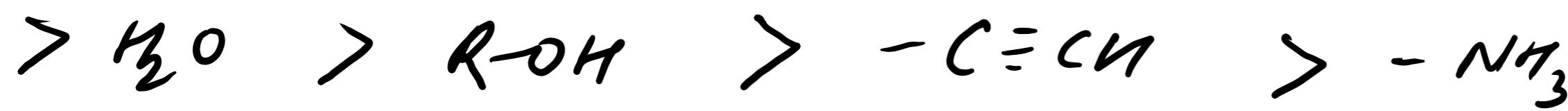
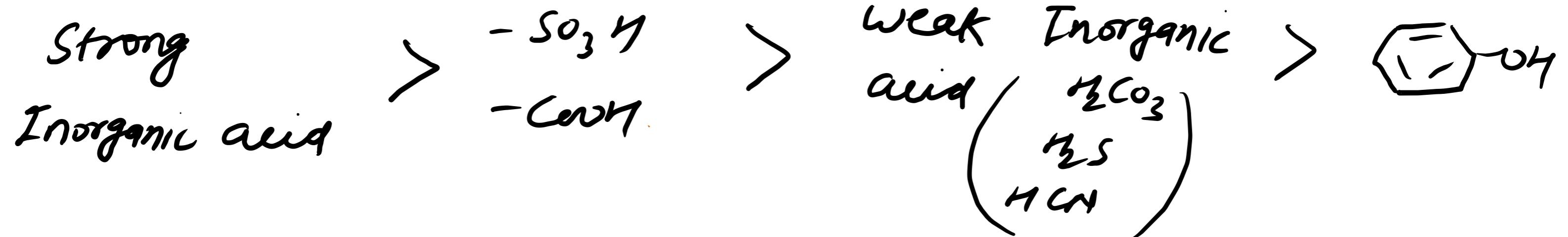
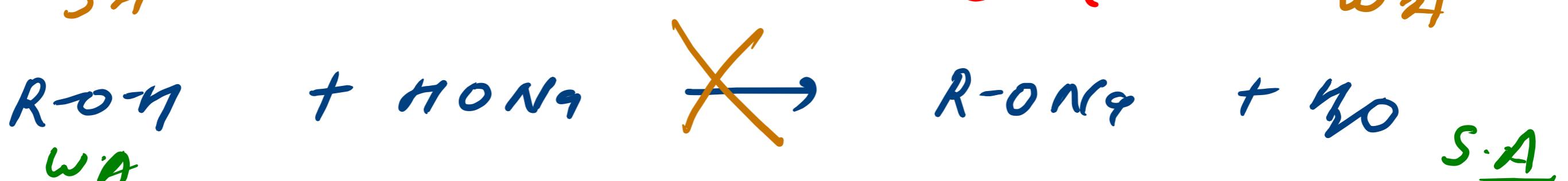


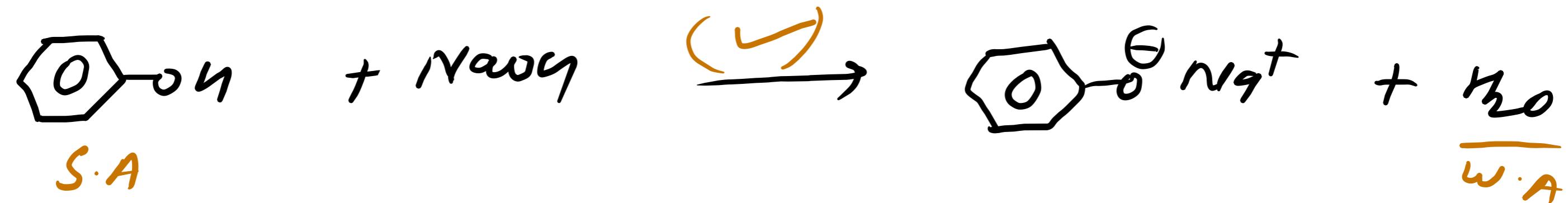
Acidic Strength



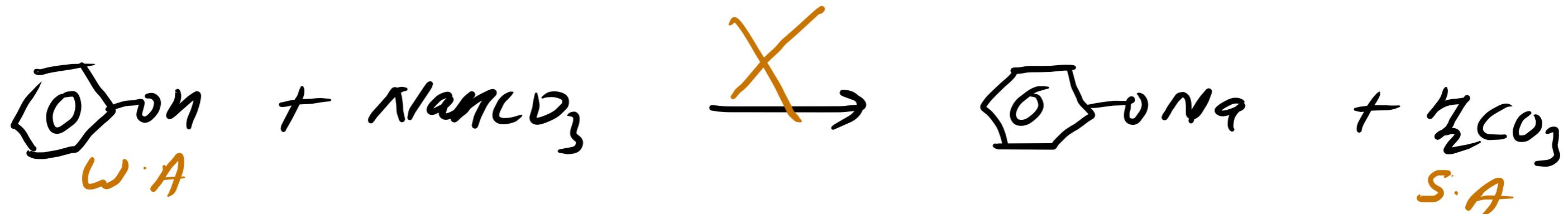
S.A \rightarrow W.A

Reaction always proceeds from Strong to weak

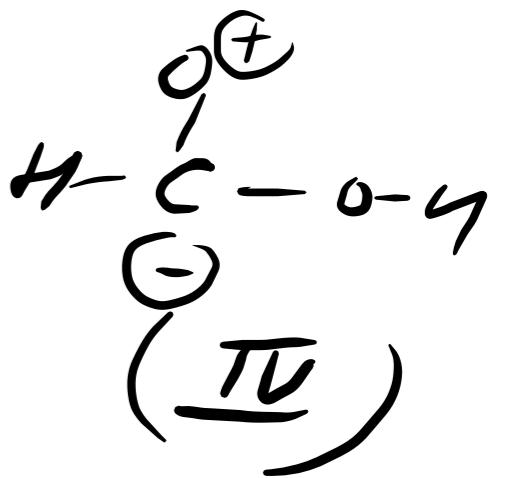
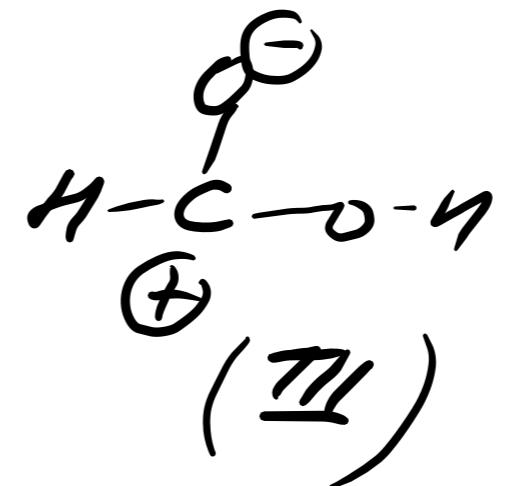
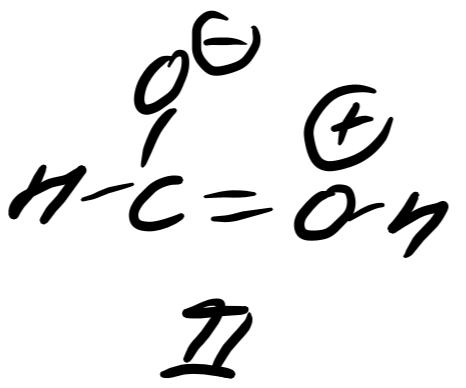
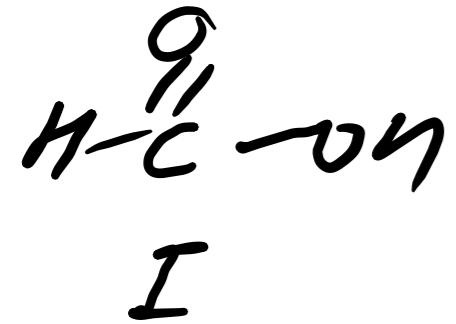




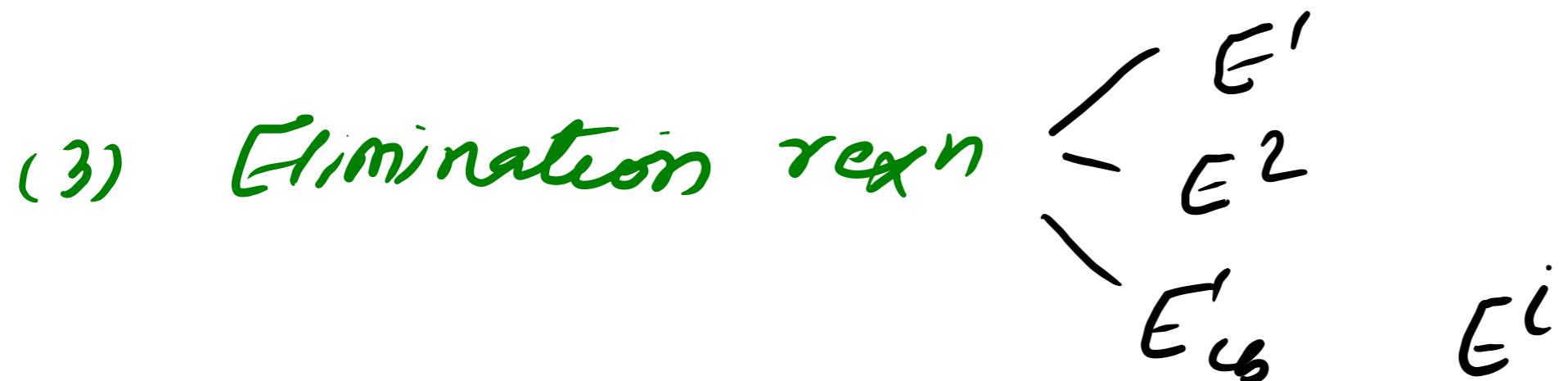
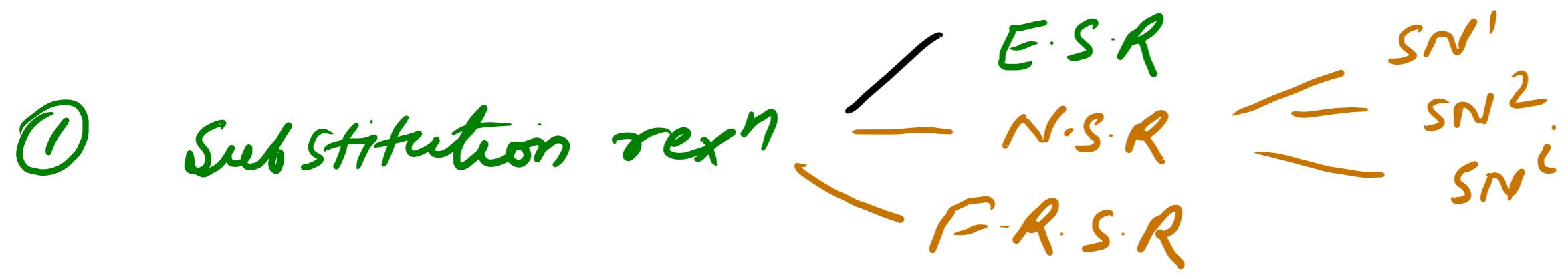
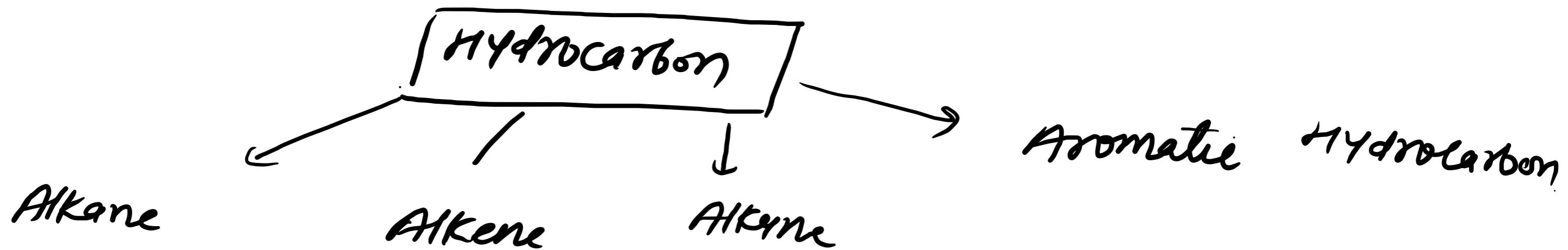
Rexn NaOCl



Ex-2 Q. 23



$(\text{I} > \text{II} > \text{III} > \text{IV})$



[Alkane]

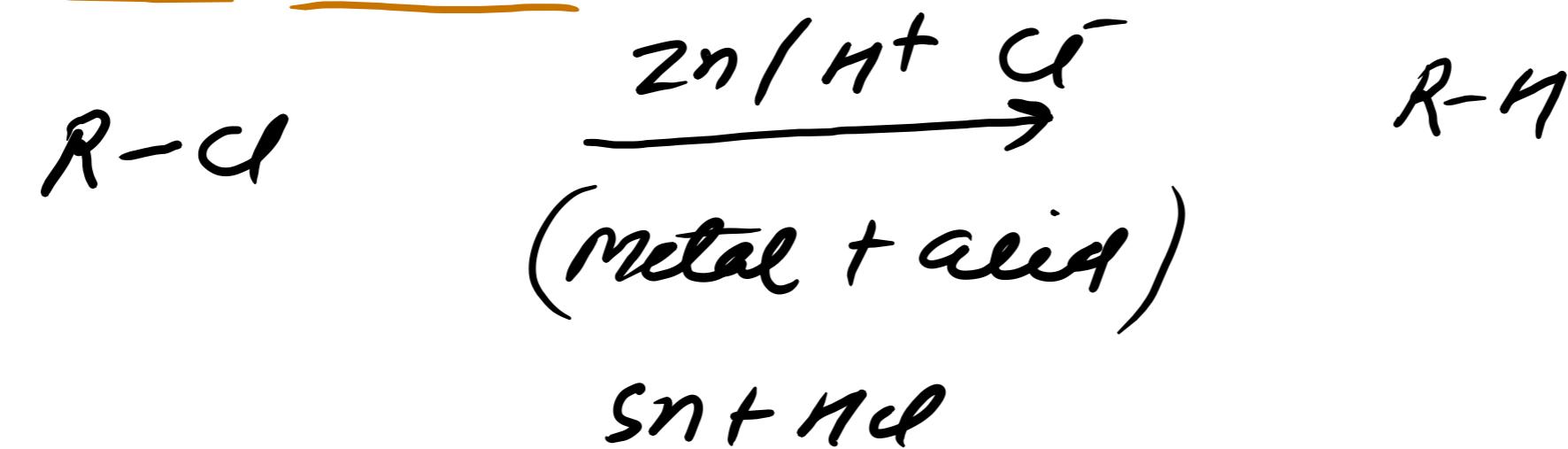
Method of preparation:

① From unsaturated Hydrocarbon:-

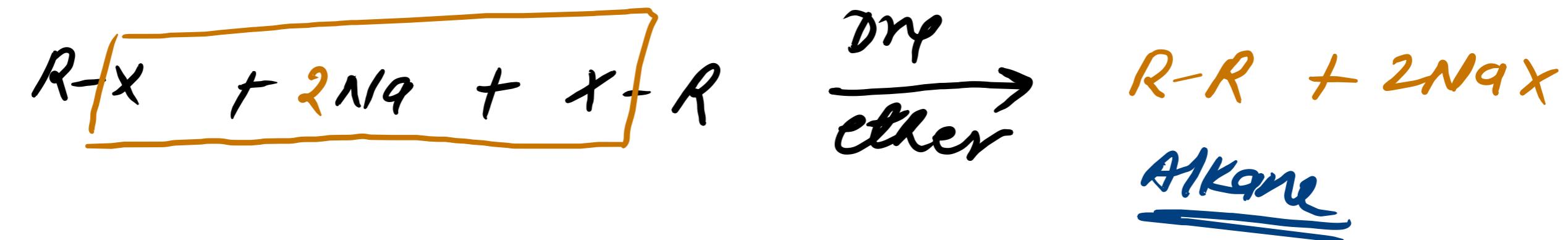


(2) From alkyl halide:

(i) By Reduction:



ii) By Wurtz rxn:

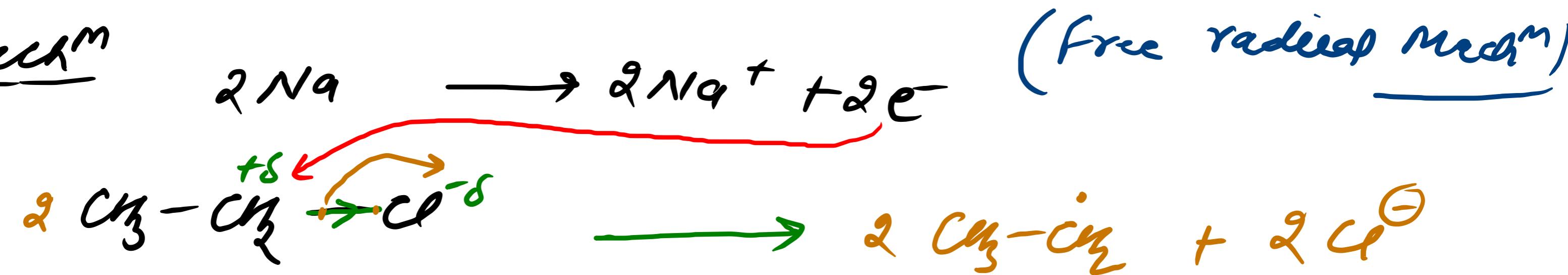


Dry ether - free from water.

If moist ether is present then alcohol will form



Mechanism



Free radicals can react as following

① Combination



② Disproportionation:



CF.R

major product

1°

Combination

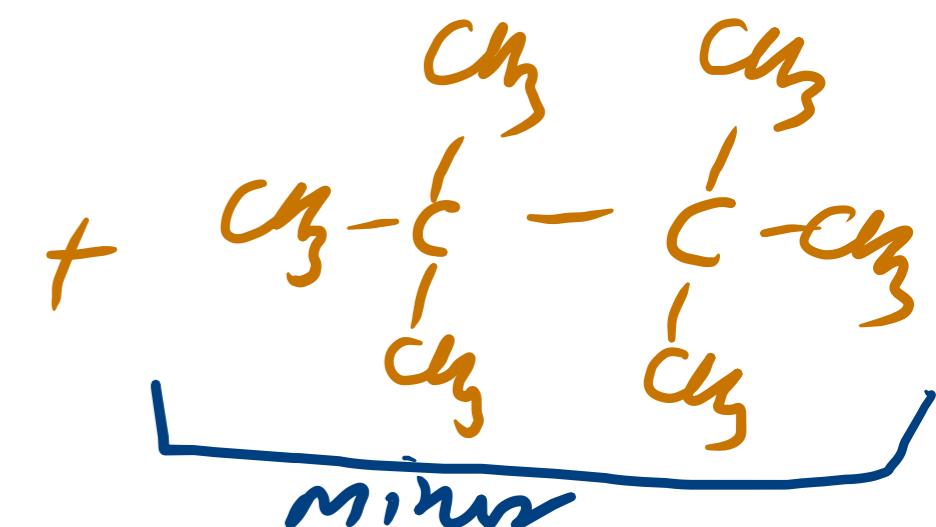
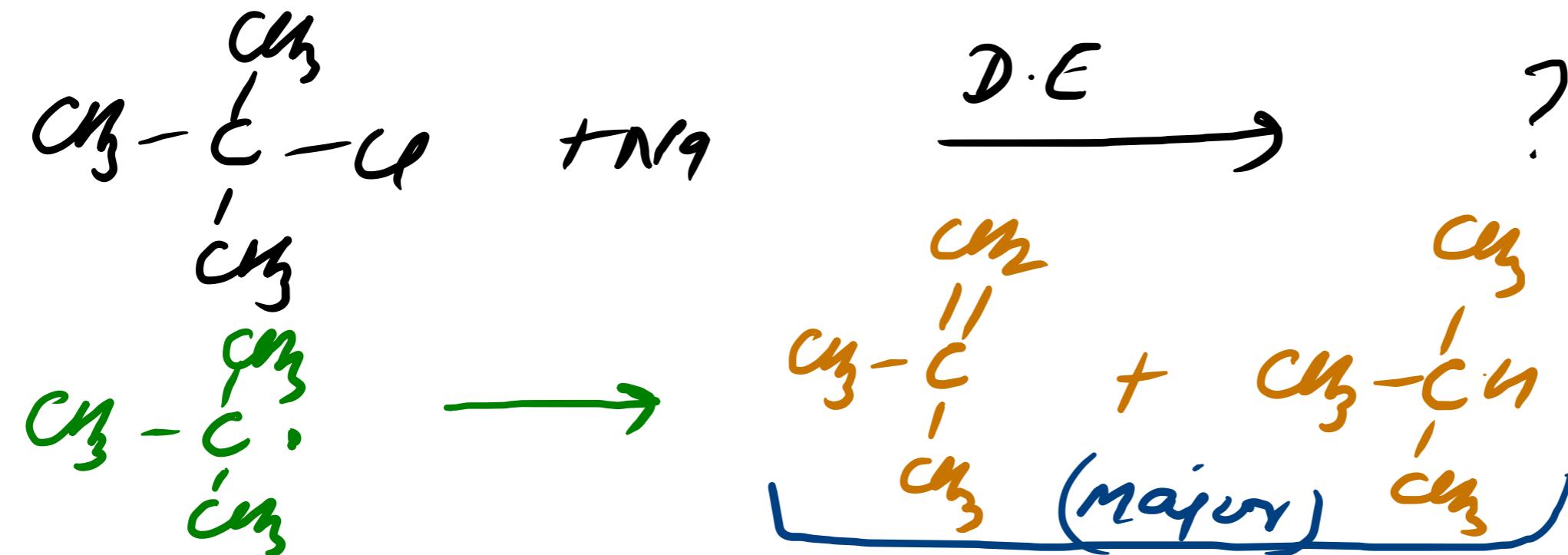
2°

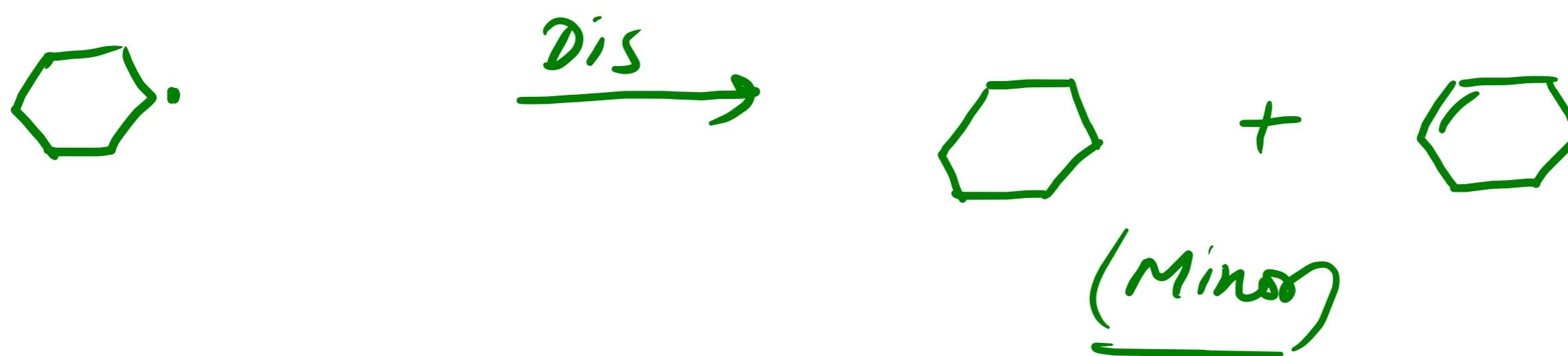
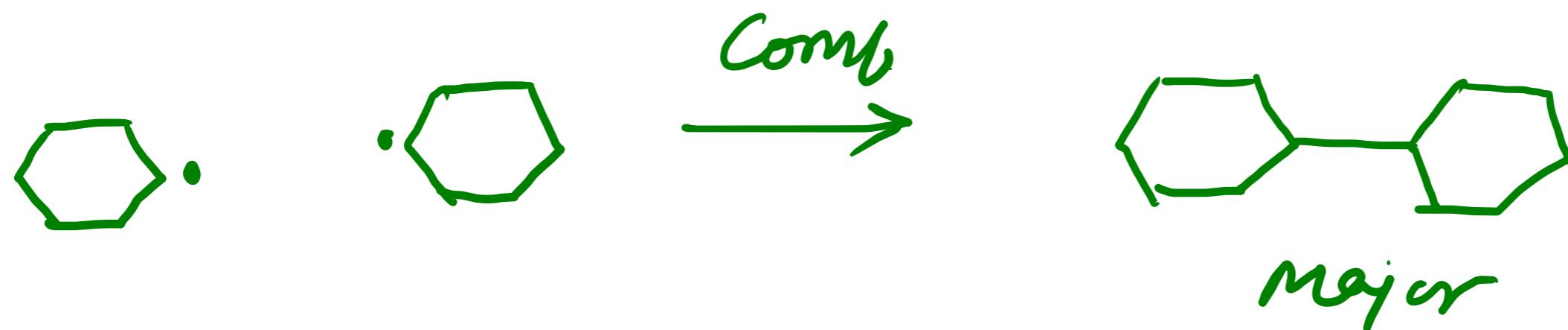
Combination

3°

Disproportionation

Wurtz rxn is not suitable for 3° alkyl halide





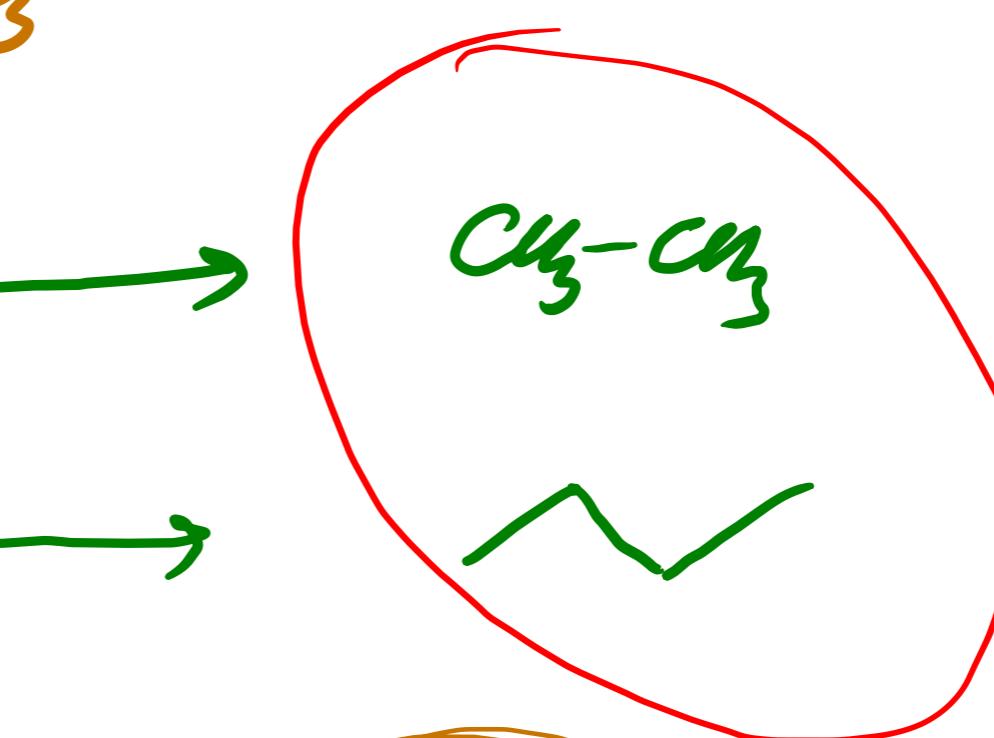
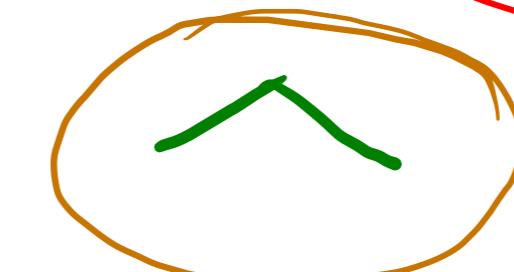


↓S



NOTE: wurtz rxn is not suitable method for the preparation of asymmetrical alkane.

Q.



Q Which of the following alkane can not be obtained in good yield by Wurtz rxn.

(a) ethane

(b) Butane

~~(c)~~ Pentane

(d) hexane



Asymmetrical

③ From Salt of Carboxylic acid:-

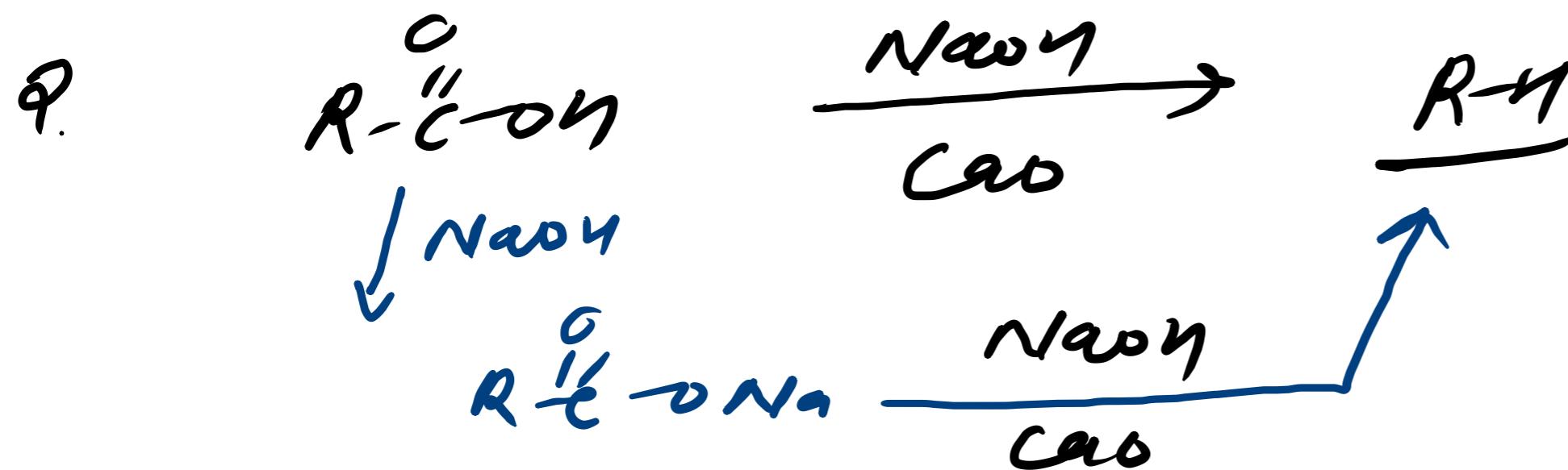
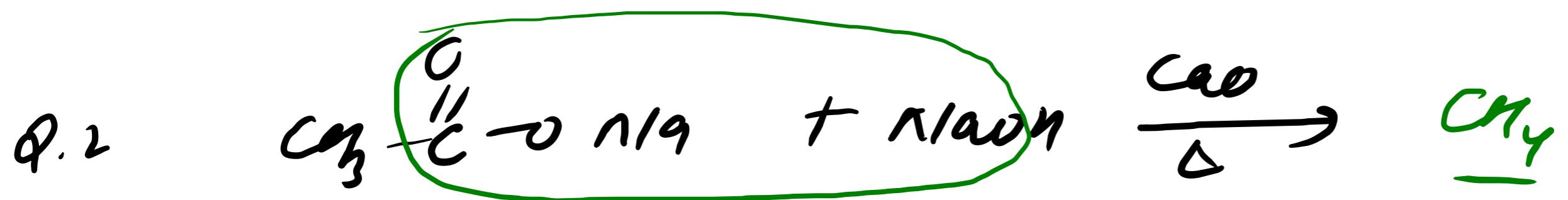
(i) By Soda lime



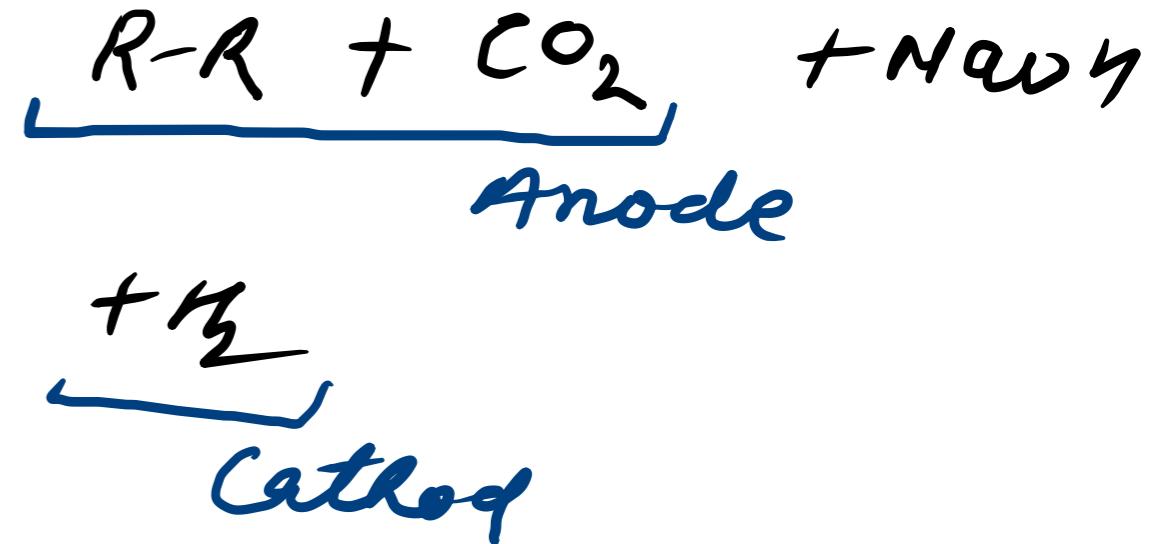
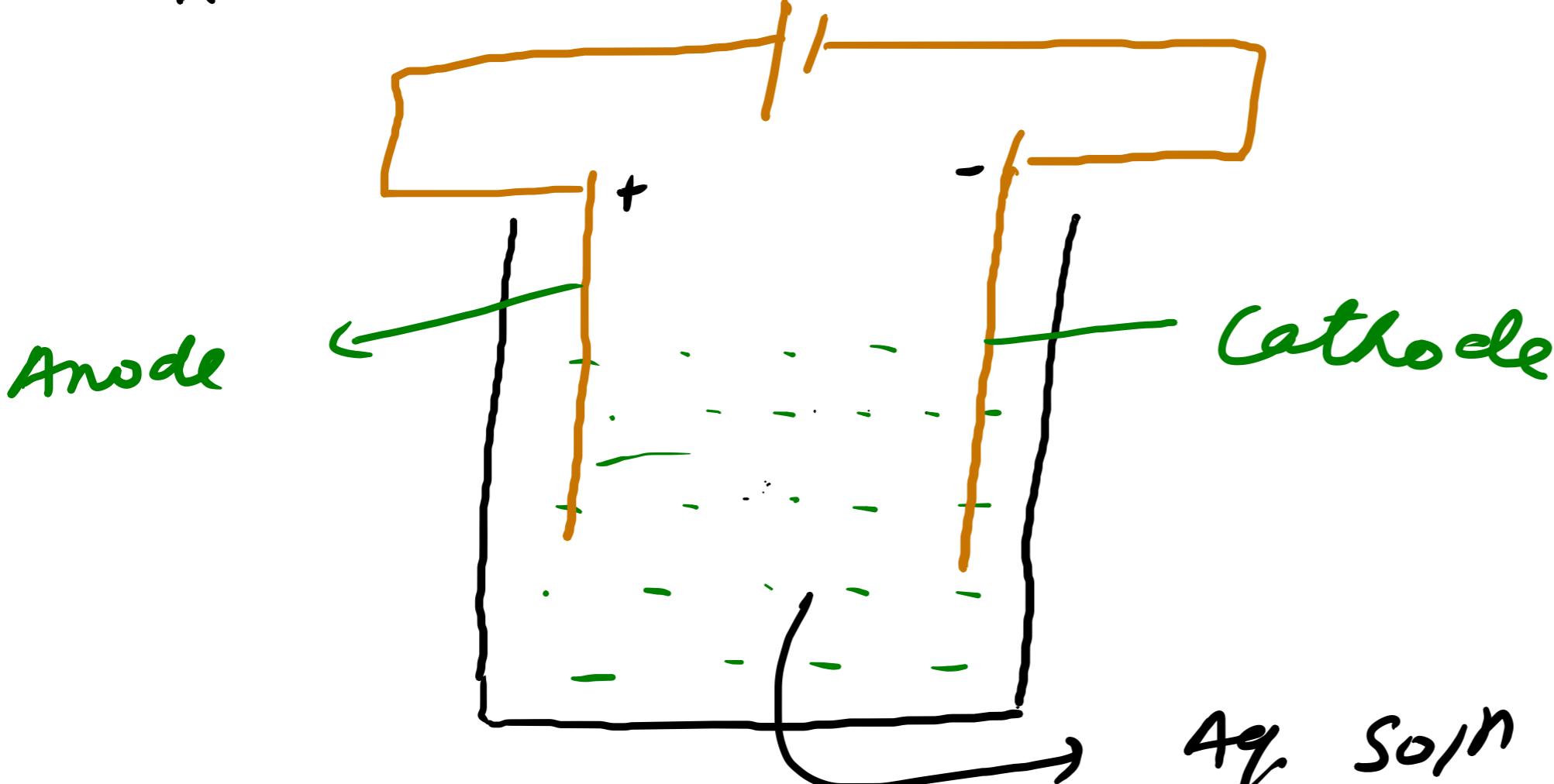
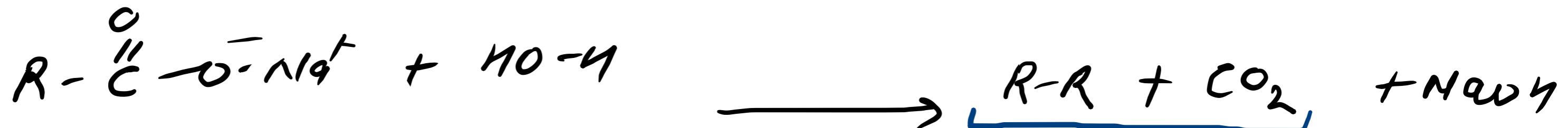
Sode lime -

NaOH + CaO

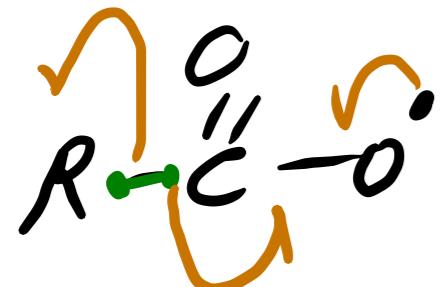
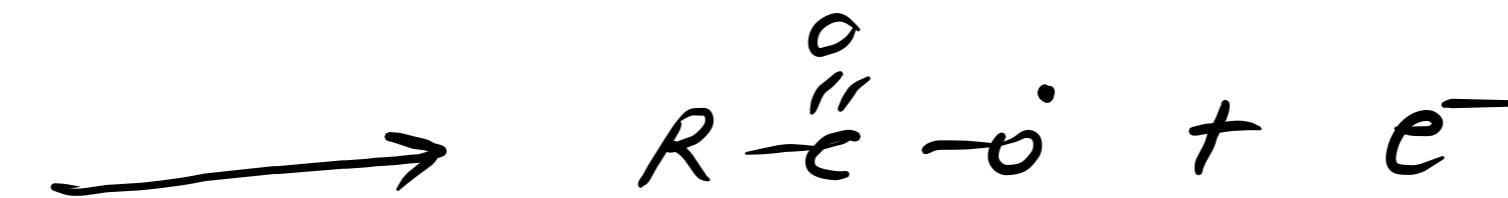
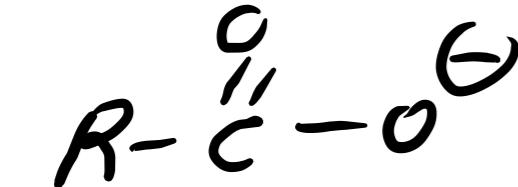
3 : 1



(2) By Kolbe's electrolysis:



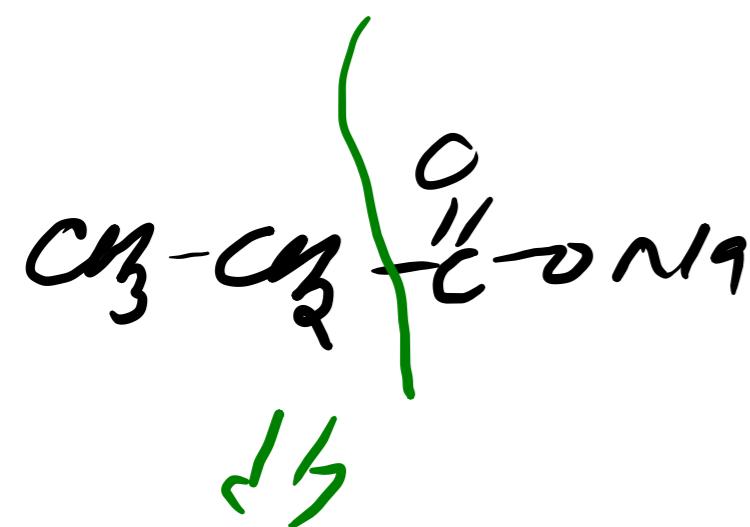
At Anode



At Cathode



Rest \uparrow - Anode \uparrow - pH of soln \uparrow



Electrolysis



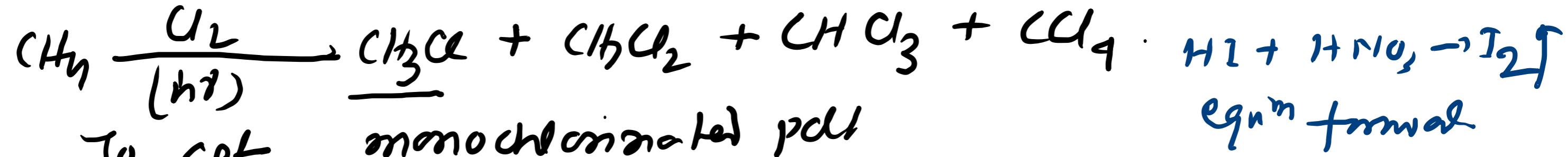
$+ \text{H}_2\text{O}$

Cathode



(minor)

: Alkane Halogenation: $\frac{\text{HIO}_3 / \text{HNO}_3}{0.1}$ is used to make iodination irreversible



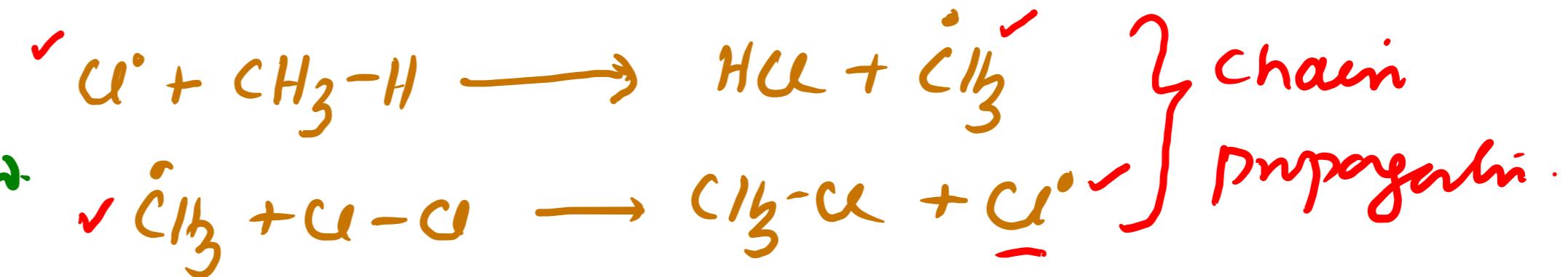
CH_4 should be present in excess. CH_3I % yield eqn formal

reactivity of

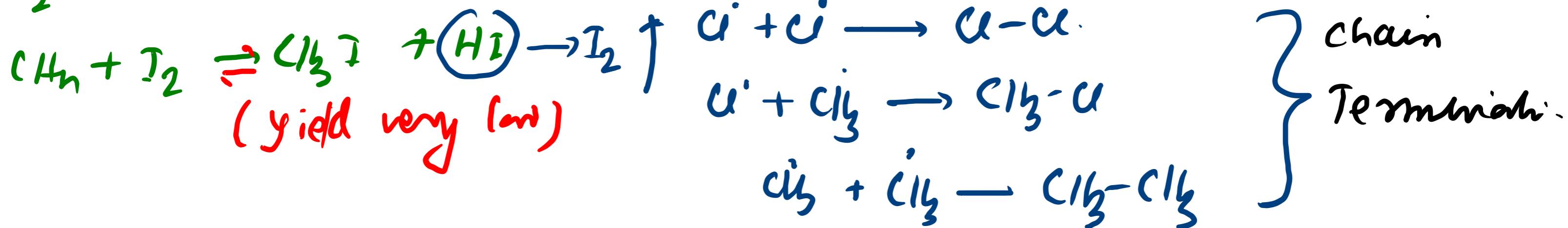
• Mechanism:



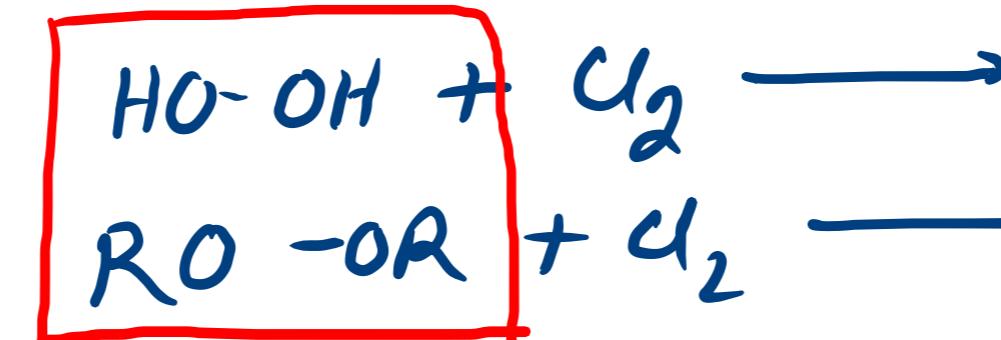
violet lit; can't be used



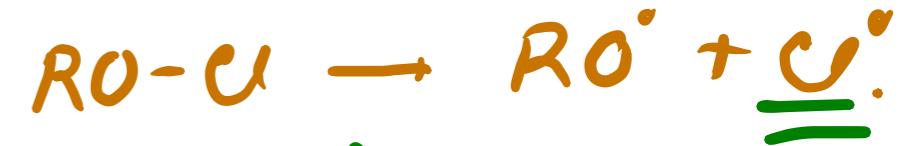
I_2 least reactive.



: low temp / at dark:

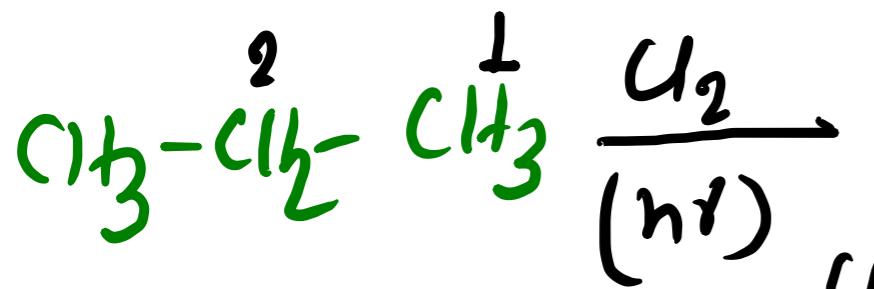


Radical initiator.



ROCl ; SO₂Cl₂ (IFT) can be used as some g radical

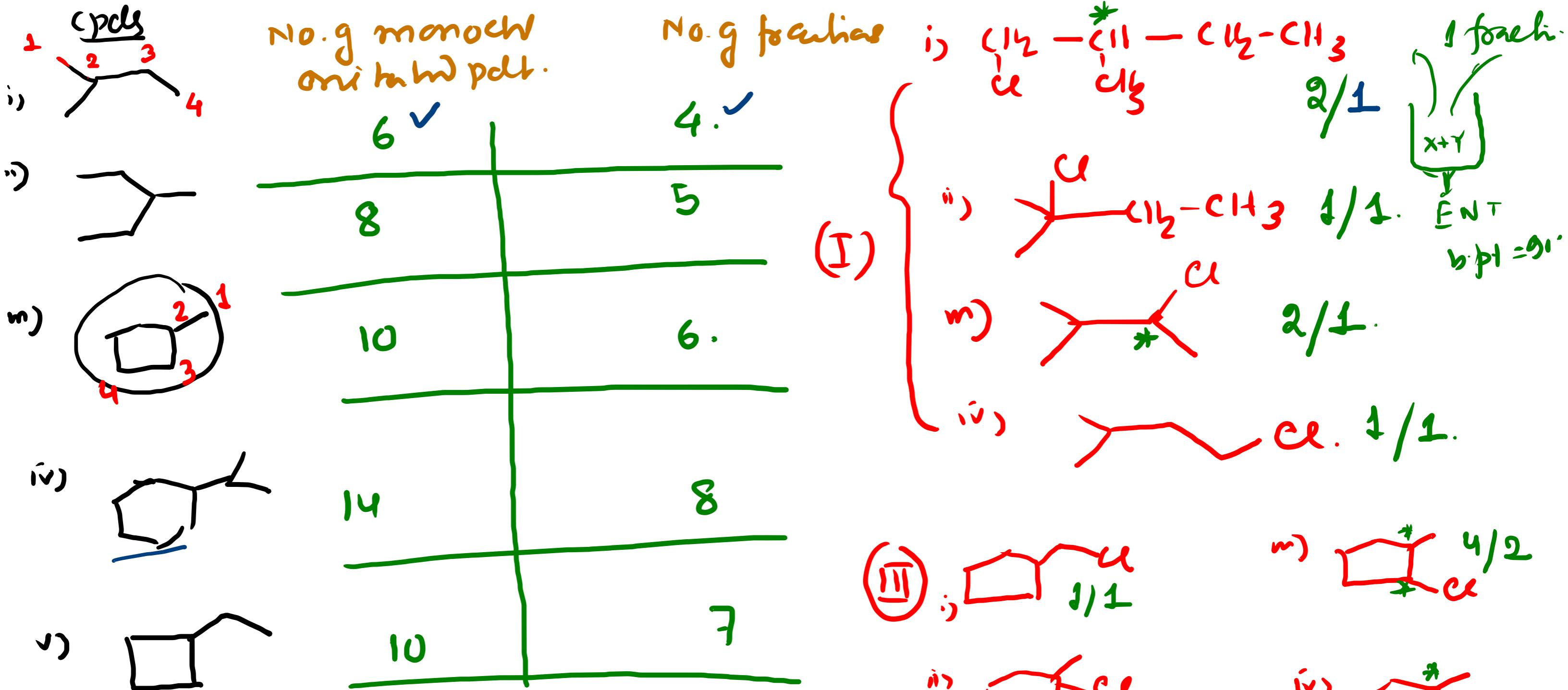
hν / Δ / RO-OR·



(1) Cl-CH₂-CH₂-Cl (1 PdI) / 1

(2) Cl-CH₂-CH(Cl)-CH₂ (1 PdI) / 1

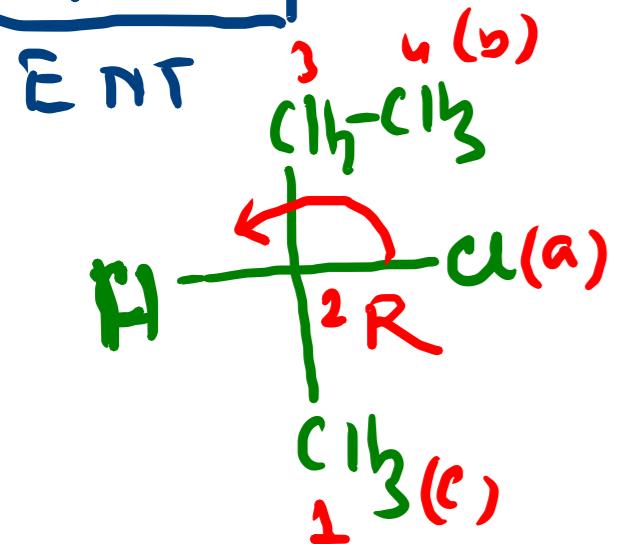
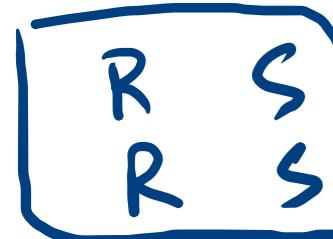
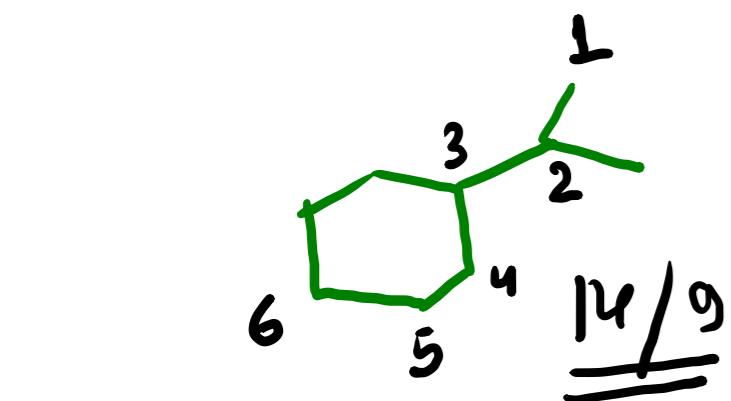
2 pdIs / 2 fractions.



2 pdts give 1 fractions
 when pdts are related in ENT.

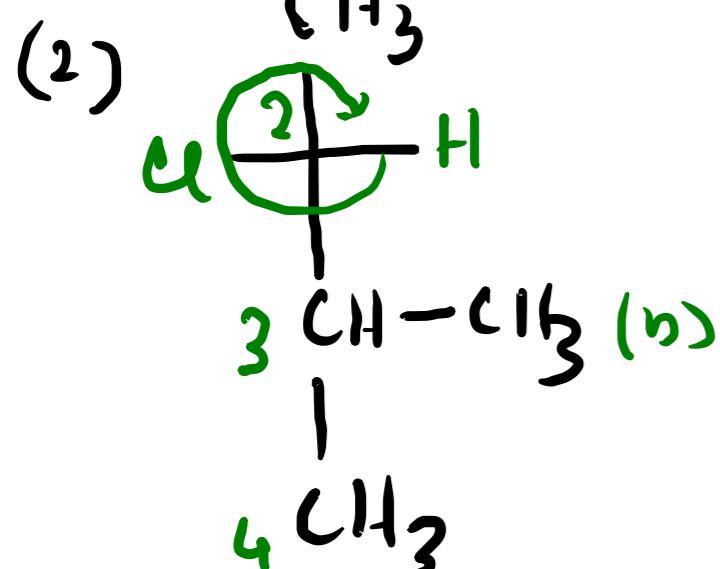
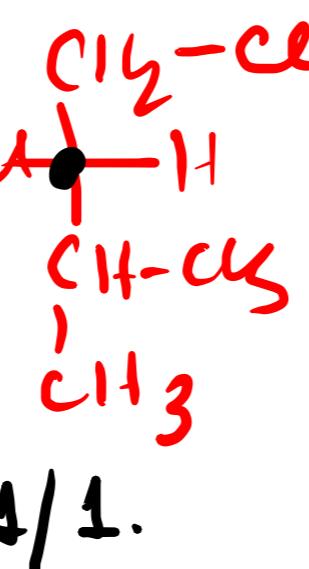
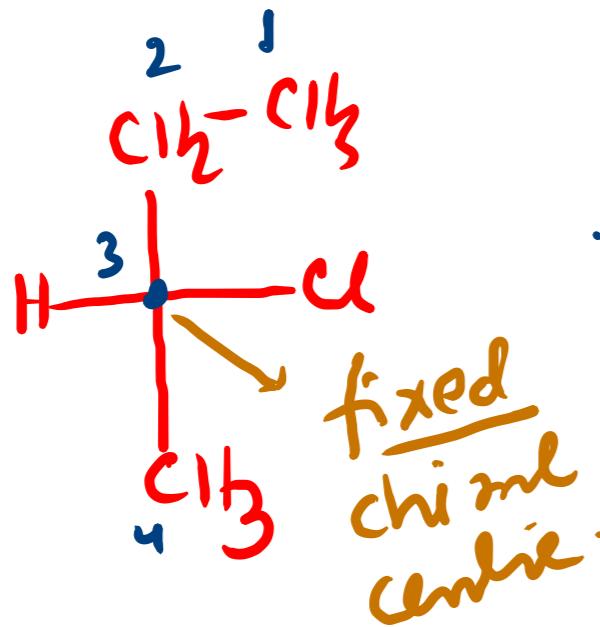
otherwise 2 products
 = 2 fractions

Total 10/6



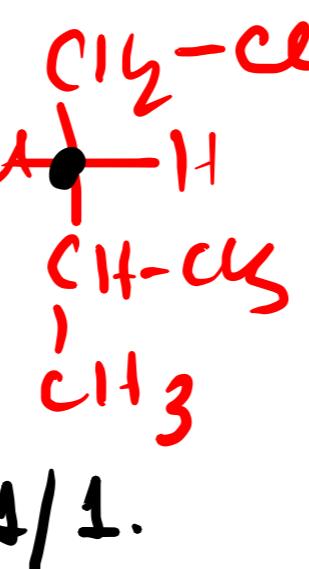
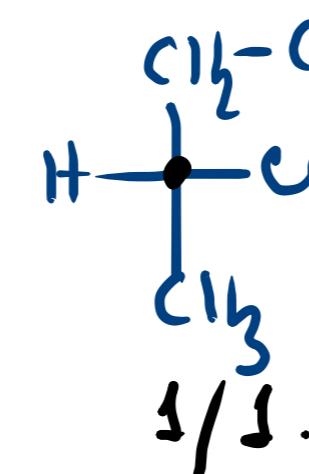
- i) 2/1. 8/5 6) 2-chlorobutane
 $\text{-Cl}_3\text{C}-\text{CH}-\text{Cl}_3\text{C}-\text{Cl}_3\text{C}$
- ii) 1/1. 17) R-2chlorbu
 tane
 $\text{-Cl}_3\text{C}-\text{CH}-\text{Cl}_3\text{C}-\text{Cl}_3\text{C}$
- iii) 1/1. 18) R-2chlor
 3-methylbutane.
 $\text{-Cl}_3\text{C}-\text{CH}-\text{Cl}_3\text{C}-\text{Cl}_3\text{C}$
- iv) 4/2 9)
 $\text{-Cl}_3\text{C}-\text{CH}-\text{Cl}_3\text{C}-\text{Cl}_3\text{C}$
- v) 4/2 10)
 $\text{-Cl}_3\text{C}-\text{CH}-\text{Cl}_3\text{C}-\text{Cl}_3\text{C}$
- vi) 2/1. 11)
 $\text{-Cl}_3\text{C}-\text{CH}-\text{Cl}_3\text{C}-\text{Cl}_3\text{C}$
- vii) 2/2

(1)
5/5.

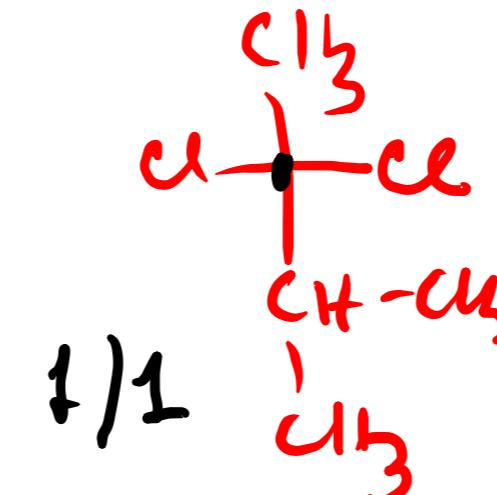


2-chloro-3-methylbutane.

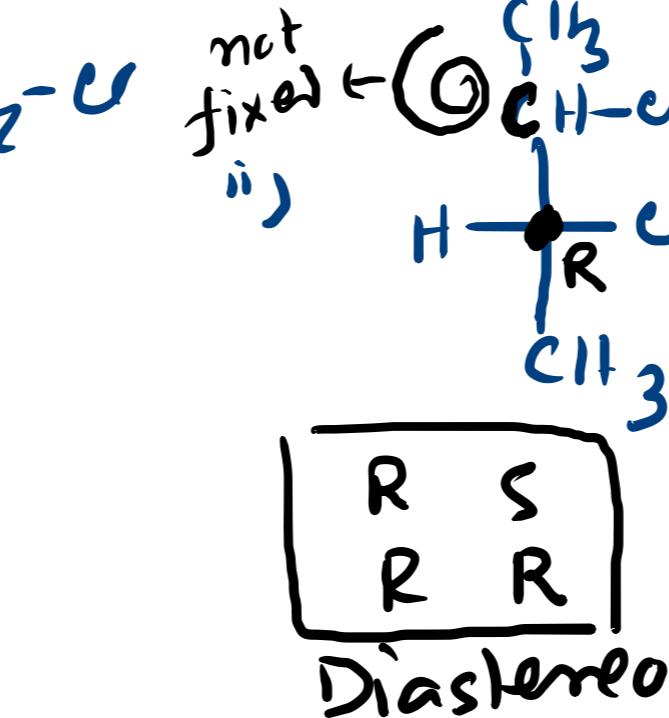
5/5



1/1

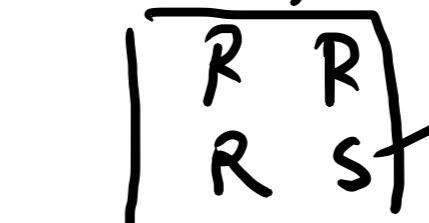
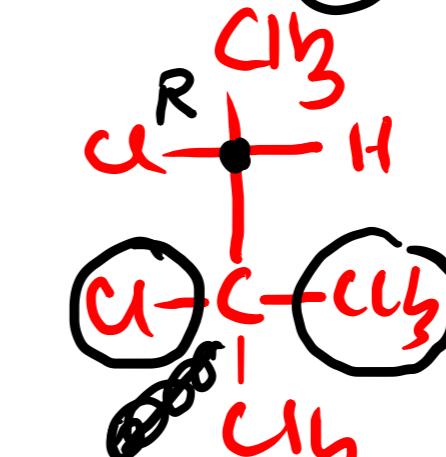


2/2



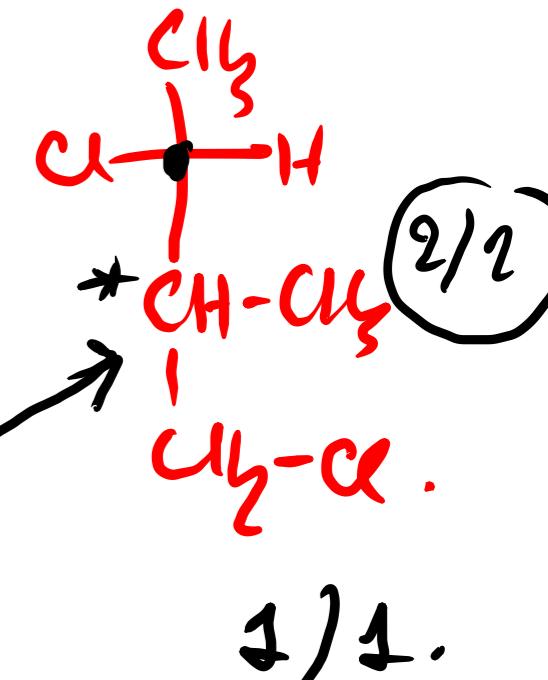
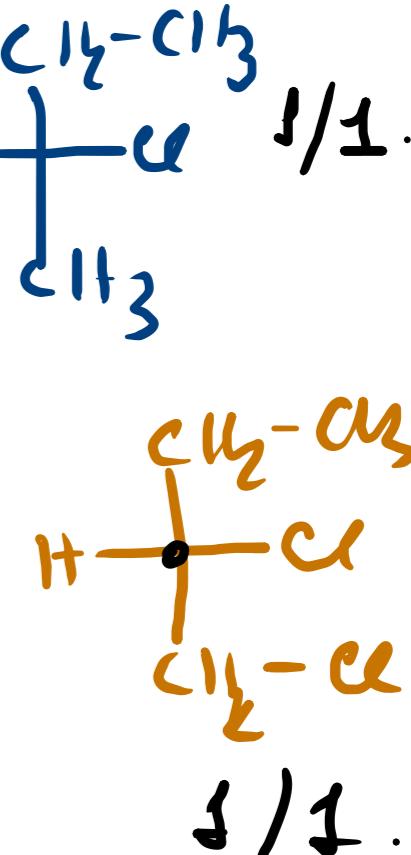
Diastereomers.

1/2

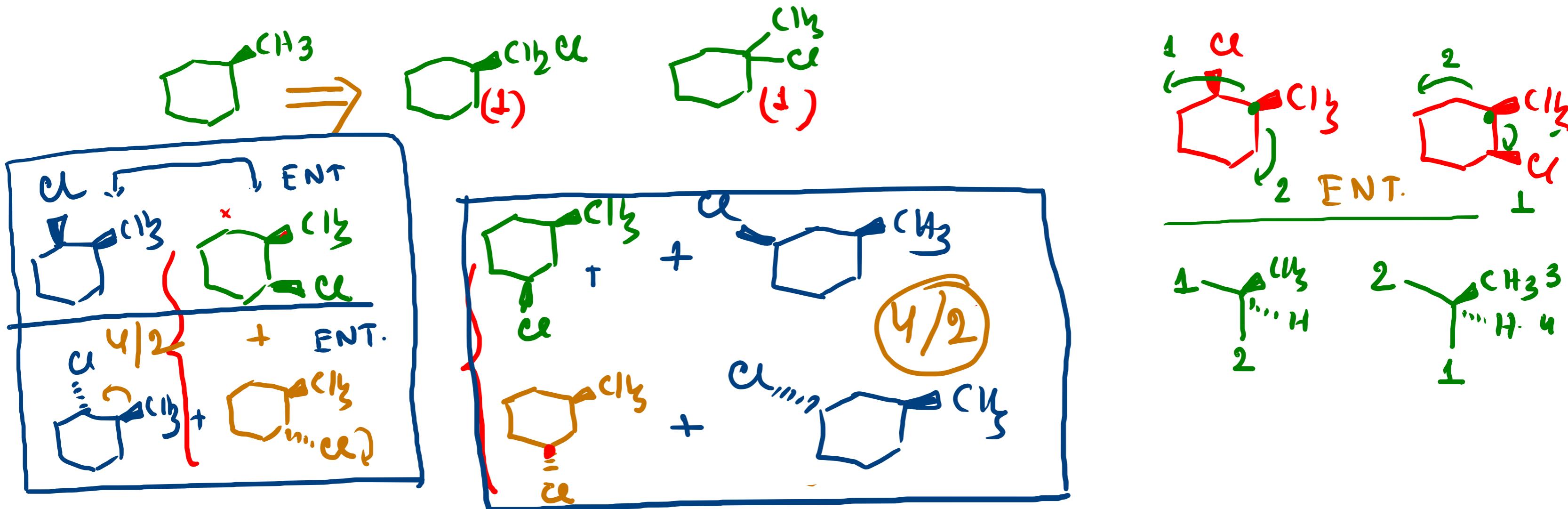
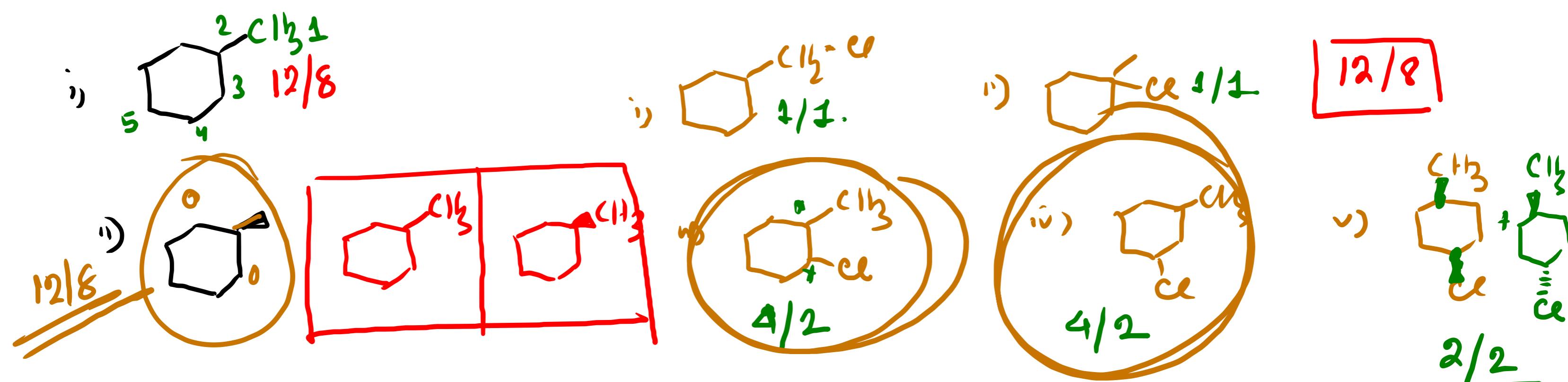


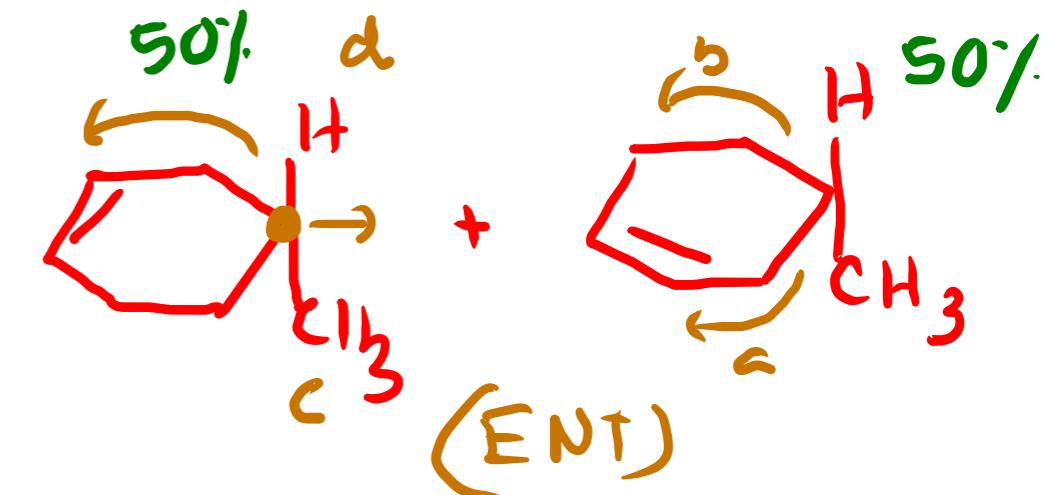
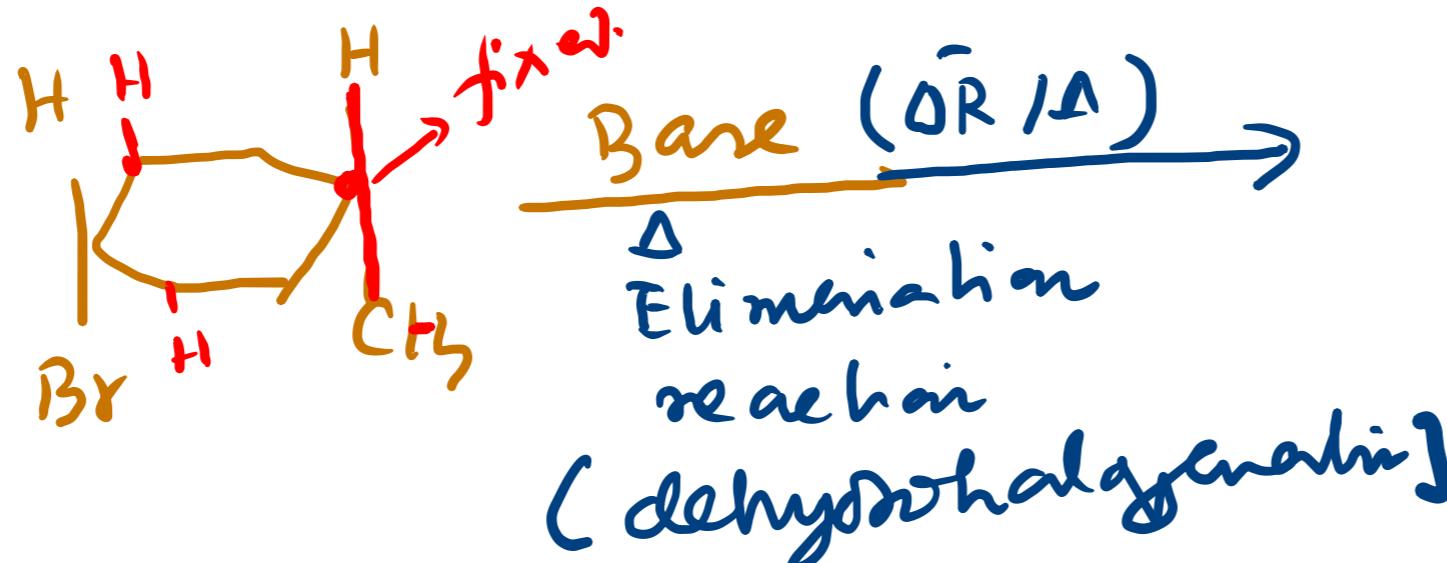
Diastereomers.

2/2.



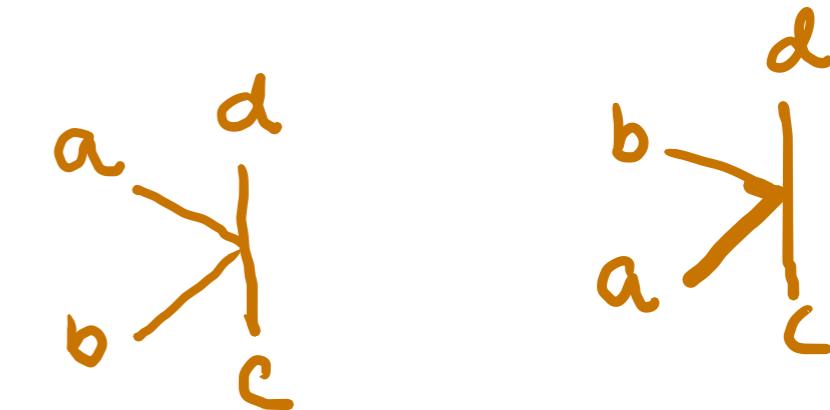
2/2.



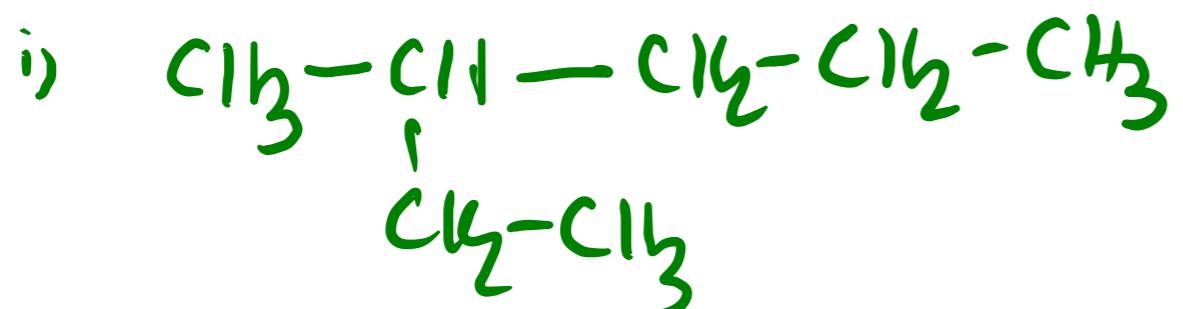


2 PCs are found as saemic mix me

(2 equal amount of EN⁺



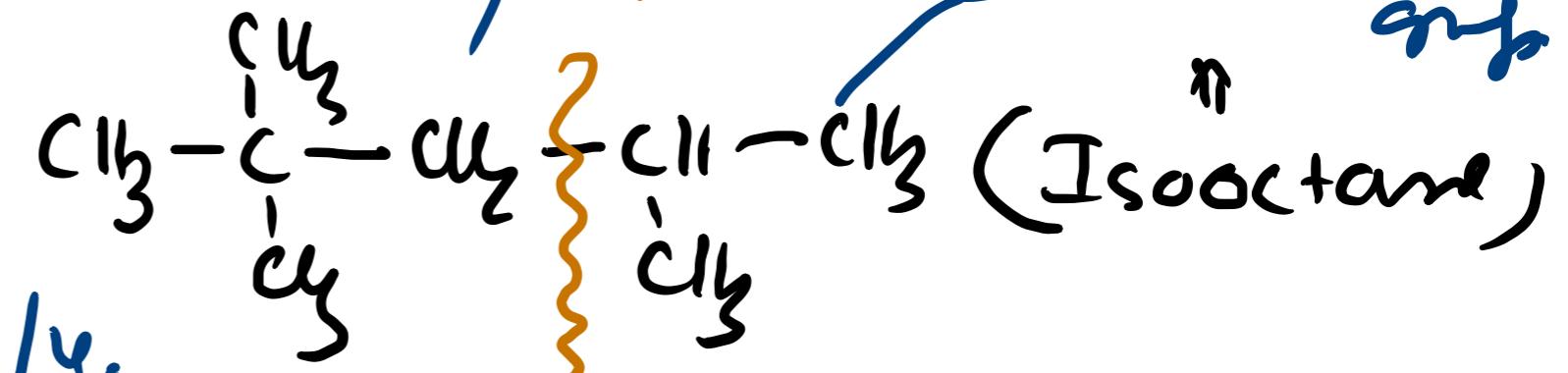
Pdt mixture is optically inactive (external compensation)



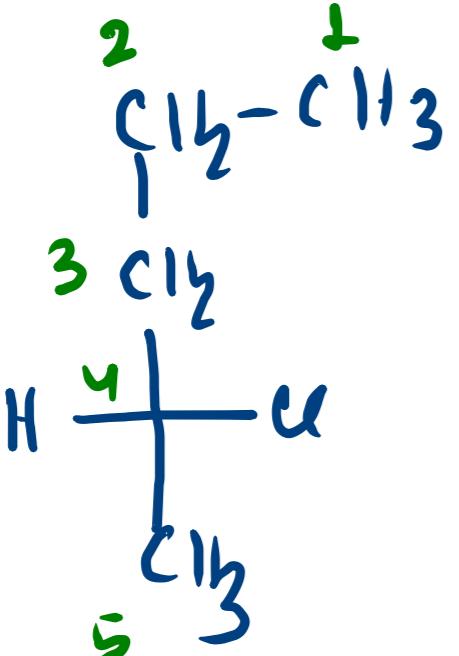
Neopentyl grp

Ans: 20/10.

+ Isopropyl grp



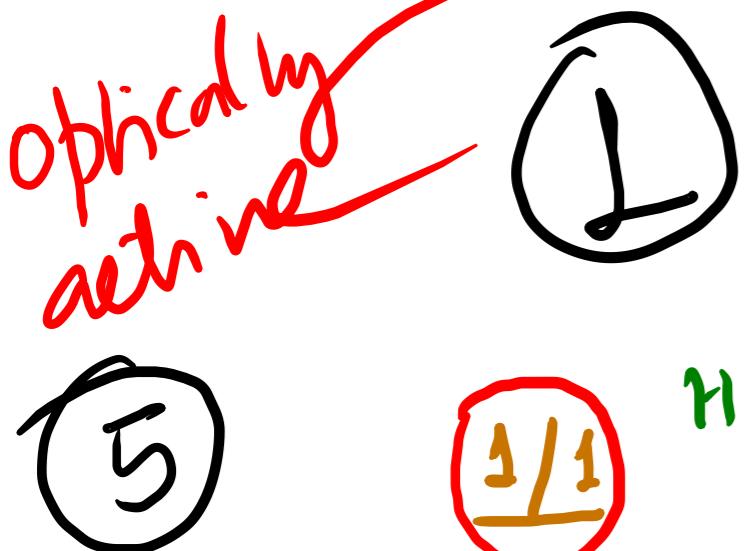
ii) Isooctane. 6/v.



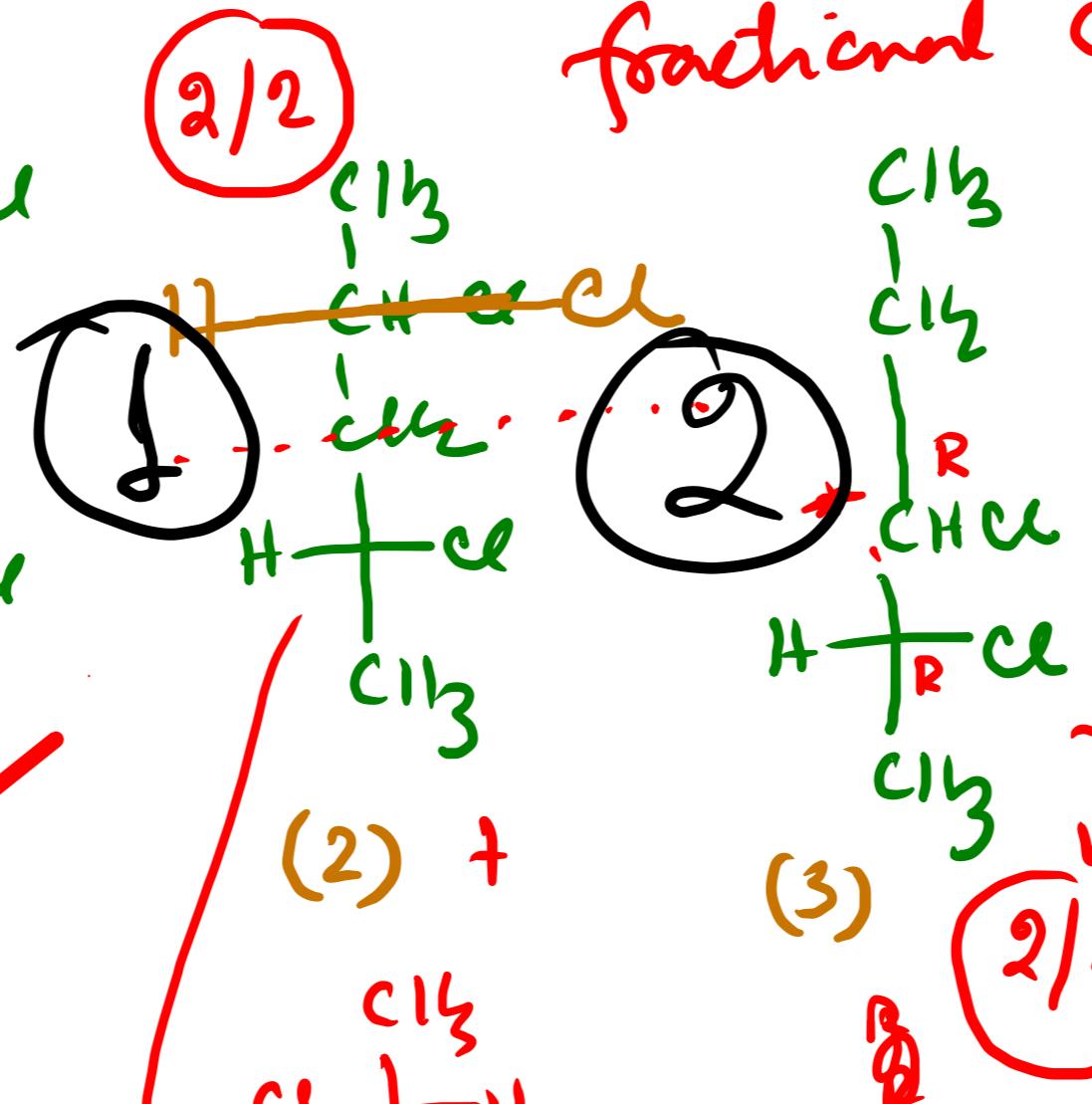
Cl_2/Hg No. of monochlorinated Pdt.

What is the fractions when pdt undergoes fractional distillation?

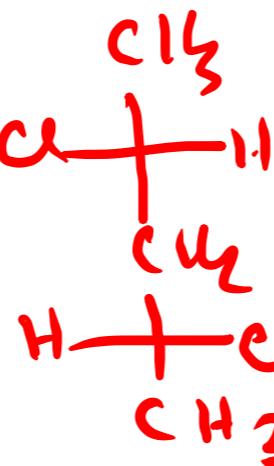
Optically active



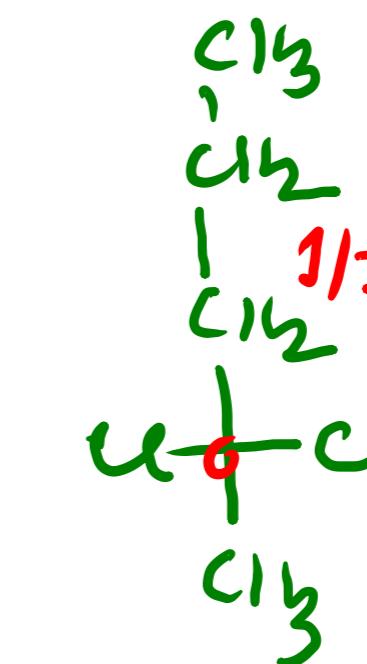
1/1



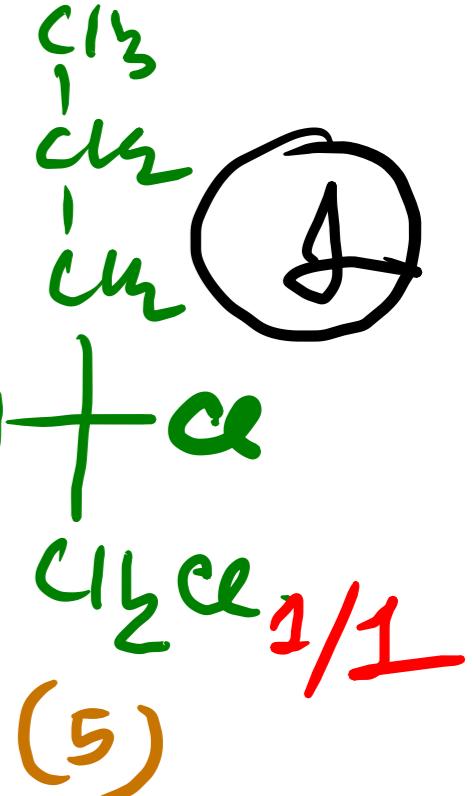
(2) +



pdt optically inactive



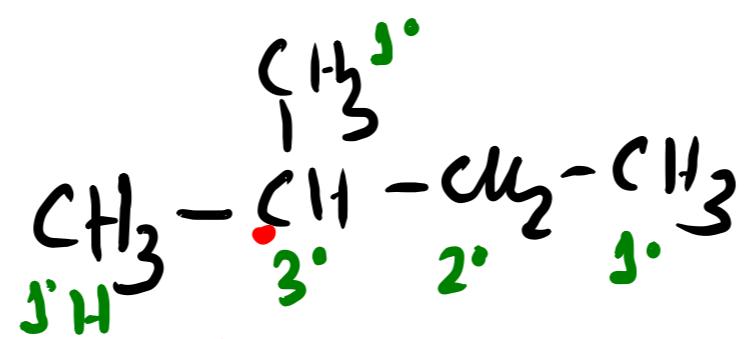
(4)



1/1
(5)

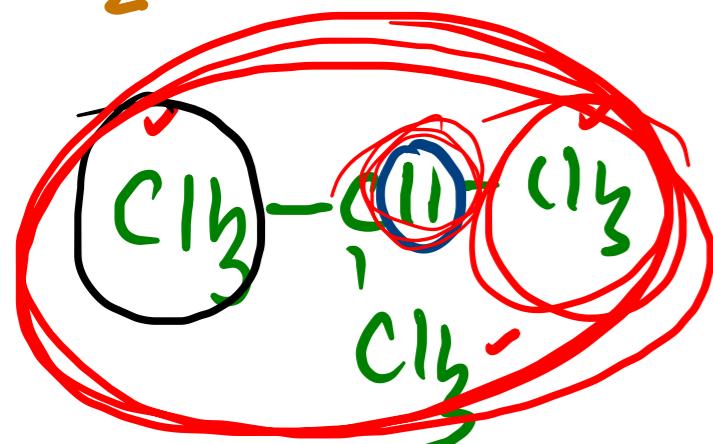
7/7

: OxyBr's:



$$\text{Cl}_2 : \text{^3H} : \text{^2H} : \text{^1H} = 5 : 38 : 1.$$

$$\text{Br}_2 : \text{^3H} : \text{^2H} : \text{^1H} = 1600 : 82 : 1.$$



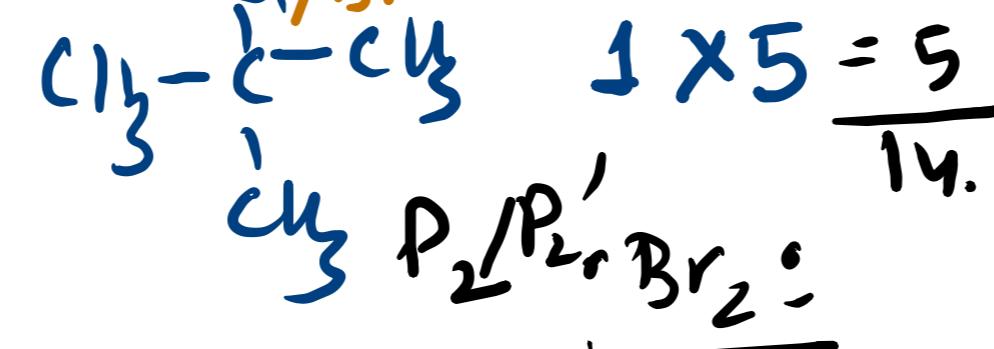
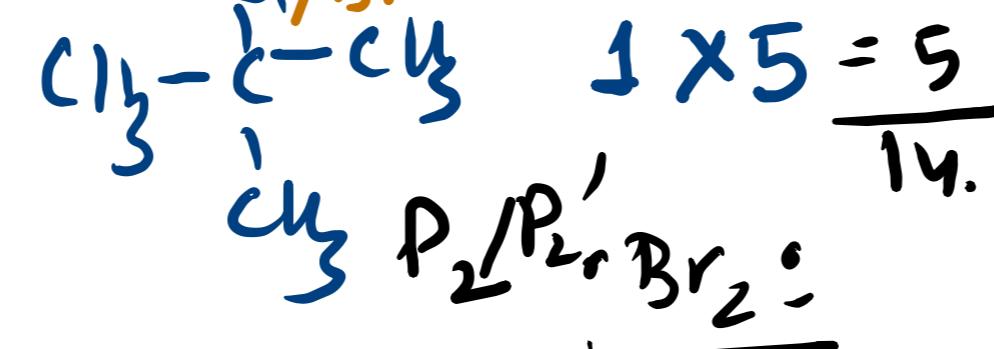
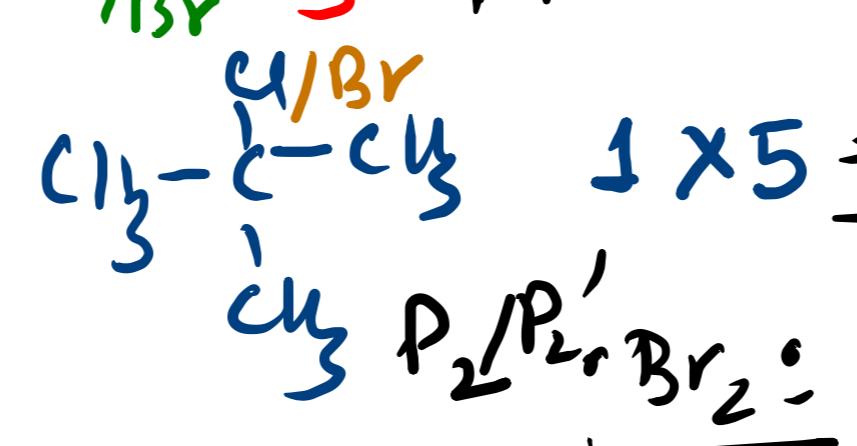
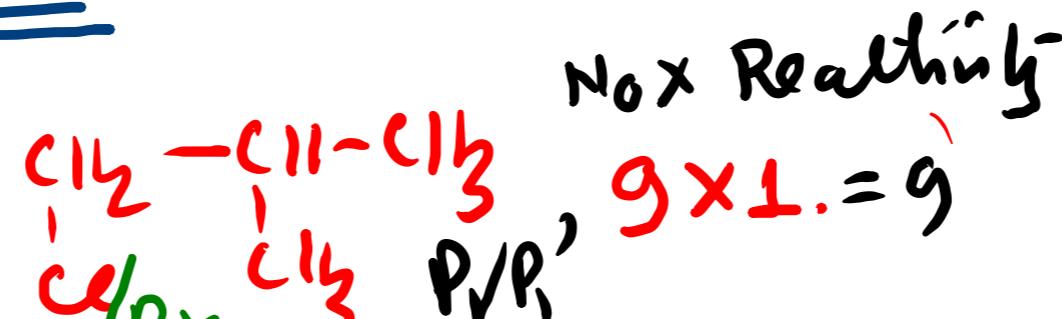
Isobutane

: Cl₂:

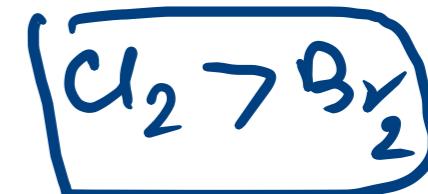
$$(\text{major}) P_1 = \frac{9}{14} \times 100$$

$$(\text{minor}) P_2 = \frac{5}{14} \times 100.$$

Cl_2
(nr)



reactivity



selective



$$\approx \frac{P_1}{P_2} : \frac{9 \times 1}{5 \times 1} = 9/1609$$

$$\approx \frac{P_1}{P_2} : \frac{1 \times 1600}{1007} = \frac{1600}{1609}$$

reactivity
selectivity

: % yielding pdf calculation:

Cl_2 $3^\circ \text{H} > 2^\circ \text{H} > 1^\circ \text{H}$.

Br_2 $3^\circ \text{H} > 2^\circ \text{H} > 1^\circ \text{H}$.

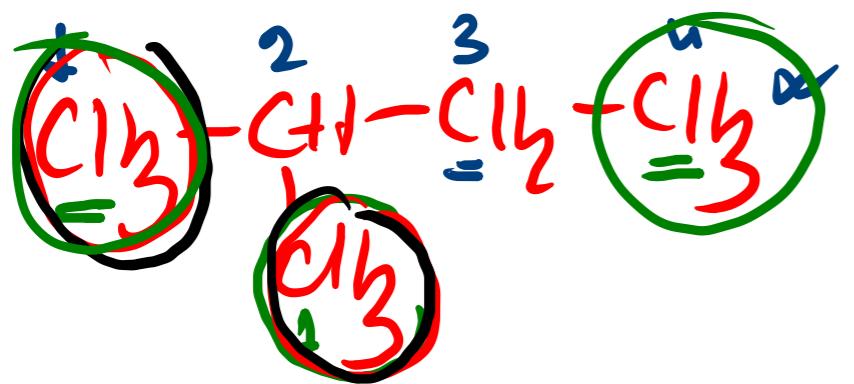
Because of stability

of radical.



reactivity
selectivity

principle.



Towards Cl_2

- (1)
- (2)
- (3)
- (4)

No. x reactivities

6×1	$= \frac{6}{21.6} \times 100$
1×5	$= \frac{5}{21.6} \times 100$
2×3.8	$= \frac{7.6}{21.6} \times 100$
3×1	$= \frac{3}{21.6} \times 100$
<hr/>	
$\frac{21.6}{21.6}$	

Towards Br_2 (1)

No. x reactivities

$$6 \times 1 = 6 \approx \text{nil}$$

$$\begin{aligned} (2) \quad 1 \times 1600 &= 1600 \approx 91\% \\ (3) \quad 2 \times 82 &= 164 \approx 9\% \\ (4) \quad \frac{3 \times 1}{17623} &\approx \text{nil} \\ &\underline{\underline{17623}} \end{aligned}$$

