

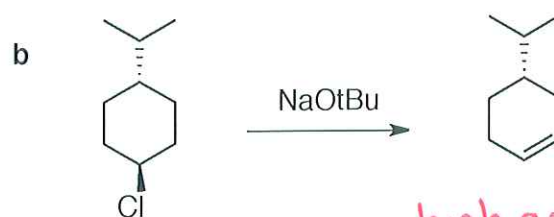
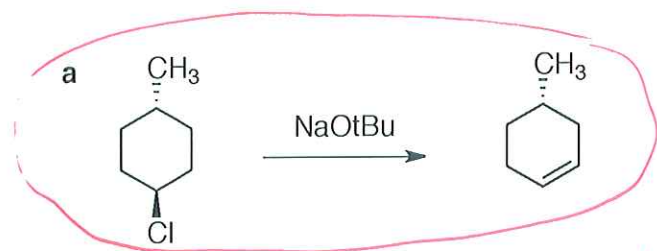
Chem 331  
Fall 2011  
Exam 2  
open book, notes

Your Name Weg.

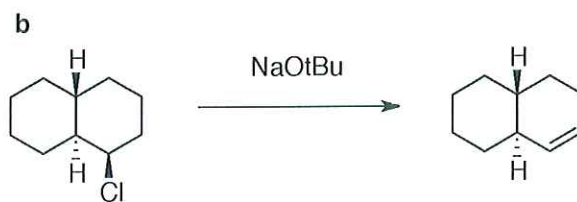
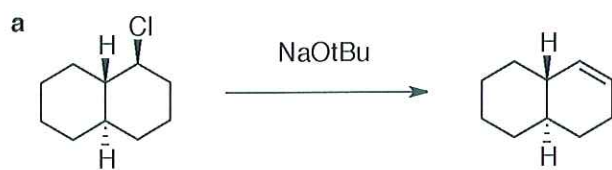
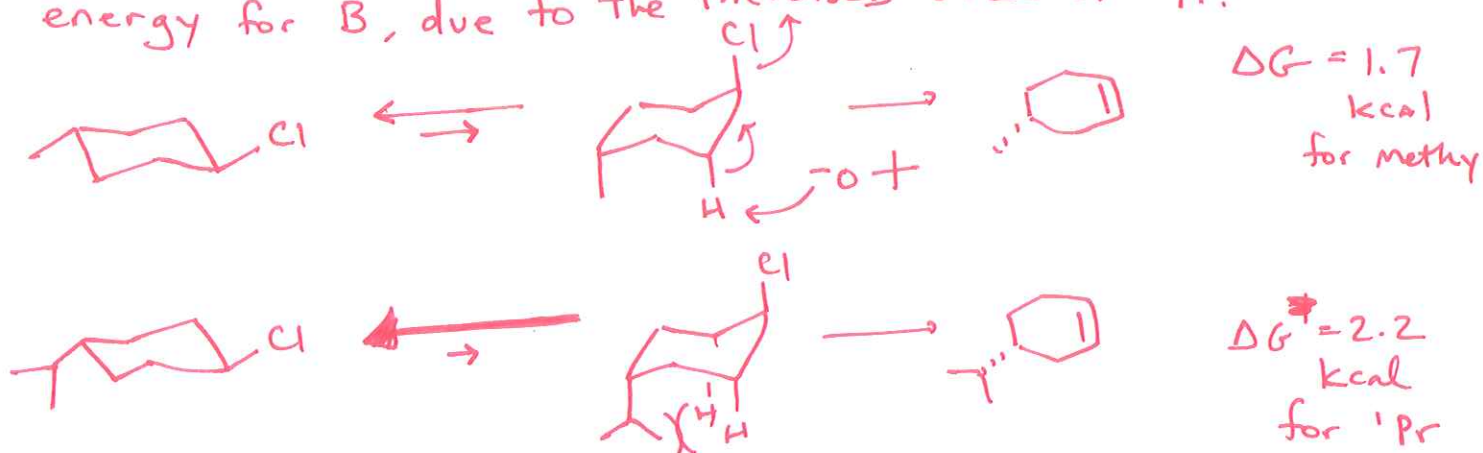
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Your Name \_\_\_\_\_

1. For each pair, **circle the reaction that is faster**. Explain your reasoning in detail. Your answer should include drawings of cyclohexane conformations. No credit for a correct guess, only a correct explanation. (10 points each)



in both cases, elimination occurs from the **DIAXIAL CONFORMER**. The DIAXIAL CONFORMATION is higher in energy for **B**, due to the increased size of **iPr**. high energy.



**a**

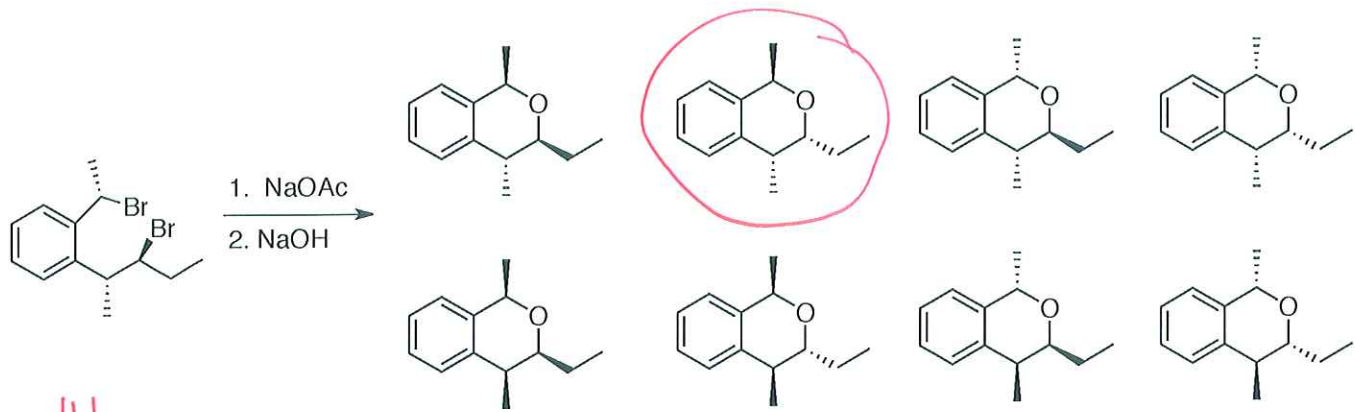
Cl is in AN EQUATORIAL position  
 $\therefore$  CANNOT UNDERGO ANTI elimination

**b**

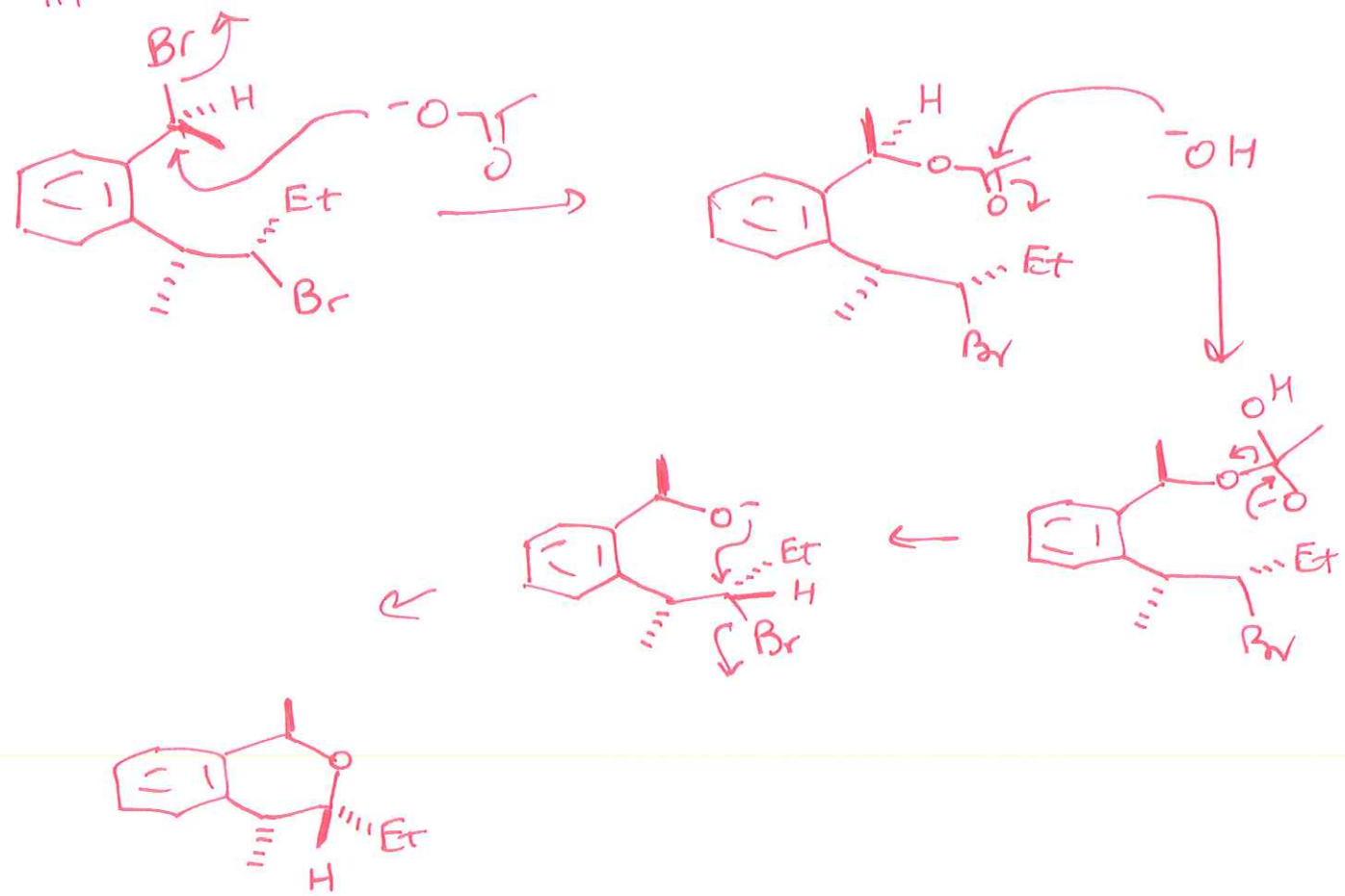
ONLY **B** has AN AXIAL chlorine positioned for ANTI-elimination

Your Name \_\_\_\_\_

2. Circle the correct product. Give a detailed mechanism (with attention to stereochemical details) that explains your choice. (20 points)

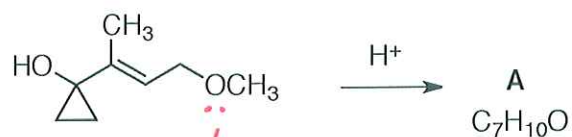


III



Your Name \_\_\_\_\_

3. Provide a structure for A and a detailed arrow pushing mechanism for it's formation (20 points)



spectral properties of A

$^1\text{H NMR}$

5.94 (dd,  $J = 16.8, 10.0$  Hz, 1H)

5.24 (dd,  $J = 10.0, 2.1$  Hz, 1H)

5.21 (dd,  $J = 16.8, 2.1$  Hz, 1H)

3.08–3.00 (m, 2H)

2.04–1.91 (m, 2H)

1.35 (s, 3H)

$^{13}\text{C NMR}$

210.1, s

145.5, d

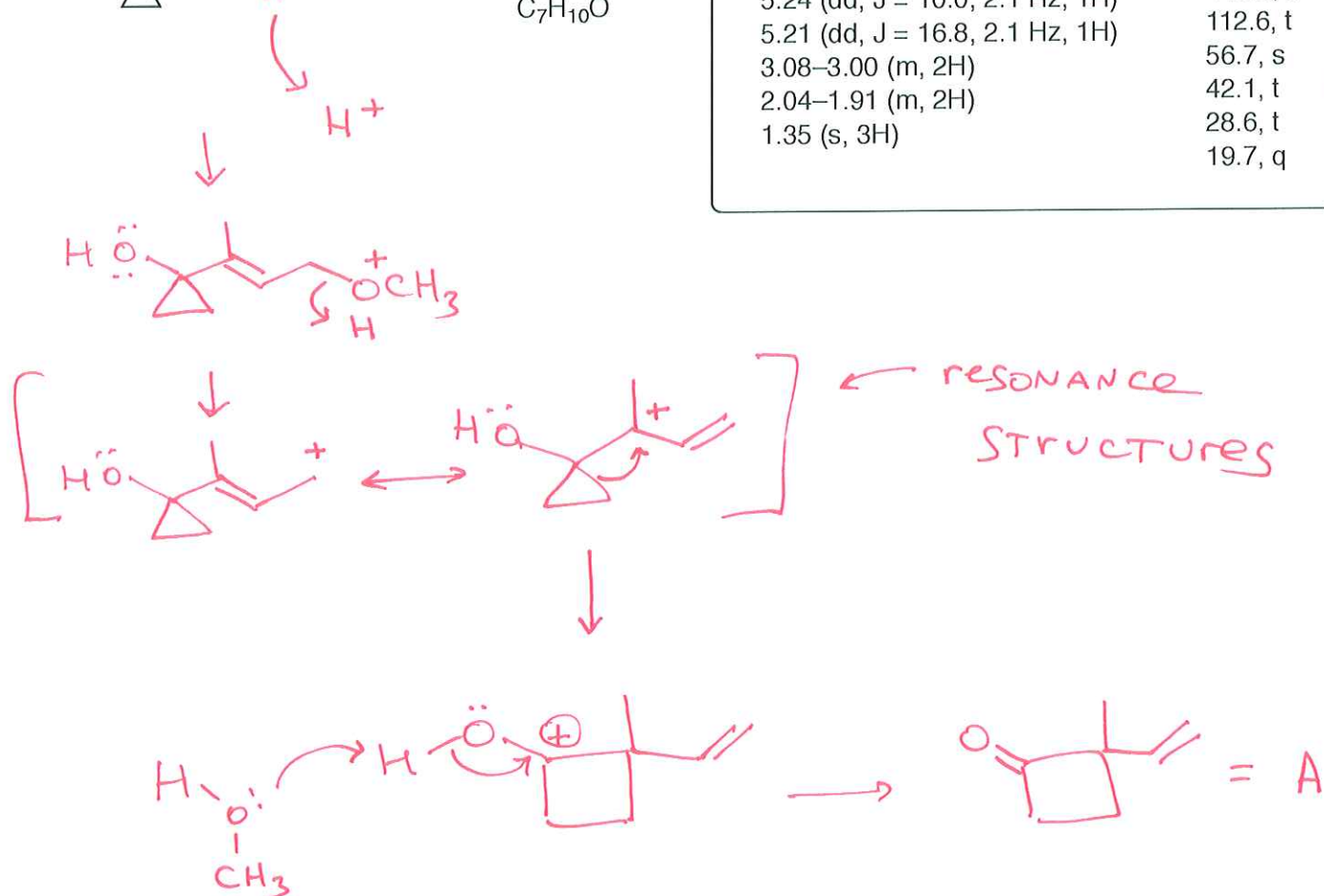
112.6, t

56.7, s

42.1, t

28.6, t

19.7, q



4. Provide a detailed arrow pushing mechanism for the following transformation (20 points)

