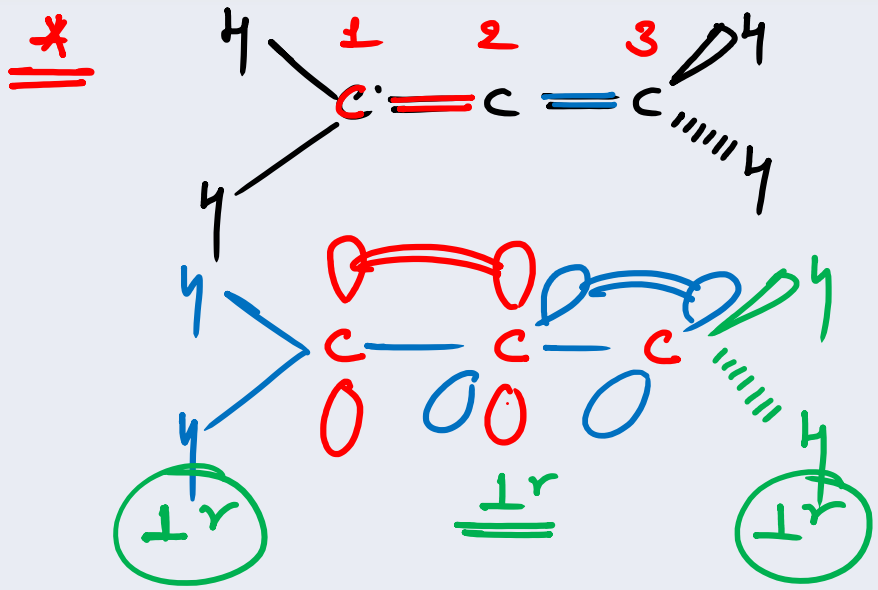
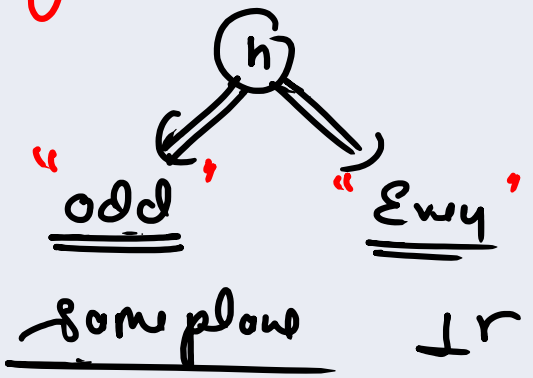
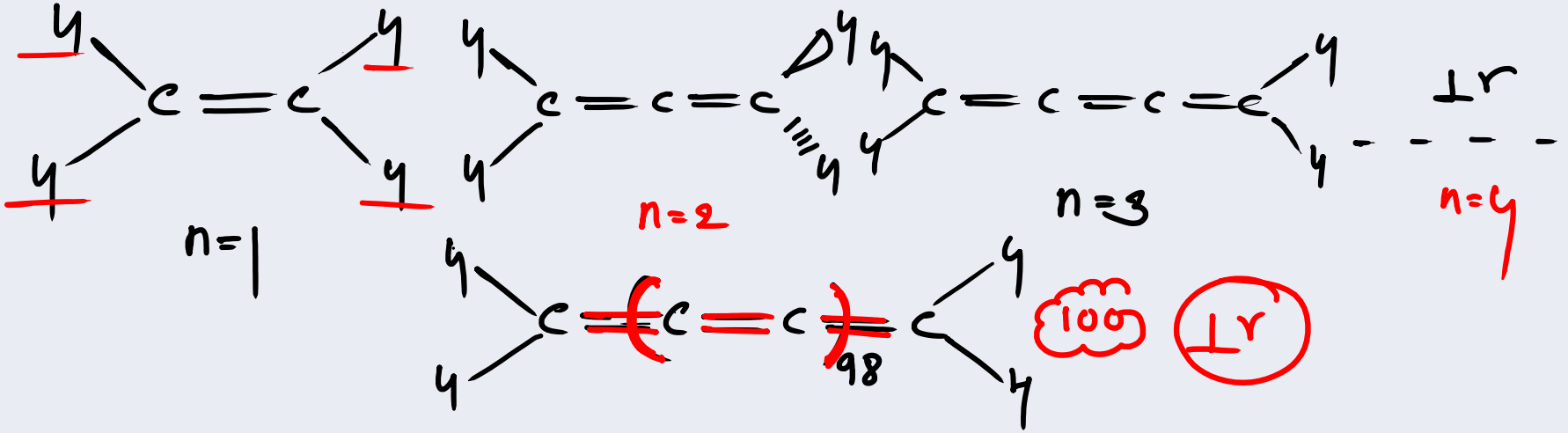
Allenes

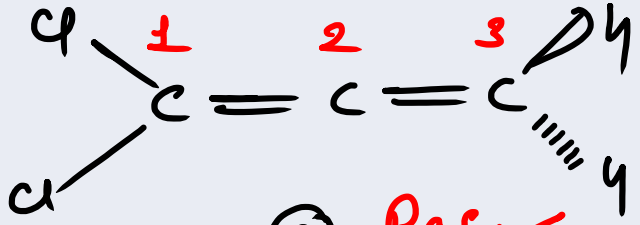


n = no. of double bonds = 2



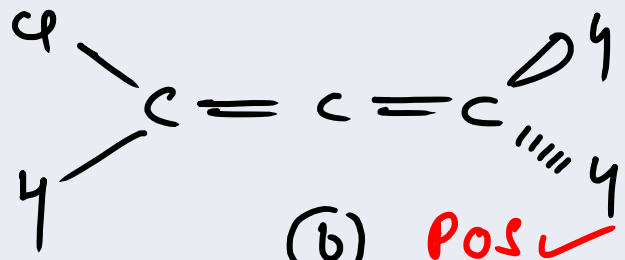
Sometimes ⊥r





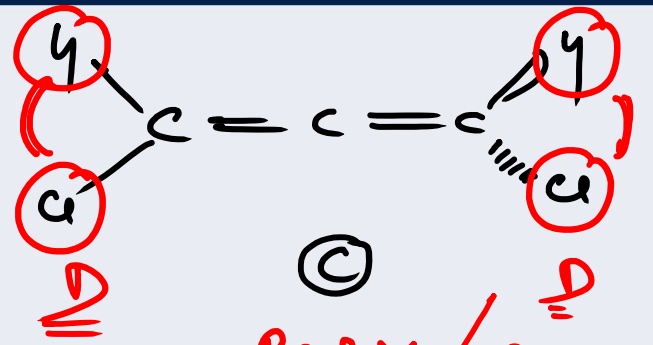
@ Pos ✓

O.I.



(b) Pos ✓

O.I.

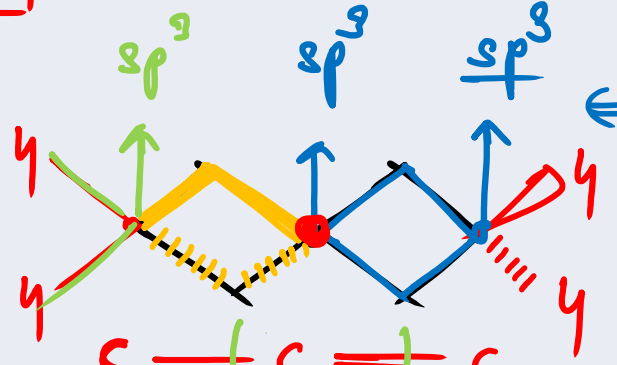


(c)

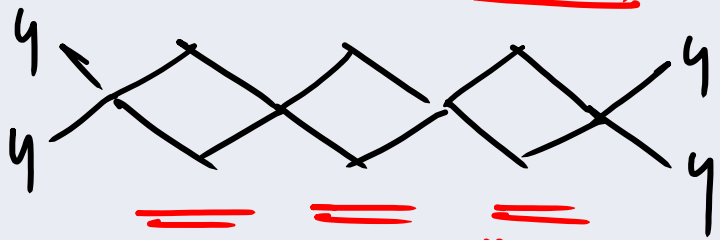
Pos X / cos X

O.R.

"Spiro Rings"



"Ir"



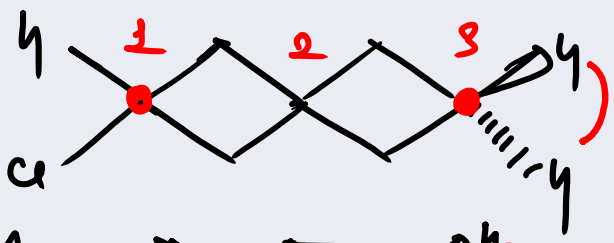
n=3

"same plane"

Pos X cos X O.R.

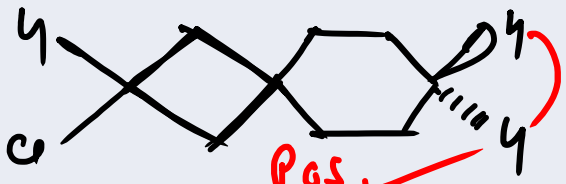
*

1)



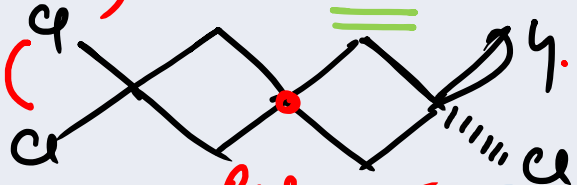
Pos ✓

4)



Pos ✓

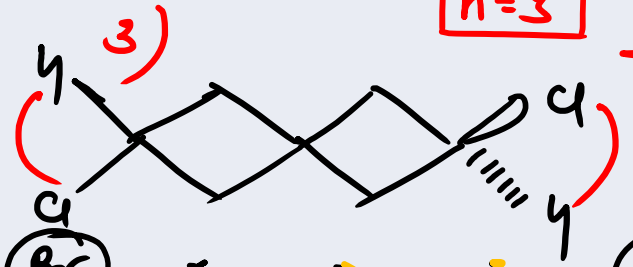
2)



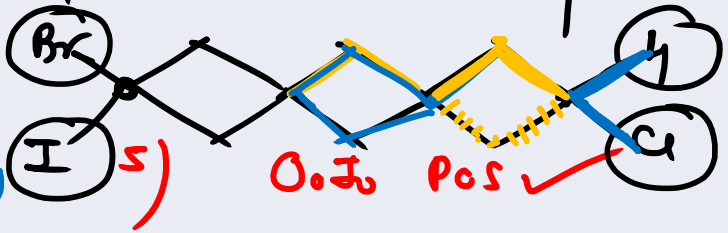
Pos ✓

how

3)

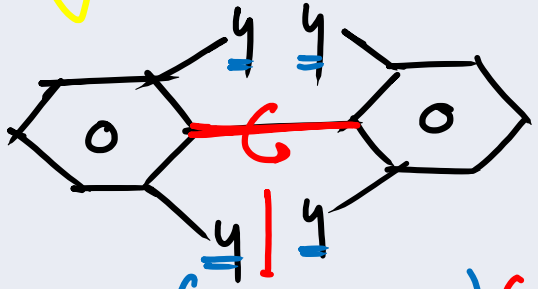


5)



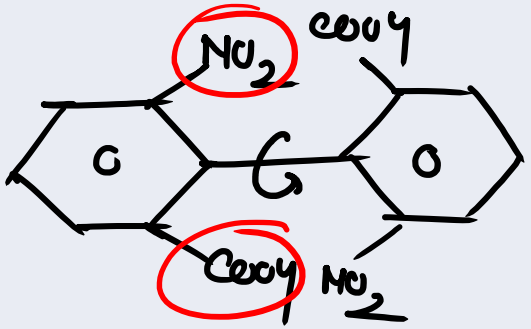
O.I. Pos ✓

Biphenyls.



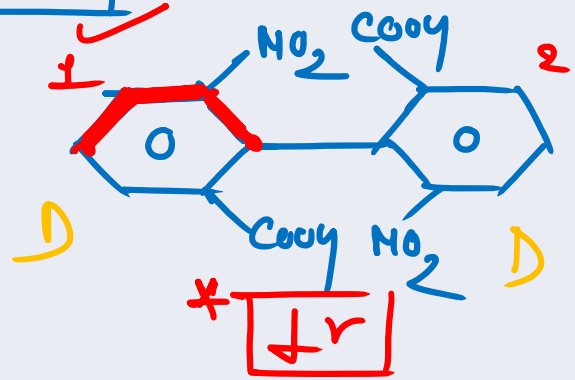
small size ≡ F / H / D / OH / OCH_3 *

(σ-bond) (To and fro Rotation possible) *



≡

OoI

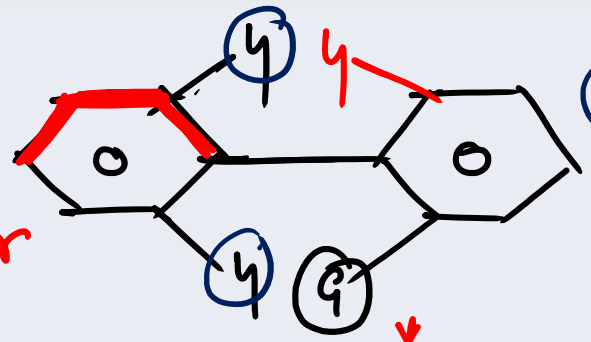


OoB

Pos X

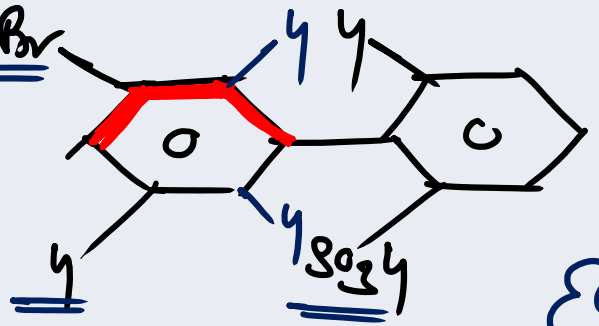
cos X

1)



O.I. ✓ Pos

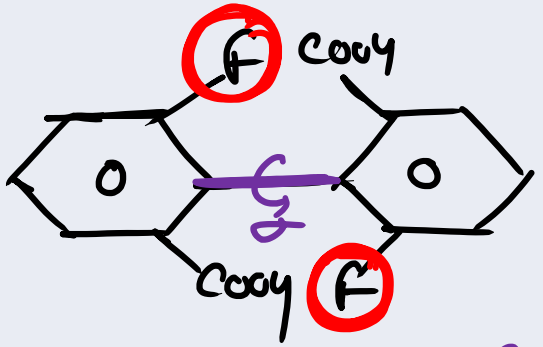
2)



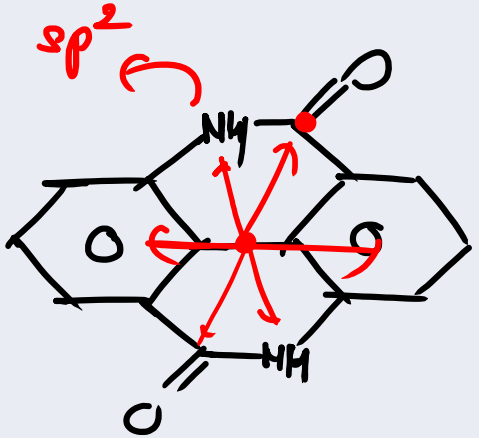
Pos ✗
cos ✗
O.A. *

Q = -t-Bu / $-As^{+}(PPh_3)_3$ / $-SO_3H$ *

2) ***



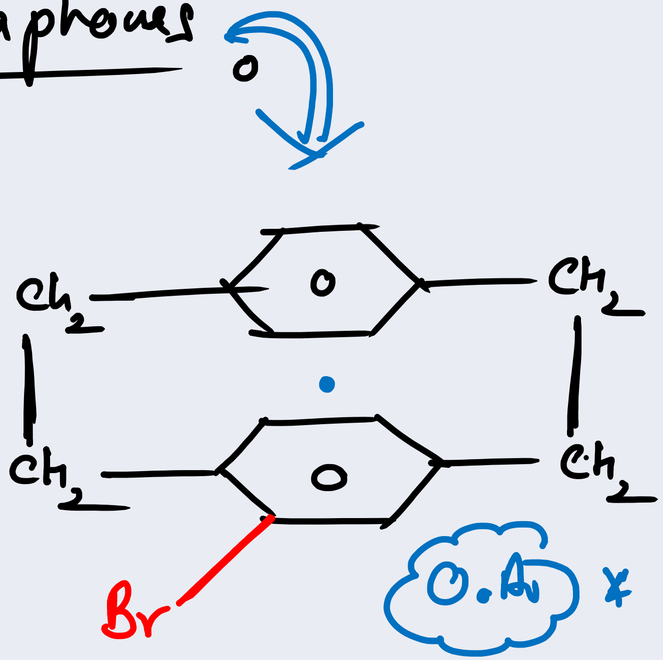
No free Rotation ✓
O
* O.I.



sp^2

Pos ✓
Cos ✓
O.I.

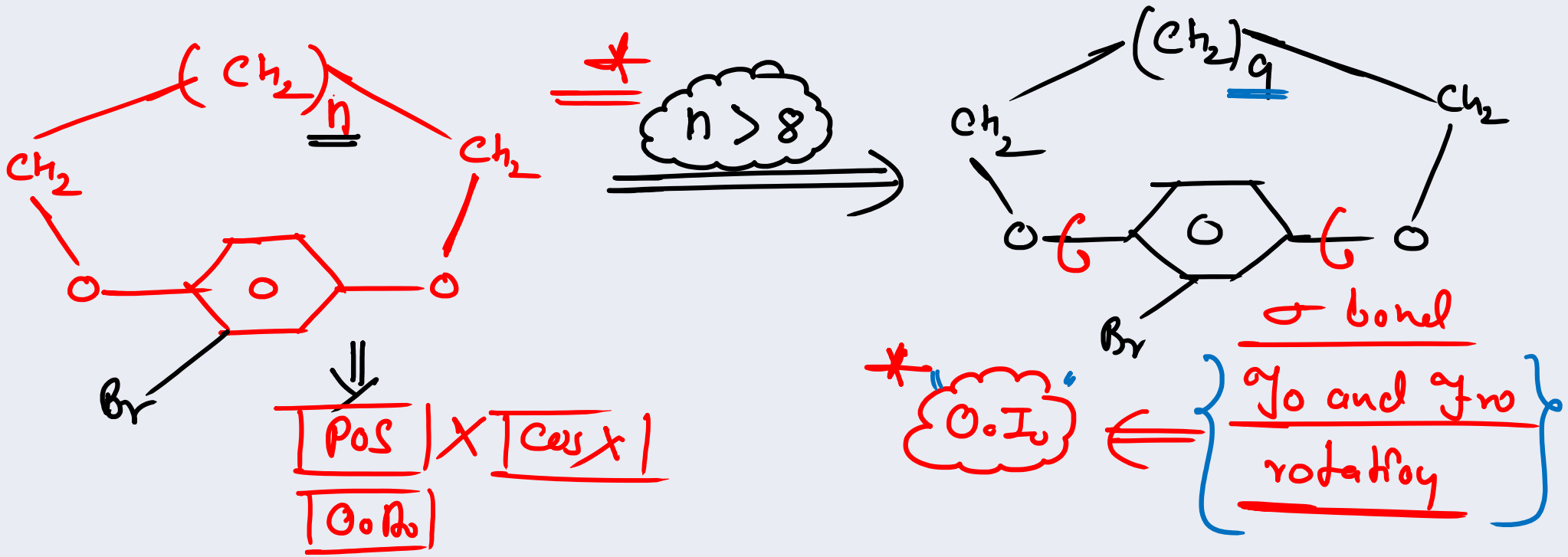
Paraphanes



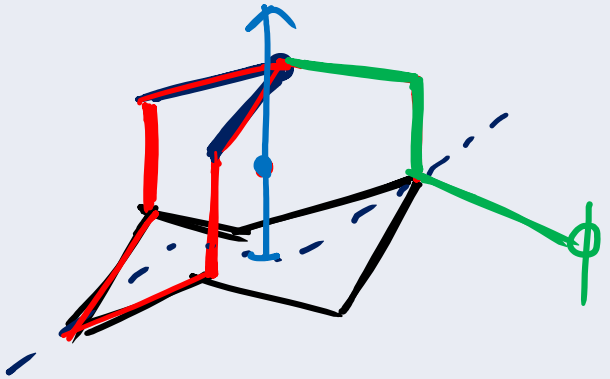
Pos X

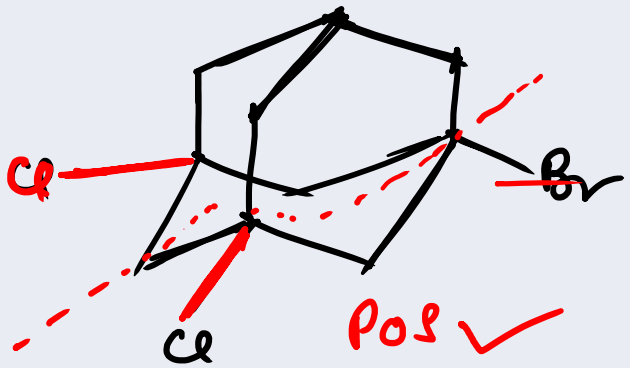
cos X

Ansa compound



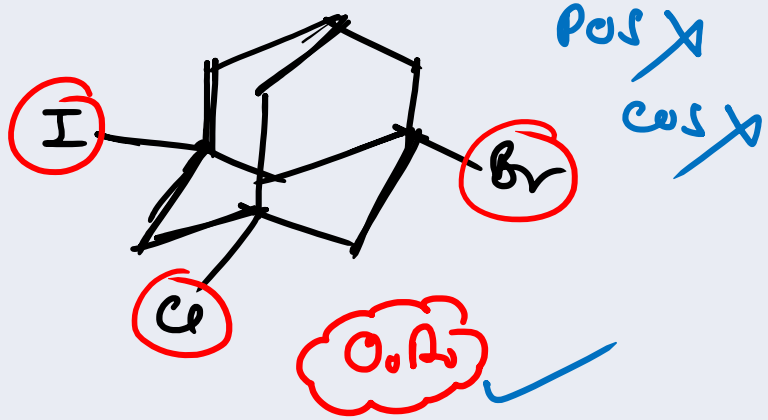
Adamantane





Pos ✓

O_2I_2



Pos ✗

Cos ✗

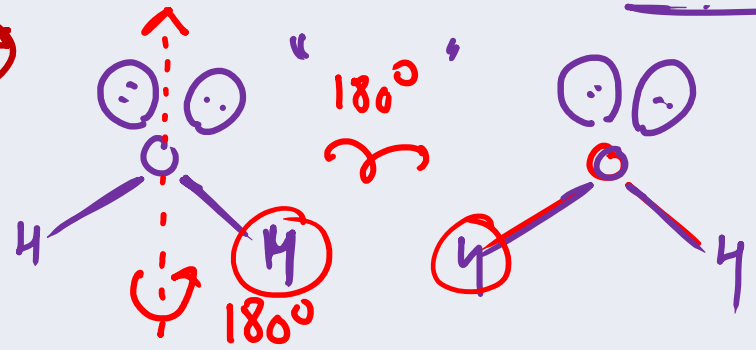
O_2I_2 ✓

Axis of symmetry (C_n)

n = order of axis

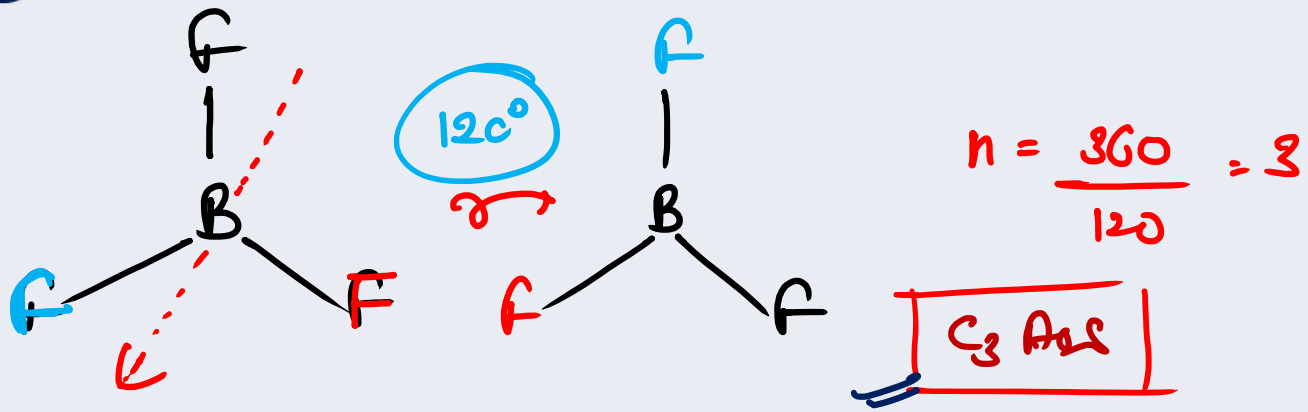
$n = \frac{360^\circ}{\theta}$ * θ ≡ "min. angle" of rotation after which we get equivalent structure

⇒



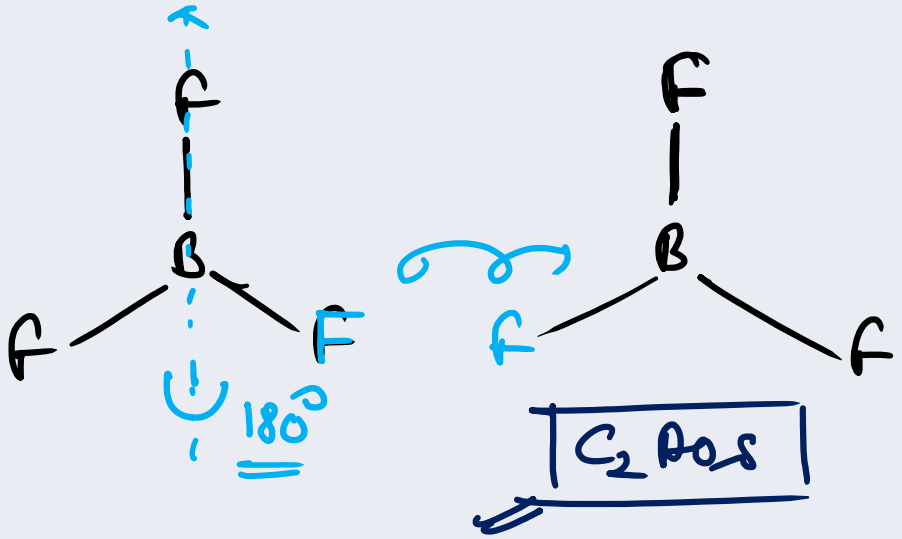
$n = \frac{360}{180} = 2$

C_2 Axis *

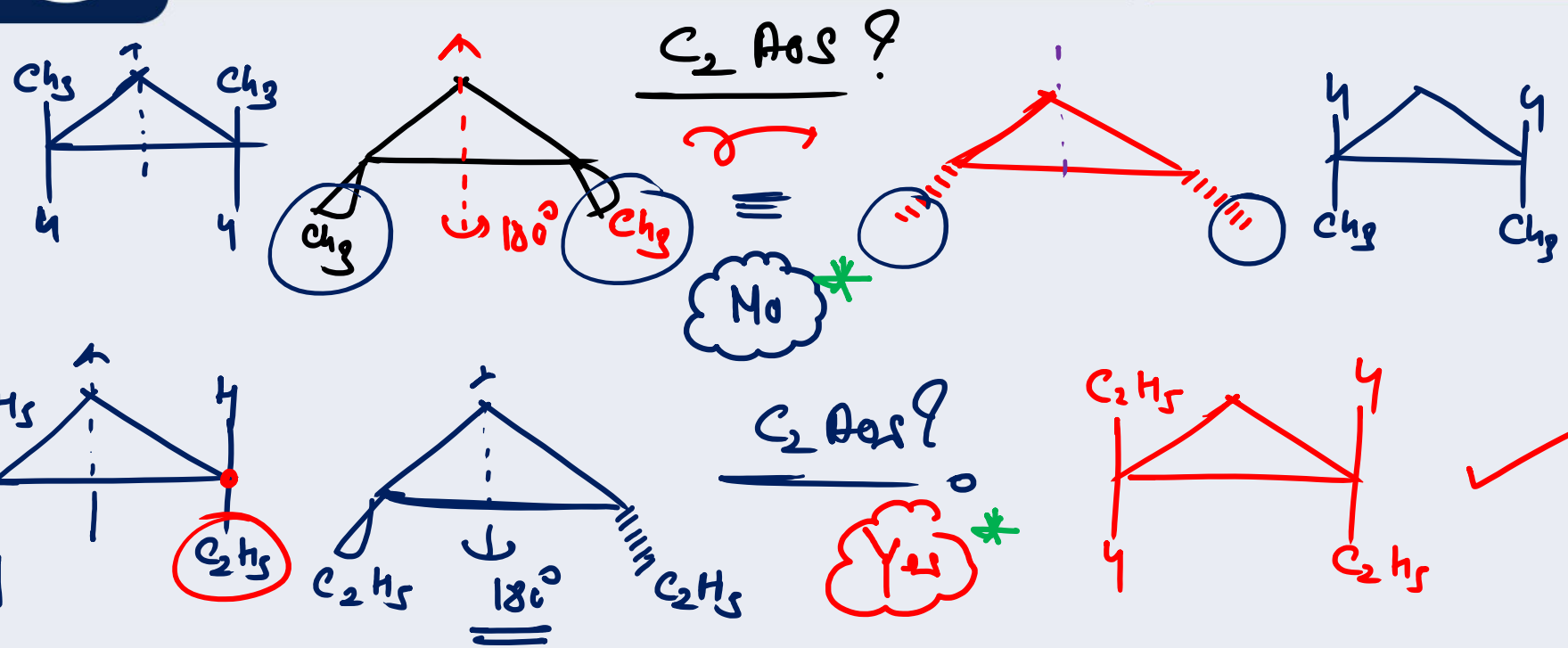


$$n = \frac{360}{120} = 3$$

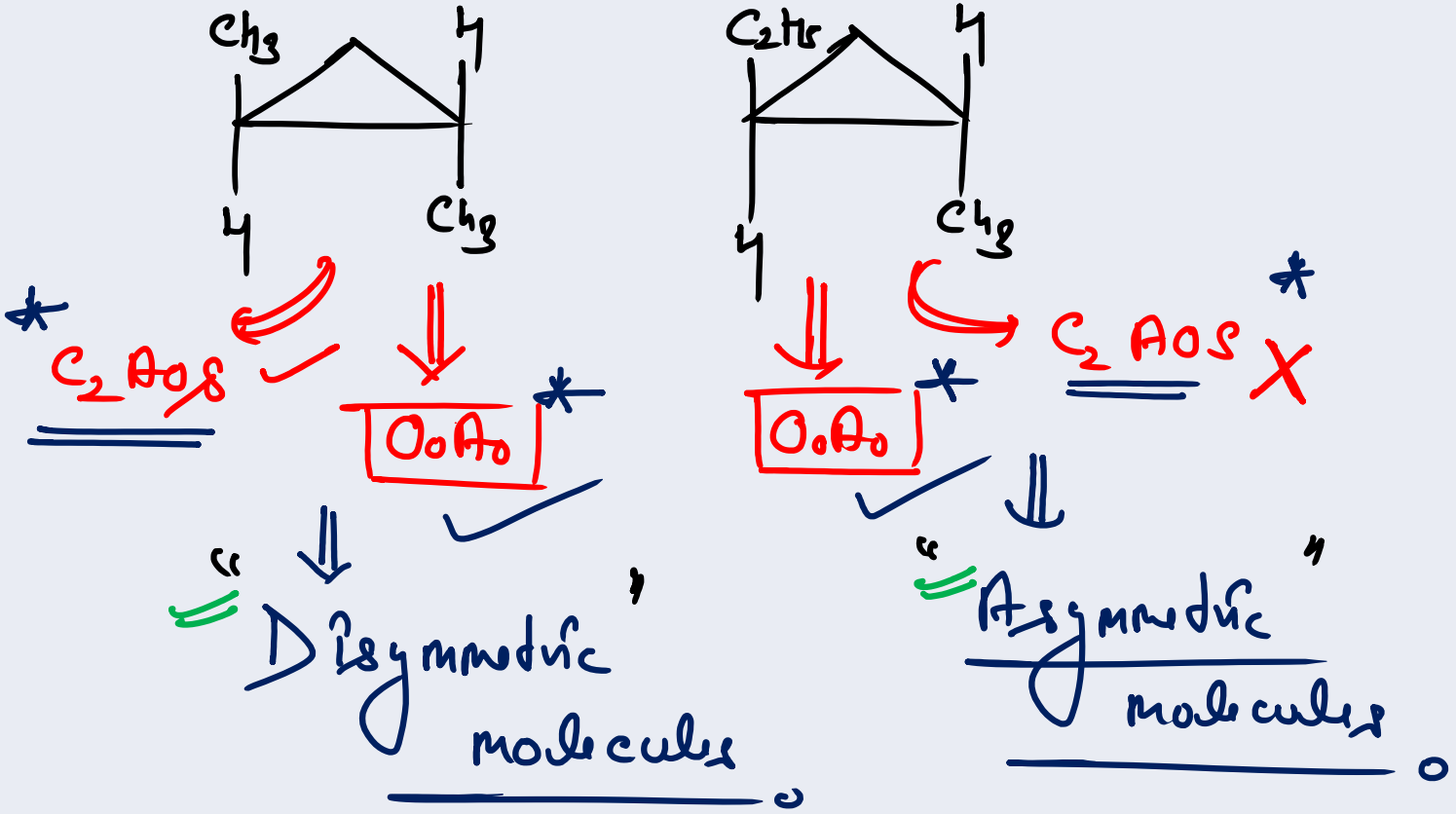
C_3 Axis

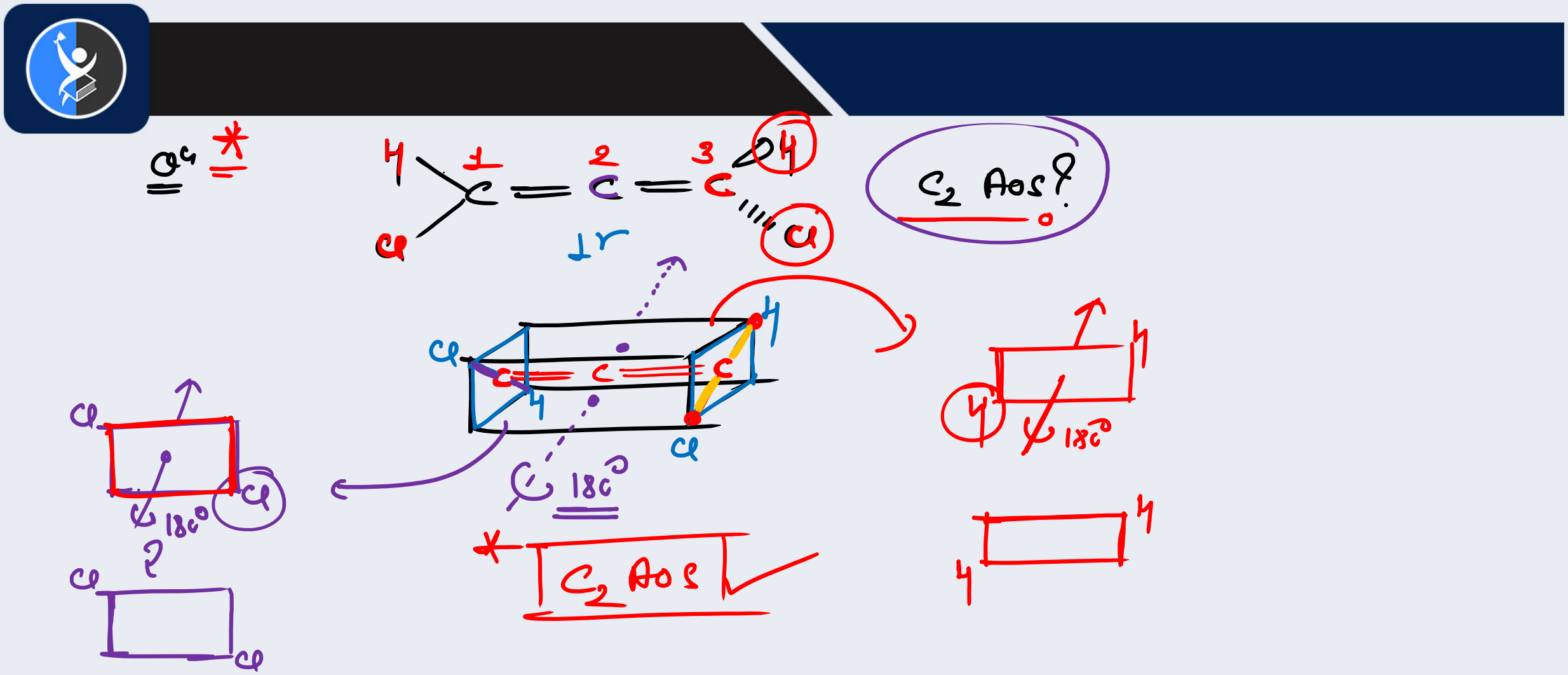


C_2 Axis


C_2 Axis ?
CH_3
CH_3
H
H
180°
CH_3
CH_3
No
H
H
CH_3
CH_3
C_2H_5
H
H
C_2H_5
C_2H_5
180°
C_2H_5
C_2 Axis ?
0
Yes
C_2H_5
H
H
C_2H_5

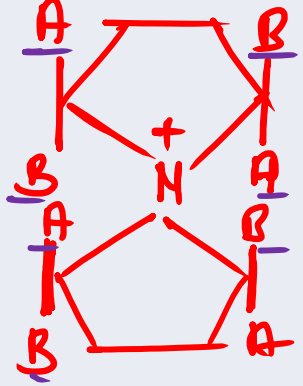
Or


CH_3
H
H
CH_3
C_2H_5
H
H
CH_3
C_2 AOS
OoAo
C_2 AOS
X
OoAo
"Diasymmetric molecules"
"Asymmetric molecules"


C_4 *
H
Cl
1
2
3
C
C
C
H
Cl
1r
C_2 Aos?
Cl
C
C
C
H
H
Cl
Cl
180°
Cl
?
Cl
Cl
H
H
180°
H
H
180°
* C_2 Aos

AAOS S_4

$\equiv$ *



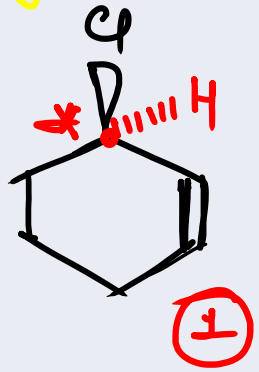
POS X
COS X
$\}\Rightarrow$ AAOS ✓ *

$\Downarrow\Downarrow$

$O_o I_o$

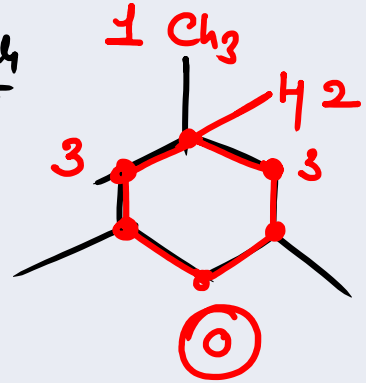
Counting of chiral centre.

Q.



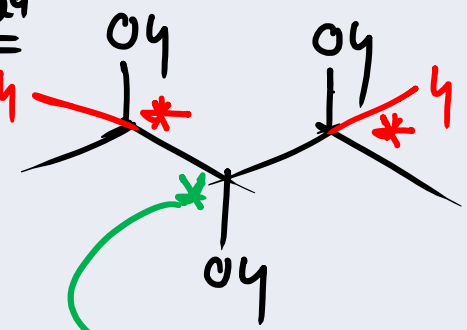
1

Q.



0

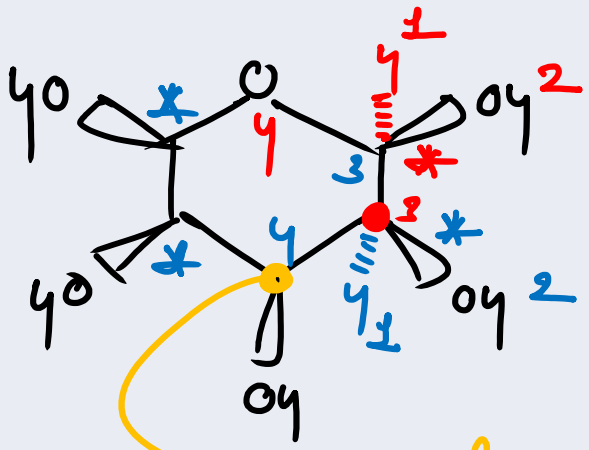
Q.



2

pseudo chiral.

Q.



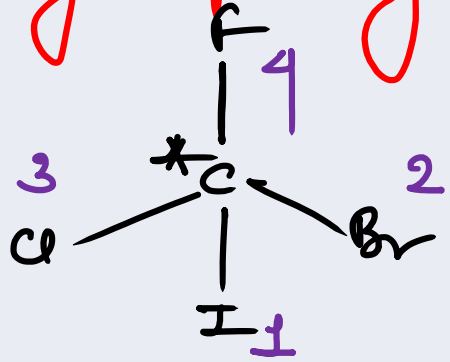
1 *

pseudo chiral

R/S Configuration

CIP

Rule (I) :- First give priority to atomic. No.



Rule (II) :- 1) Atomic. no. should be "same till end of the chain".

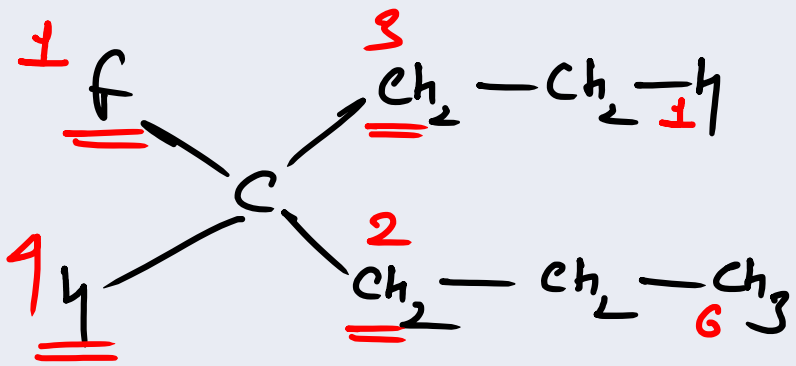
2) Atomic mass would decide the priority if Atomic no. is same

3) $-\overset{3}{I} > -\overset{2}{D} > -\overset{1}{H}$

1) $-\overset{16}{\underset{8}{O}}-\underset{1}{H}$ (a) $<$ $-\overset{18}{\underset{8}{O}}-\underset{1}{H}$ (b)

2) $-\overset{16}{\underset{8}{O}}-CH_3$ (a) $>$ $-\overset{18}{\underset{8}{O}}-\underset{1}{H}$ (b)

Rule (iii) First center is similar they go for second point of difference.



Or

(1) $-C(H,H)-C(H,H)-H$

(2) $-C(D,D)-C(H,H)-H$

(3) $-C(H,H)-C(H,H)-C(H,H,H)$

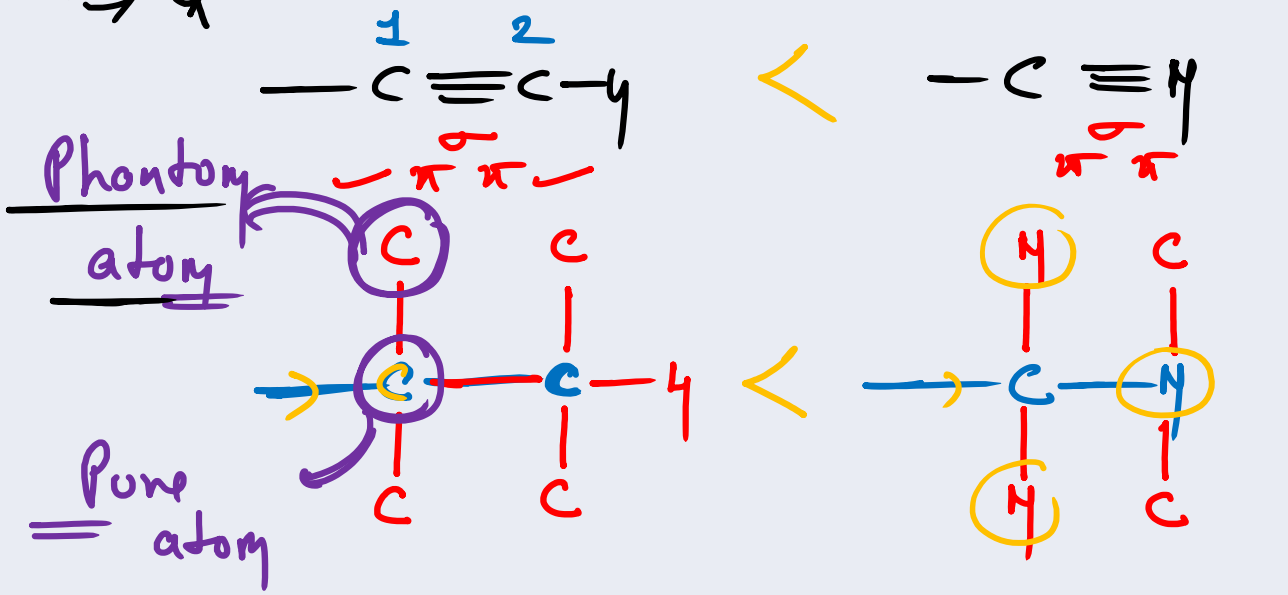
3 > 2 > 1 *

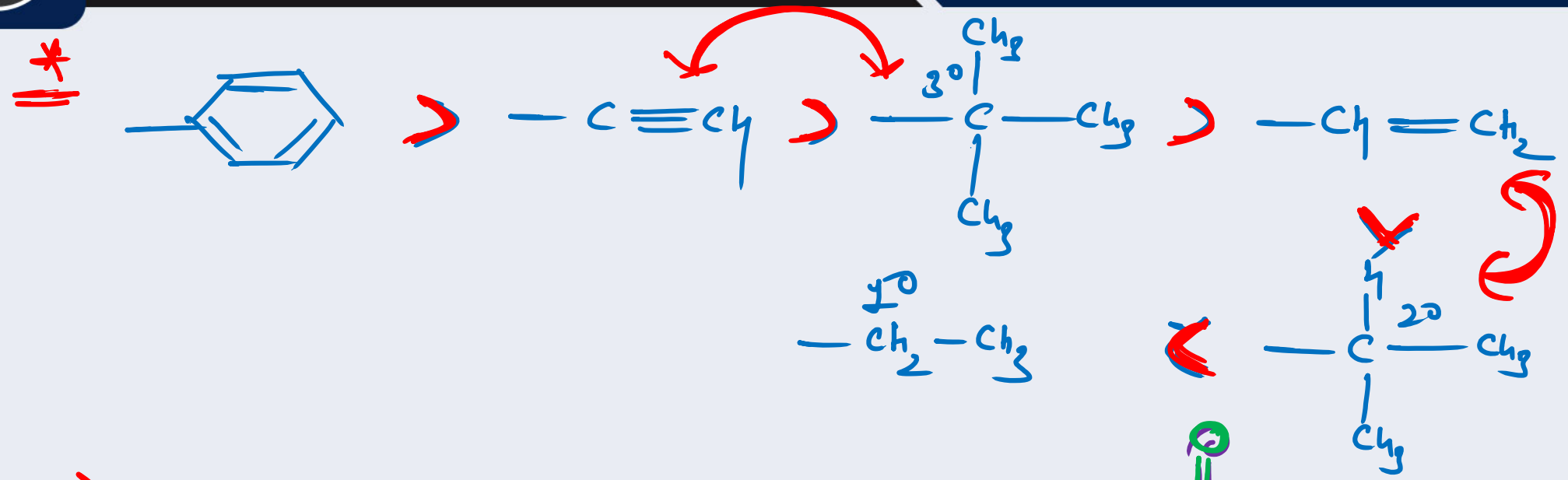
Rule (iv).

Double bond = duplicathon

Triple bond = Triplicathon

⇒ *





⇒ **Rule (5)**.

* R > S
* Z > E
* cis > trans
* atom > Lp.
* RR > SS