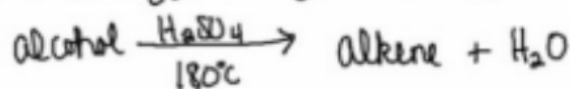
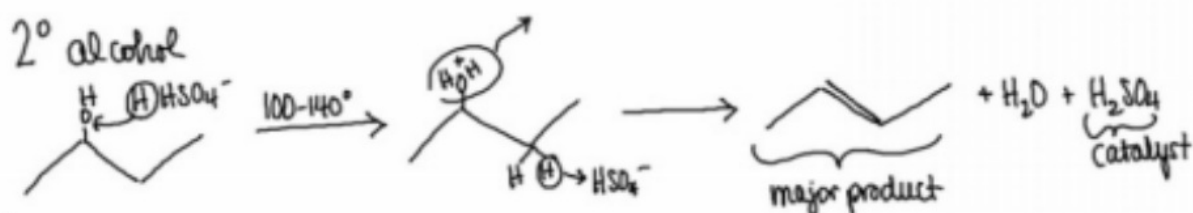
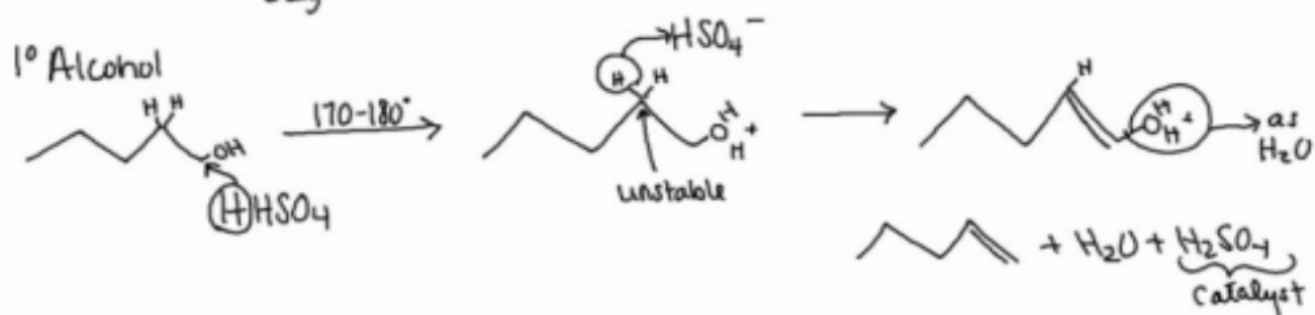


## Reactions

### ① Acid-Catalyzed Dehydration to form Alkenes:



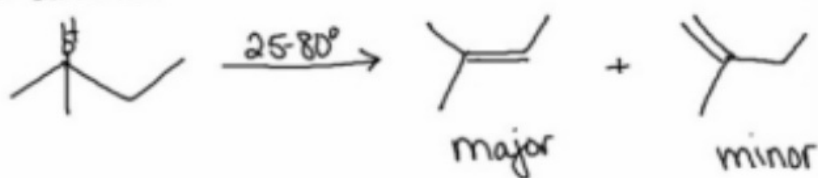
(Ease to produce  
 $1^\circ \rightarrow 2^\circ \rightarrow 3^\circ$   
Easy)



Zaitsev Rule - the double bond will form between the most highly substituted carbon.

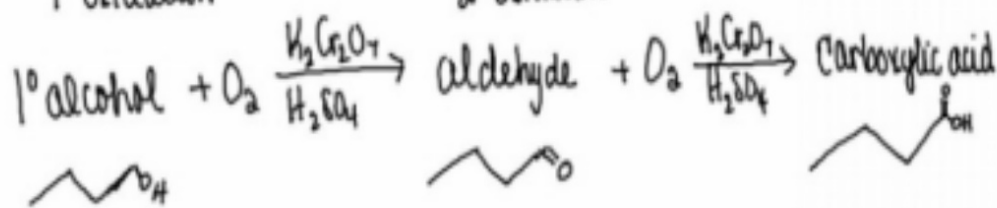
In addition: most will form trans as it is more stable

3° alcohol

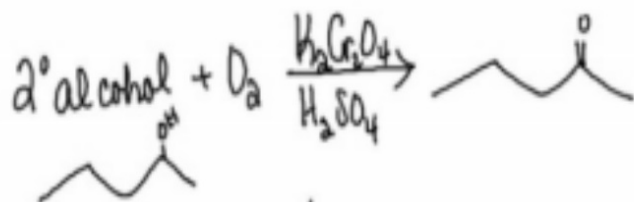


② Oxidation

(partial)  
1° oxidation

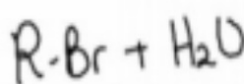
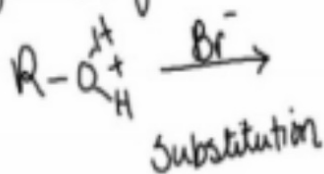
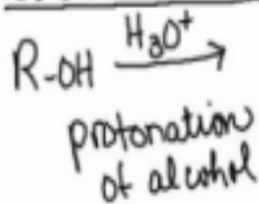


(full)  
2° oxidation



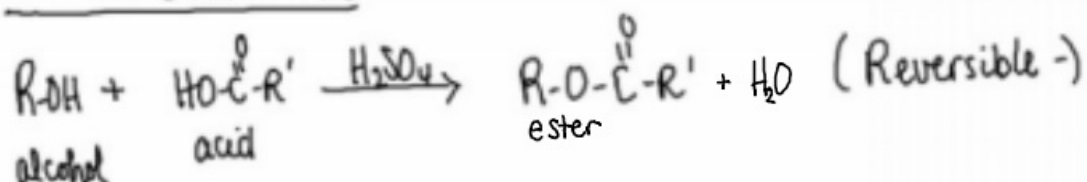
3° alcohol  $\not\rightarrow$  resists oxidation

③ Substitution to form alkyl halides

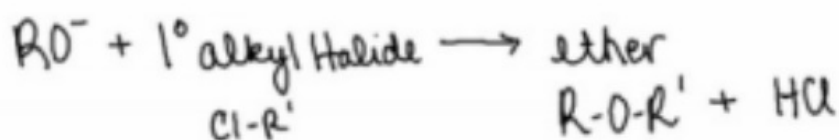
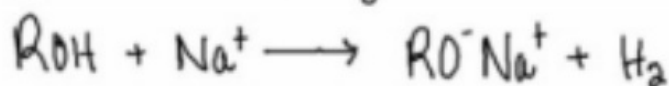


{ 1° alcohols - slow or not at all  
 { 2° alcohol - reacts in 1-5 min  
 { 3° alcohol - reacts very quickly

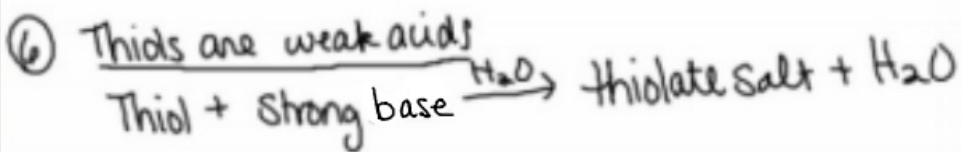
④ Fischer Esterification:



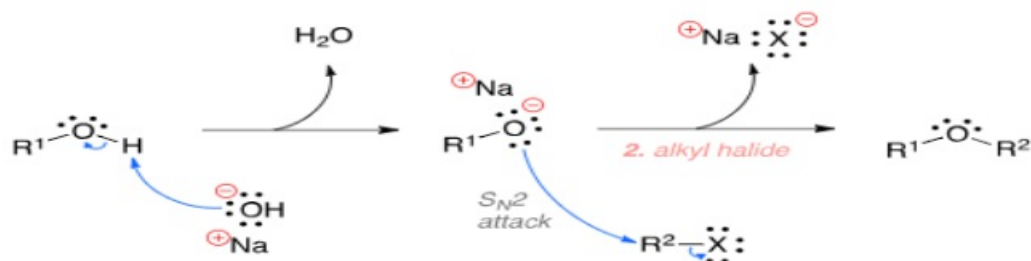
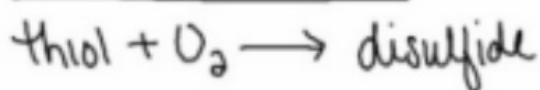
⑤ Williamson Ether Synthesis - alkoxide ions



⑥ Thiols are weak acids



⑦ Oxidation of thiols



Alcohol - OH (hydroxyl)

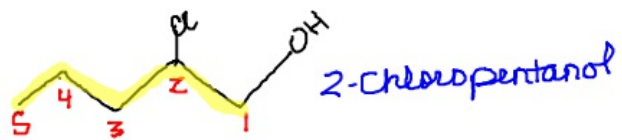
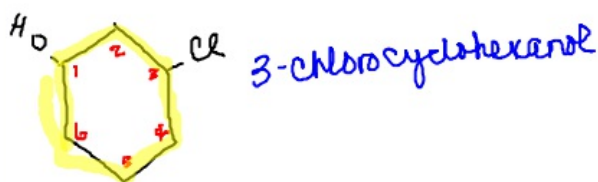
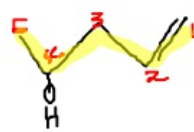
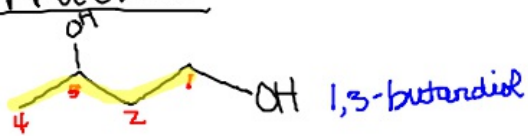
Nomenclature:

IUPAC - Determine PC and # so that the hydroxyl group has the lowest # possible

Carbon # prefix - an/en/yn - ol

Common name - name PC as a branch followed by -alcohol

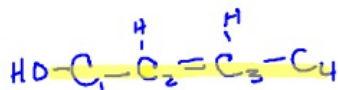
Practice:



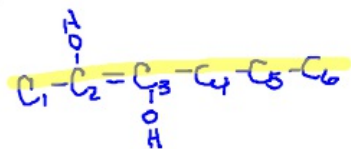
Isobutyl alcohol



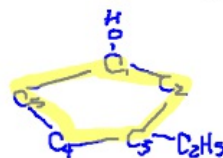
cis-2-butene-1-ol



trans-2-hexen-2,3-diol



3-ethylcyclopentanol



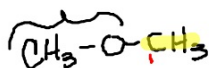
## Ethers

### Nomenclature

IUPAC- the alkyl groups on each side of the oxygen are named as branches in alphabetical order, followed by ether



Common- the smaller of the R groups (alkyl groups) and the oxygen are blended together as a branch - prefix + oxy, the larger R group is named as the parent.

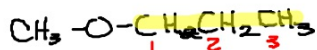


common name

dimethyl ether

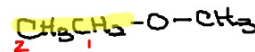
IUPAC

methoxy methane



1 2 3  
methyl propyl ether

methoxy propane



2 1  
ethyl methyl ether

methoxy ethane

Thiols - R-SH (sulfhydryl group)

Nomenclature

IUPAC - name compound adding thiol at the end and # locator in front

Common name - mercaptan - name parent as an alkyl branch followed by mercaptan