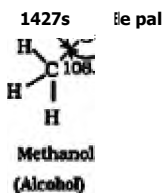


	$\begin{array}{c} \text{Cl} \\ \\ \text{Cl}-\text{C}-\text{H} \\ \\ \text{H} \end{array}$	(I-I ₃ -CH, -CHO			
2.	Two different types of dissimilar H-atoms. C1-5 -CClCH ₂ CH ₃	One type of similar H-atoms H1-5 -O-CH ₂ -CHO	3	3	6
3.	Two different types of dissimilar H-atoms C1-5 -CO-CH ₂ -Cl-5	Two different types of dissimilar H-atoms Ph-CH ₂ -CO-Cl-CH ₂ -O-CH ₂ -	4	4	8

.....

16. ALCOHOLS, PHENOLS AND ETHERS

Structure of Alcohols :



Preparation of Alcohol

(1) From alkenes

(2) By acid catalysed hydration in accordance with Markovnikov's rule.



(3) By hydration-oxidation



(ii) From carbonyl compounds

(a) Reduction of aldehydes and ketones



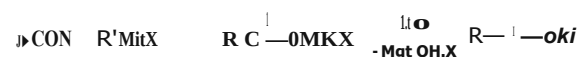
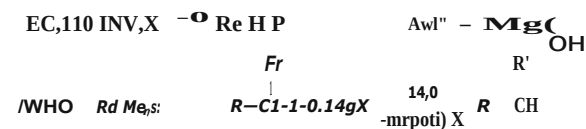
OH

(b) By reduction of carboxylic acids and ester



Reduction of aldehydes, ketones and esters with NaBH_4 in alcohol is called Bouveault-Laplace reduction.

Reaction of carbonyl compound with Grignard Reagent,



(iv) Hydrolysis of alkyl halides



Ease of hydrolysis of alkyl halide, $\text{RI} > \text{RBr} > \text{RCI} > \text{RCl}_3$ and $\text{R}_2\text{O} > \text{ROH} > \text{alkyl halides}$.

(v) Hydrolysis of ethers



(vi) From primary amines by treatment with nitrous and



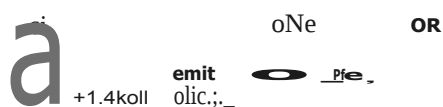
Methylamine does not give methyl alcohol when treated with HCl . It gives CH_3Cl , H_2 and CNH_2 .

(i) by alcoholic fermentation

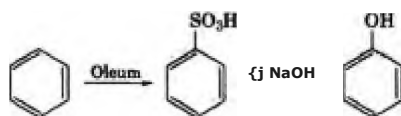


Preparation of Phenols.

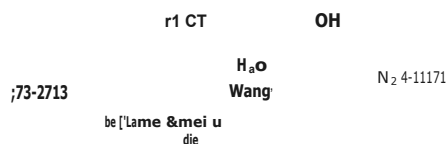
(i) From haloarenes



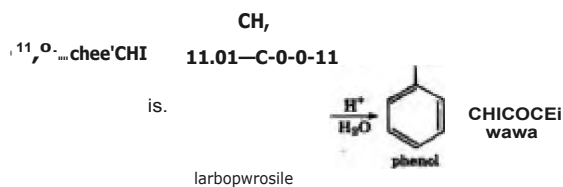
(ii) From benzenesulphonic acid



From diazonium salts

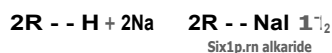


(iii) From cumene



Alcohols react as nucleophiles

fa) Reaction with metals



{14 Esterification reaction



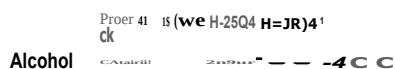
{b4 Reaction with phosphorus halides



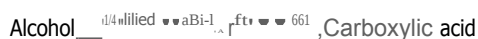
{di Reaction with thionyl chloride



{C 'Dehydration reaction



Oxidation reaction



(i) Primary Alcohol

Aldehyde

Secondary Alcohol

Ketone

(III) Tertiary Alcohol

Alkene

Phenols

Structure of Phenols :



sp^2 hybridised

Chemical properties of phenols ;

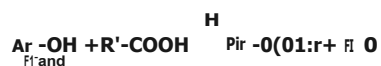
(i) Reaction with metals



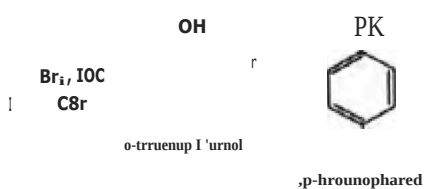
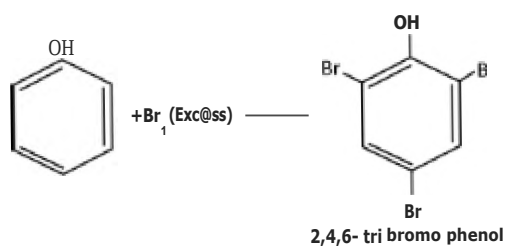
26 I aNivkl:::1 14.2'

Ecd u m piavnimr.lde

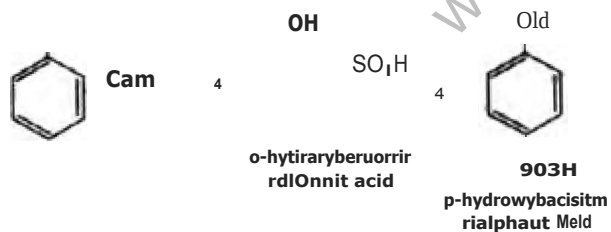
Esterification reaction



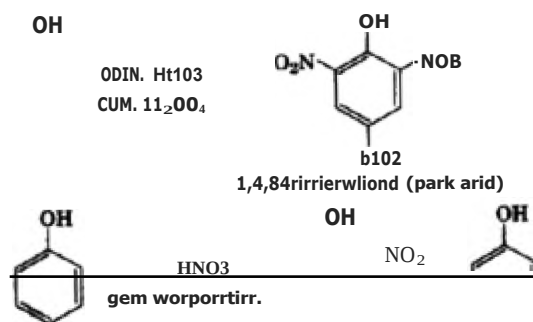
(a) Halogenation



(b) Su'phonation



(c) Nitration



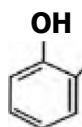
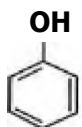
411 4-11L1
A4L1.704.#7



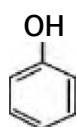
0 Na'

4r1

ryolnrhorlp
{third pr otlutri



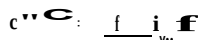
irrilikKO
cyclic acid

 COOH

-hydromyborizoic acid
(n or)

Oil

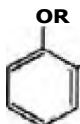
Oita



envi.I

OH

aoE



**2-kritliTrbmanic .Neffi
aithrylic**

pfianAsai§rylnio ILEALA

°COMA

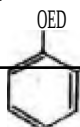


CH1COCIL

Irqie0h0

icaRyl

acid



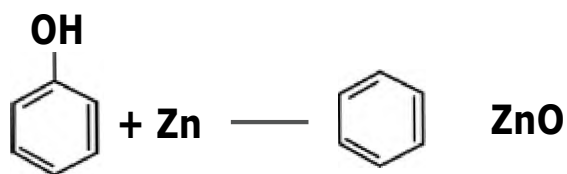
~~MA X:11~~

raf-thyL aali_{miapp} (ibulterl

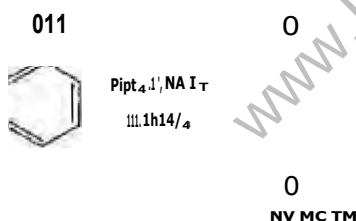
www.FirstRanker.com

UOISSIUIPV MOS1I2V

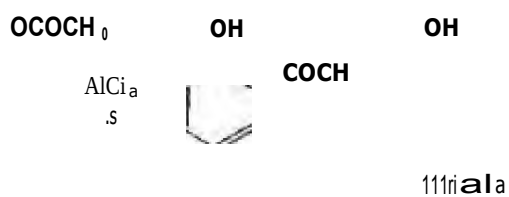
iii) Reaction with zinc dust



(iv) Oxidation



(1.1) Fries rearrangement

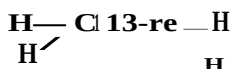


Ethers

Structure of Ethers

sp^3 hybridised

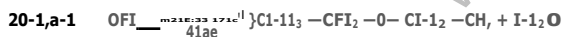
141 pm



Methoxy-methane
(Ether)

Preparation of Ethers

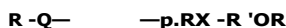
By dehydration of alcohols



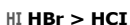
Williamson's Synthesis: Only primary alkyl halides when react with sodium alkoxide give ether while tertiary alkyl halides give alkene due to steric hindrance.



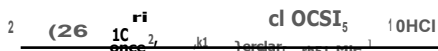
General Reaction of Ether



The order of reactivity of hydrogen halides is as follows



(ii) Halogenation



(iii) Reaction with RCl s

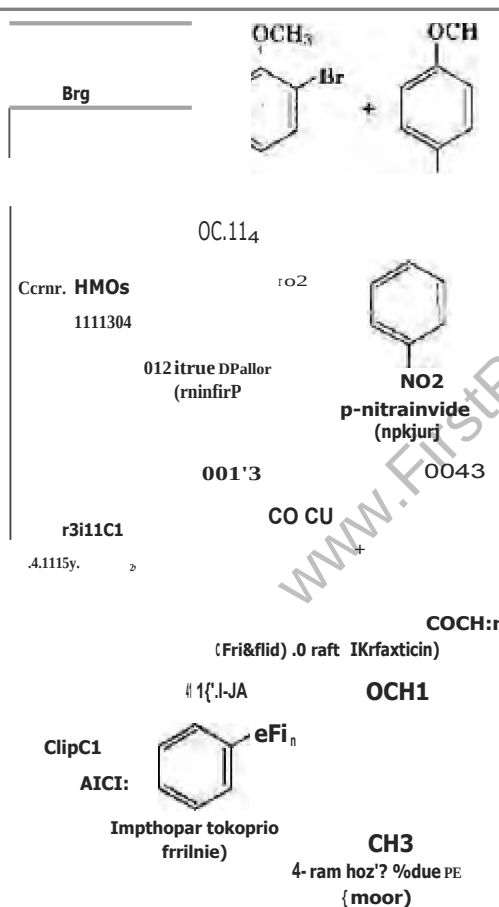


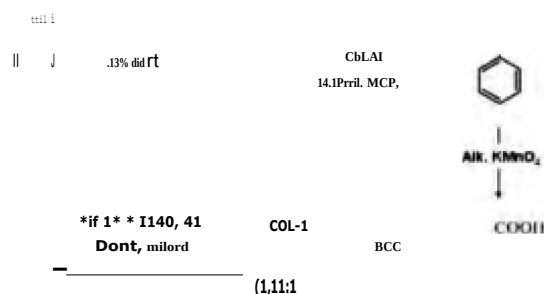
(iv) Reaction with CO



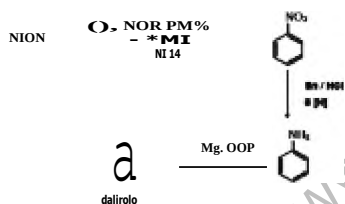
Electrophilic Substitution reactions

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(b) Phenol to benzene diazonium chloride



Differentiate between organic compounds :

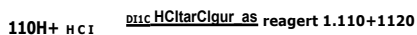
(a) Alcohols and phenols

Phenol on reaction with neutral FeCl₃ gives purple colour whereas alcohols do not give purple colour.



(b) Primary, secondary and tertiary alcohols

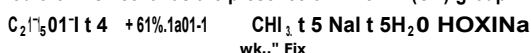
Lucas reagent test ;



If it is a primary alcohol, no turbidity appears at room temperature. Turbidity appears only on heating. If it is a secondary alcohol, turbidity appears in 5 minutes. If it is a tertiary alcohol, turbidity appears immediately.

Phenol and ethanol

Iodoform test : Ethanol when reacted with I₂ and NaOH gives yellow ppt of iodoform since it has the presence of CH₃-CH(OH)-group.



Phenol + NaOH → No yellow ppt