Alcohol Phenol & Ether

Class XII
Board Exam

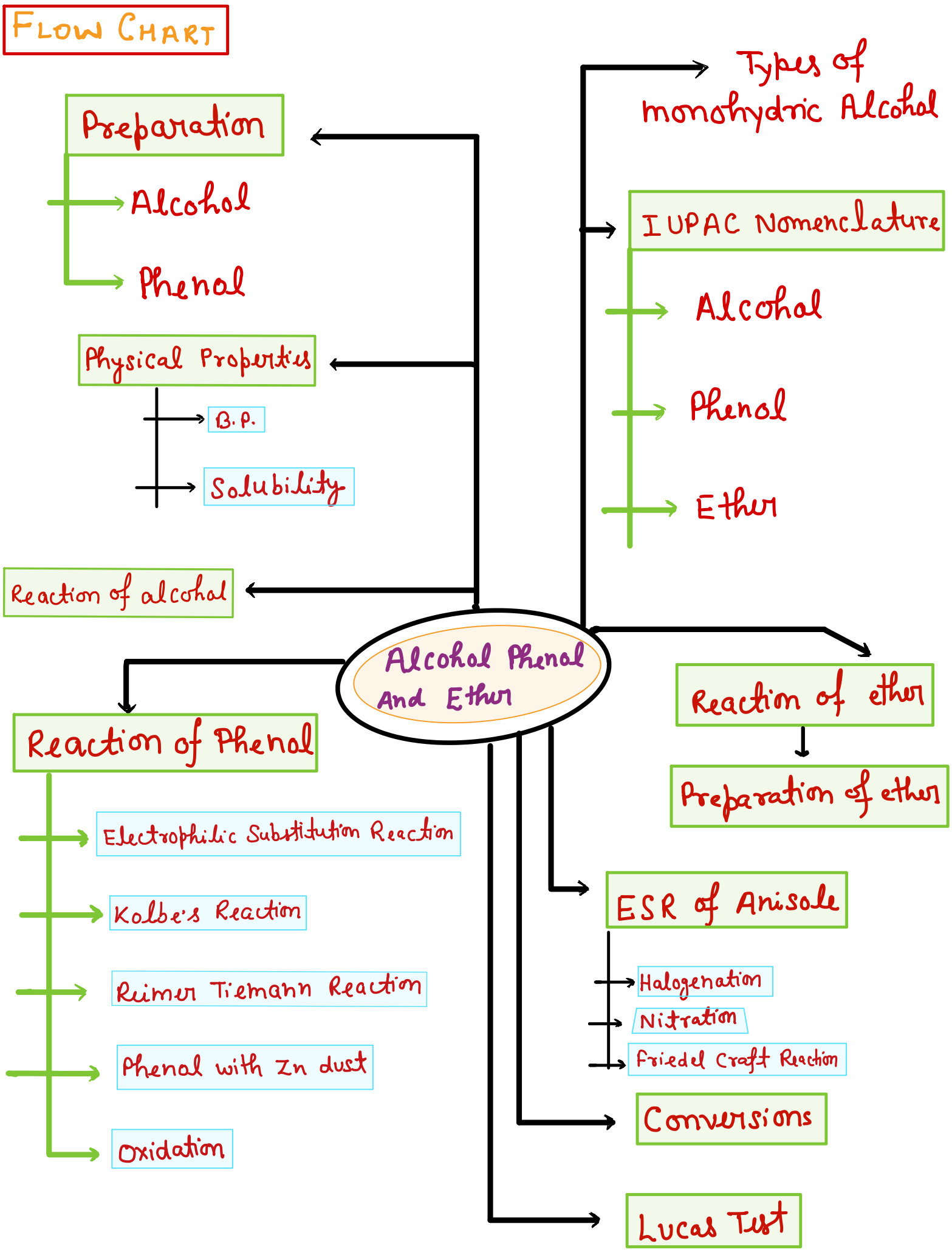
↳ These notes have been verified by top faculties & CBSE Science Toppers

↳ As per updated syllabus

↳ Target 100
↳ Previous Year Q's

Jao Ab Phodo !

Aman Dhattarwal


Flow Chart
Alcohol Phenol And Ether
Preparation
Alcohol
Phenol
Physical Properties
B.P.
Solubility
Reaction of alcohal
Reaction of Phenol
Electrophilic Substitution Reaction
Kolbe's Reaction
Reimer Tiemann Reaction
Phenal with Zn dust
Oxidation
Types of monohydric Alcohal
IUPAC Nomenclature
Alcohal
Phenol
Ether
Reaction of ether
Preparation of ether
ESR of Anisole
Halogenation
Nitration
Friedel Craft Reaction
Conversions
Lucas Test

Alcohols, Phenols and Ethers

$R-OH$ | $Ph-OH$ | $R-O-R$

Apni Kaksha

Monohydric Alcohols

Compounds containing $C_{sp^3}-OH$ bond

- Primary Alcohol: $R-CH_2-OH$
- Secondary Alcohol: R_2CH-OH
- Tertiary Alcohol: R_3C-OH

Allylic Alcohols :-

$CH_2=CH-CH_2-OH$

↳ Allylic carbon

[Carbon next to double bond]

Benzylic Alcohols :-

Benzylic Carbon → $C_6H_5-CH_2-OH$

[Carbon next to benzene]

IUPAC Nomenclature of Alcohols

→ The longest carbon chain is numbered starting at the end nearest to the hydroxyl group (-OH).

Alkane - e + ol = Alkanol

Examples :- CH_3-OH : Methanol (Methyl alcohol) ; $CH_3-CH(OH)-CH_3$

↳ IUPAC ↳ Common Name

Propan-2-ol

(Isopropyl alcohol)

$(CH_3)_3C-OH$: 2-Methylpropan-2-ol

(tert-Butyl alcohol) : [Delhi 2012] 1M

→ $C_6H_5-CH_2-CH_2-OH$: 2-Phenylethan-1-ol → $CH_2(OH)-CH=C(CH_3)_2$ [2015] 1M

[CBSE 2016] 1M

: 3-Methylbut-2-en-1-ol

→ $CH_3-C(CH_3)_2-CH(OH)-CH_3$: 3,3-Dimethylpentan-2-ol

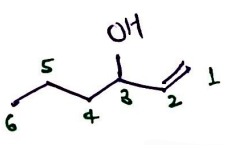
[2018] 1M

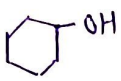
→ $CH_2(OH)-CH(OH)-CH_2(OH)$: Propan-1,2,3-triol

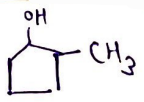
(Glycerol) 1M

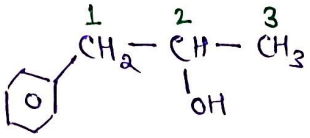
→ Hex-1-en-3-ol

Delhi 2012] 1M Structure →

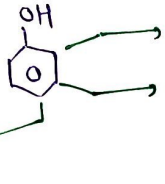


→ Cyclohexanol : 

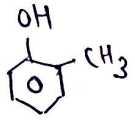
→ 2-Methyl Cyclopentanol : 

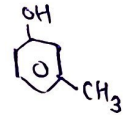
→ 1-Phenylpropan-2-ol :  (CBSE 2010) 1M

IUPAC Nomenclature of Phenols

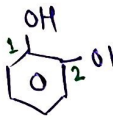
→ Phenol : 
Ortho Position
Meta Position
Para position

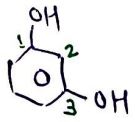
→ Cresol → 2-Methylphenol.

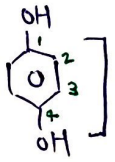
o-Cresol : 

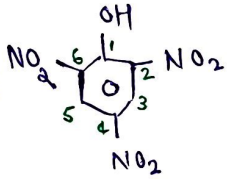
m-Cresol : 
→ 3-Methyl phenol.

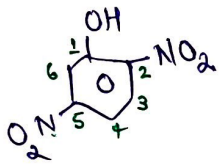
p-Cresol : 
→ 4-Methyl phenol.

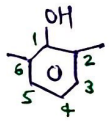
→ Catechol :  : Benzene-1,2-diol

→ Resorcinal :  : Benzene-1,3-diol

→ Quinal (Hydroquinone) : Benzene-1,4-diol []

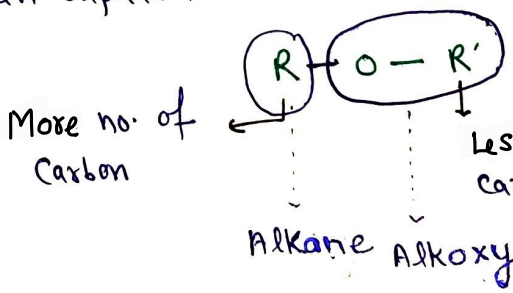
→ Picric Acid :  : 2,4,6-Trinitrophenal.

→  : 2,5-Dinitrophenol [Delhi 2015] 1M

→ 
2,6-Dimethylphenol
[2011]
1M

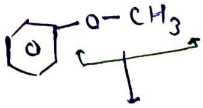
IUPAC Nomenclature of Ethers → Alkoxy Alkane
R–O–R'

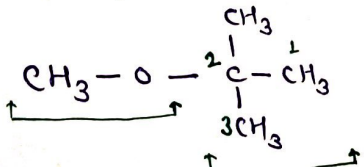
→ Common name of ethers are derived from the names of alkyl / aryl groups written as seperate words in alphabatical order and adding the word "ether" at the end.

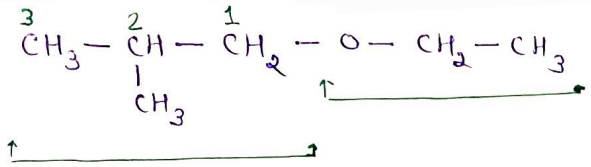


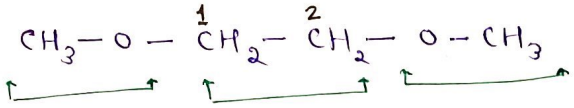
→ CH_3-O-CH_3 [Dimethyl ether]
Methoxy methane

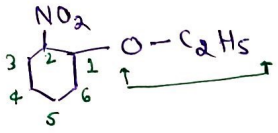
→ $CH_3-O-CH_2-CH_2-CH_3$ [Methyl n-propyl ether]
Methoxy propane

→  Methylphenyl ether
(Anisole) Methoxy benzene

→  2-Methoxy-2-methylpropane
[CBSE 2017] 1M

→  : 1 - Ethoxy - 2 - methyl propane [CBSE 2015] 1M

→  : 1, 2 - Dimethoxy ethane

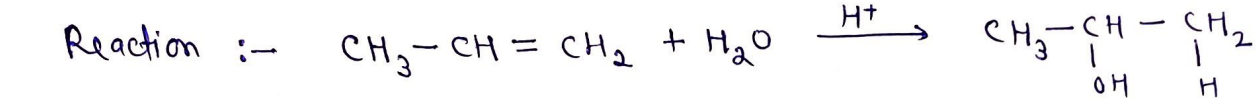
→  : 1 - Ethoxy - 2 - nitrocyclohexane [CBSE 2012C] 1M

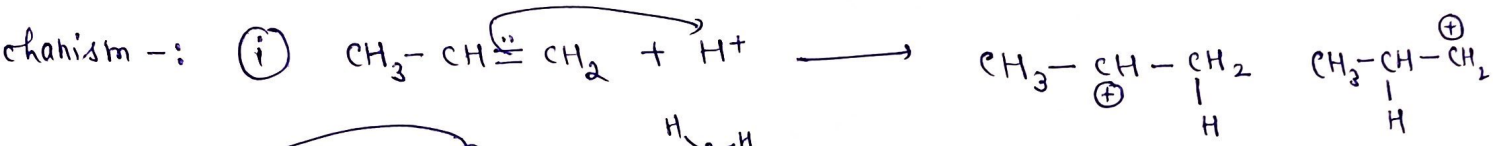
Preparation of alcohols

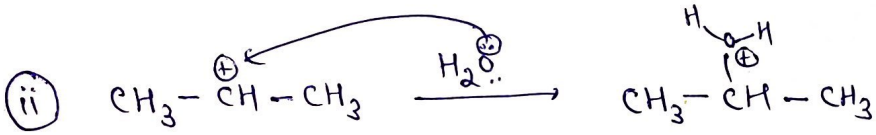
1M

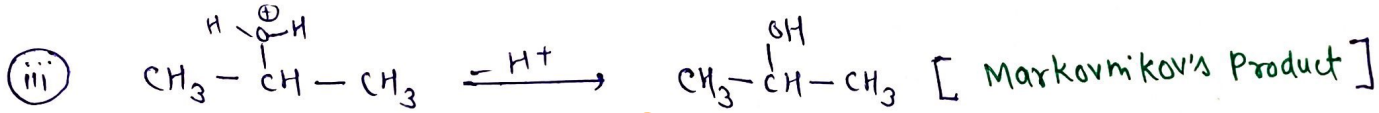
1.] From alkenes :-

[a.] Acid catalysed hydration :- [Delhi 2013]

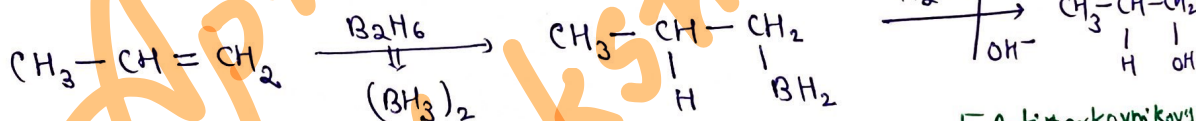
Reaction :-  Propan-2-ol

Mechanism -: (i) 

(ii)  (More stable)

(iii)  [Markovnikov's Product]

[b.] Hydroboration - Oxidation Method -:

Reaction : 

[Delhi 2013] 1M [CBSE 2016]

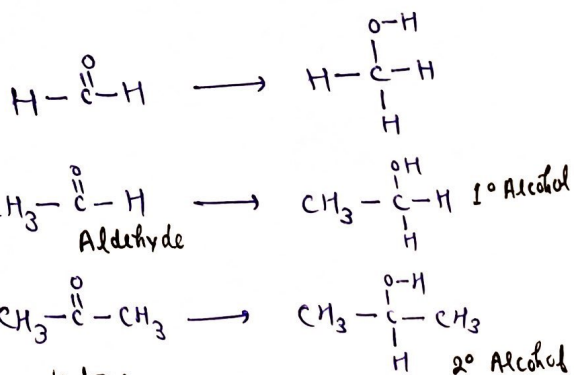
[Anti markovnikovs Product]

2.] From Carbonyl compounds -:

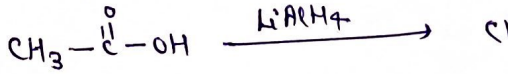
(a.) → Reduction of aldehyde and ketone :-

Reducing agent : $NaBH_4$ | $LiAlH_4$ | H_2 with Pd

Only for ketone/Aldehyde → Ketone / Aldehyde / Acid Ester



(b.) → Reduction of carboxylic Acid -:

→ 

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