

OC Mega Revision

● **Live** at 8:00 PM

5th April - 24th April



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SD Card Included

JEE T-22

Warriors 1.0-For Droppers

NEET T-22

Warriors 1.0-For Droppers

Link in Description

Get Top Ranks in IIT-JEE/NEET with eSara! APP



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9024464479 / 6376440597



SD Card Included

Early Starter Batch

New Batch 16 April

JEE - 2023
Main + Advanced
BrahMos Course

The advertisement features a dark blue background with a rocket launch illustration. A yellow banner at the top left states 'SD Card Included'. A yellow circle on the right contains the text 'Early Starter Batch', and a blue circle below it says 'New Batch 16 April'. The main text 'JEE - 2023' is in large white letters, with 'Main + Advanced' in yellow and 'BrahMos Course' in large yellow letters below it.



SD Card Included

Early Starter Batch

New Batch 16 April

NEET-2023
BrahMos Course

The advertisement features a dark blue background with a rocket launch illustration. A yellow banner at the top left states 'SD Card Included'. A yellow circle on the right contains the text 'Early Starter Batch', and a blue circle below it says 'New Batch 16 April'. The main text 'NEET-2023' is in large white letters, and 'BrahMos Course' is in large yellow letters below it.

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SD Card Included



PRAHAAR JEE T-22
■ **PHASE-3** ■



PRAHAAR
■ **NEET T-22** ■

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2021

SD Card Included

SD Card Included

Bounce Back 2.0 Bounce Back 2.0

JEE Main

(All Attempts)



JEE

Main+Advanced



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JEE 2021

मैं भी

Bounce Back

करेगा!



with eSaral Crash Course 2021

APURV PRINCE



FIRST ROUND

39%ile

SECOND ROUND

99%ile



650+

2021

August

SD Card Included

NEET 2021

Shoot-Out 2.0

HURRY UP!



Get Top Ranks in IIT-JEE/NEET with eSara! APP



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What you get inside the course?



- Study from **Kota's Top IITian Faculties**
- **650+ Hours** of PCM Videos Lectures with best Visualisation
- **30000+ Solved Qs**
- Personalised date wise Time-table
- Live **4-Layered Doubt Solving System**
- Personalised 3-Layered **One to One Mentorship**
- **115 Fully Solved Topic wise segregated Practice Sheets with homework index & video solutions**

- **Solved Prev 10 years Chapterwise Qs**
- **Quick Revision Video Lectures and 90+ Mind Maps**
- **97 JEE Main and 94 JEE advanced 1hr Topic wise Tests**
- **3 Hour Regular Review tests and Test Series**
- **Instant Test Analysis Report**
- **Regular Motivation and Strategy Sessions**



Complete Chemistry Mega Revision Timetable

5 April

IUPAC + GOC

10%

7 April

Structural +
Stereo Isomerism

10%

9 April

Hydrocarbon

60%

12 April

Haloalkane &
Haloarenes

14 April

Alcohol, Phenol
& Ether

16 April

Carbonyl
Compounds

19 April

Oxidation,
Reduction,
Carboxylic Acid &
amines

21 April

**Polymer &
Environmental
Chem**

23 April

Biomolecule and
CIEL

Organic Chemistry Mega Revision Imp Qs Timetable

6 April

IUPAC + GOC

8 April

Structural +
Stereo Isomerism

10 April

Hydrocarbon

13 April

Haloalkane &
Haloarenes

15 April

Alcohol, Phenol
& Ether

17 April

Carbonyl
Compounds

20 April

Oxidation,
Reduction,
Carboxylic Acid &
amines

22 April

**Polymer &
Environmental
Chem**

24 April

Biomolecule and
CIEL



I Love Chemistry



Get Top Ranks in IIT-JEE/NEET with eSara! APP



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Samjho, dekho & yaad karo

Get Top Ranks in IIT-JEE/NEET with eSara! APP

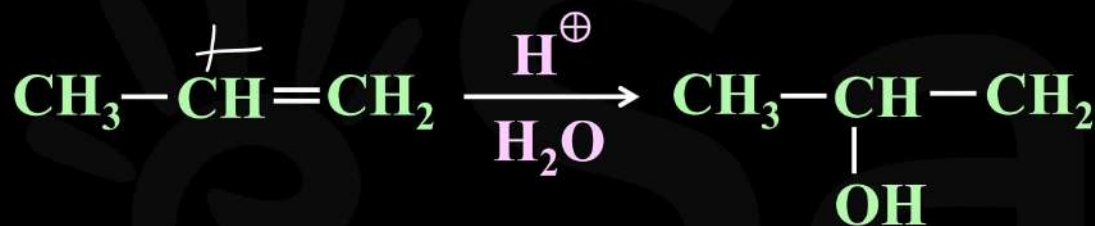


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General Methods of Preparation

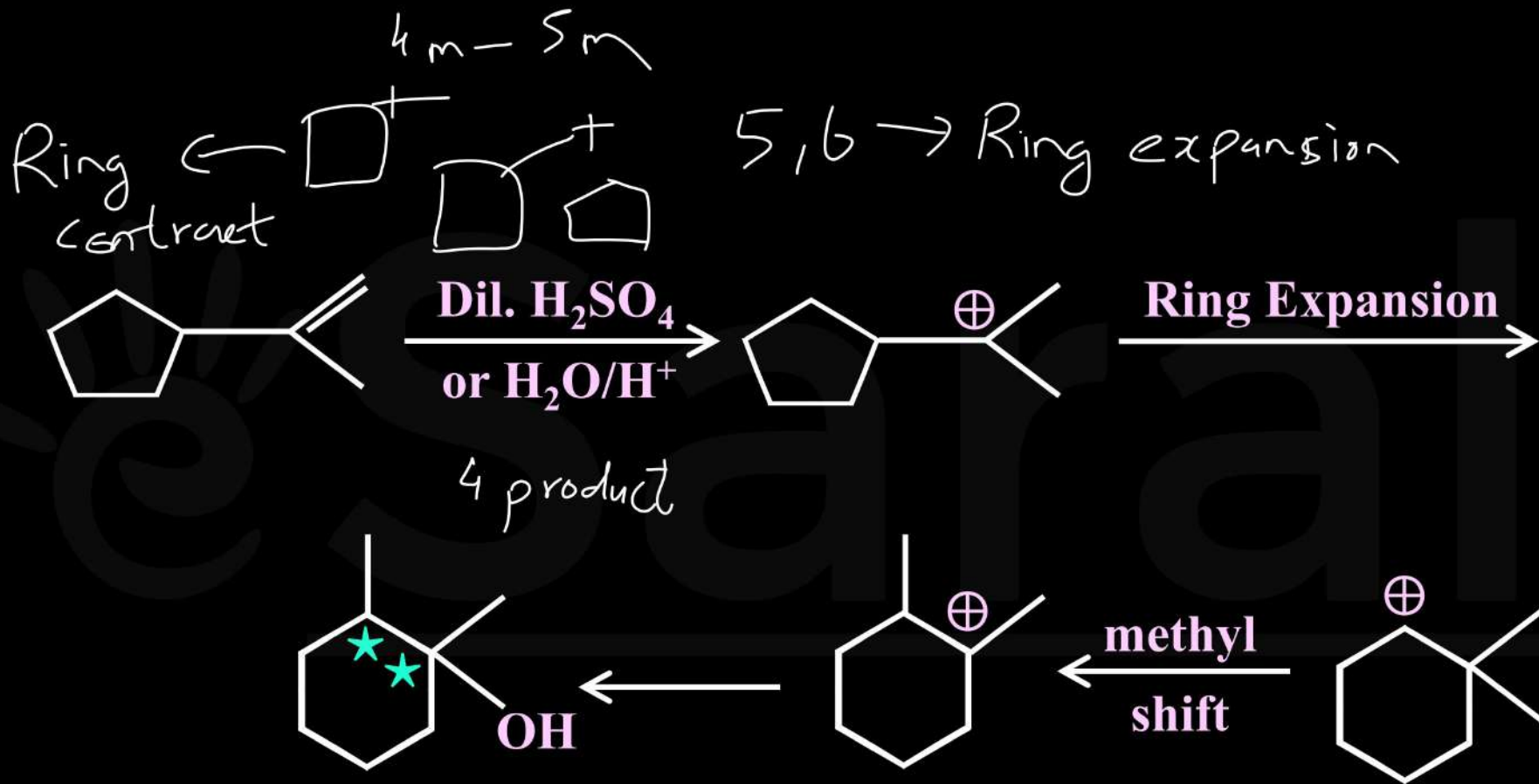
HBD
OMDM

By Hydration



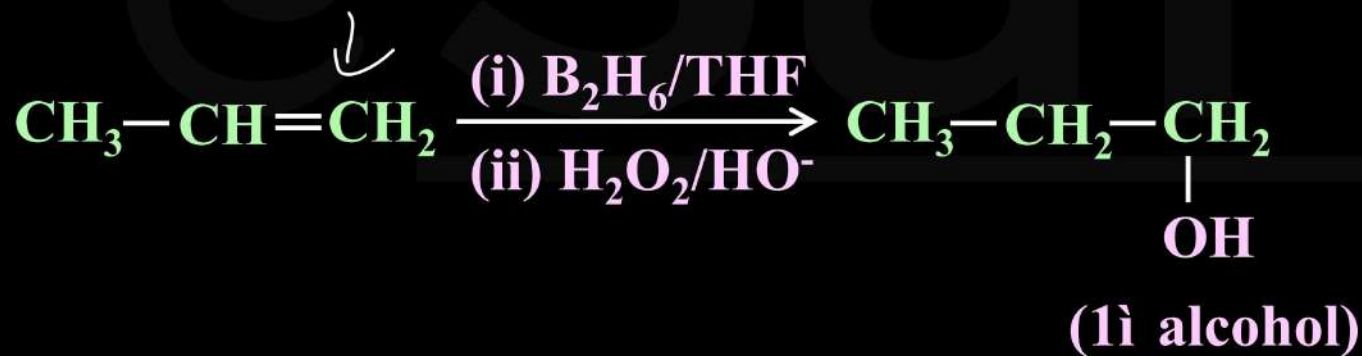
Carbocation intermediate so rearrangement is possible.



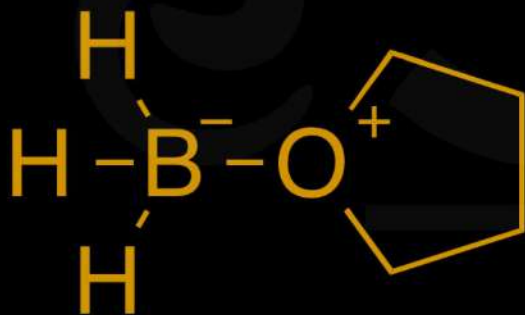


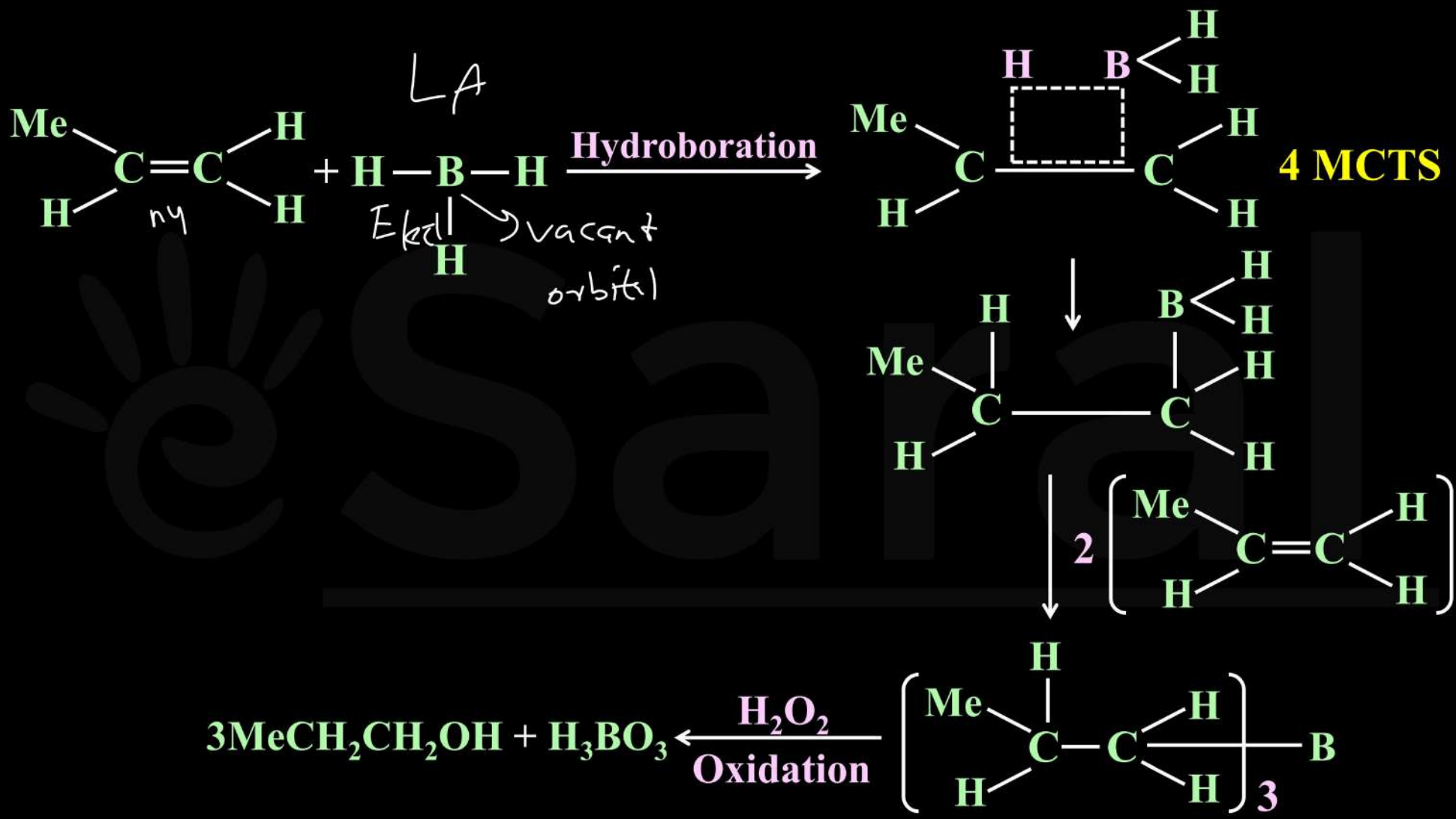
By Hydroboration Oxidation (HBO)

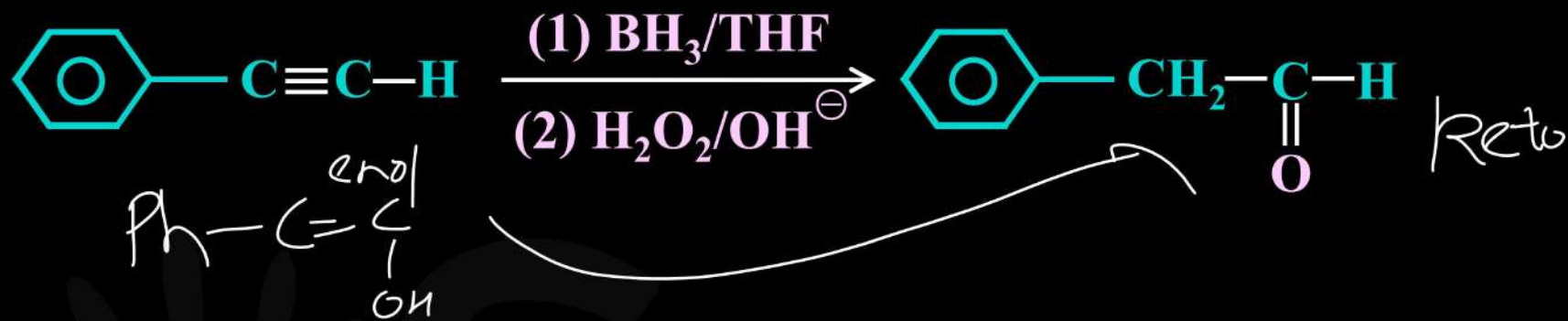
Takes place by **Anti Markovnikov** Rule in presence of H_2O_2 without Carbocation Rearrangement.



Mechanism







By Oxymercuration Demercuration (OMDM)

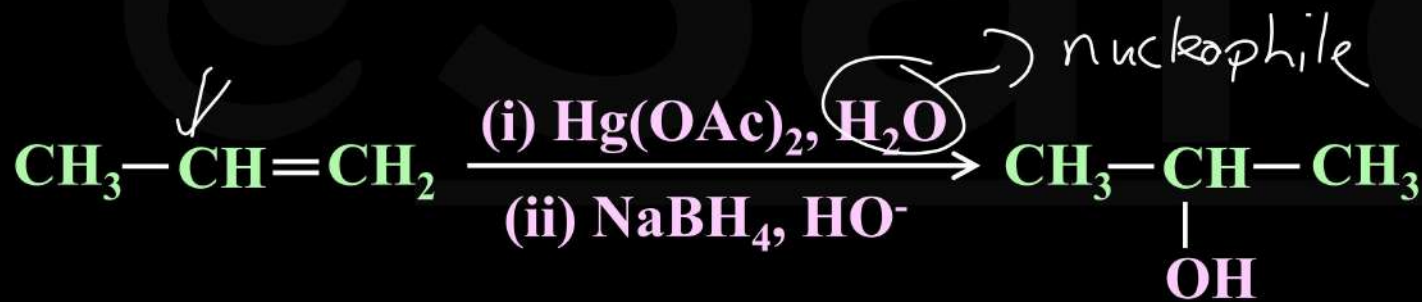
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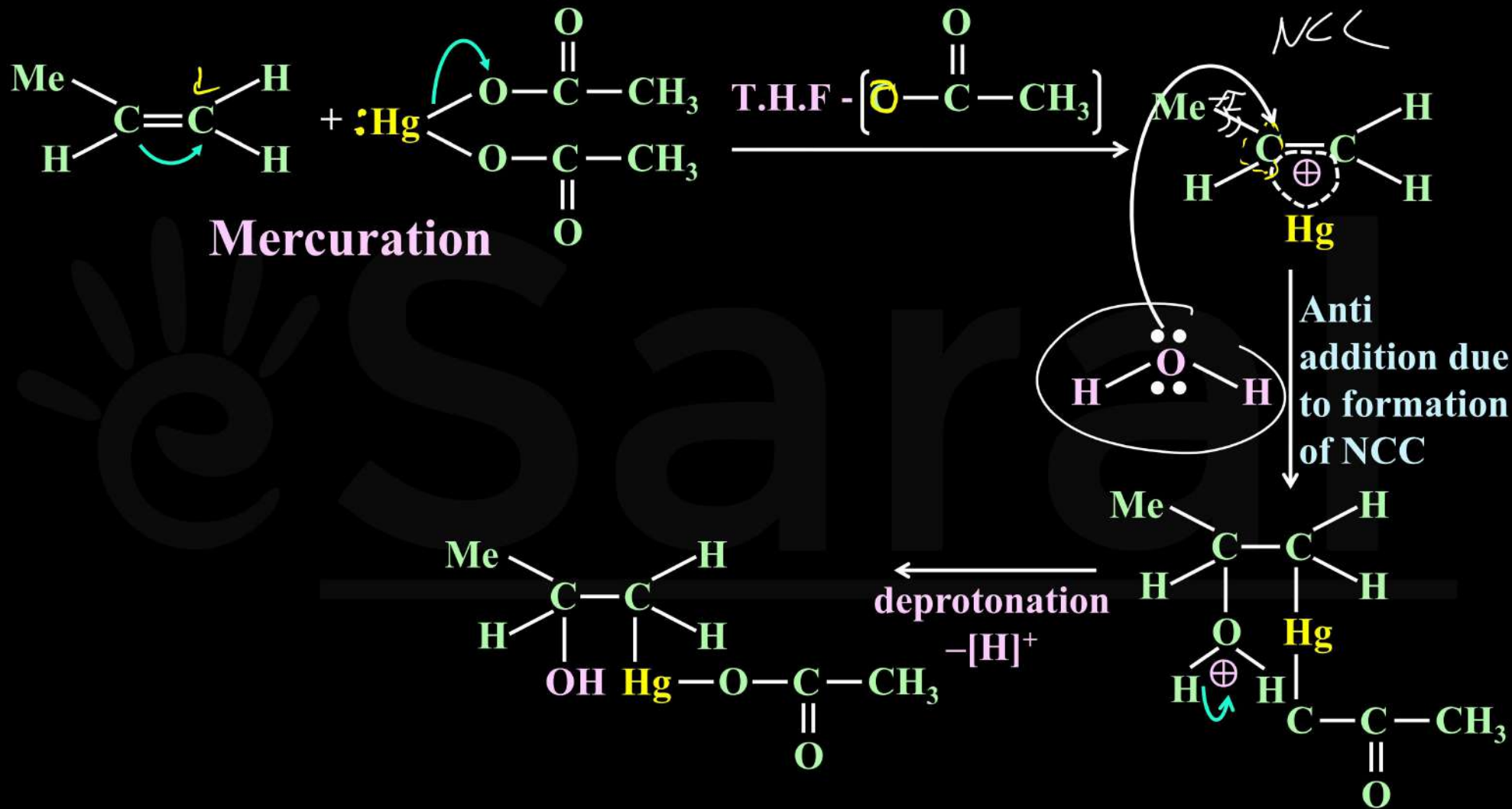


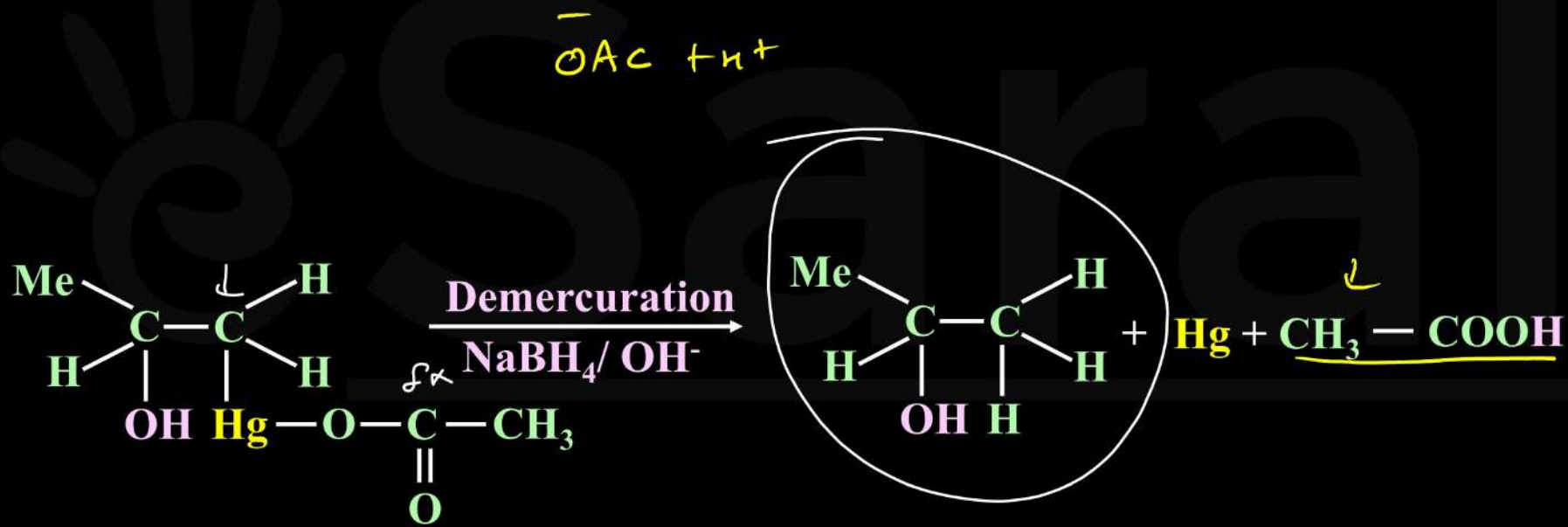
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Takes place by **Markovnikov rule**.

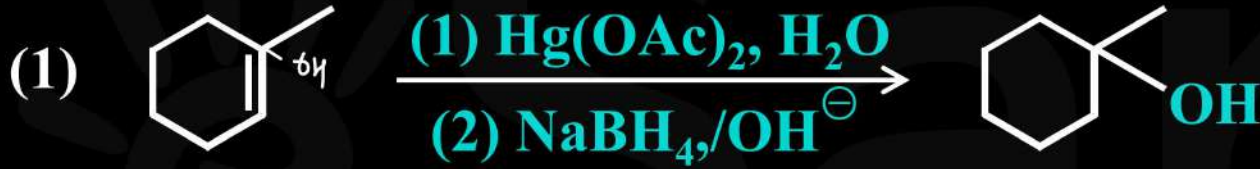
No carbocation is formed during reaction hence no rearrangement takes place.







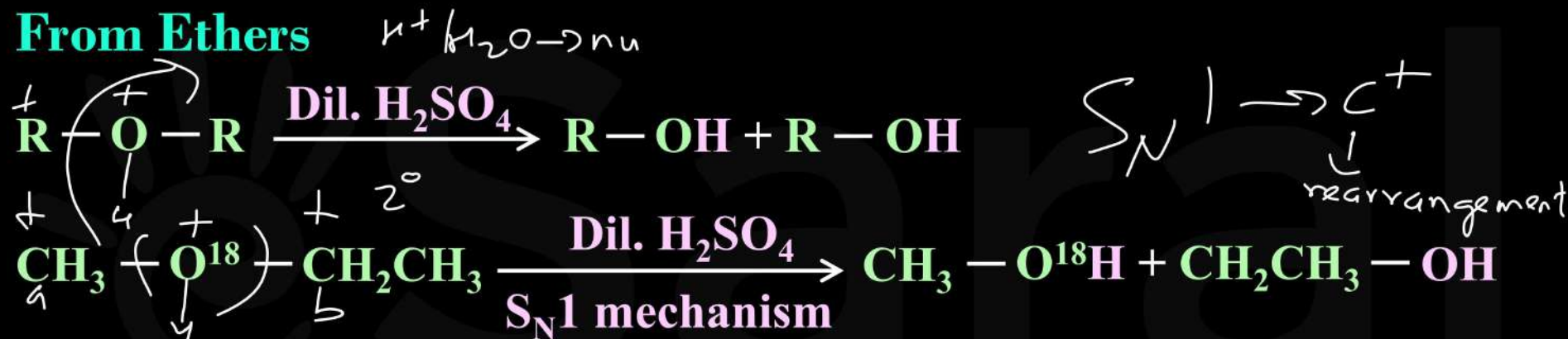
$\text{HBO} \rightarrow \text{AM} \rightarrow \text{OH}$
 $\text{OMDM} \rightarrow \text{M} \rightarrow \text{OH}$



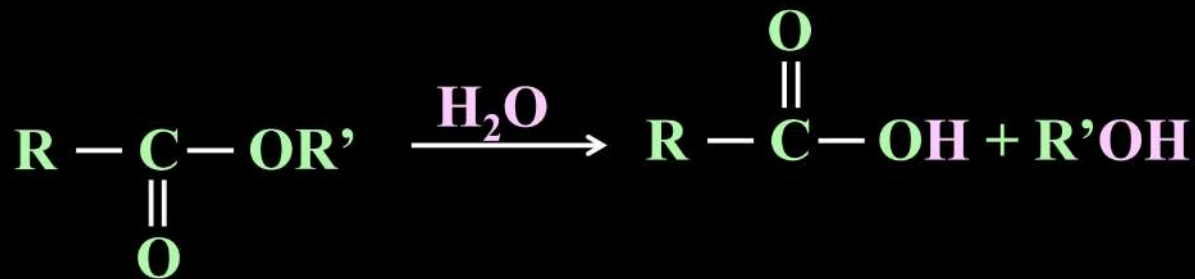
From Alkyl Halides (By Hydrolysis)



From Ethers

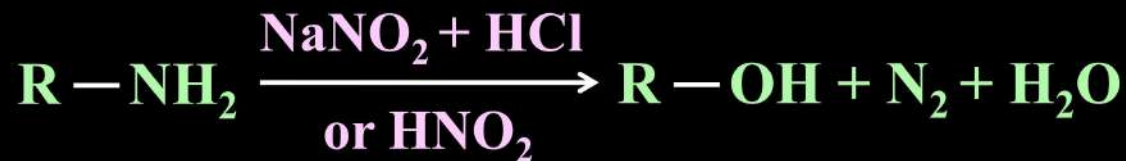


From Hydrolysis of Ester

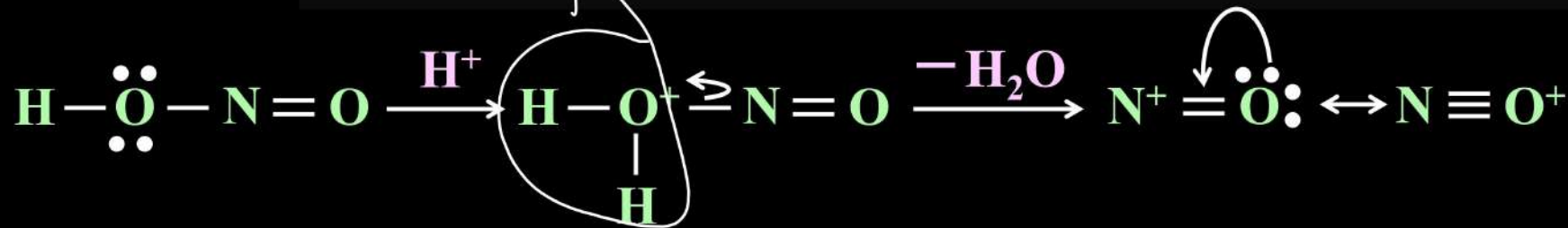


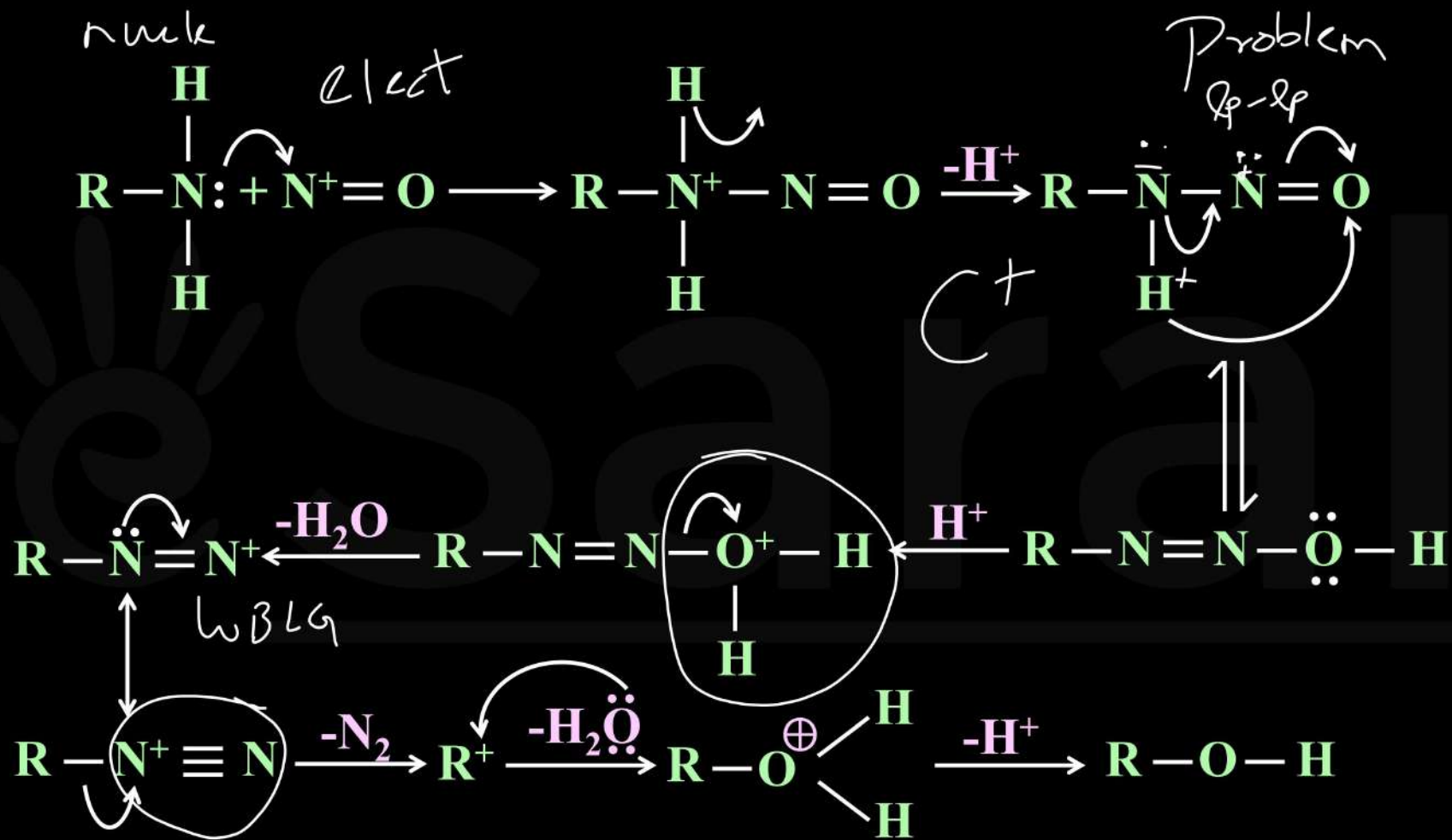
From Primary Amines (conversion of 1 degree amine into RN_2^+)

Gmp reaction

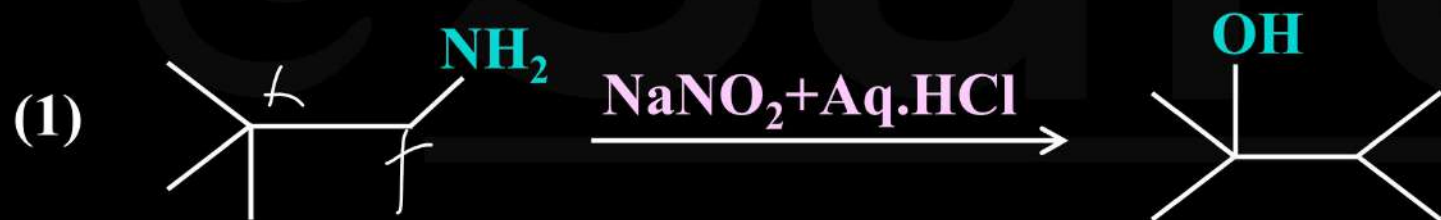


Mechanism





Carbocation intermediate is formed
so rearrangement is possible.



Grignard Reagent RMgX

Organometallic Compounds

Organometallic compounds are the organic compounds in which a metal atom is directly attached to carbon of organic molecules through **covalent bond** or **ionic bond**.



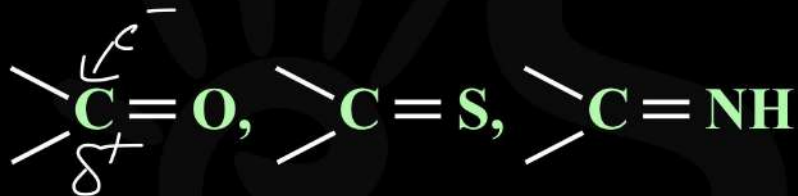
Preparation of Grignard Reagent



Ether is used as a solvent because it is a Lewis Base that coordinates its lone pair of electrons to electron-deficient magnesium atom, therefore providing stability to the Grignard Reagent.

Reactions of Grignard Reagents

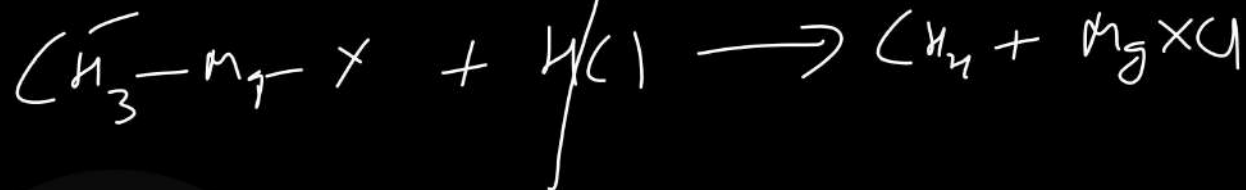
Grignard reagents form **adducts** by addition on the following types of **pi** bonds.



Synthesis of Alkanes

With compounds having reactive hydrogen atom (Acid – Base Reaction).

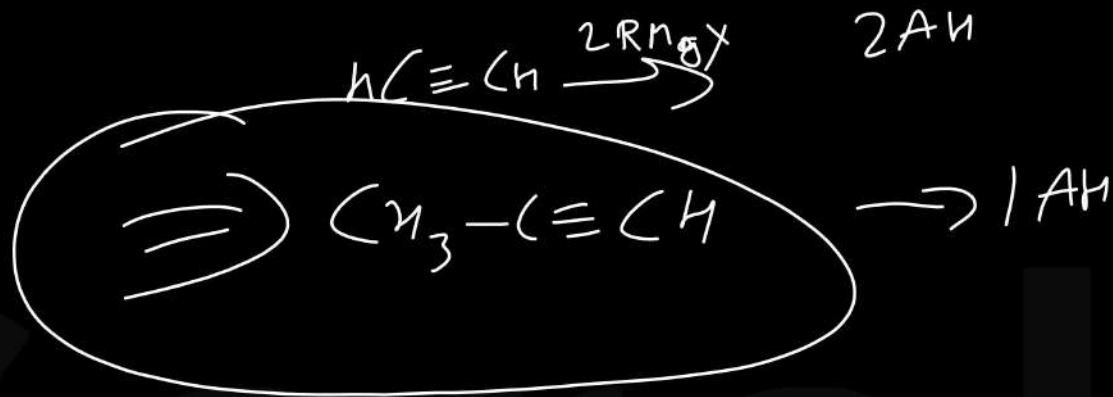
General Reactions





(Ethyne magnesium halide)





The reaction is used for estimation of reactive hydrogen atoms present in a molecule.

This method is called **Zerewitinoff's** method of estimation of reactive hydrogen atoms.

With Alkyl Halide (Coupling)

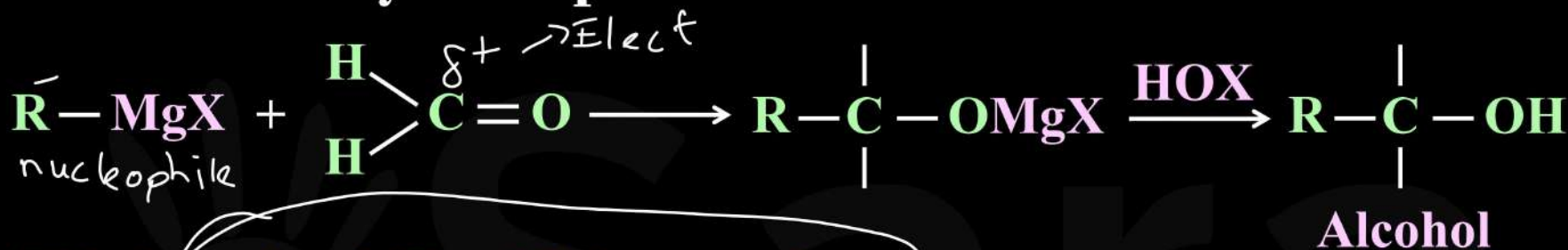


Synthesis of Alkenes



Synthesis of Alcohols from Grignard Reagent

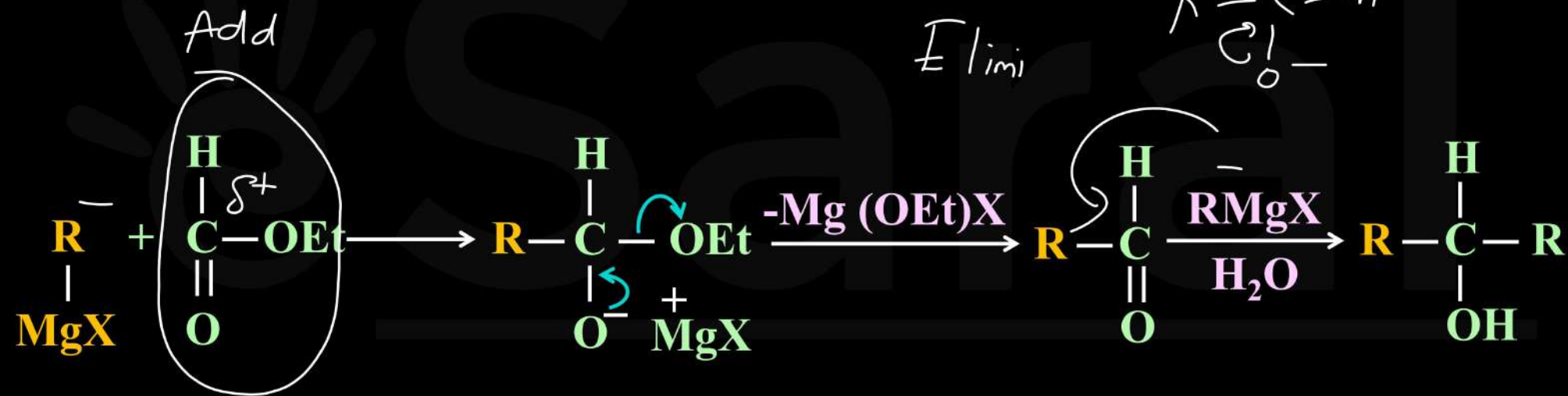
From Carbonyl Compounds



This is nucleophilic addition reaction.

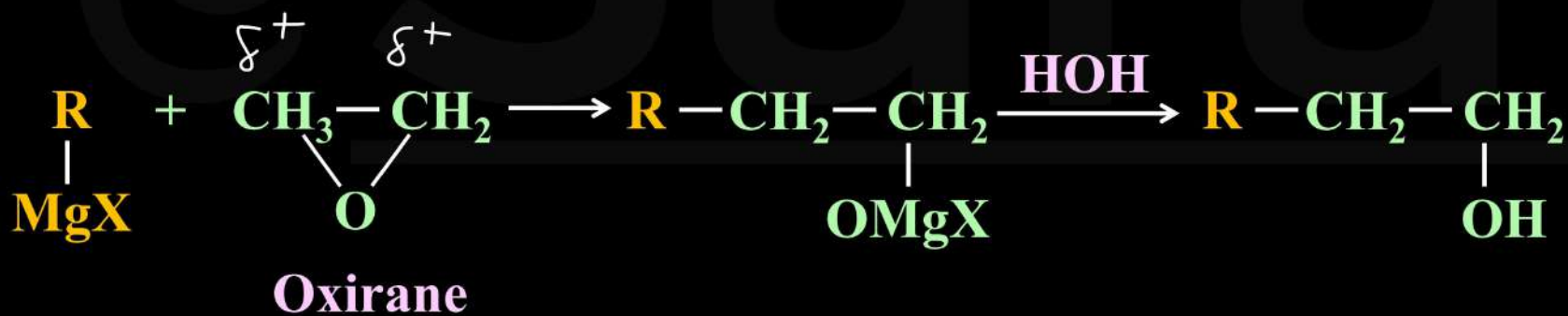
From Acid Derivative

Secondary alcohols are obtained on hydrolysis of the product obtained by taking **excess of Grignard Reagent** and adding formic ester to it.



Nucleophilic addition elimination reaction $\text{S}_{\text{N}}\text{AE}$

From Epoxides

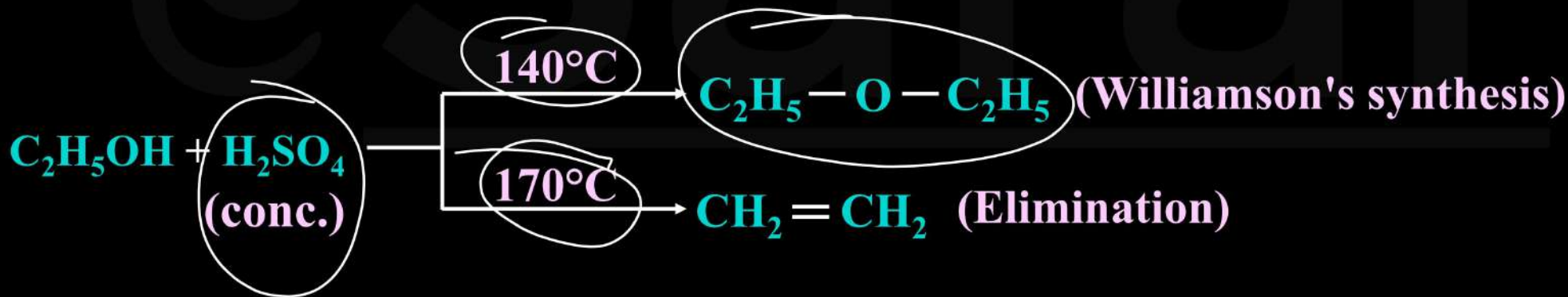


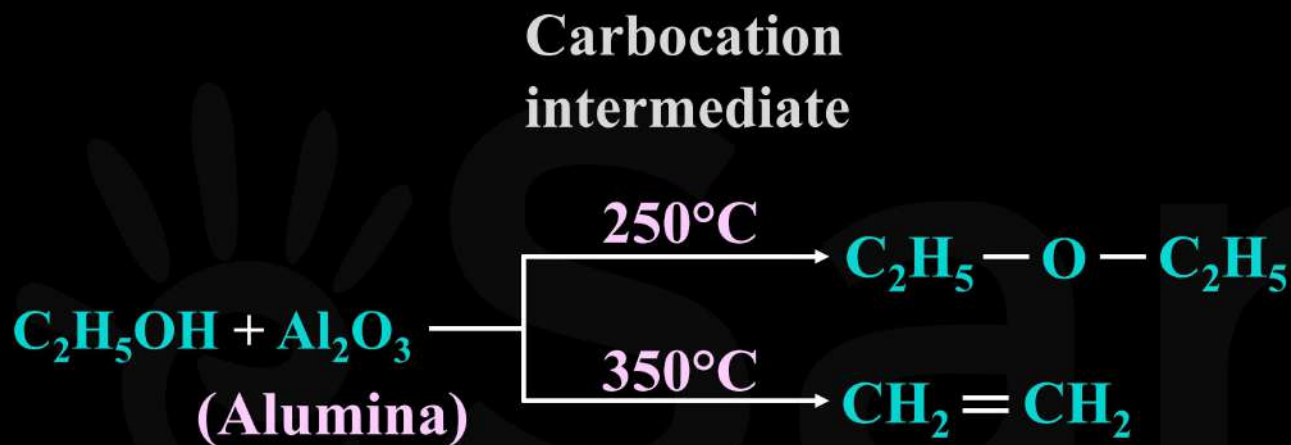
Chemical Properties of Alcohols

(i) Dehydration: Removal of H_2O by two type

(a) Intermolecular removal of H_2O [forms ether]

(b) Intramolecular removal of H_2O [forms alkene]





Ease of dehydration follows the order



Test of Alcohols

VVV Imp

POC

(1) Lucas Test

A mixture of $\text{HCl}(\text{conc.})$ and anhydrous ZnCl_2 is called Lucas reagent.



S_N1 C^+

$2 \rightarrow 1$
sec \rightarrow 5 min
t \rightarrow 1 min

p-alcohol $\xrightarrow{ZnCl_2 + HCl}$ **No turbidity at room temp.**
[on heating within 30 minutes.]

s-alcohol $\xrightarrow{ZnCl_2 + HCl}$ **Turbidity appears within 5 minutes**

t-alcohol $\xrightarrow{ZnCl_2 + HCl}$ **Turbidity appears within 1 minutes**

This test is used to differentiate 1°, 2° and 3° alcohols.

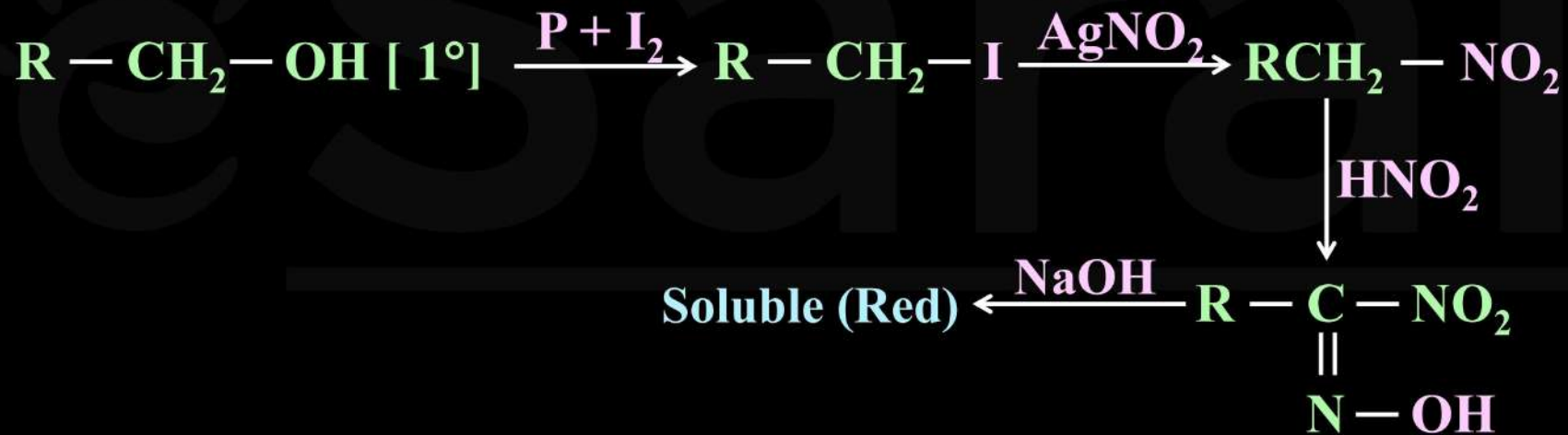
(2) Victor - Meyer Test (RBC Test)

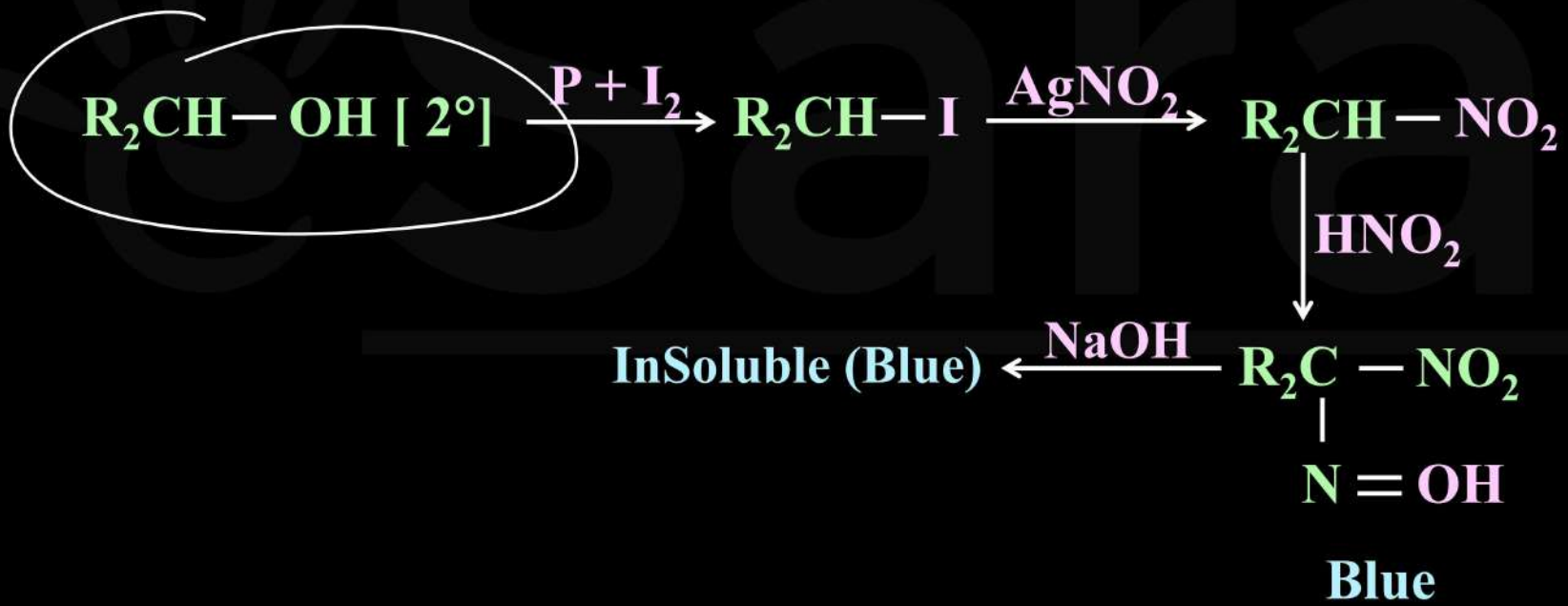
This is a colour test for alcohols (primary, secondary & tertiary).

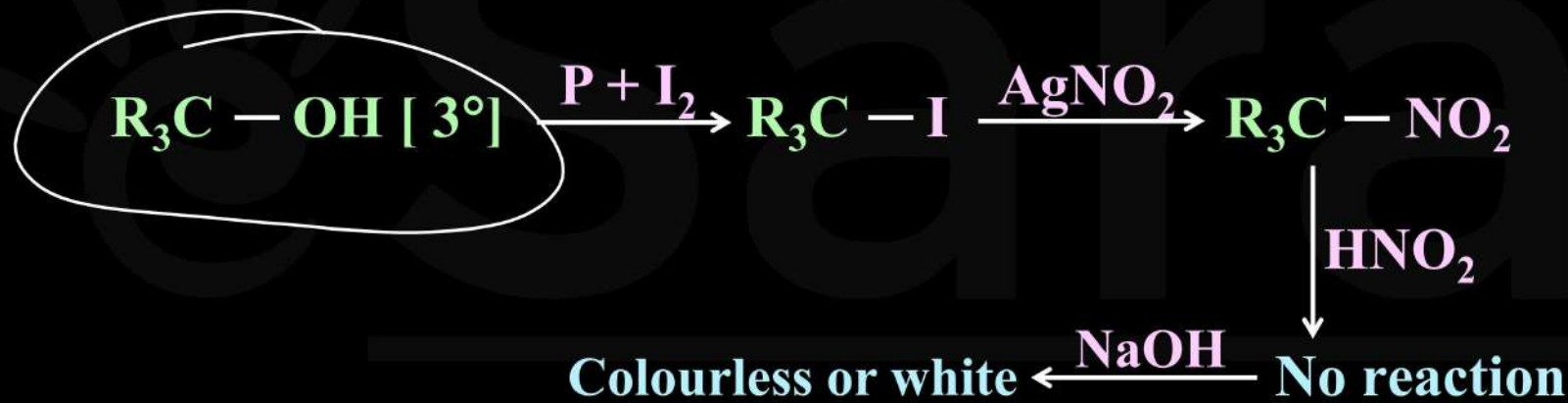
p-alcohol	————→	Red colour
s-alcohol	————→	Blue colour
t-alcohol	————→	No colour

This test is used to differentiate 1°, 2° and 3° alcohols.

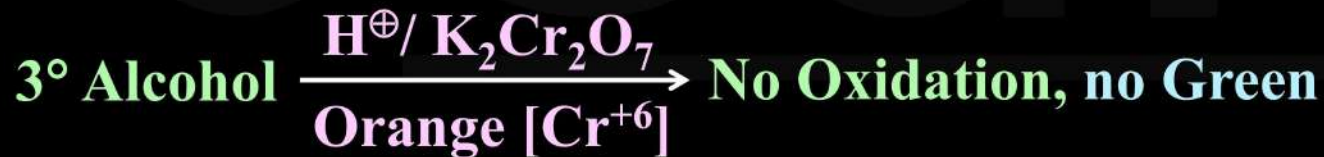




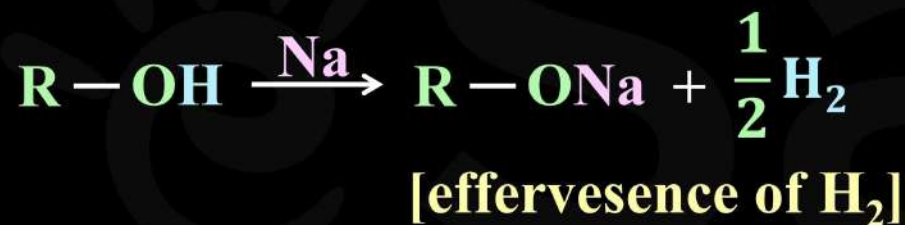




Dichromate Test



(b) Test of Alcoholic Group



Ether

R-O-R (Dialkyl ether), alkoxy alkane.

It's General formula is $C_nH_{2n+2}O$.



Classification

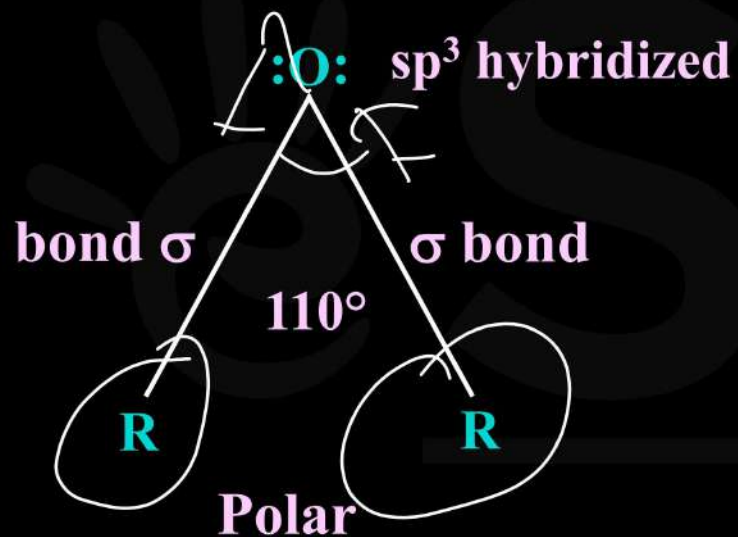
They may be classified as

(a) Simple or symmetrical ether. e.g. $R-O-R$

(b) Mixed or unsymmetrical ether e.g. $R-O-R'$



Structure



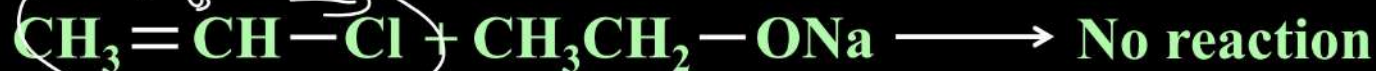
General Methods of Preparation

From Alkyl Halides

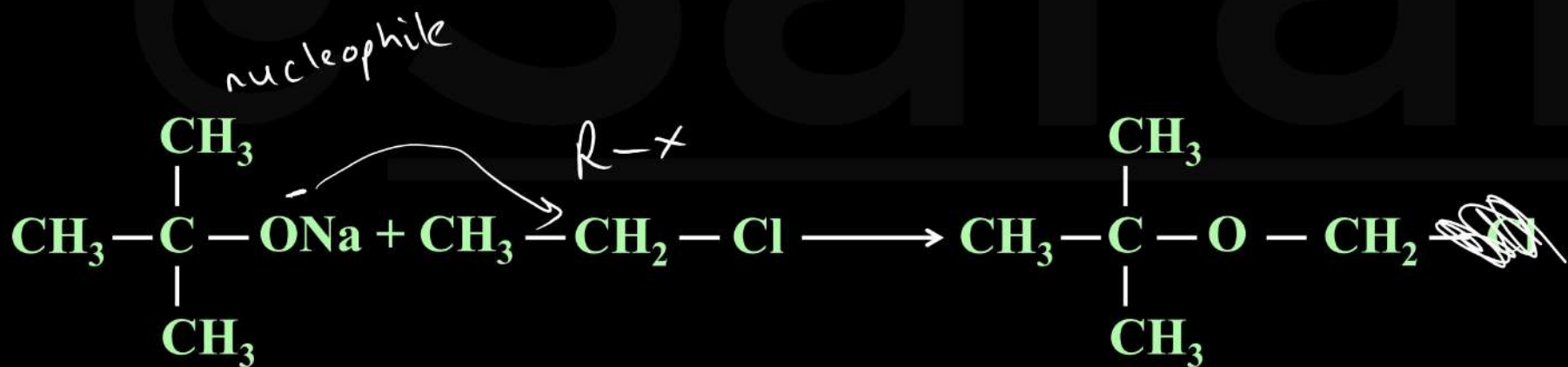
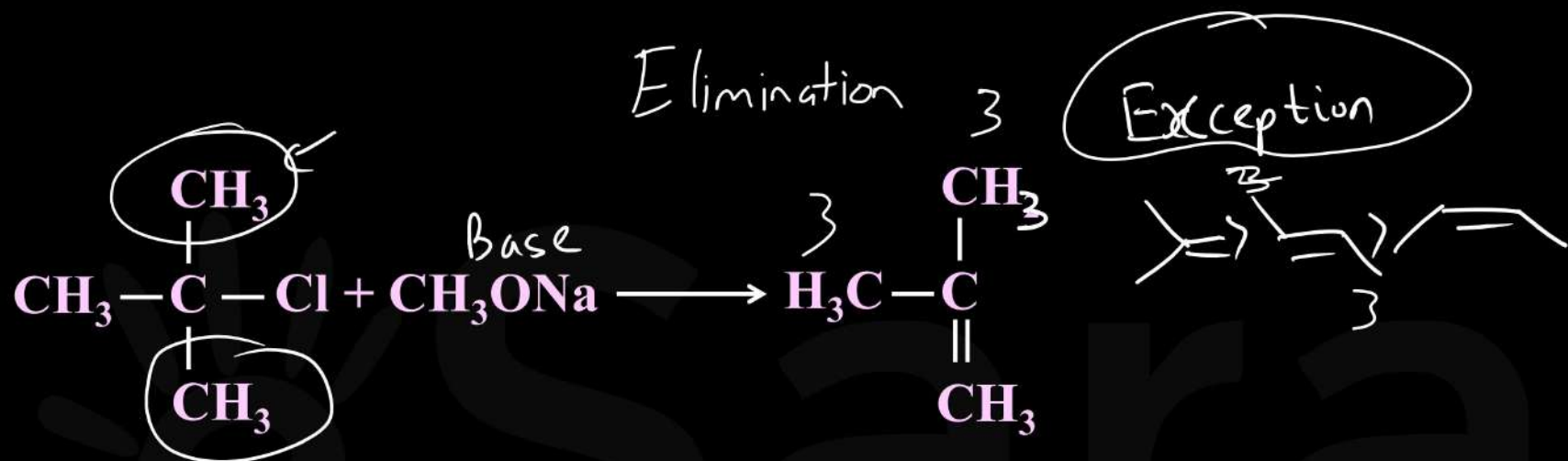
(i) By Williamson's synthesis *omf*



[S_N2 Reaction]



[Stable by Resonance]



(ii) Reaction with Dry Ag_2O



From Alcohol

(i) By dehydration



413K



(Williamson's Substitution
favored synthesis)

443K



(Elimination)

(Elimination favored)

Reaction with CH_2N_2 (Diazomethane)



Chemical Properties of Ethers

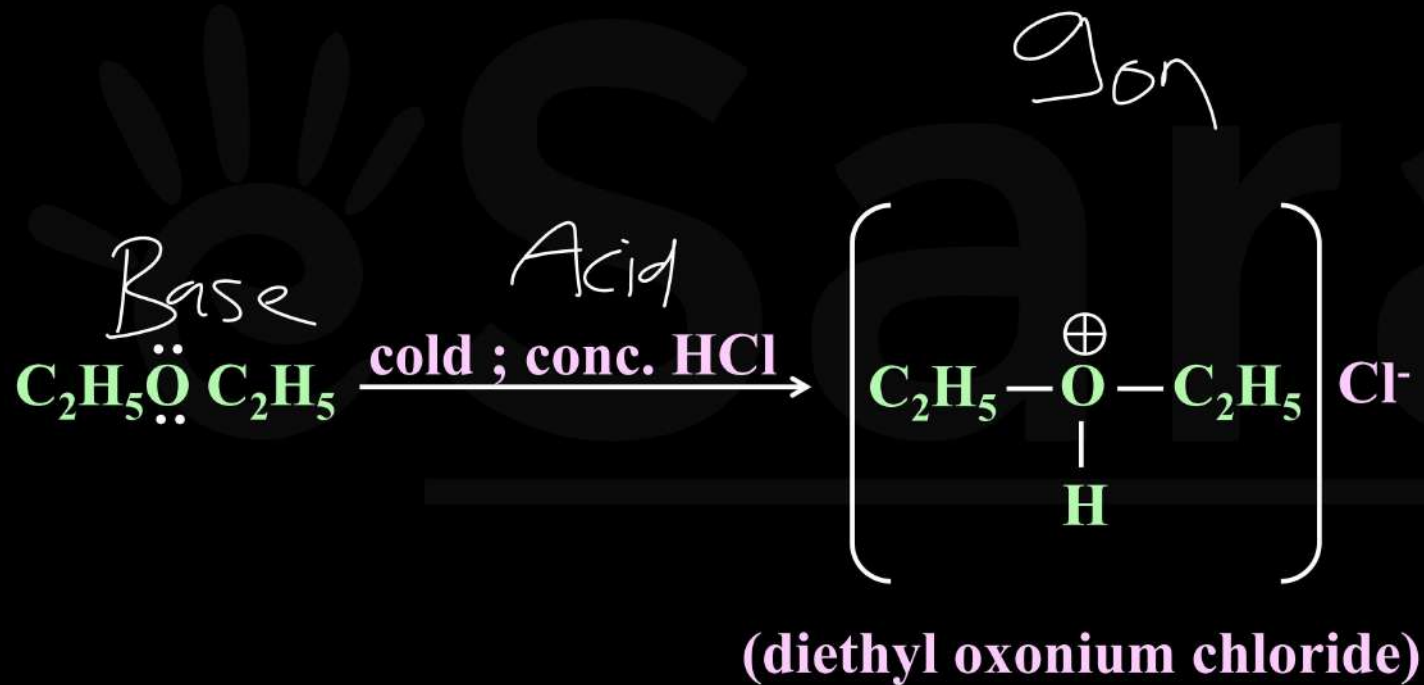
Ethers are less polar so less reactive and do not react with active metals (Na,K) cold dil. acid, oxidising and reducing agent.

They do not have any active functional group.



1. Basic nature

Due to presence of lone pair on oxygen atom ethers behave as lewis base. Ethers react with cold concentrated acid and form oxonium ion



Ethers form dative bond with Lewis Acids like BF_3 , AlCl_3 , RMgX etc.

Reaction with hot dil. H_2SO_4



Reaction with PCl_5



Reaction with HX

Reactivity of HX

2nd Imp

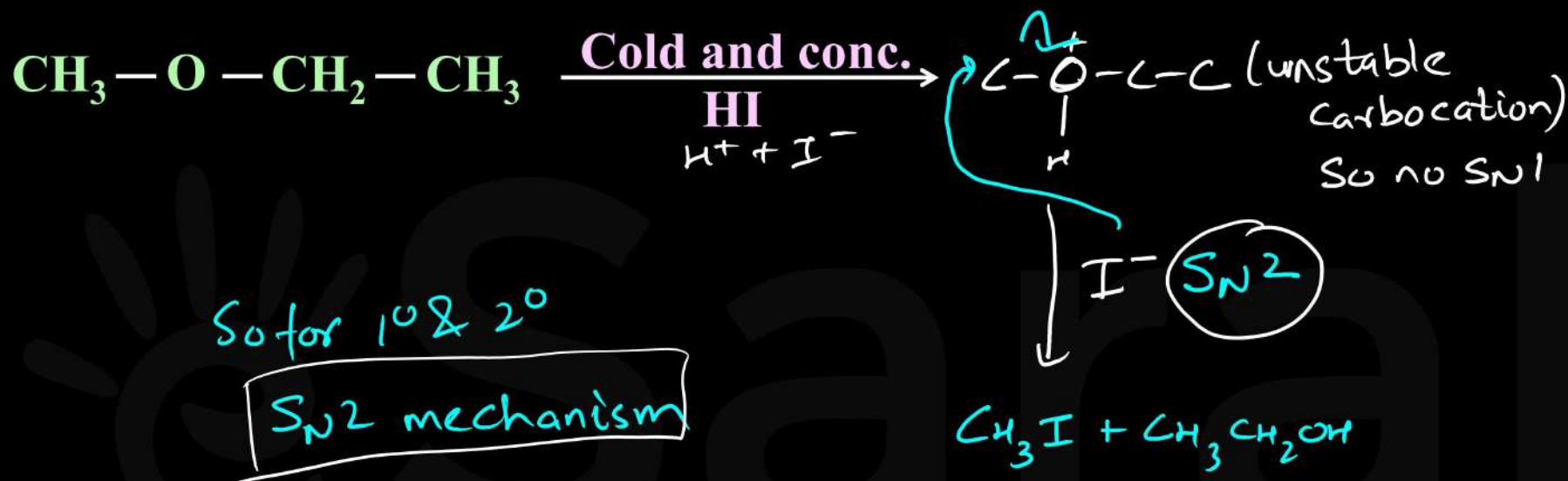


Reaction with cold conc. HX

Ethers forms oxonium salt with cold and conc. HCl (less reactive)

Cold conc. HI and HBr (more reactive) break C-O bond.

↓
HX

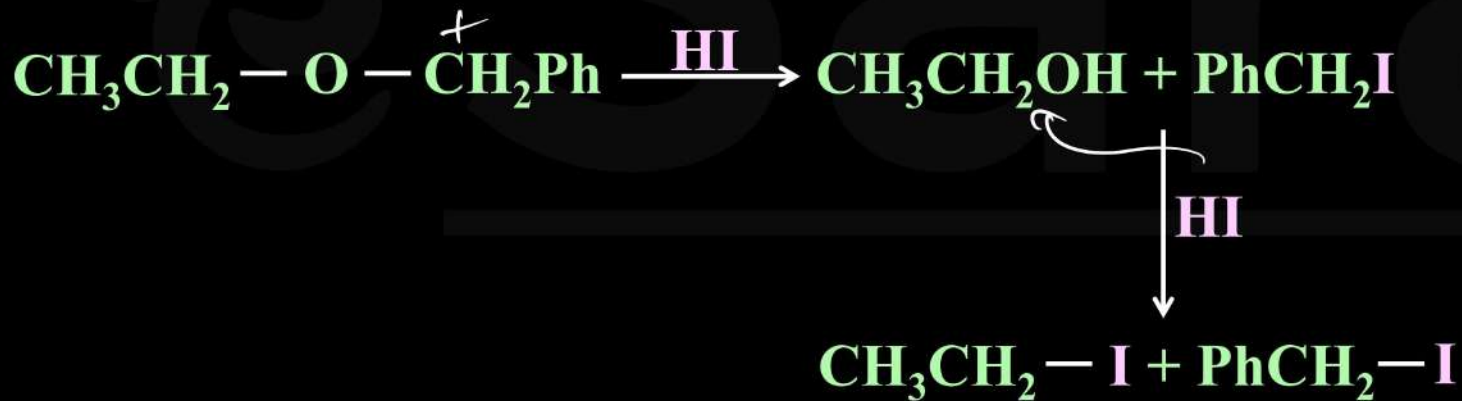


If oxonium ion gives more stable carbocation (3° and more stable Carbocation then $\text{S}_{\text{N}}1$ mechanism) then $\text{S}_{\text{N}}1$ reaction occurs.





If excess of HI is used then two moles of alkyl halides are formed.

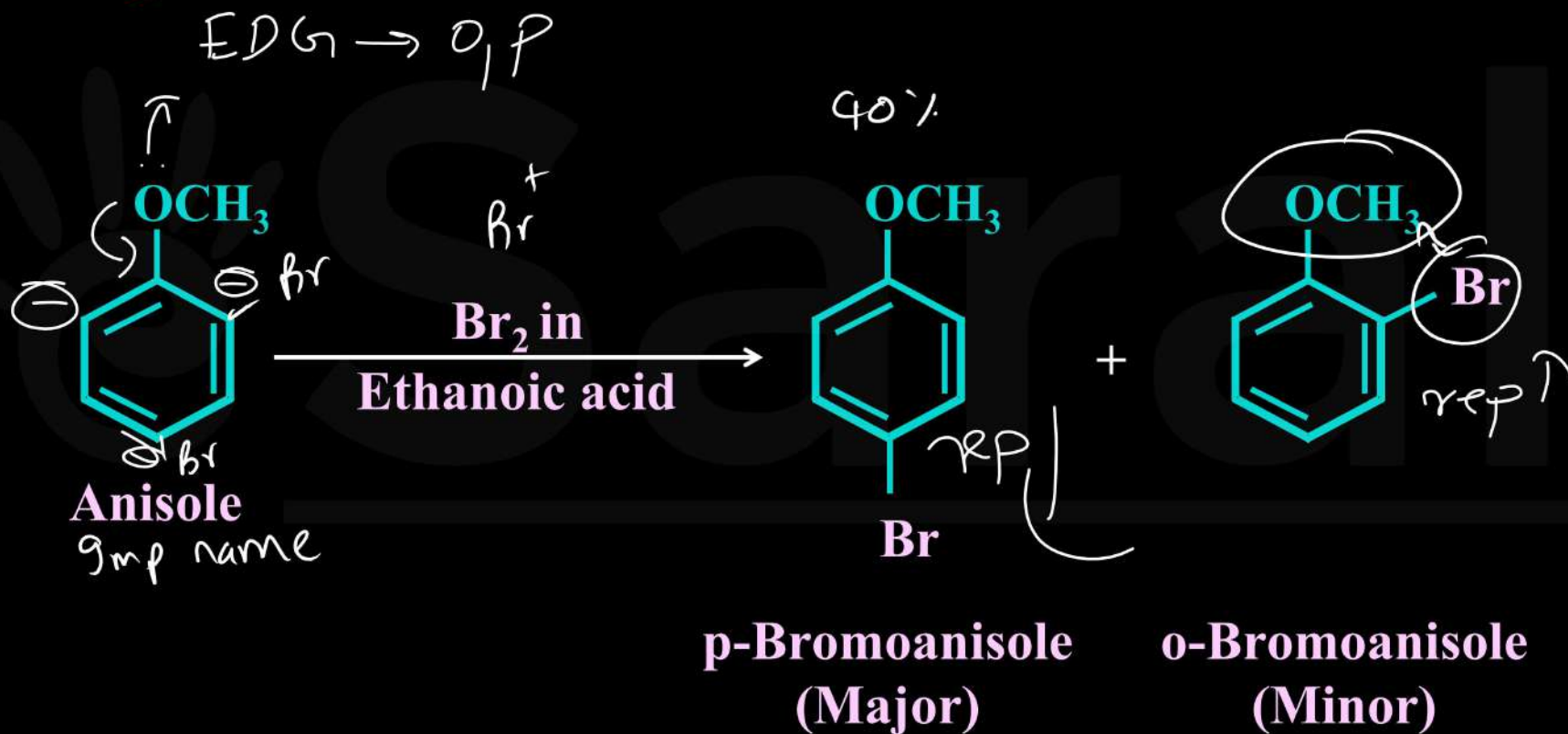


(B) Reaction with hot and conc. HX



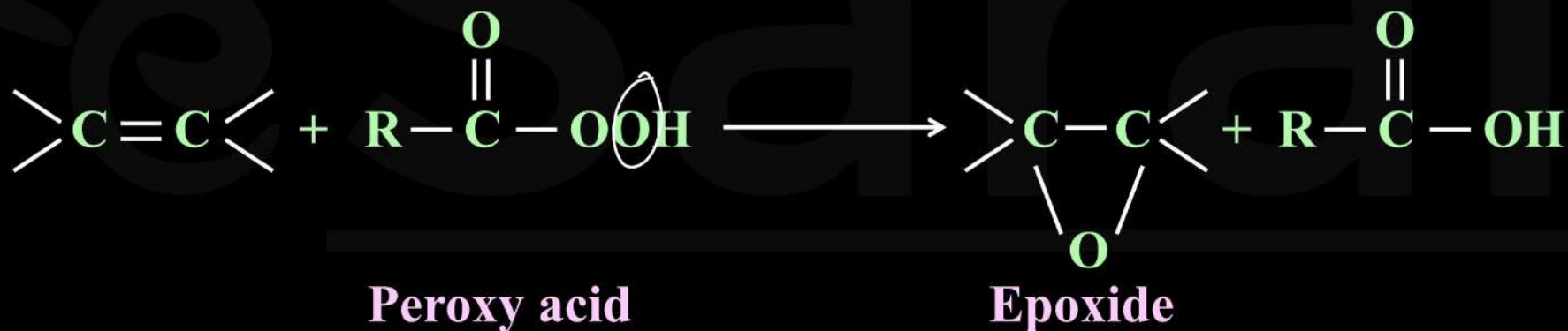
Electrophilic Substitution

(i) Halogenation

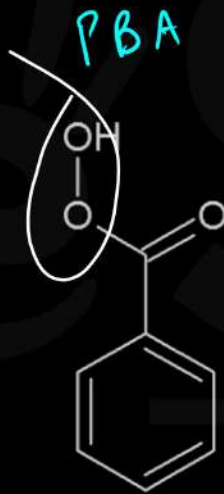


Epoxides

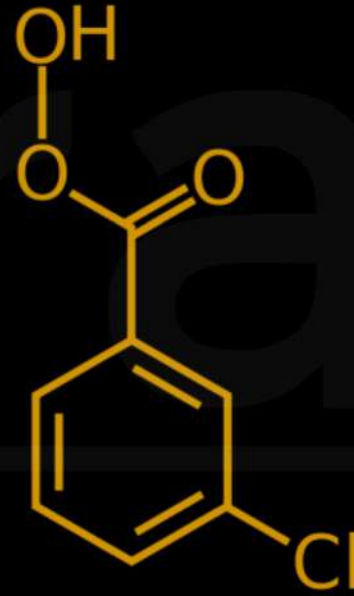
Epoxidation of Alkenes By Reaction With Peroxy Acids



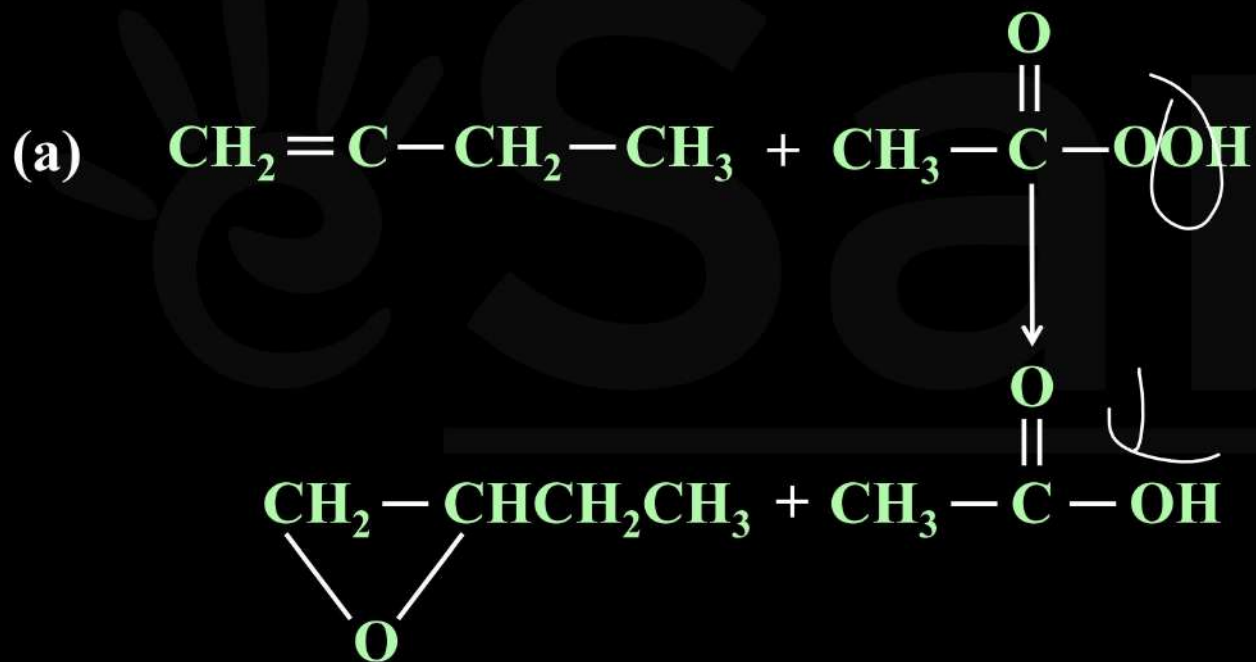
Epoxidation



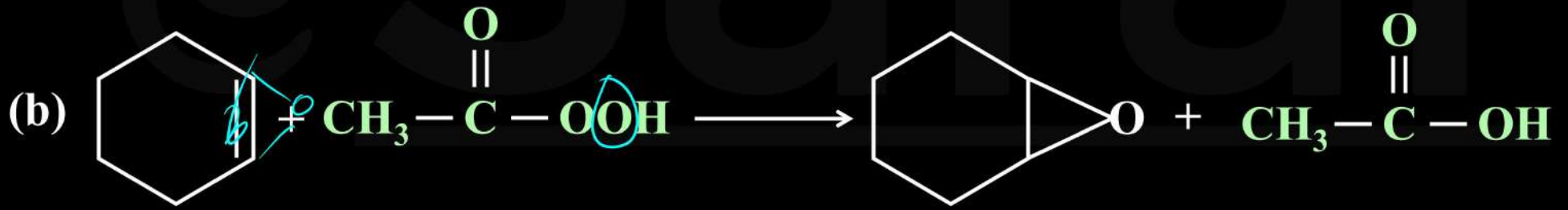
mCPBA



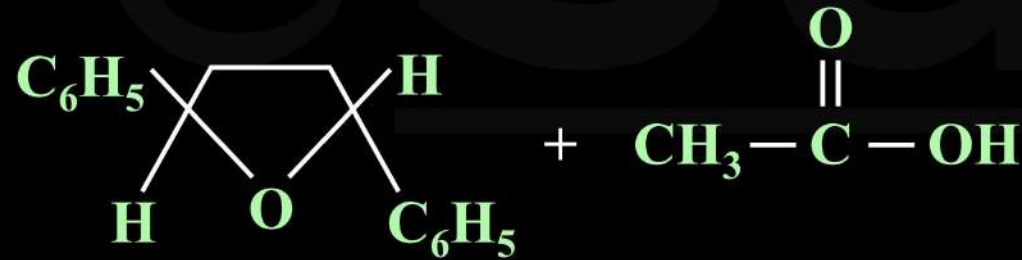
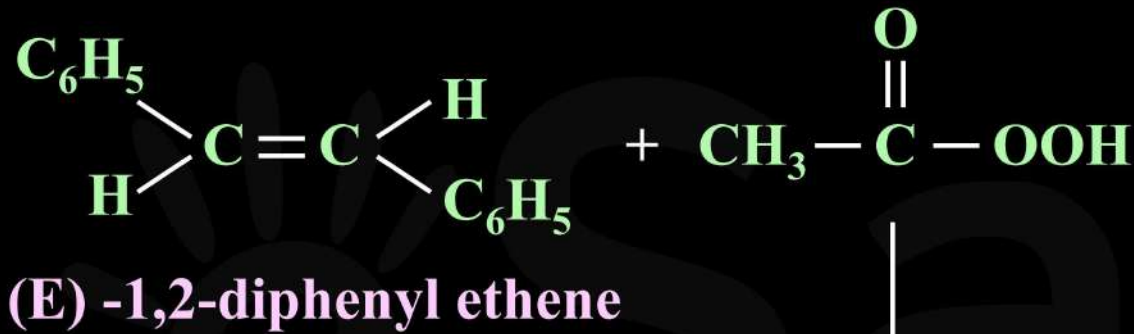
Ex



mCPBA ✓

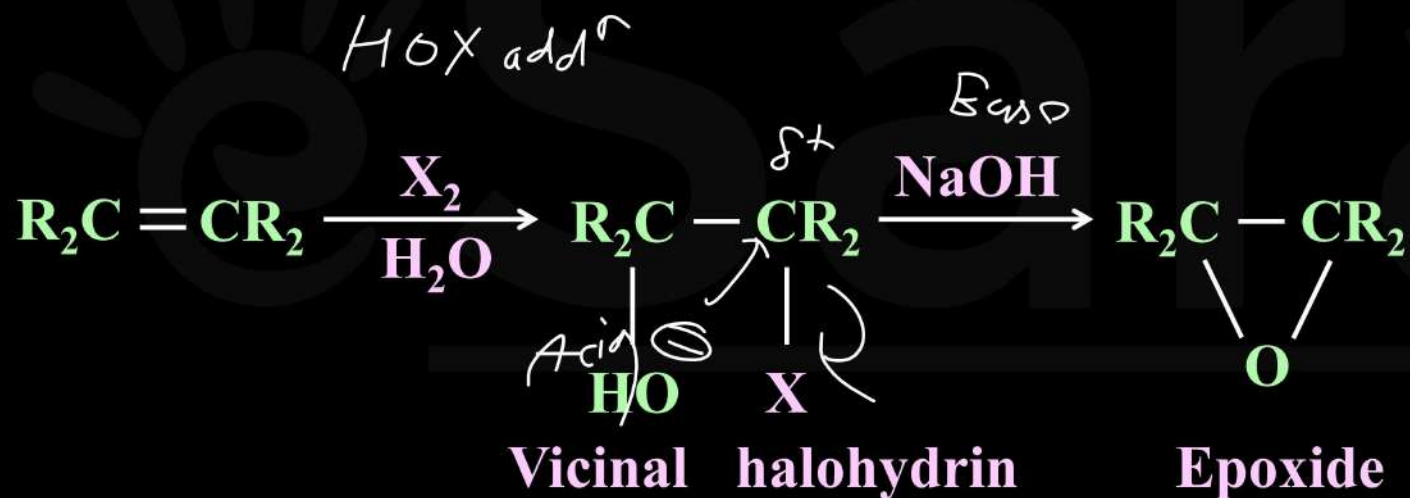


Epoxidation is a stereospecific syn addition

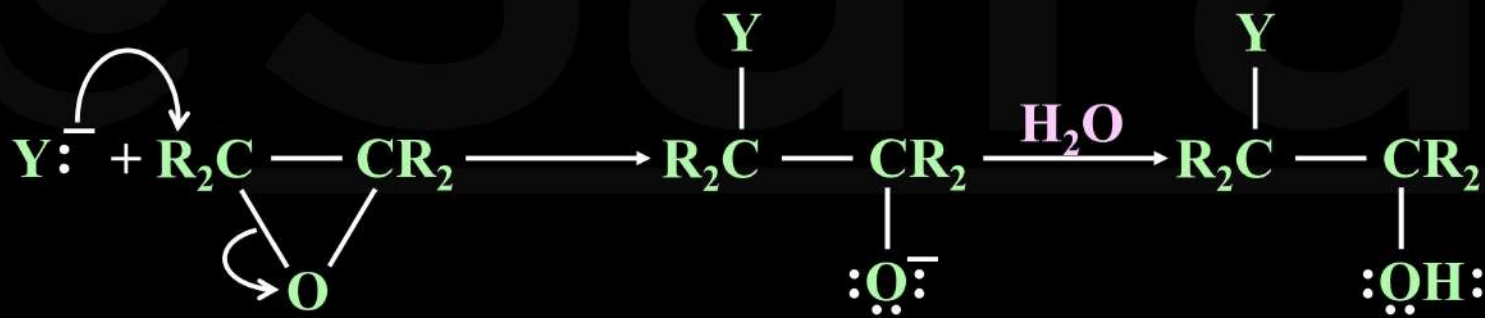


trans -2,3-diphenyl oxirane

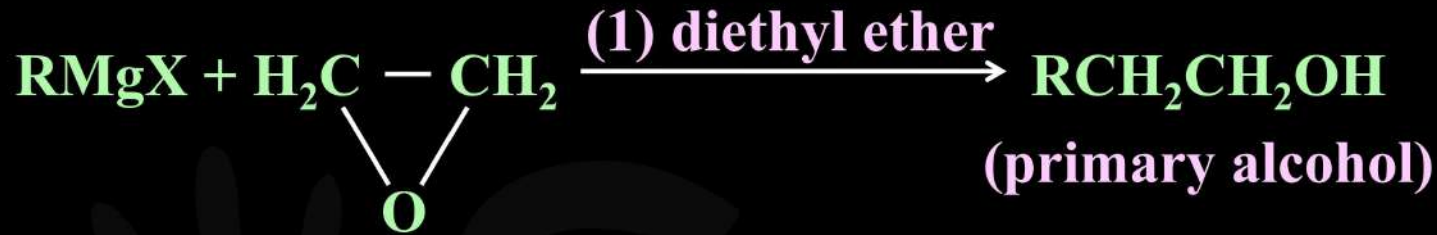
Base-promoted Ring Closure of Vicinal Halohydrins

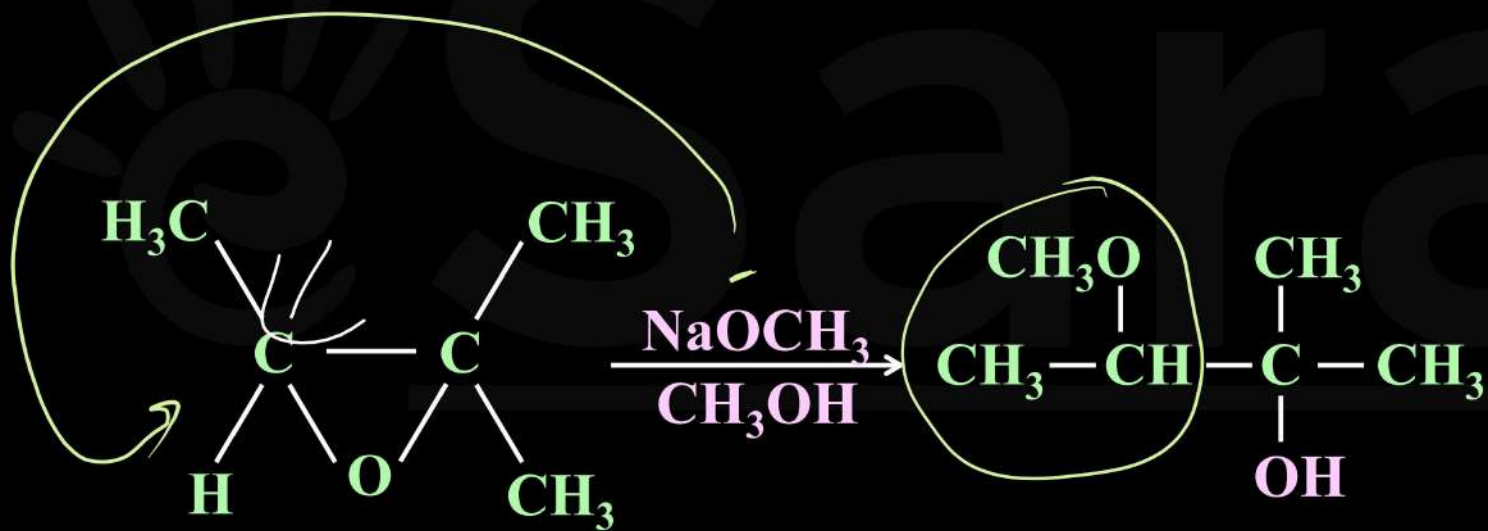


Nucleophilic Ring Opening Reactions of Epoxides



With Grignard Reagent





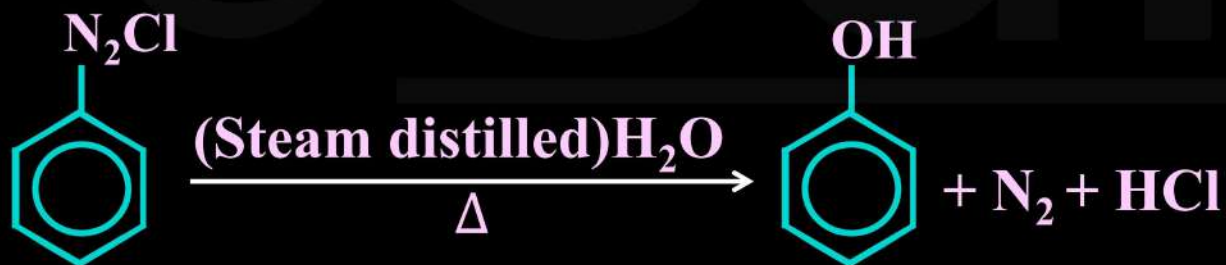
Phenolic Compounds

General Methods of Preparation

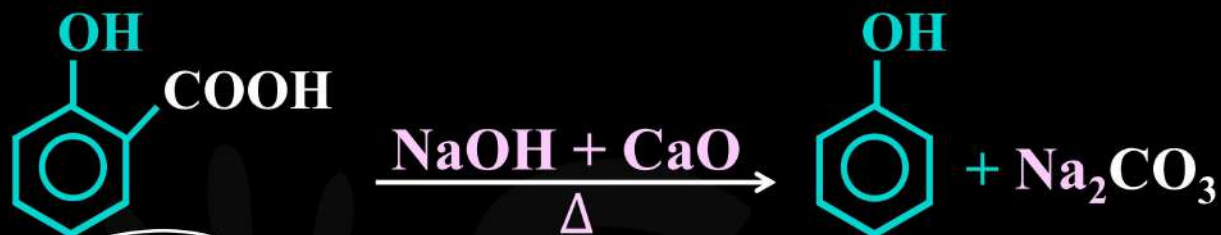
From Benzene Sulphonic Acid



From Benzene Diazonium Chloride



By Distilling A Phenolic Acid With Sodalime (Decarboxylation)



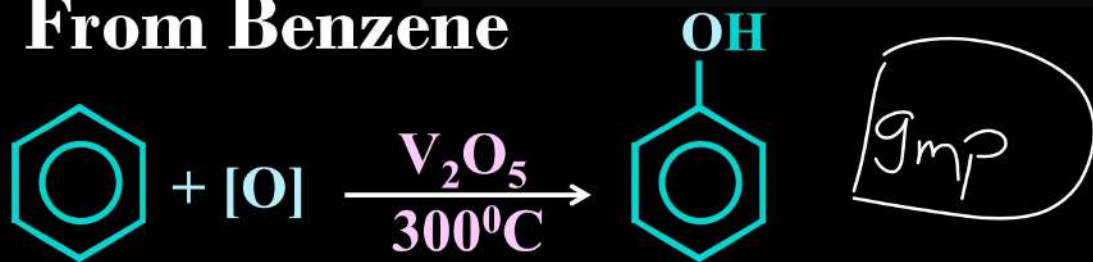
Salicylic acid

Learn

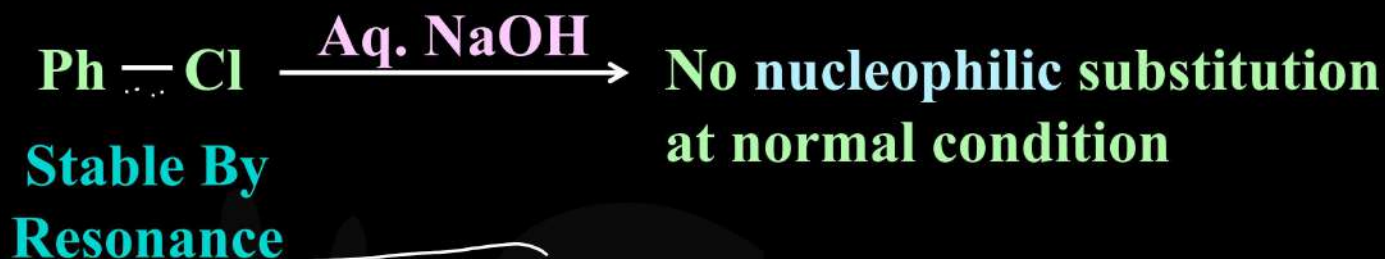
From Grignard Reagent



From Benzene



From Chloro Benzene



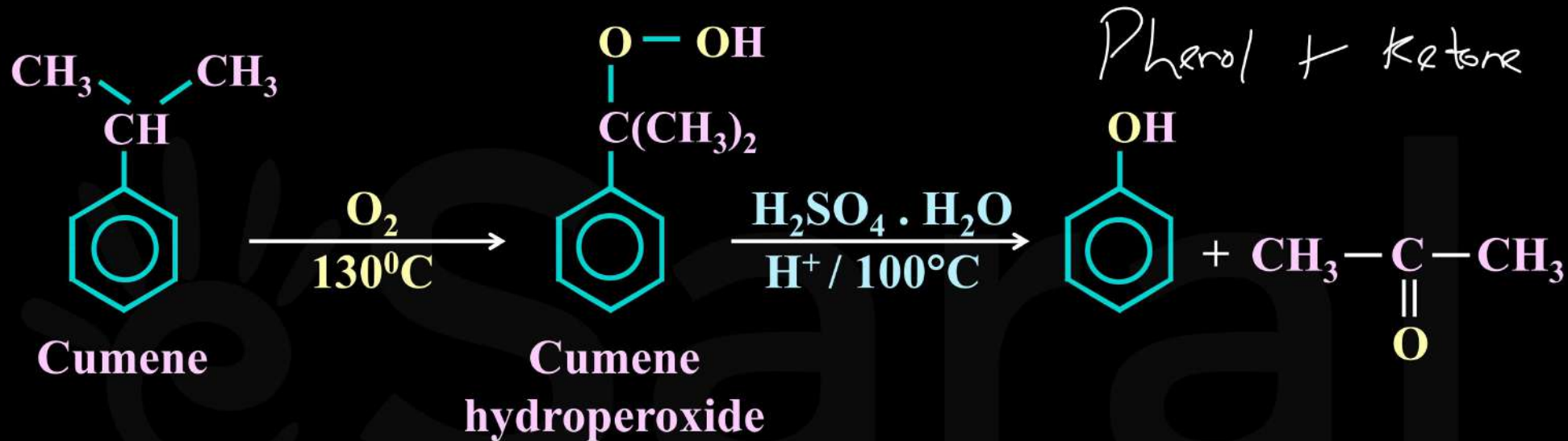
Phenol Can Be Prepared Commercially By

(a) Cumene

(b) Dow's process



From Cumene (Isopropyl Benzene)



Dow Process



(A) Reactions due to $-OH$ group \rightarrow o/p directing, Ring activating

Reaction with PCl_5



Reaction with Zn Dust



Reaction with $FeCl_3$

Phenol gives violet colouration with $FeCl_3$ solution (neutral) due to formation of a complex.

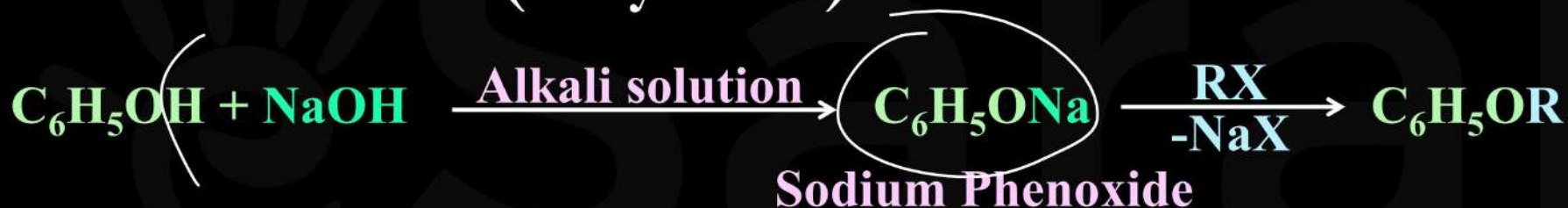
This reaction is used to differentiate phenol from alcohols.

PCX

Acetylation (Schotten-Baumann Reaction)



Ether Formation (Alkylation)



(B) Reaction of Benzene Ring

The $-OH$ group is ortho and para directing.

It activates the benzene molecule.

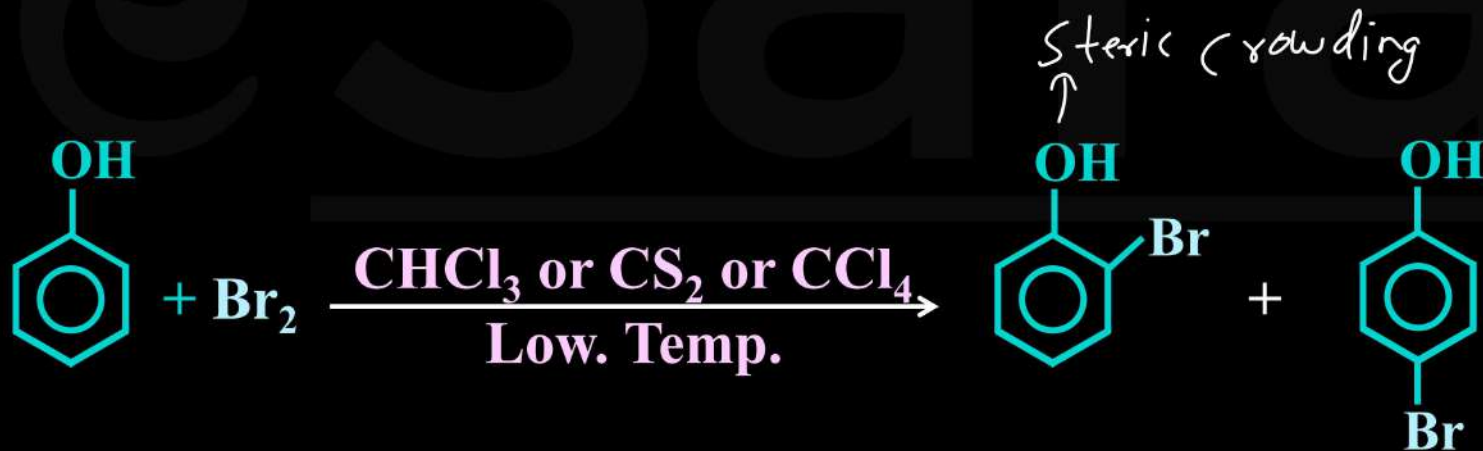
Halogenation



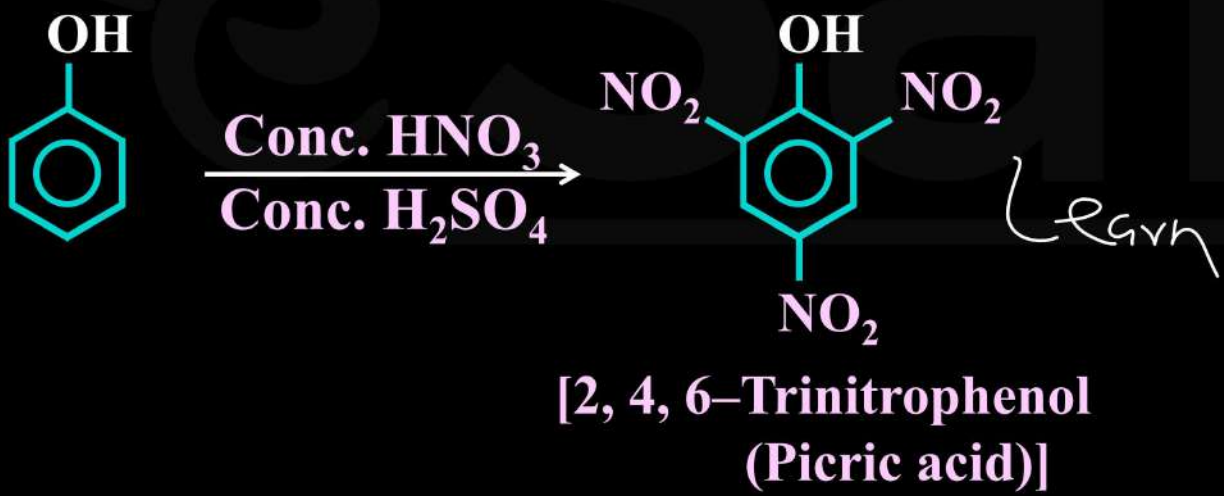
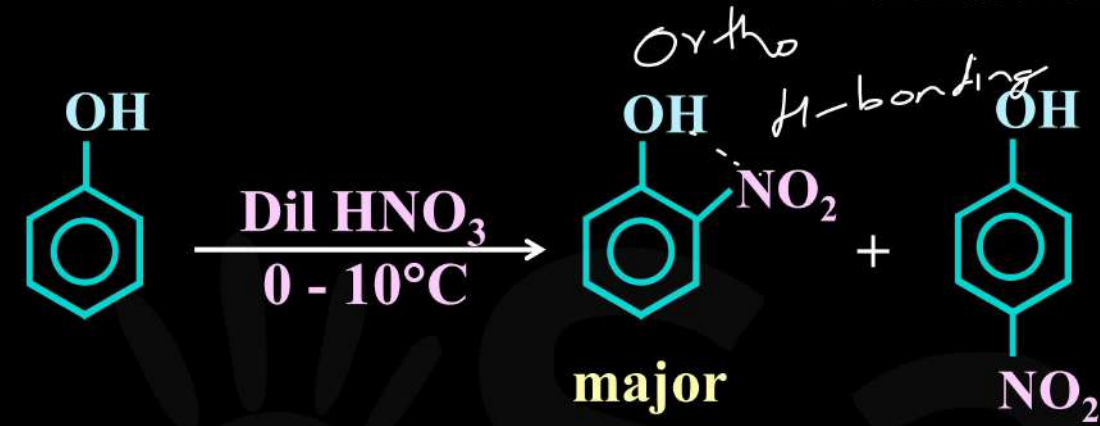
Halogenation

N, O, F

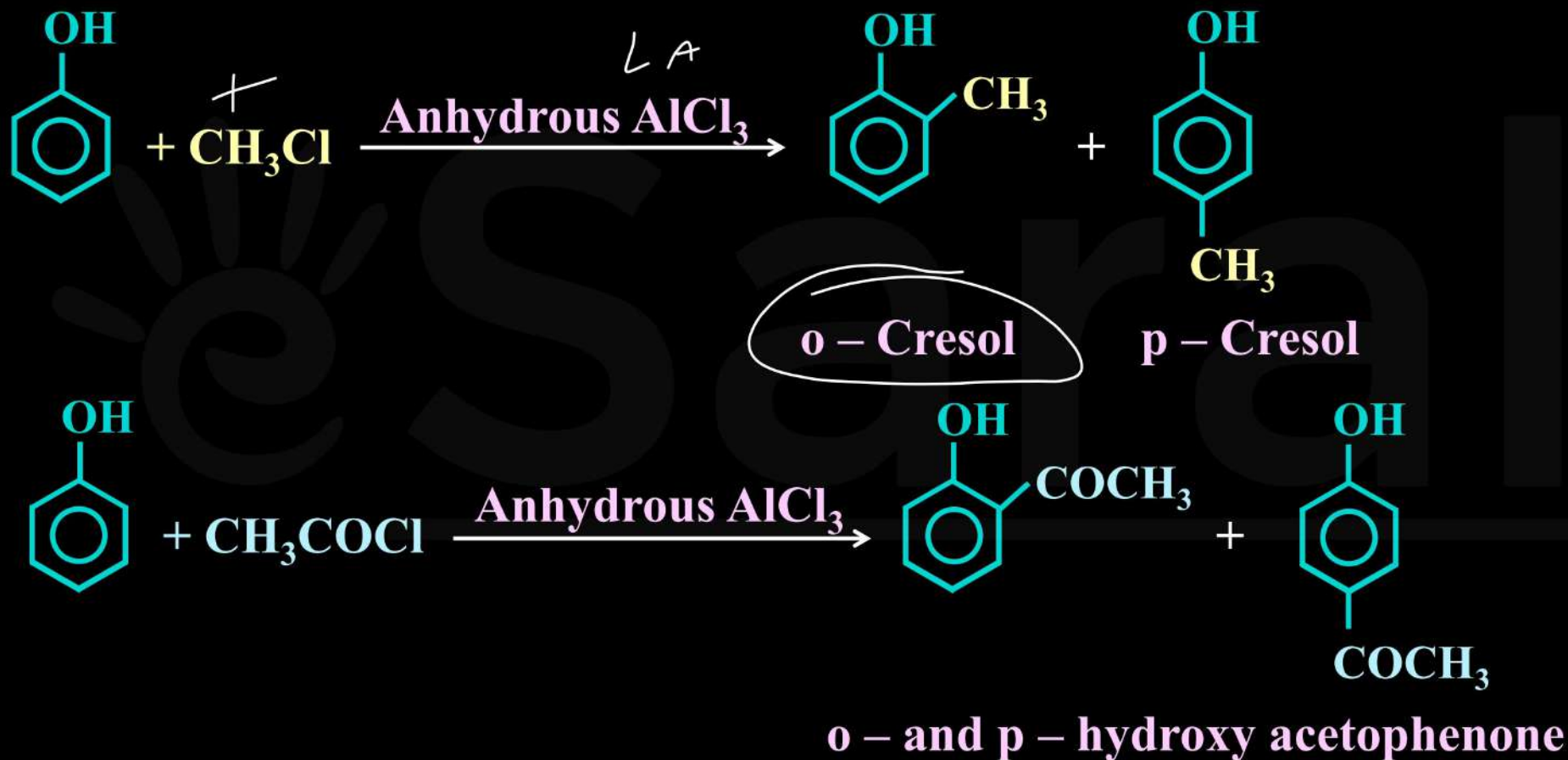
Phenol reacts with Bromine in CCl_4 to form mixture of ortho and para bromo phenol.



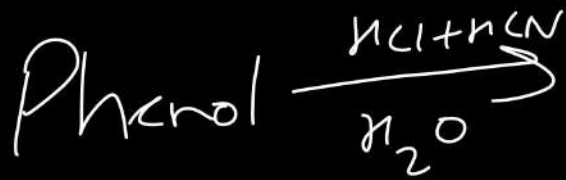
Nitration



Friedel-Craft's Reaction

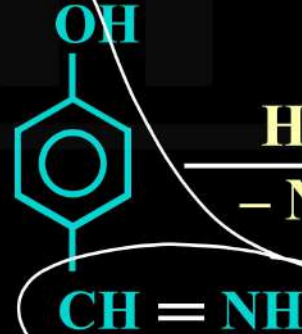


Gattermann Reaction

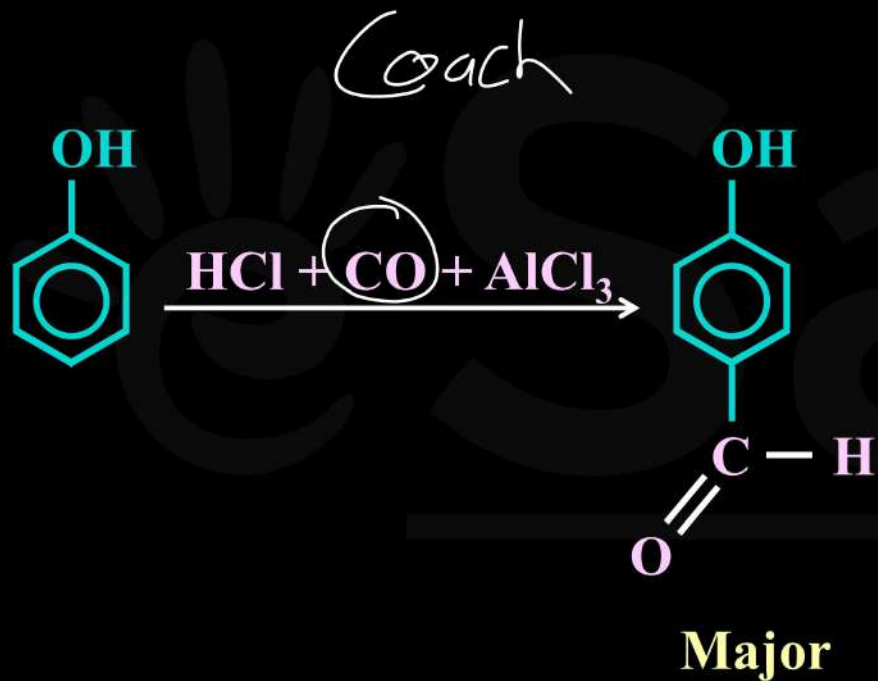


ESR

Electrophile



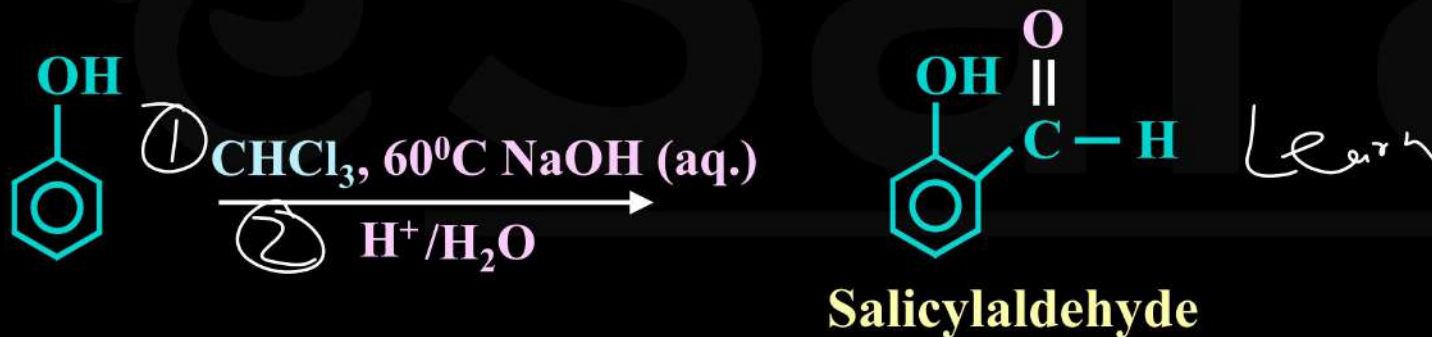
Gatterman Koch Reaction



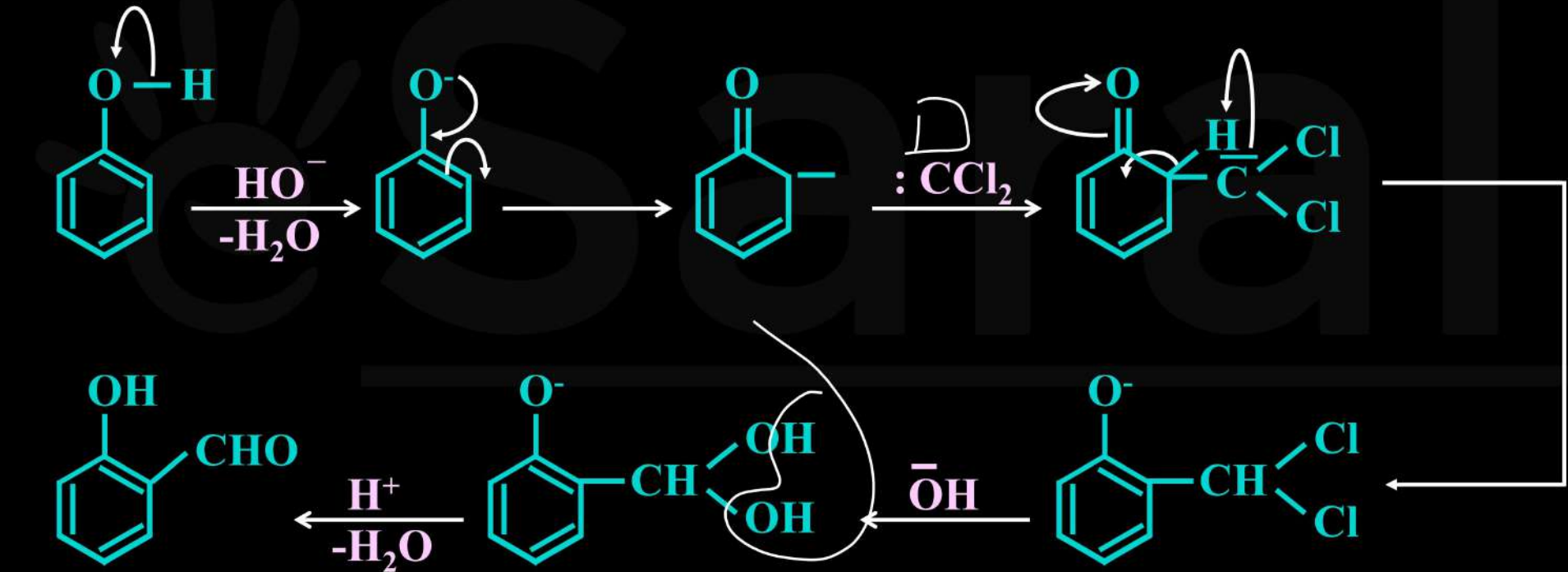
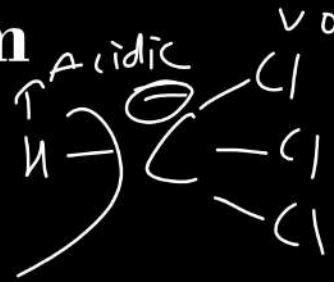
Reimer-Tiemann Reaction

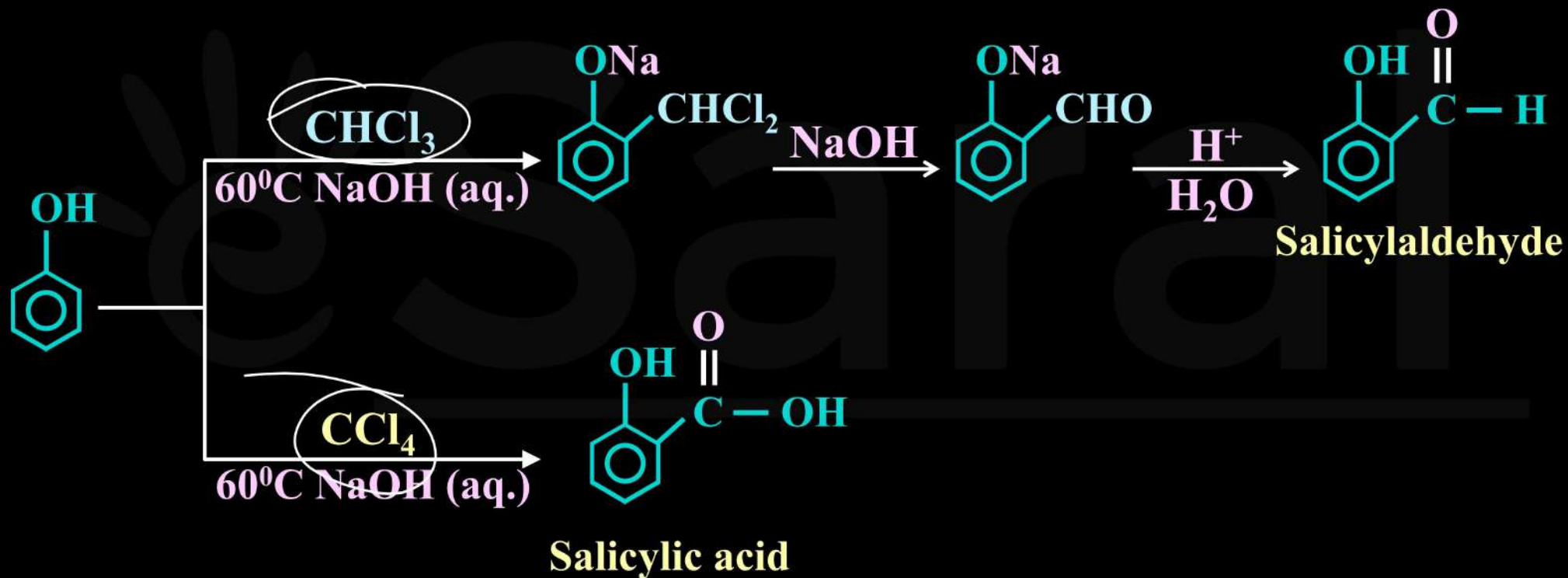
Phenol on refluxing with chloroform and NaOH (aqueous) followed by acid hydrolysis yields o-hydroxy benzaldehyde (As major product).

When CCl₄ is used salicylic acid is formed.

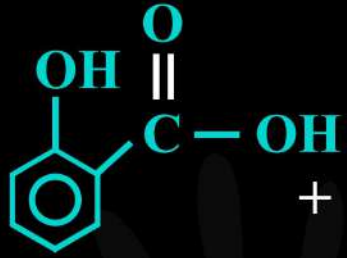


1 Carbon Mechanism

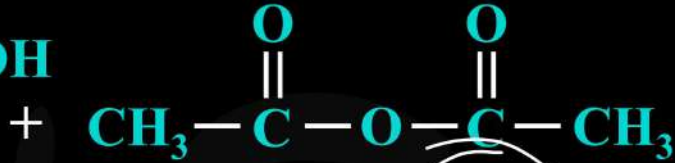




Asprin Formation



Salicylic acid



H_3PO_4
Catalyst



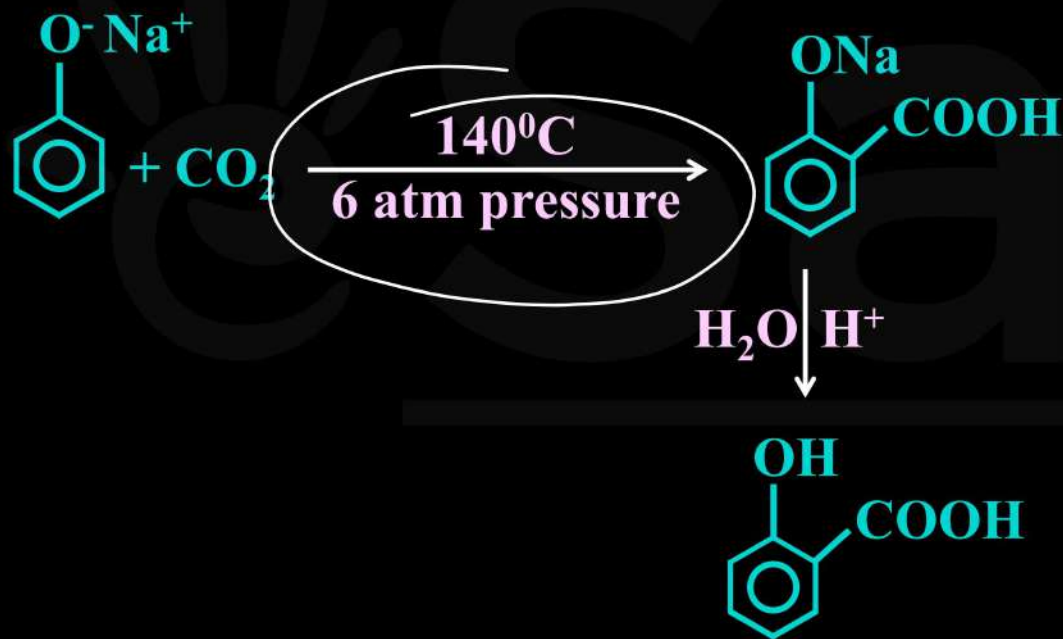
Asprin (pain killer)

Aspirin
Learn

Kolbe-Schmidt Reaction

This involves the reaction of C_6H_5ONa with CO_2 at $140^\circ C$ followed by acid hydrolysis salicylic acid is formed.

Sodium salicylate



Salicylic acid

Test of Phenol

POC

- (i) Phenol turns blue litmus to red.**
- (ii) Aqueous solution of phenol gives a violet colour with a drop of FeCl_3**
- (iii) Aqueous solution of phenol gives a white ppt. of 2,4,6 tribromophenol with bromine water.**



Alc + Ether + Epoxy + Phenol



Helps to differentiate
b/w alcohol and phenol



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Kanishk Singh

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