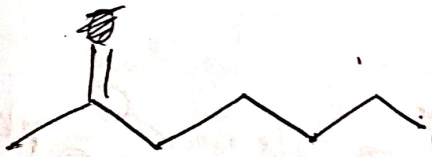
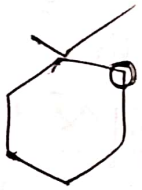
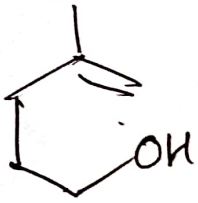
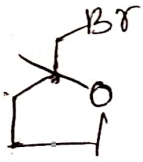
Ethers

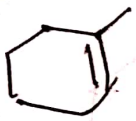
Preparation

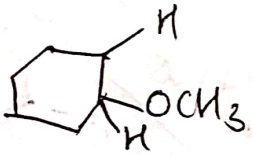
① ⇒ 



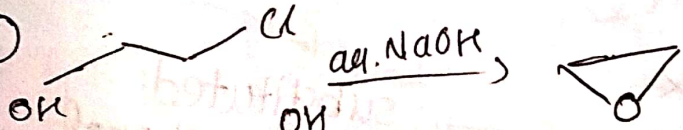
② 

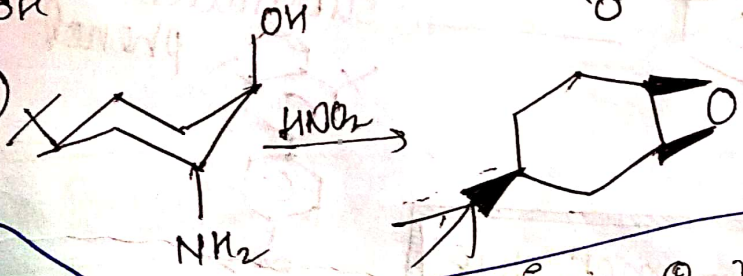
Br_2/CCl_4


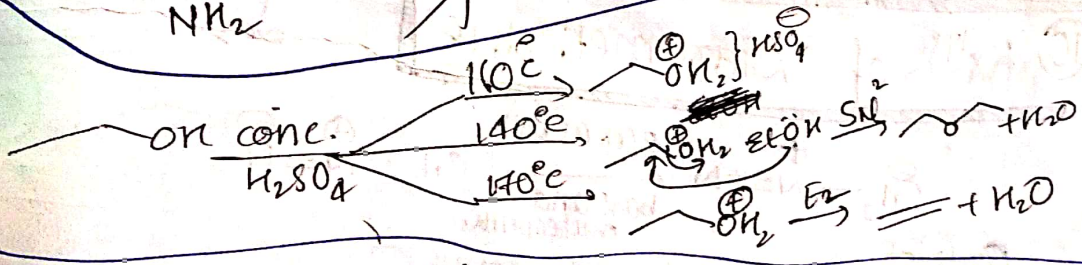
③ 
1) $Hg(OAc)_2$
~~2) B_2H_6, THF~~
2) CH_3OH

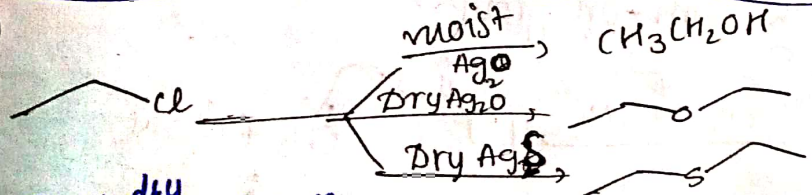


④ 

⑤ 

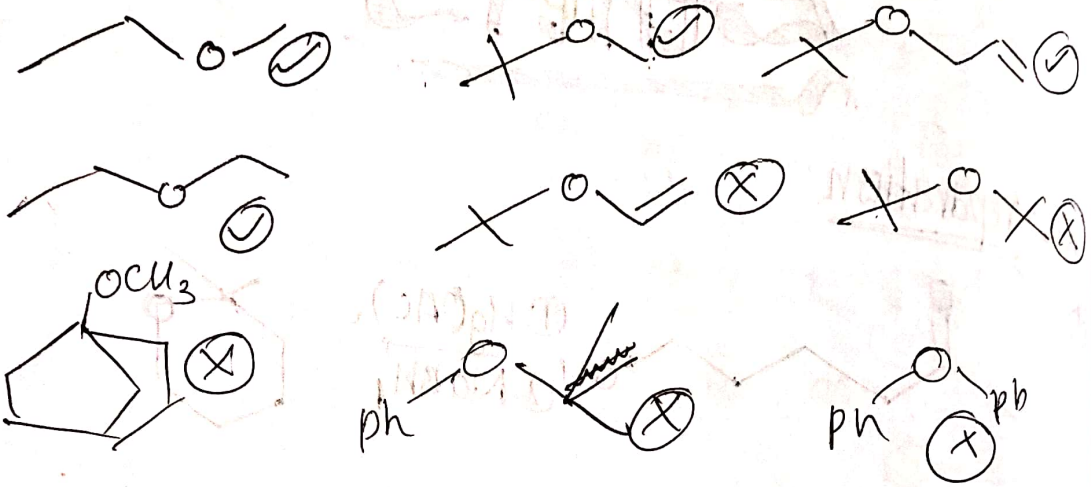
⑥ 

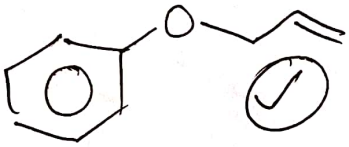
⑦ 

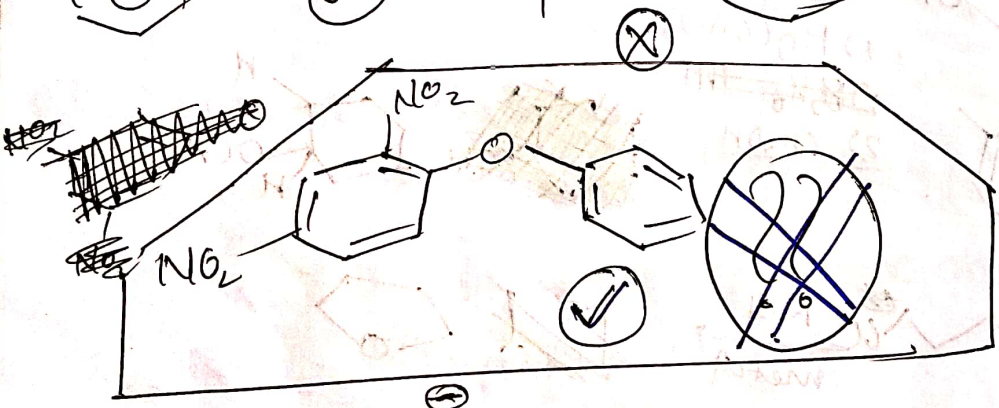
⑧ 

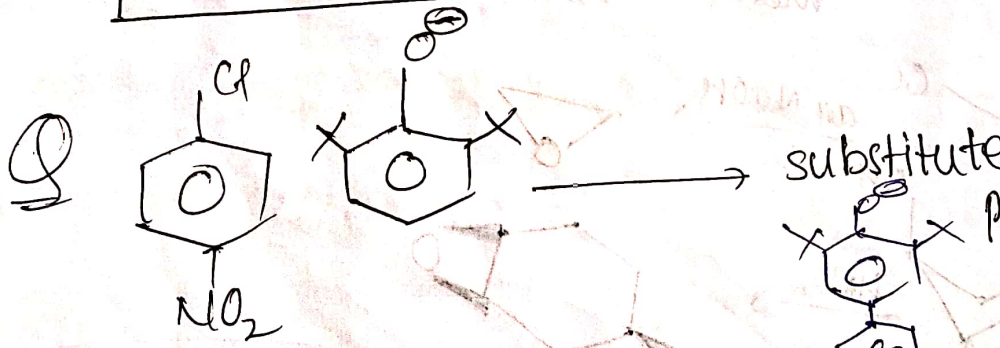
$R-X \xrightarrow[Ag_2O]{dry} R-O-R$

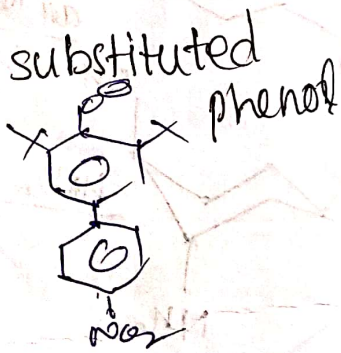
⑨ Williamson Ether synthesis



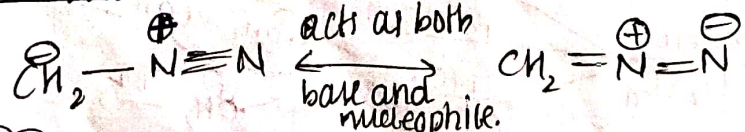






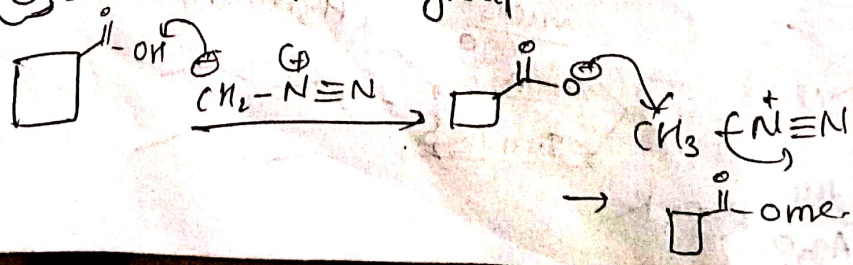


⑩ Rxns of Diazomethane

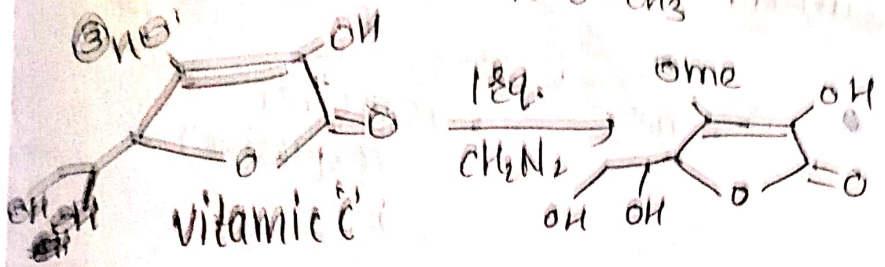


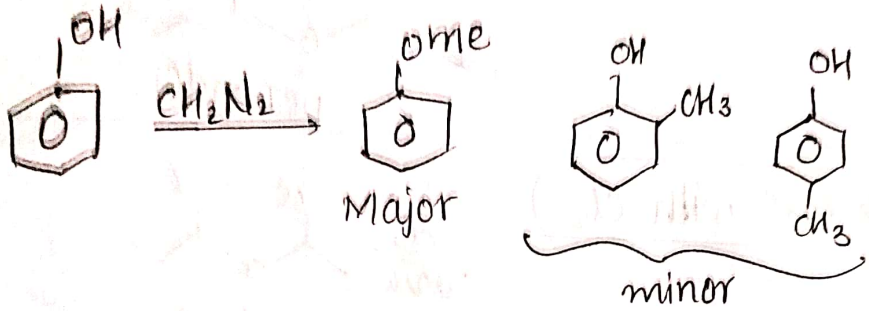
Rule ①:- Base with -OH groups.

Ex ①

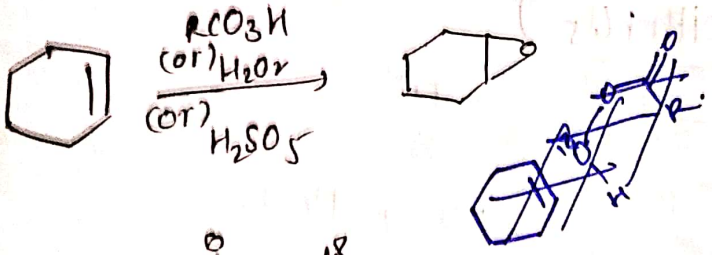


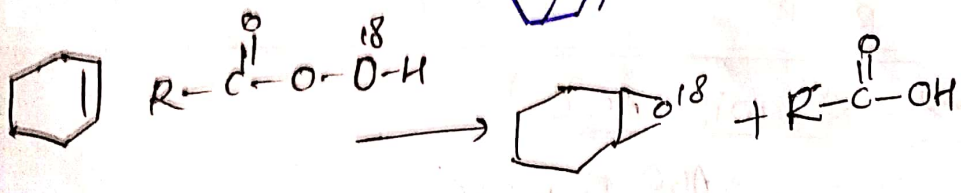
(10) $R-OH \xrightarrow{CH_2N_2} R-O-CH_3$

(13) 

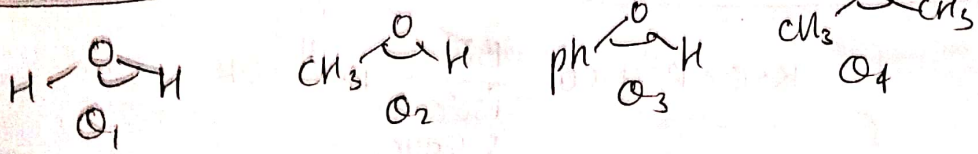
(9) 

(11) $CH_2=CH_2 \xrightarrow[Ag]{H_2O_2}$ 

(12) 

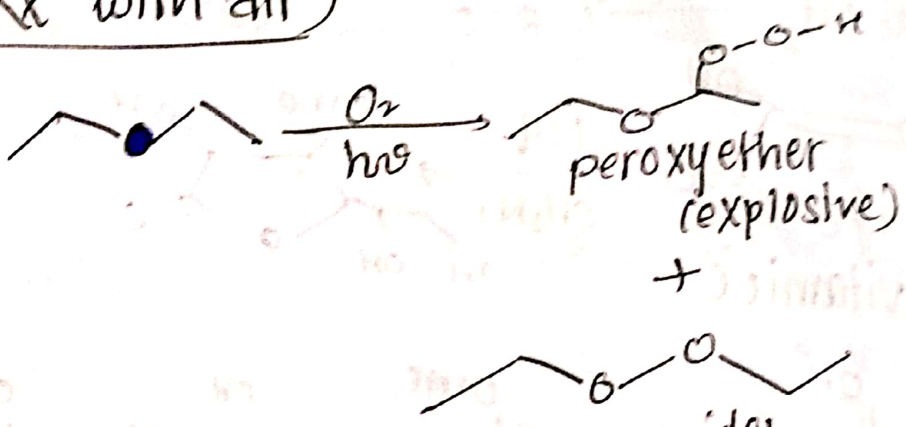
(9) 

Properties

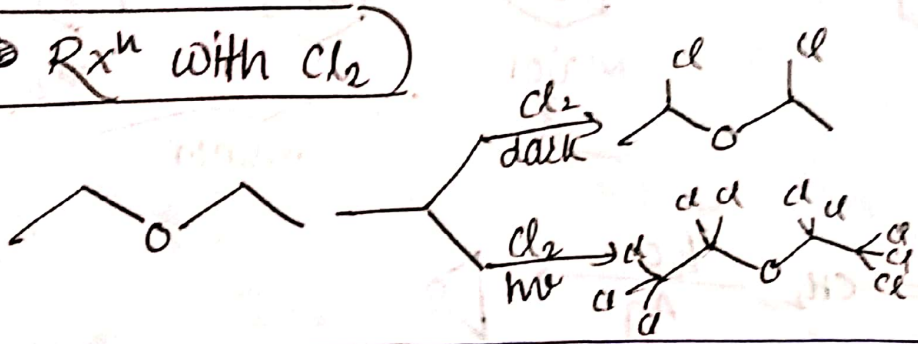
(1 mins) 

$O_1 < O_2 < O_3 < O_4$

② Rxn with air



③ Rxn with Cl_2



④ Rxn with PCl_5

$R-OR \xrightarrow{\text{normal condition}}$ no rxn.

$R-OR \xrightarrow[\Delta]{PCl_5} 2RCl + POCl_3$

⑤ Rxn with Ac_2O

$R-OR \xrightarrow[\Delta]{Ac_2O} ROAc$

⑥ Rxn with CO

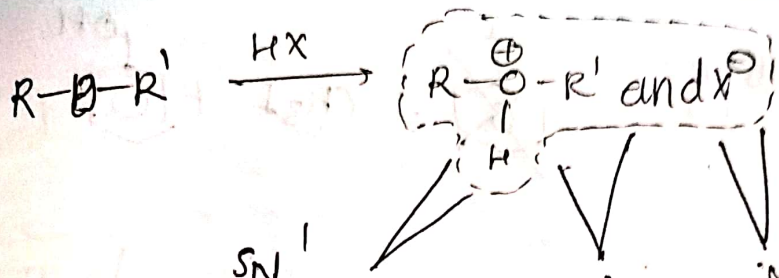
Imp. for BITSAT

$R-O-R + CO \xrightarrow[150°C,\ 500\ atm]{BF_3} R-\overset{O}{\overset{\|}{C}}-OR$

⑦ Rxn with H-X

Reactivity:- HI > HBr > HCl

case I) with cold HX (means 1eq. of HX only for this chapter)



S_N1

3°, Benzylic, $-CH_2-$, etc.

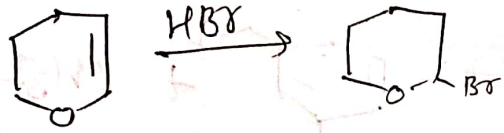
S_N2

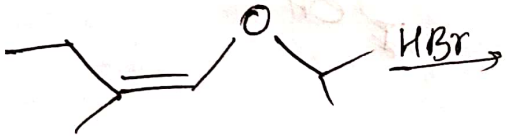
1°, 2°, 1β

No Rx^n

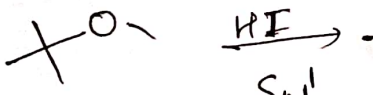
$-Ph$,

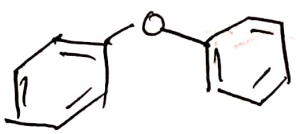
Examples

① 

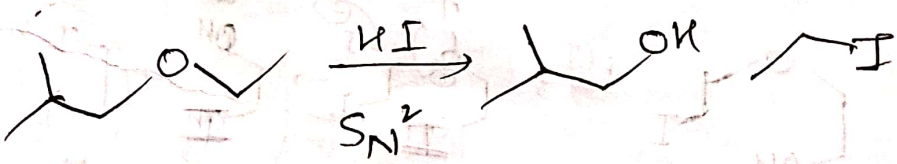
② 

No. of optically active products:- ④

③ 

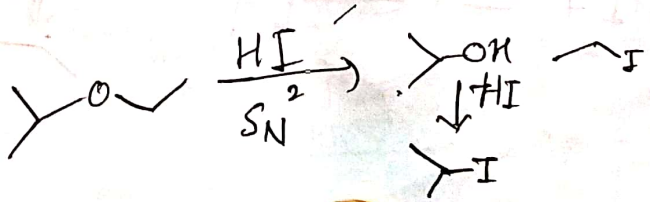
④ 

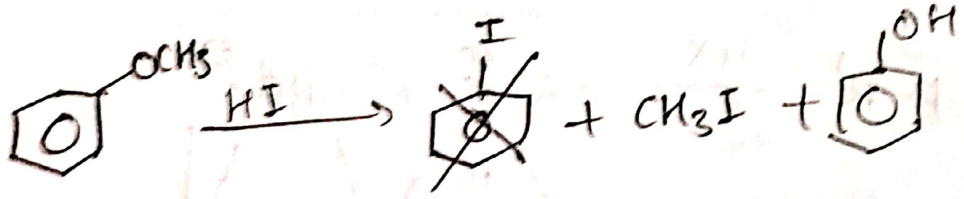
No rx^n (or) No cleavage of bonds.

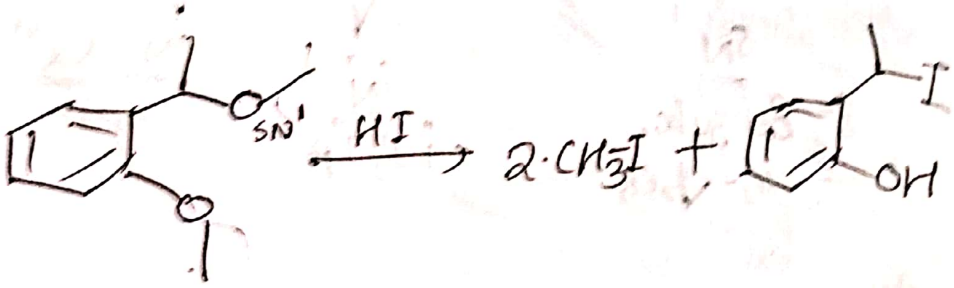
⑤ 

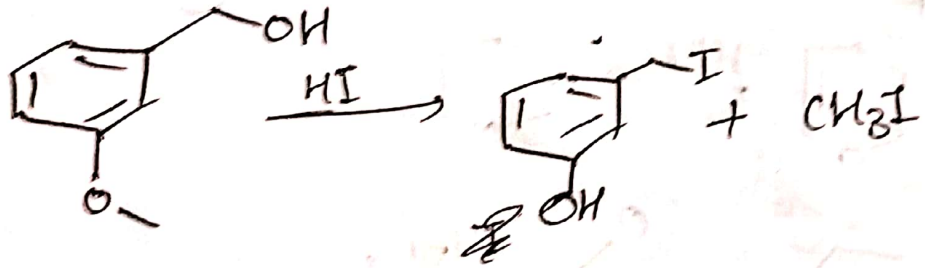
---

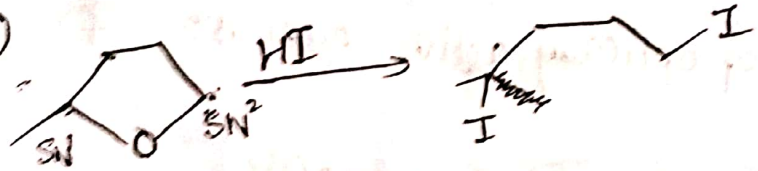
case II) Warm or Hot HX (which means it is excess)

Ex① 

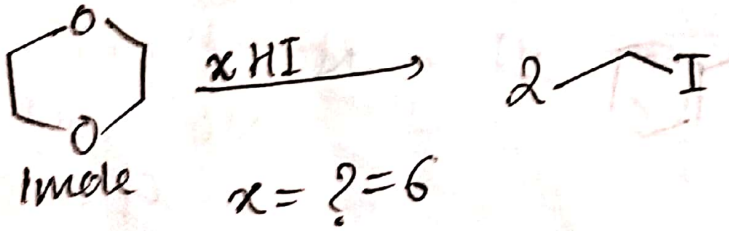
② 

③ 

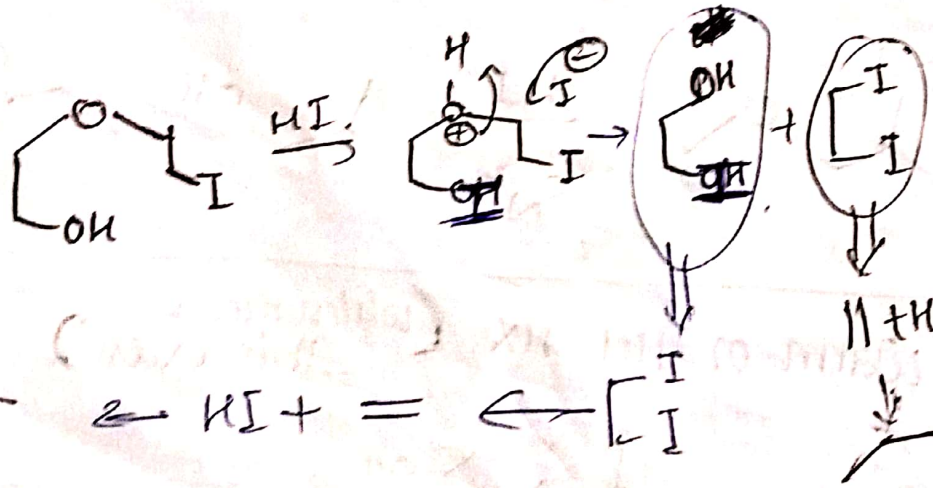
④ 

⑤ 

⑥ 1,4 - dioxane

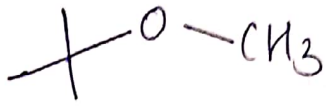


1mole $x = ? = 6$



7)  $\xrightarrow{HI}$ No rxn

Case III) Anhydrous HX

Ex (1)  $\xrightarrow[S_N^2 \text{ only}]{\text{Anhyd. HI}}$  + CH_3-I

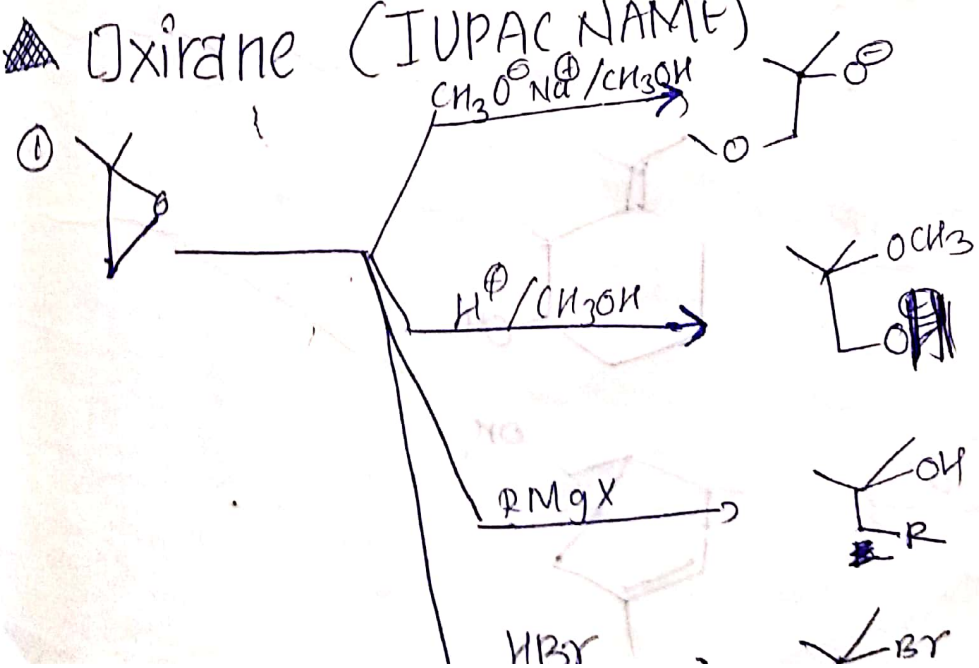
(2)

Property (8) Zeisel's Method — Best method for identification or detection of methoxy groups on arenes.

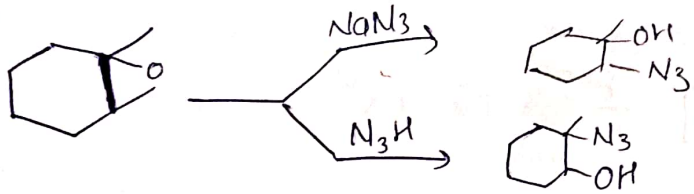
Given compound $\xrightarrow[\text{warm}]{HI}$ Mixture of product. $\xrightarrow{AgNO_3\ (\text{sol})}$ yellow ppt.

Q1

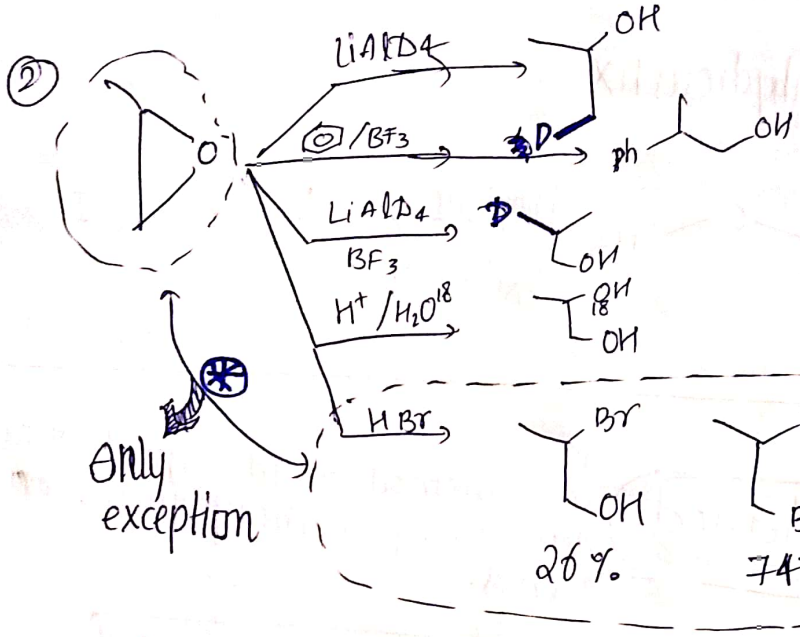
Oxirane (IUPAC NAME)



Q

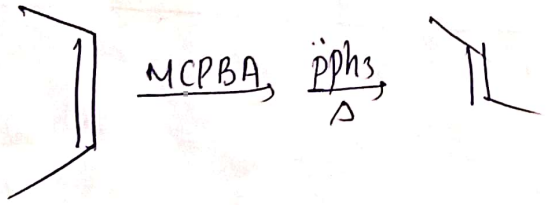


(2)

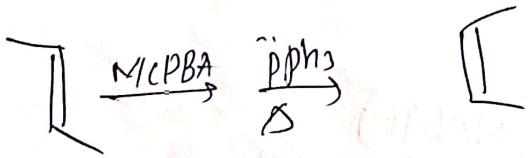


Q propose product or products.

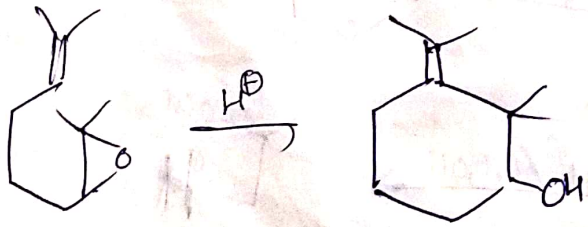
(1)



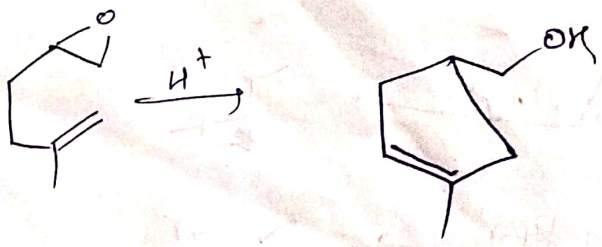
(2)



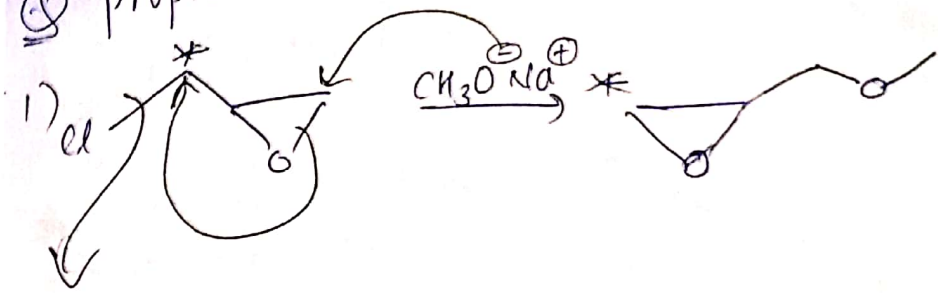
(3)

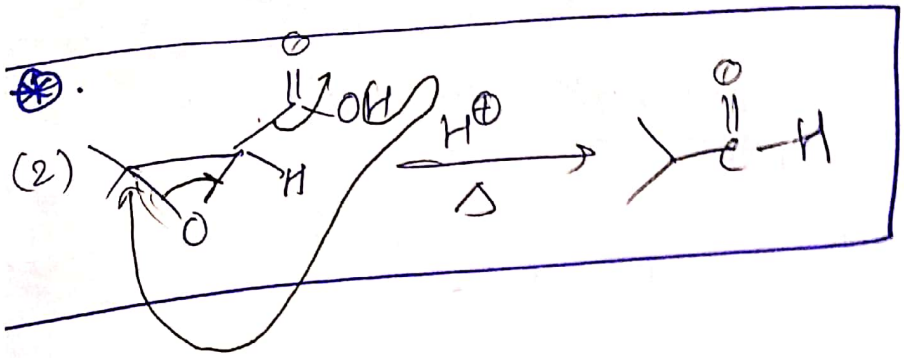


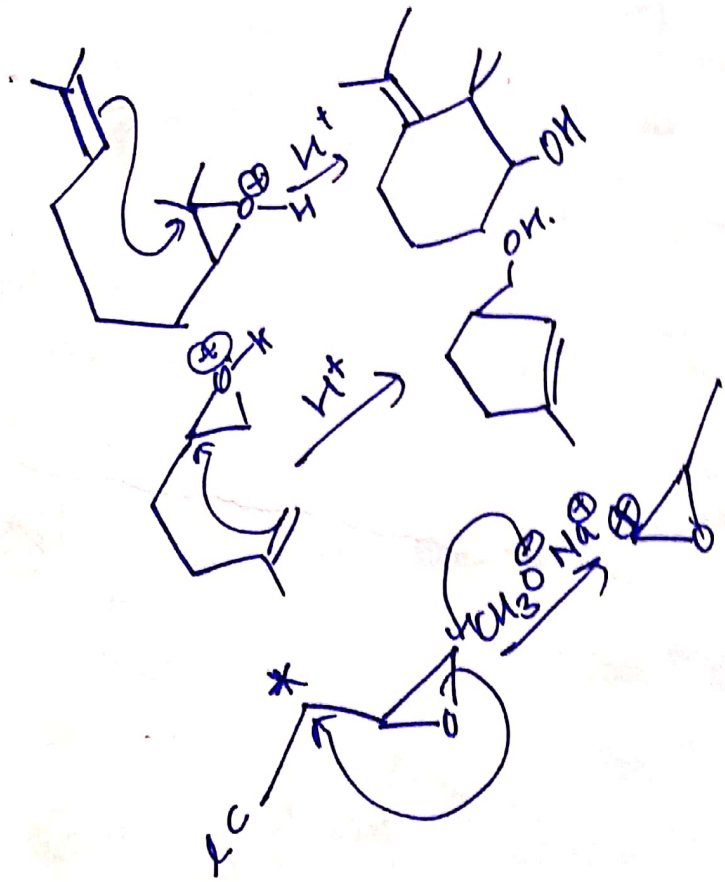
(4)



② propose mechanisms

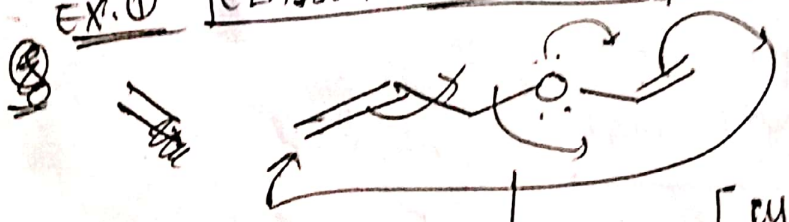






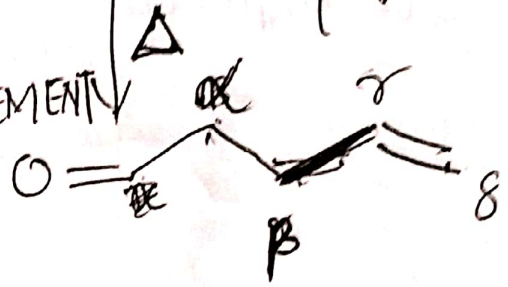
During cleavage of Epoxide in basic medium if any leaving group is there - $O^{\ominus}$ reattacks and forms ring again.

EX. ① CLAISEN REARRANGEMENT | N*



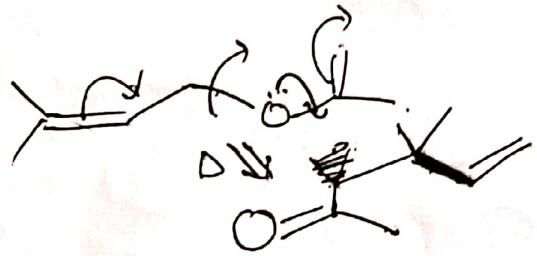
[cyclic 6 MR TS#]

CLAISEN REARRANGEMENT

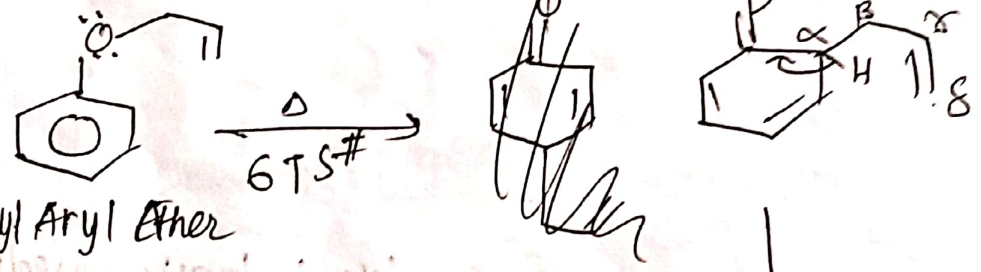


γ-δ unsaturated carbonyl compound.

②

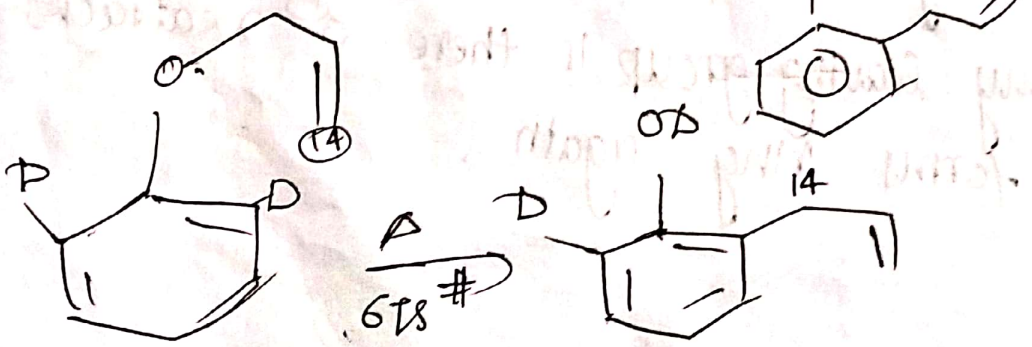


③



Allyl Aryl Ether

④



⑤ N*