

# Conformation

①

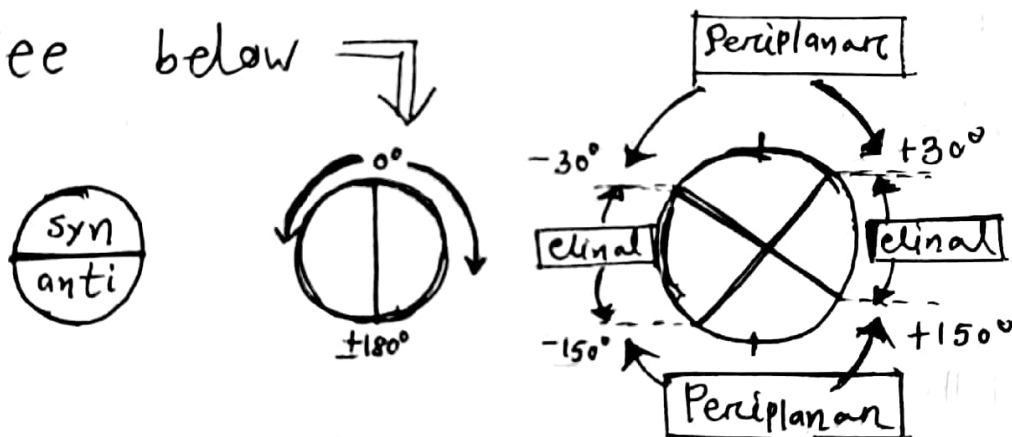
class - 8.

## Klyne-Prelog conformational terminology

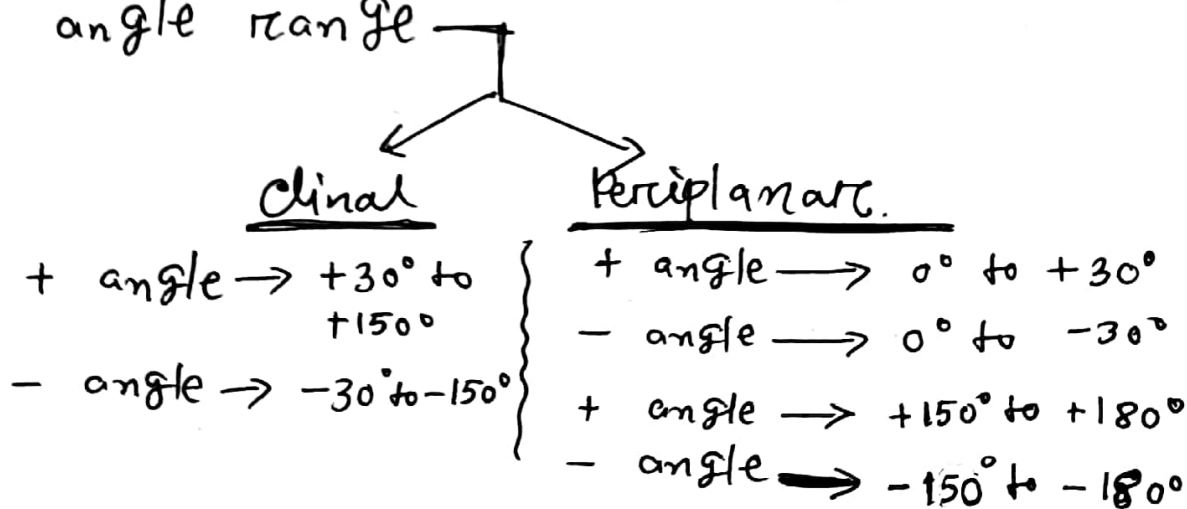
This is another way for representing conformational isomers by specifying exact magnitude and sign of torsional angle or dihedral angle.

For this you have to think a circle with syn/anti phase and angle of both sign from  $0^\circ$  to  $180^\circ$

see below

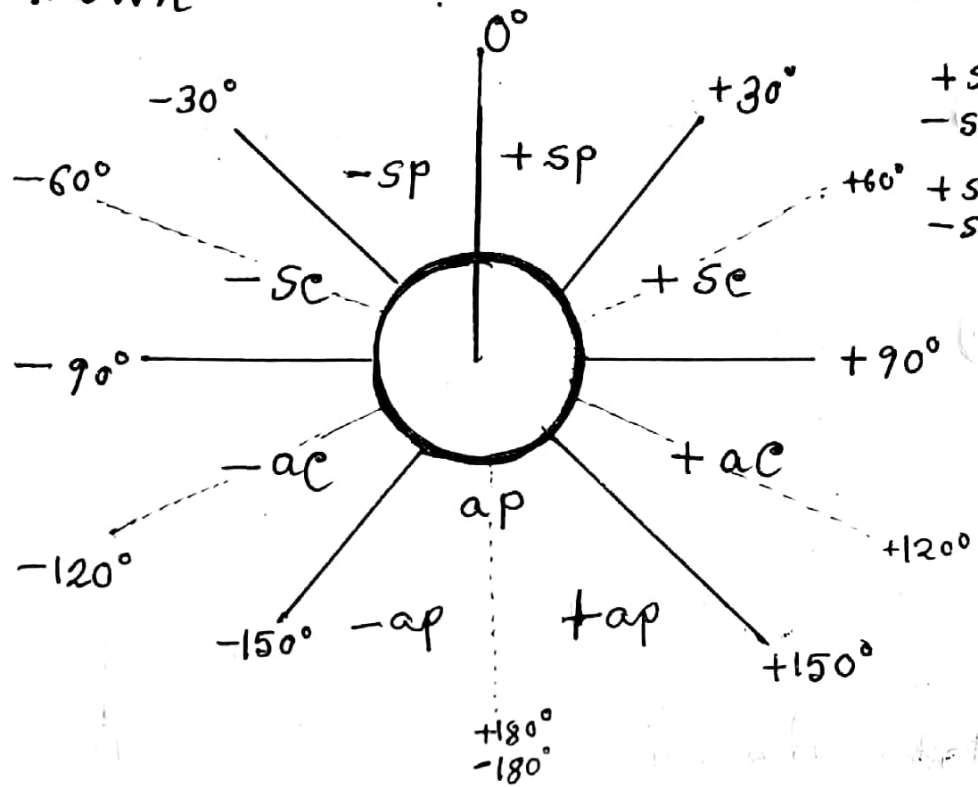


two angle range



Overall angle range has been shown in Newmann Projection formula

Combination of these specification divide the circle into six segments as shown below.

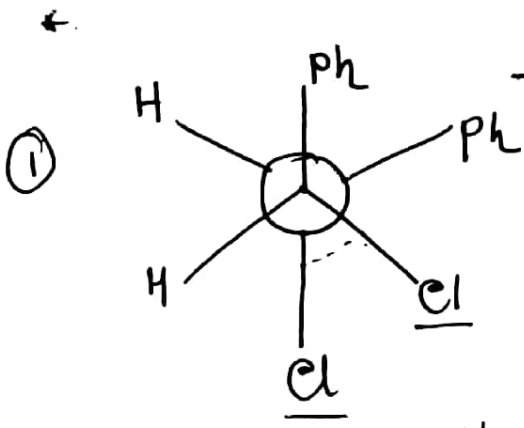


+SP = + Syn Periplanar  
 -SP = - " "  
 +SC = + Synclinal  
 -SC = - Synclinal  
 +ac = + anticlinal  
 -ac = - " "  
 +ap = + antiPeriplanar  
 -ap = - " "

Designations of conformations based on torsional angle

Torsion angle	Designation	Symbol	$\theta$ as a multiple of $60^\circ$
$0^\circ \pm 30^\circ$	$\pm$ Syn-Periplanar	$\pm$ SP	0
$+60^\circ \pm 30^\circ$	+ Synclinal	+ SC	1
$+120^\circ \pm 30^\circ$	+ anticlinal	+ ac	2
$180^\circ \pm 30^\circ$	$\pm$ antiPeriplanar	$\pm$ ap	3
$-120^\circ \pm 30^\circ$	- anticlinal	- ac	4
$-60^\circ \pm 30^\circ$	- Synclinal	- SC	5

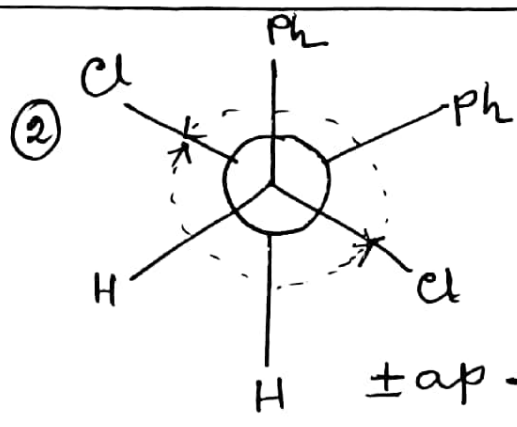
Some examples



consider the Cl atoms

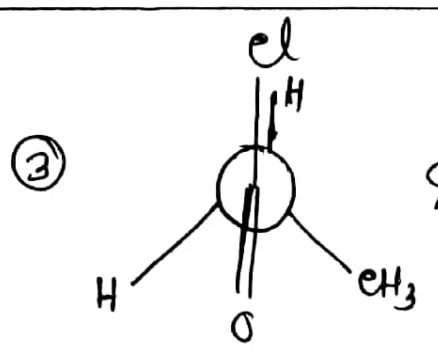
Here  $\phi(Cl/Cl) = \frac{120^\circ \text{ to } 180^\circ}{\times}$  (not check by this way)  
 $= \frac{+60^\circ}{\checkmark}$  (check by this way)

show the chart. it will be +sc conformation



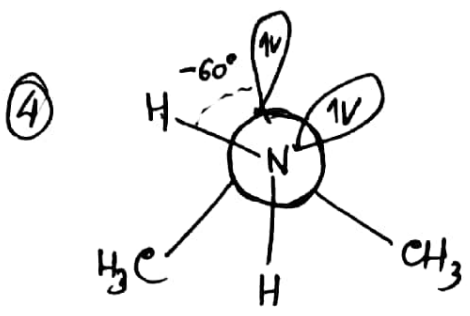
$\phi(Cl/Cl) = 180^\circ \rightarrow +180^\circ \rightarrow +ap$   
 or  
 $\rightarrow -180^\circ \rightarrow -ap$

$\pm ap \rightarrow$  it indicates both +ap and -ap

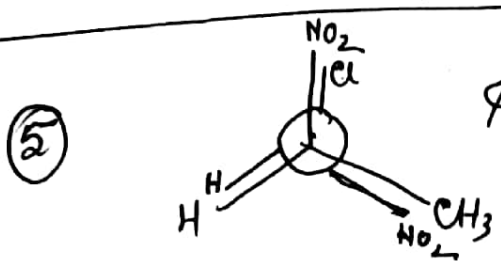
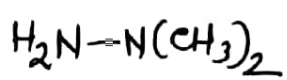


$\phi(Cl/CH_3) = +120^\circ$   
 $\therefore +ac$

Read from  
 D. Nasipuri  
 or  
 S. Sengupta



$\phi(IP/H) = -60^\circ$   
 -sc



$\phi(NO_2/Cl) = 0^\circ \rightarrow \left. \begin{matrix} +sp \\ -sp \end{matrix} \right\} \text{ both}$   
 $\pm sp$