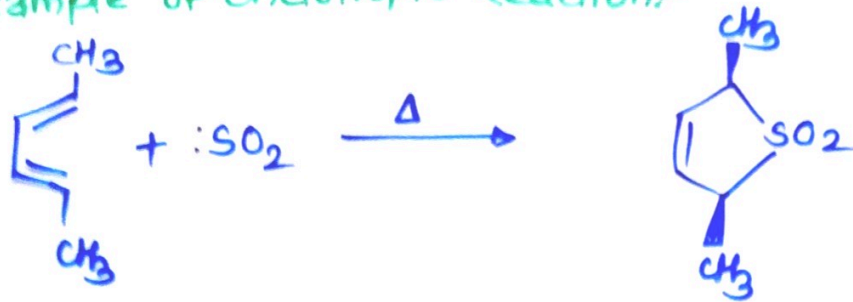


Example of chelotropic Reaction:-



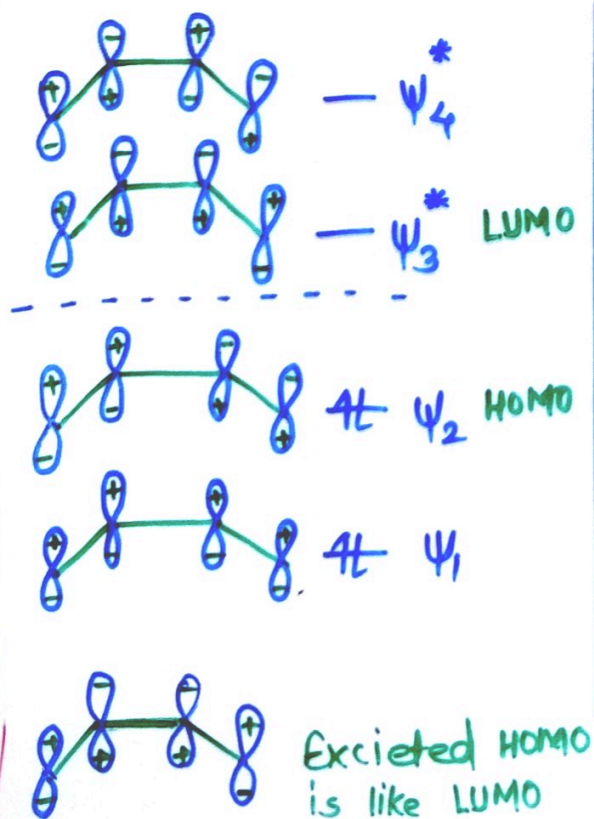
In this reaction stereochemistry is maintained.

*** Electrocyclic reactions ***

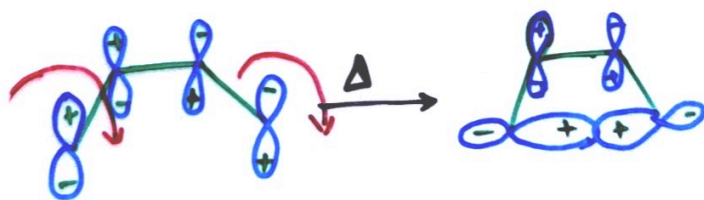
* These are pericyclic reactions (intramolecular) which under the influence of heat or light involve either the formation of ring with the generation of one new sigma-bond and consuming of one pi-bond. or the reverse.



- * Electrocyclic reactions are stereoselective.
- * All electrocyclic reactions are accounted by (FMO approach) by looking only at the symmetries of two outermost lobes.

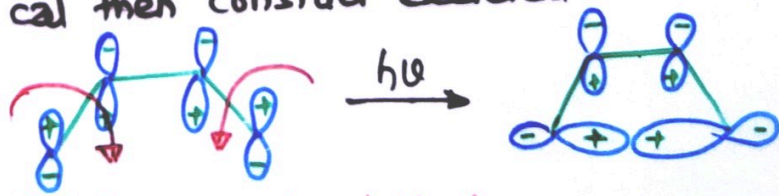


When electrocyclic is thermal then consider HOMO of molecule.



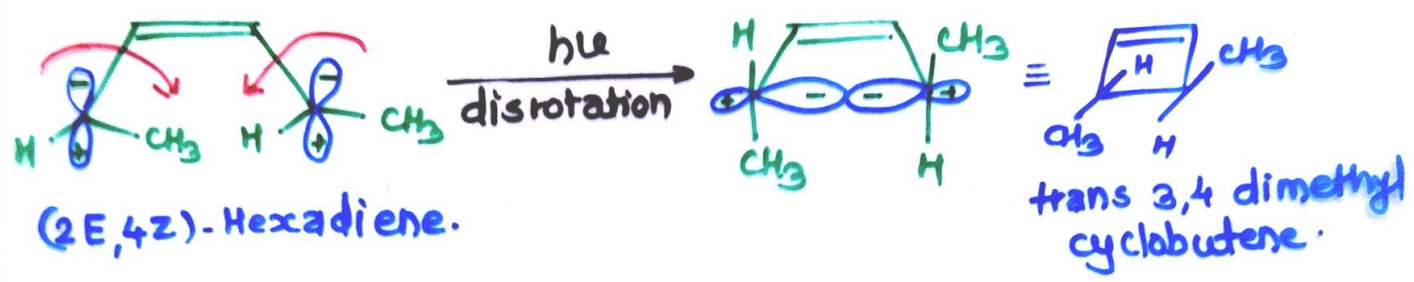
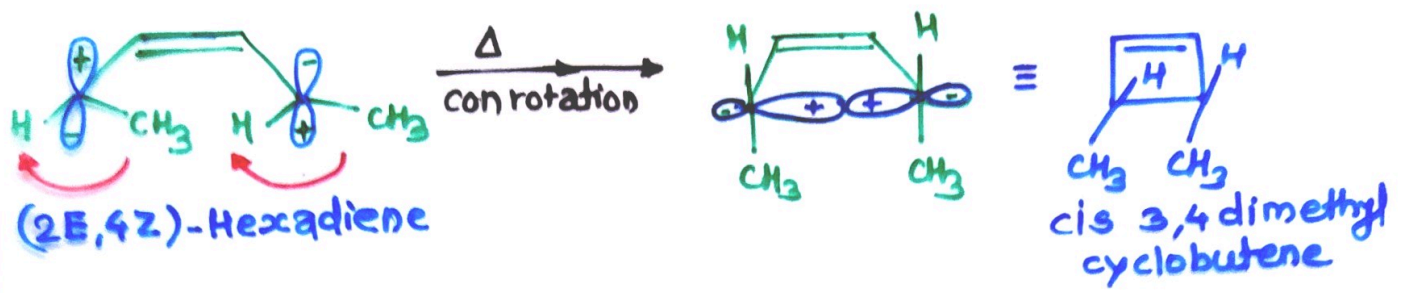
Rotation is clockwise called (Con rotation)

When electrocyclic reaction is photochemical then consider excited HOMO

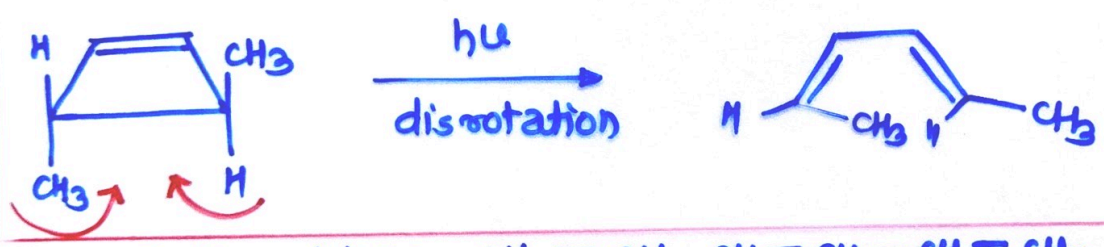
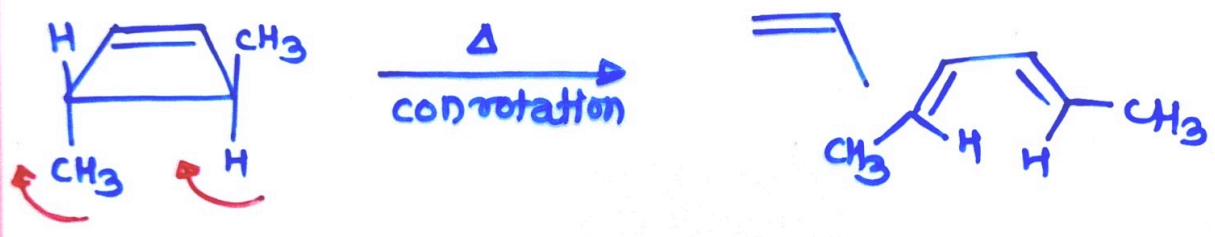


Rotation one is clockwise and another anticlockwise called (Disrotation)

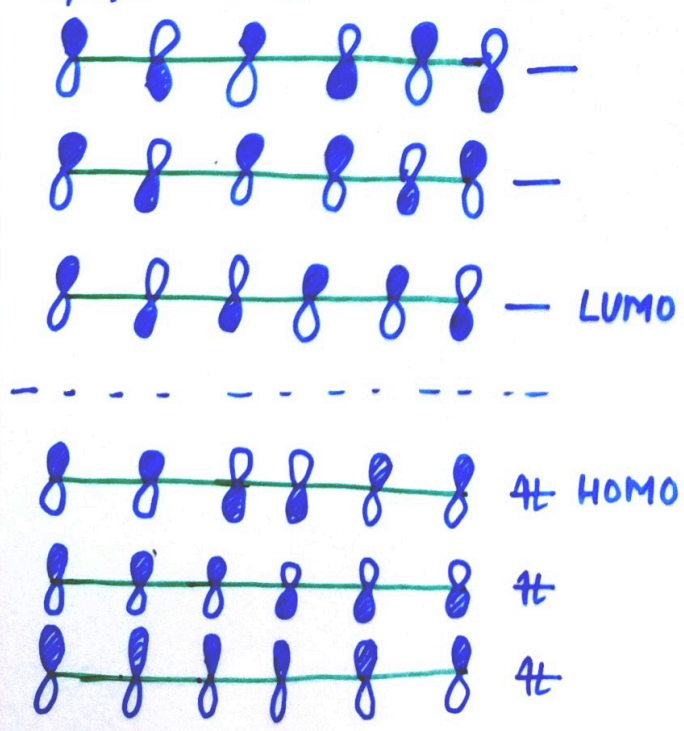
* Stereochemistry is different when reaction carried out in presence of photochemical condition and thermal condition.



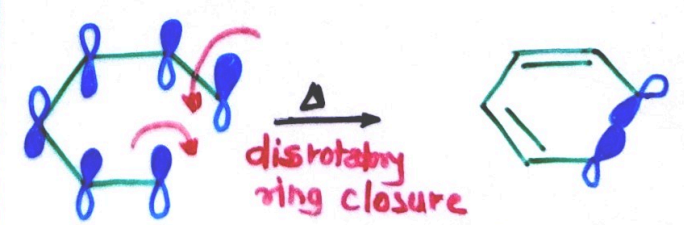
Ring closing Reaction also reversed as ring opening.



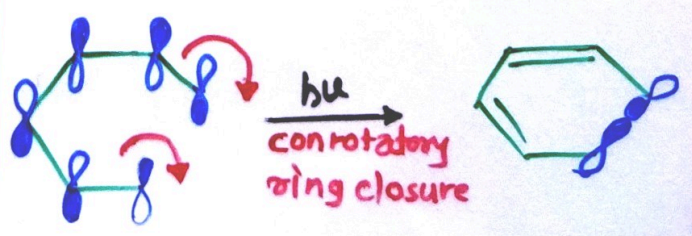
1,3,5-Hexatriene $CH_2=CH-CH=CH-CH=CH_2$



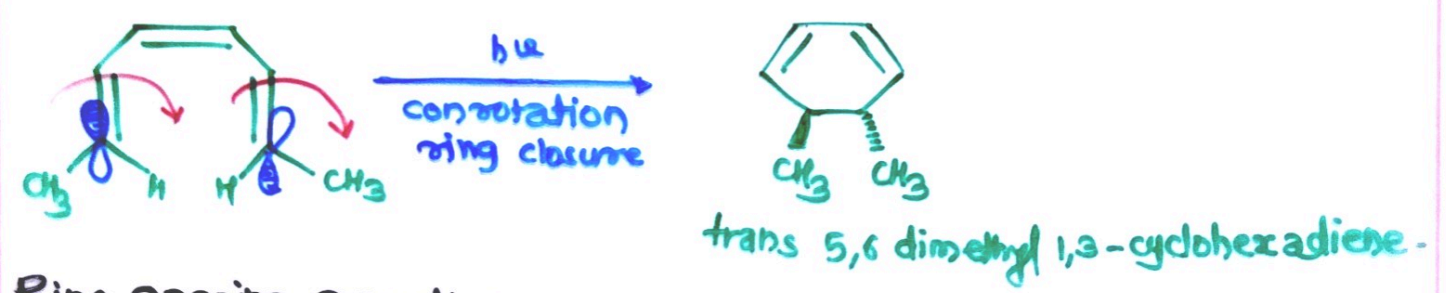
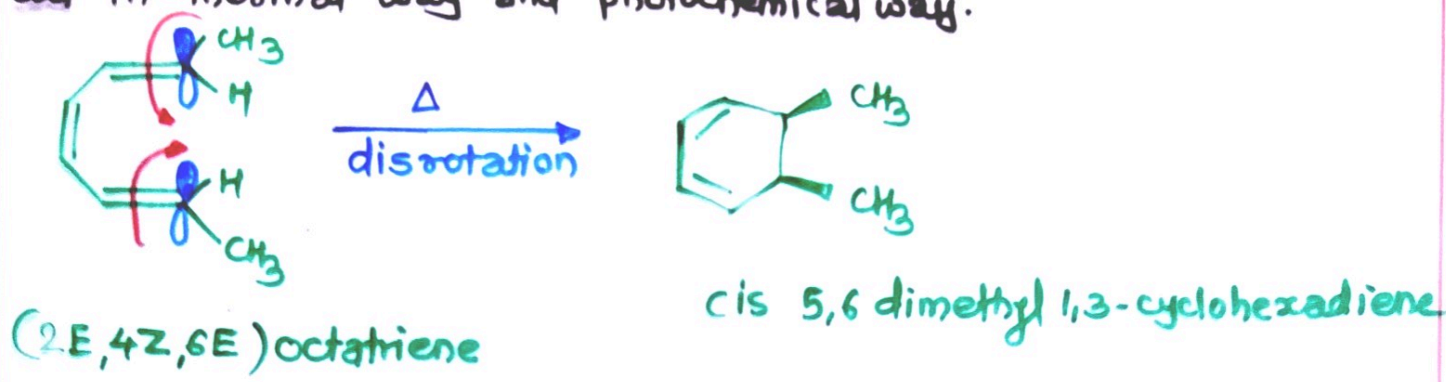
When electrocyclic reaction is thermal then consider HOMO of molecule.



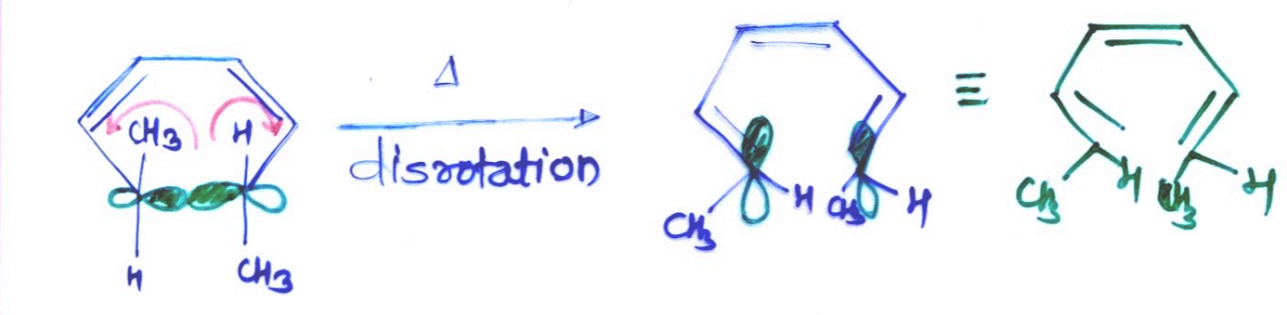
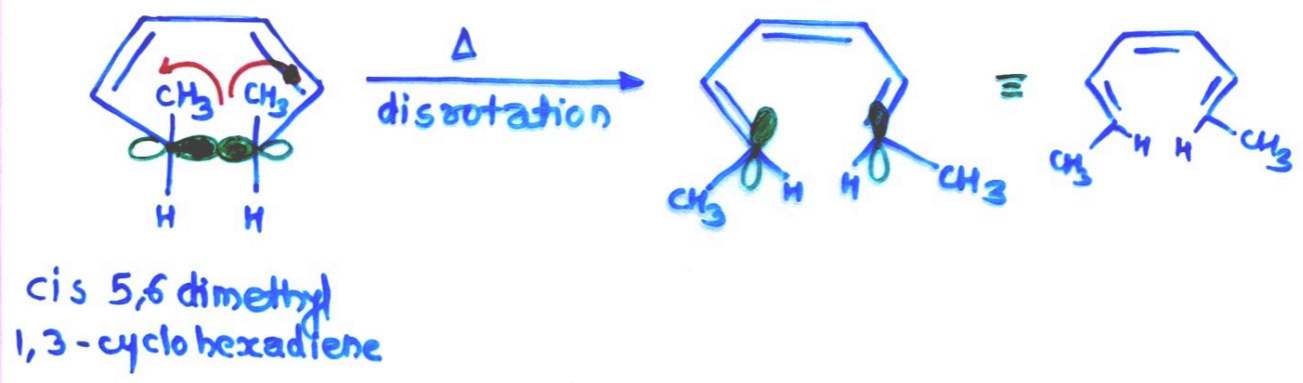
For photochemical reaction excited HOMO is considered (excited HOMO = LUMO)



* Stereochemistry of product is different when reaction carried out in thermal way and photochemical way.



Ring opening reaction of cis & trans 5,6 dimethyl 1,3-cyclohexadiene.



Stereochemical Rules - Electrocyclic Reactions:-

Electron pair (Double bonds)	Δ	$h\nu$
Even number ($4n$)	conrotatory	Disrotatory
Odd Number ($4n+2$)	Disrotatory	conrotatory

The above rules are called Woodward-Hoffmann Rule for electrocyclic reactions.

The table given below for the simplicity

(15)

4n electron system:-

4n+2 electron system.

Reactant	product	
	Δ	h ν
TT	T	C
CC	T	C
TC	C	T
CT	C	T

Reactant con ⁿ	Product con ⁿ	
	Δ	h ν
TT	C	T
CC	C	T
TC	T	C
CT	T	C

Problem:-

