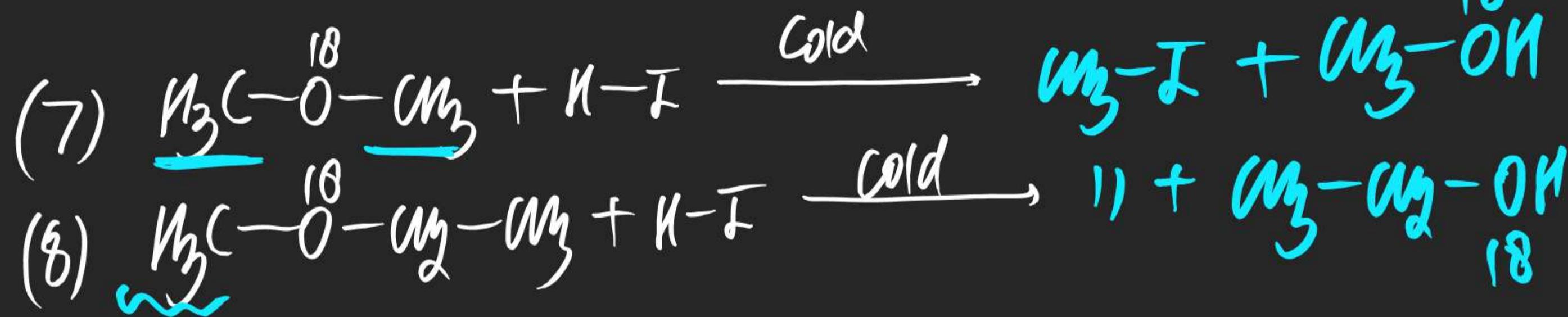
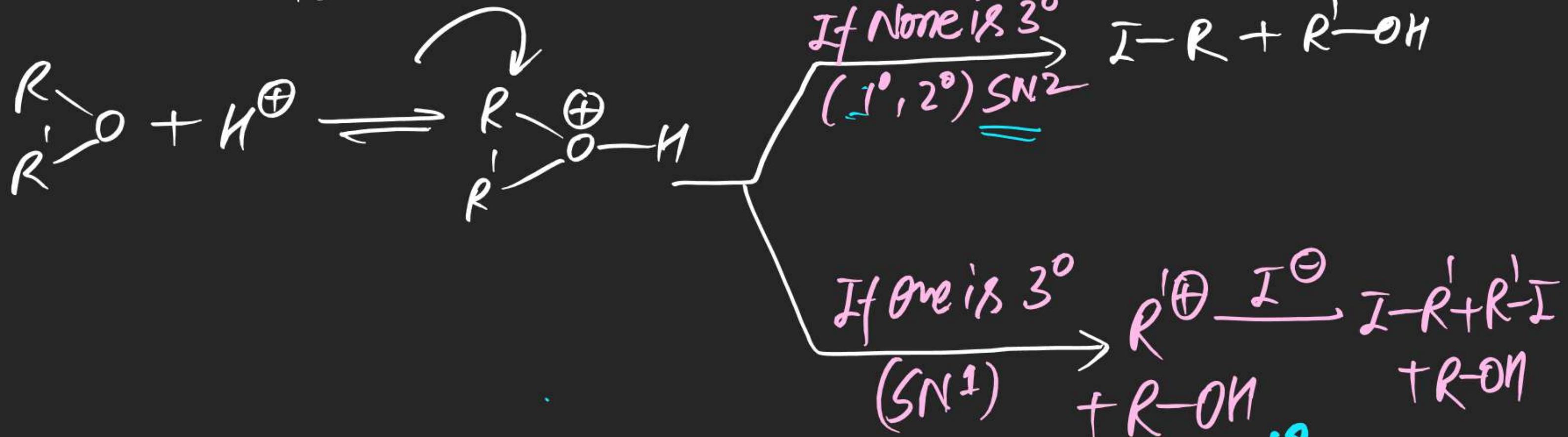
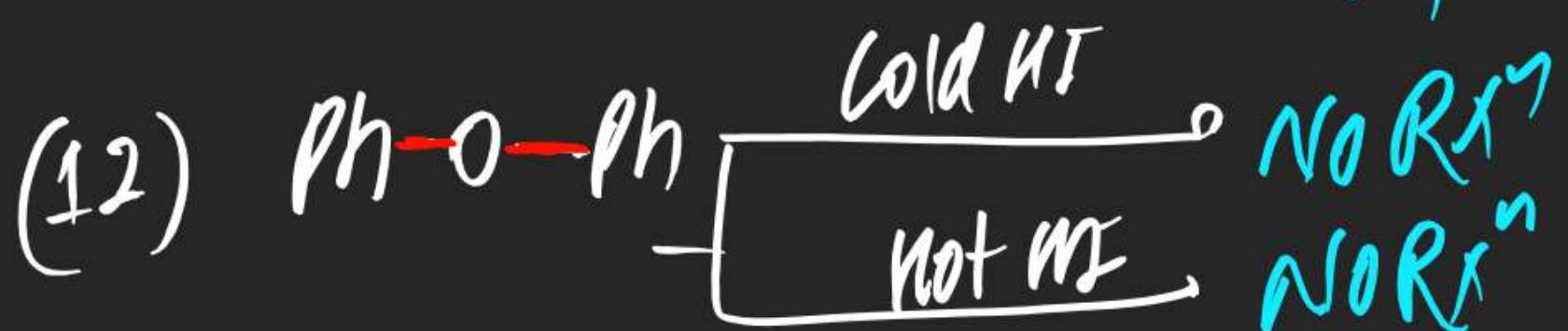
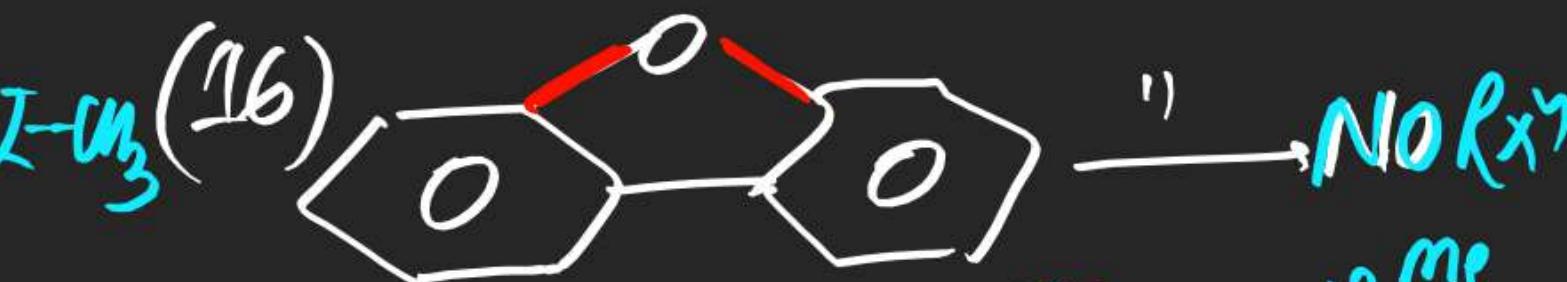


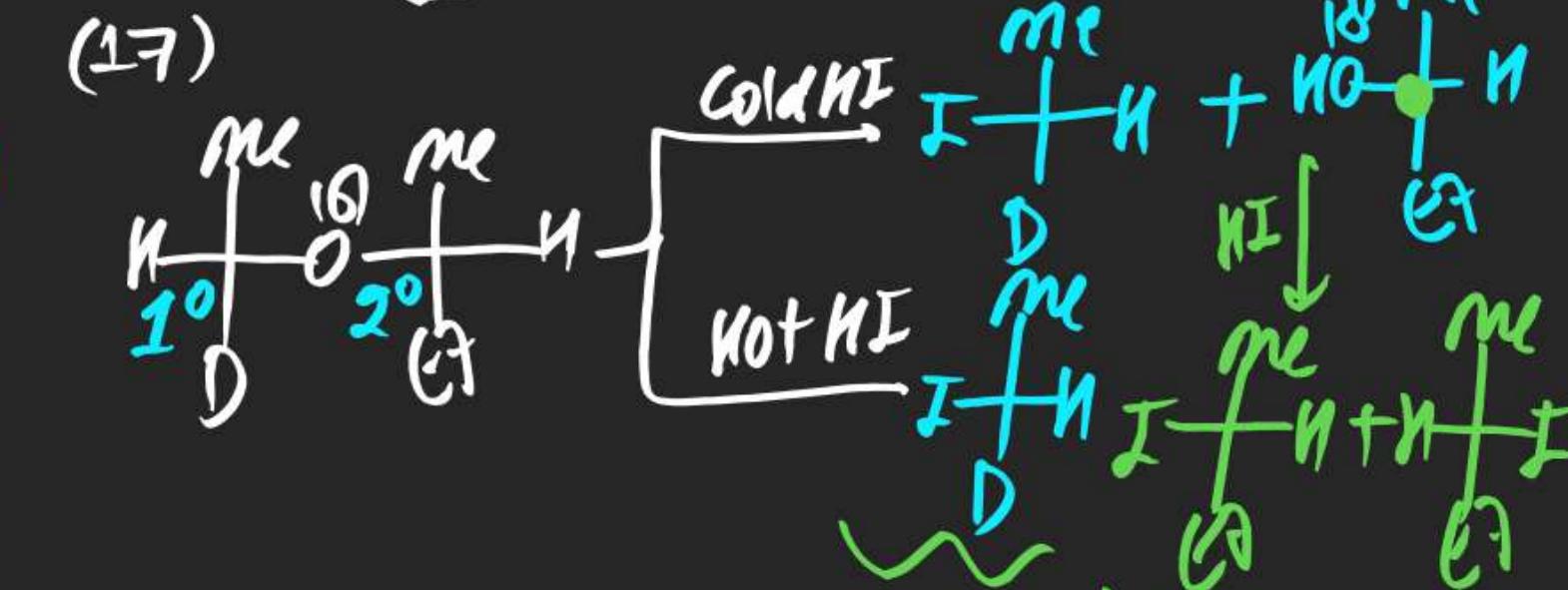
Mechanismlet us consider $R' > R$ in size



Not HI $\rightarrow \text{II} + \text{II}$

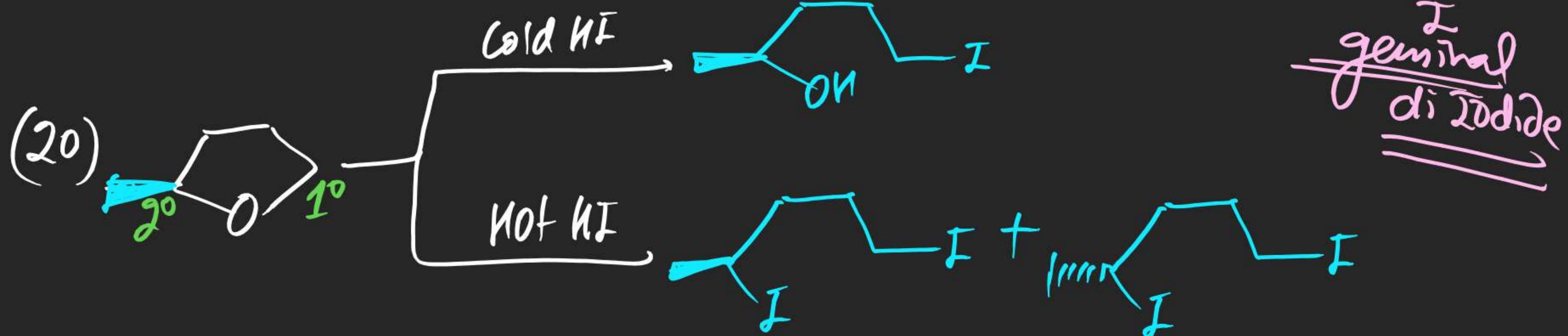
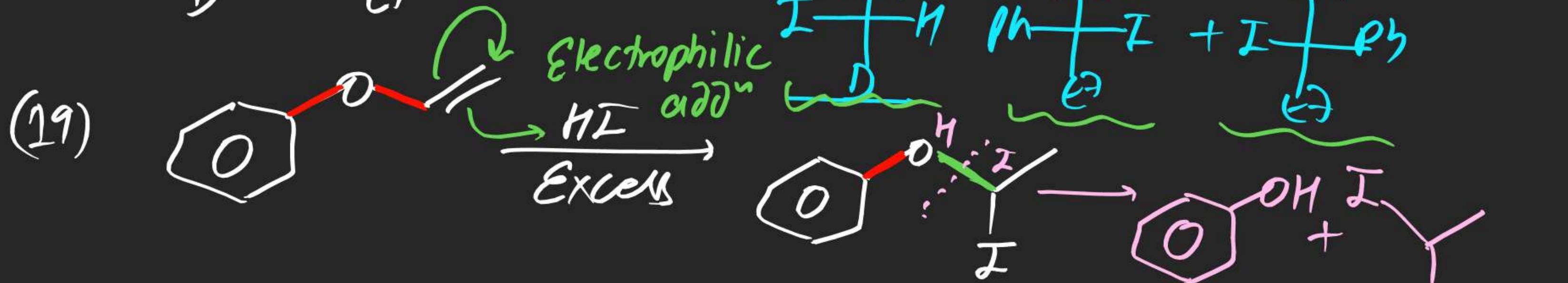
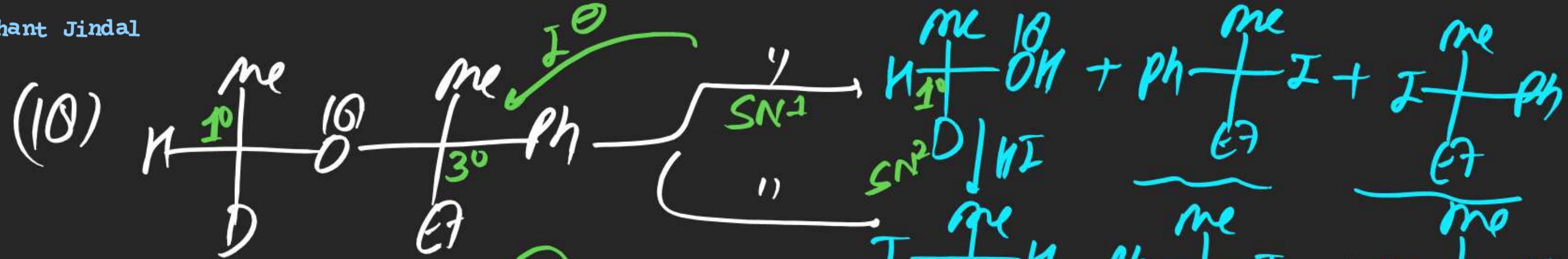


Not HI $\rightarrow \text{NO}_2\text{R}'$



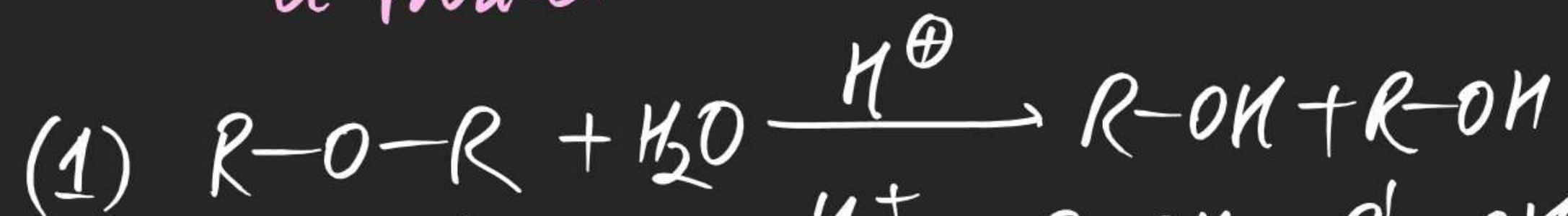
Not HI $\rightarrow \text{I-CH}_2\text{CH}_2\text{CH}_2\text{I} + \text{NO}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{I}$





(#) Hydrolysis of Ether :-

\Rightarrow Hydrolysis of Ether gives mixture of alcohol as a product

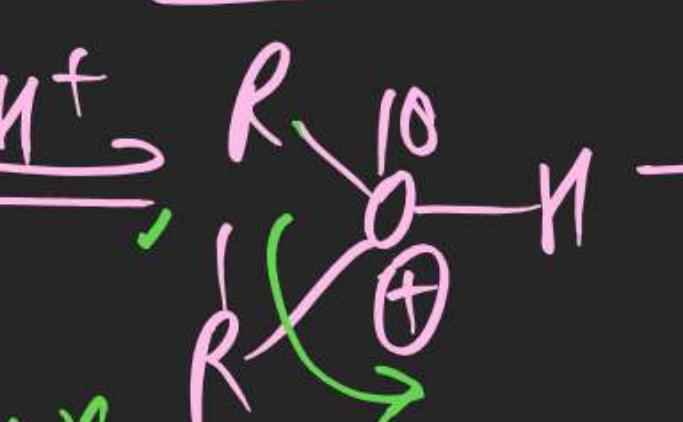


mech^r

NOK (i)

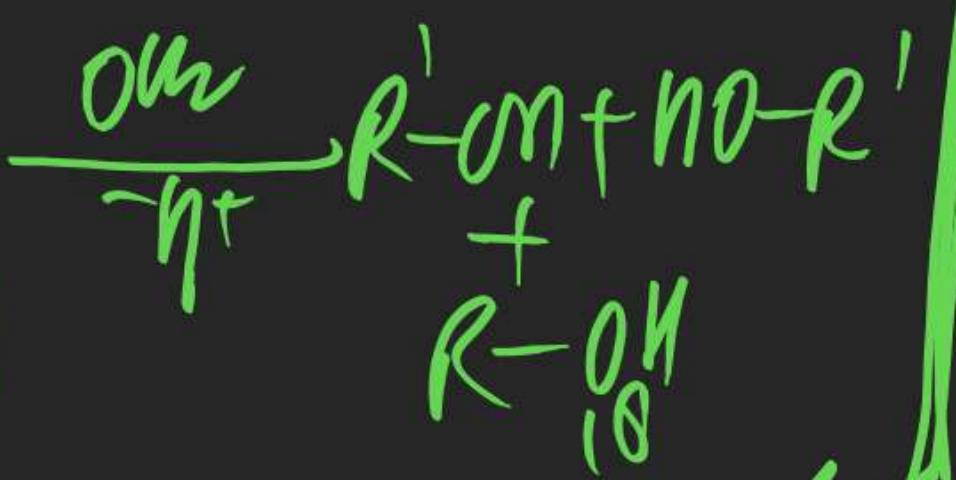
$$R \xrightarrow{(b)} R$$

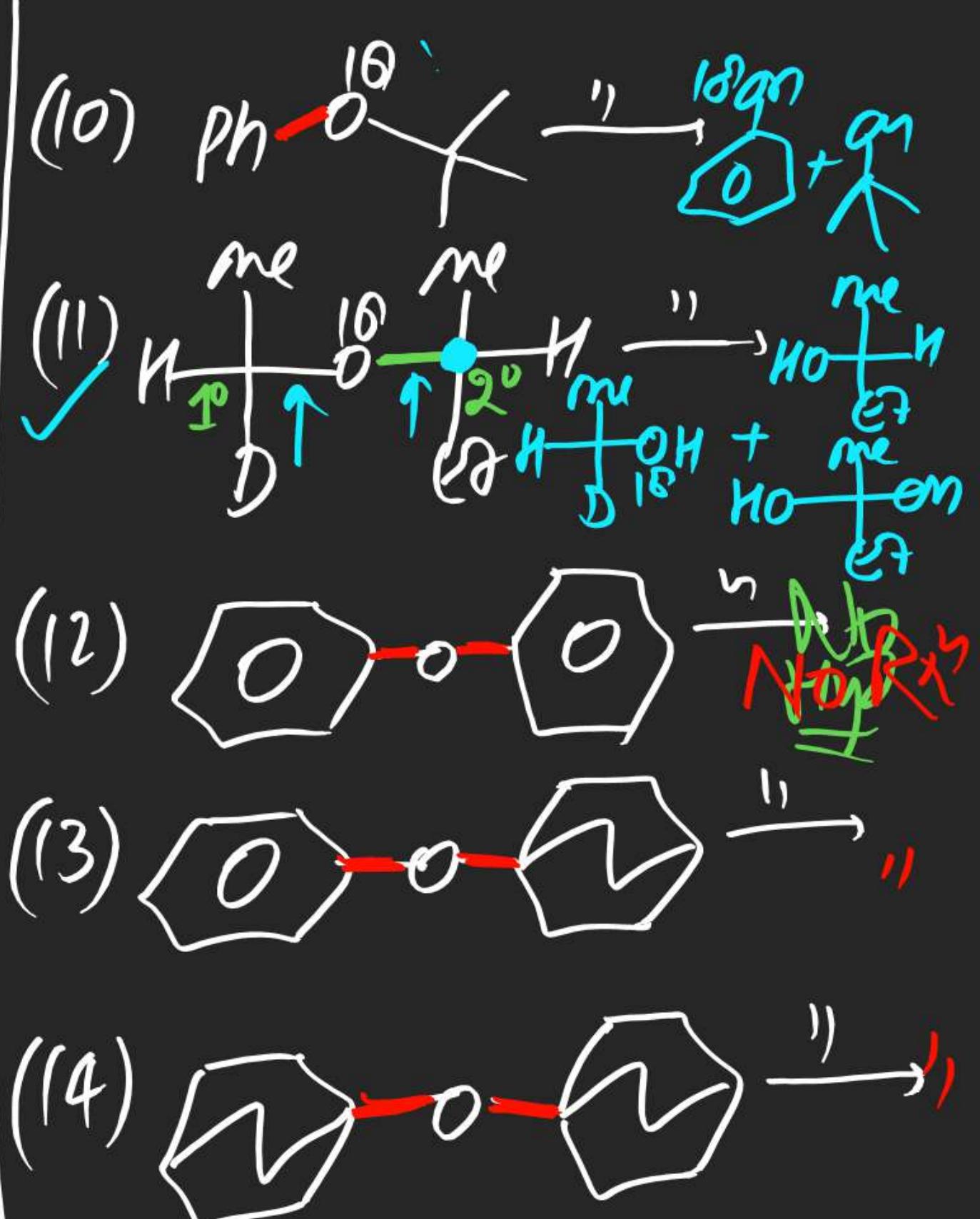
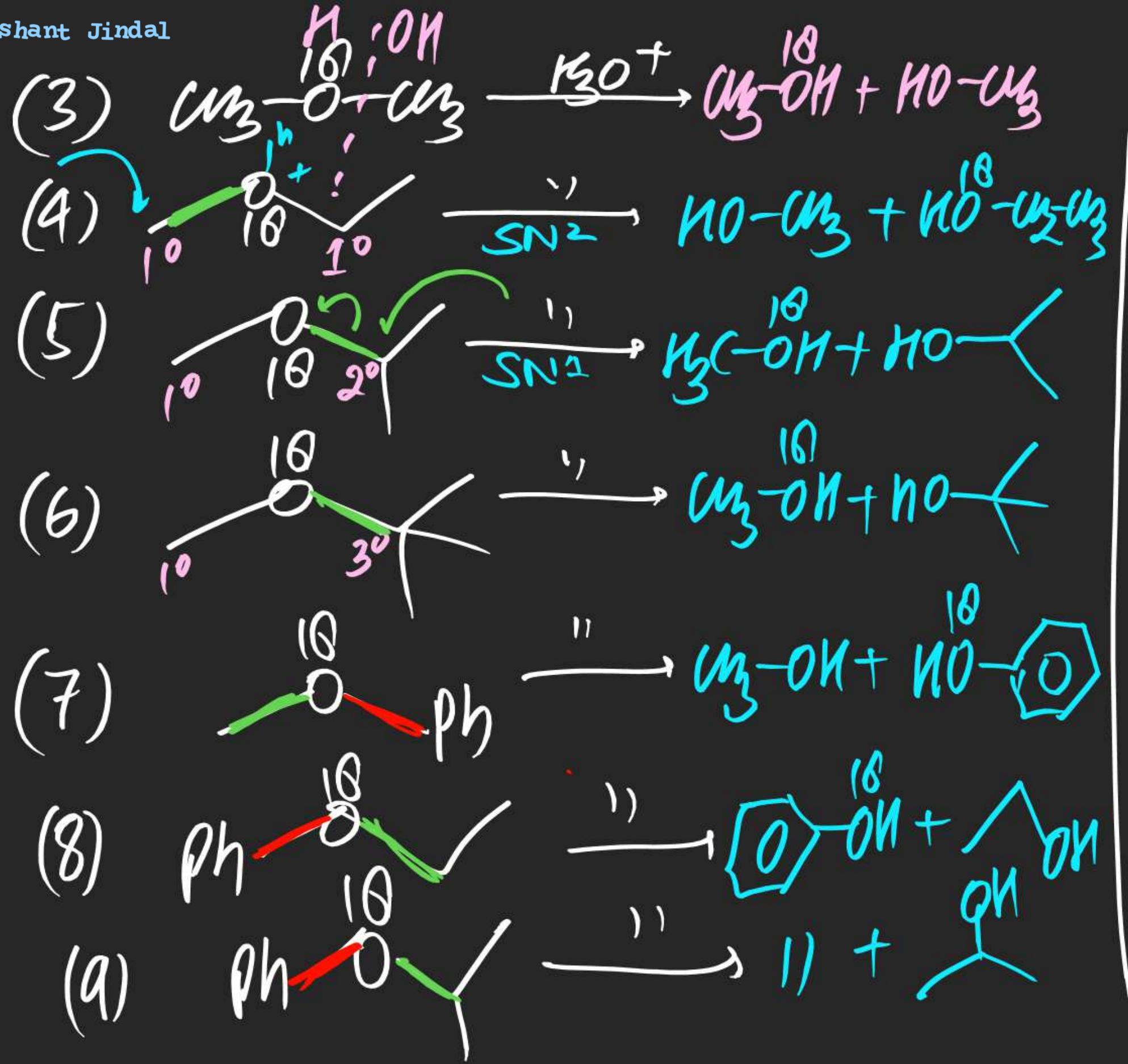
SN¹mech^v

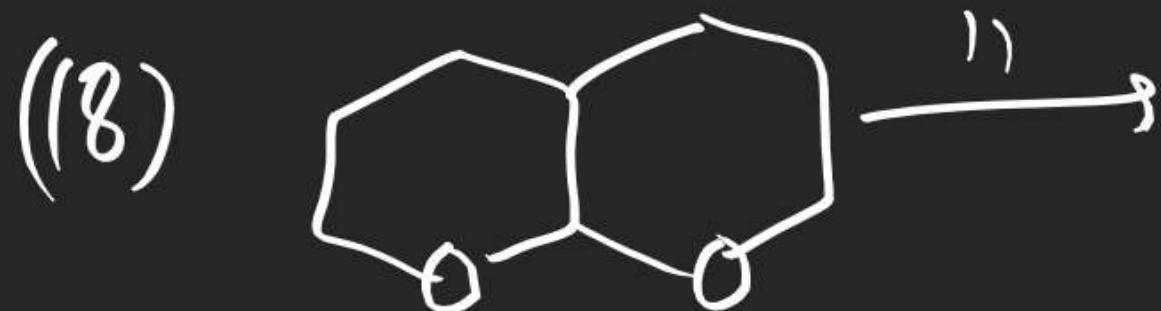
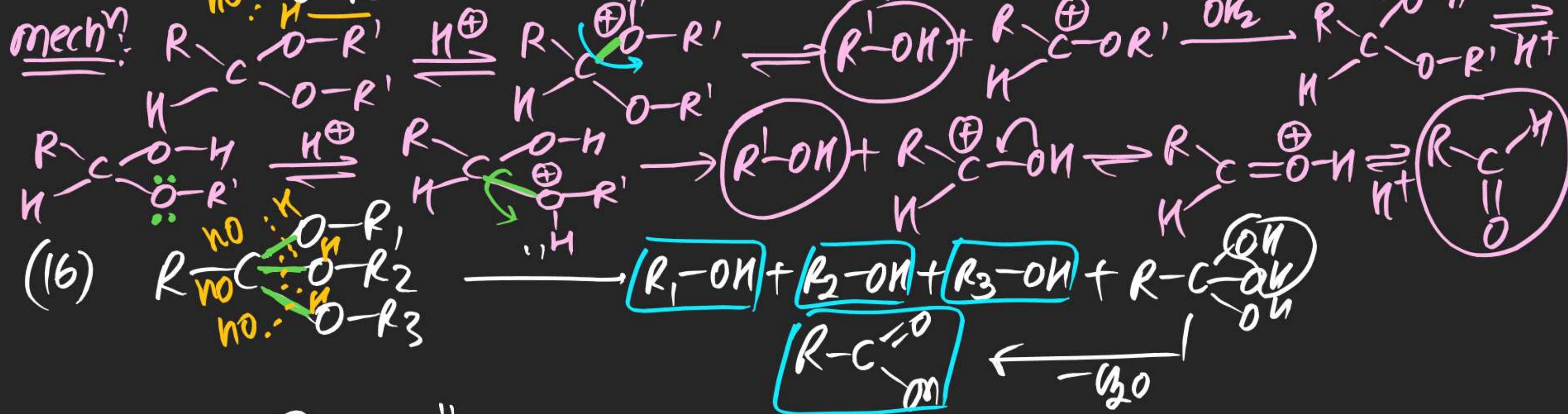
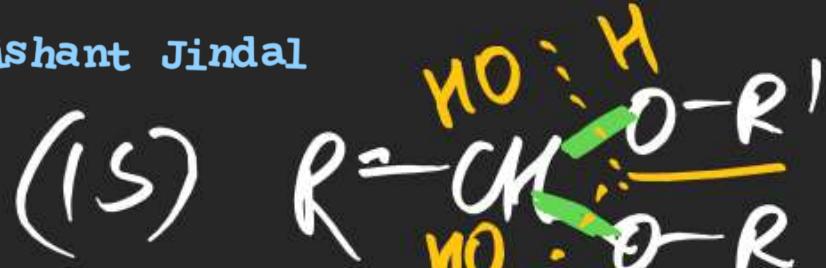


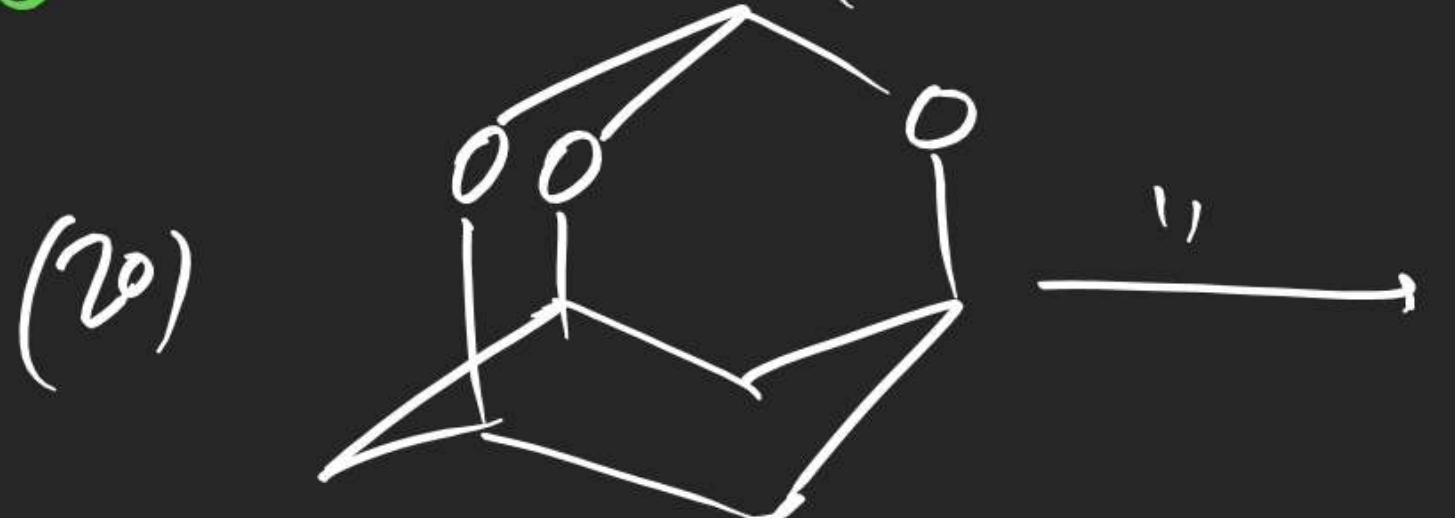
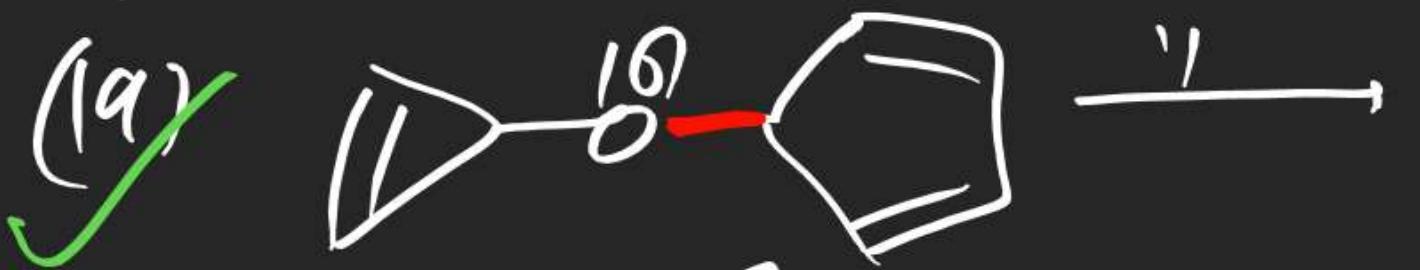
$$SN1 \xrightarrow{\quad} R'\oplus$$

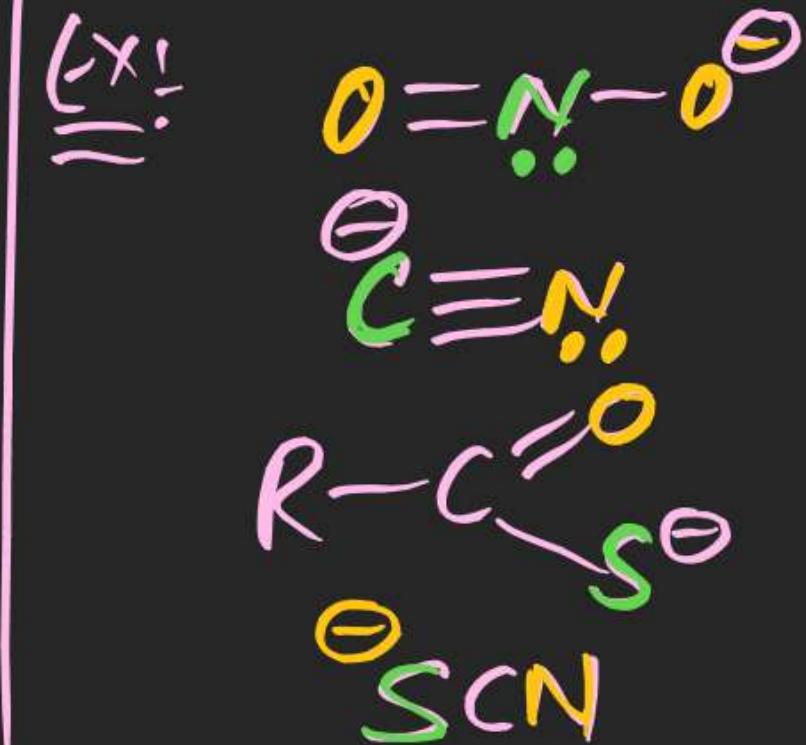
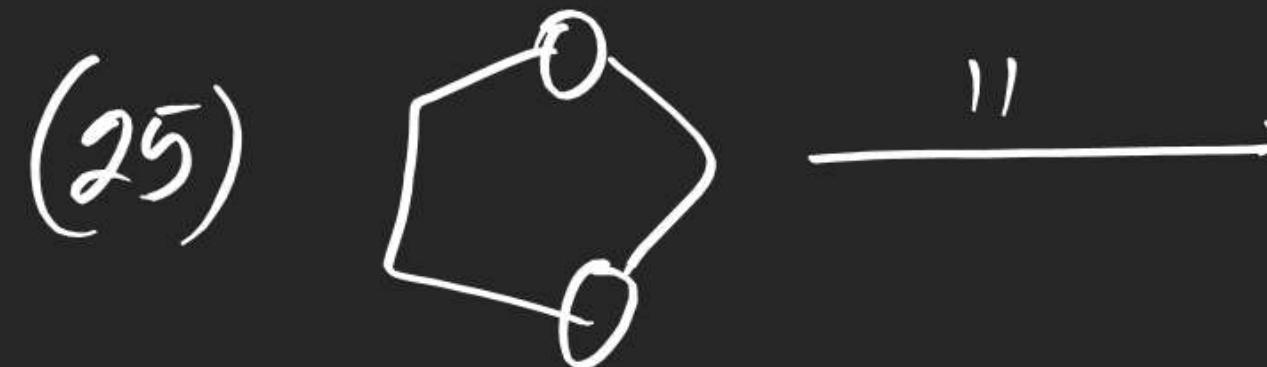
+ R-ON₁₆











Ambidentate Nucleophile:

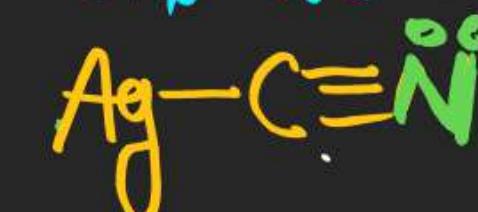
→ Nucleophiles having more than one electron donating sites are known as Ambidentate Nucleophiles

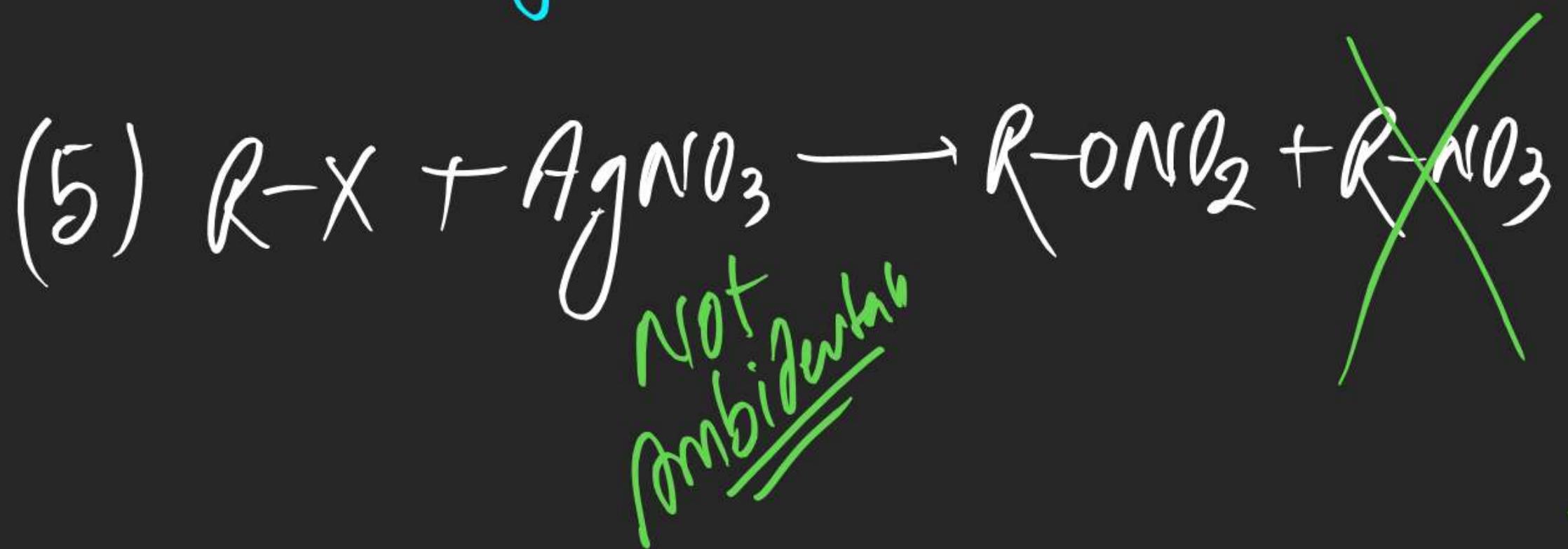
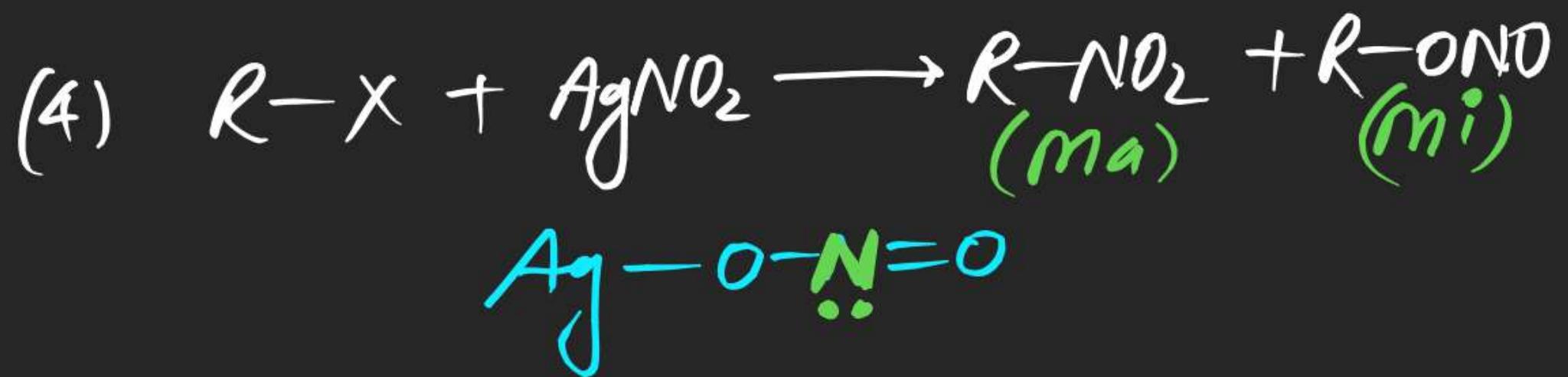
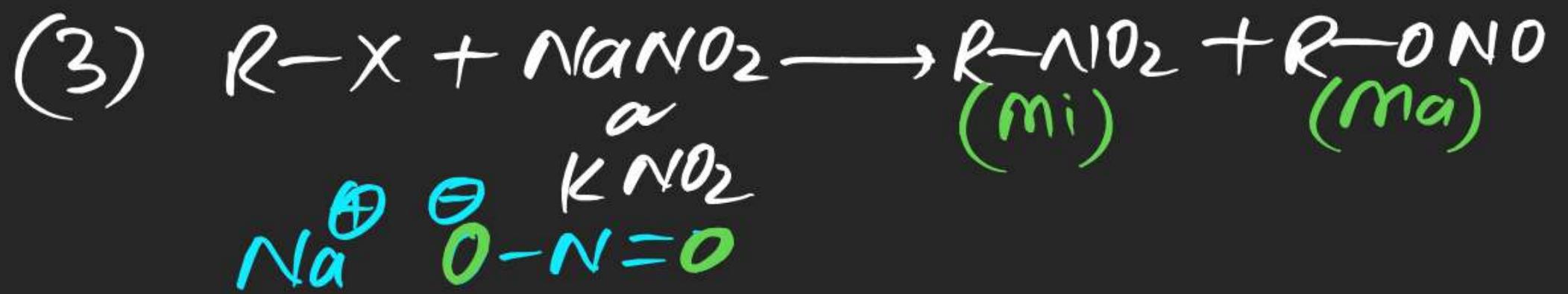


Na salts are ionic



Ag salts are covalent

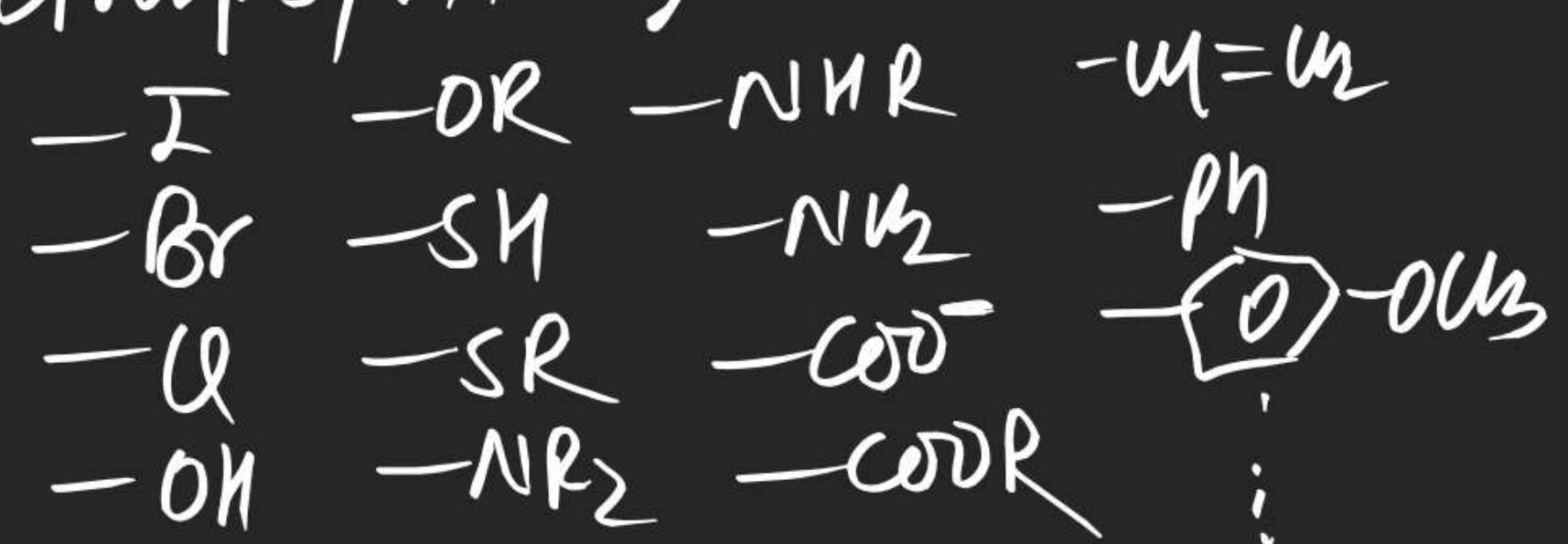




SN-NGP:

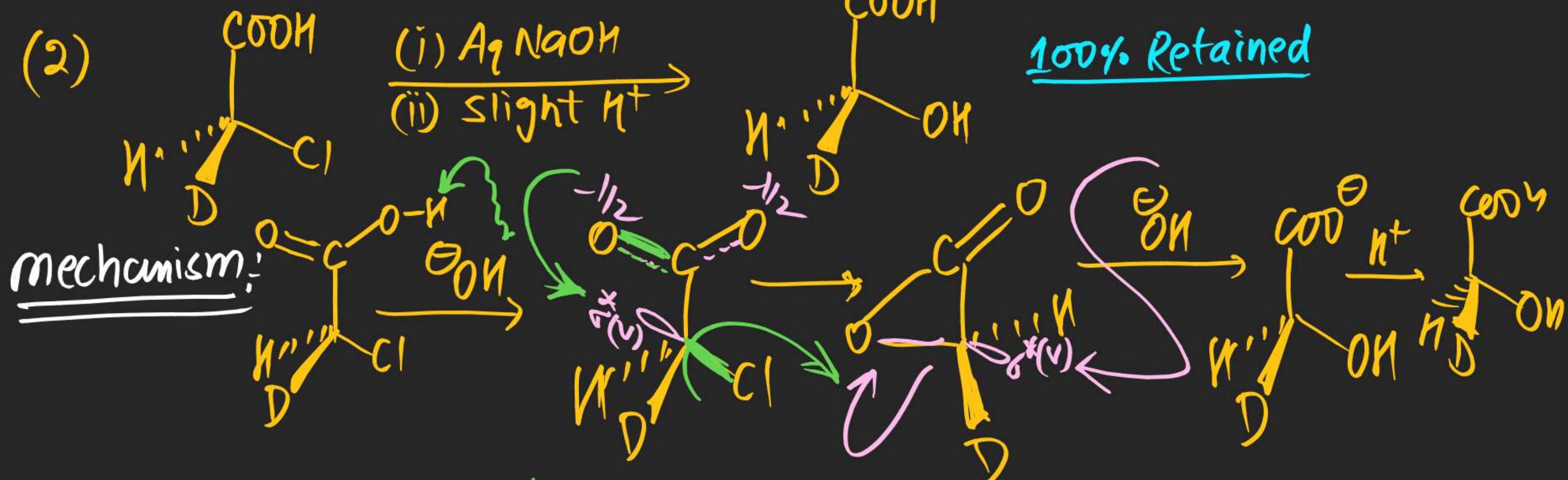
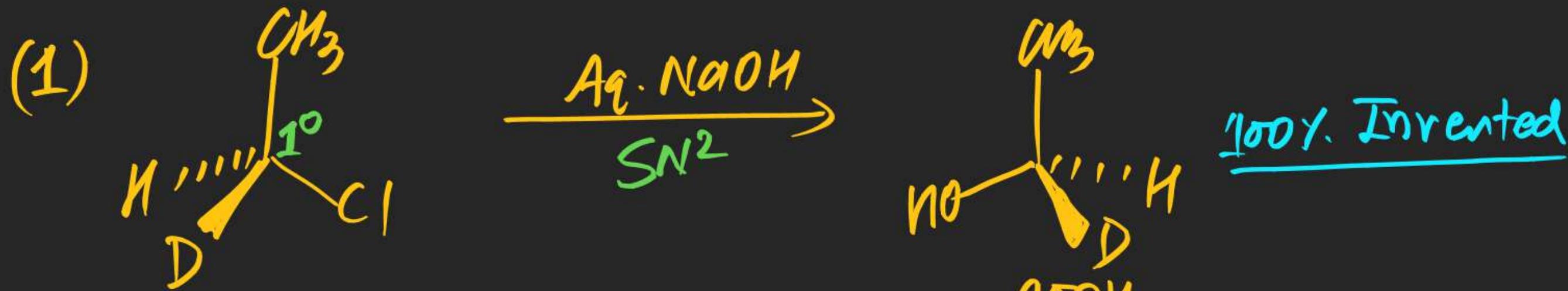
- ⇒ Neighbouring Group participation in SN Rxn
- ⇒ Anomeric assistance
- ⇒ For NGP Comp. must have a lg & internal NV anti to each other
- ⇒ Retained product is usually obtained

⇒ Groups/Atoms which can show NGP

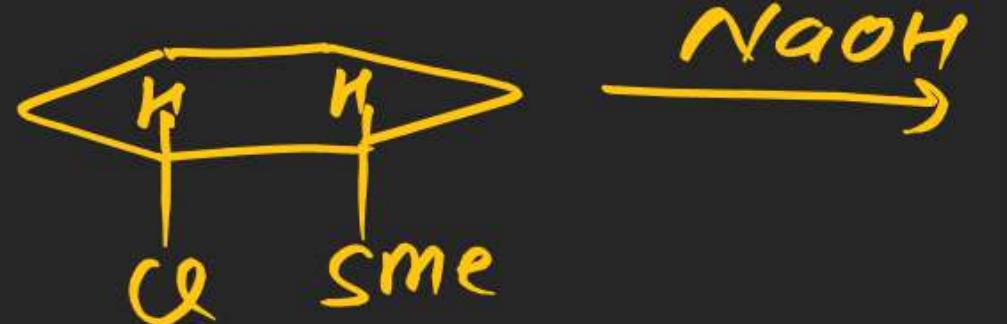


⇒ -F never shows NGP

⇒ NGP increases rate of Rxn.



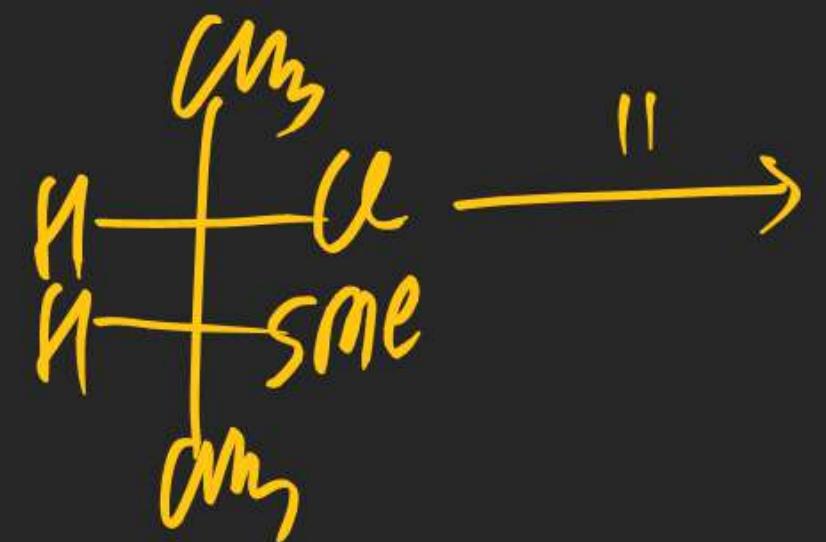
(3)

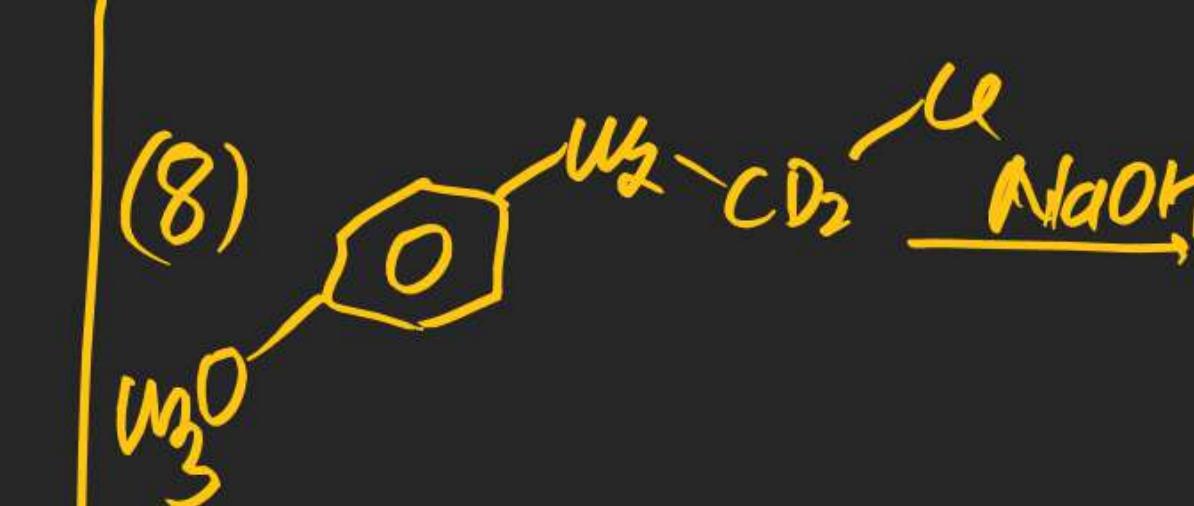
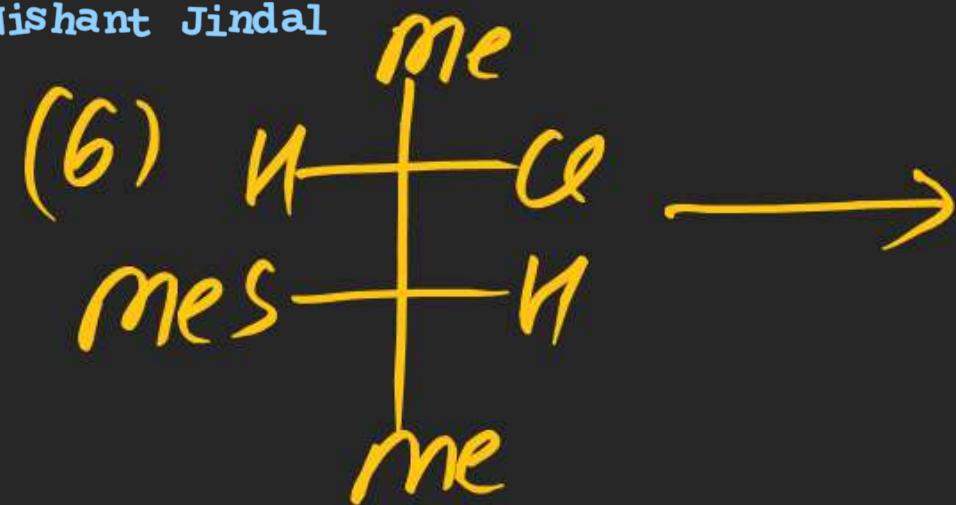


(4)

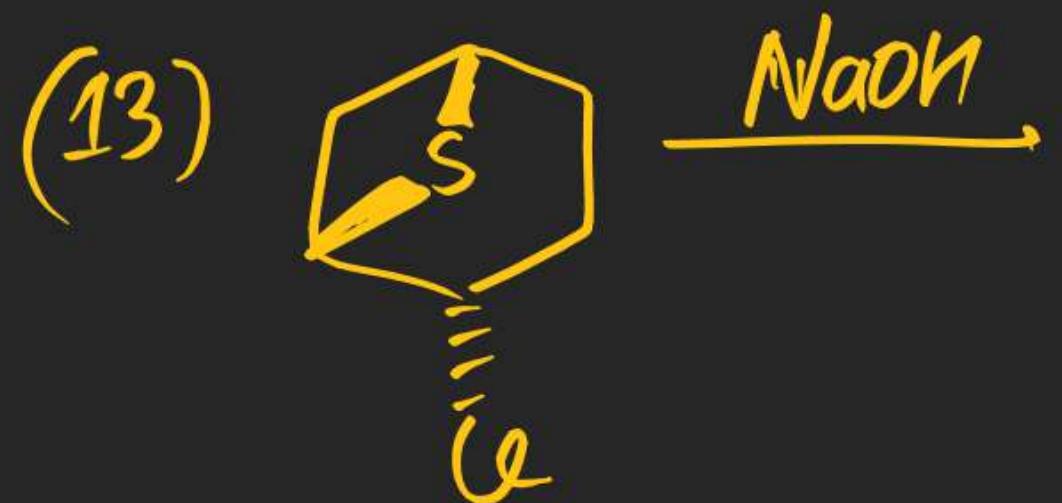


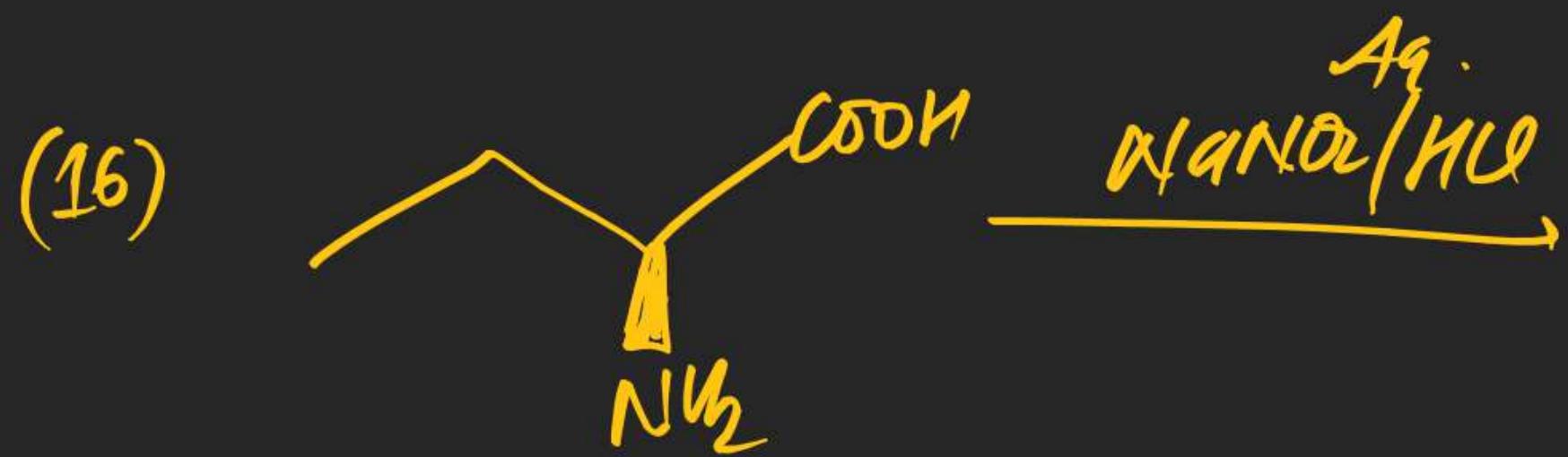
(5)





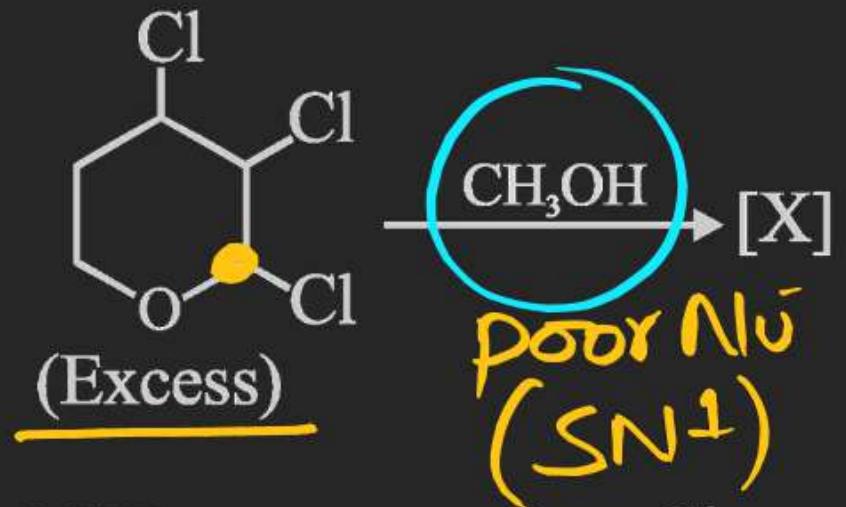






EXERCISE - I (MAINS ORIENTED) PPT-1

1. Major product of following reaction is:



- (A)
- (B)
- (C)
- (D)

$\text{SN}^1 \rightarrow \text{Poor Nu}^-$ ($\text{R-OH}, \text{H}_2\text{O}, \dots$)

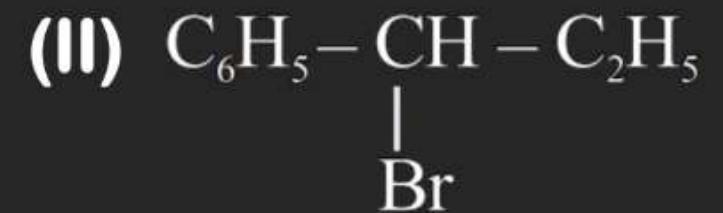
$\text{SN}^2 \rightarrow \text{Strong Nu}^-$ ($\text{NaI}, \text{NaCN}, \text{NaN}_3$, aq. NaOH)

3. Arrange the following compounds in decreasing order of their reactivity for hydrolysis reaction



(A) I > II > III > IV

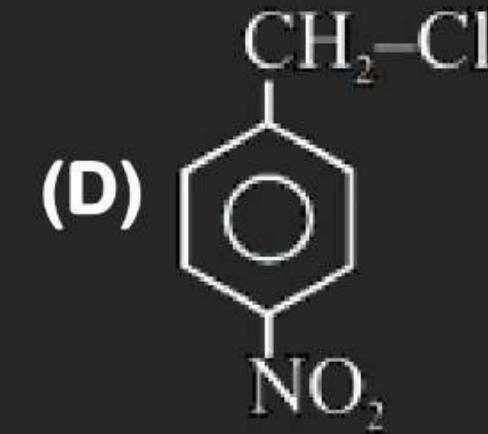
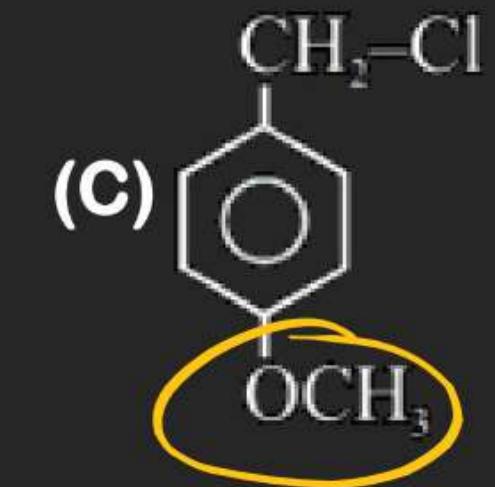
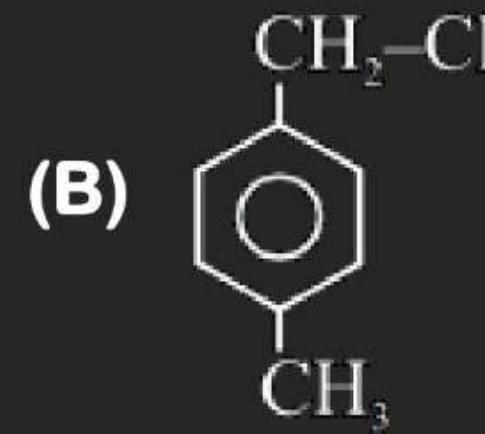
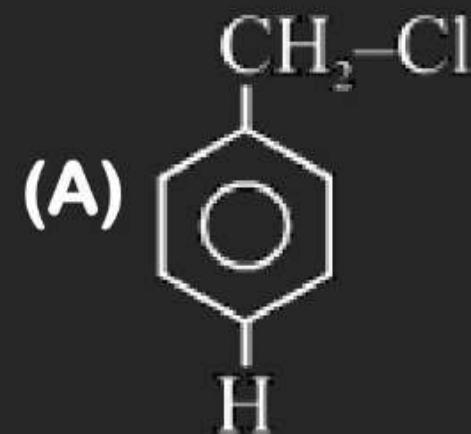
(C) III > IV > II > I

~~(B) IV > II > I > III~~

(D) IV > III > II > I

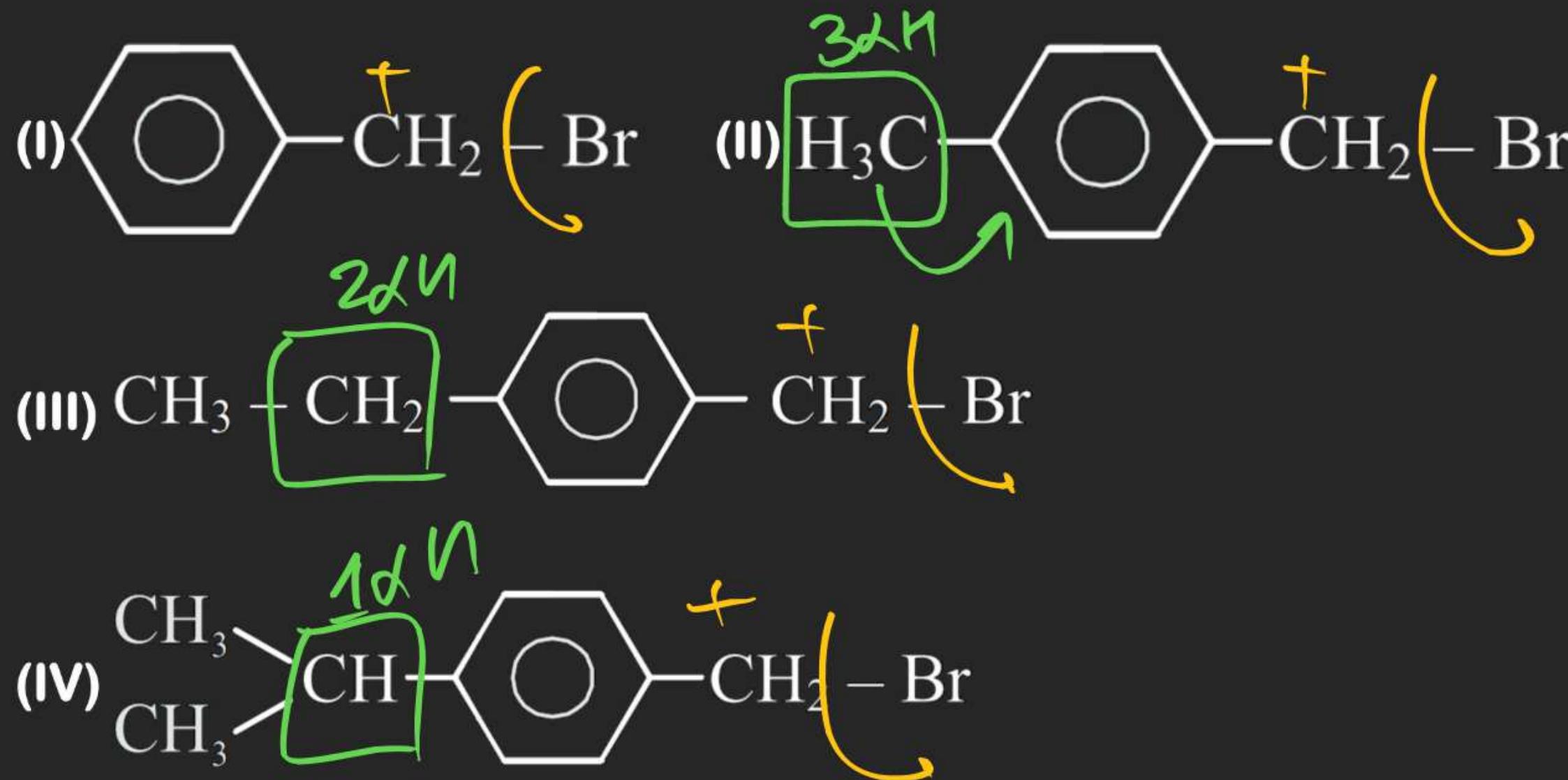


4. Arrange the following compounds in order of decreasing rate of hydrolysis for $S_N 1$ reaction:



C > B > A > D

5. Which of the following is most reactive toward S_N1 reaction?

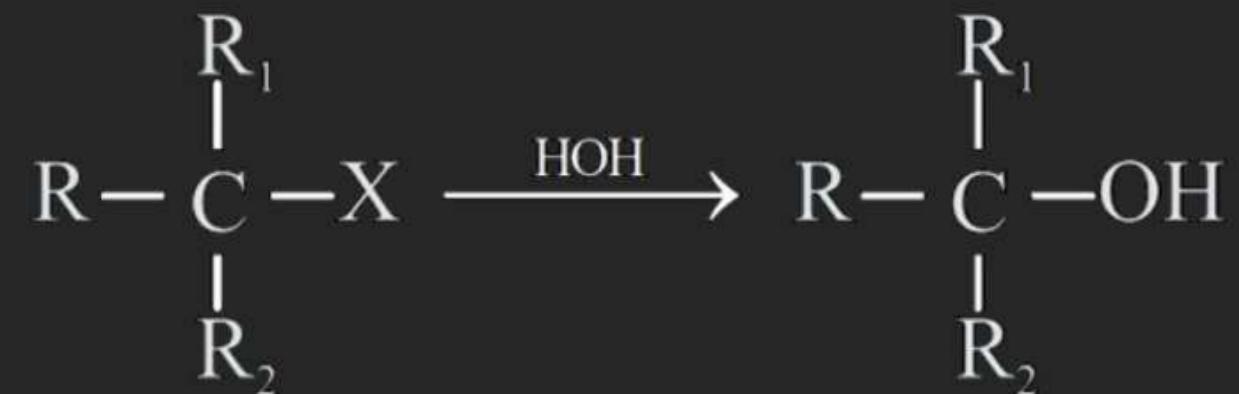


Ans

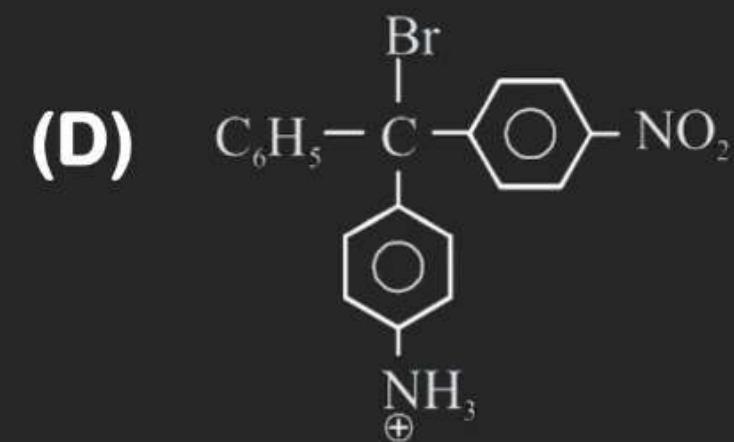
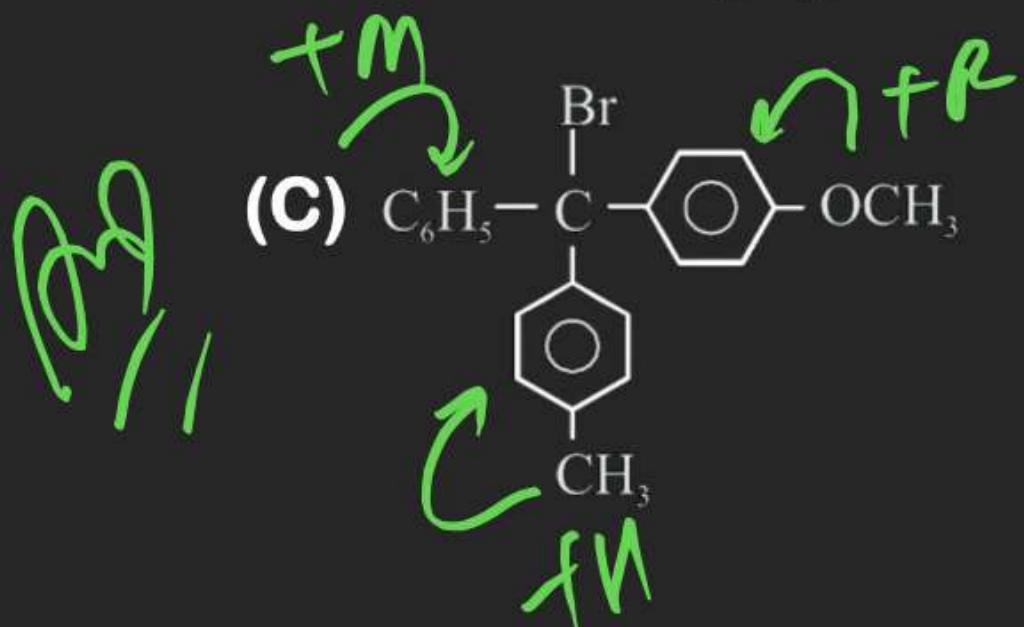
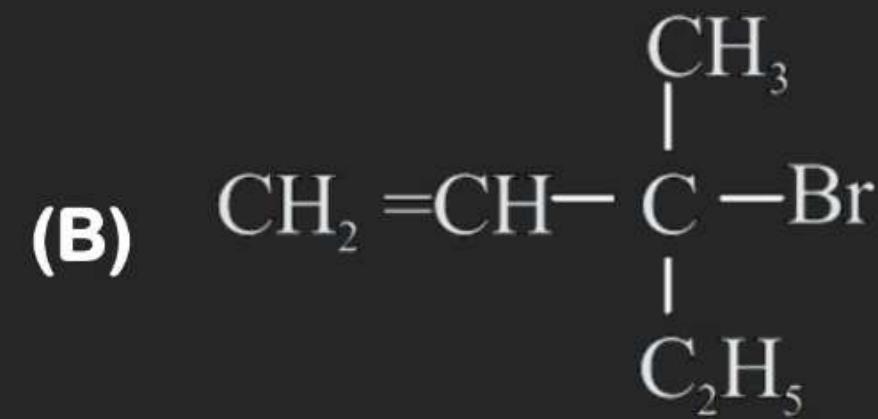
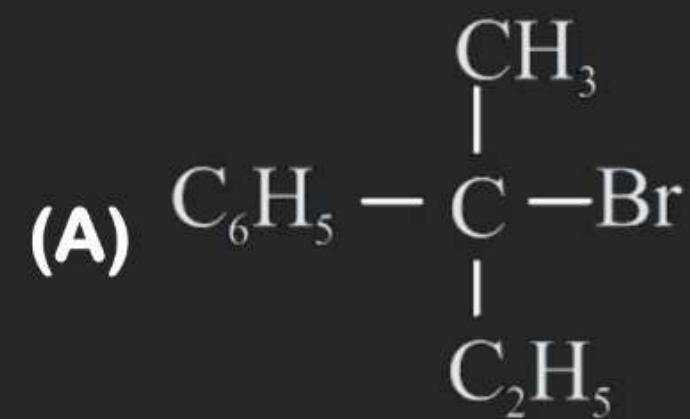
- (A) II > III > IV > I
(C) III > IV > II > I

- (B) IV > III > II > I
(D) I > II > III > I

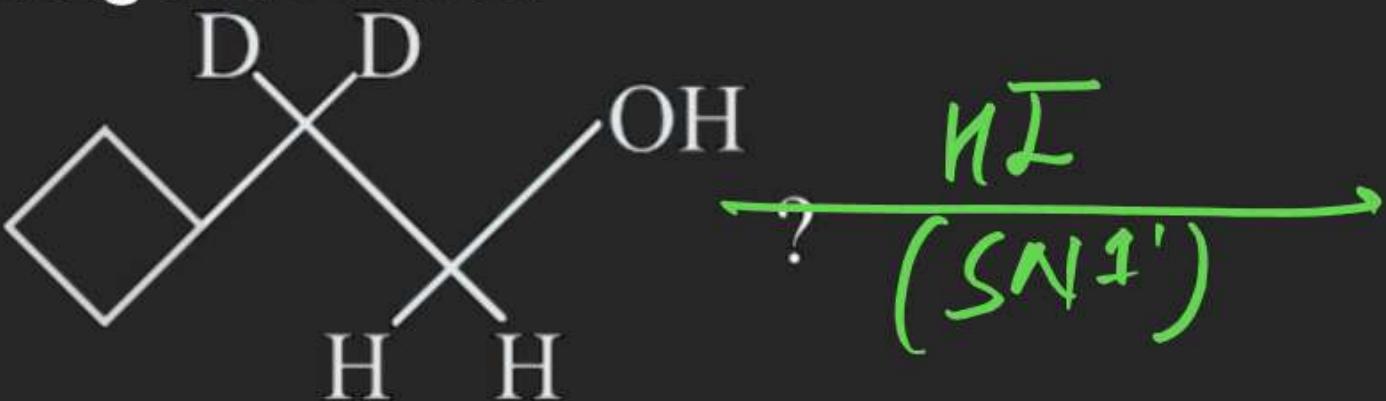
8. For the given reaction, which substrate will give maximum racemisation?



Cation stable ↑
Racemisation ↑

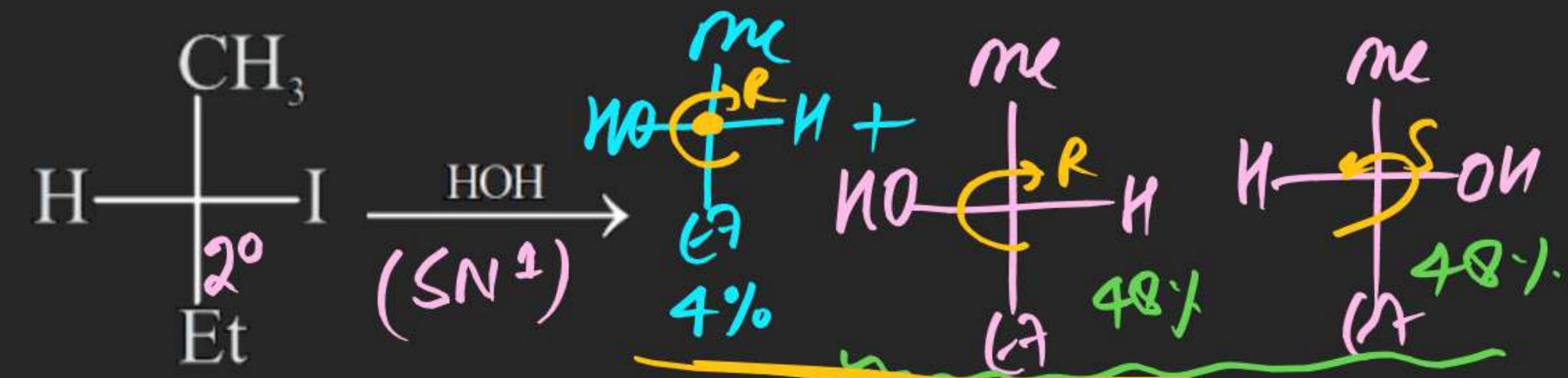


9. Major product of following reaction is:



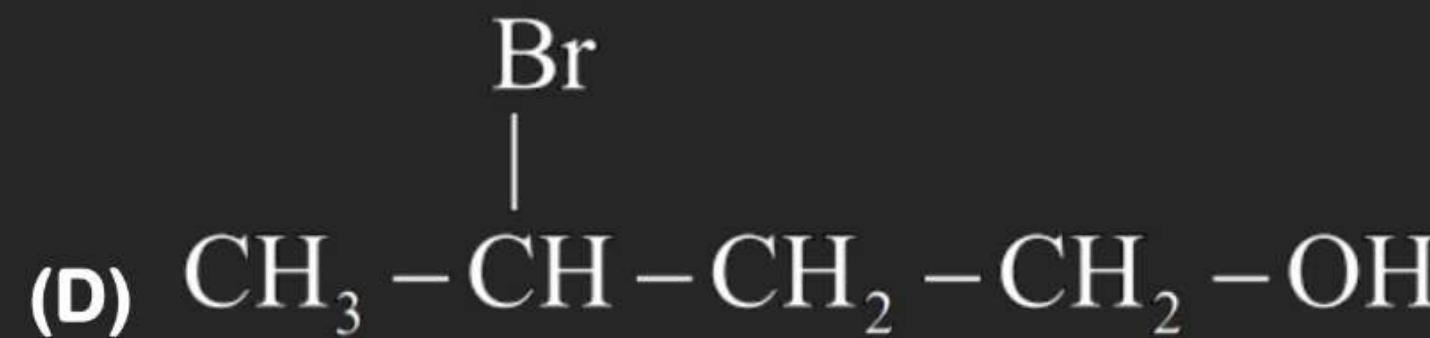
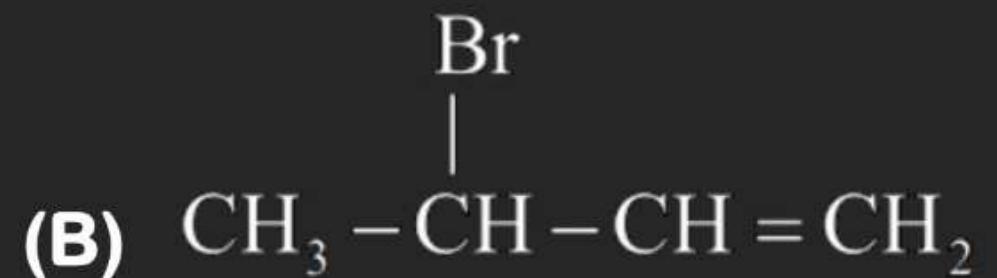
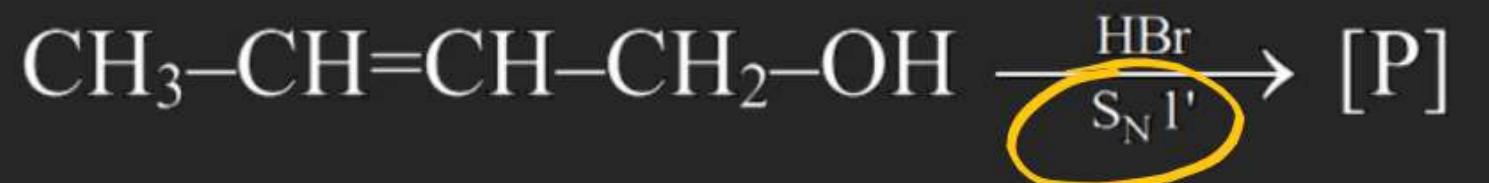
- (A)
Structure (A) shows a cyclobutane ring with iodine (I) at the top position and two deuterium atoms (²D) at the adjacent 1 and 2 positions.
- (B)
Structure (B) shows a cyclopentane ring with iodine (I) at the top position and a deuterium atom (¹D) at the adjacent 1 position.
- (C)
Structure (C) shows a cyclopentane ring with iodine (I) at the top position and two deuterium atoms (²D) at the adjacent 2 and 3 positions.
- (D) None of these

10. If **96%** racemisation takes place in given reaction then find out the correct statement:

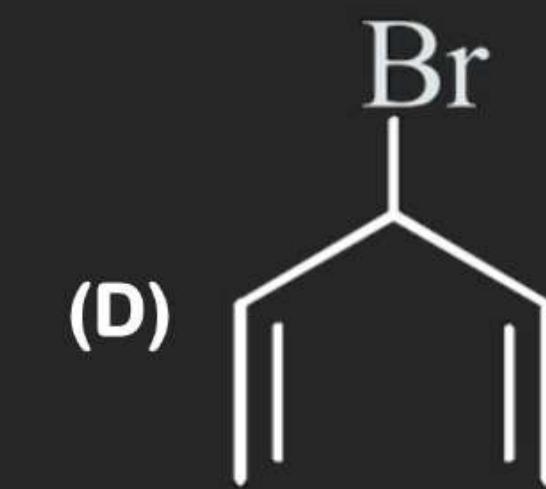
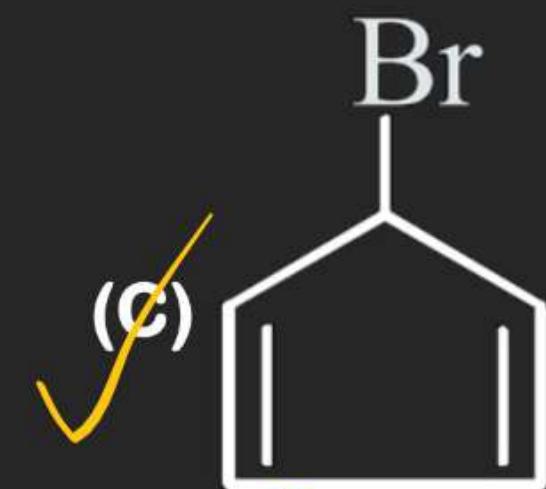
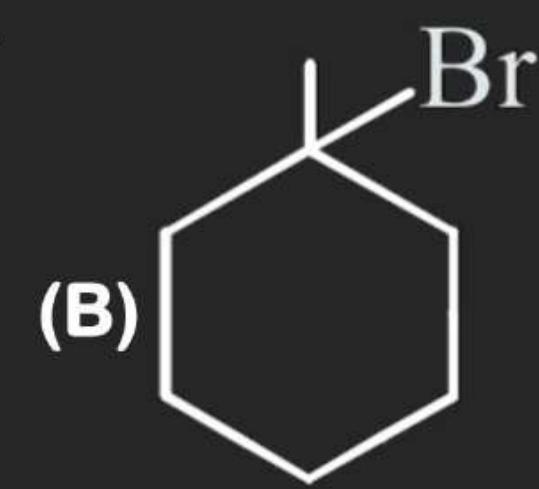
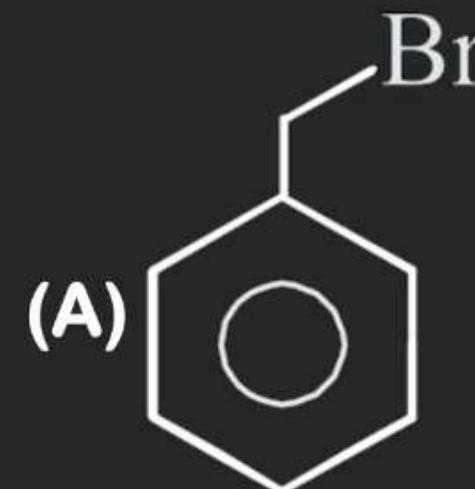


- (A) Among the products 48% " S and 48% R configuration containing molecules are present
- (B) Among the products 50% " S and 50% R configuration containing molecules are present
- (C) Among the products 48% " S and 52% R configuration containing molecules are present
- (D) Among the products 52% " S and 48% R configuration containing molecules are present

11. In the given reaction the product [P] can be :



12. Which of the following can not give $S_N 1$ reaction easily?



16. Which of the following is most reactive toward S_N2.



- (A) Rate = $k[\text{CH}_3\text{ Br}]$
- (B) Rate = $k[\text{OH}^-]$
- (C) Rate = $k[\text{CH}_3\text{ Br}][\text{OH}^-]$
- (D) Rate = $k[\text{CH}_3\text{ Br}]^\circ [\text{OH}^-]^\circ$

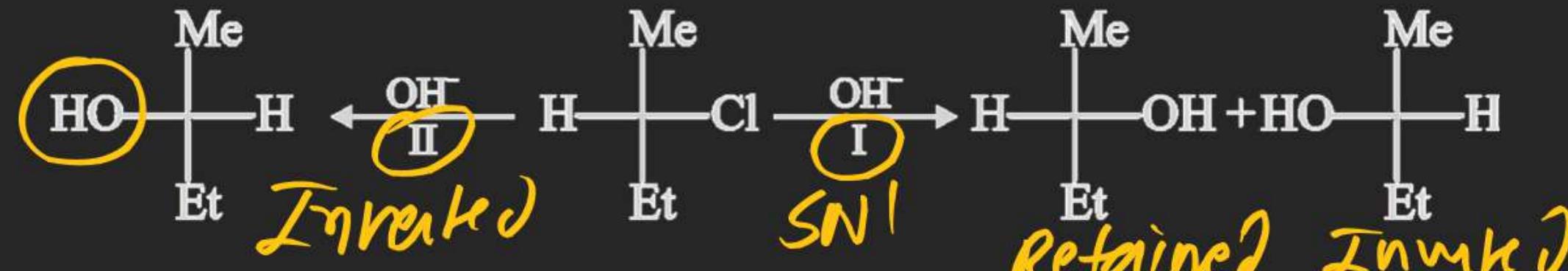
$$\gamma = K [(\alpha_{\text{H}} - \alpha_{\text{m}})]^{\frac{1}{2}} [\bar{\sigma}_{\text{m}}]^{\frac{1}{2}}$$

17. Select suitable reason for non-occurrence of the following reaction.



- (A) Attacking nucleophile is stronger one
- (B) Leaving group is a stronger base than nucleophile
- (C) Alcohols are not good substrate for S_N reaction
- (D) Hydroxide ions are weak bases

20. For the given reaction, CORRECT option regarding mechanism involved is :



Retained Invert

(A) I can't be S_N1

(B) II can't be S_N2 *Conv*

(C) I can be S_N1 & II can be S_N2

~~(D)~~ I can be S_N2 & II can be S_N1

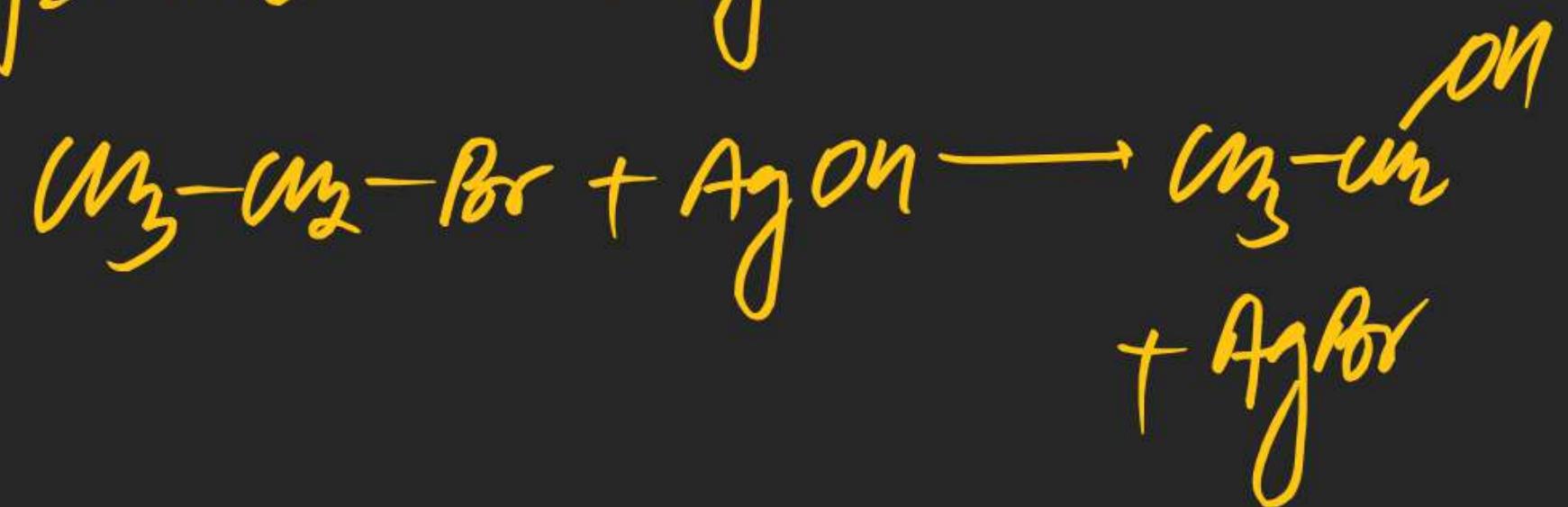
Ans

25. The compound $\text{CH}_3 - \boxed{\text{O}} - \text{CH}_2 - \text{Br}$ gives faster rate of nucleophilic substitution reaction than :



27. When ethyl bromide is treated with moist Ag_2O , the main product is:

- (A) Ethyl ether (B) Ethanol (C) Ethoxy ethane (D) All of these



40. On heating glycerol with excess amount to HI, the product formed is

- (A) Allyl iodide
(B) Isopropyl iodide
(C) Propylene
(D) 1,2,3-tri-iodopropane

