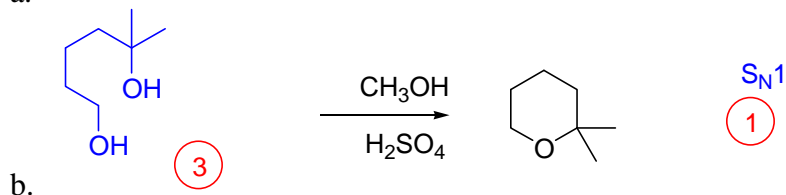
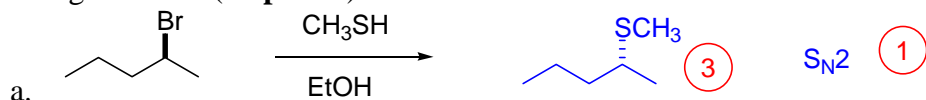
e) What is the stereochemical relationship between the hydrogen and leaving group in the transition state? (1 point)

Antiperiplanar

f) What is the configuration of the alkene formed? (1 point)

E

7. Supply the missing products or starting materials as necessary. Indicate what type of reaction is occurring for each. (16 points)



8. Suggest a synthesis of the following compound. You may use any starting material containing three carbons or less. Be sure to include a retrosynthesis. (17 points)

