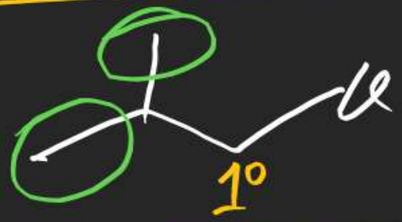
Nishant Jindal

(18)

(SN2)

4 > 3 > 2 > 1

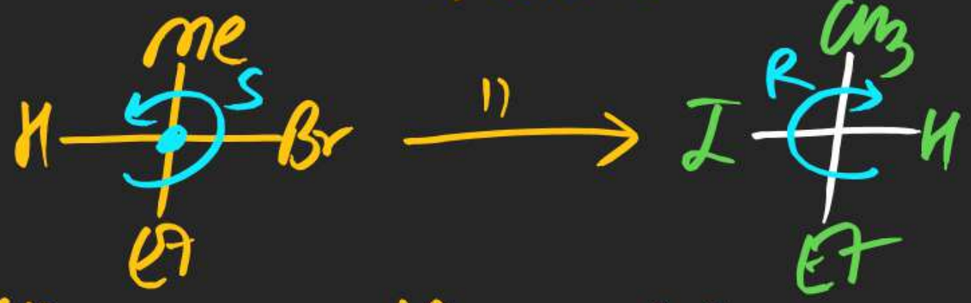
(19)

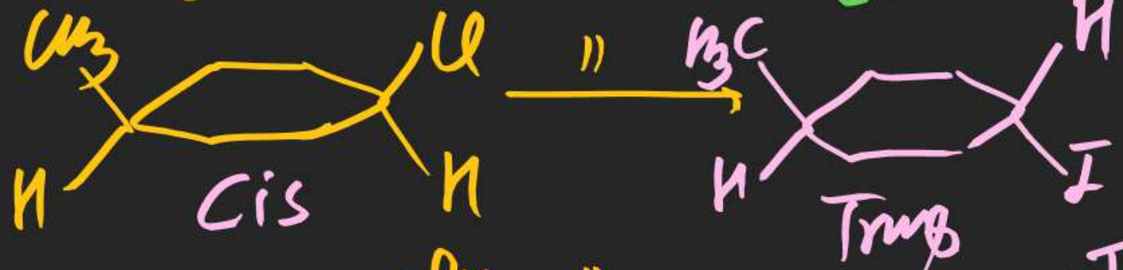


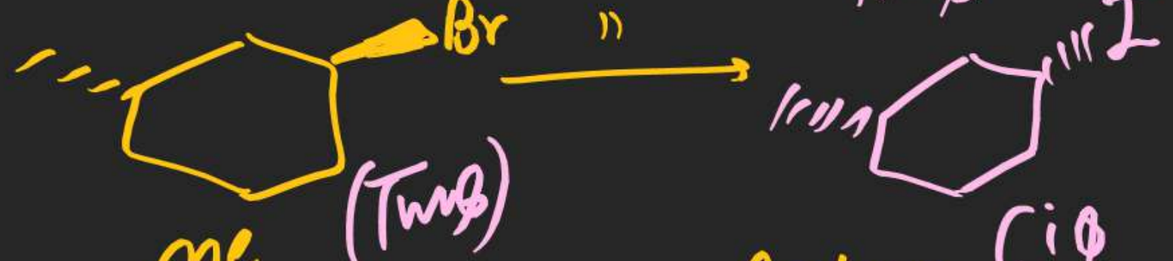
(SN1)

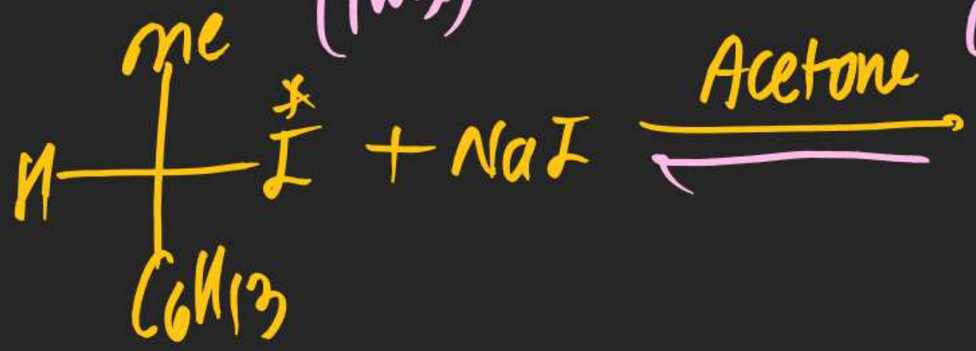
1 > 2 > 3 > 4

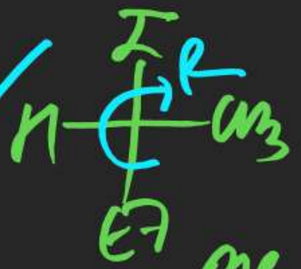
(2) $CH_3-CH_2-Cl \xrightarrow[\text{Acetone}]{NaI}$

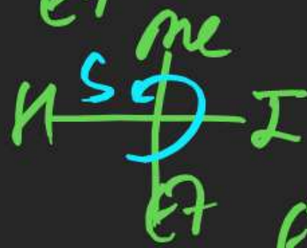
(3) 

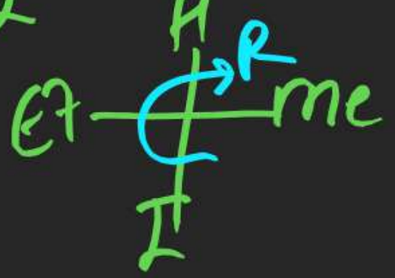
(4) 

(5) 

(6) 

(A) 

(B) 

(C) 

(D) NOT

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(2) Swarts Rxn :

⇒ In this Reaction Alkyl halide is Treated with AgF, Hg_2F_2, COF_2 ---So that alkyl Fluoride is obtained as a Product.

(1) $R-X + AgF \xrightarrow{PAS} F-R + AgX$

(2) $CH_3-CH_2-Br \xrightarrow[\text{''}]{Hg_2F_2} CH_3-CH_2-F$

(3) 

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(4)  + AgF ⟶ 

(#) Wiliamson Ether Synthesis :-

⇒ In this Reaction alkyl halide is treated with Sodium or Potassium alkoxide so that Ether is obtained as a Product.

(1) $R-OH \xrightarrow[-H_2\uparrow]{Na} R-O^{\ominus}Na^{\oplus} + R'-X \longrightarrow R-O-R' + NaX$

(2) $R'-OH \xrightarrow[-H_2\uparrow]{Na} R'-O^{\ominus}Na^{\oplus} + R-X \longrightarrow R'-O-R + NaX$

Note (i) SN^2 mechanism.

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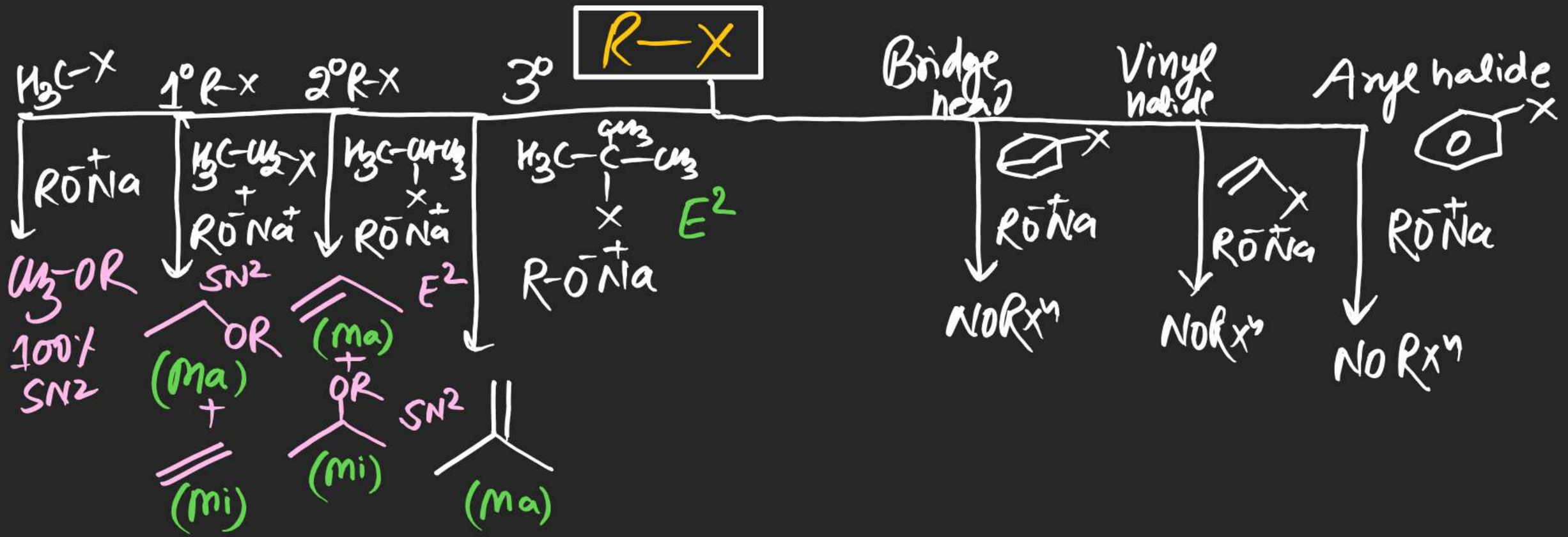

(2) $CH_3-\overset{\oplus}{O}Na + CH_3-Cl \longrightarrow CH_3-O-CH_3$

(3) $\| + \wedge Cl \longrightarrow CH_3-\underset{(Ma)}{O}-CH_2-CH_3 + \underset{(Mi)}{CH_2=CH_2}$

(4) $\| + \rangle Cl \longrightarrow CH_3-\underset{(Ma)}{CH=CH_2} + \underset{(Mi)}{\rangle OCH_3}$

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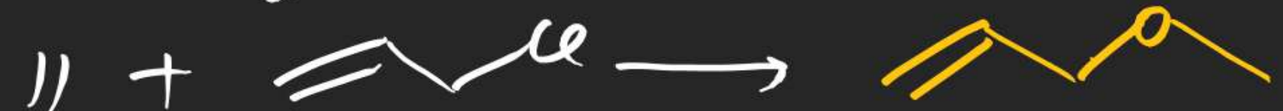
(5) 

(6) 

(7)  NO Rxn

(8)  NO Rxn

(9)  NO Rxn

(10) 

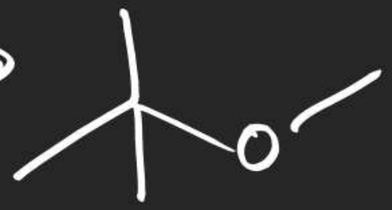
HW:

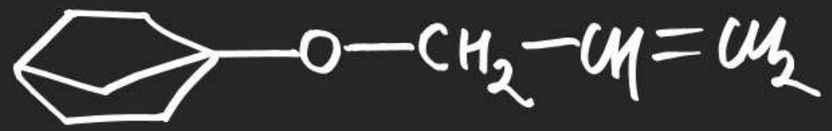
Carbocation sheet (JM+JA)

Substitution sheet (40 Questn)

BB (ISO) (Next 40 Questn)

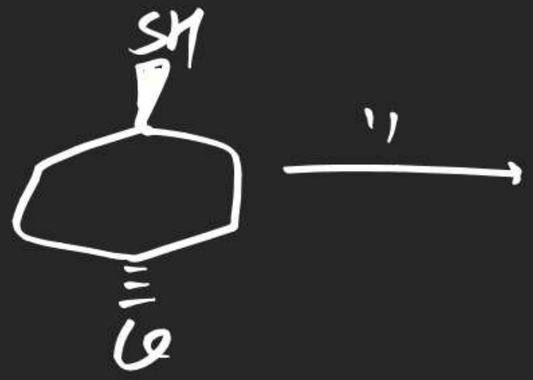
(11) $R-O^{\ominus}Na^{\oplus} + R'-X \longrightarrow$ 

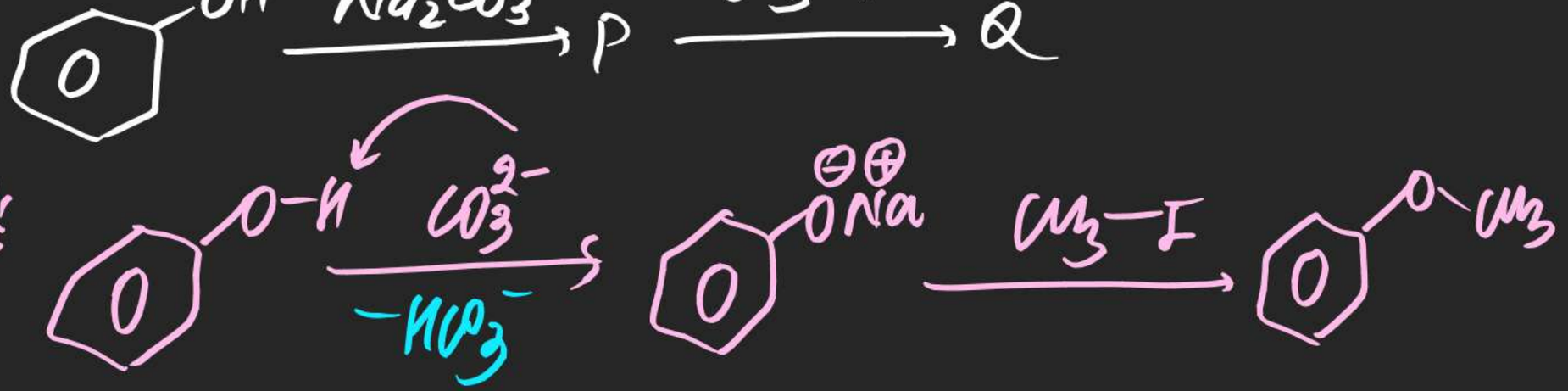
(12) ? + ? $\longrightarrow$ 

(13) ? + ? $\longrightarrow$ 

(14)  $\xrightarrow[\text{metal}]{Na}$

(15) 

(16) 

(17) 

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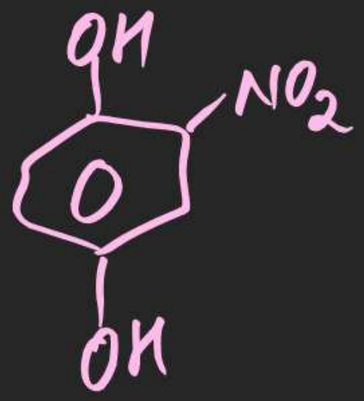
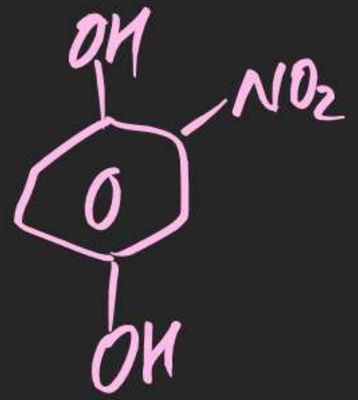
(18) 

$\xrightarrow[1eq]{NaOH} P \xrightarrow{CH_3-I} Q$

(19) 

$\xrightarrow[Excess]{NaOH} P' \xrightarrow[(1eq)]{CH_3-I} Q'$

(20) $H-C\equiv C-CH_2-CH_2-OH \xrightarrow[Excess]{Na} P \xrightarrow[(1eq)]{CH_3-Cl} Q \xrightarrow{CD_3-Br} R$

Mech:- $H-C\equiv C-CH_2-CH_2-OH \xrightarrow[-H_2\uparrow]{Na}$ $Na^{\oplus}\ {}^{\ominus}C\equiv C-CH_2-CH_2-O^{\ominus}\ Na^{\oplus} \xrightarrow{CH_3-Cl}$

WA SA SB P WB

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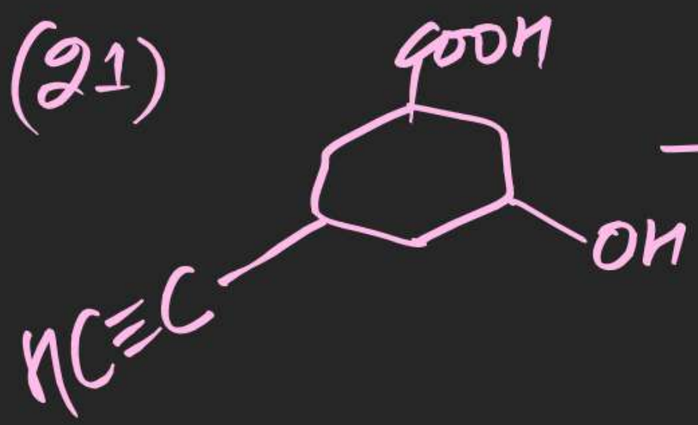
$H_3C-C\equiv C-CH_2-CH_2-O^{\ominus}\,Na^{\oplus} \xrightarrow{CD_3-Br} H_3C-C\equiv C-CH_2-CH_2-CD_3$

(Q) (R)

$En-H + Na \rightarrow Na^{\oplus}En^{\ominus} + \frac{1}{2}H_2\uparrow$

(21) 

$\xrightarrow[\text{Excess}]{NaOH}$ P $\xrightarrow{CH_3-Cl}$ Q $\xrightarrow{CD_3-Br}$ R

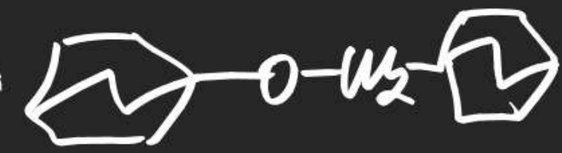
(22) ?. + ?. → 

(23) → 

(24) → 

(25) → 

(26) ?. + ?. → 

(27) ?. + ?. → 

(28) $CH_3-CH(D)-OH \xrightarrow[(ii)\ CH_3-Cl]{(i)\ Na}$

(29) $CH_3-OH \xrightarrow[(ii)\ CH_3-CH(D)-Cl]{(i)\ Na}$

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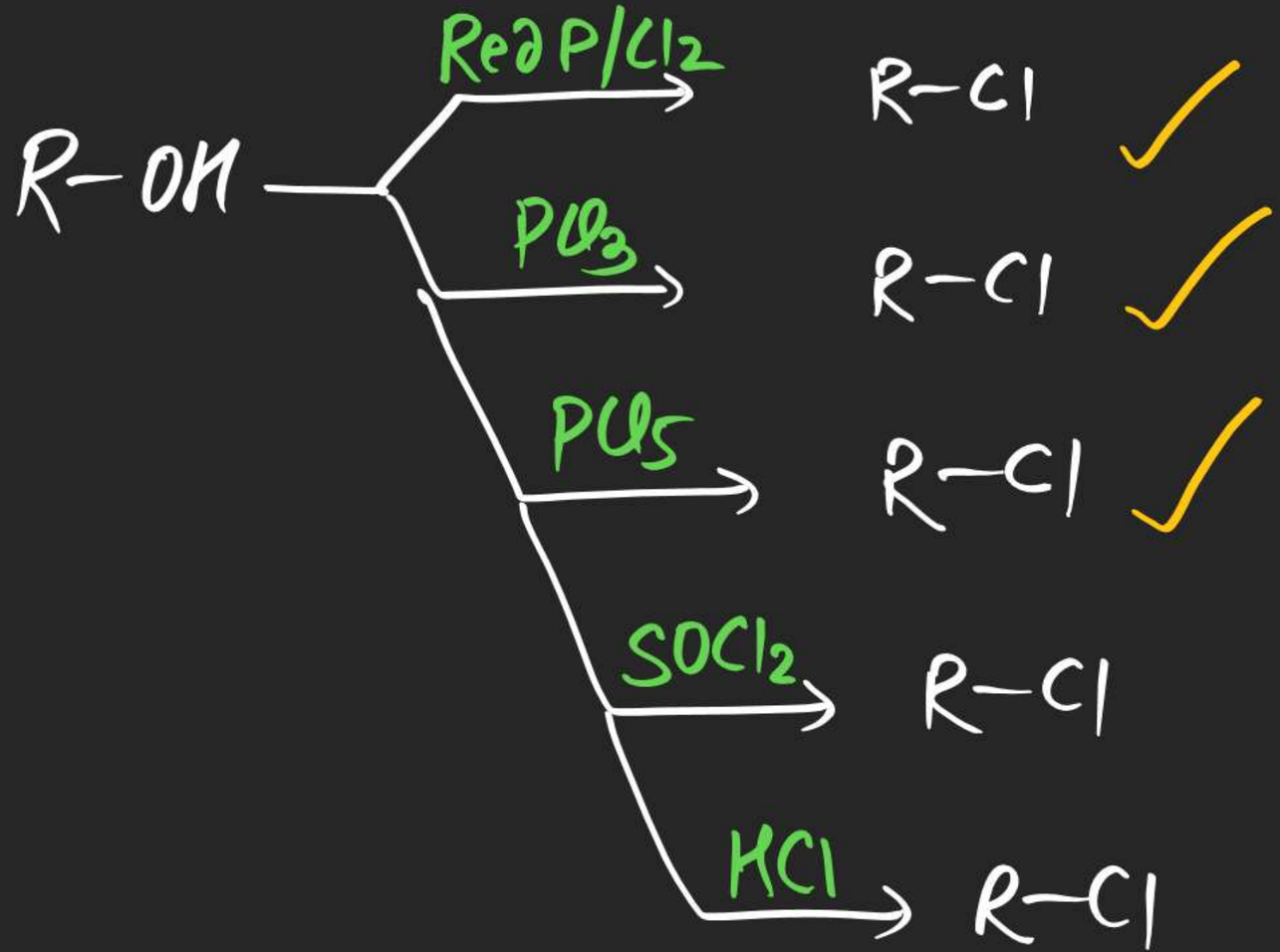
(30)



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(#) Rxn of R–OH with Red P/Cl_2 or PCl_3

$\Rightarrow$ On Reaction of R–OH with Red P/Cl_2 or PCl_3, Alkyl chloride (R–Cl) is obtained as a Product

(1) $R-OH \xrightarrow[\text{or } PCl_3]{\text{Red P}/Cl_2} R-Cl + H_3PO_3$

Mechⁿ: $2P + 3Cl_2 \longrightarrow 2PCl_3$

Note (i) SN^2 mechanism (ii) driving force of Rxn is formation of (P=O)

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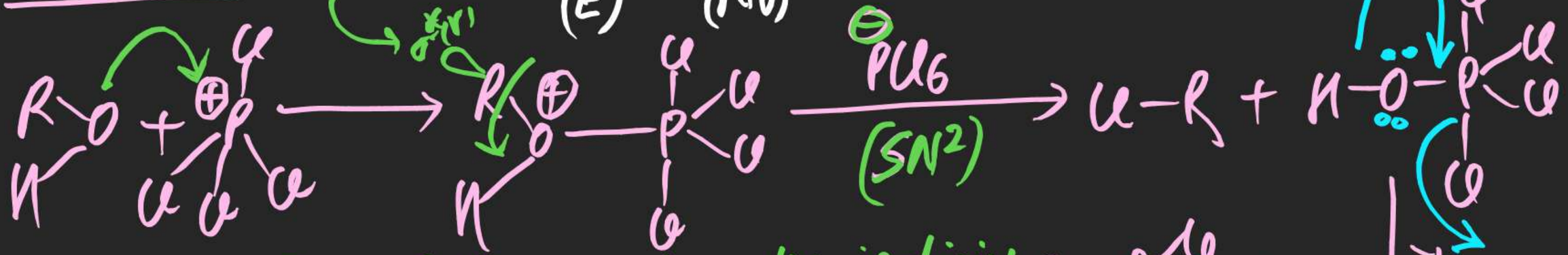
(#) Rxn of PCl_5

⇒ PCl_5 on Reaction with organic compounds gives Alkyl chloride / Acyl chloride as a product.

(2) $R-O-H + PCl_5 \longrightarrow R-Cl + H-Cl + O=PCl_3$

Mechanism:-

$2PCl_5 \longrightarrow \underset{(E)}{PCl_4^{\oplus}} + \underset{(NV)}{PCl_6^{\ominus}}$

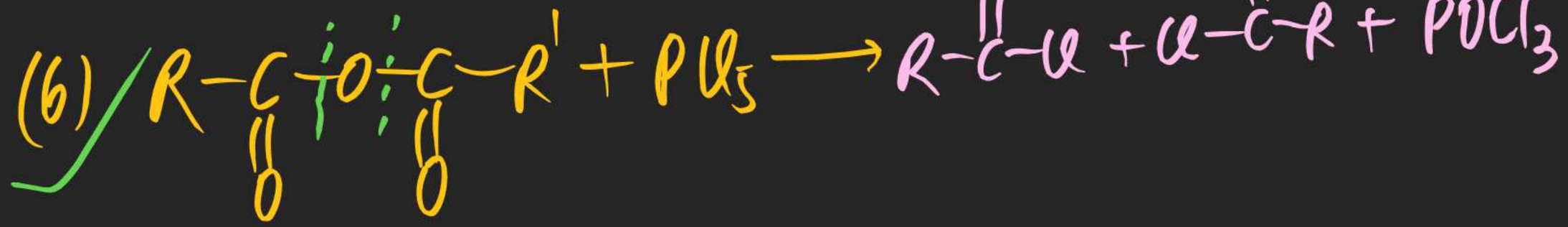


Note: (i) SN^2 mechn (ii) P=O formation is driving force.

(3) $R-O-R' + PCl_5 \longrightarrow R-Cl + R'-Cl + POCl_3$

(4) 

(5) 

(6) 

(7) $R-C(=O)-Cl + PCl_5 \longrightarrow$ NO Rxn

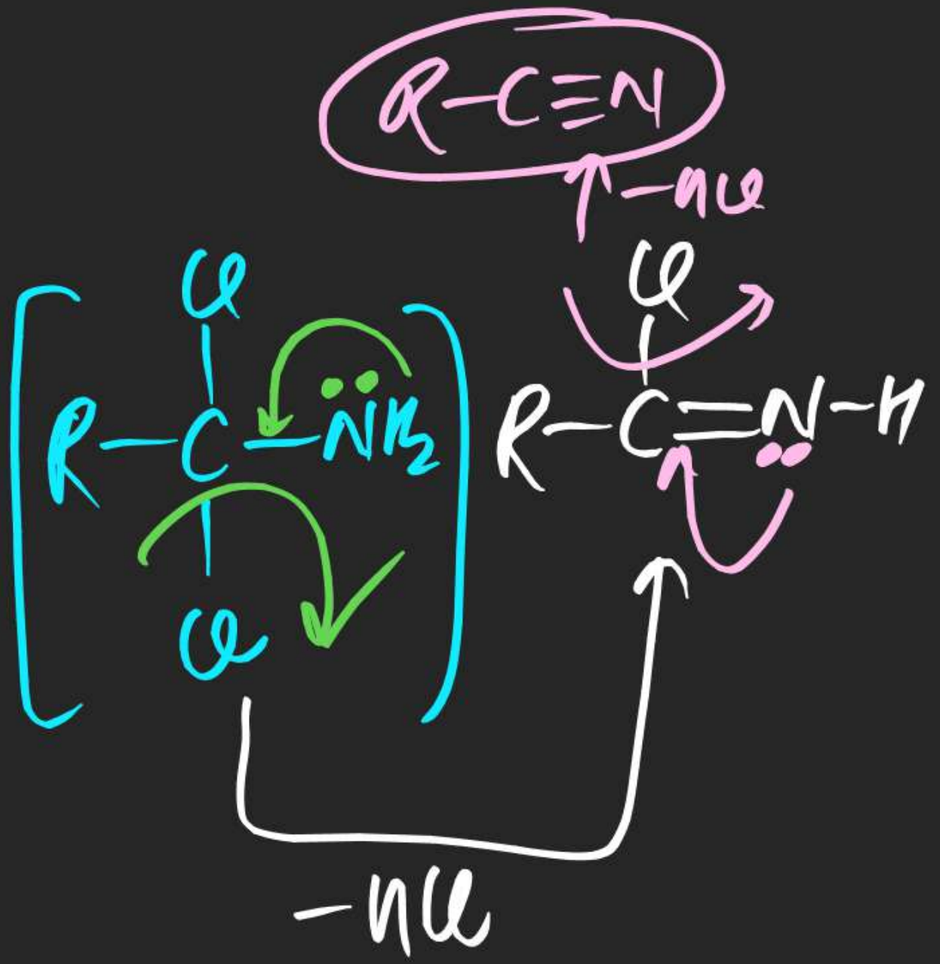
(8) $R-C(=O)-NH_2 + PCl_5 \longrightarrow R-C\equiv N$

dehydrating agent

(9)  $+ PCl_5 \longrightarrow$

(10)  $+ PCl_5 \longrightarrow$

(11)  $+ PCl_5 \longrightarrow$



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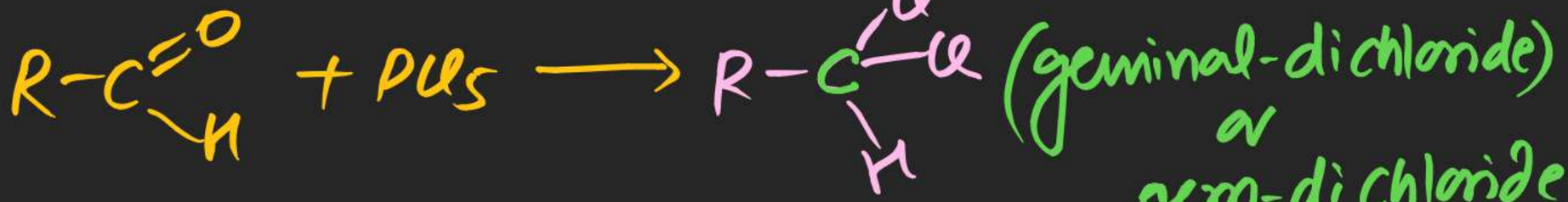
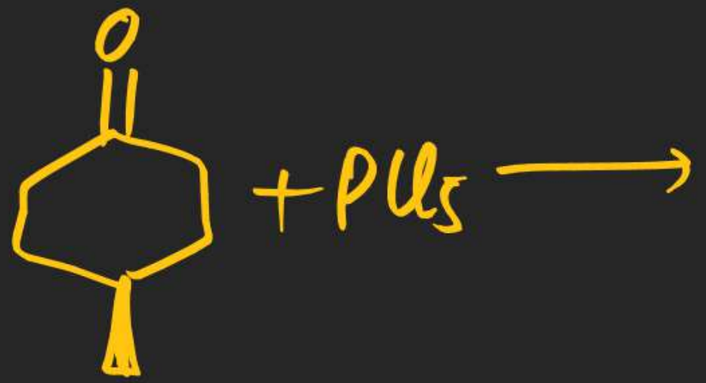
(12)  (geminal-dichloride) or gem-dichloride

(13) 

(14) 

(15) 

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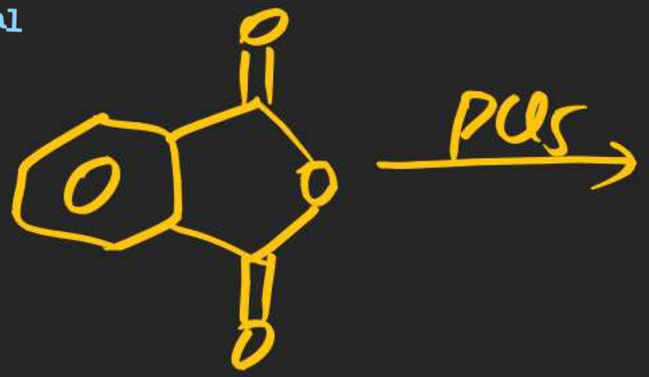
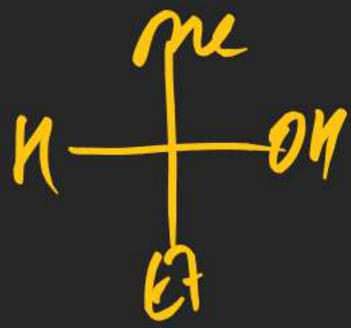
(16)



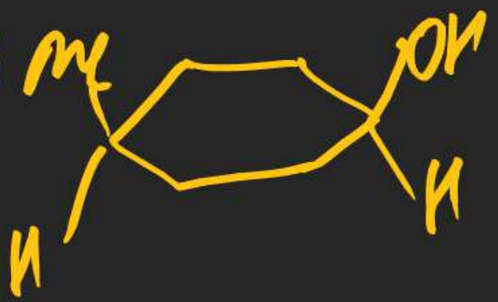
$\xrightarrow{PCl_5}$

(17)



$\xrightarrow{PCl_5}$

(18)



$\xrightarrow{PCl_5}$

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Darzen Reaction (Reaction of $SOCl_2$)

⟹ On Reaction of R–OH & $SOCl_2$, alkyl chloride is obtained as a Product.

⟹ Formation of R–Cl By Rxn of R–OH & $SOCl_2$ is most appropriate method due to formation of Escapable gases SO_2 & HCl

(1) $R-OH + SOCl_2 \longrightarrow R-Cl + H-Cl_{(g)} + SO_{2(g)}$

(2) 

$+ SOCl_2 \longrightarrow$

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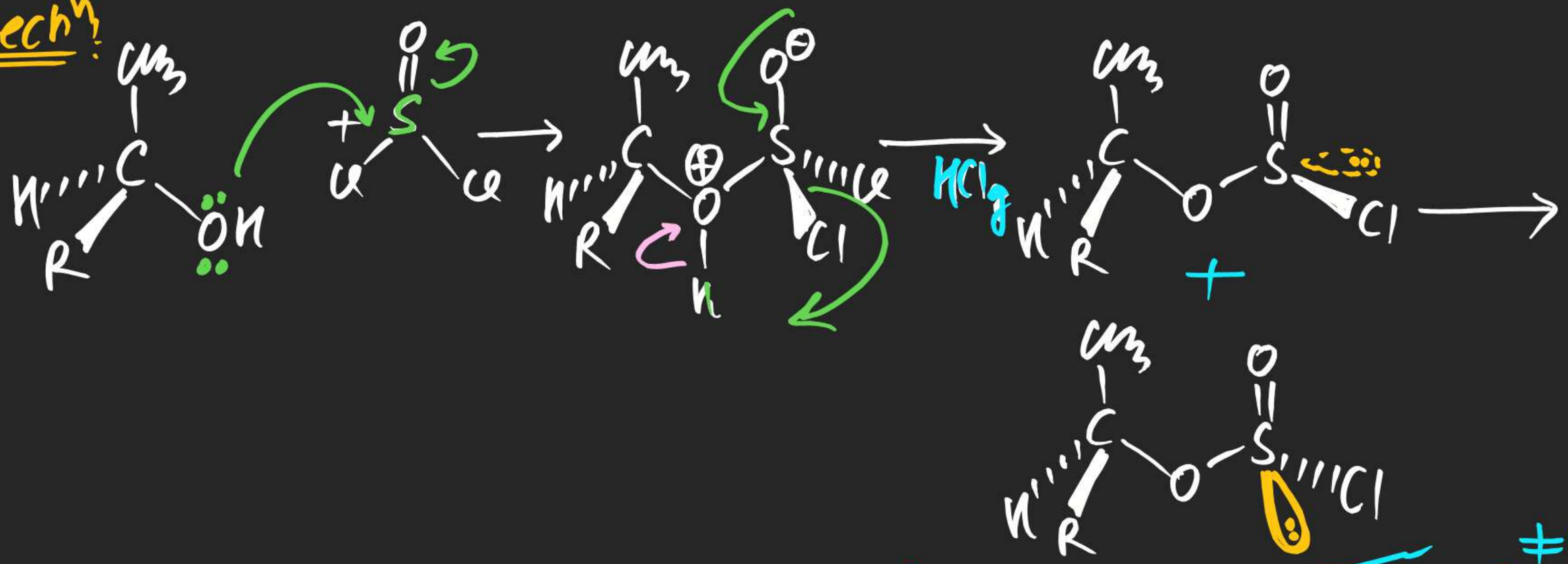
Mechⁿ:



(x) Diastereomeric mix $R \neq CH_3$

(x) Enantiomeric mix $R = H$ & $R = CH_3$

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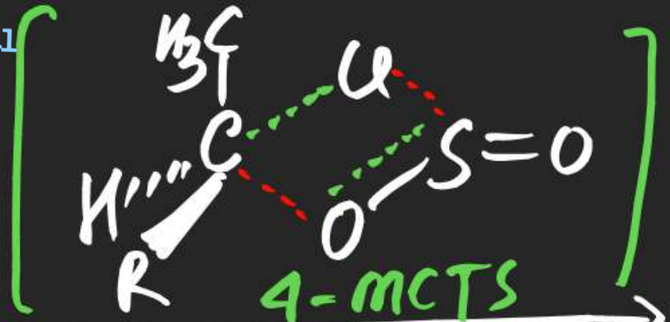
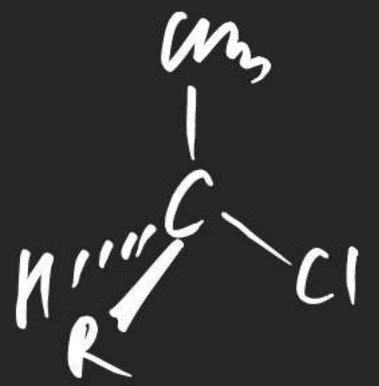
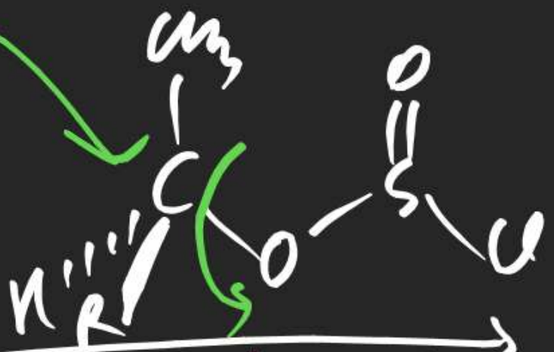


4-MCTS

S_Ni



(100% Retained)



In Case of weak Base

S_N2

100% inverted