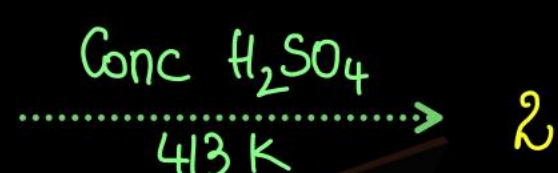


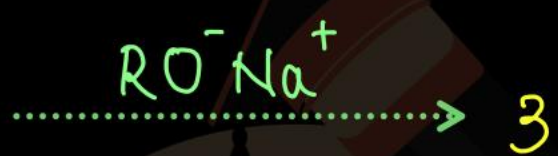
Ethers

MOP :-

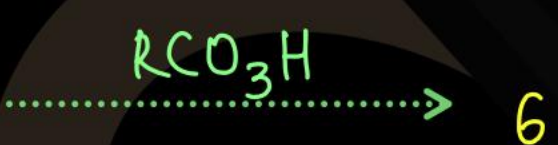
1) Dehydration of alcohols



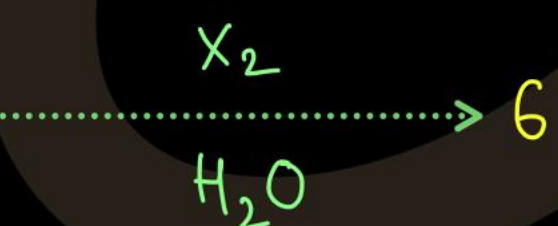
2) Williamson Ether Synthesis



3) from Peracid



4) from Halo hydrin



Properties :-

1) Rxn with HX Conc. HI → 7

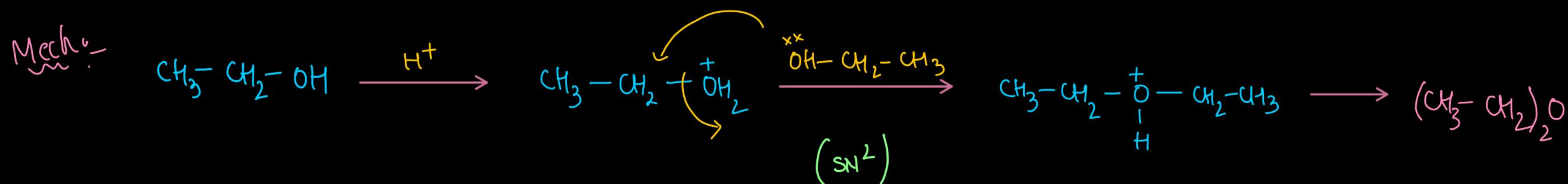
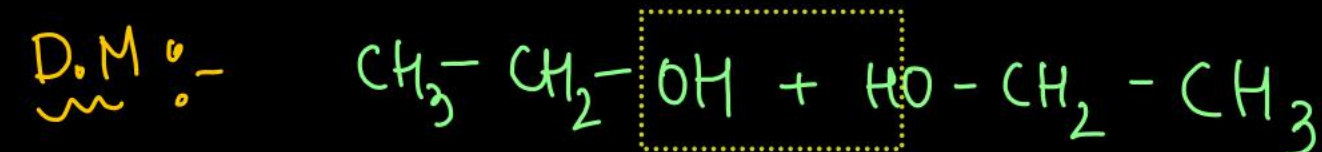
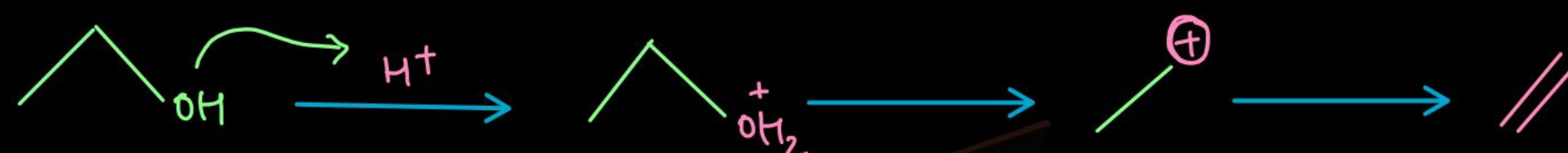
2) Hydrolysis of ester H_3O^+ → 10

3) Electrophilic subs rxn o,p/meta → 13

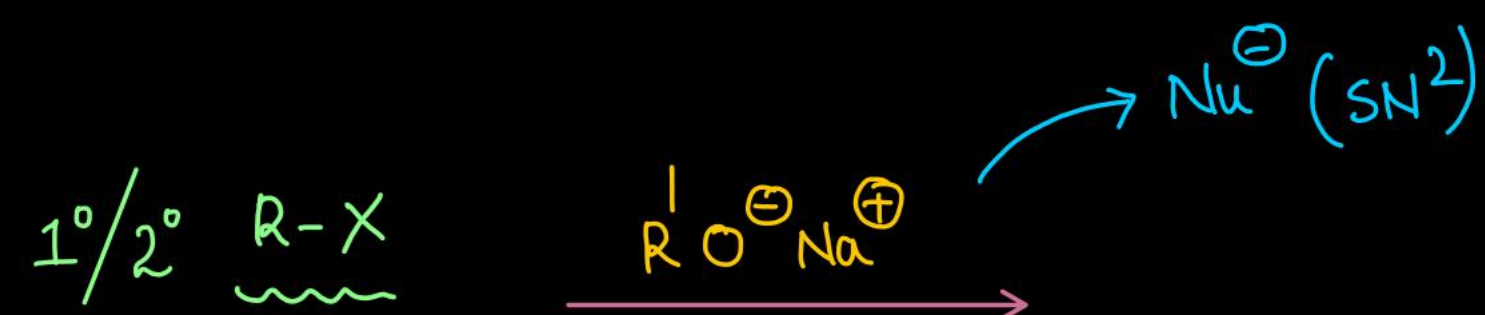
4) Rxn with PCl_5 → 14

5) Ring opening of epoxide
*) acidic med H^+ / Nu^- → 14
*) basic med → 15

1) Dehydration of alcohols :



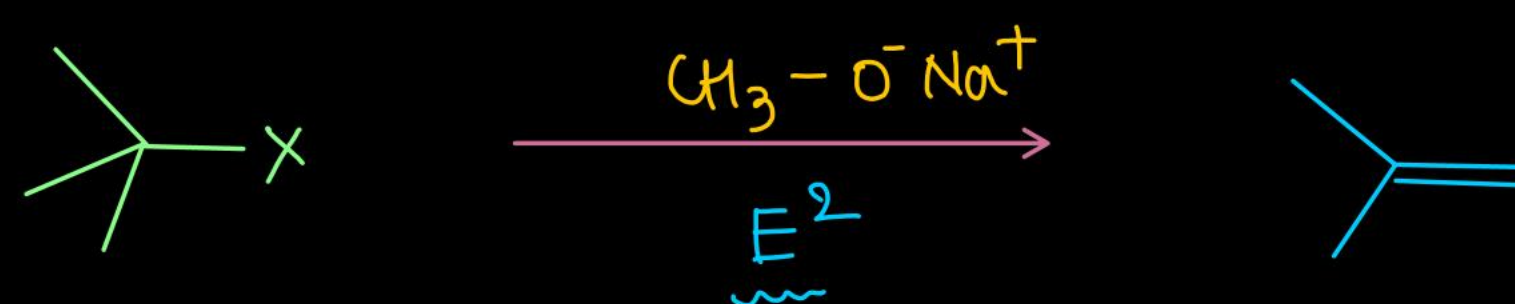
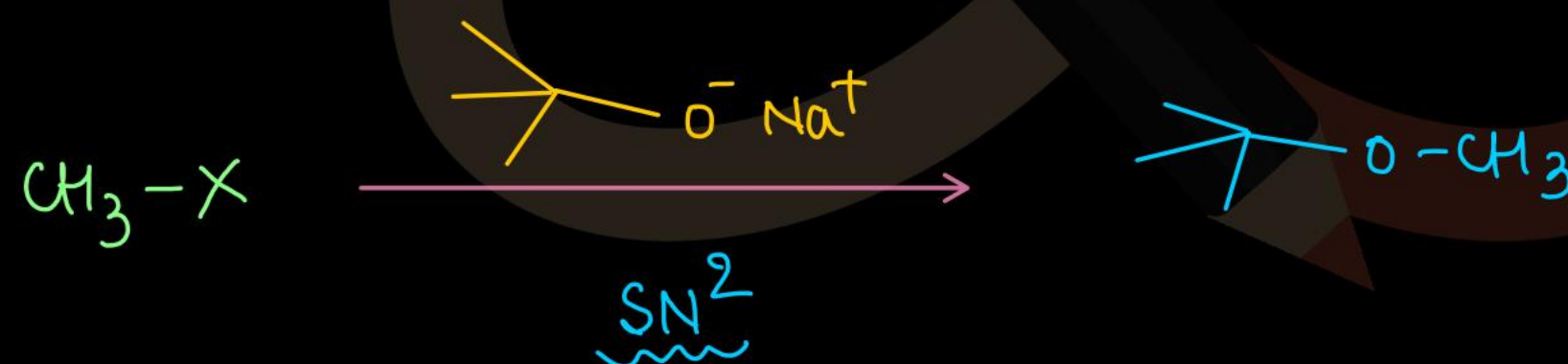
2) Williamson Ether Synthesis :



Reactivity of R-X :- $1^\circ > 2^\circ > 3^\circ$

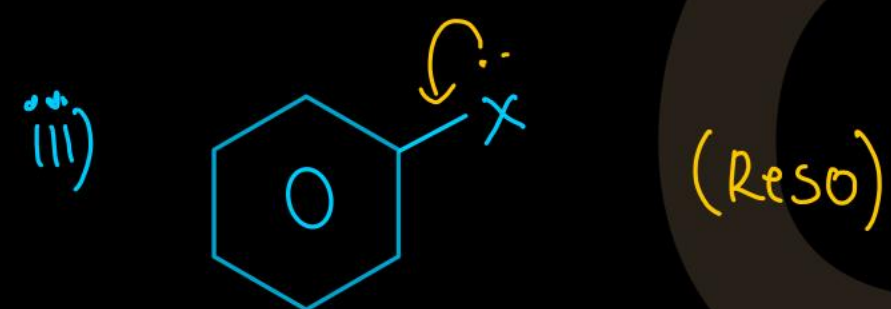
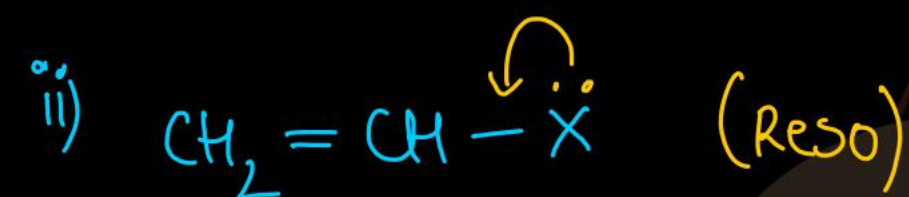
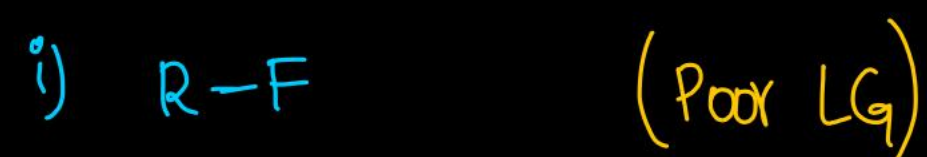


Ex:

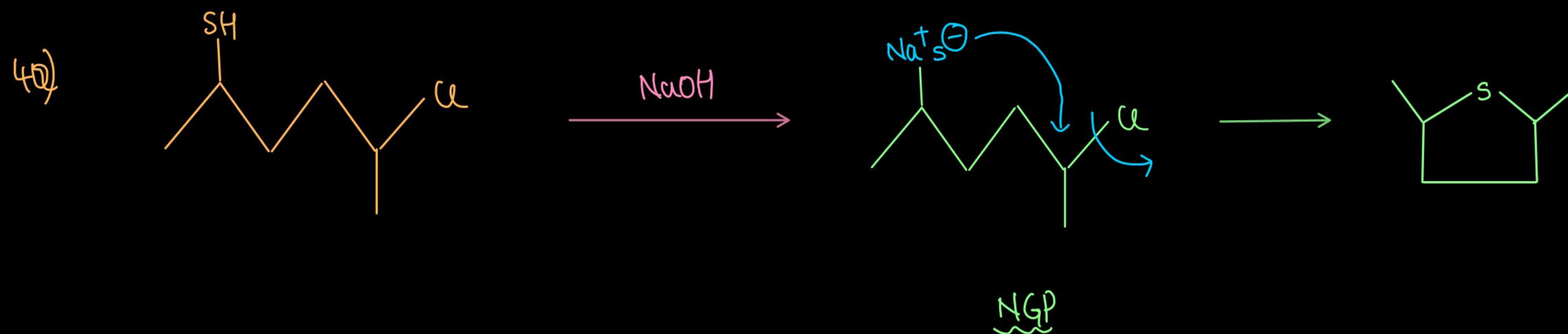
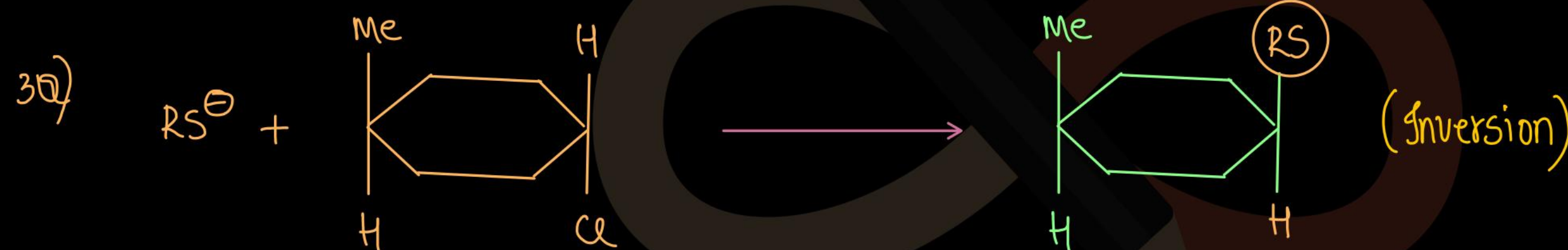
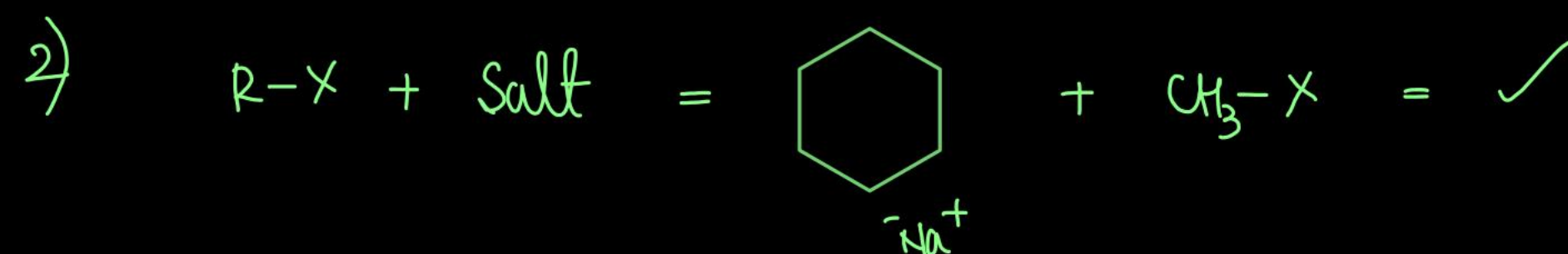
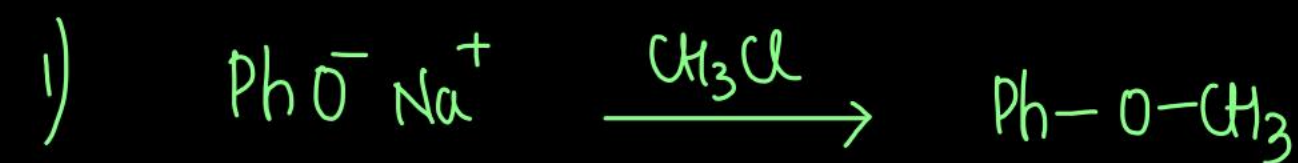
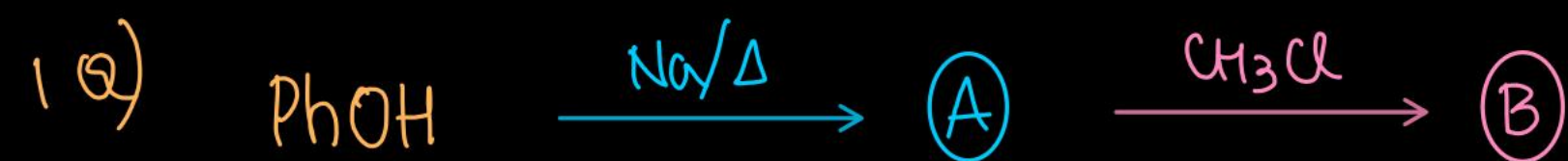


Note:-

* Following alkyl halides cannot be used in 'WES'

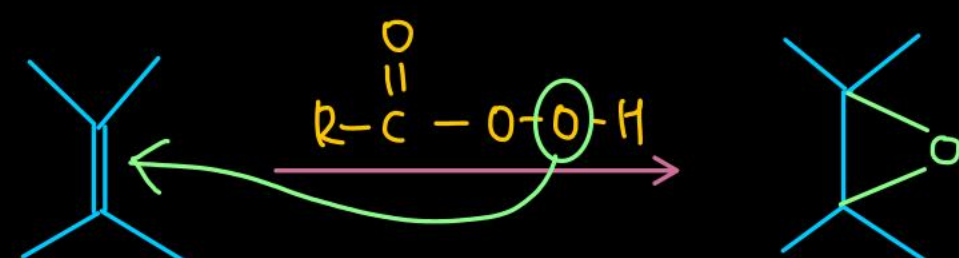


Practice



3) From peracid :

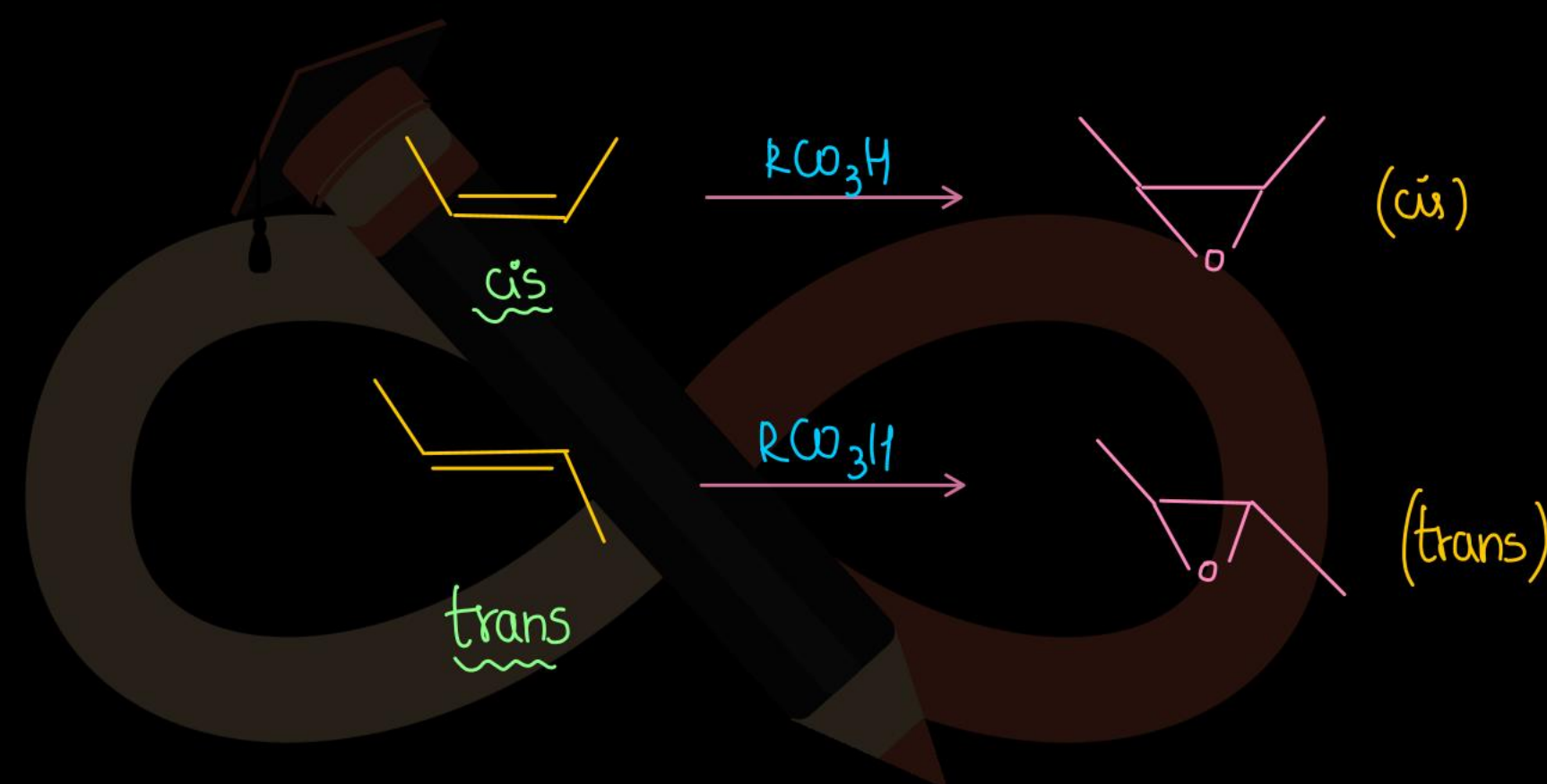
→ for cyclic ether, epoxide



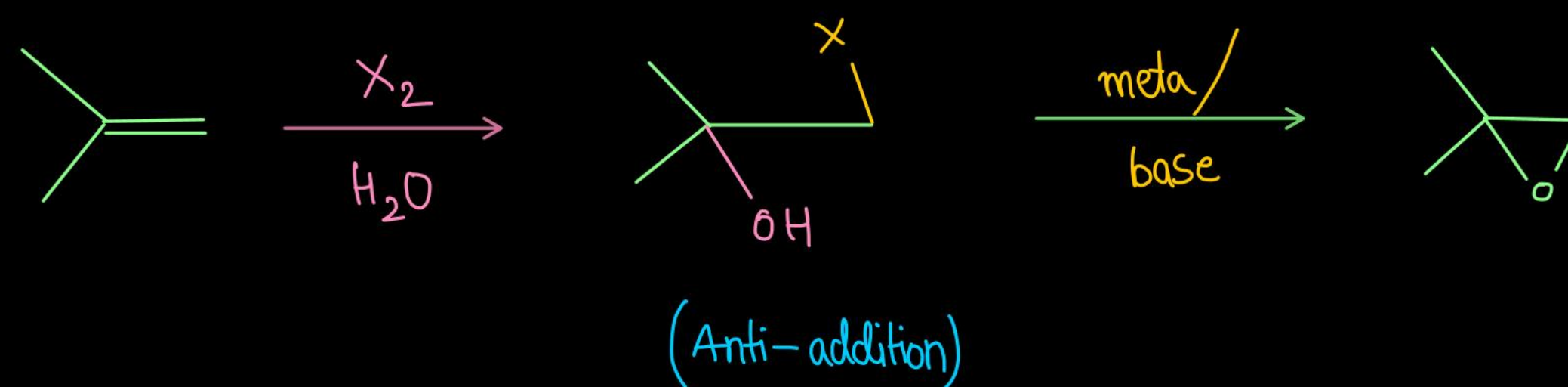
* T.S is formed

* stereospecific rxn

* syn addition

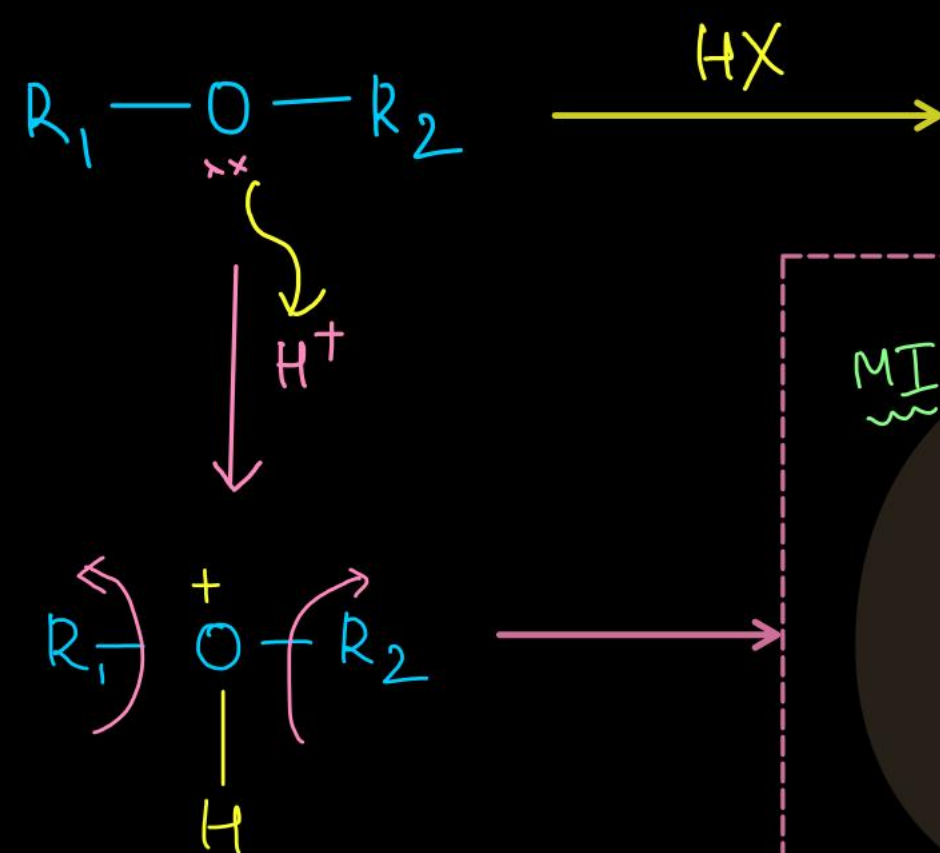


4) from halo hydrin :



Properties

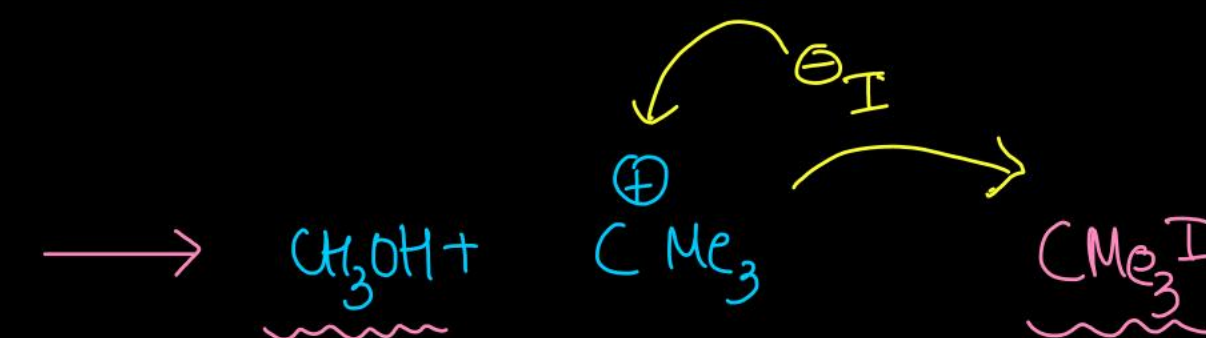
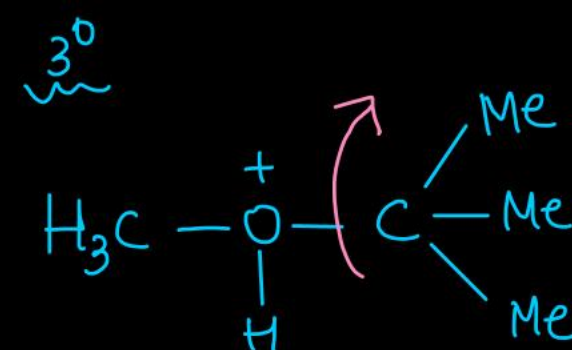
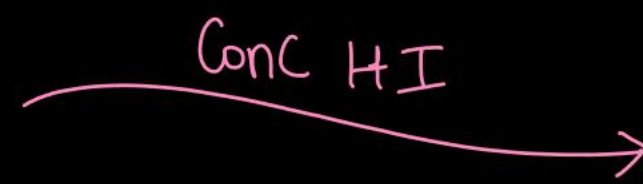
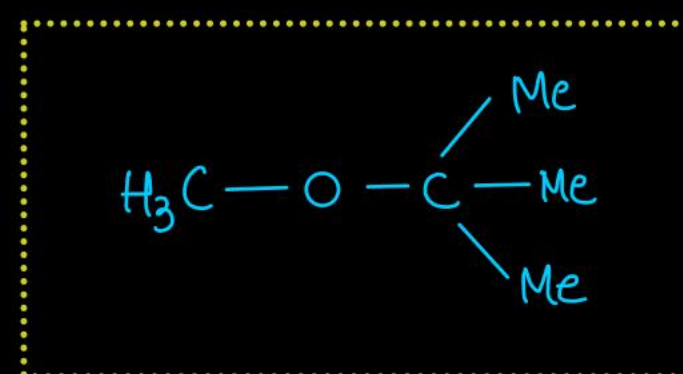
1) Rxn with H-X :-



MI :-

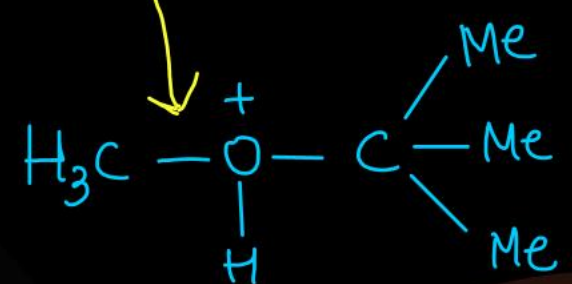
- 1) If R_1, R_2 are both normal $1^\circ/2^\circ \Rightarrow \text{SN}^2$ (steric hindrance)
- 2) If any one of them is 3° / reso $1^\circ, 2^\circ \Rightarrow \text{SN}^1$ (C^+ stability)

* Ex^o

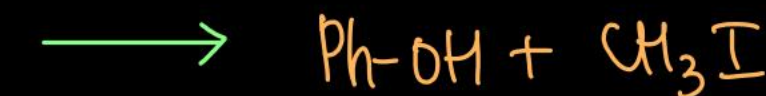
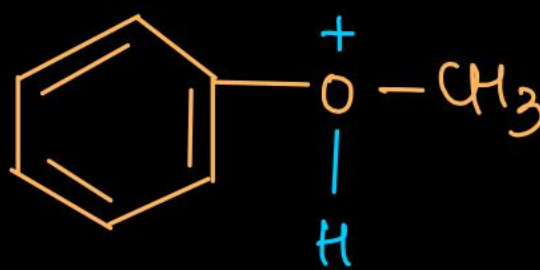
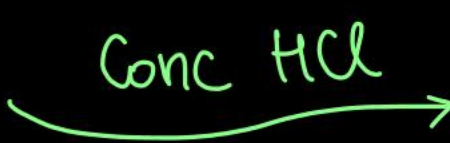
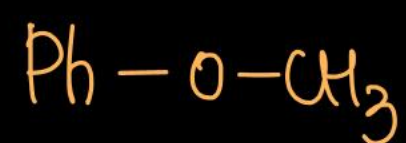


Conc HI
(Excess)

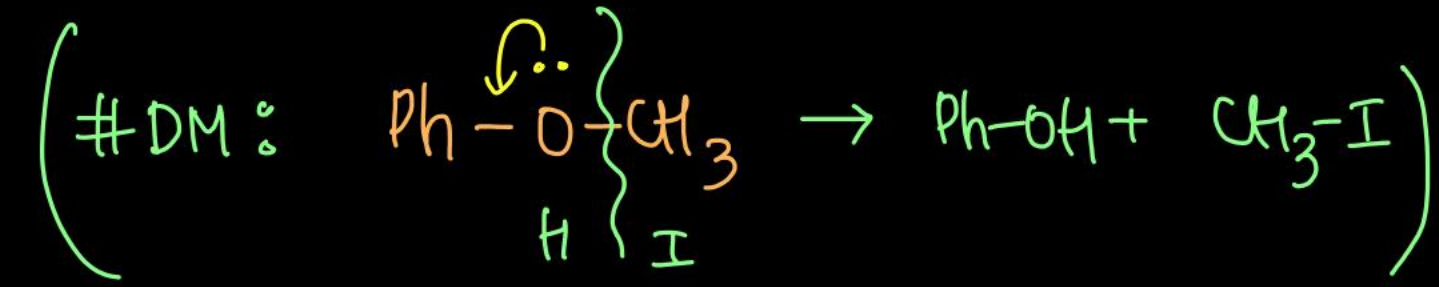
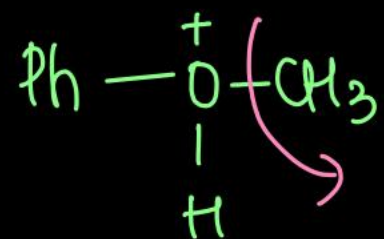
anhyd HI
(always) S_N2



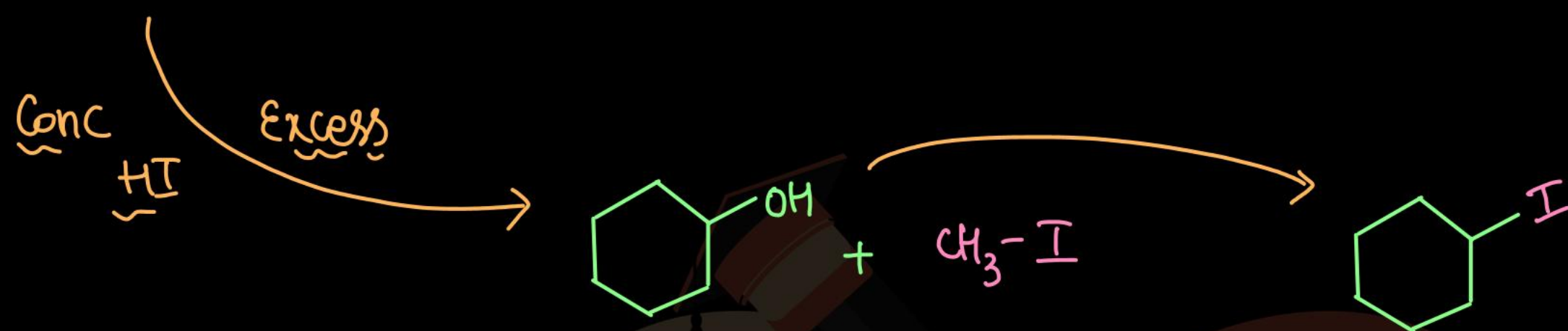
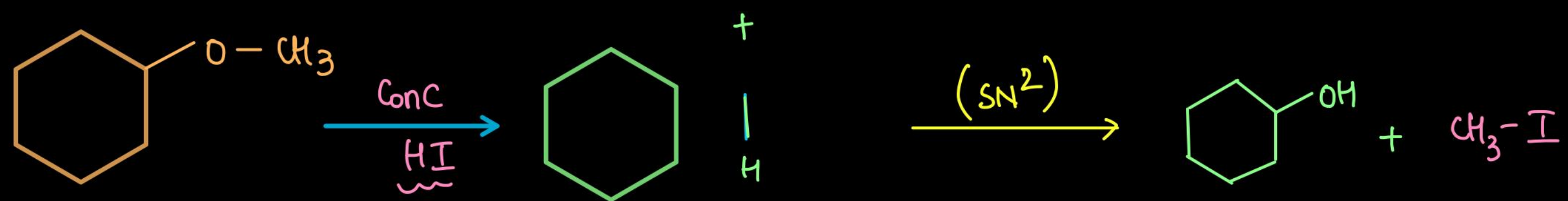
a)



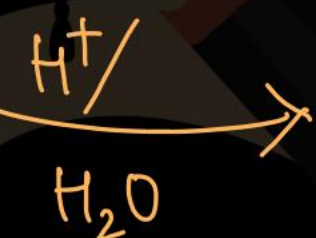
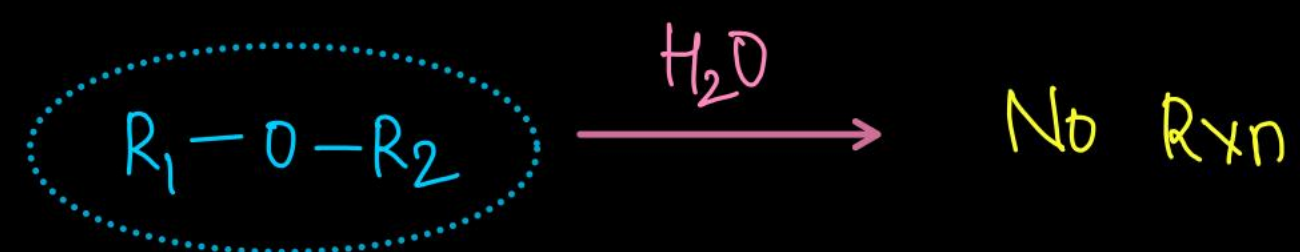
Conc. HI
(Excess)



a)

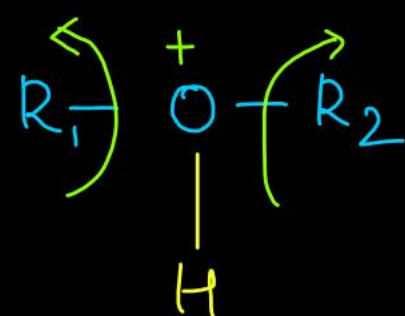
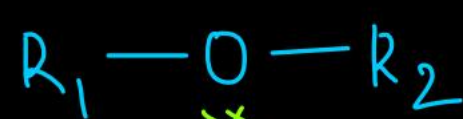


② Hydrolysis of ester :-



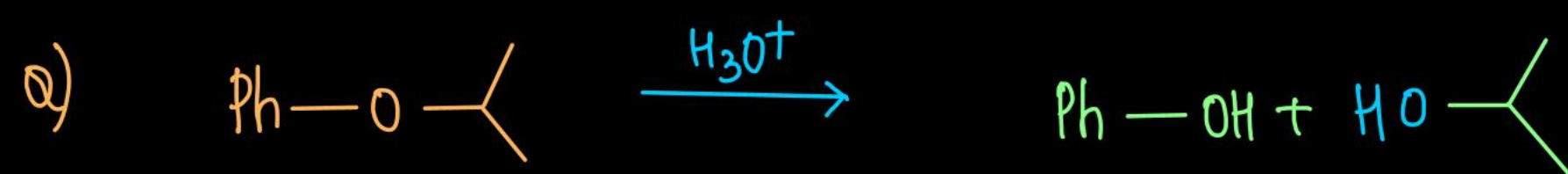
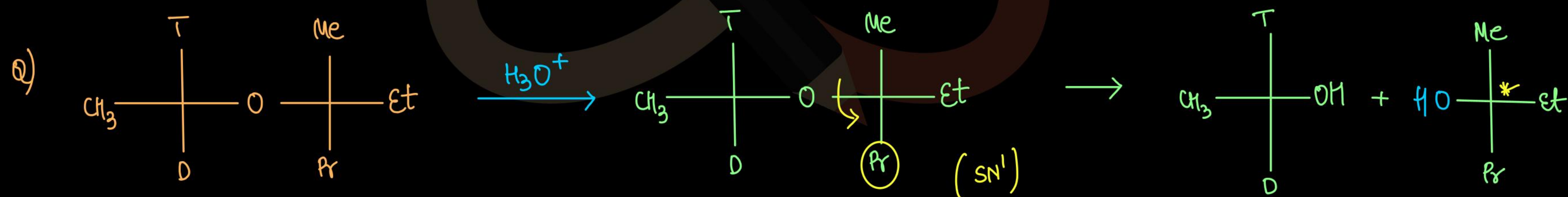
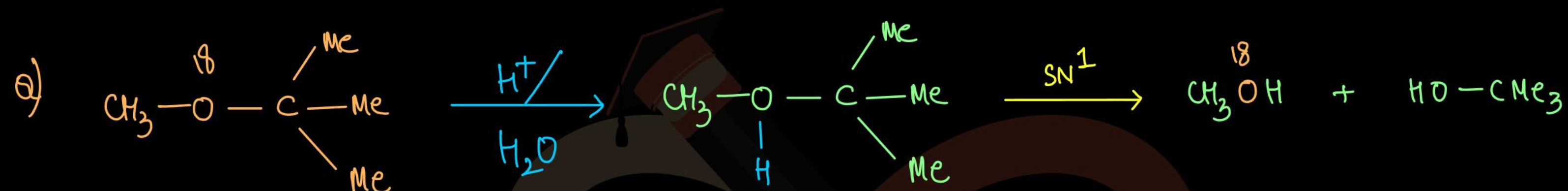
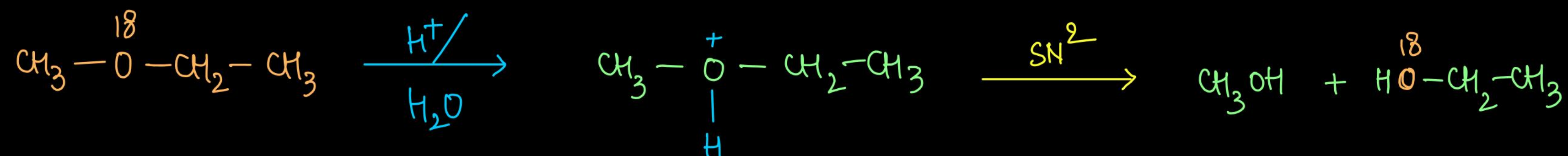
3 membered & 4 membered
cyclic ethers hydrolyses in BM

Mech :-

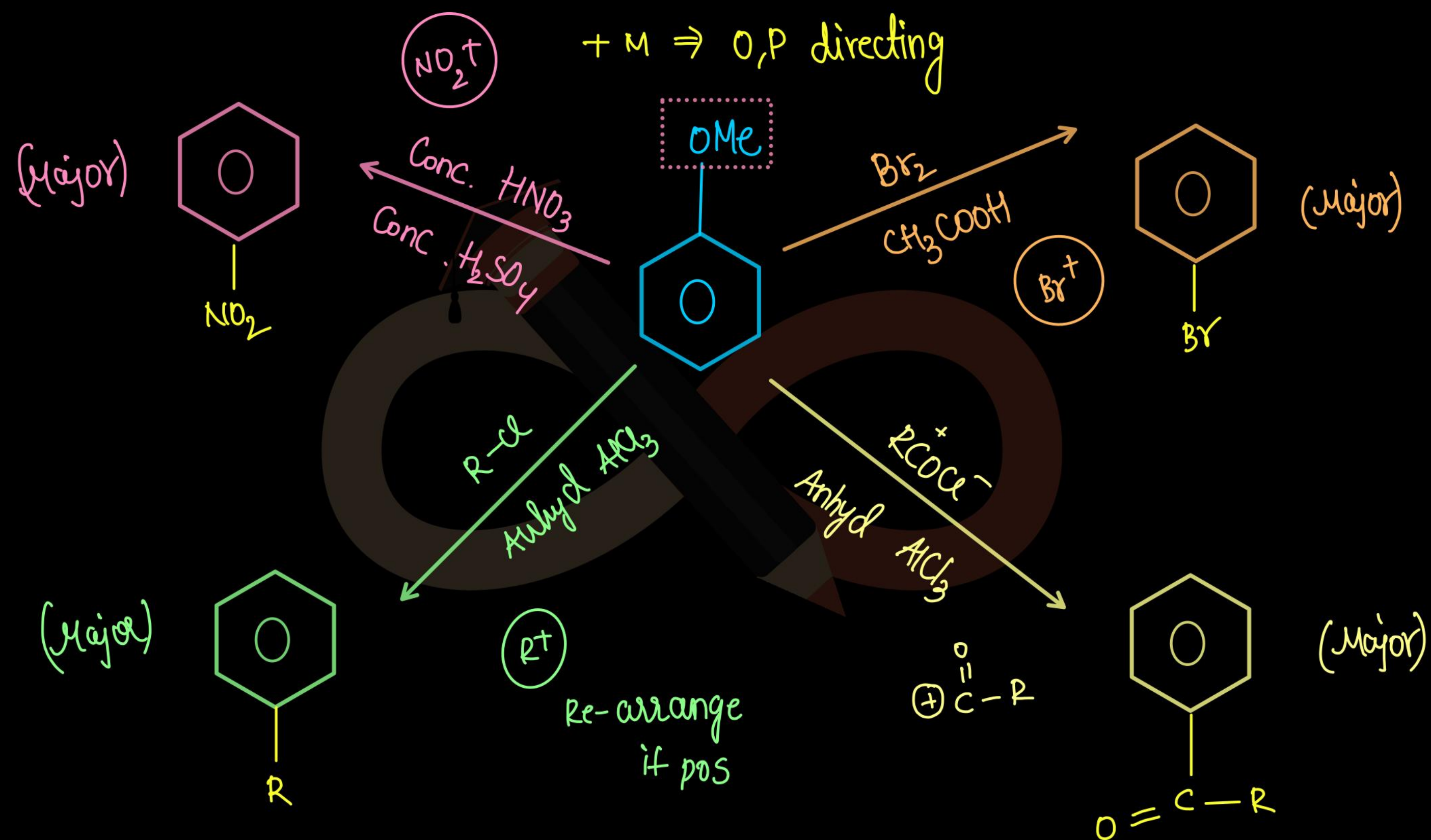


- MI :
- 1) If R_1, R_2 are $1^\circ \Rightarrow \text{SN}^2$ (steric Hinderece)
 - 2) If any one of them $\Rightarrow \text{SN}^1$ (C^+ stability)
is $2^\circ, 3^\circ$ / reso stab 1°

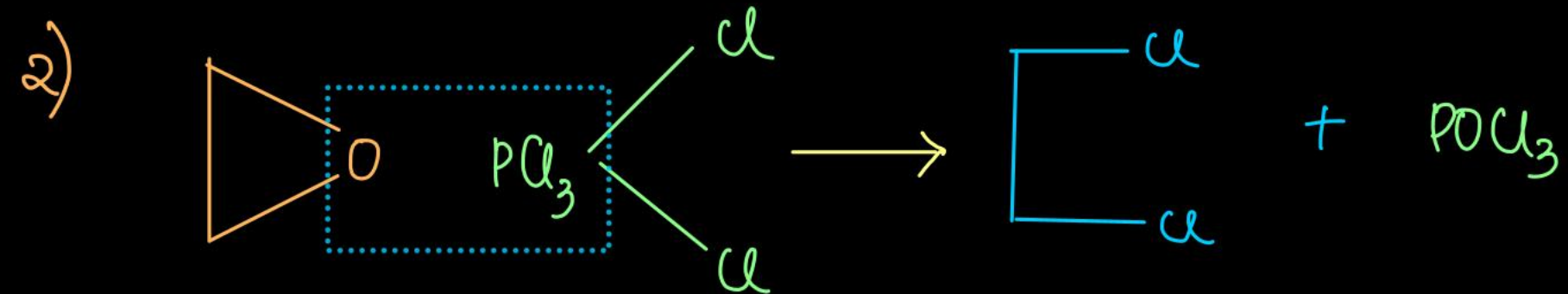
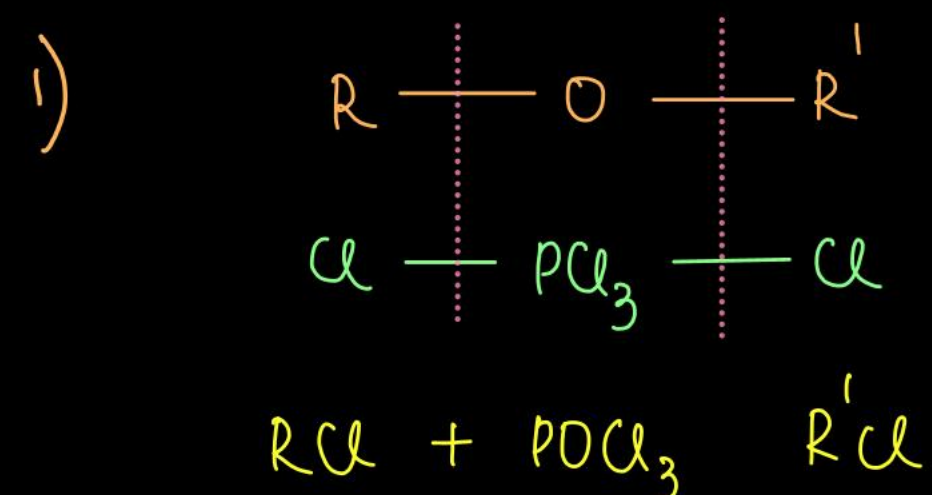
Ex:-



③ EAS :-

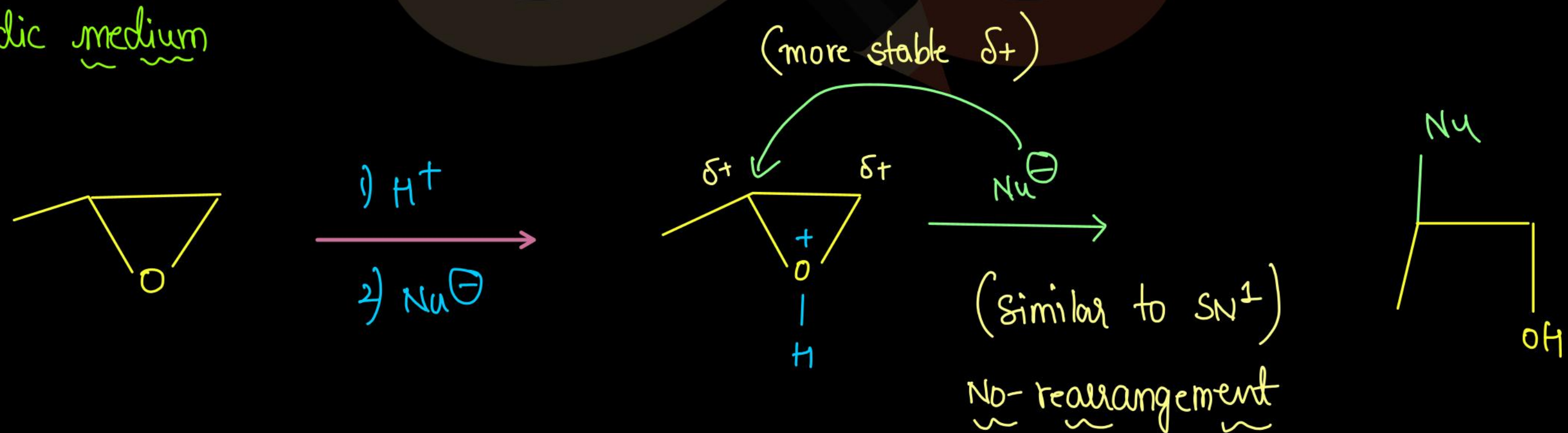


④ Rxn with PCl_5 :

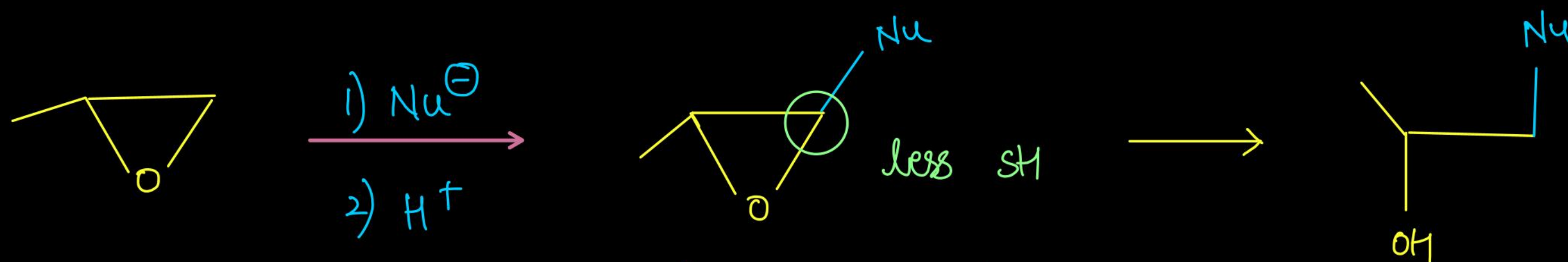


⑤ Ring opening of epoxide :

a) Acidic medium

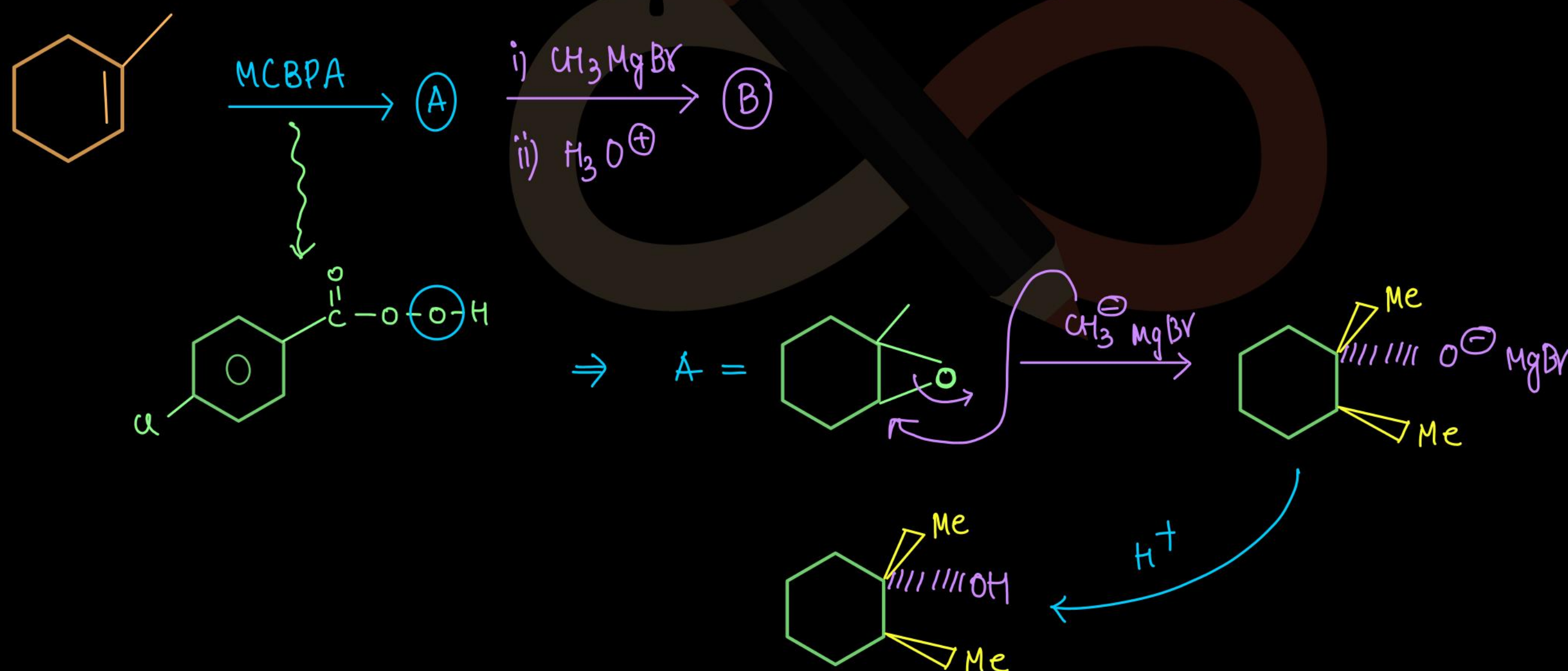


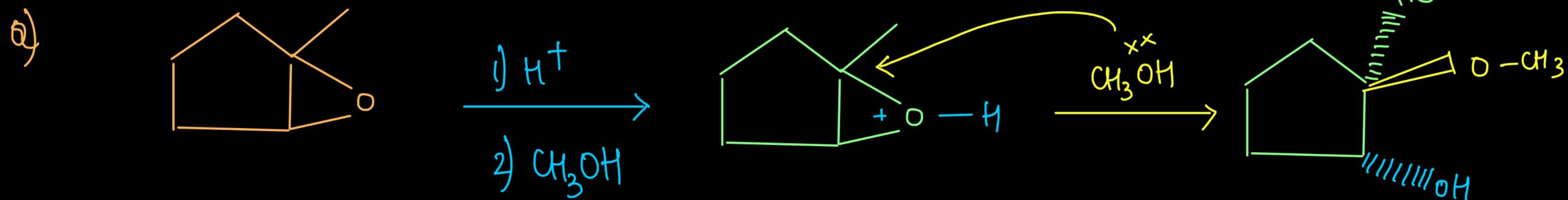
b) Basic medium



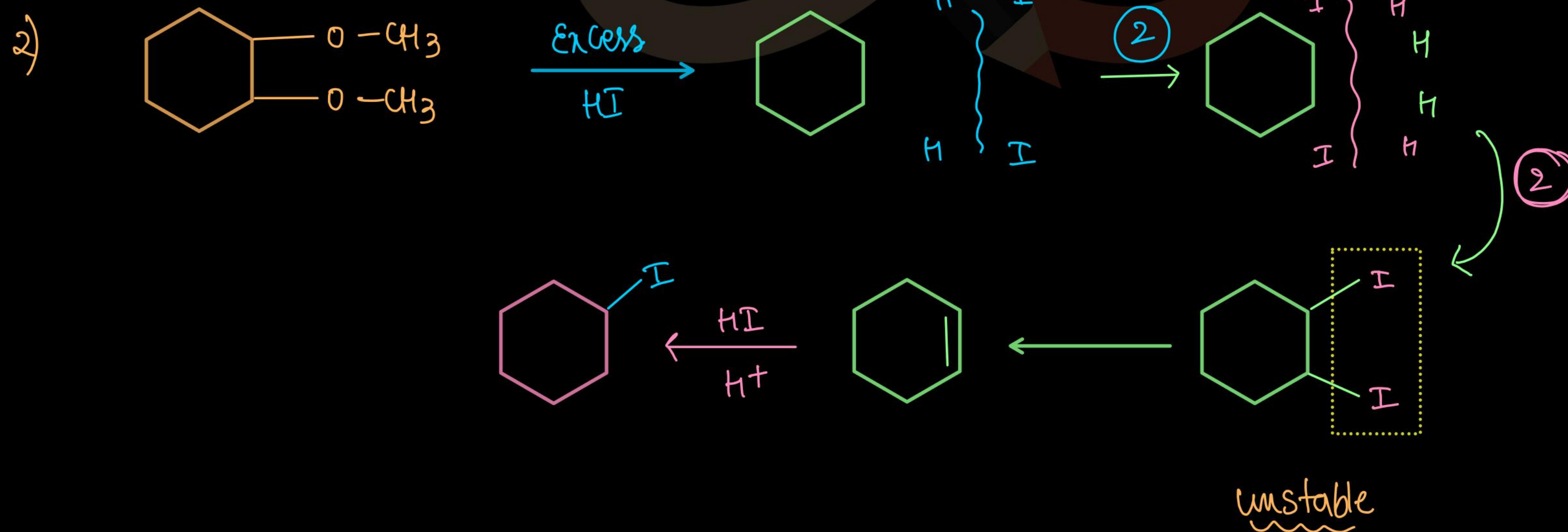
(similar to S_N2)

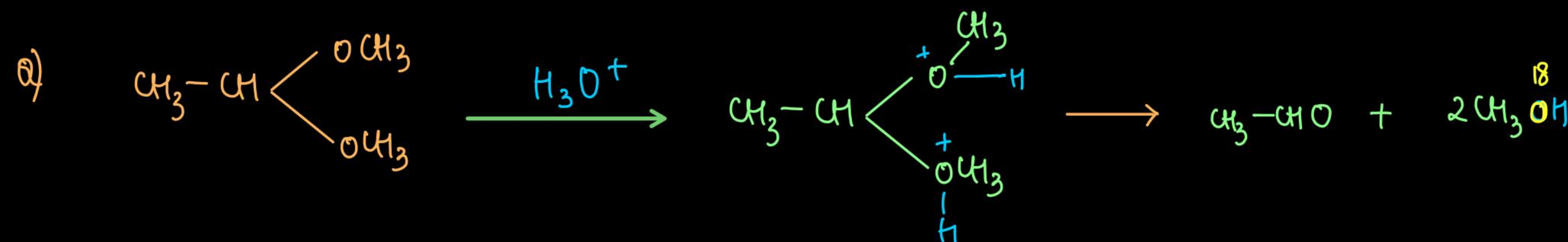
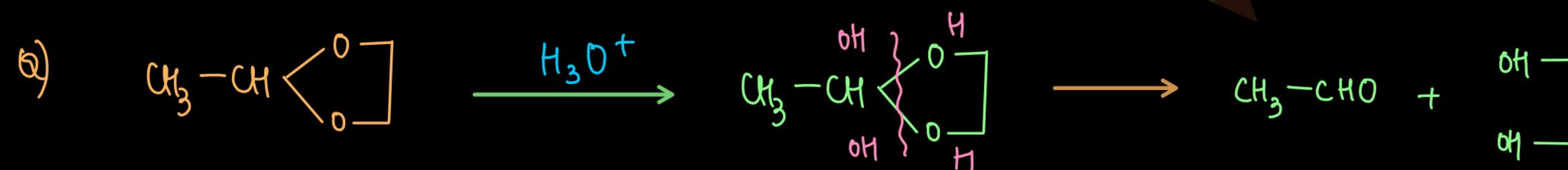
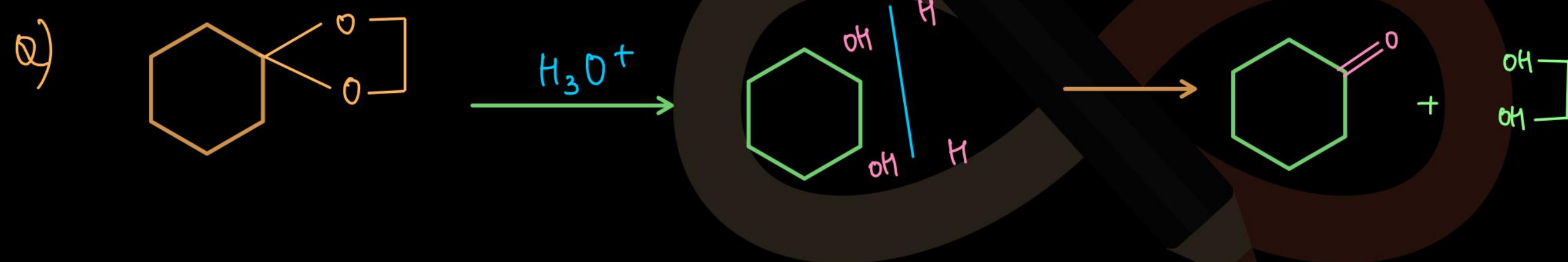
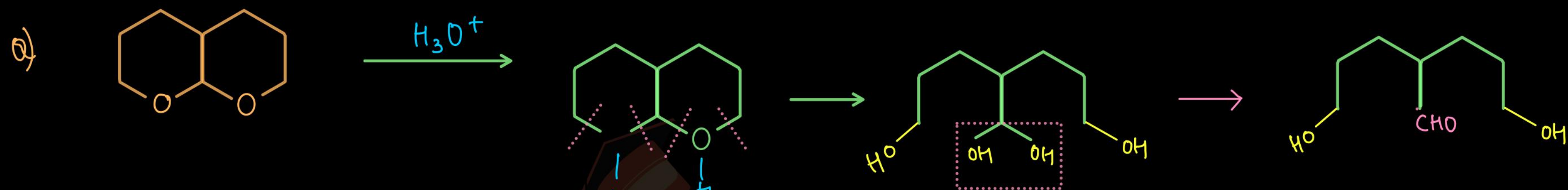
a)

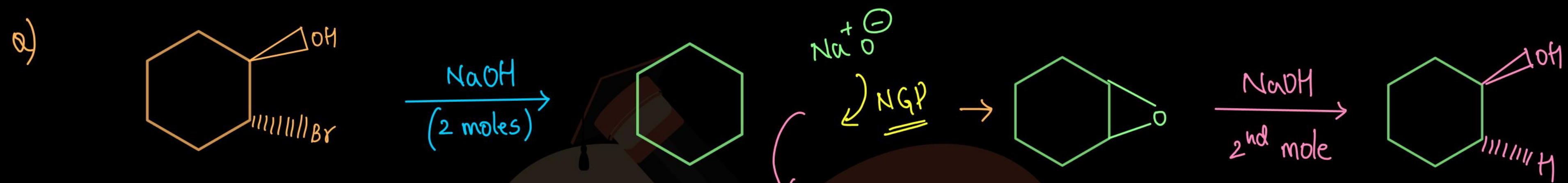
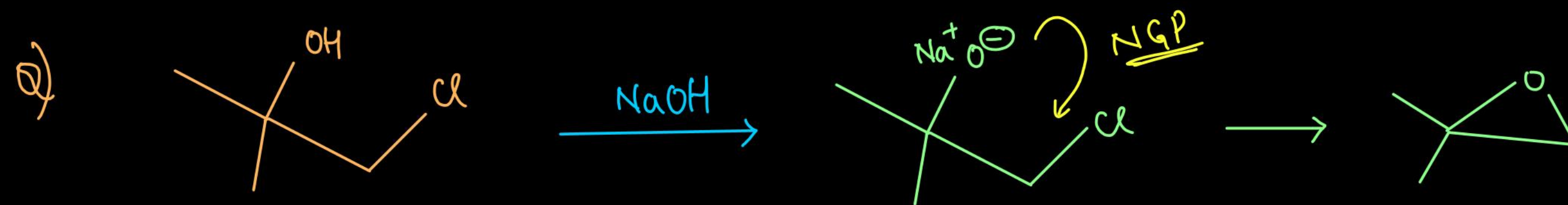


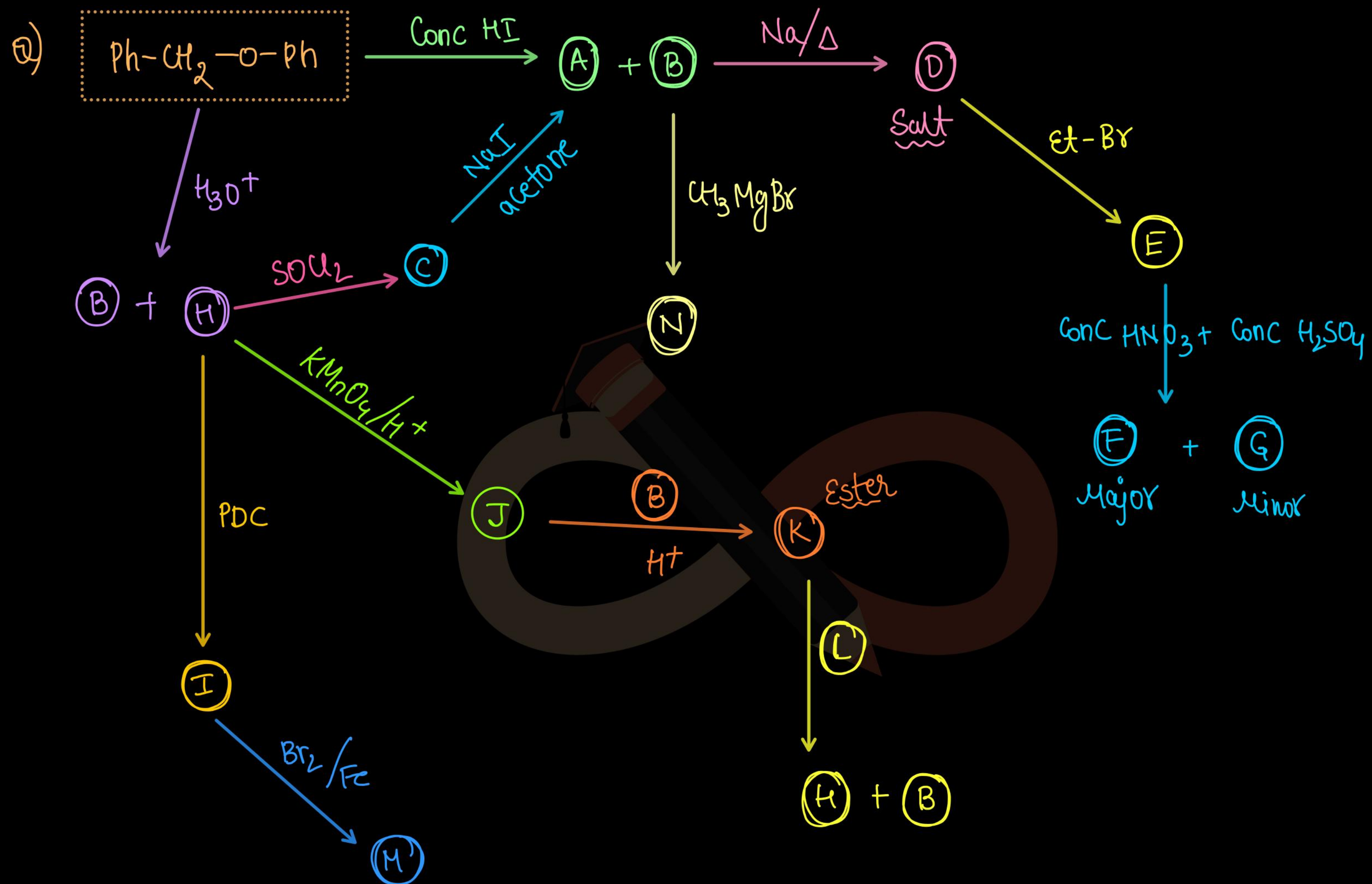


Q) How many moles of HI will be consumed?









Sol:-

