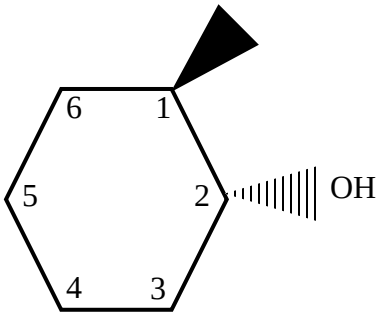
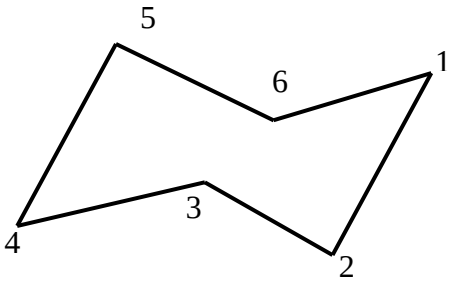
Stable Chair Structures from Substituted Cyclohexanes

Fig. 1



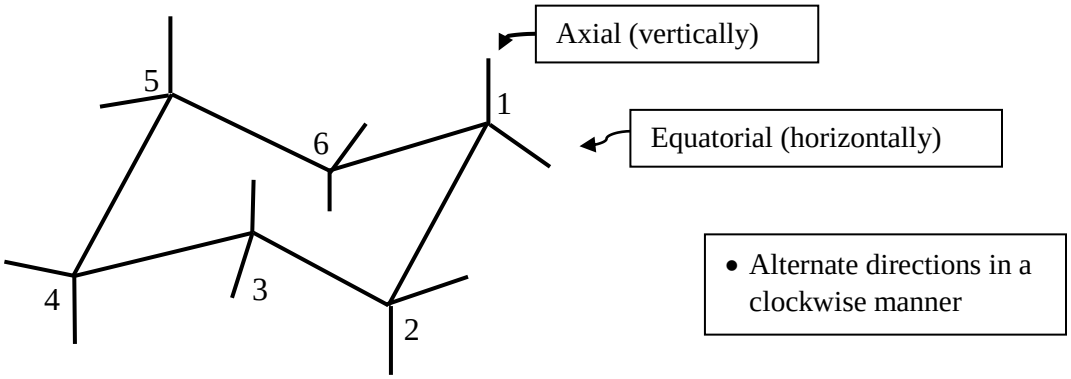
1. Step 1 is to draw a chair structure. Label starting from the tip of the chair.

Fig. 2



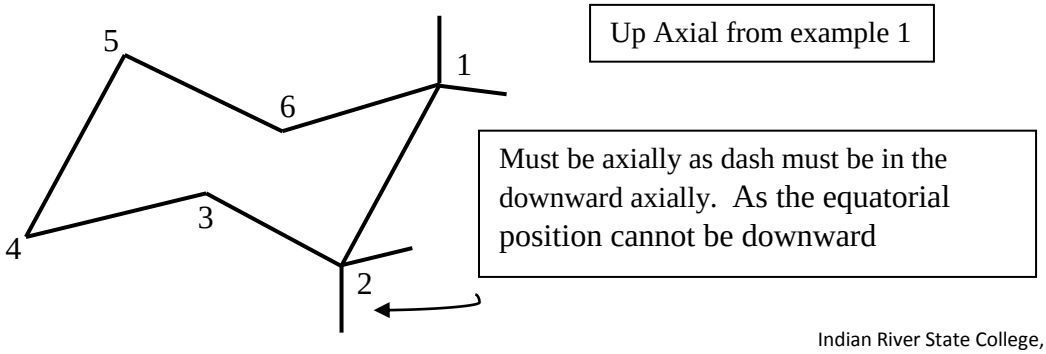
2. Draw the chair structure with the generic locations of axial and equatorial substituents in a clockwise manner.

Fig. 3



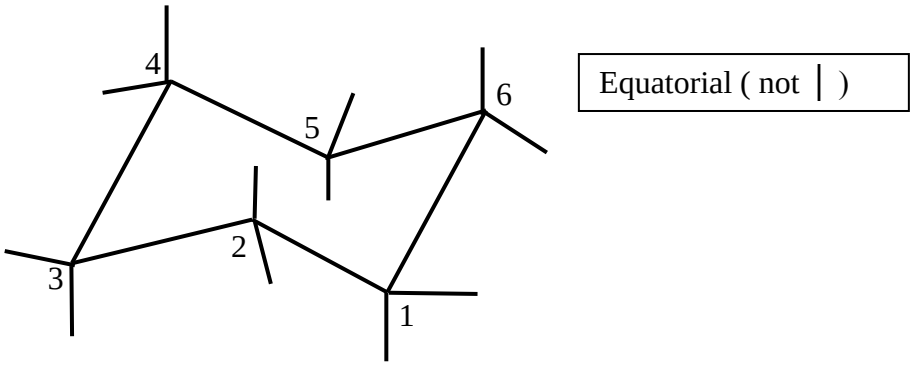
3. Wedges are always up. Dashes are down. They must be in alignment with the chair structure location (i.e. if a wedge is an up axial it must be located with corresponding up equatorial.
   Locate on chair the corresponding locations from Fig. 1

Fig. 4



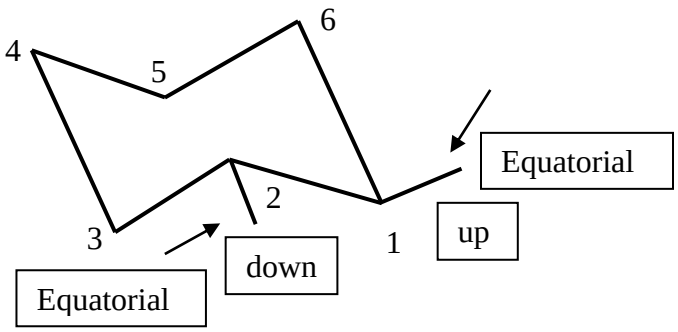
4. Examine the mirror image of the above structure. To create the mirror image of the above structure, the basic structure is rearranged as follows. Remember axial positions are always vertical.

Fig. 5



5. Rearrange per Fig. 4 to create Fig. 6 in which the axial substituents must become equatorial to create a match.

Fig. 6



Since equatorial positions are more stable than an axial structure, Fig. 6 is the most stable chair arrangement of disubstituted cyclohexane.