

- Stereochemistry -

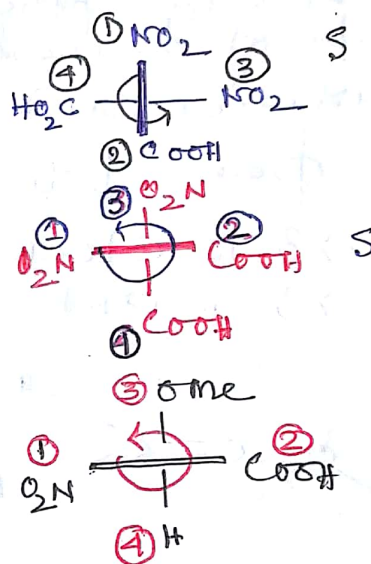
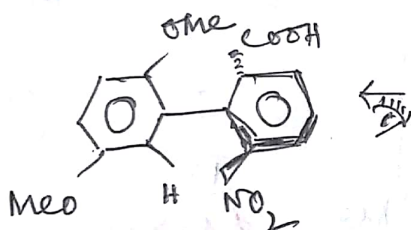
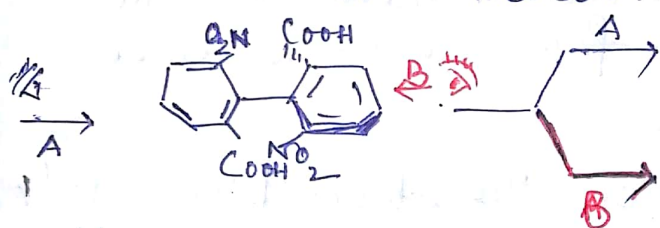
Lecture notes - II A.

For 2nd Sem Chem Honors.
Paper - C5T

By

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Kharagpur College.

Nomenclature of biphenyls.
Same as alkenes.

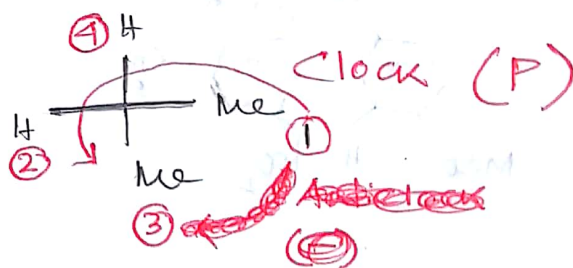
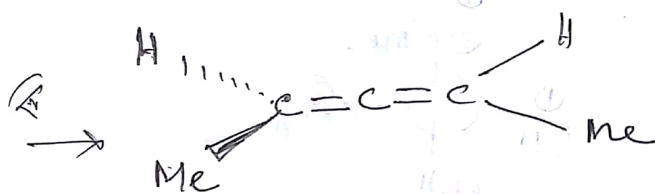


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P, M descriptors for molecules with
Chiral axis $\Rightarrow$

- Helical descriptors.
- Groups of highest priority nearer to the view direction and the far are considered i.e. from 1 to 3.

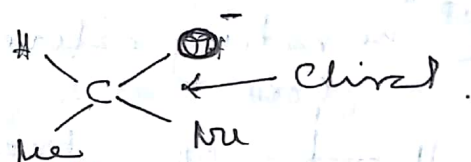
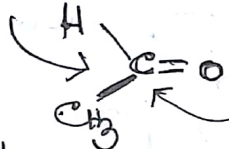
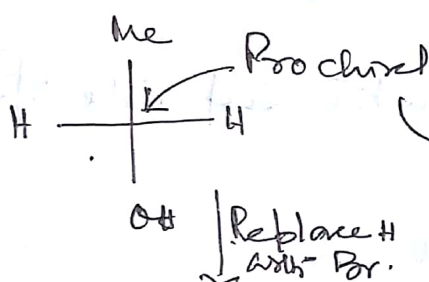
If $1 \rightarrow 3$ is clockwise - The descriptor is P (Plus)
 $1 \rightarrow 3$ " anti " " " " M (Minus)



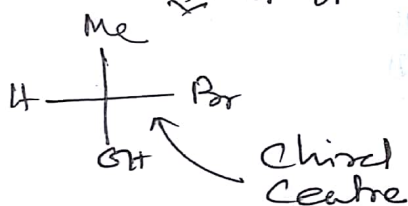
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Pro-chirality

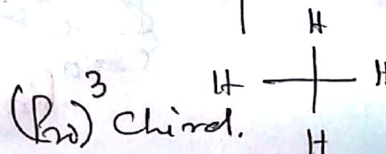
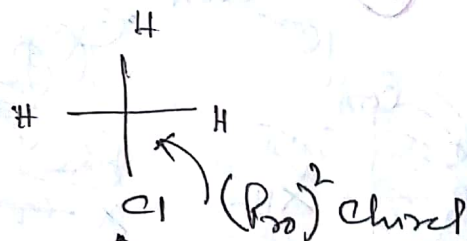
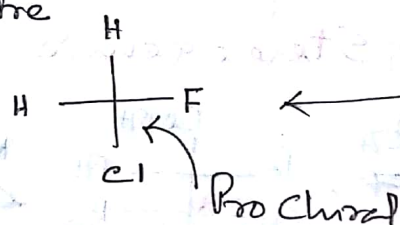
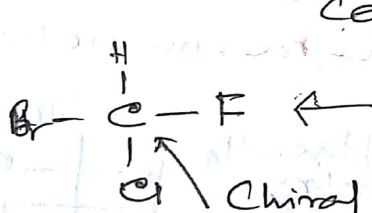
Both, are ~~achiral~~ chiral.



Replace H with Br.



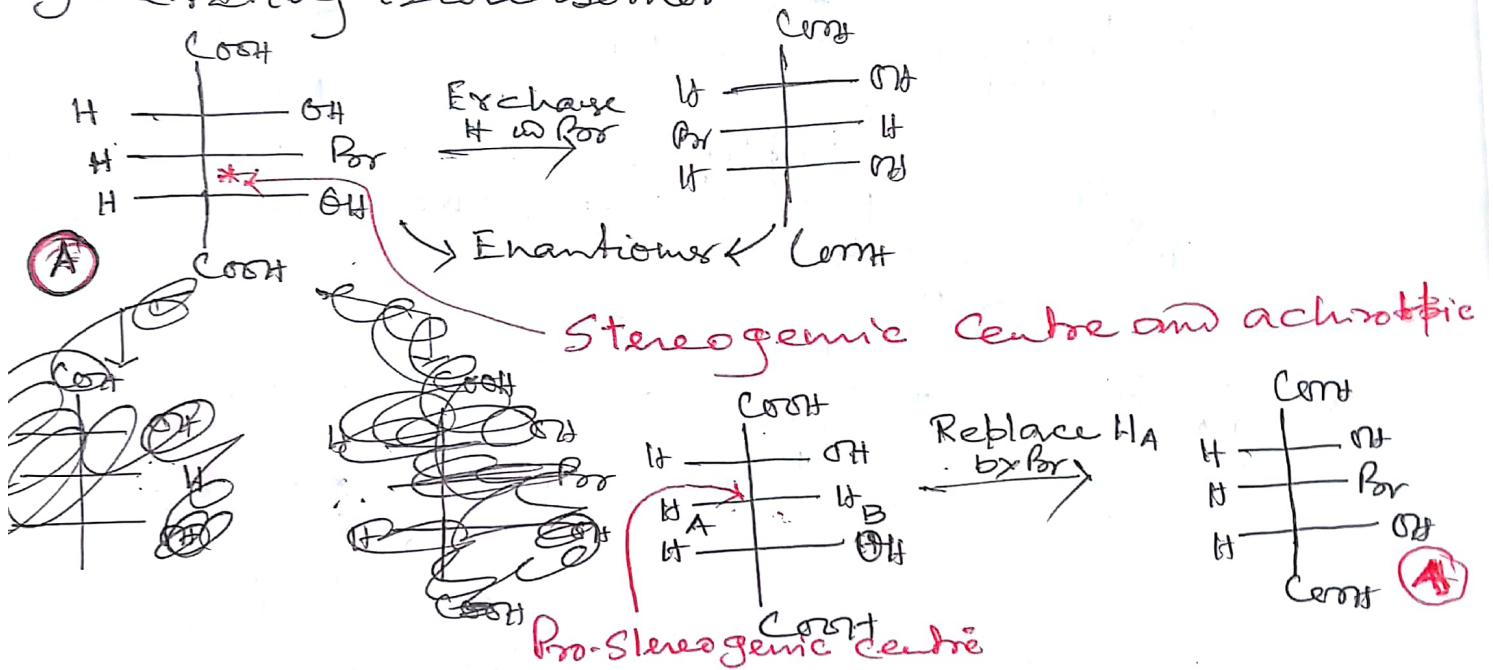
Replacement of one ligand leading to Chiral Centre, known as Pro chiral Centre



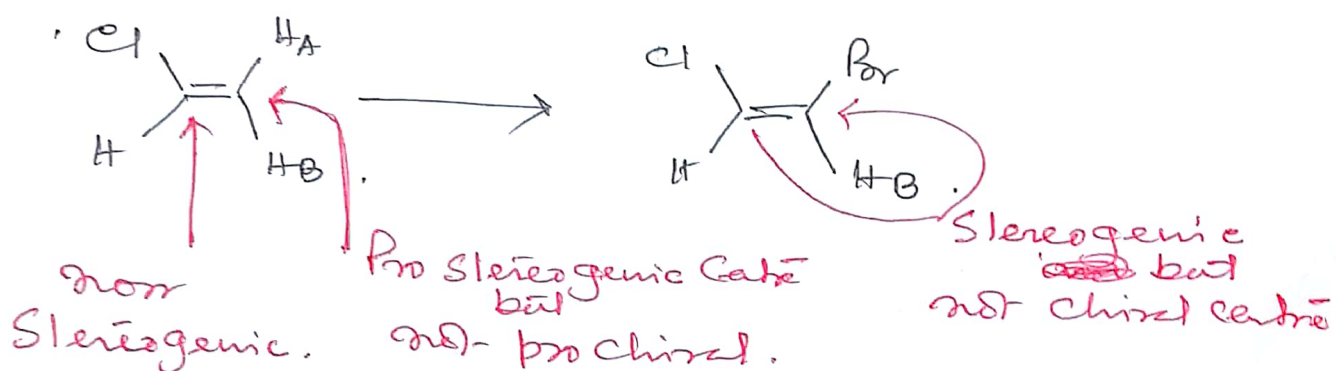
③

Pro-Stereogenic Centre

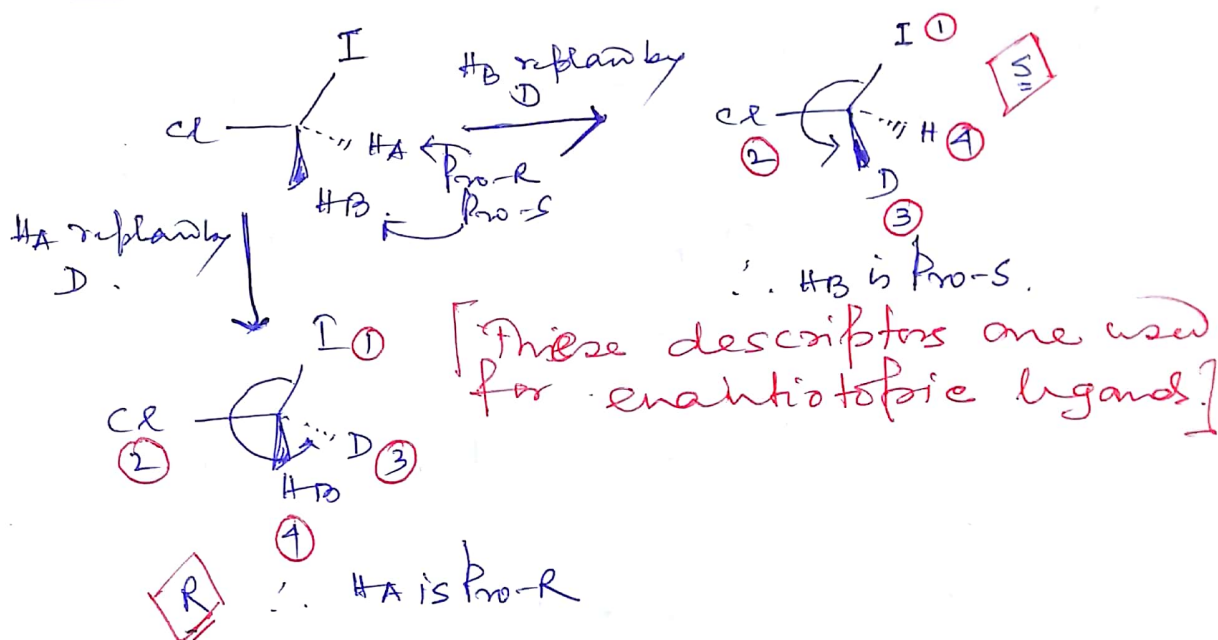
Stereogenic centre —: Centre, capable of generating stereoisomers



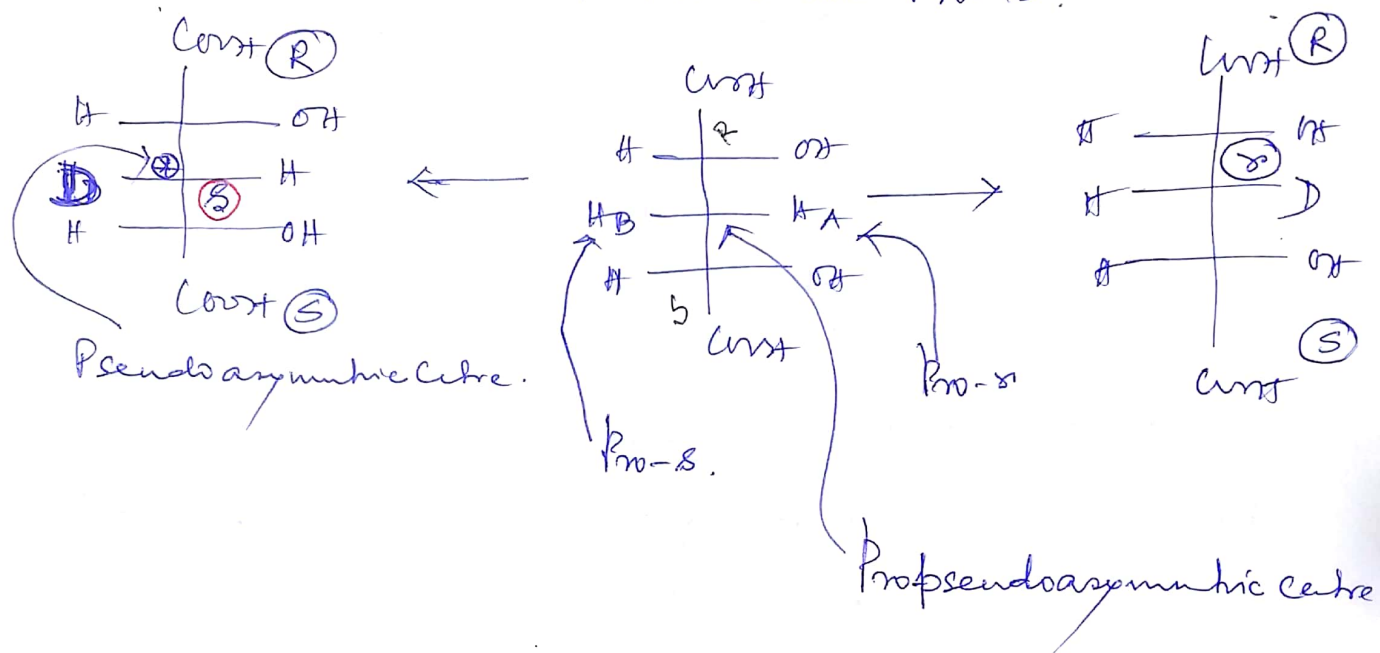
a Centre bearing homomorphous ligands or groups which can be converted into a stereogenic centre by replacing one of them by different substituent, known as Pro-stereogenic centre.



Pro-R & Pro-S.



In case of Pro-pseudoasymmetric centre the ligands are named Pro-R and Pro-S.



Geometric Topicity of ligands

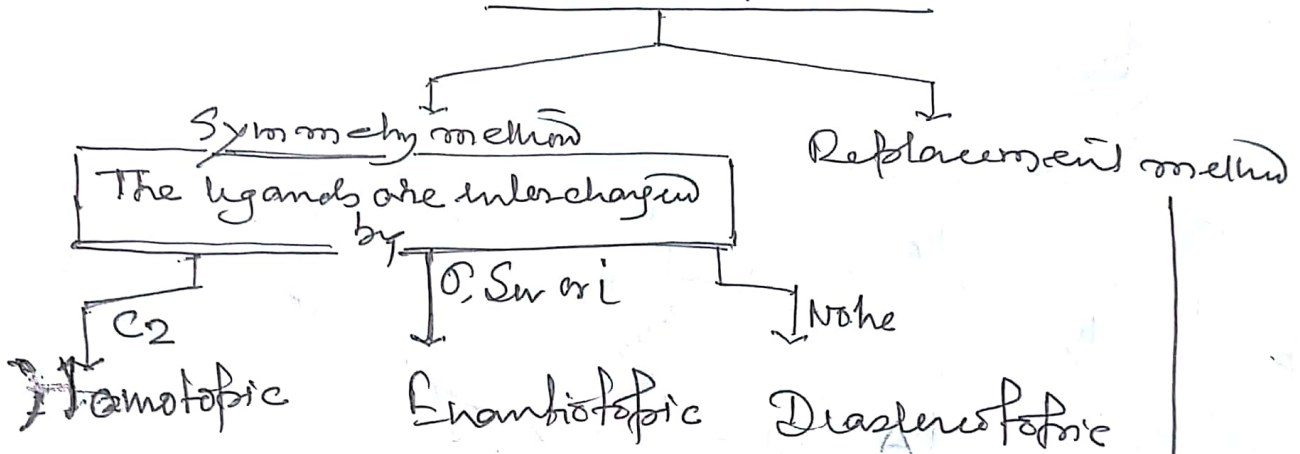
Topicity: Relationship between ligands (atoms or groups) that are homomorphous in nature (when in isolation the ligands are constitutionally same).

Importance: Behaviour of ligands to reagents is determined by ~~the~~ topicity.

- Homotopic ligands - Behave similarly with either chiral or achiral reagents.
- Enantiotopic ligands - Behave similarly towards achiral reagents but differently with chiral reagents.
- Diastereotopic ligands → Behave differently with towards either chiral or achiral reagents

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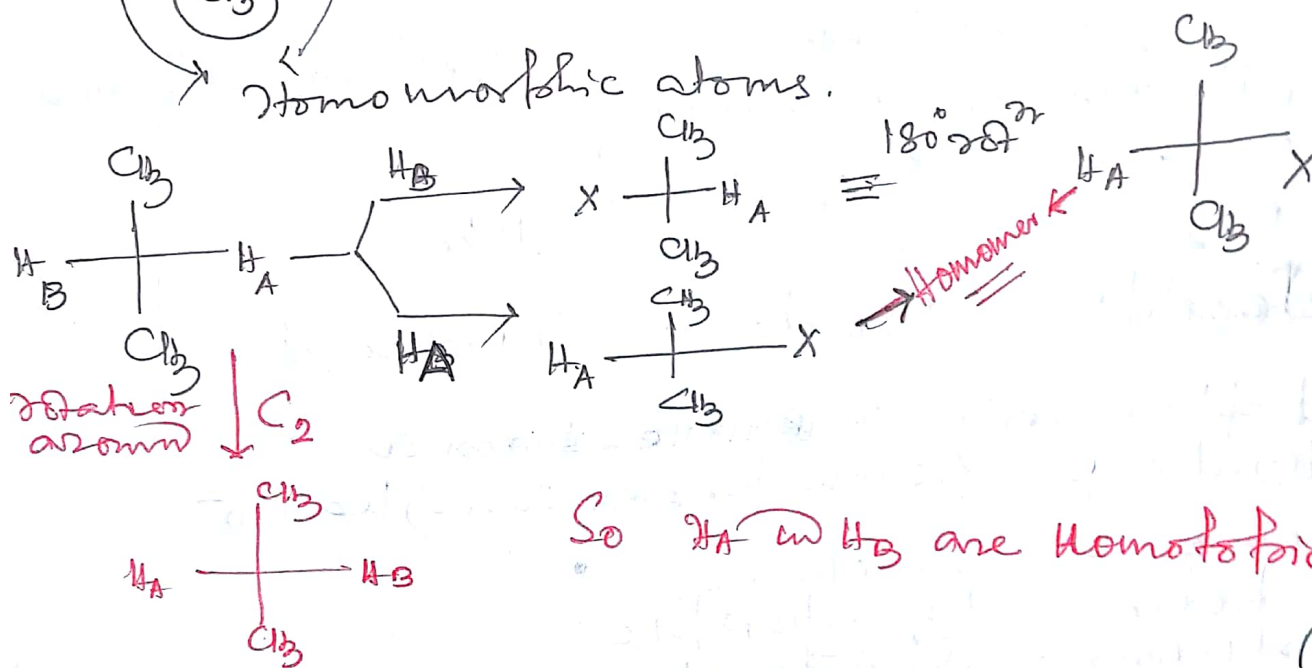
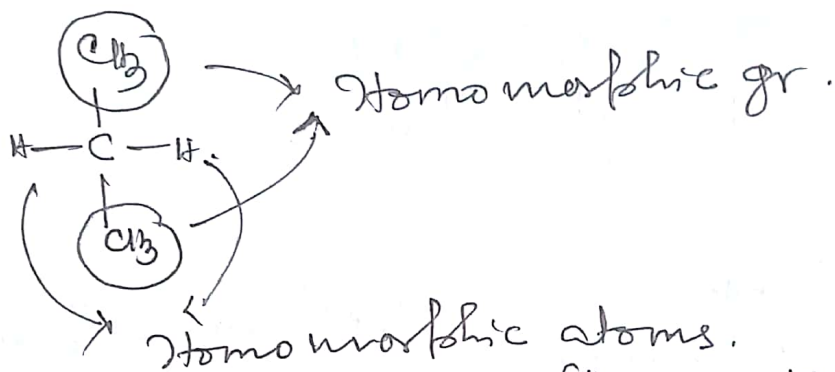
Topics of hands.



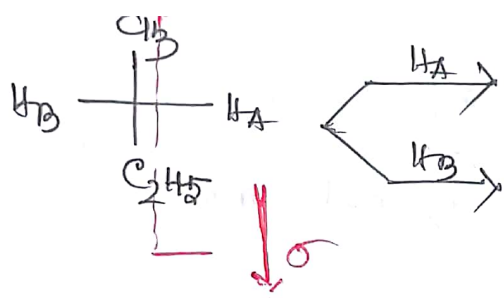
Replacement with ~~different ligand~~ a different ligand (same for both cases) lead to -

Homomers	—	Homotopic
Enantiomers	—	Enantiotopic
Diastereomers	—	Diastereotopic

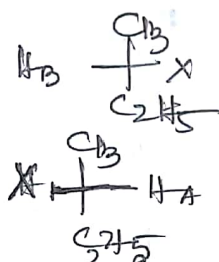
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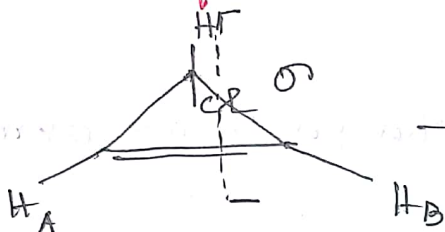
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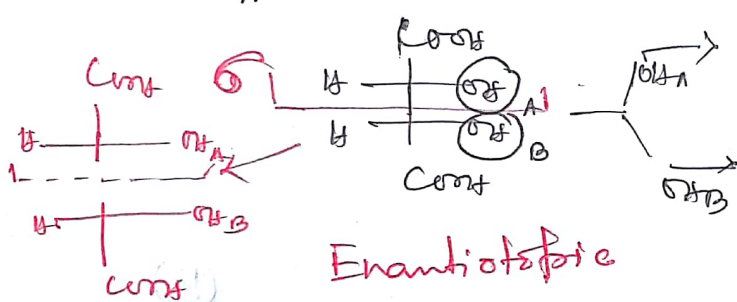
Enantiotope.



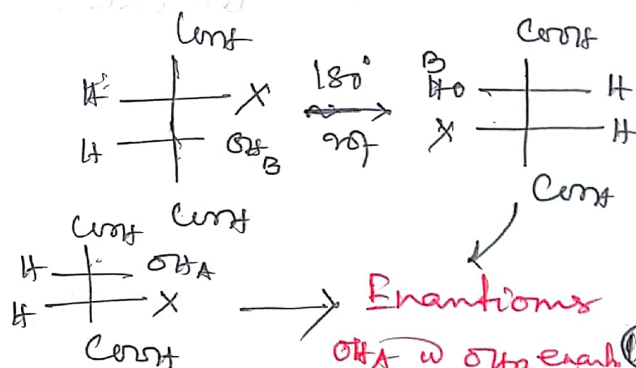
Enantiomers.



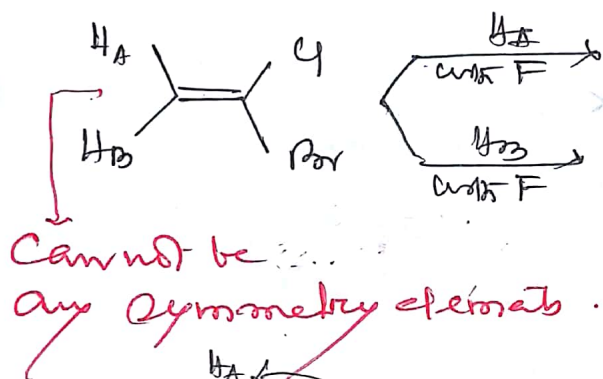
H_A & H_B are enantiotope.



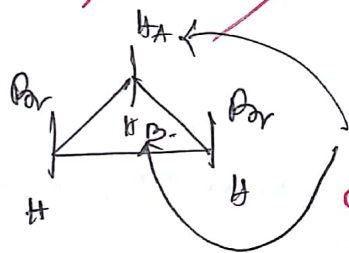
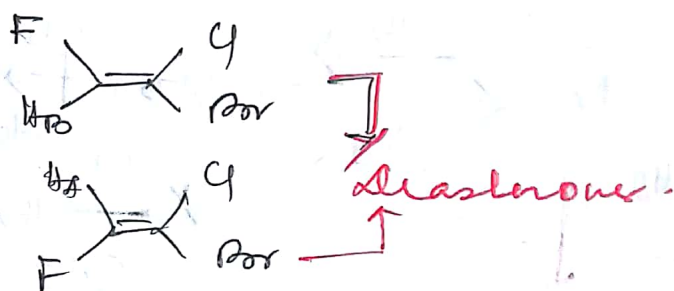
Enantiotope



Enantiomers
 H_A & H_B enantiotope (2)



Cannot be any symmetry elements.



H_A and H_B are diastereotopic cannot be interchanged by any symmetry elements.