

CHEM UN2045 – TPS 1

Key

Circle the Date: Feb 6th 2024 / Feb 8th 2024

*Instructions: You have 10 min to work on the questions individually. This will be followed by another 10 minutes where you may discuss with a partner, change answers if needed, and submit one of your copies together. You may only use pen or pencil, and paper. **Clarity in your 3-D drawings is required – ambiguous or unclear drawings will be given no credit.** It is strongly suggested that you work your answers out on scratch paper and then transfer them to the test packet.*

Names (please print):

Honor pledge: We have neither given nor received aid on this examination.

Signatures: _____

1. (10 pts): _____

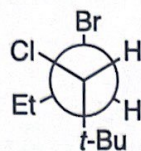
2. (15 pts): _____

3. (10 pts): _____

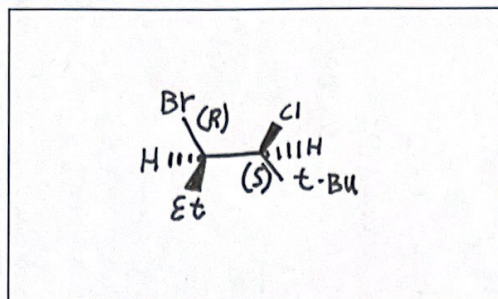
TOTAL (35 pts): _____

TOTAL (scaled to 25 pts): _____

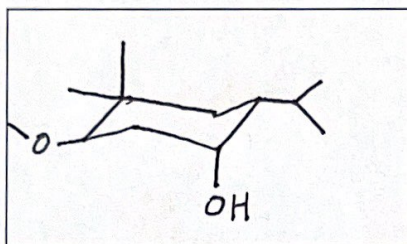
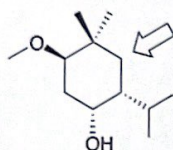
(1) Convert the following Newman projection to a line drawing and indicate the chirality (R or S) of the stereogenic center(s) (10 pts)



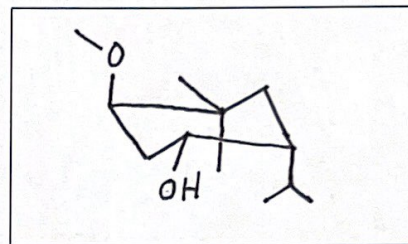
=



(2a) For the structure shown below, draw the 2 chair conformations. Label the chair conformation as 'more stable' and 'less stable'. (10 pts)



More stable

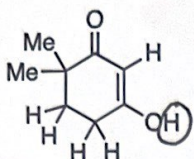


Less stable

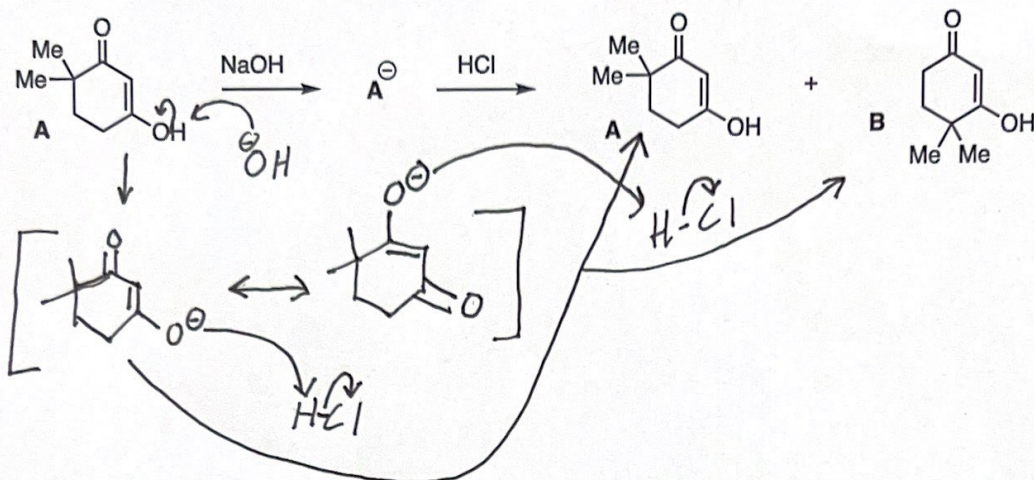
(2b) Describe in a few sentences why one conformation is more stable than the other, ideally naming the type of strain involved. (5 pts)

The more stable structure has less 1,3 diaxial interactions, reducing steric strain (1,3 diaxial strain)

(3a) Circle the most acidic proton in the structure below. (2 pts)



(3b) When compound **A** is first reacted with a base (NaOH), and then with an acid (HCl), a new product is observed (**B**). Provide a suitable explanation for the acid/base reactions below (8 pts):



Upon deprotonation, charge may be localized on either oxygen via resonance. Thus, upon reprotonation either oxygen may be protonated.