INTOCHEMISTRY / ORGANIC CHEMISTRY

Stereospecific E2 and Cyclohexanes

STUDENT WORKSHEET

Name: _____ Date: _____

Explain the reasoning behind every answer. Show stereochemical drawings when asked.

1. cis-1-bromo-2-methylcyclohexane: Reactive chair has axial Br at C1 and equatorial methyl at C2. What geometry is needed for cyclohexane E2?

2. What alkene can arise by removing C2-H?

3. trans-1-bromo-2-methylcyclohexane: Reactive chair has axial Br at C1 and axial methyl at C2. Does C2 have an axial beta H available?

4. What ring alkene results from C1=C6 elimination in this case?

5. Equatorial leaving group: A cyclohexane chair has bromine equatorial at the reactive carbon. Can it satisfy a trans-diaxial E2 in the displayed chair?

6. What remains unchanged on chair flipping?

7. E2 product geometry from a fixed conformer: An acyclic substrate is held in a conformation with only one beta C-H anti to C-Br. Which beta H is removed most readily in the favored E2 pathway?

8. What is required to assign a particular E/Z product?