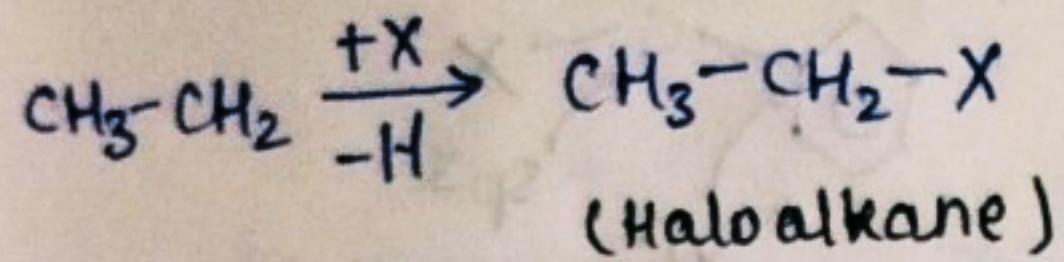


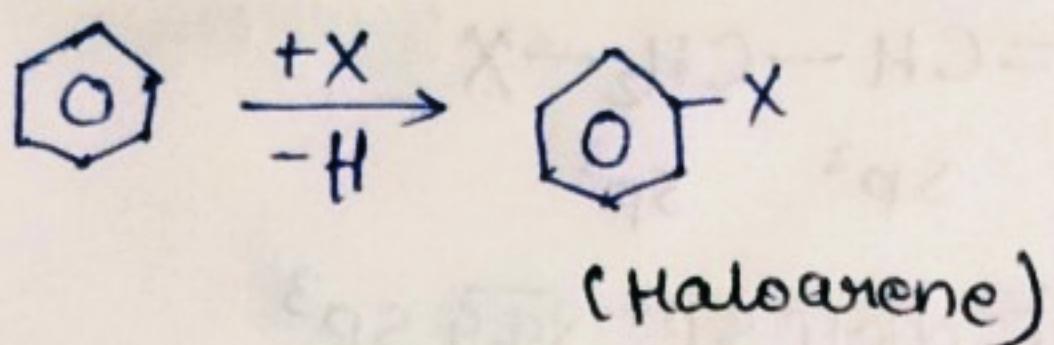
HALOALKANE AND HALOARENNE

compounds which are prepared by the replacement of "H" by Halogen from an alkane.



Alkyl Halide

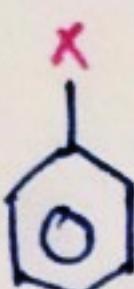
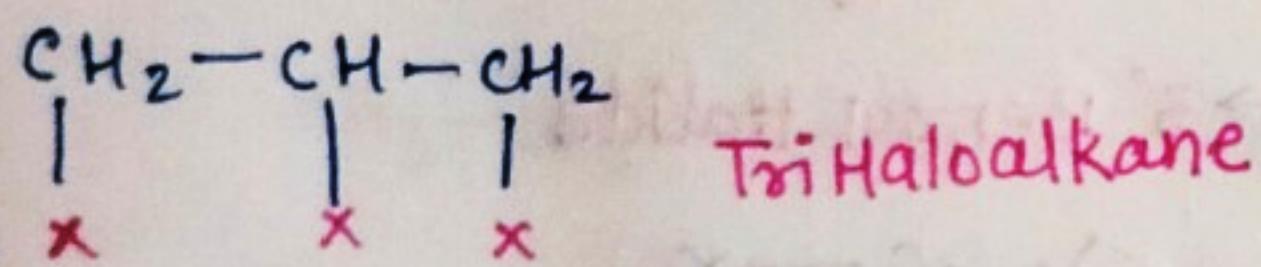
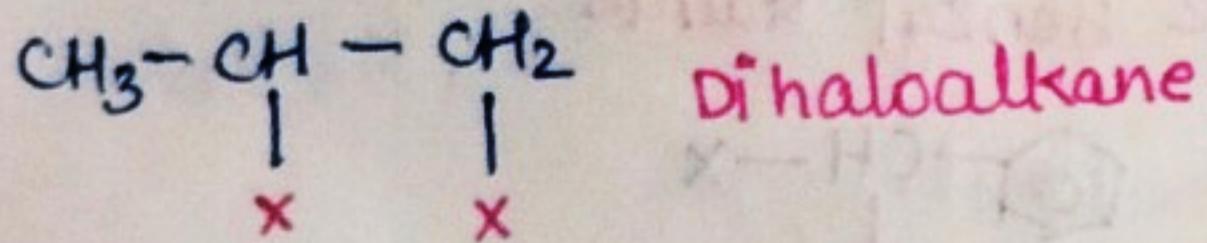
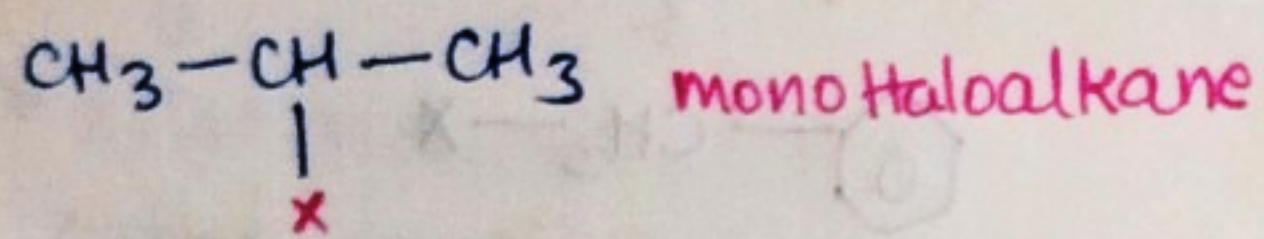
compounds which are prepared by the replacement of H by Halogen from Benzene.



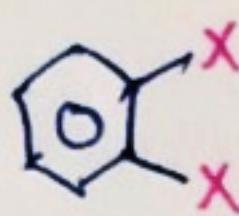
→ Aryl Halide

CLASSIFICATION

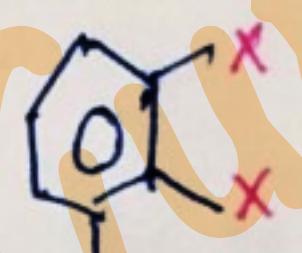
on the Basis of No. of Halogen



mono Haloarene

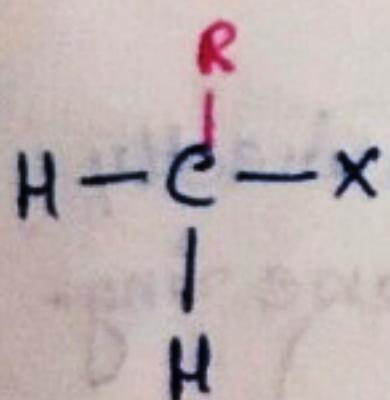


Dihaloarene

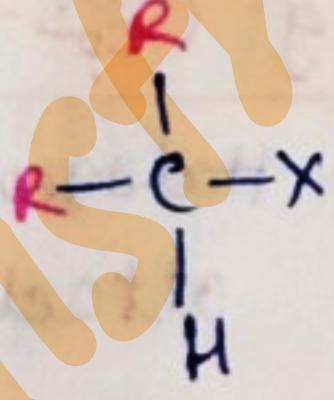


Tri haloarene

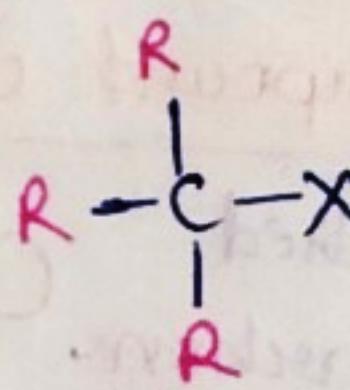
on the Basis of degree of Carbon Atom



1° Haloalkane

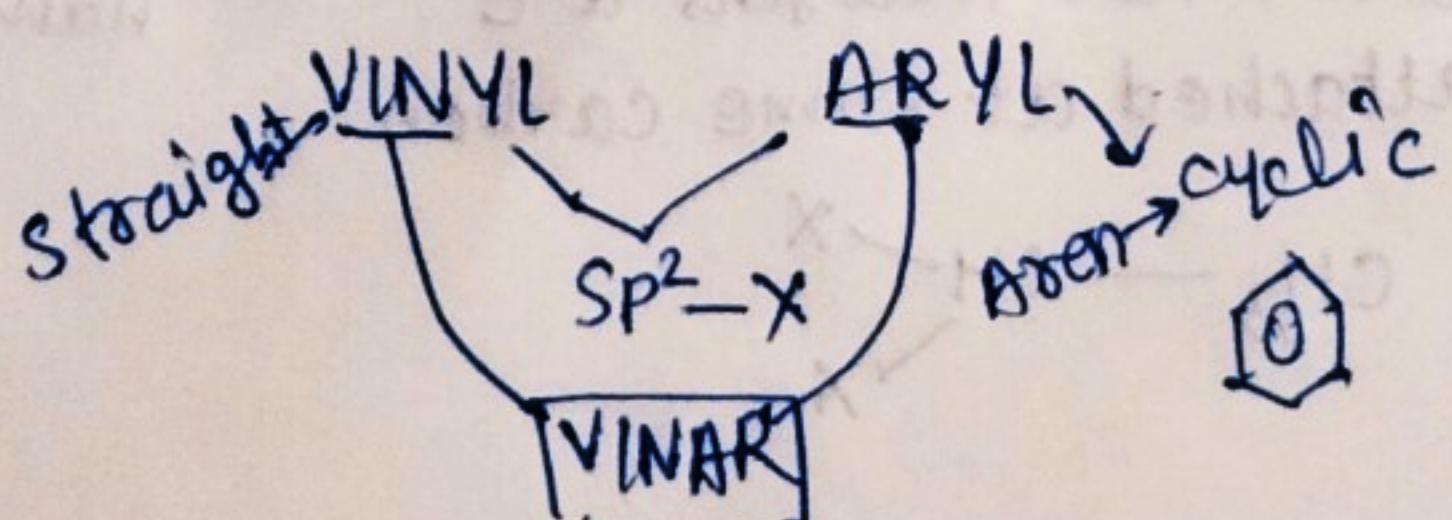
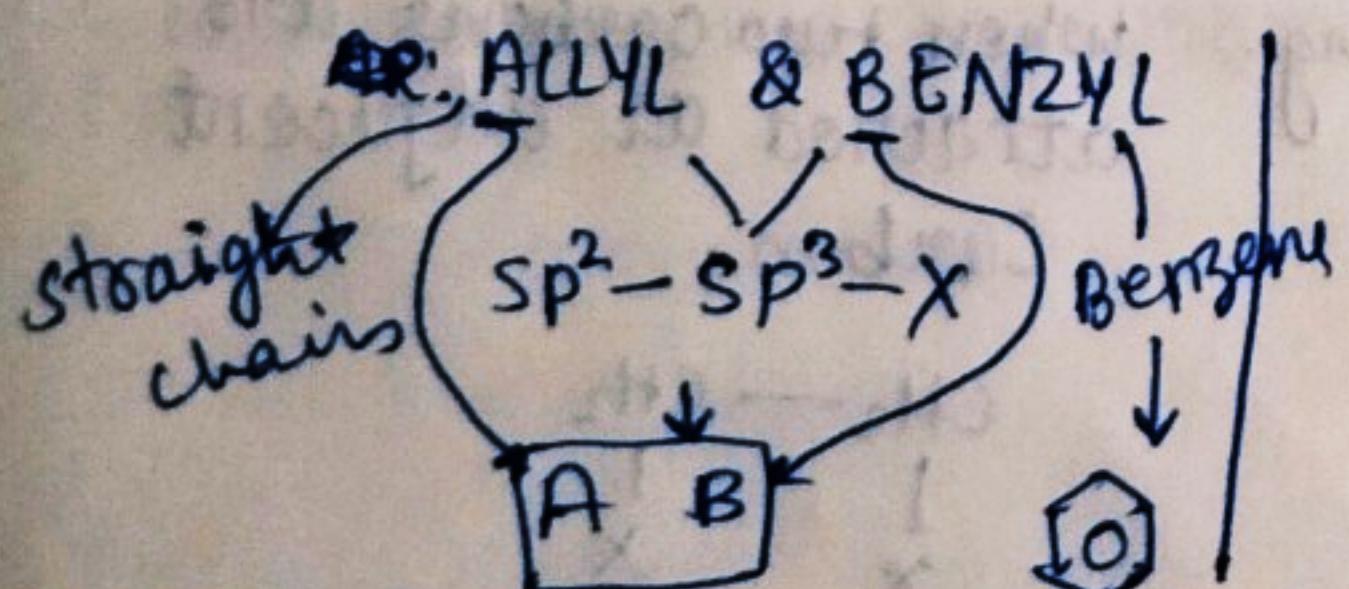


2° Haloalkane



3° Haloalkane

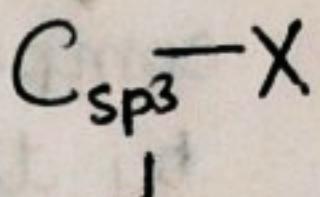
TRICK TO LEARN ALLYL, BENZYL, ARYL, VINYL :



on the Basis of compound containing $C_{sp^3}-X$ Bond

Halogen atom attached to

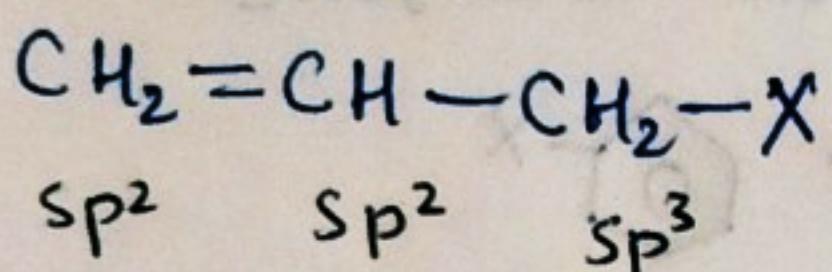
\nearrow SP^3 hybridised next to carbon



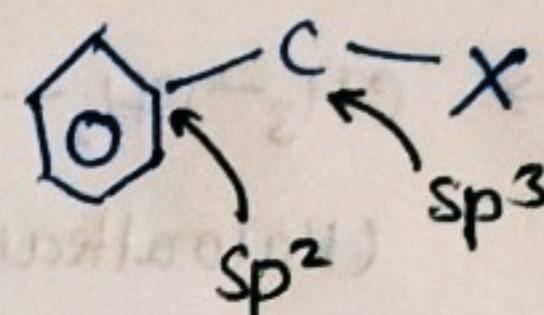
Halogen atom is attached
to SP^3-C next to
Benzene ring

Allyl Halide SP^2 Hybridised carbon

Benzyl Halide

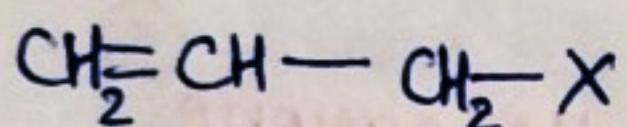


पहाड़ी वाला SP^2 , लंबा SP^3

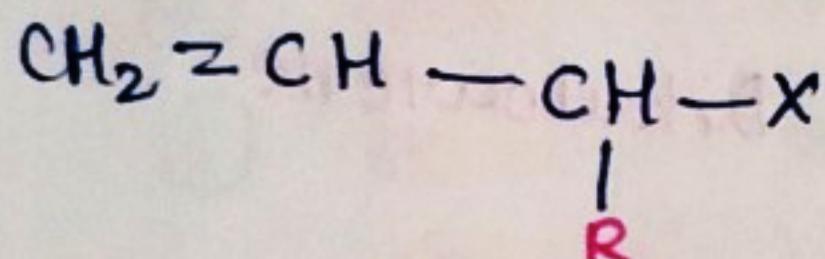


पहाड़ी वाला SP^2 ,
लंबा SP^3

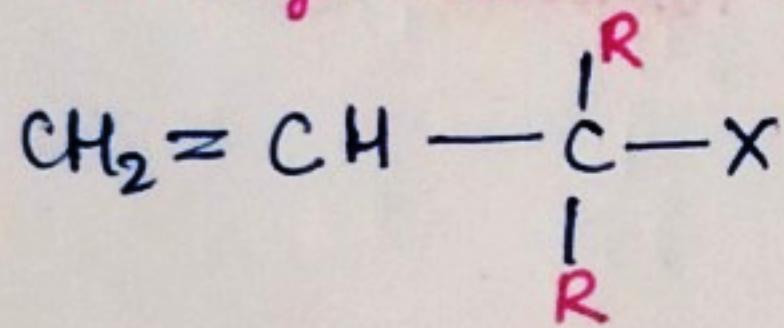
1° allyl Halide



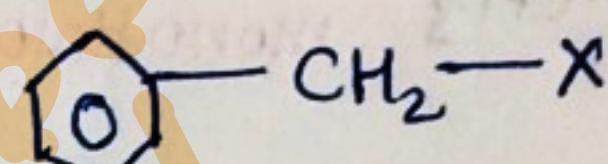
2° allyl Halide



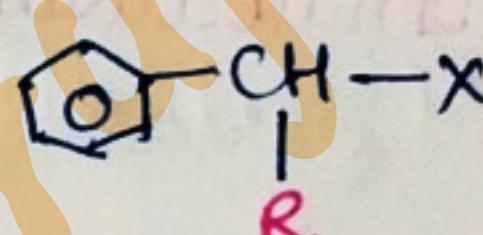
3° allyl Halide



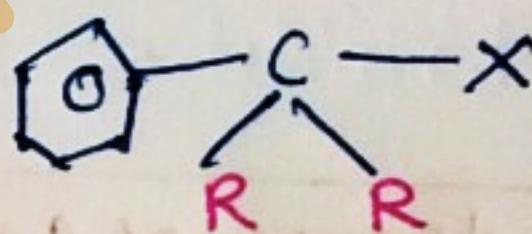
1° Benzyl Halide



2° Benzyl Halide



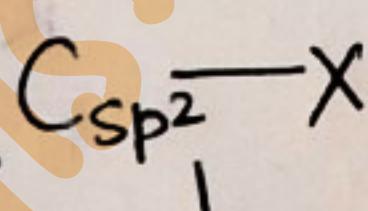
3° Benzyl Halide



on the Basis of compound containing $C_{sp^2}-X$ bond

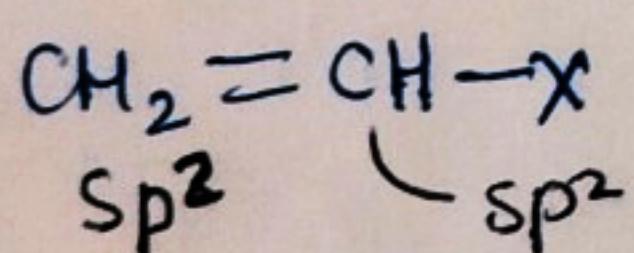
Halogen atom is attached

\nearrow to SP^2 Hybridised carbon.

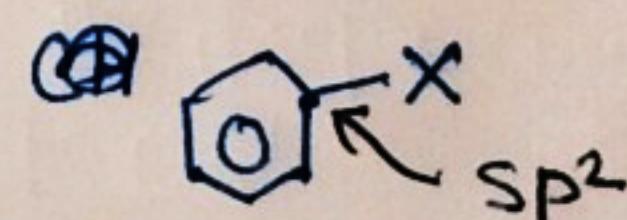


Halogen atom is directly
attached to Benzene ring.

Vinyl Halide



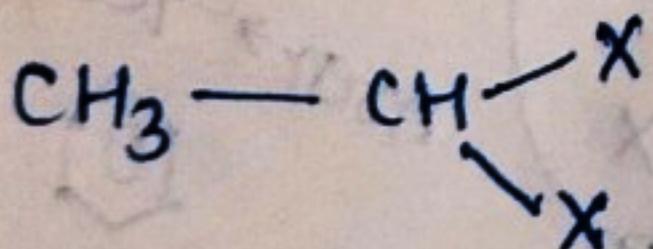
Aryl Halide



Dihalides

GEMINAL

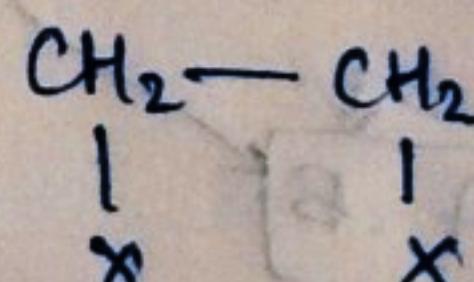
when two Halogens are
attached at same carbon.



for common
naming.

VICINAL

when two carbons are
attached at adjacent
carbon.



NOMENCLATURE

Nomenclature

common
naming

WPAC
Naming

In preference of Halogen

e.g. methylchloride $\leftarrow \text{CH}_3\text{-Cl} \rightarrow$

In preference of Hydrocarbons

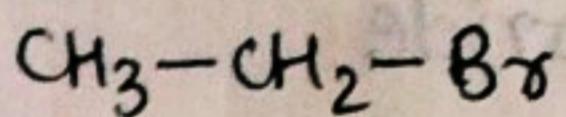
e.g. chloromethane

Naming is done by using

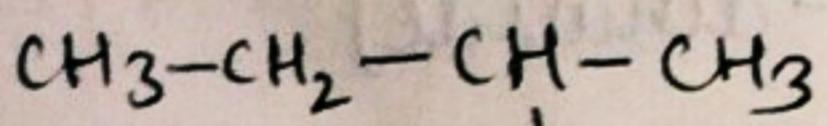
n, iso, neo, sec, tert,
ortho, para, meta,
 α, β, γ .

done by using Numbers.

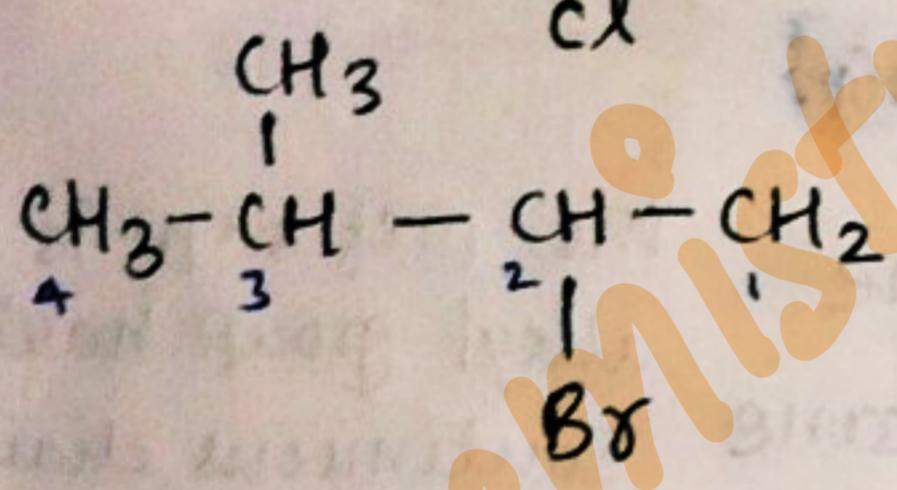
- examples -



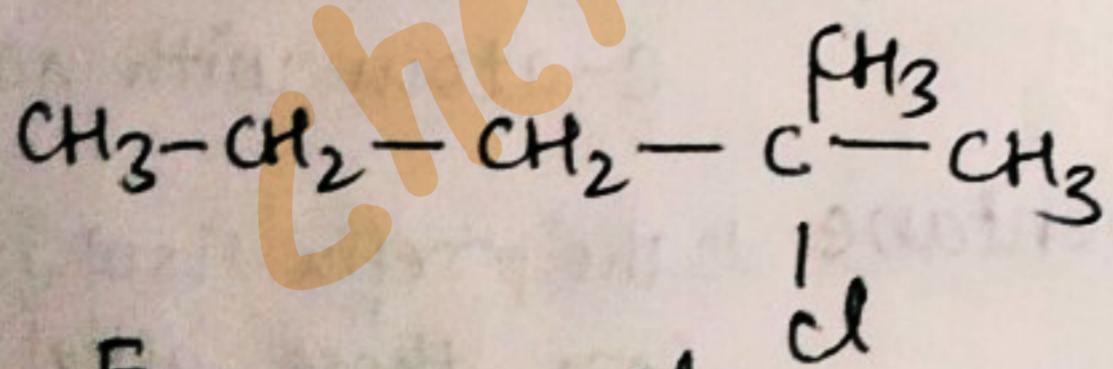
1-Bromoethane



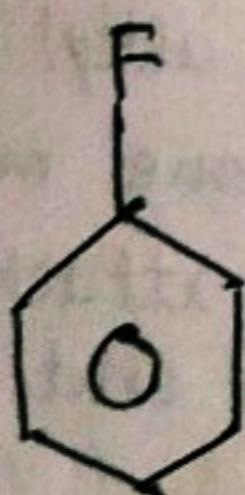
2-chlorobutane



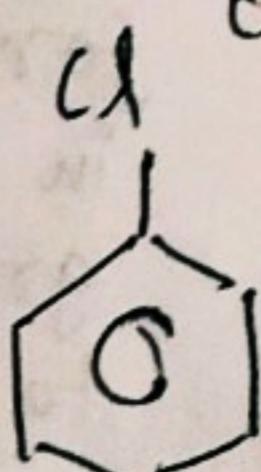
2-Bromo-3-methylbutane



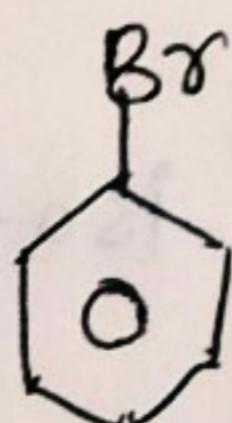
2-chloro-2-methylpentane



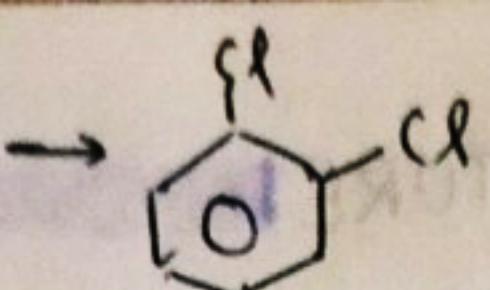
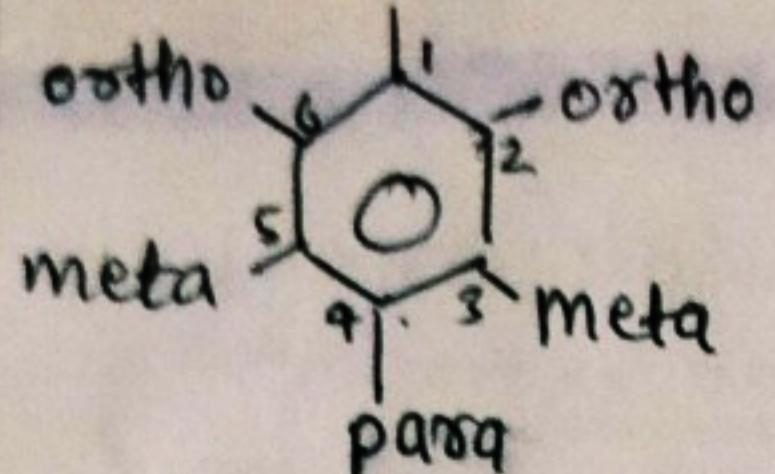
fluorobenzene



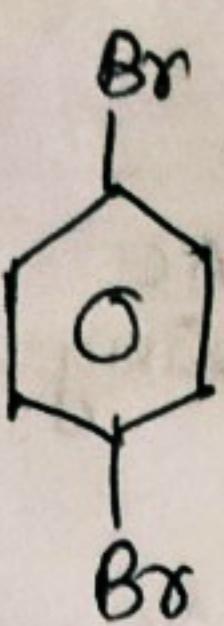
chlorobenzene



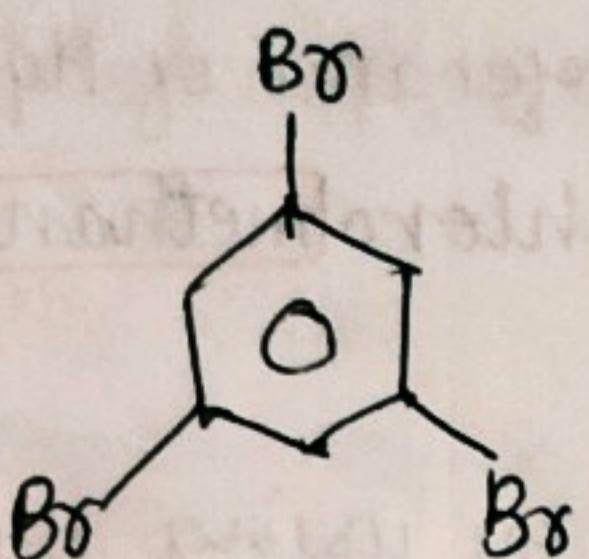
bromobenzene



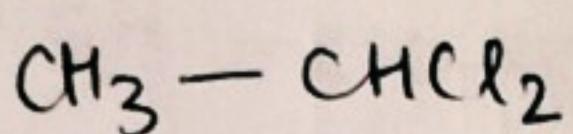
1,2-Dichlorobenzene
OR
o-dichlorobenzene



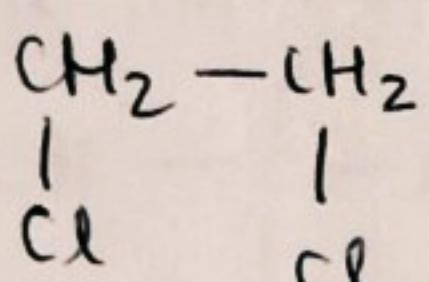
1,4-Dibromobenzene
OR
p-dibromobenzene



1,3,5-Tribromobenzene
OR
sym-Tribromobenzene

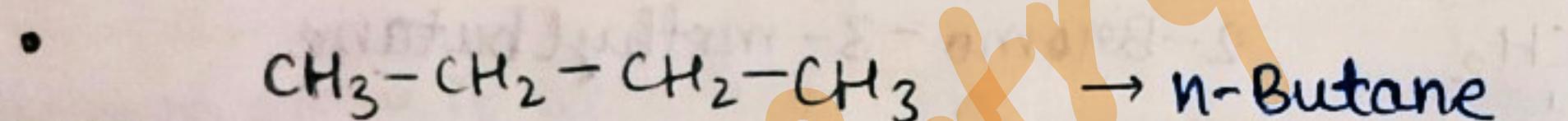


Ethyldene chloride
(gem-Dihalide)

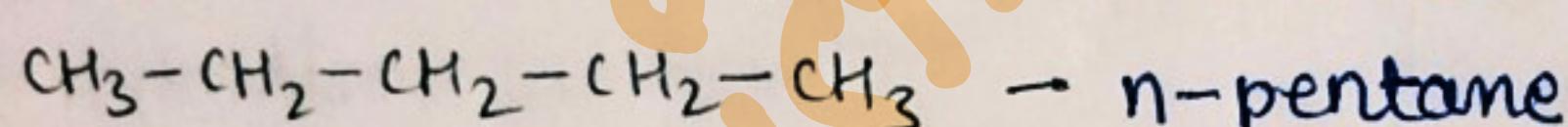


Ethylene dichloride
(vic-Dihalide)

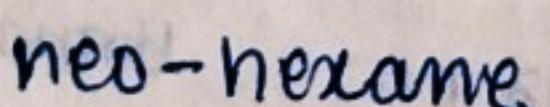
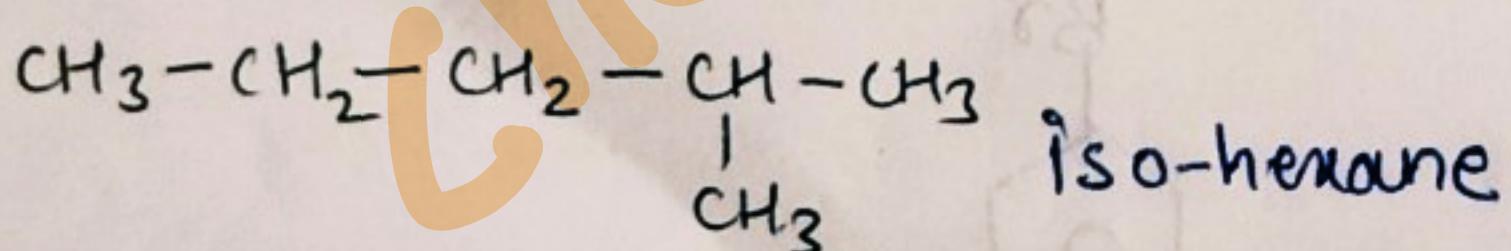
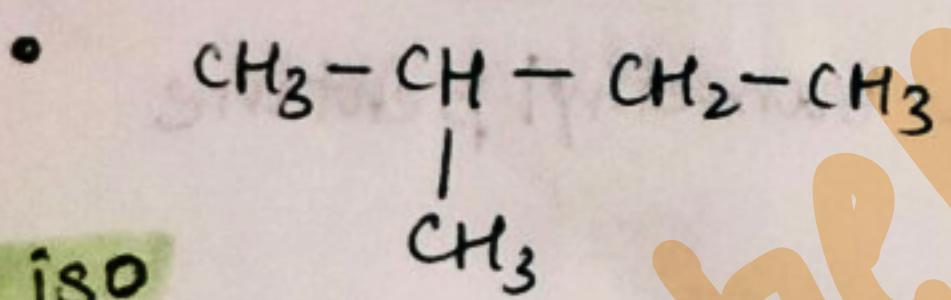
COMMON NAMING



The prefix 'n' is used for alkyl group having continuous chain of C-atom with no branching.

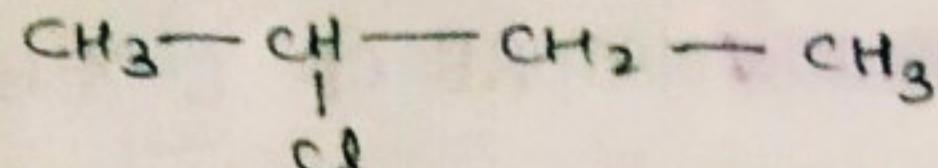


"The prefix 'iso' is used for those alkyl group in which one methyl group is attached to next to end C-atom."



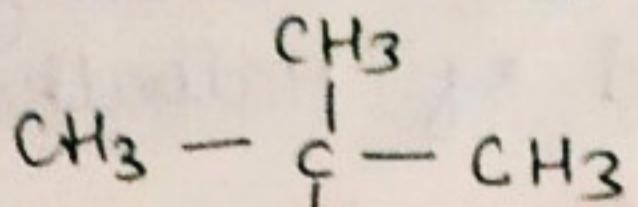
The prefix "neo" is used for those alkyl group which have two methyl group is attached to next to end C-atom.

• sec-butyl chloride



chloride ese carbon se juda ho jo 2° ho!

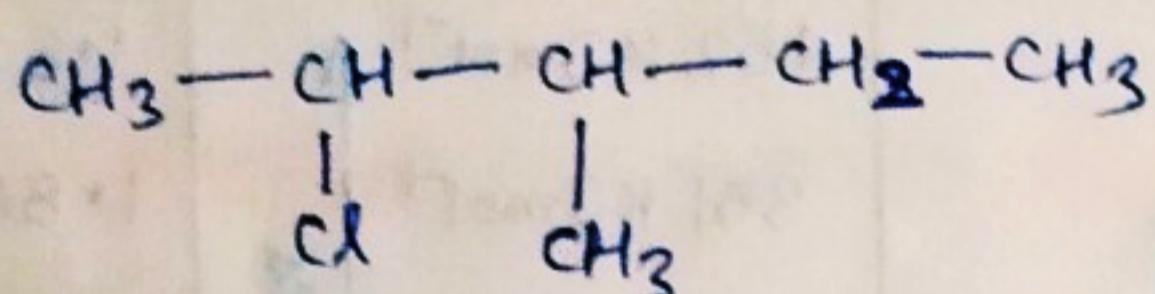
• tert-butyl chloride



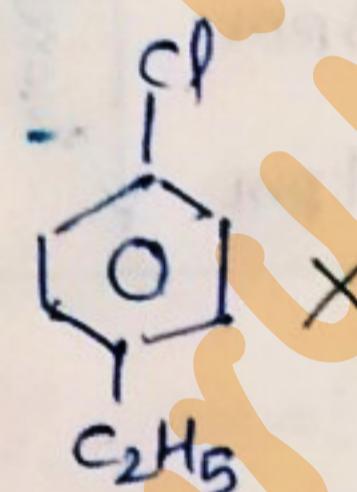
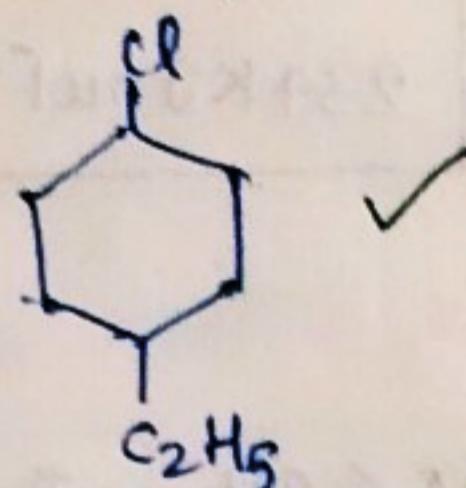
chloride ese carbon se juda ho jo 3° ho!

some important Nomenclature of from NCERT -

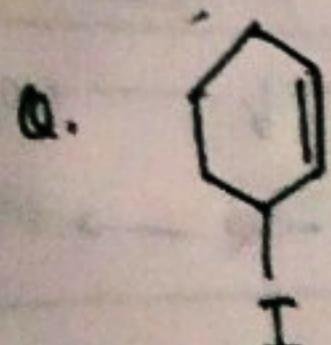
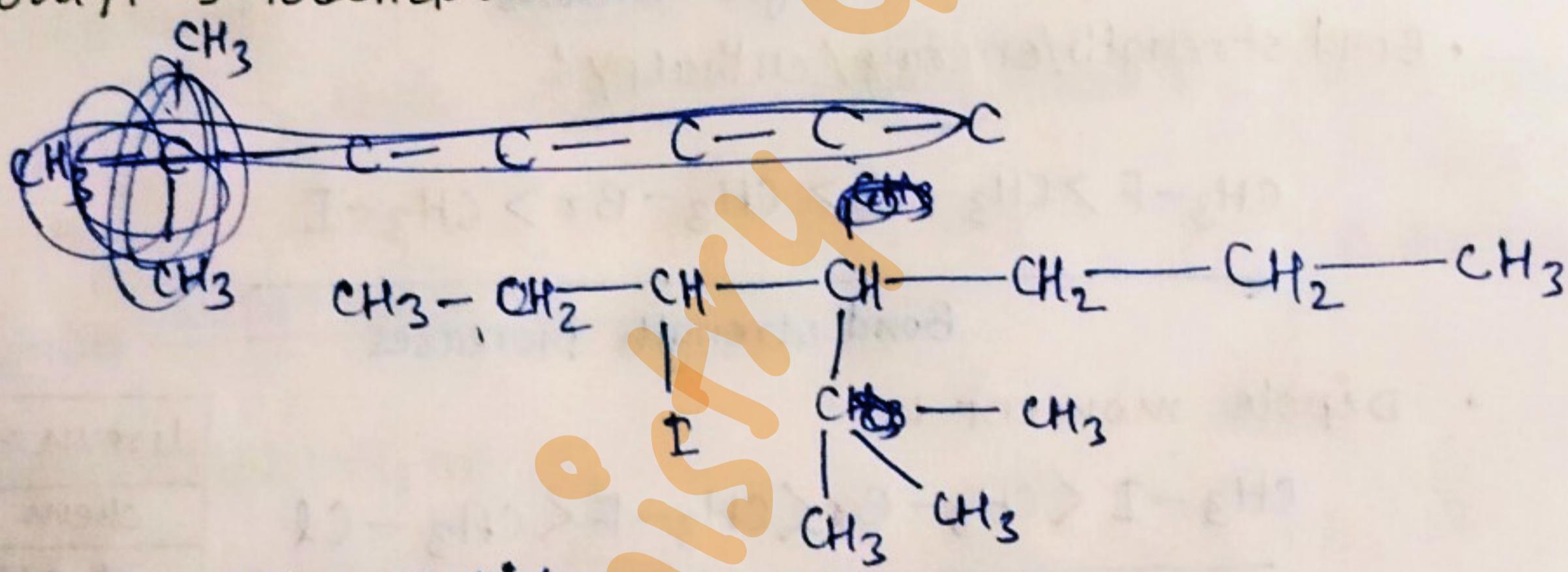
(i) 2-chloro-3-methylpentane



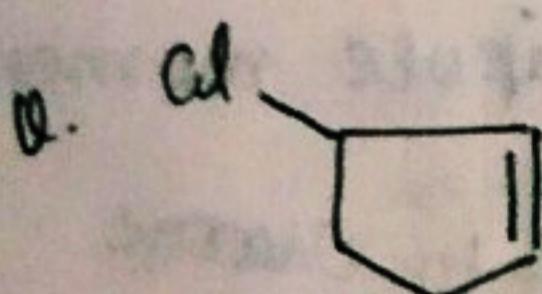
(ii) 3-chloro-4-ethyl cyclohexane



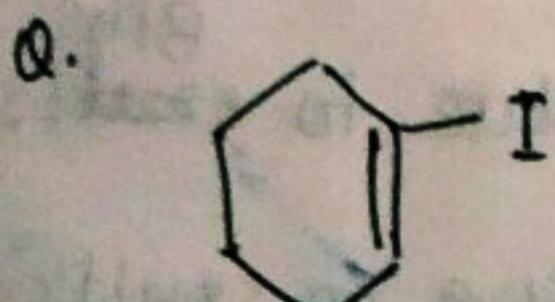
(iii) 4-tert Butyl-3-iodoheptane



→ Allyl Halide



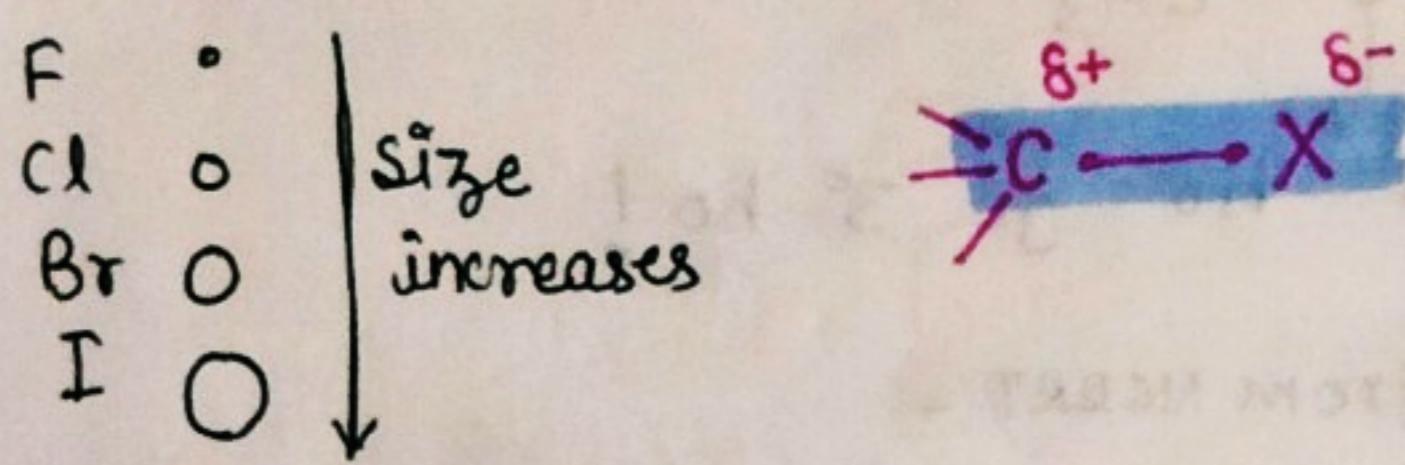
→ Allyl Halide



→ Vinyl Halide

NATURE OF C-X BOND

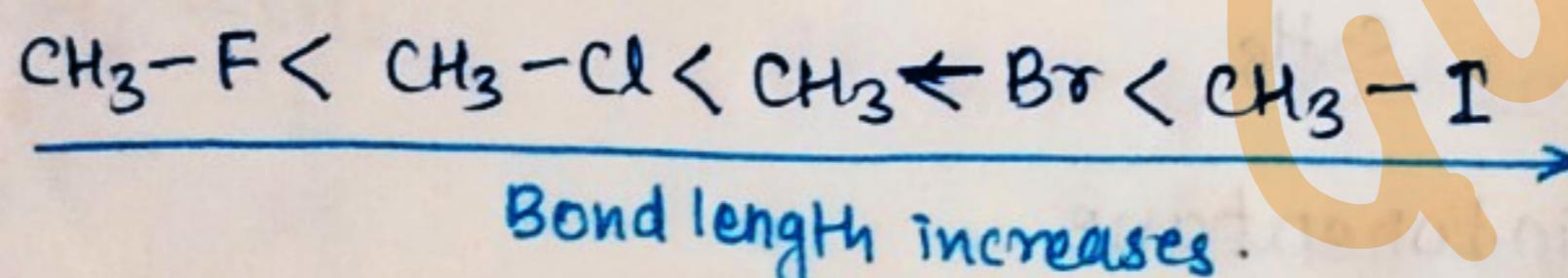
(1) Halogen atoms are more electronegative than carbon therefore Carbon-Halogen bond of Haloalkane is polar in nature.



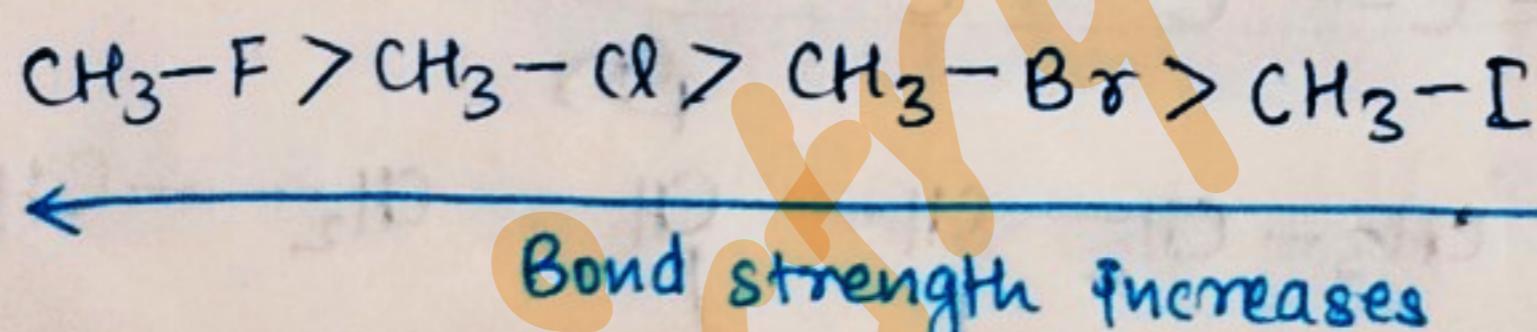
(2)

Bond	Bond length (pm)	Bond enthalpy	Dipole moment
CH_3-F	139 pm	452 kJ mol^{-1}	1.8747
CH_3-Cl	178 pm	351 kJ mol^{-1}	1.860
CH_3-Br	193 pm	293 kJ mol^{-1}	1.830
CH_3-I	214 pm	234 kJ mol^{-1}	1.636

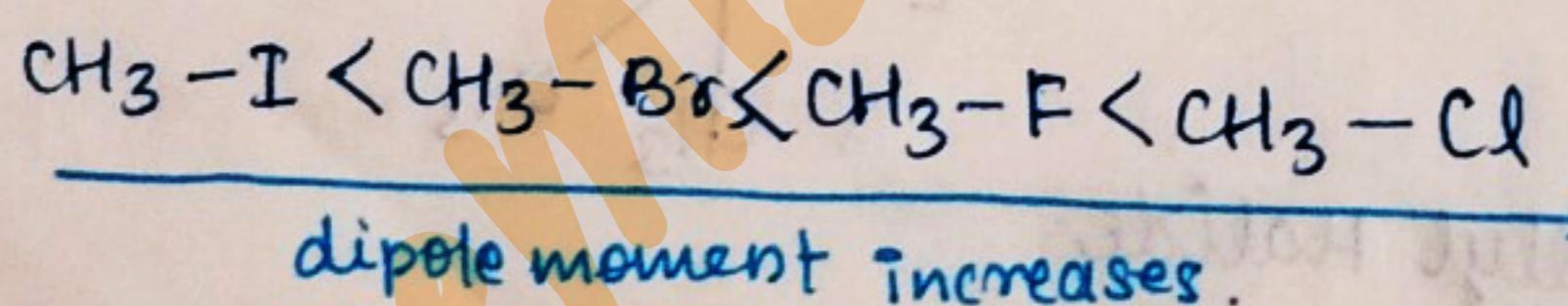
- Bond length :



- Bond strength/energy/enthalpy :



- Dipole moment :



direction of dipole	
chem	physics
$\text{H}^+ \text{e}^-$	$-q \longrightarrow +q$
$+ \rightarrow -\text{ve}$	$-\text{ve} \longrightarrow +\text{ve}$

→ CH_3-Cl have highest dipole moment because dipole moment is a product of charge and distance.

Highest dipole moment → CH_3-Cl — due to charge

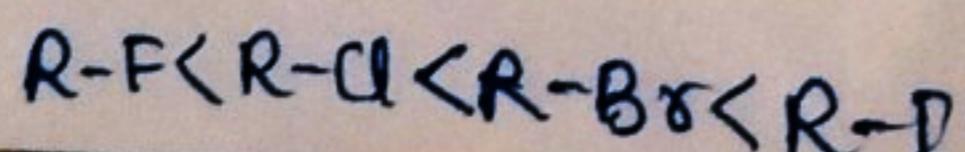
Highest Bond length → CH_3-I — due to ^{Big} size

Highest Bond energy → CH_3-F — due to small size

most reactive

→ CH_3-I — due to small size

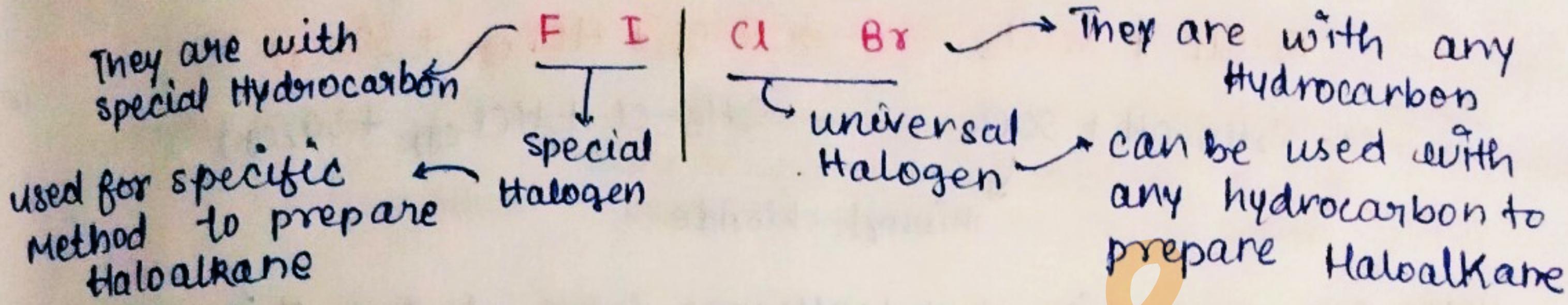
Reactive series:



Preparation

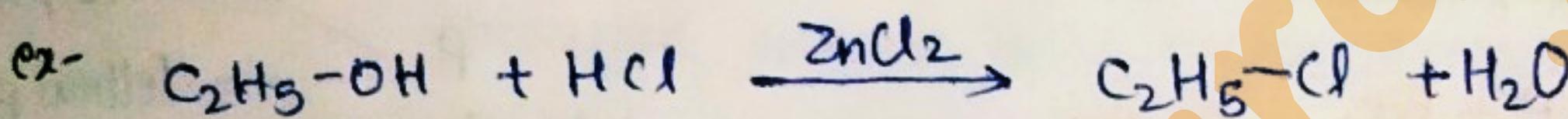
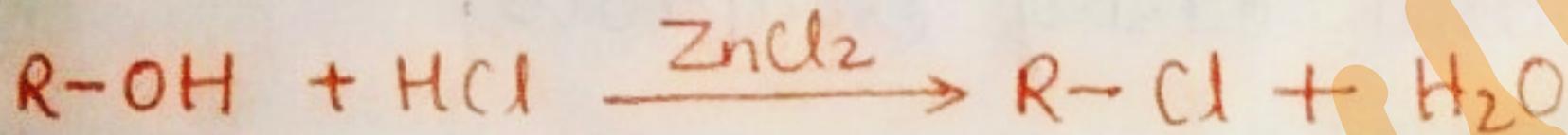
- from alcohol
- from Halogen exchange
- from Hydrocarbon

NOTE: common Halogen = F Cl Br I



FROM ALCOHOL

Grove's process:



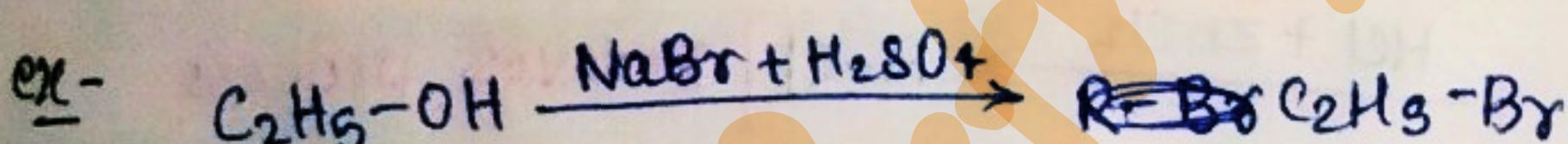
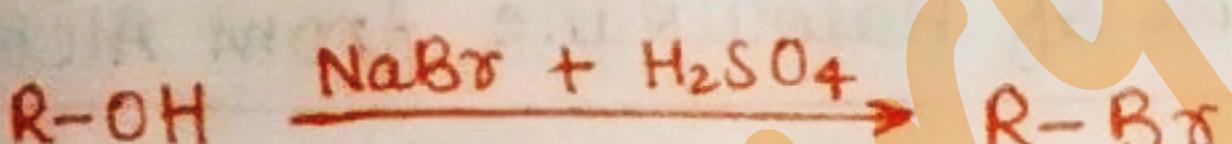
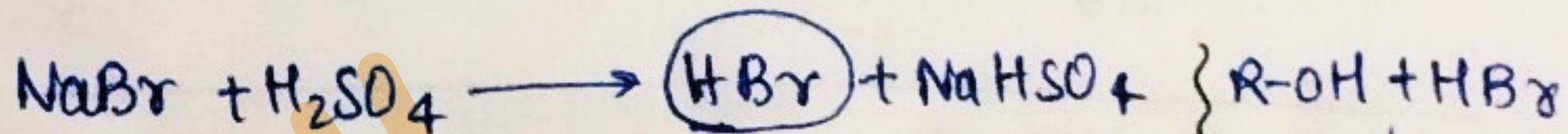
This reaction is also called Lucas Test.

mixture of $HCl + ZnCl_2$ → Lucas reagent

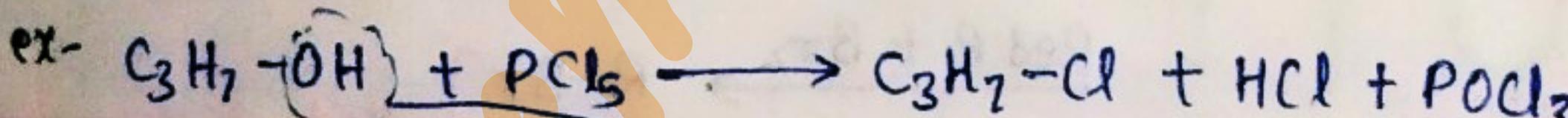
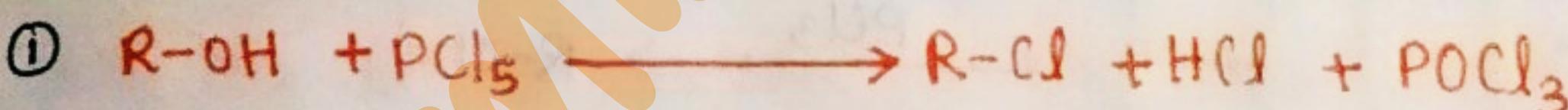
To distinguish
B/w 1°, 2° and 3°
alcohol

By using H_2SO_4 (situ Method)

T_{sattu}!

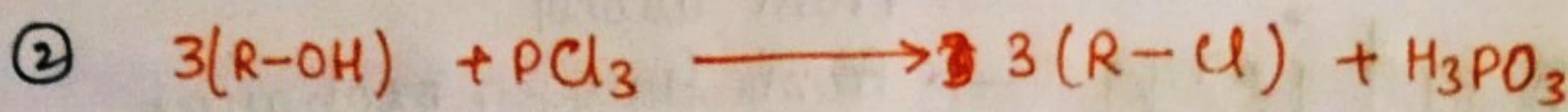


Phosphorus Halide method: PX_3 or PX_5

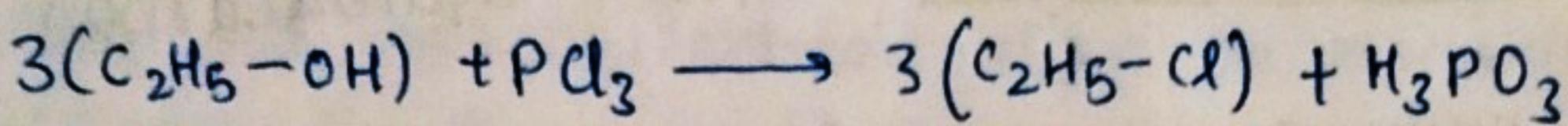


phosphorus
oxychloride

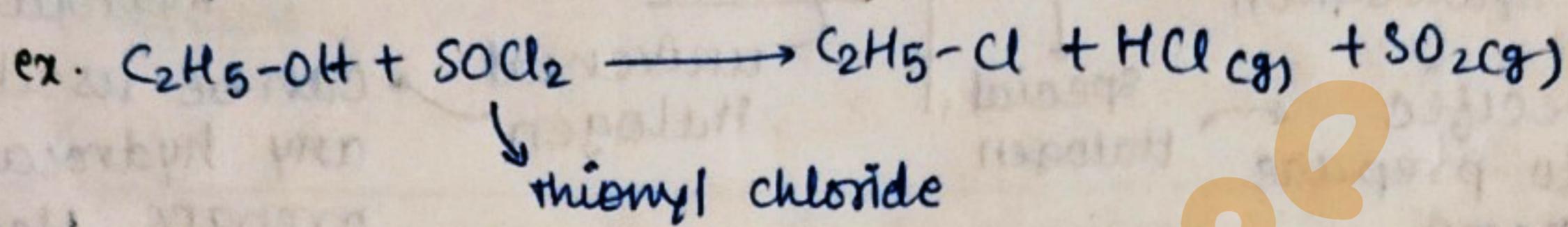
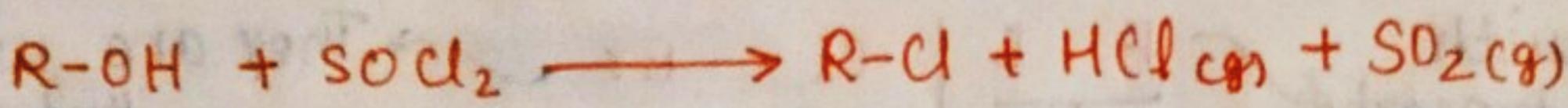




ex.

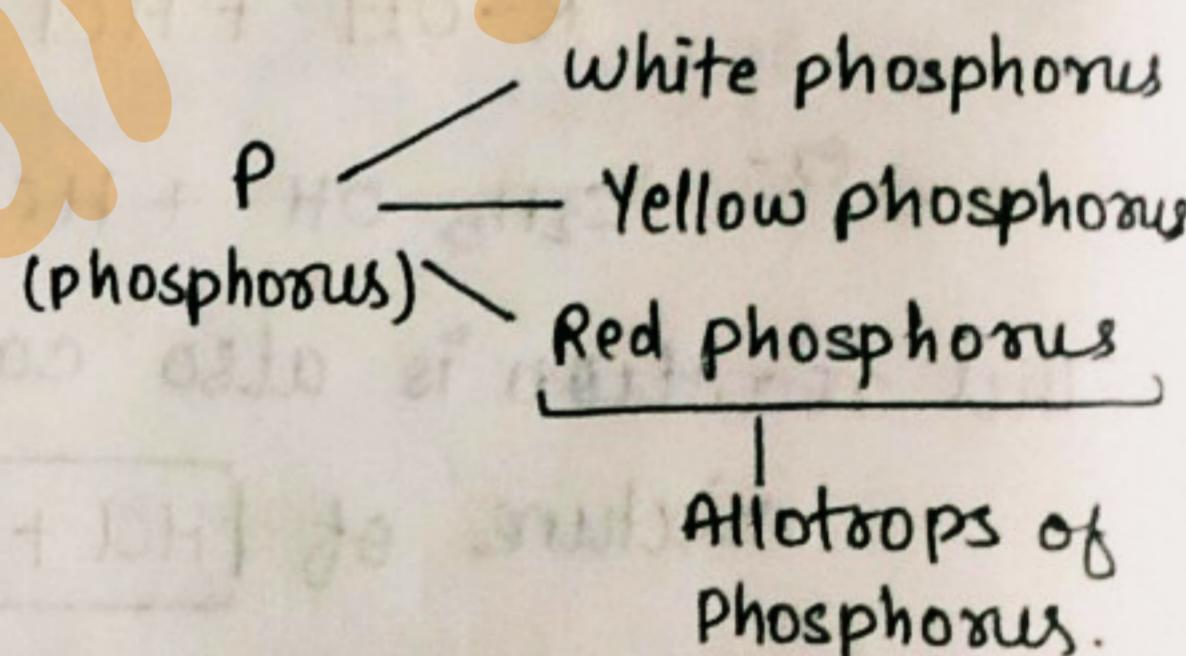
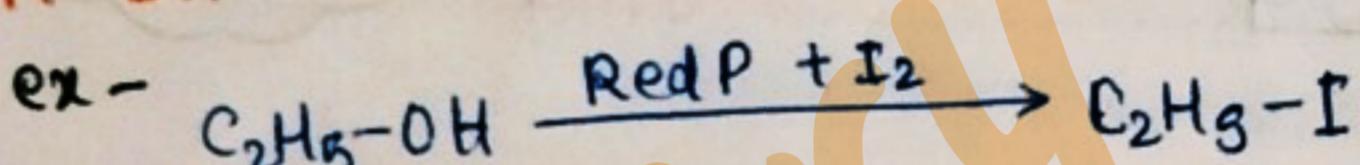
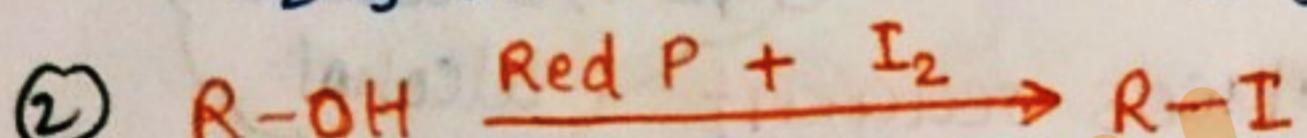
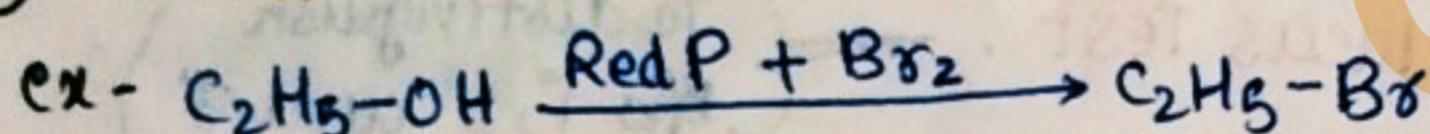
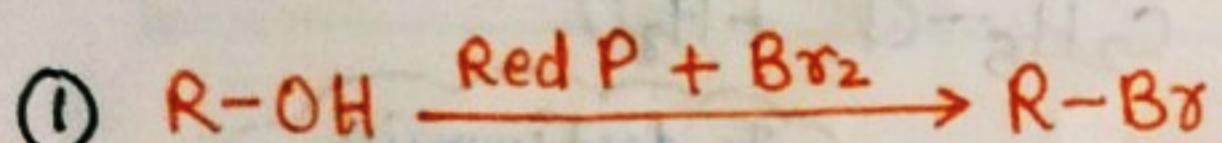


Darzon's Process :



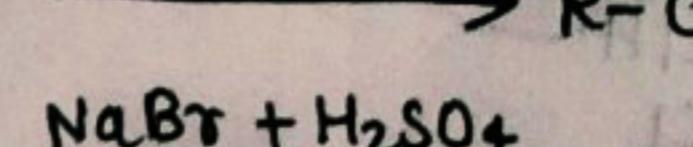
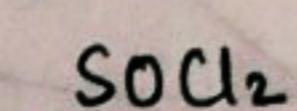
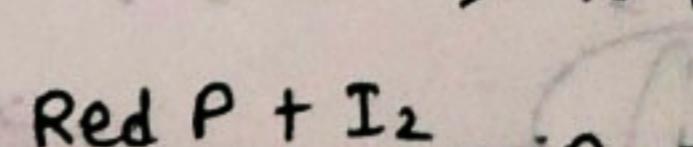
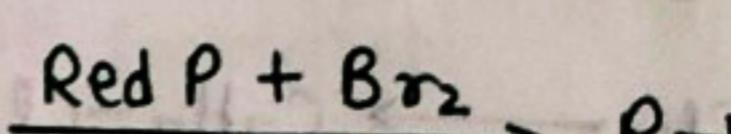
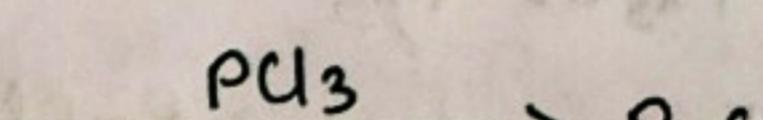
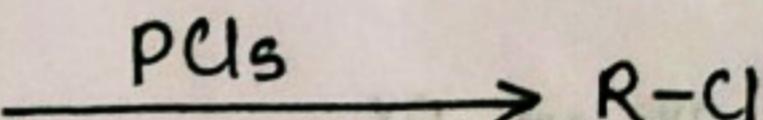
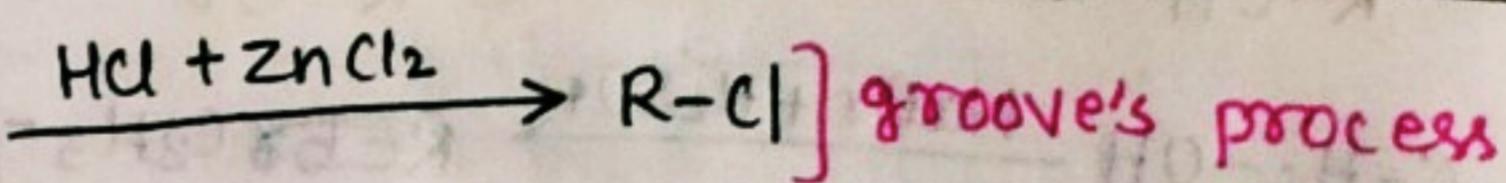
NOTE: for preparation of Haloalkanes from alcohol, thiomyl chloride method or Darzon's process is considered as best process because side products are gases and easily escapable.

By using Red phosphorus :



Q Quick Recap of : Preparation of Haloalkane from Alcohol.

R-OH



] Phosphorus Halide method

] Red phosphorus method

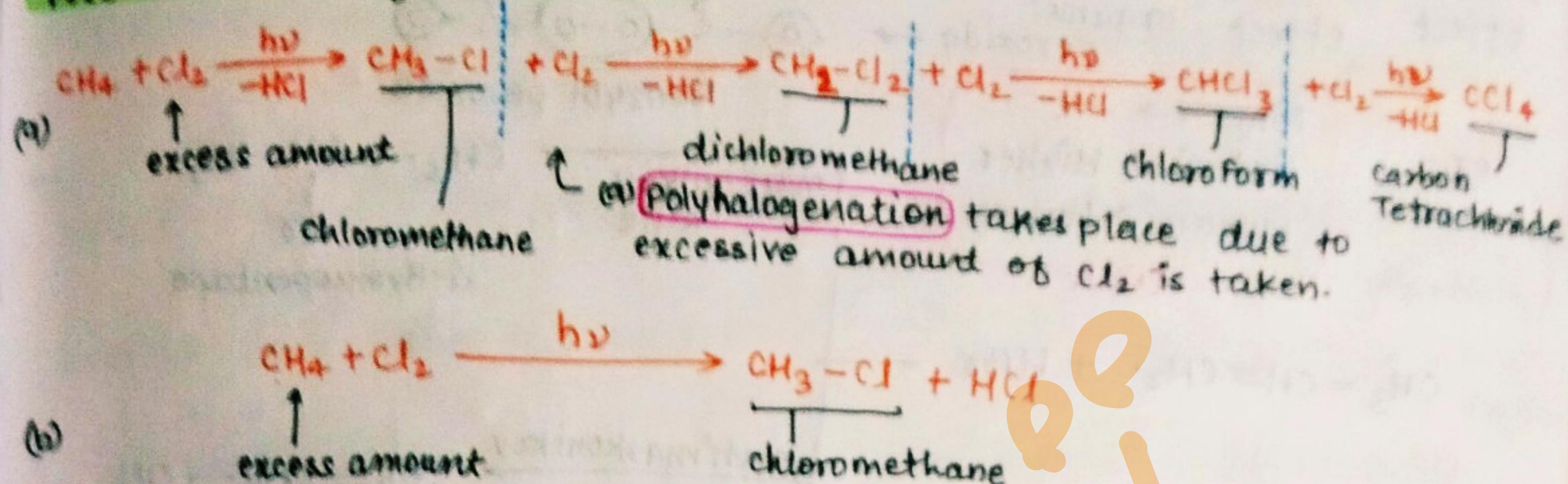
] Darzon's process.

] By using H_2SO_4
(Sattu Method)

BY HYDROCARBON

FRAN AIKANE

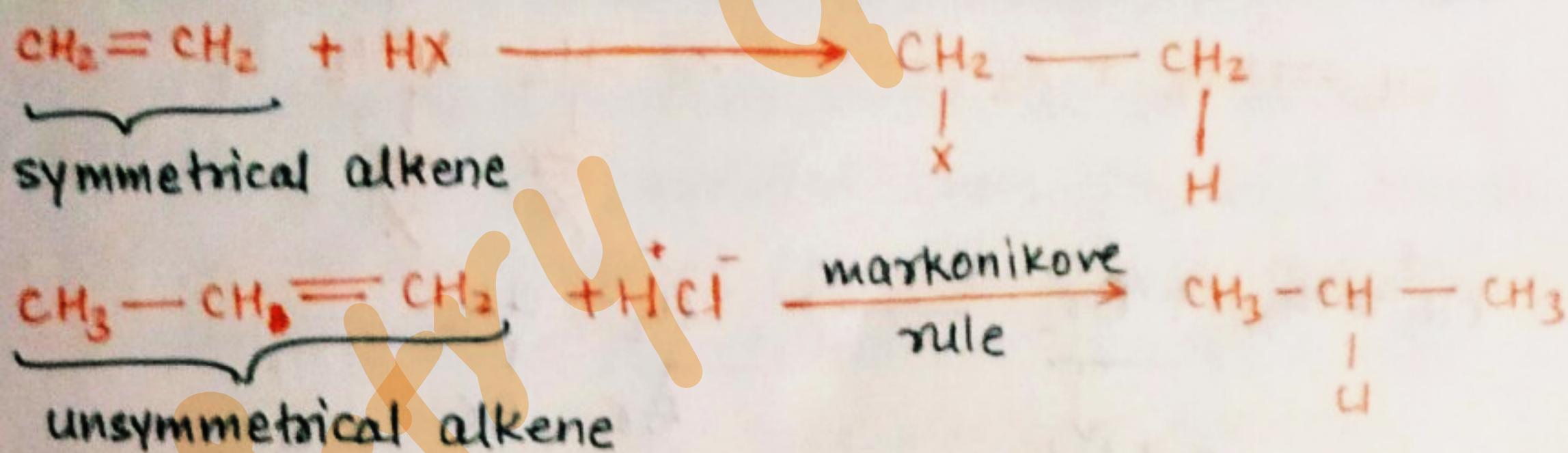
One - radical Halogenation method:



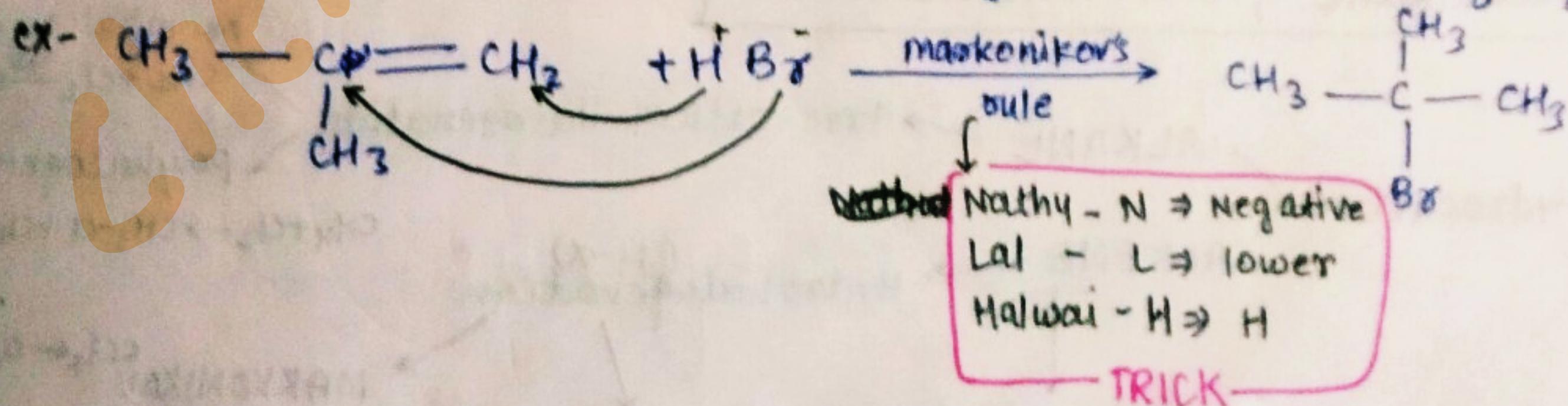
(b) Here, **Mono Halogenation** takes place because Alkane is in excess amount.

FROM ALKENE

By Hydrohalogenation -



Markonikov Rule → In addition reaction of unsymmetrical alkene, the negative part of the additive will go to that carbon having lower number of hydrogen.

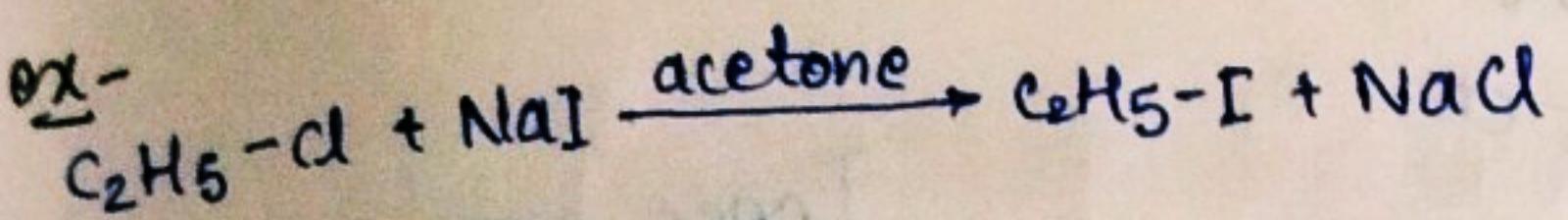
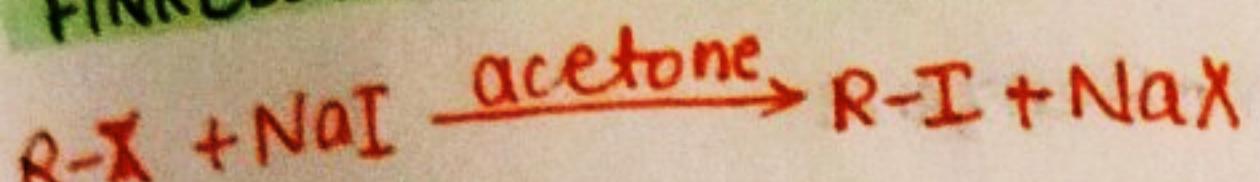


BY HALOGEN EXCHANGE METHOD

Halogen exchange Method

(very very important

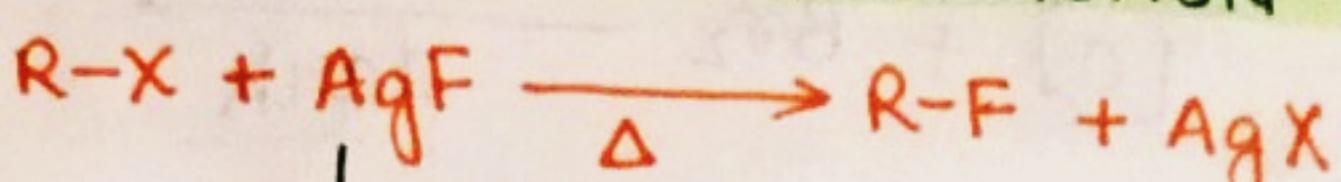
FINKELSTIEN REACTION



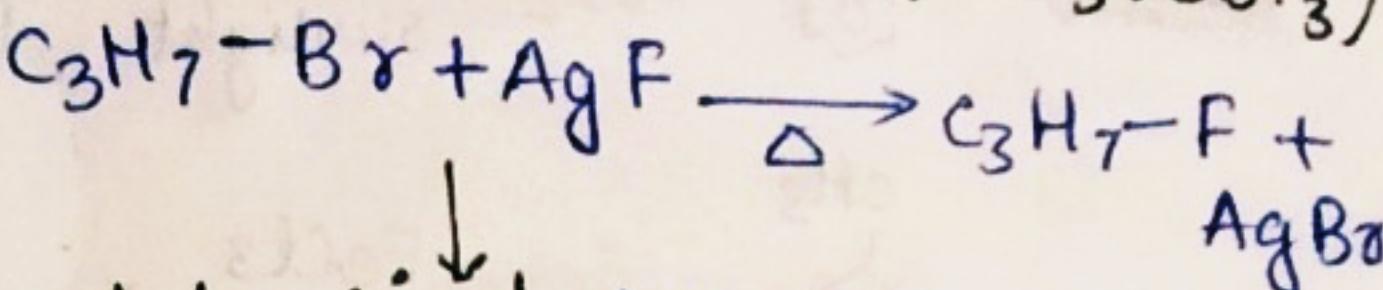
used to find Alkyl sodide

finkel Nai करेगा
— TRICK —

SWARTS REACTION



x: metallic Fluoride (AgF , Hg_2F_2 , CoF_3 , SbF_3)



used to find Alkyl fluoride

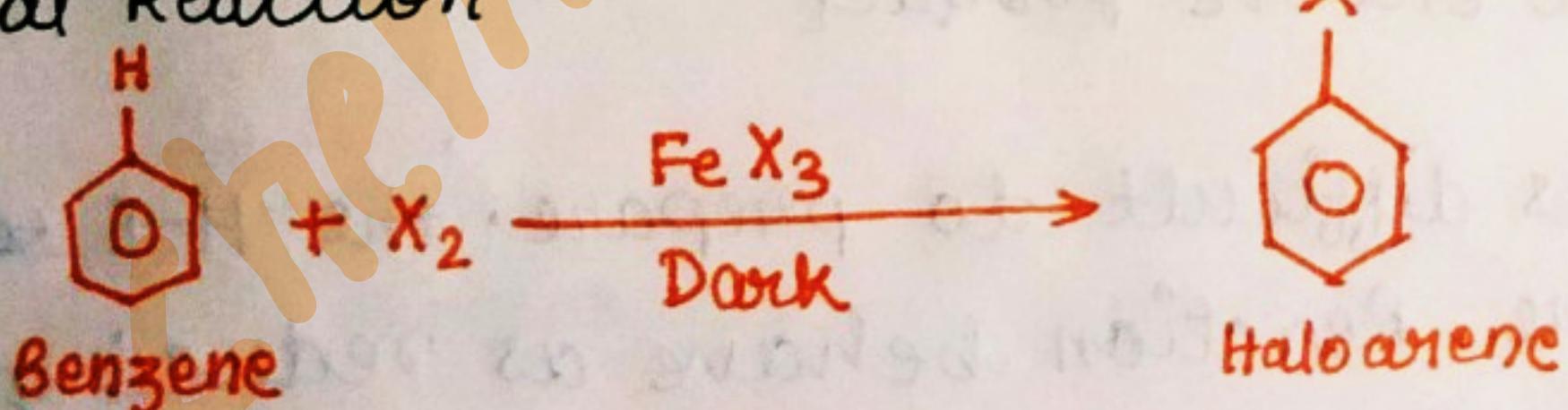
swarg में fly
—TRICK—

Preparation of Haloarene

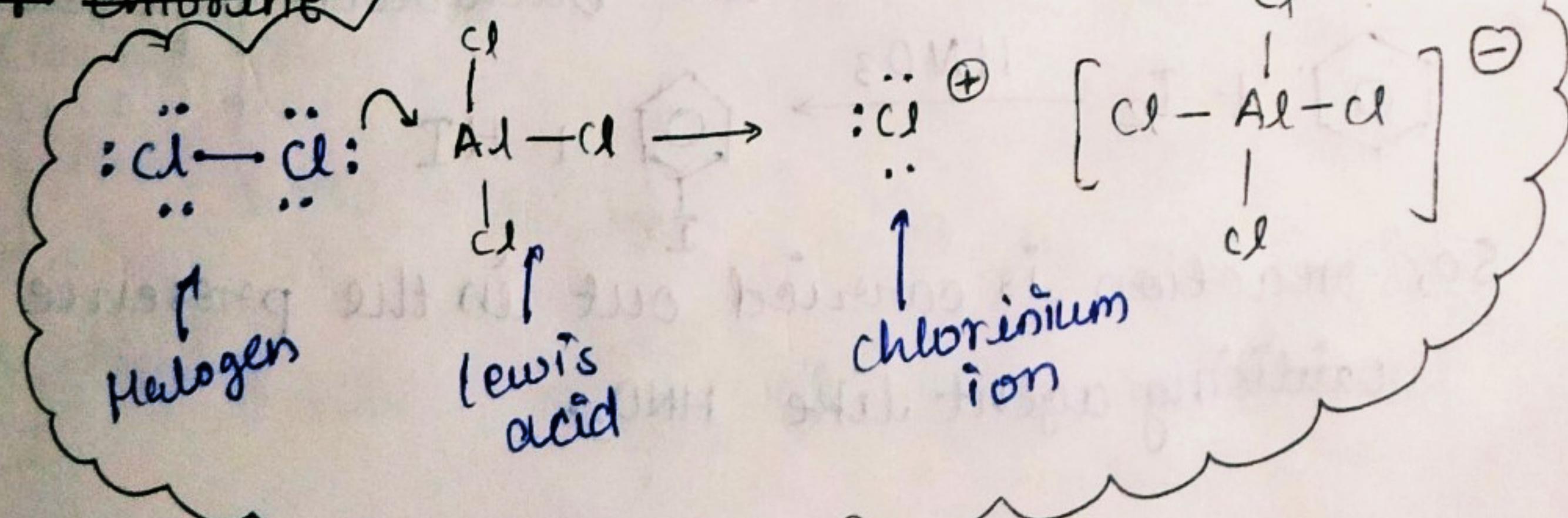
1. Electrophilic Substitution Reactions

↳ Always Done in Dark, it is becoz, if sunlight is provided then Cl_2 will break in Free radical ($\text{Cl}\cdot$) and we are doing electrophilic substitution reaction not free-radical substitution Reaxn.

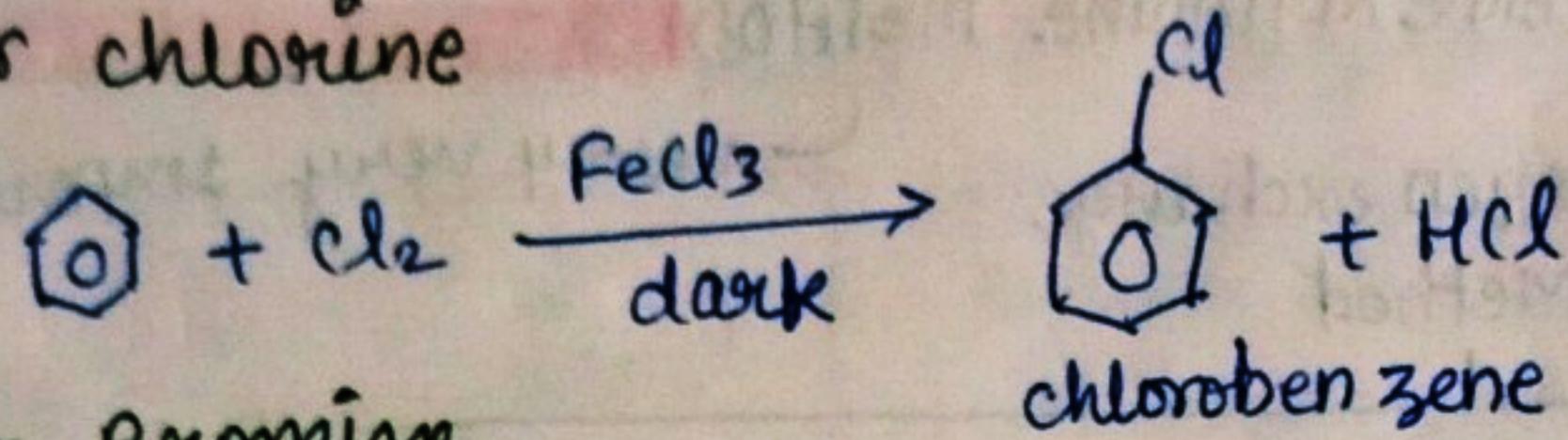
• general Reaction -



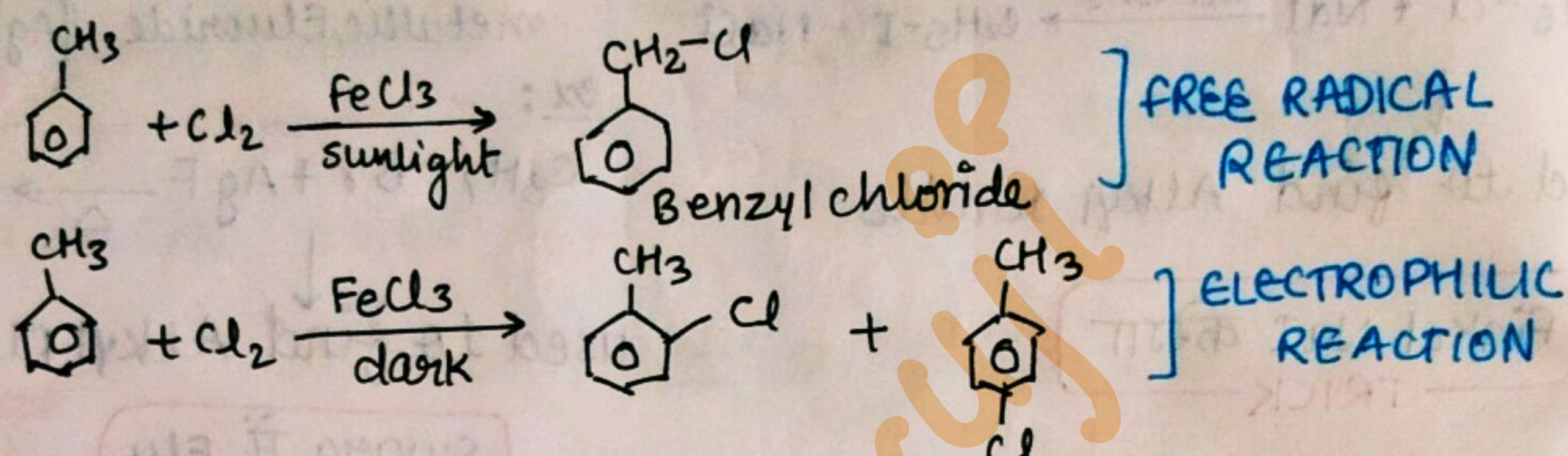
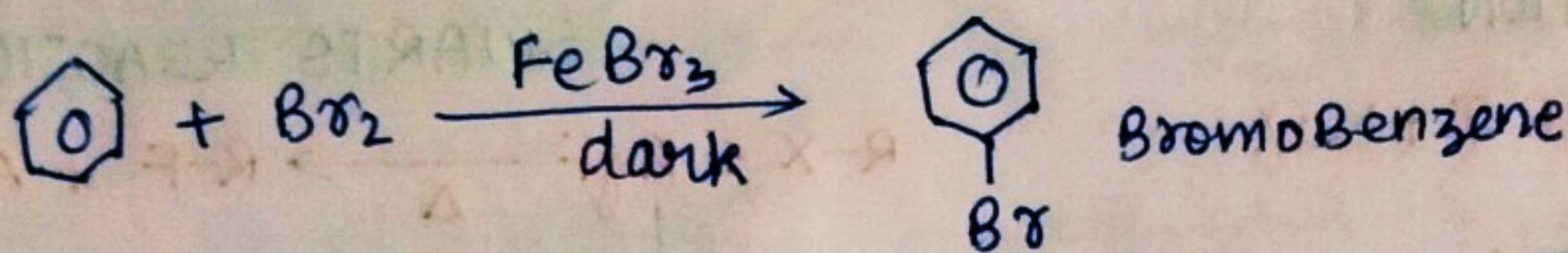
~~for chlorine~~



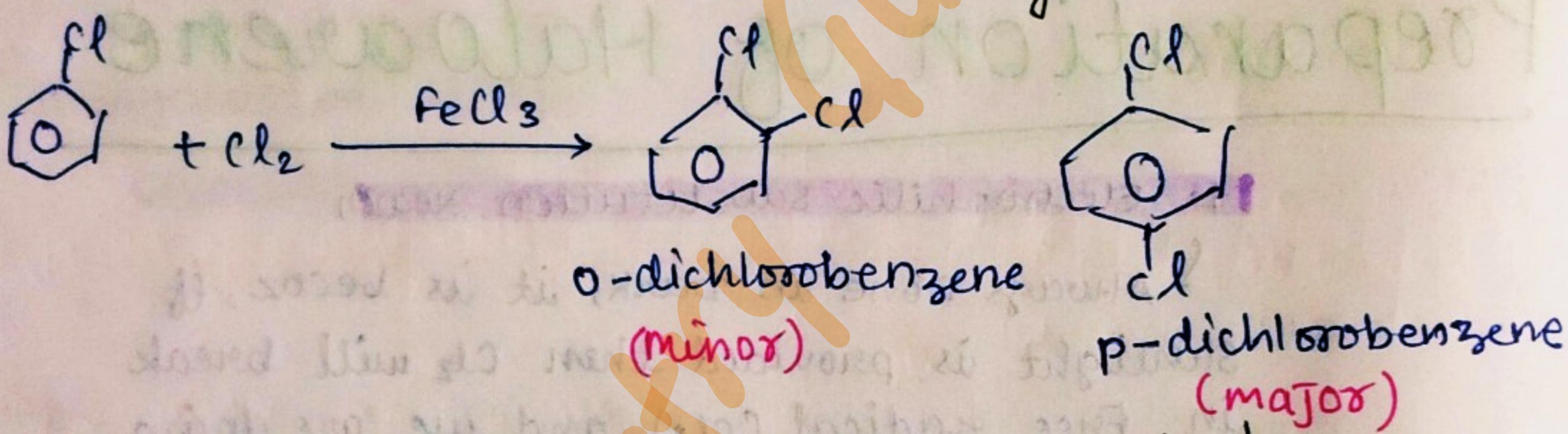
•for chlorine



• For Bromine

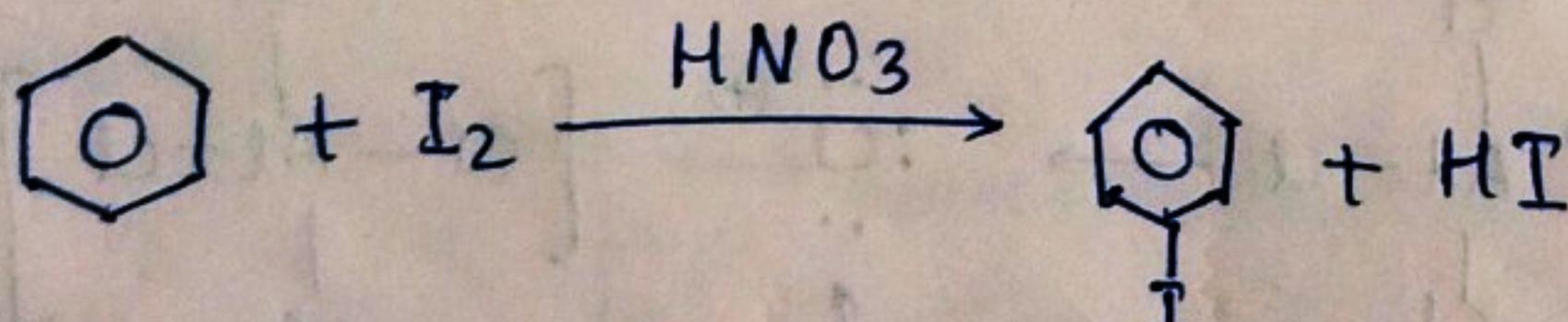


∴ chlorobenzene is ortho - para directing.



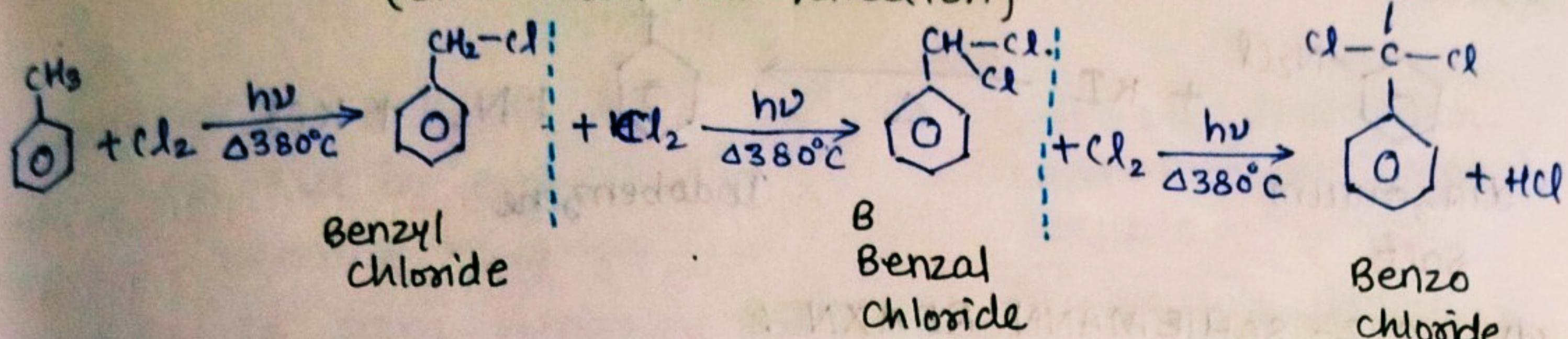
- Far away from each other (Halogens) → (symmetry)
 - Less repulsion
 - More stable product

. For Iodine , it is difficult to prepare . the H-I ~~to~~ bond formed during the Reaction behave as reducing agent and cause the Reaction in backwards reaction



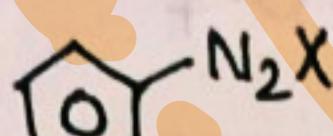
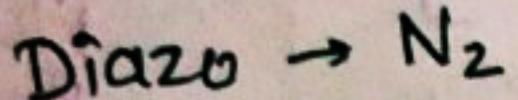
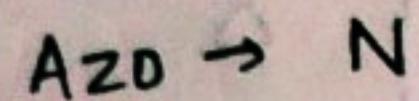
So, reaction is carried out in the presence of oxidising agent like HNO_3 .

2. PREPARATION OF VINYL HALIDE (side-chain Halogenation)



3. PREPARATION OF DIAZONIUM SALT

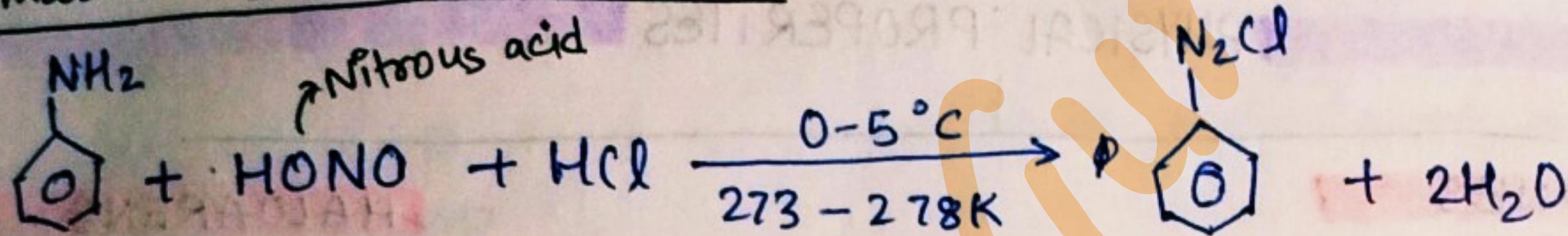
FROM



Diazonium salt

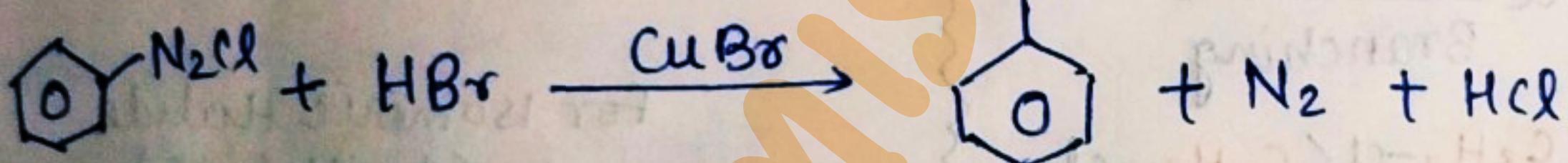
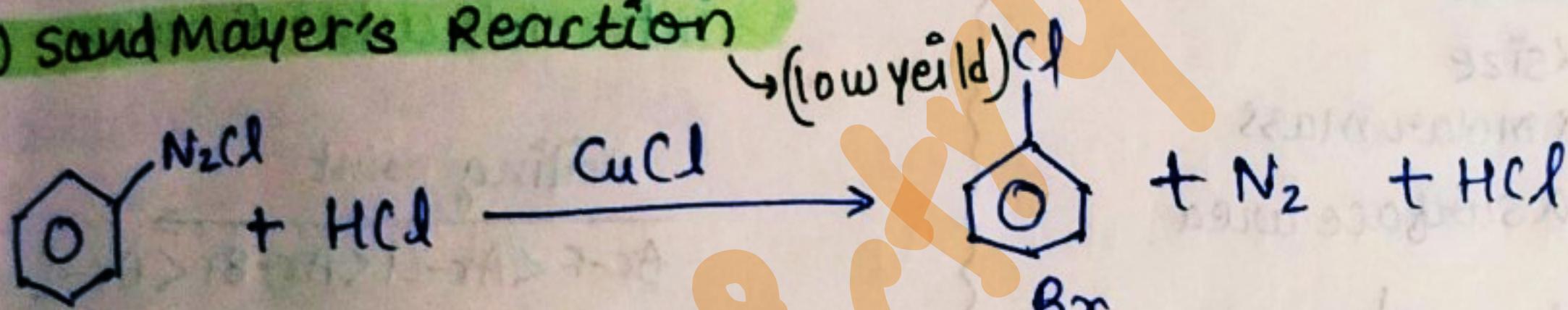
always in
situ Reaxn

formation of diazonium salt:



ON HONO, HCl की पानी नीकल गया!
TRICK

(a) SandMayer's Reaction

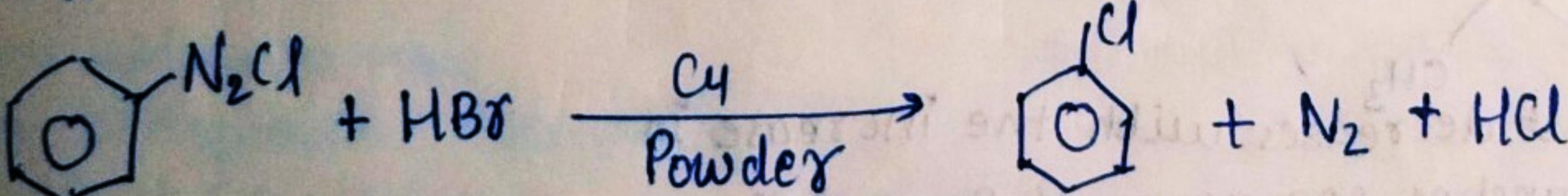
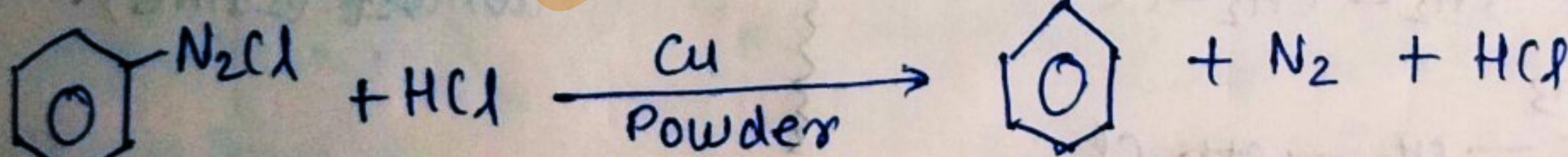


DC ne sand me salt dala
sandmayer's CuCl, CuBr

TRICK

(b) Gattermann's Reaction

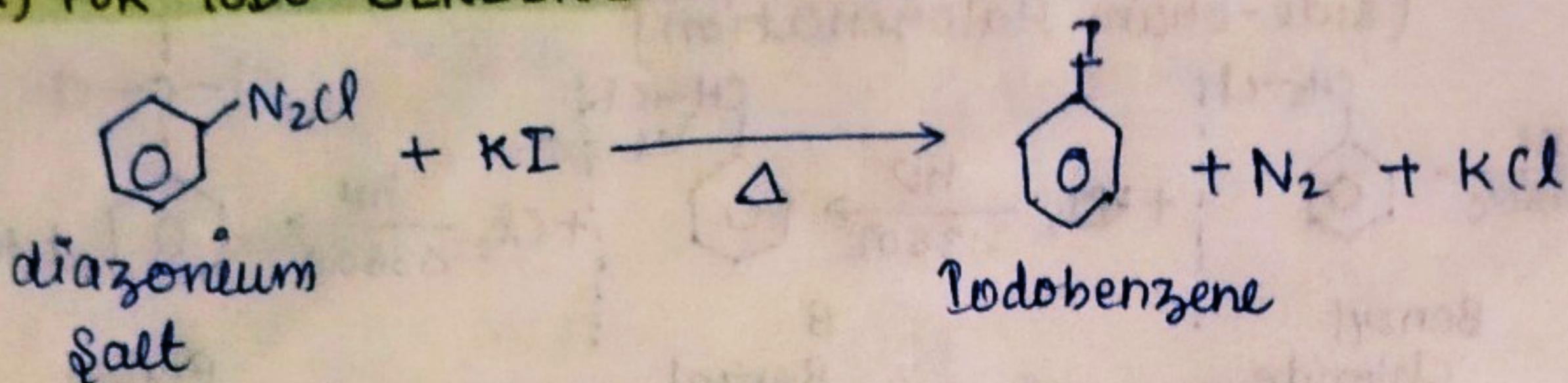
→ (for high Yield)



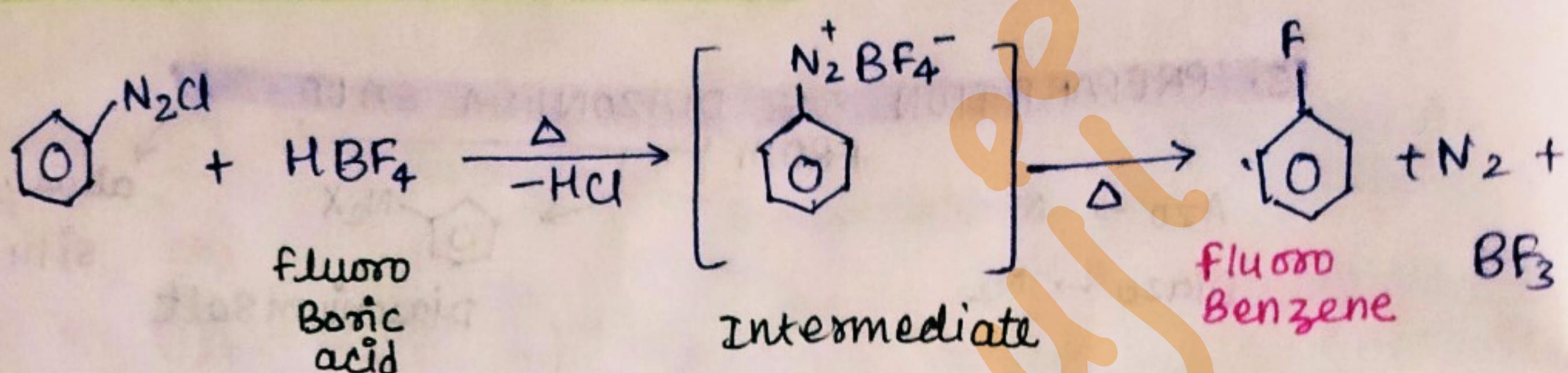
TRICK

DC ne gatter me powder dala

(c) FOR IODO-BENZENE



(d) BALZ-SCHIEMANN REAXN:



PHYSICAL PROPERTIES

HALOALKANES

HAIDAREN

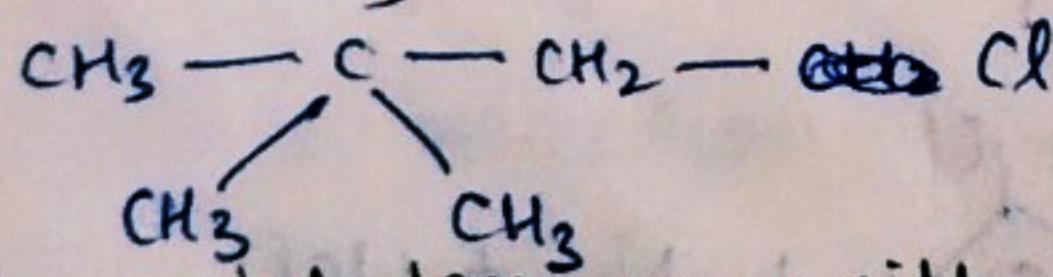
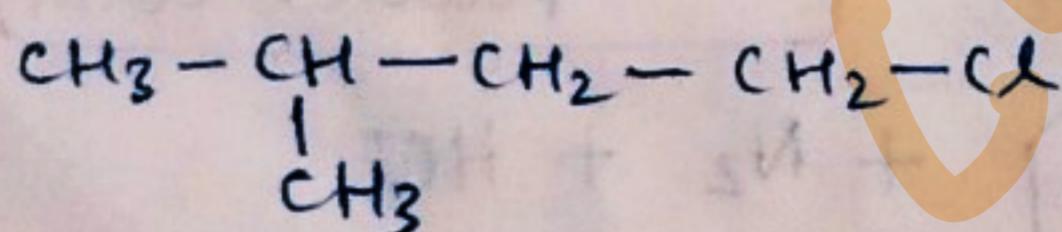
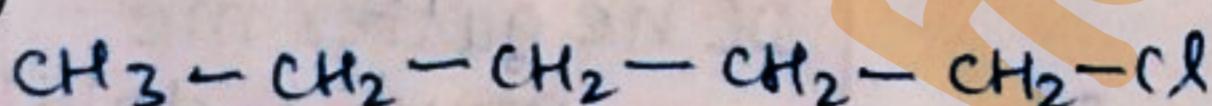
Boiling Point

Boiling point increases with increase in molar mass

Boiling point \propto van-der waal force \propto size
 molar mass \propto surface area

d Branching

- $\text{CH}_3\text{-Cl} < \text{C}_2\text{H}_5\text{-Cl} < \text{C}_3\text{H}_7\text{-Cl} < \text{C}_4\text{H}_9\text{-Cl}$
 - $\text{C}_2\text{H}_5\text{-F} < \text{C}_2\text{H}_5\text{-Cl} < \text{C}_2\text{H}_5\text{-Br} < \text{C}_2\text{H}_5\text{-I}$
 - $\text{CH}_3\text{-Cl} < \text{CH}_2\text{Cl}_2 < \text{CHCl}_3 < \text{CCl}_4$
 - for isomeric Haloalkane:

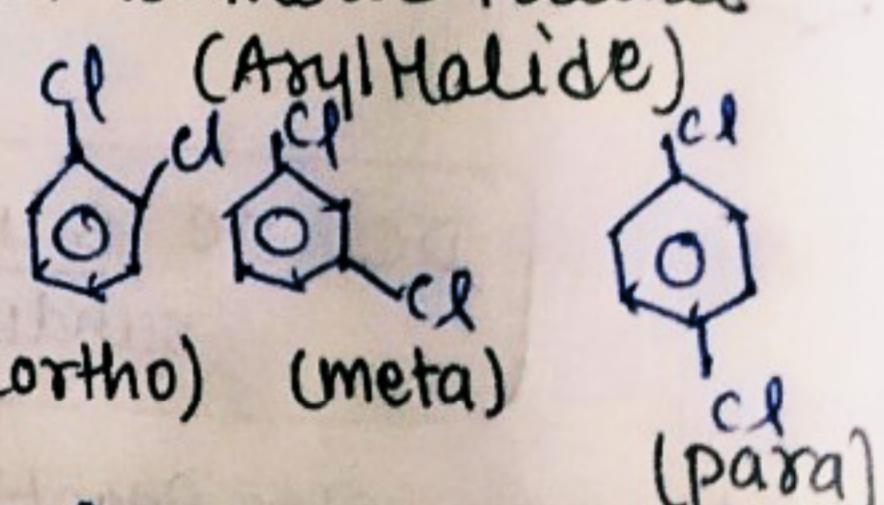


Boiling point decreases with the increase in
no. of Branches coz as no. of Branches
increases, surface Area decreases, hence
magnitude of Van-der waal force decrease

They have low Boiling point due to weak- intermolecular force.

$$\text{Boiling point} \xrightarrow{\text{Ar-F} < \text{Ar-Cl} < \text{Ar-Br} < \text{Ar-I}}$$

For Isomeric Halide



- Boiling point is almost (same).

HALOALKANE

HALOARENES

SOLUBILITY

Haloalkanes are not soluble in water But in organic solvent. Because They are unable to form Hydrogen Bond in water.

organic solvent like acetone, ether, benzene, alcohol, etc.

Haloarenes are polar compound but not soluble in water but soluble in organic solvent like acetone, benzene, alcohol, etc.

PHYSICAL STATE

Pure haloalkanes are colourless and have sweet smell.

Bromoalkanes and Iodoalkanes develop colour when exposed to sunlight.

lower haloalkanes are gases while higher Haloalkanes are either liquid or solid at room temp.

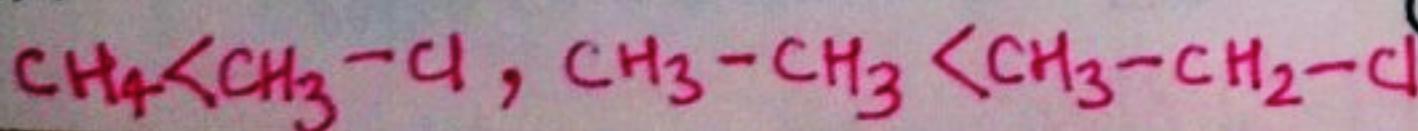
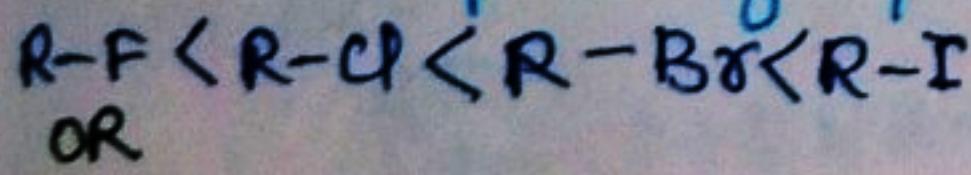
Methane — CH_4 — Gas

Octane — C_8H_{18} — liquid
(petrol)

$\text{C}_{19}\text{H}_{40}$ — solid

They are generally colourless liquid or crystalline solid with a distinct odour

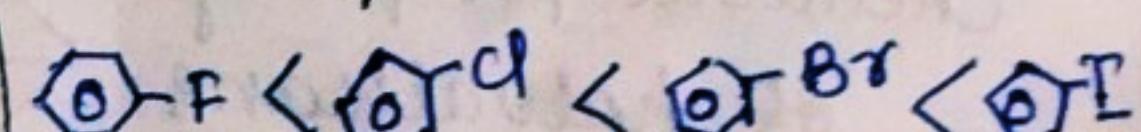
Their melting point are higher becoz haloalkanes have a higher molecular mass than corresponding Hydrocarbon.



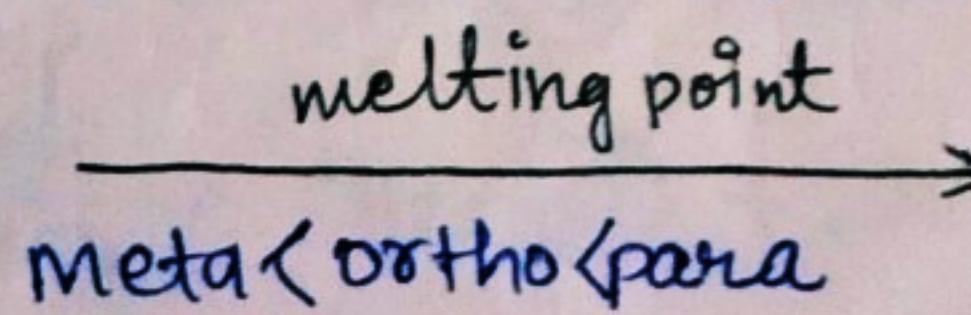
MELTING POINT

molecules with efficient packaging have high melting point

100%



mpt and Bpt of Haloarenes increases with increase in size and mass of Halogen.



m.p.t.
meta
para

Density

Density of Haloalkanes and Haloarenes increase with increase in size of Halogen.

Haloalkanes are lighter than water

Haloarenes are ~~High~~ Heavier than Water.

CONCLUSION

The physical properties of a compound are determined by its mass and the type of intermolecular and intramolecular ~~inter~~ attraction forces.

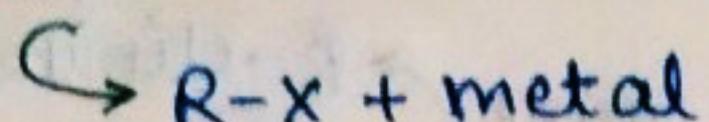
- Alkyl Halides are colourless in their Natural state. Haloarenes can be found as a colourless liquid or as a crystalline solid.
- ~~The~~ The boiling points of alkyl halides are $R-I > R-Br > R-Cl > R-F$ in that order. The boiling points of Haloarene are as follows:
 $AR-I > AR-Br > AR-Cl > AR-F$.
- Despite being polar compounds, Haloalkanes and Haloarenes are insoluble in water.

CHEMICAL PROPERTY OF HALOALKANE

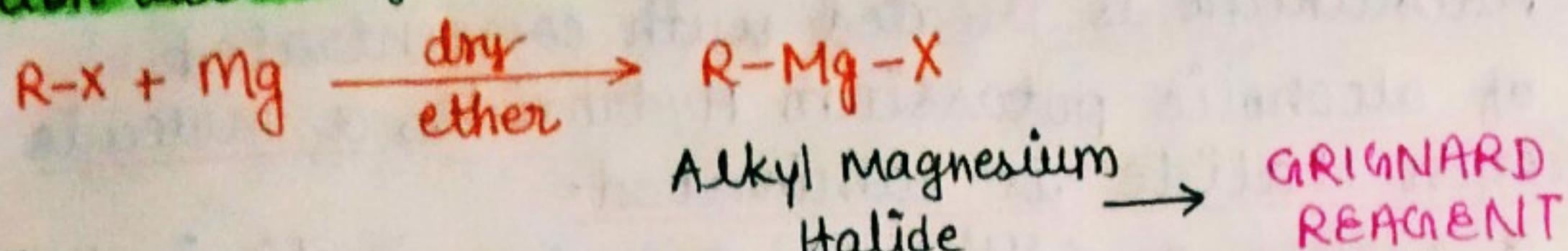
chemical property
of haloalkane

-
- Reaction with Metal
 - Elimination Reacn
 - Nucleophilic substitution Reaction. **100%**

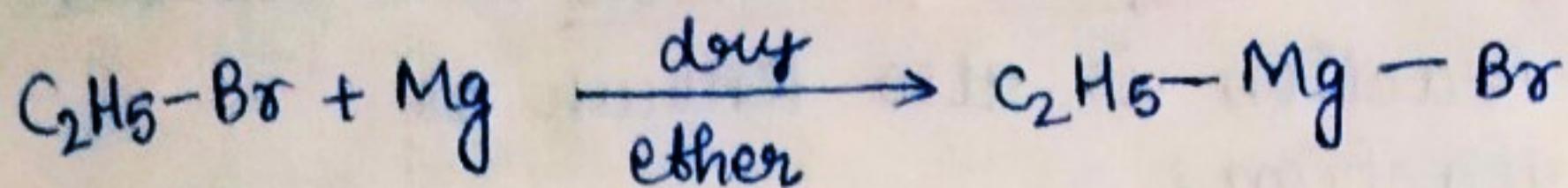
REACTION WITH METAL



Reaction with Magnesium



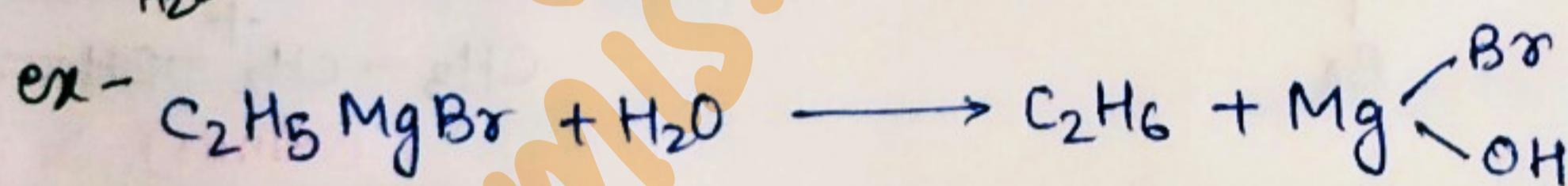
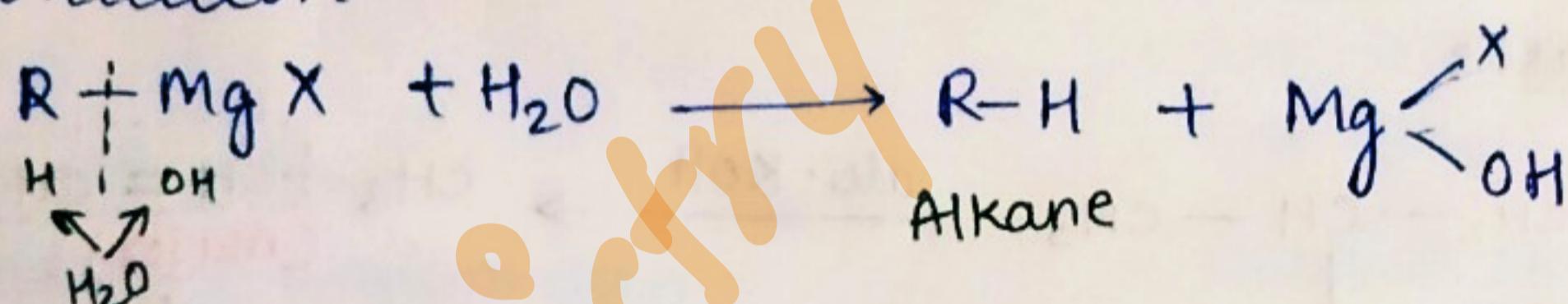
ex -



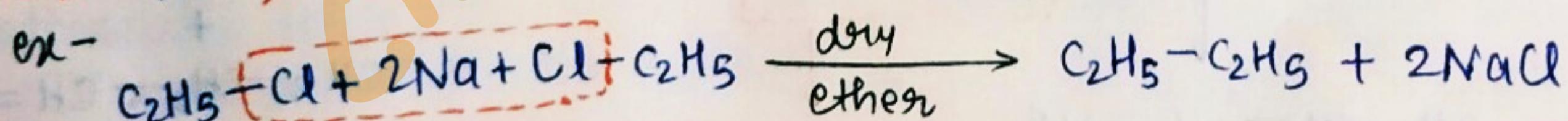
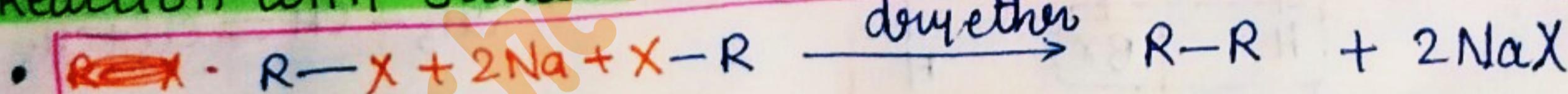
Q. Why Grignard reagent is prepared in presence of dry ether?
or

Why Grignard reagent is prepared under any anhydrous condition?

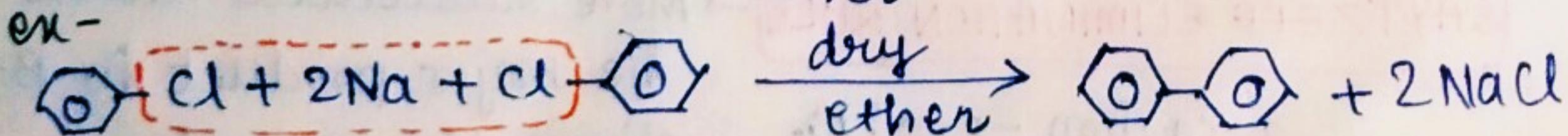
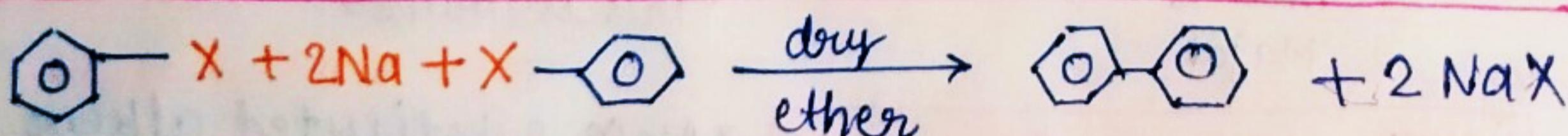
Ans \Rightarrow A Grignard reagent is very reactive. In the presence of moisture, they give alkane. That's why Grignard reagent ~~is~~ should be prepared under anhydrous condition.



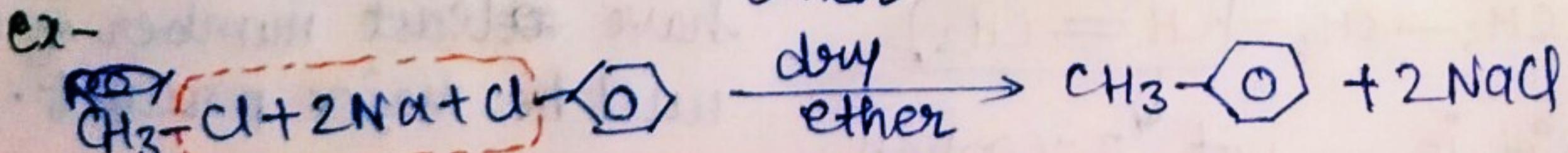
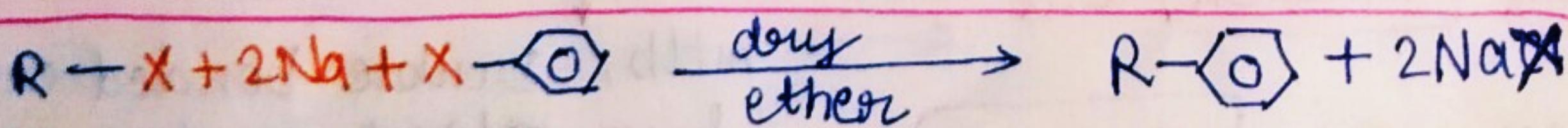
Reaction with Sodium



WURTZ REAXN



FITTIG REAXN

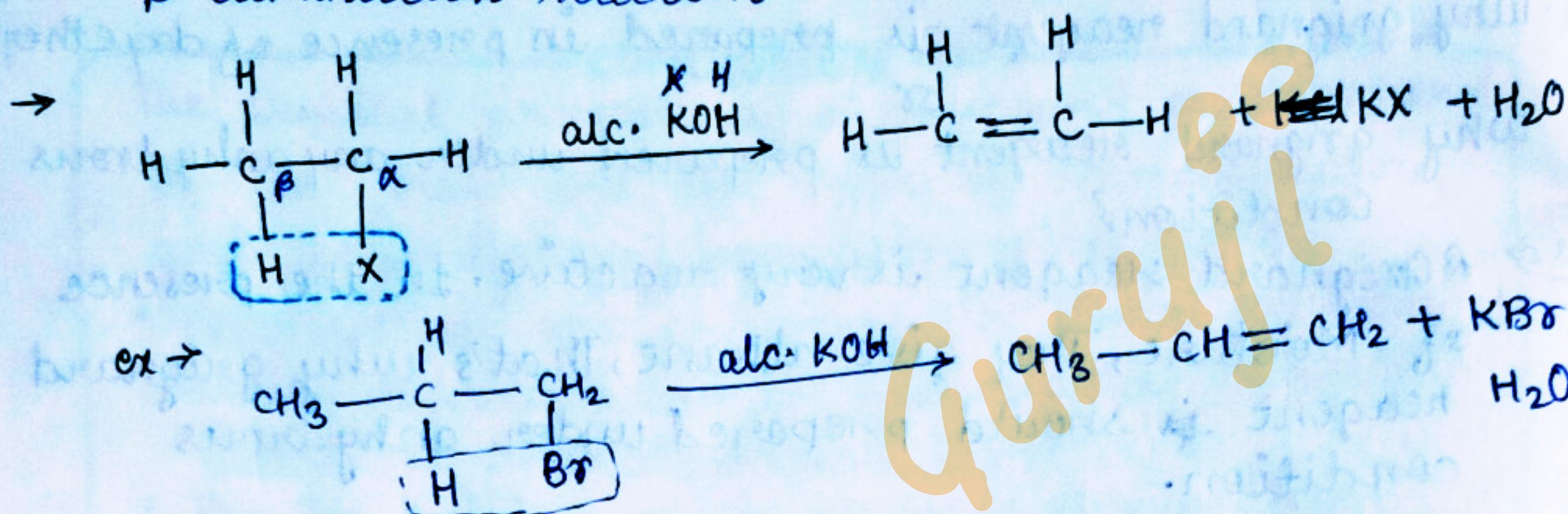


WURTZ-FITTIG REAXN

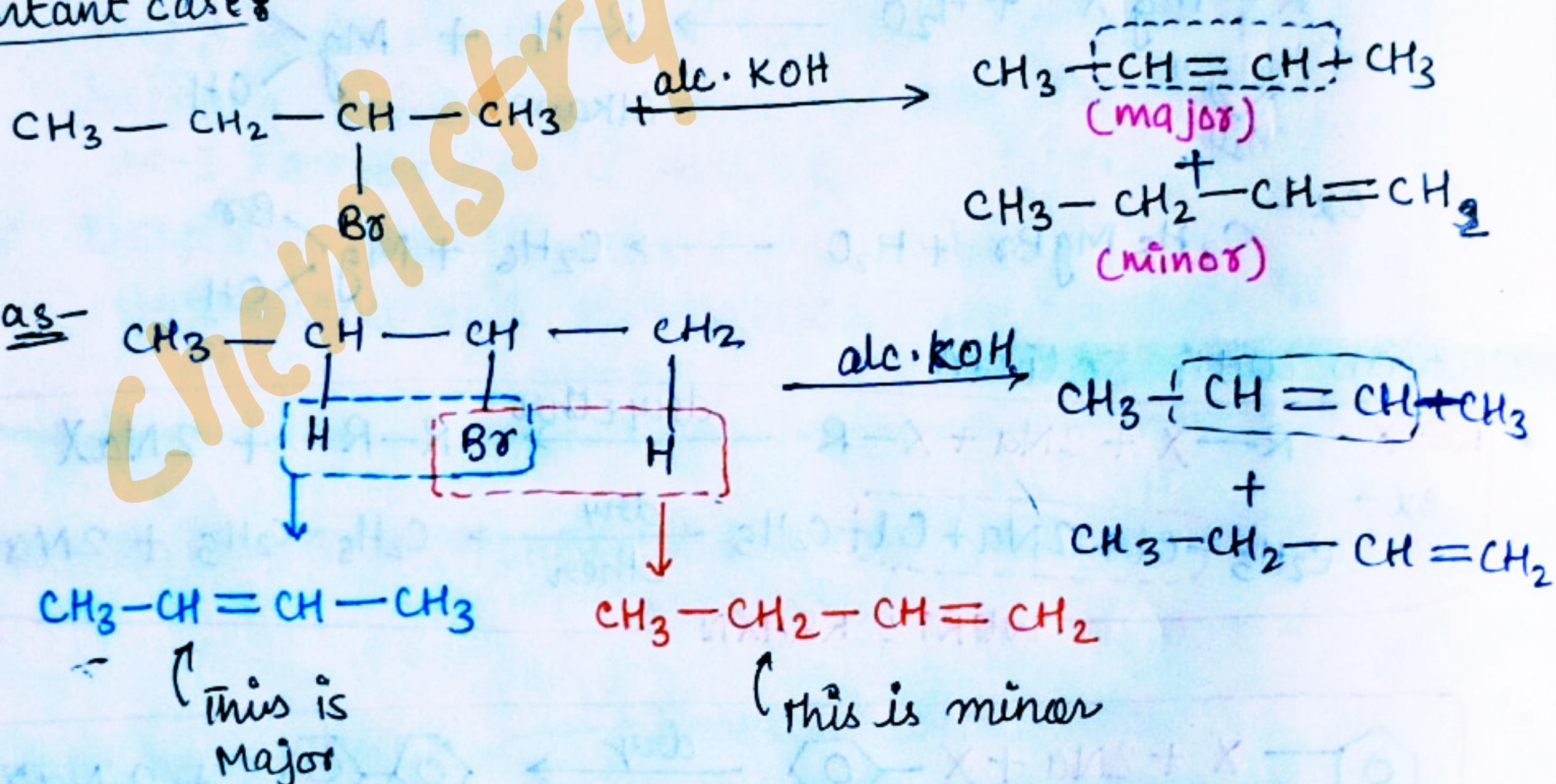
ELIMINATION REACTION

β -elimination Reaction
Other Name \hookrightarrow Dehydrohalogenation

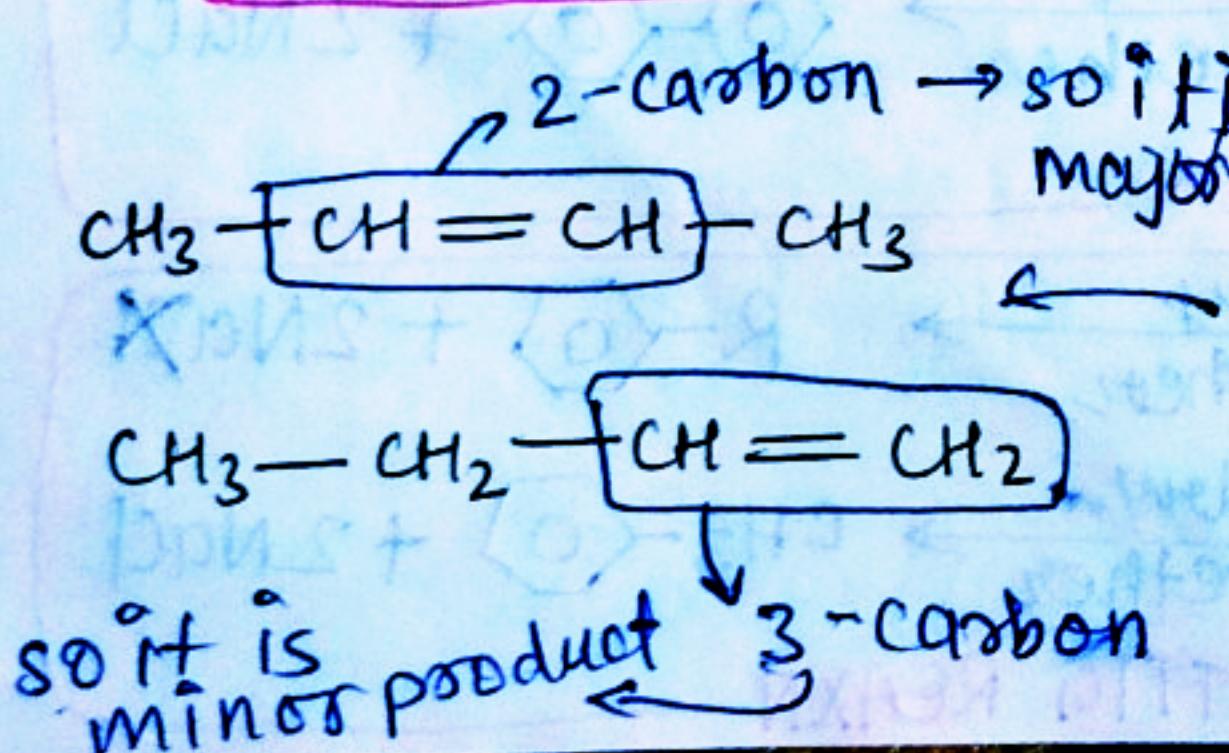
→ When an Haloalkane is treated with concentrated solution of alcoholic potassium hydroxide, a molecule of Hydrogen Halide is eliminated.
 'X' from α -carbon and 'H' from β -carbon is eliminated
 that's why, this reaction is also known as β -elimination reaction.



Important cases



SAYTZEFF ELIMINATION RULE



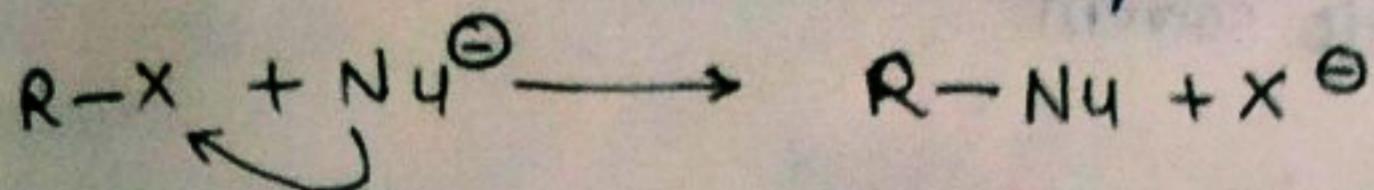
→ More substituted alkene will be major product in β -elimination Reaction.

ntlb, Double bonded carbon have ~~at least~~ number of H-atom will be Major product.

NUCLEOPHILIC SUBSTITUTION REAUX

Those substitution reaction in which an atom or group of atom is substituted by a nucleophile.

100% chance



Nucleophile

- Nucleus (+ve charge) loving chemical substance
- Neutral → $\ddot{N}H_3$, H, $R-\ddot{N}H_3$
- Negative → OH^- , I^- , CN^-

Nucleophilic substitution Reaction

S_N1

[Unimolecular Nucleophilic Substitution Reaction]

- Rate $\propto [R-X]$
- 1st order reaction
- Racemisation of configuration
- 2 step Mechanism

formation of $\begin{matrix} \swarrow \\ \text{Carbocation} \end{matrix}$ $\begin{matrix} \searrow \\ \text{Attack of} \end{matrix}$ $\begin{matrix} \nearrow \\ \text{Nucleophile} \end{matrix}$

- Stability of carbocation Matters the Most.

$$3^\circ > 2^\circ > 1^\circ$$

- Reactivity order:

(a) $3^\circ > 2^\circ > 1^\circ$ (1 से 1 नफरत)

(b) $R-I > R-Br > R-Cl > R-F$

S_N2

[Bimolecular Nucleophilic Substitution Reaction]

- Rate $\propto [R-X][Nu^-]$
- 2nd order reaction
- Inversion of configuration
- 1 step mechanism

- less steric hindrance Matters the Most
- polar aprotics solvent is used. \rightarrow lack of Proton

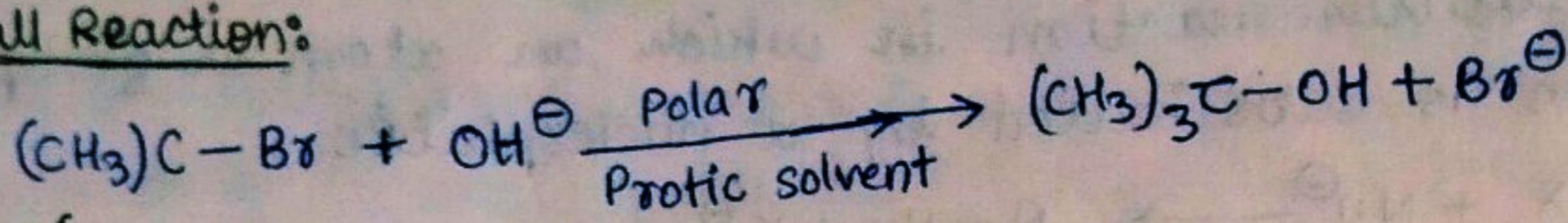
- Reactivity order:

(a) $1^\circ > 2^\circ > 3^\circ$

(b) $R-I > R-Br > R-Cl > R-F$

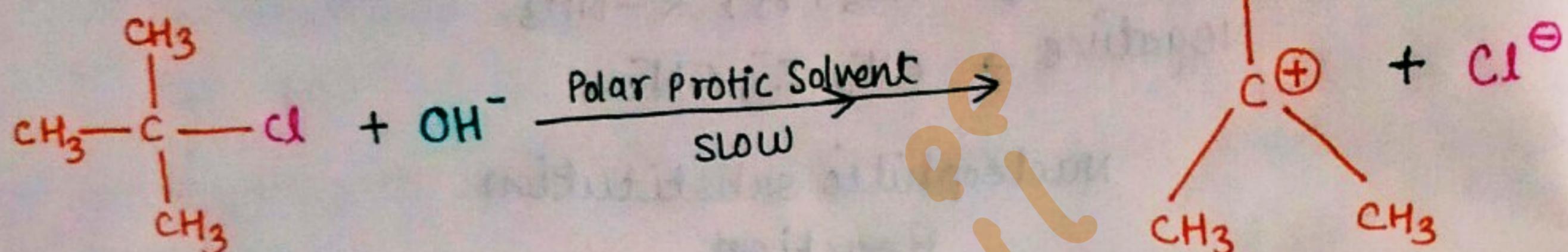
SN₁ Reaction [Unimolecular Substitution Nucleophilic reaction]

overall Reaction:

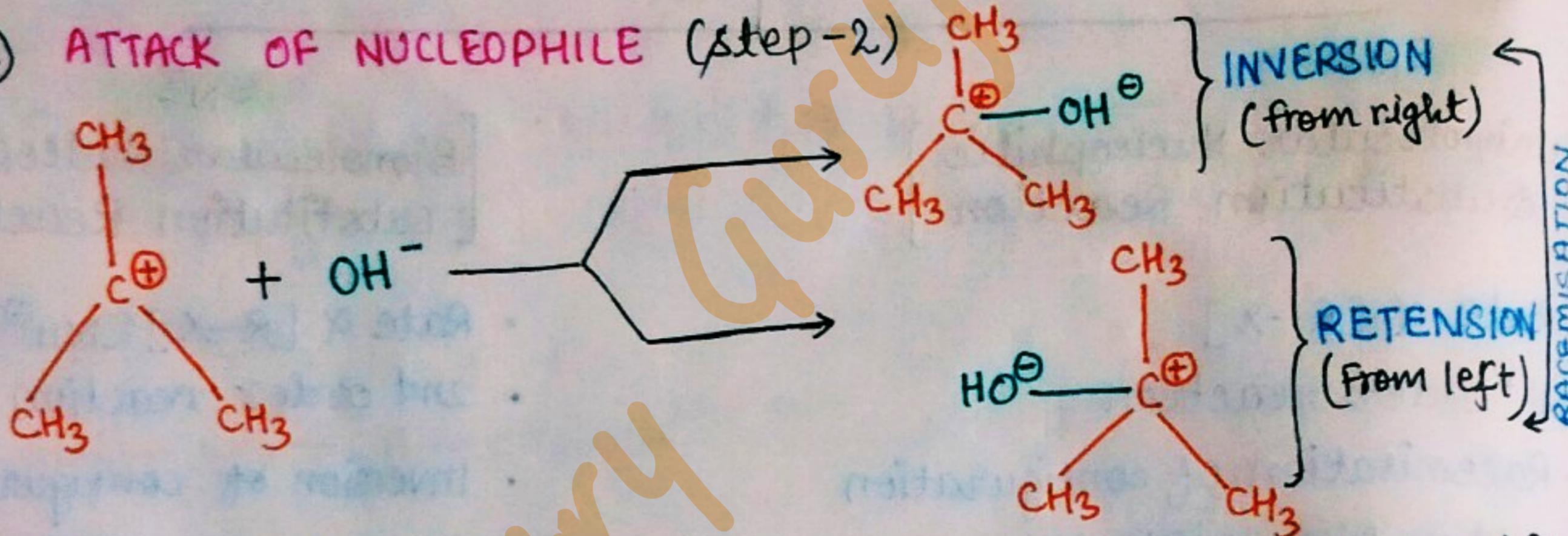


This reaction is complete in 2 step:

① FORMATION OF CARBOCATION (step 1)

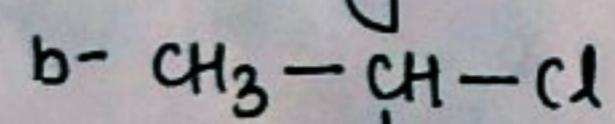
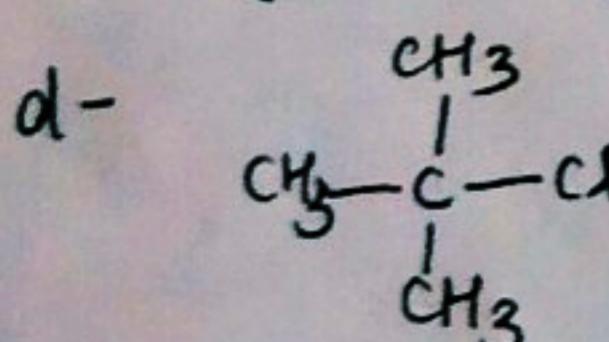
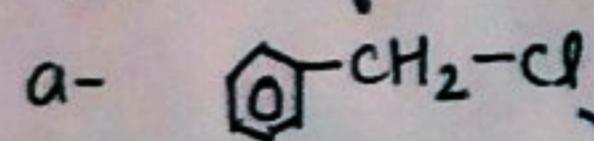


② ATTACK OF NUCLEOPHILE (Step-2)

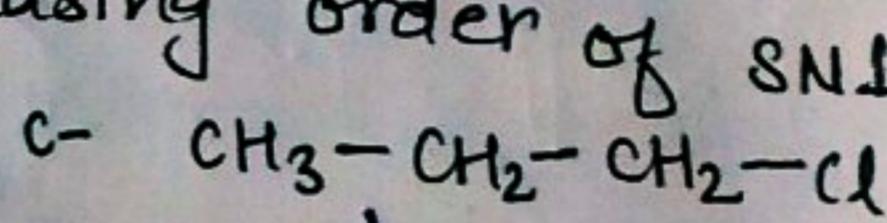


- Two step reaction : ① Formation of carbocation ② Attack of Nucleophile
 - carbocation is formed
 - Rate $\propto [\text{R-X}]$
 - 1st order reaction
 - Racemisation of configuration occurs
 - Reactivity order : (a) $3^\circ > 2^\circ > 1^\circ$ (1 से 1 नफरत)
 - (b) $\text{R-I} > \text{R-Br} > \text{R-Cl} > \text{R-F}$
 - Polar protic solvent is used
- $\xrightarrow{\text{Inversion}}$ $\xrightarrow{\text{Retention}}$

Q. Arrange the following in increasing order of SN₁ reaction



Benzyllic

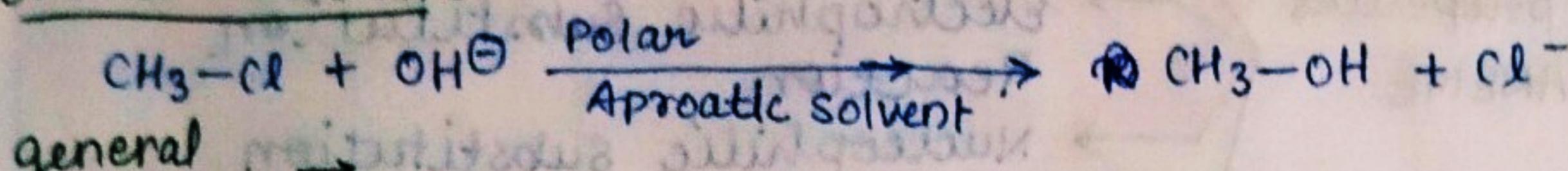


Alkyl

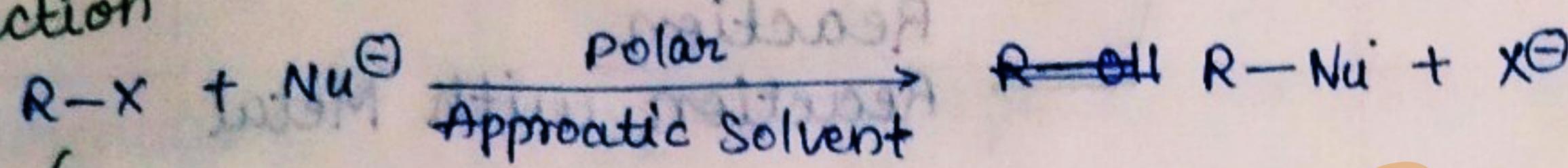
$c < b < d < a$

SN₂ REACTION [Bimolecular Nucleophilic Substitution Reaction]

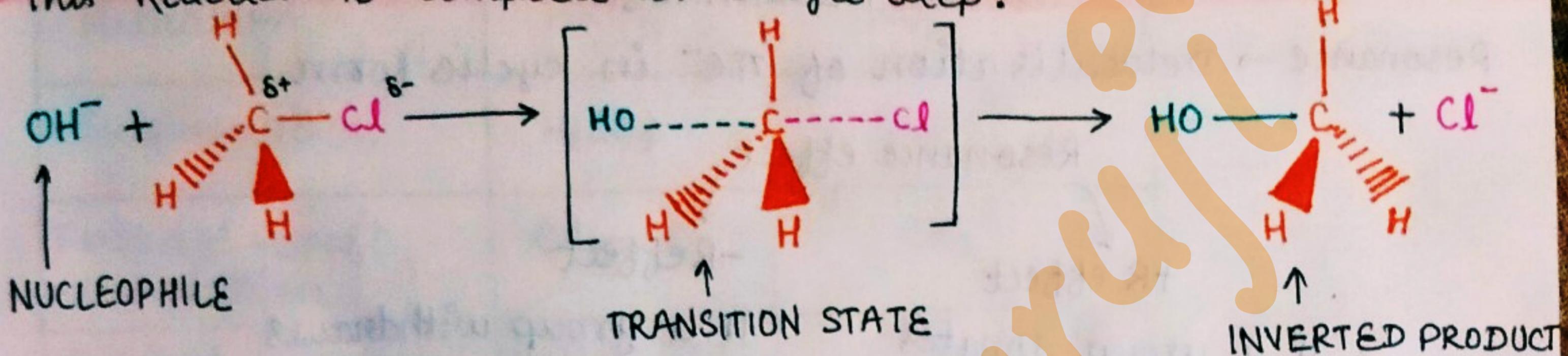
overall reaction:



general reaction →

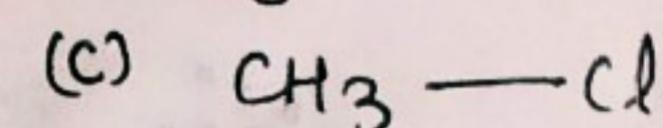
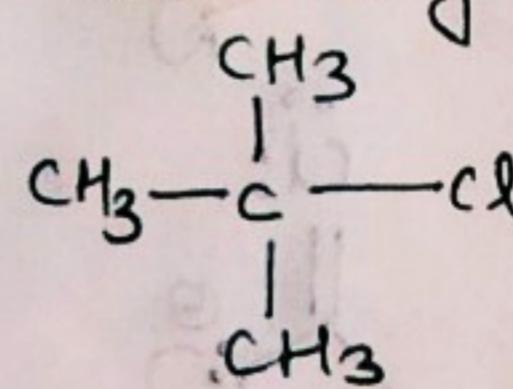
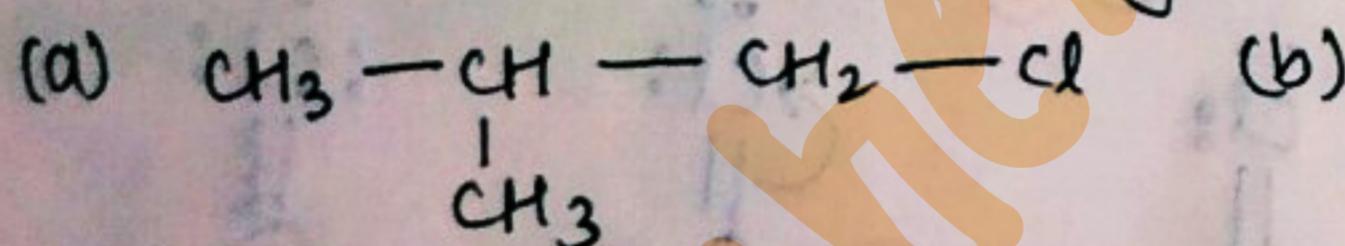


This Reaction is complete in single step:



- single step reaction
- Transition state is formed.
- Rate $\propto [\text{R-X}] [\text{Nu}^-]$
- 2nd order reaction
- Inversion of configuration
- polar aprotic solvent is used.
 → lack of proton
- Reactivity order : (a) $1^\circ > 2^\circ > 3^\circ$
 (b) $\text{R-I} > \text{R-Br} > \text{R-Cl} > \text{R-F}$
- Ease of SN₂ Reaction \propto simple compound.

Q. Arrange the following in increasing order of SN₂ reaction



$C > D > A > B$

$0^\circ \downarrow \quad 1^\circ \downarrow \quad 2^\circ \downarrow \quad 3^\circ \downarrow$

High steric
hindrance than
D-option

CHEMICAL PROPERTY OF HALOARENES

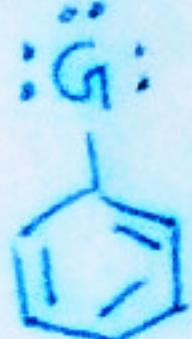
Chemical properties of HALOARENES

- Resonance in Haloarene
- Electrophilic substitution Reaction
- Nucleophilic substitution Reaction
- Reaction with Metal

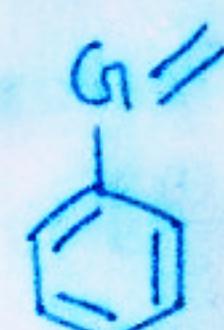
RESONANCE

Resonance → Delocalisation of πe^- in cyclic form

- Resonance effect
 - +R effect
 - R effect
- If a group donates e^- to the conjugated system.
- If a group withdraws e^- from the conjugated system.

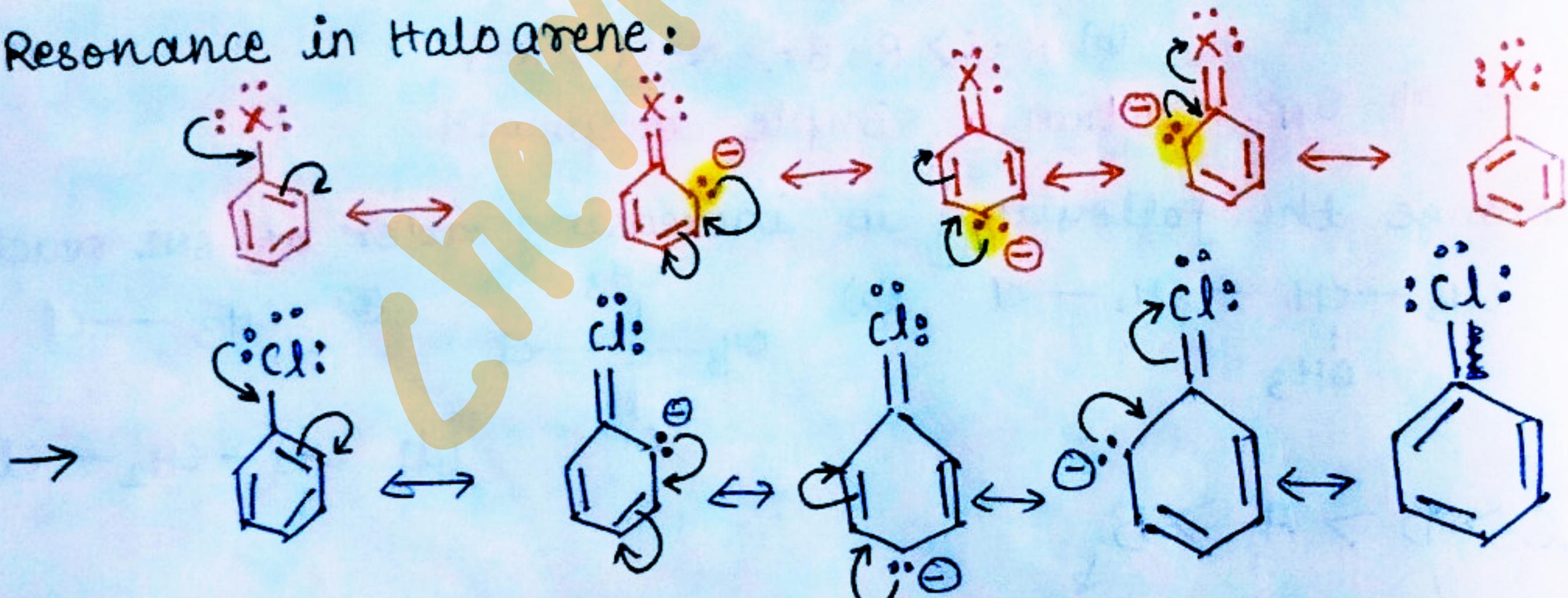


- Activating group
- ortho and para directing group



- deactivating group
- Meta directing group.

Resonance in Haloarene:



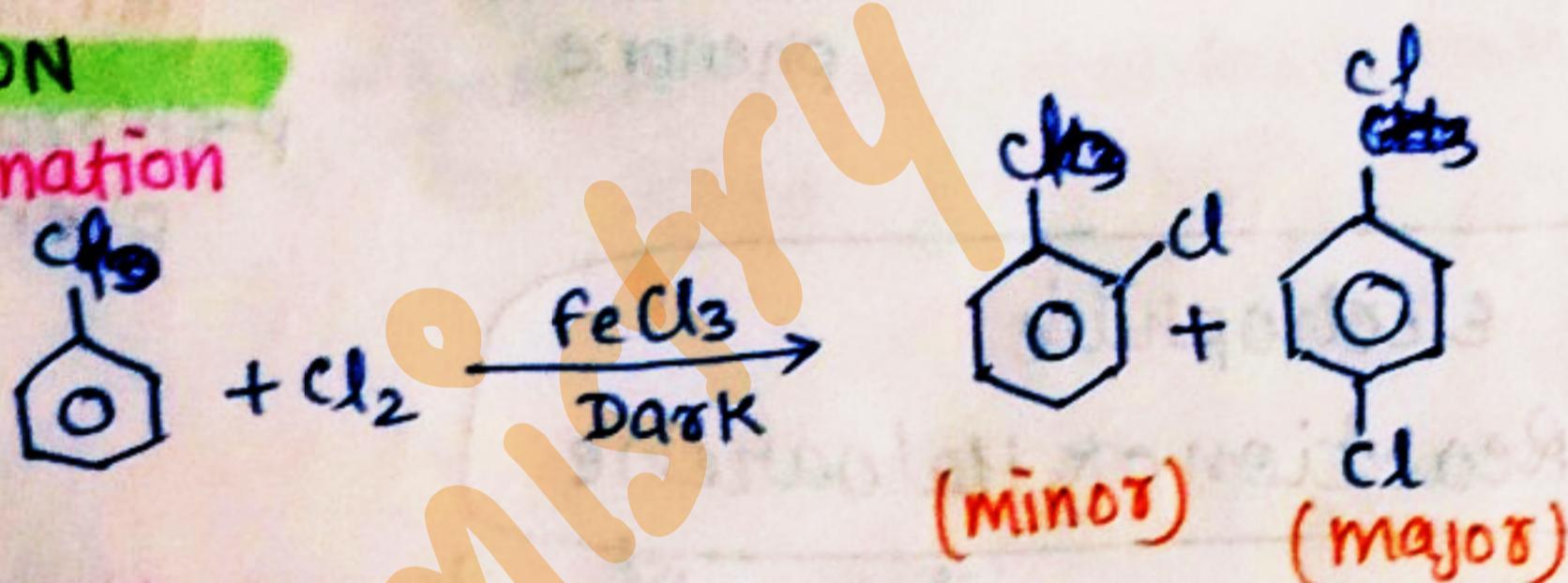
↳ ∵ ortho and para directing, Electrophile (E^+) will attack ortho and para position becauz, there is -ve charge at these position.

ELECTROPHILIC SUBSTITUTION REACTIONS

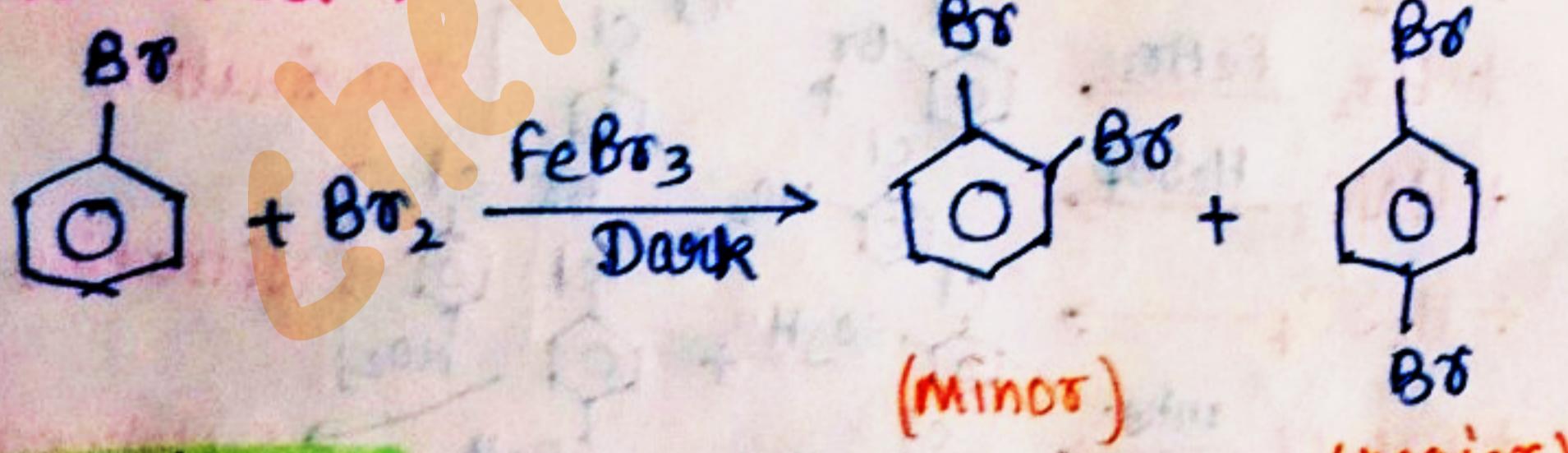
Type of Electrophilic Subs. Reaction	Done with	Attack of electrophile at Benzene ring
Halogenation	X_2	X^\oplus
Nitration	HNO_3	NO_2^\oplus
Sulphonation	H_2SO_4	SO_3H^\oplus
Friedel-Crafts Alkylation	CH_3-Cl	CH_3^\oplus
Friedel-Crafts Acylation	CH_3-COCl	CH_3-CO^\oplus

① HALOGENATION

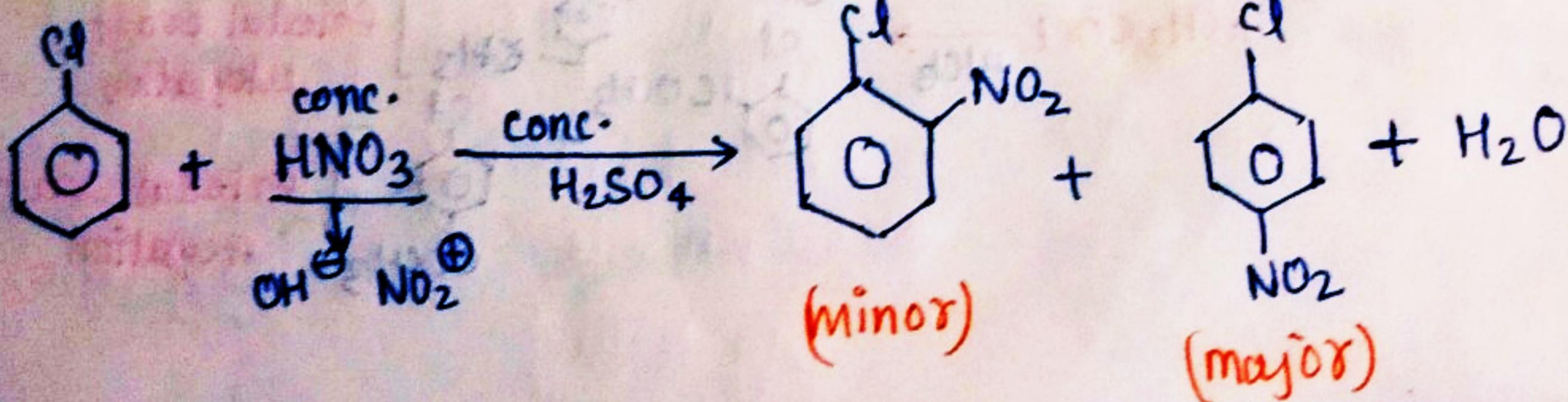
(a) chlorination



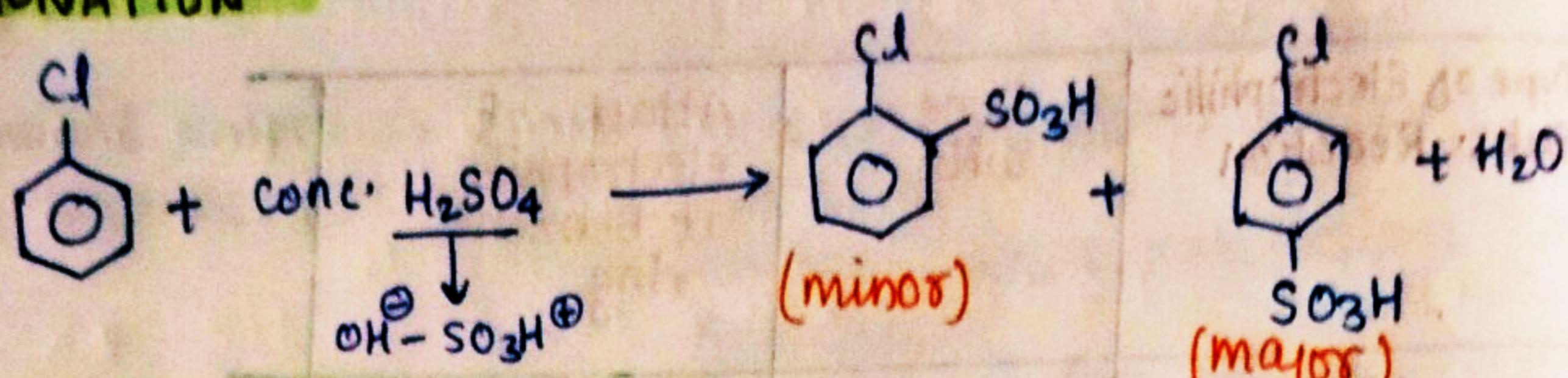
(b) Bromination



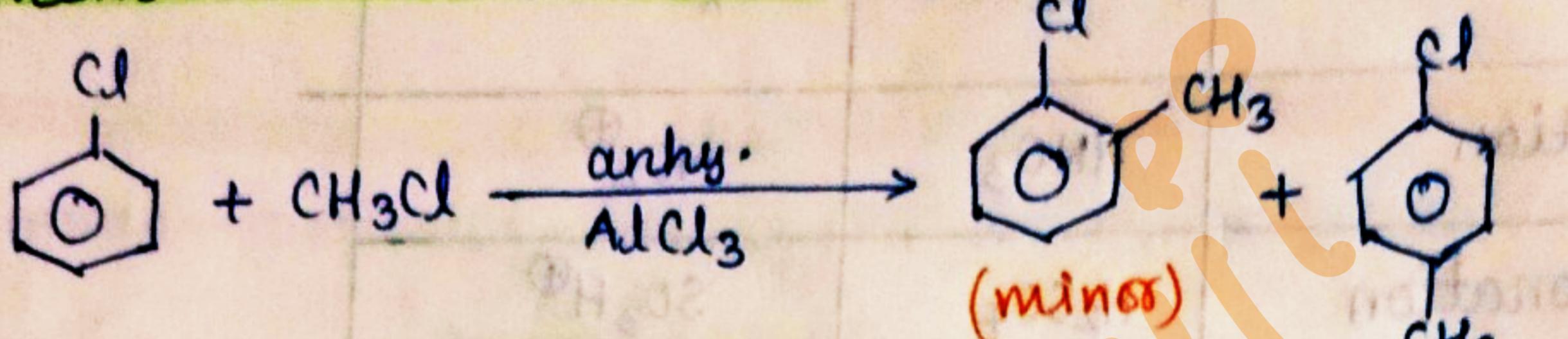
② NITRATION



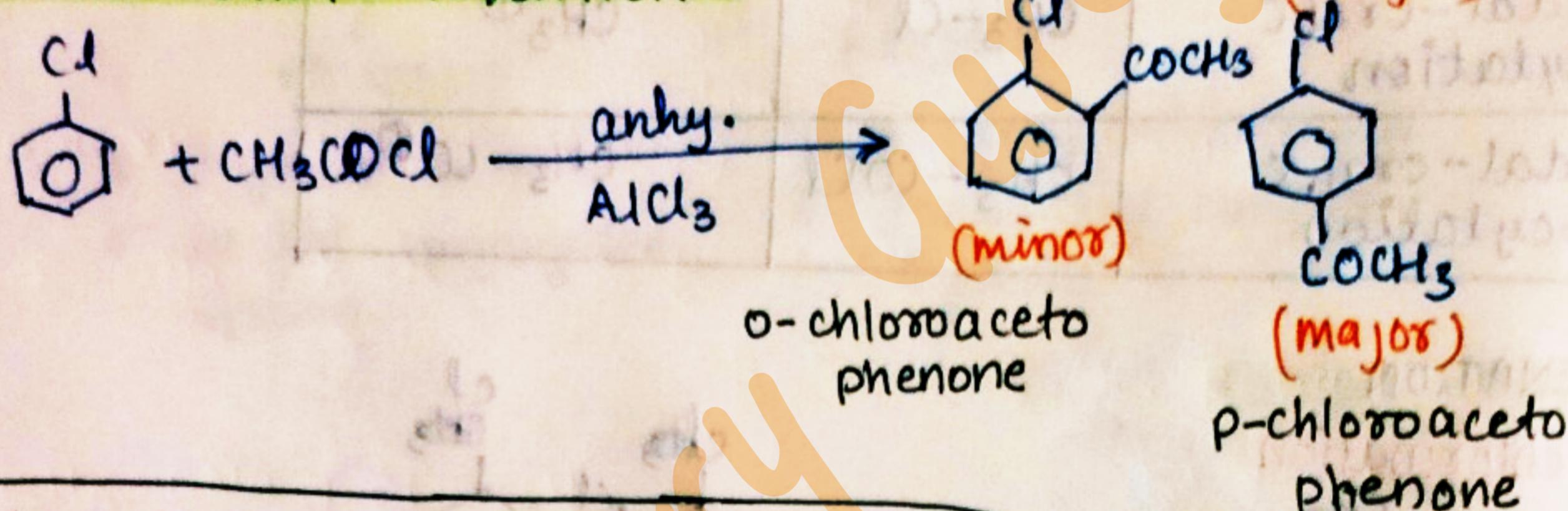
③ SULPHONATION



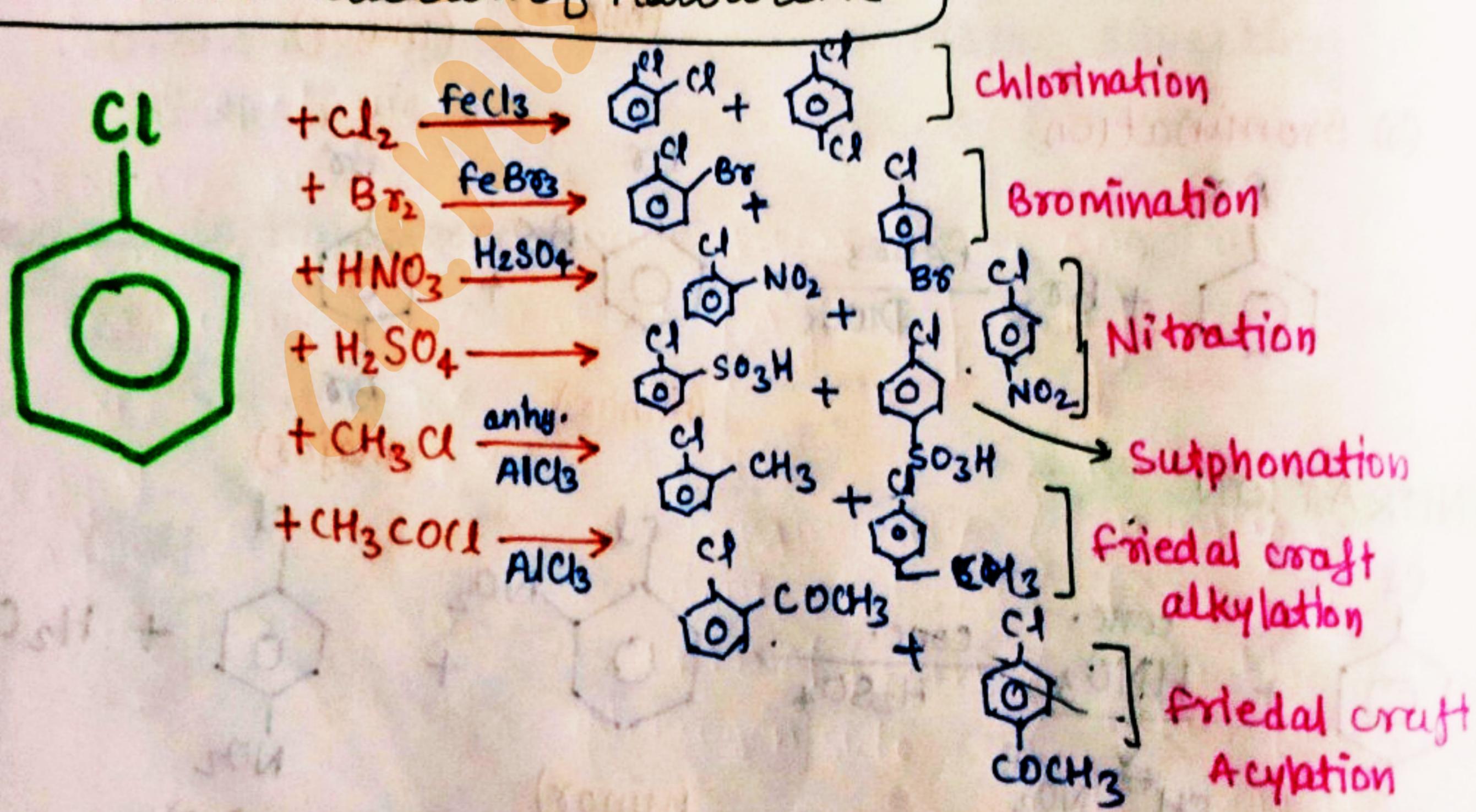
④ FRIEDEL-CRAFT ALKYLATION



⑤ FRIEDEL-CRAFT ACYLATION

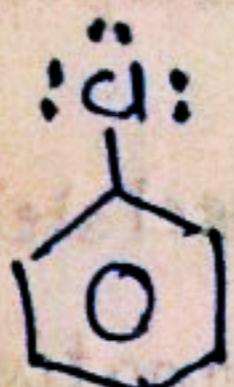


Quick Recap of Electrophilic Substitution Reaction of Haloarene

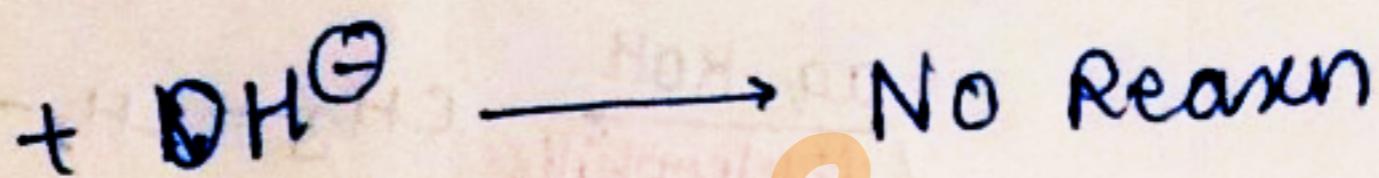
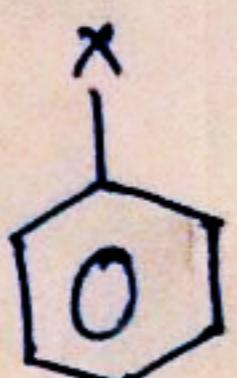


NUCLEOPHILIC SUBSTITUTION REAQN

Those reaction in which an atom or group of atom is substituted by a Nucleophile.

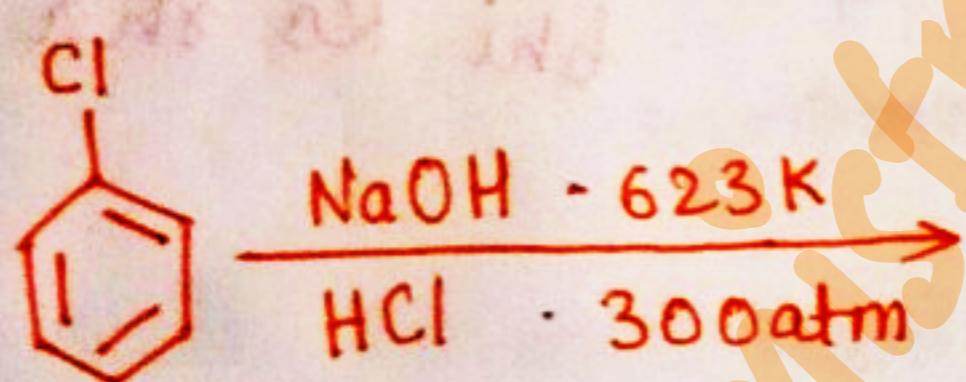


or

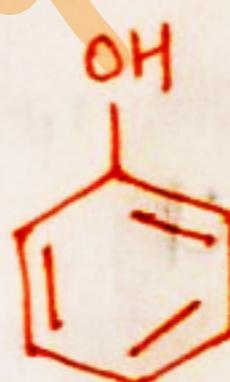


- Haloarenes doesn't undergo nucleophilic substitution
- Reaction becoz in haloarenes C-X bond have partial double bond character due to resonance, which is not easy to break.

Dow's process: → Haloarene ko jabardasti reaction ke liye use kiya jata hai.



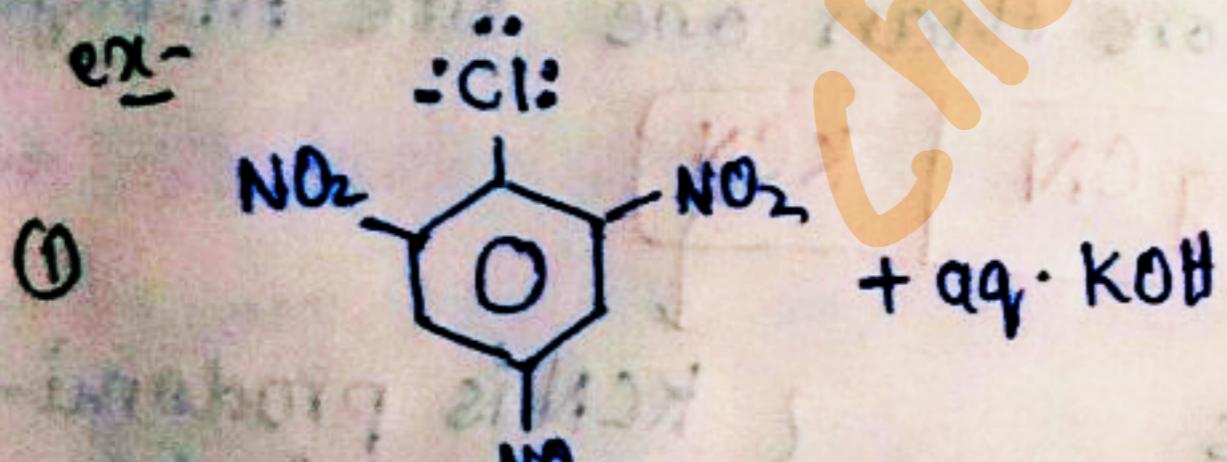
chlorobenzene



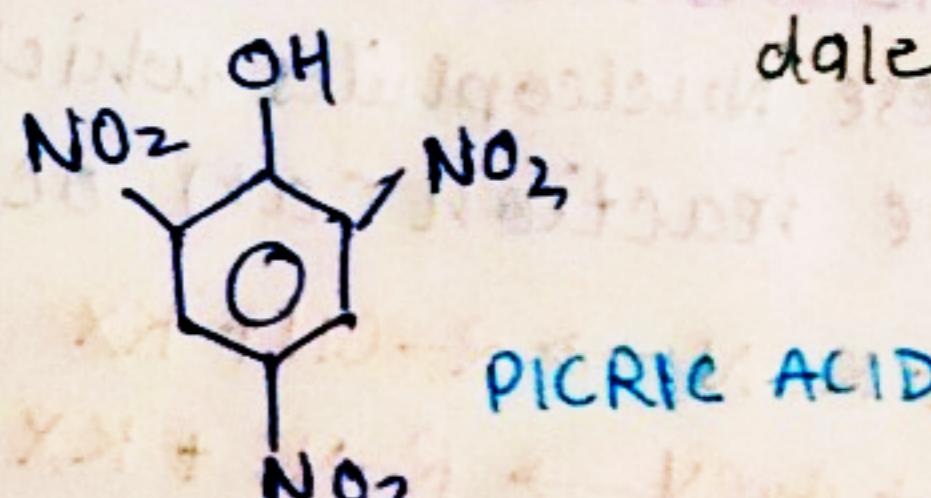
Phenol

D.C.P. B.A. pass.
Dow's process me
Phenyl Benzene
chlorobenzene se

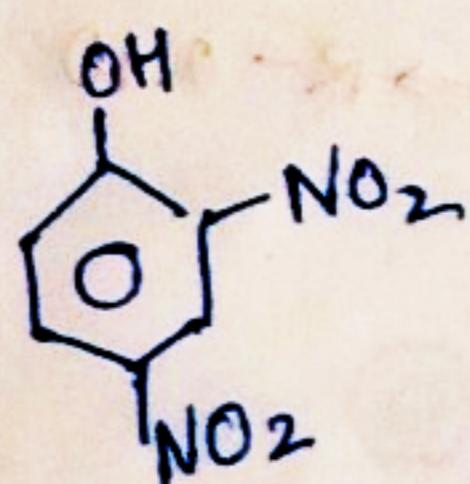
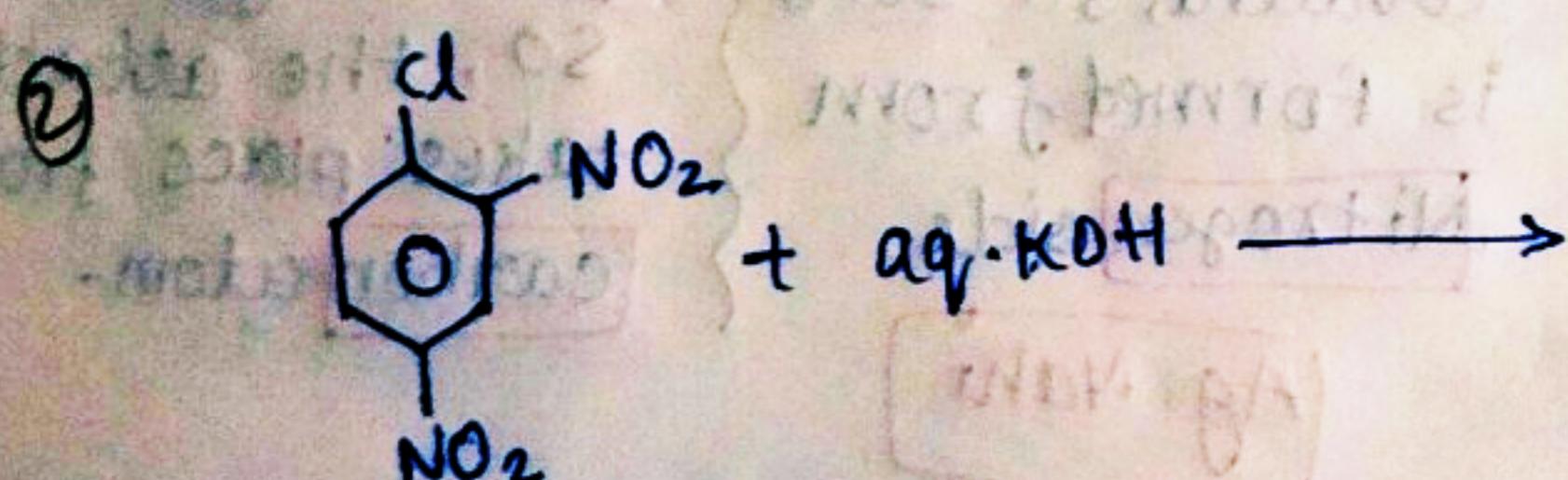
uske liye
Base & Acid
dalenge



1-chloro-2,4,6-Tinitrobenzene



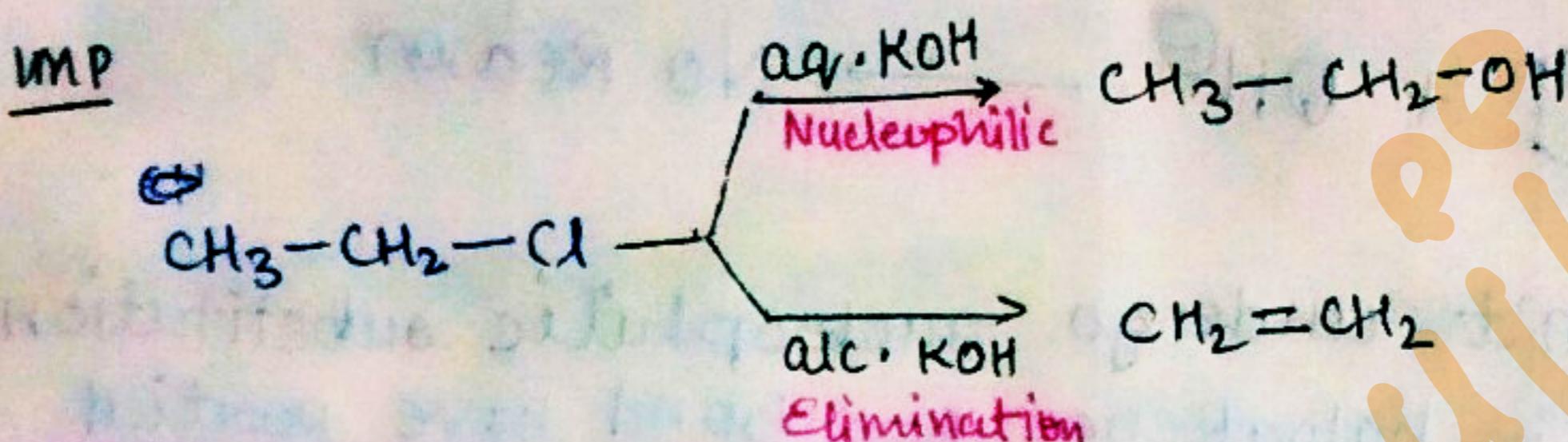
2,4,6-Tinitrophenol



2,4-di Nitrophenol

TYPES OF NUCLEOPHILIC SUBSTITUTION REACTION OF HALOALKANE:

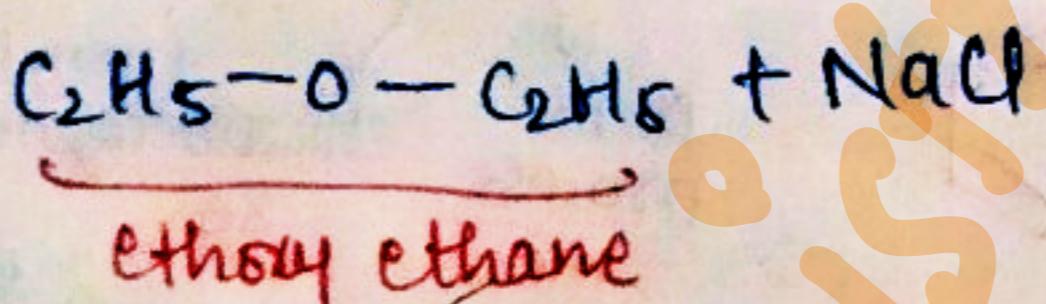
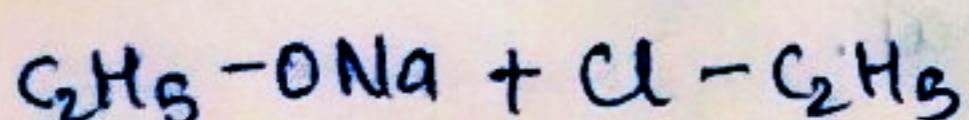
- ① $R-X + KOH \rightarrow R-OH + NaX$ > Nucleophilic
- ② $R-X + NaOH_{(aq)} \rightarrow R-OH + NaX$
- ③ $R-X + NaI \rightarrow R-I + NaX$ — Finkelstein Reacn.
- ④ $R-X + aq\cdot KOH \rightarrow R-OH + KX$ — Elimination Reacn
- ⑤ $R-X + H_2O \rightarrow R-OH + HX$ — Elimination Reacn



WILLIAMSON'S SYNTHESIS (100%) $\rightarrow S_N2$ Mechanism



OR -



Trick: Rong Haloalkane

Ki yaad me fir
bhi Ro rha hai-

AMBIDENTATE NUCLEOPHILE

These Nucleophiles which have more than one site through the reaction can occur.

- ① $R-X + KCN \rightarrow R-CN + KX$
- ② $R-X + AgCN \rightarrow R-NC + KX$
- ③ $R-X + AgNO_2 \rightarrow R-NO_2$
- ④ $R-X + KNO_2 \rightarrow R-ONO$

$\boxed{Ag\ CN \quad KCN}$

AgCN is predominantly covalent, so bond is formed from Nitrogen side

KCN is predominantly ionic form ~~of~~ SO, the attack takes place from carbon atom.

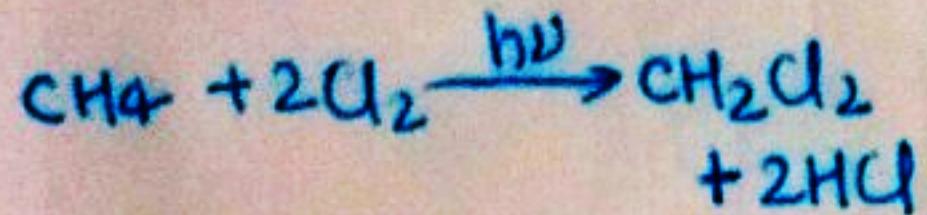
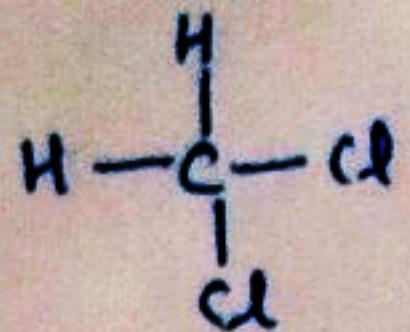
$\boxed{Ag\ Nahn}$

Trick

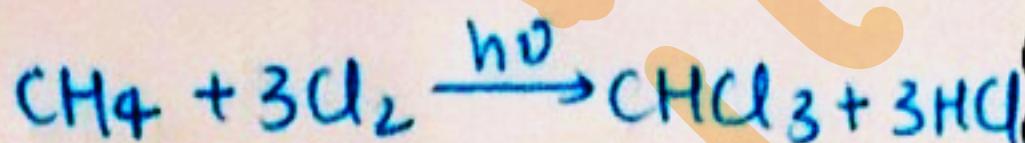
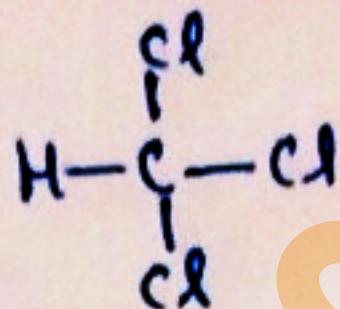
POLYHALOGEN COMPOUND

Brie compound which contain more than one halogen and useful in industry and agriculture.

Dichloromethane (CH_2Cl_2)
methylene chloride

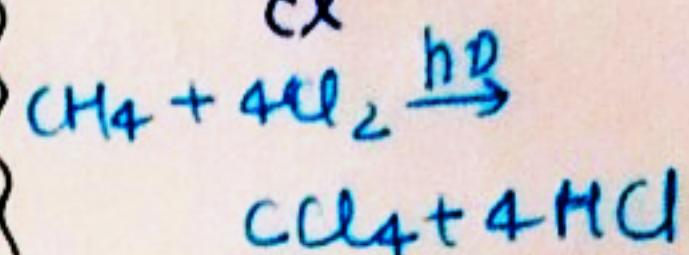
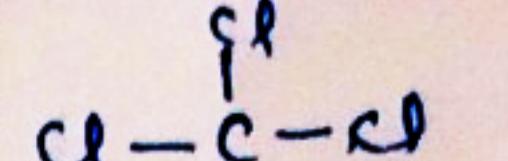


Trichloromethane (CHCl_3)
chloroform



Tetrachloromethane (CCl_4)

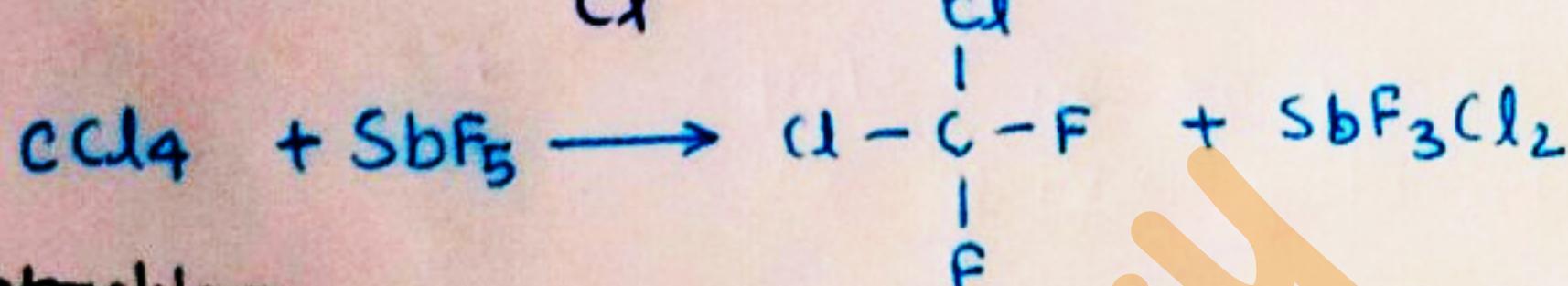
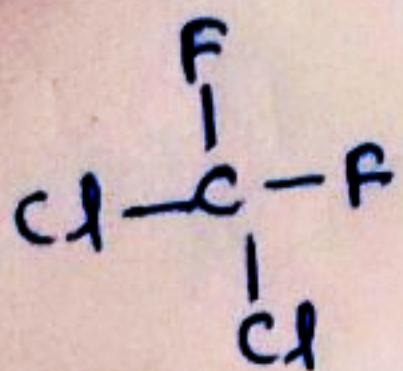
carbon-Tetra
chloride



Freons 

CFC (chlorofluoro Carbon)

Freon - 1,2



Tetrachloro
methane

1,1-dichloro-1,1-difluoromethane

→ CFCs are known as Freons

→ These are extremely stable, unreactive, non-toxic, non-corrosive and easily liquifiable gas.

→ used in AC and refrigerators

→ Responsible for the depletion of ozone layer.

DDT (Dichloro Diphenyl Trichloroethane)

→ DDT was used widely to kill mosquito at spreads malaria.

→ Many species of DDT ~~and~~ insects develop resistance toward DDT and it was discovered to have toxicity against Fish.

→ DDT was not metabolised rapidly by animals & it ~~is~~ is fat soluble, stored in fatty tissues.

