

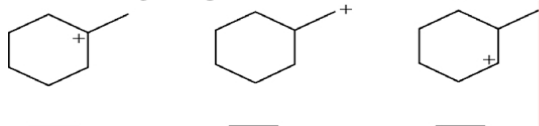
Organic Chemistry II: Review Worksheet

Chapter 7: Alkenes: Reactions and Synthesis

Chapter 11: Reactions of Alkyl Halides: Nucleophilic Substitutions and Eliminations

In order to more fully understand the nature of reactions of Organic Chemistry, we need to review what happens with reactions with alkenes in Chapter 7 and nucleophilic substitutions in Chapter 11.

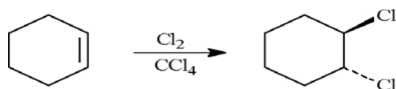
1. Rank the carbocations below in order of increasing stability (least stable = 1; most stable = 3). Place the number corresponding to the carbocation's relative stability in the blank below the structure.



Cyclohexene

To answer the questions below consider the following reaction:

When cyclohexene reacts with chlorine in carbon tetrachloride the *trans*-dihalide is formed.

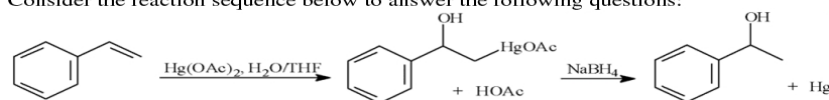


2. Refer to Cyclohexene. Since the two chlorine atoms add to opposite faces of the cyclohexene double bond, we say that the reaction occurs with:

- syn stereochemistry
 - cis stereochemistry
 - anti stereochemistry
 - retention of stereochemistry
3. Refer to Cyclohexene. The observed stereochemistry of addition of chlorine to cyclohexene is explained by the intermediacy of a:
- cyclonium ion
 - Carbocation
 - Carbene
 - chloronium ion

Reaction 7-1

Consider the reaction sequence below to answer the following questions:



4. Refer to Reaction 7-1. In the second step of this reaction sequence, the organomercury compound is treated with sodium borohydride, NaBH_4 , to yield the alcohol product. This replacement of a carbon-mercury bond with a carbon-hydrogen bond is termed:

- an oxidation
- a reduction
- a hydroxylation
- a cycloaddition