

STEREOCHEMISTRY 1.

LECTURE-17 (LAST)

D-II (H) ,P-IV ,27/08/2020

Topic : Conformational Isomerism
(Continued & Completed)

Conformation of Cyclohexane

- * Cyclohexane has a non-polar structure that makes it almost free from ring strain.
- * The most important conformation that it can have include chair conformation and boat conformation.
- * The chair conformation is more stable than the boat conformation.
- * The boat conformation can sometimes be more stable than it usually is by a slight rotation in the C-C bonds and is called the skew boat conformation.
- * A conformation of cyclohexane can refer to many different 3-dimensional shapes assumed by a cyclohexane molecule without disturbing the integrity

of the chemical bond it is.

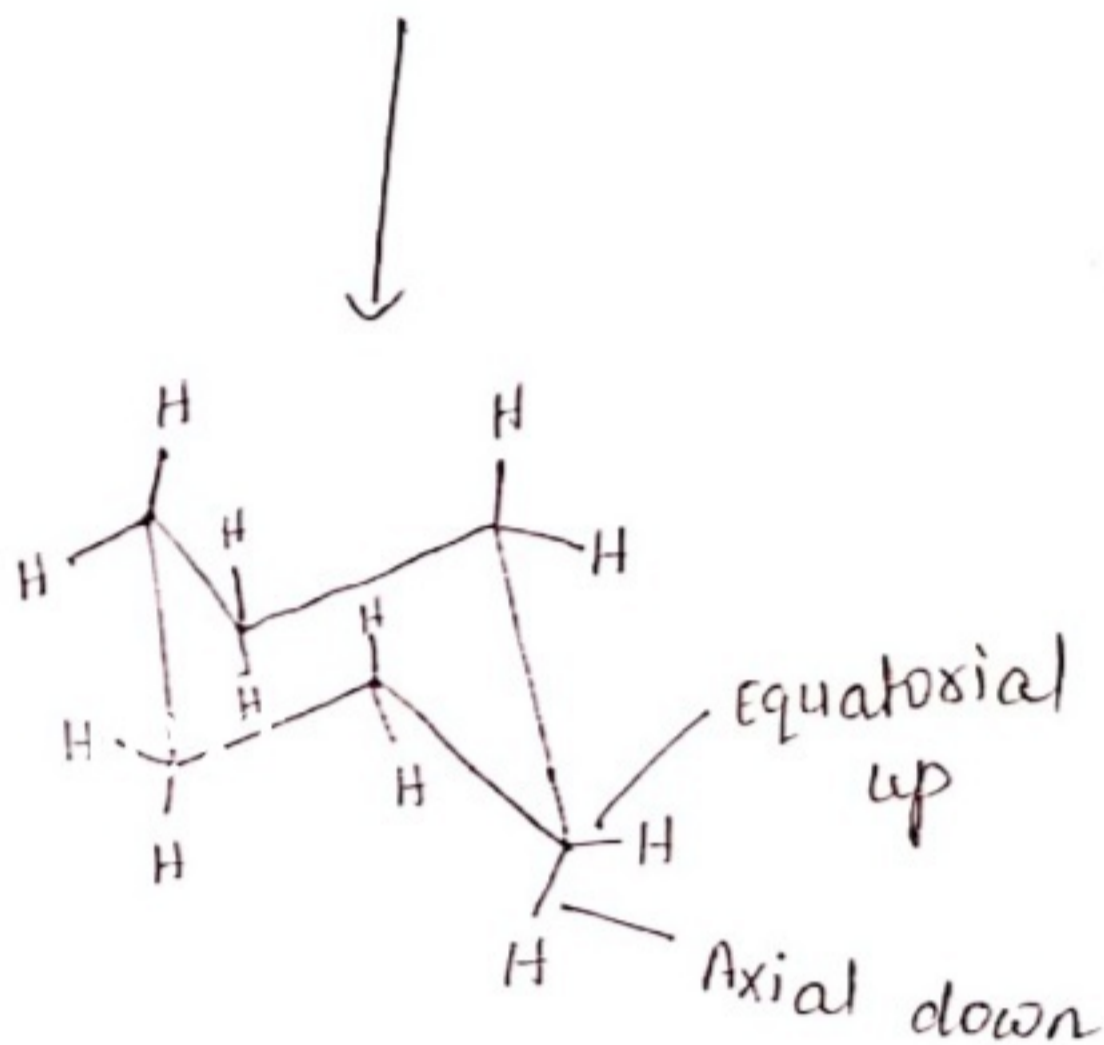
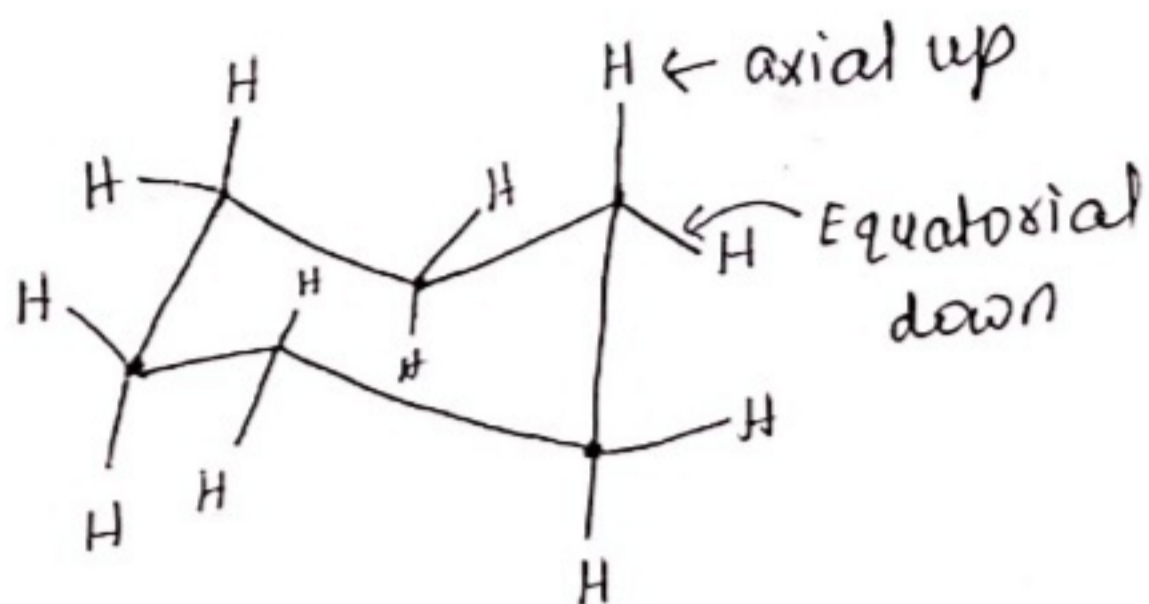
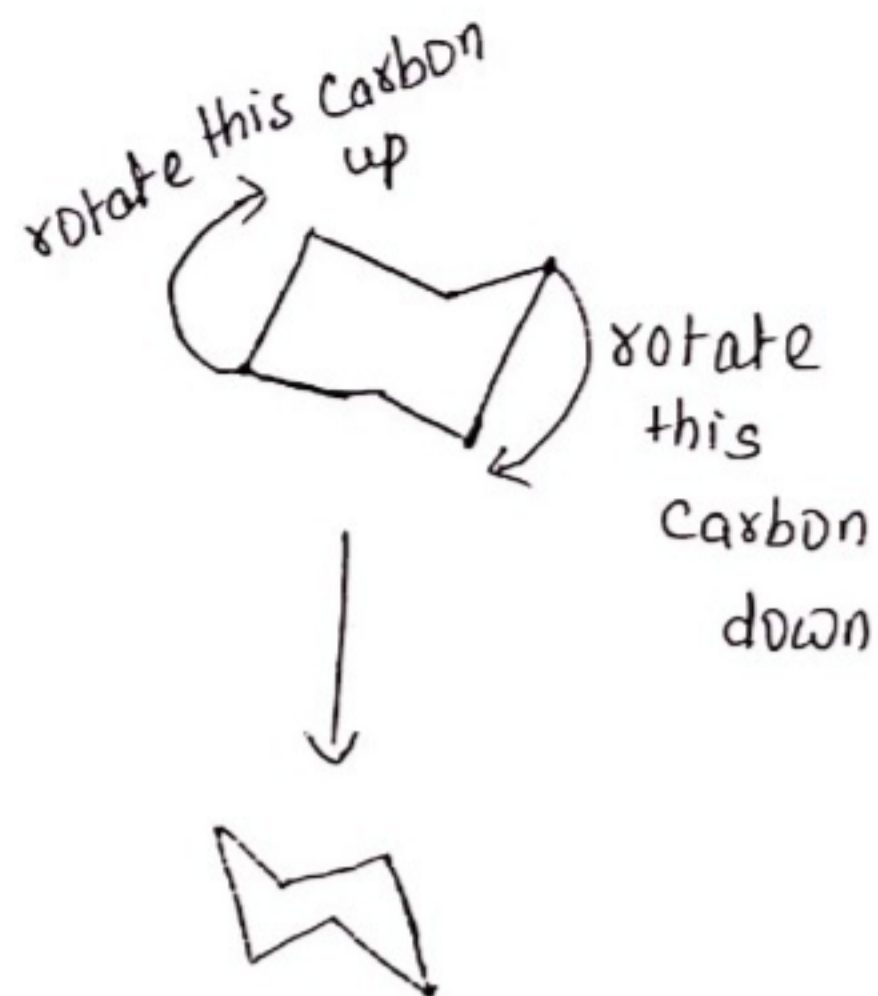
2.

- * In order to avoid the strain, cyclohexane does not exist as a planar molecule as expected.
- * It exists as a puckered ring which is non-planar and the bond angles are close to tetrahedral bond angles.
- * Two such puckered rings for cyclohexane called boat and chair conformations.

Conformation of Cyclohexane Stability

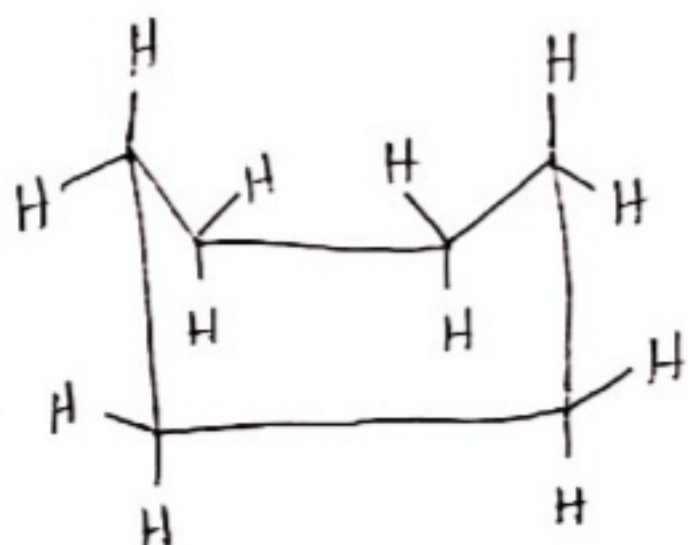
Generally, in the chair shaped conformation of cyclohexane, there are three carbon-hydrogen bonds of each of the following types:-

- * Axial 'up'
- * Axial 'down'
- * Equatorial 'up'
- * Equatorial 'down'



* When chair flipping occurs, axial C-H bonds become equatorial and the equatorial C-H bond become axial.

* However they retain the corresponding 'up' or 'down' position.



Boat conformation of cyclohexane.