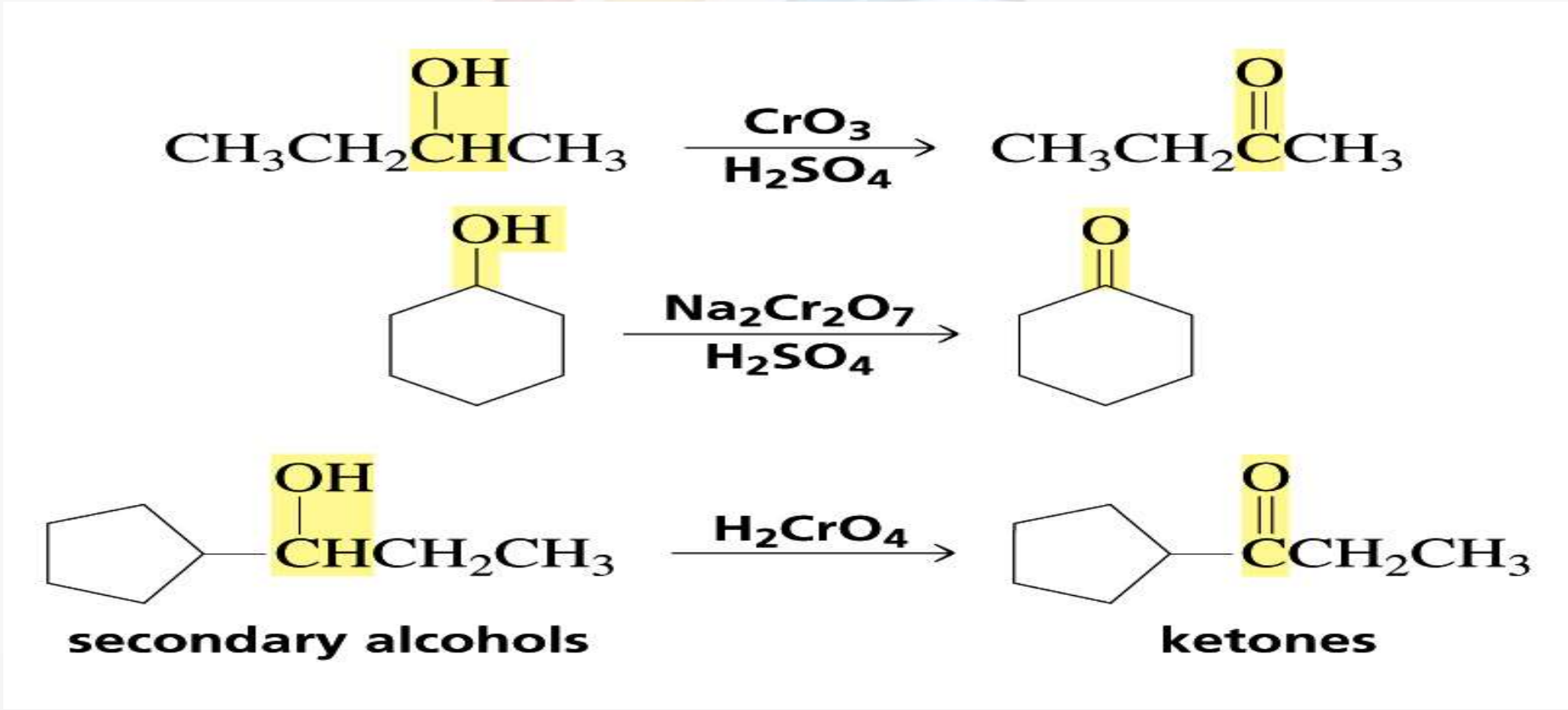
OXIDIZING REAGENTS

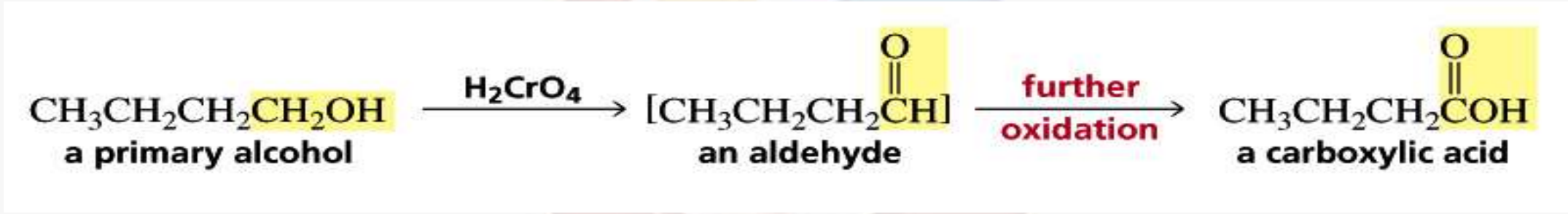
TOPICS TO BE COVERED

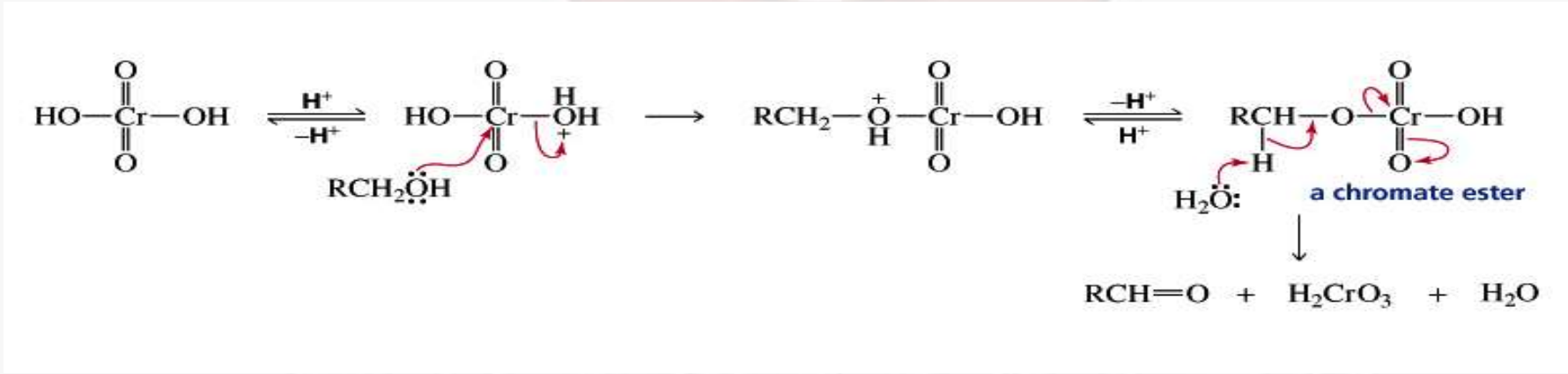
- Oxidation Reaction of Alcohols
- Oxidation of Aldehyde and Ketones
- Mechanism of oxidation
- Hydroxylation Reaction and Mechanism
- Stereochemistry of Hydroxylation and Problems

Oxidation of Alcohols

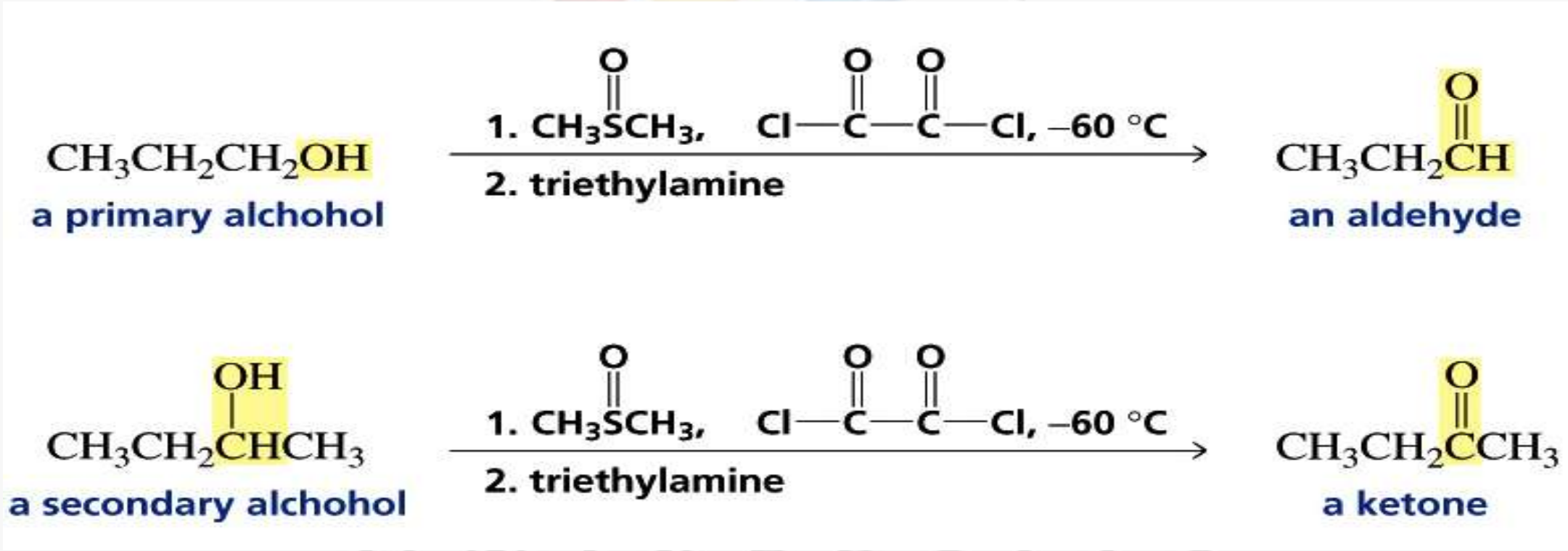


Oxidation of Alcohols and Mechanism

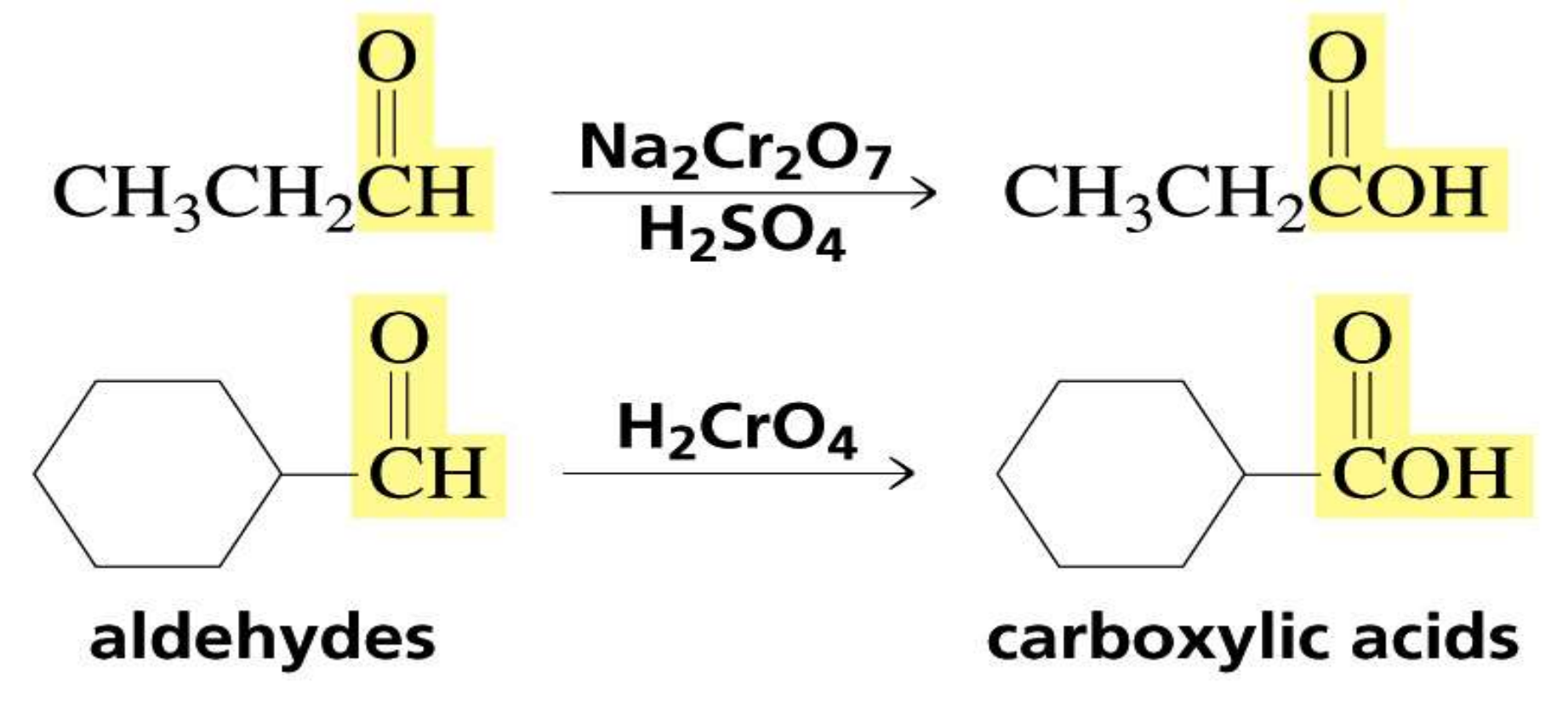




The Swern Oxidation



Oxidation of Aldehydes and Ketones



Hydroxylation of Alkenes

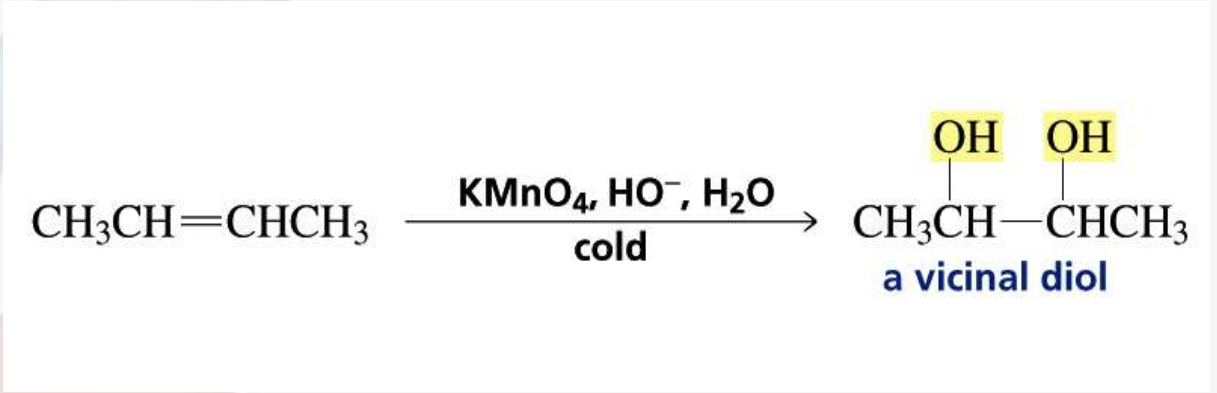
Converting an alkene to a glycol requires addition of –OH group to each end of the double bond.

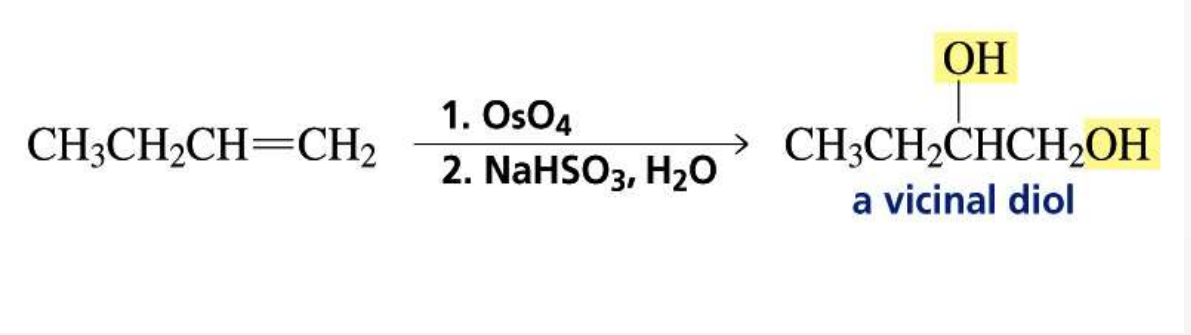
Hydroxylation Reagents:-

i. Potassium Permaganate ($KMnO_4$)

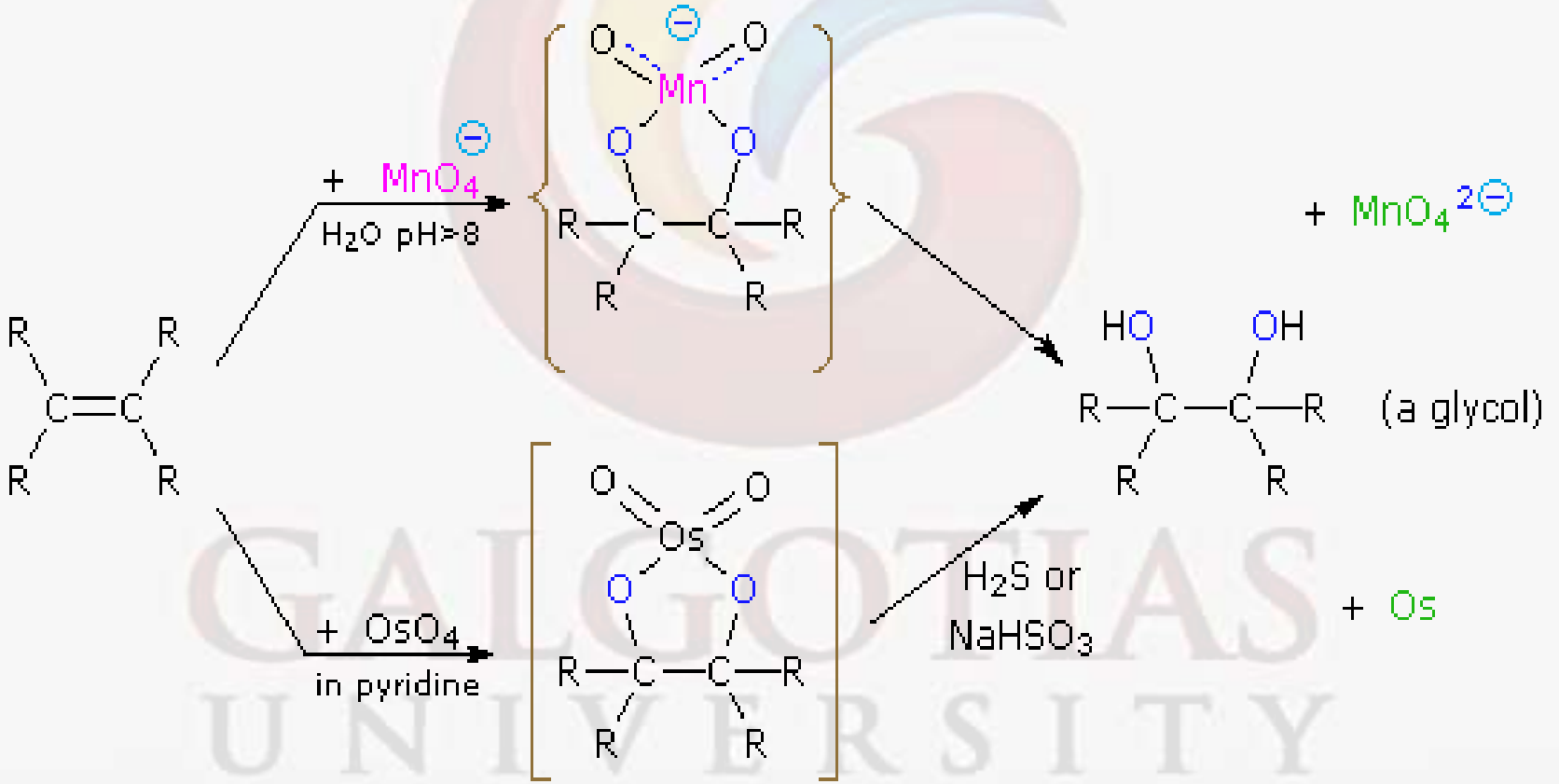
ii. Osmium Tetroxide (OsO_4)

It is a Syn-addition reaction giving diol.

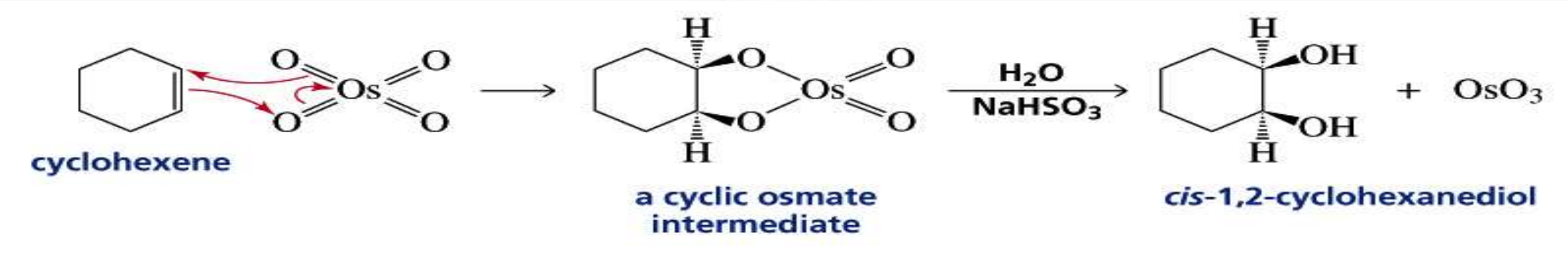




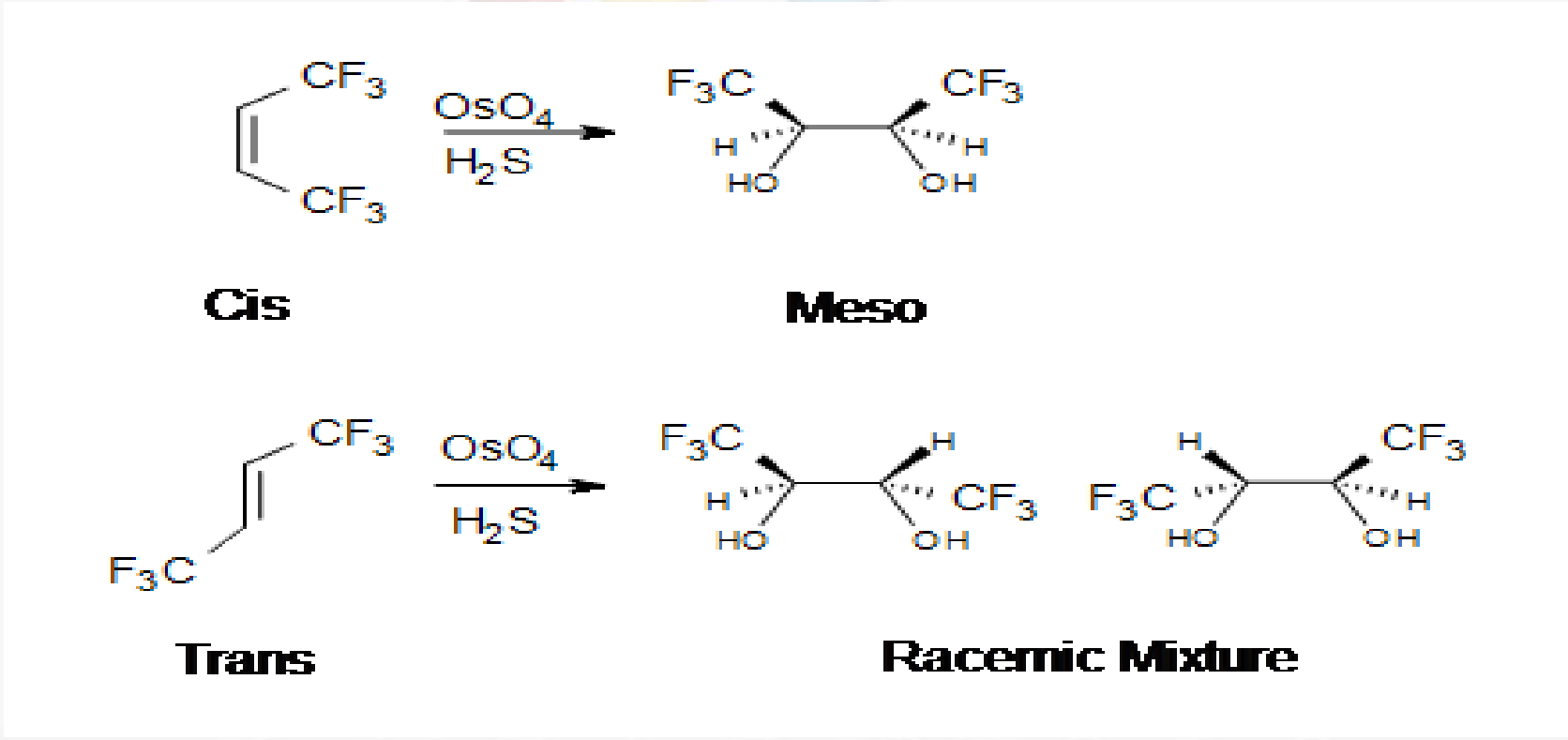
Mechanism of Hydroxylation of Alkenes



Mechanism of Hydroxylation of Alkenes

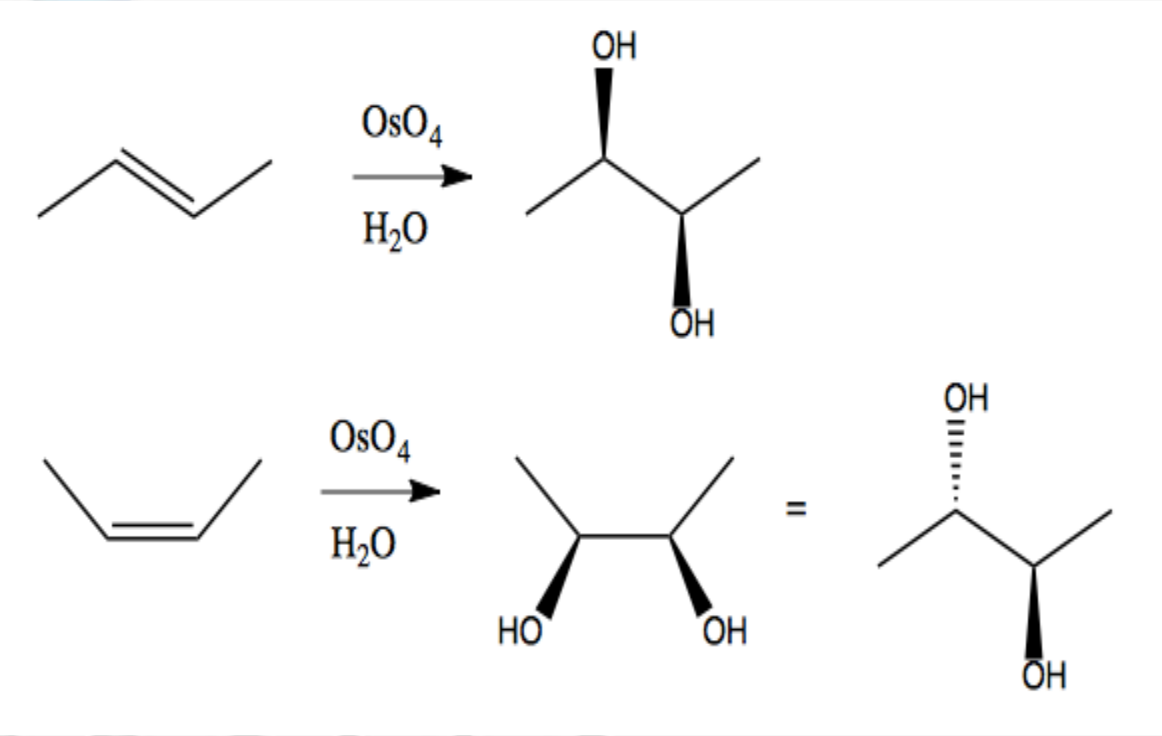


Stereochemistry of Hydroxylation

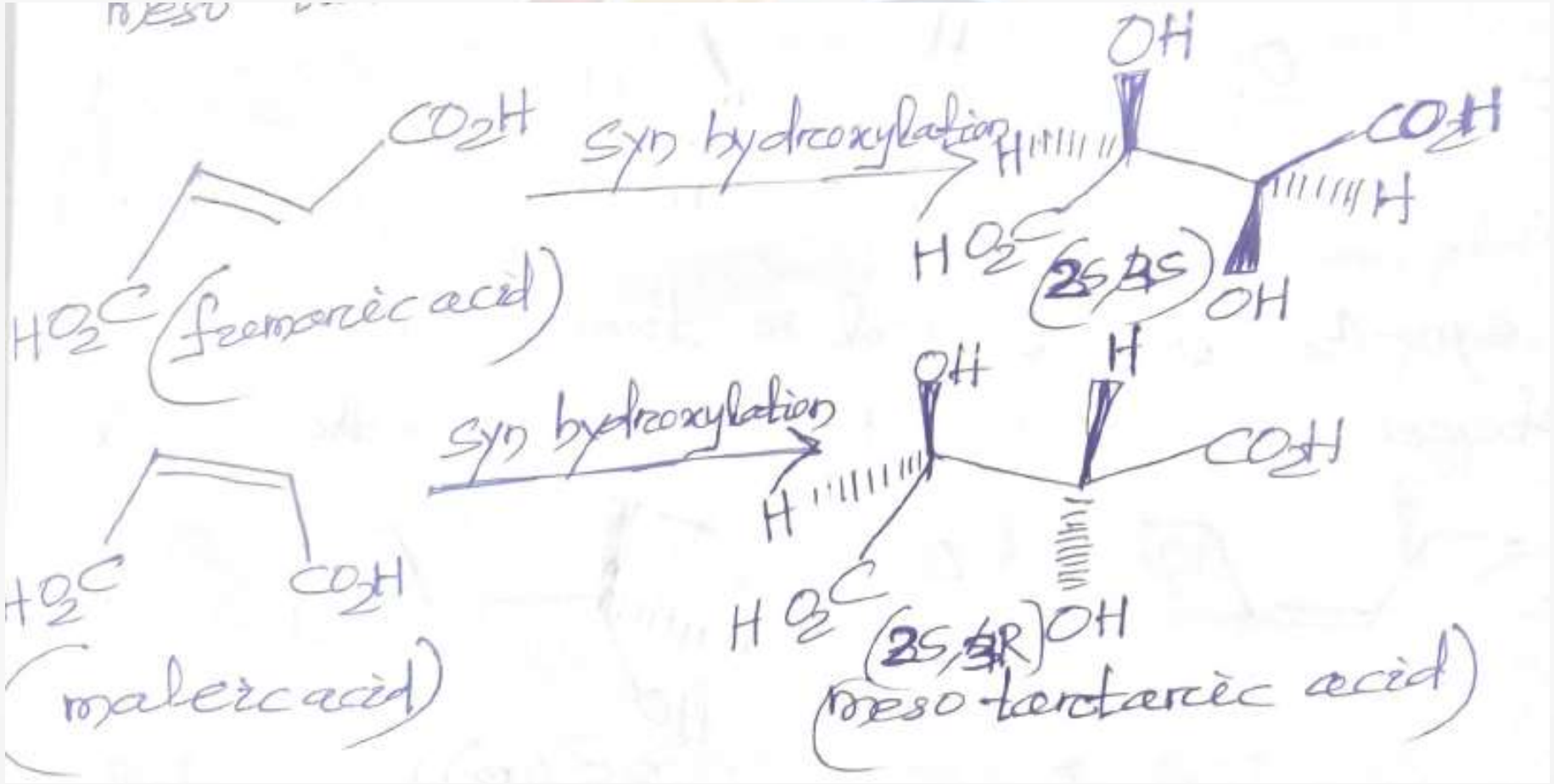


Stereochemistry of Hydroxylation

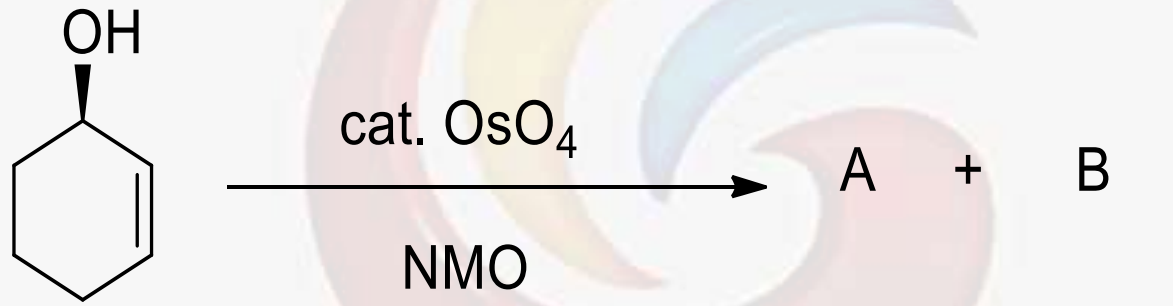
E-isomer will give racemic mixture and z-isomer will give meso form.

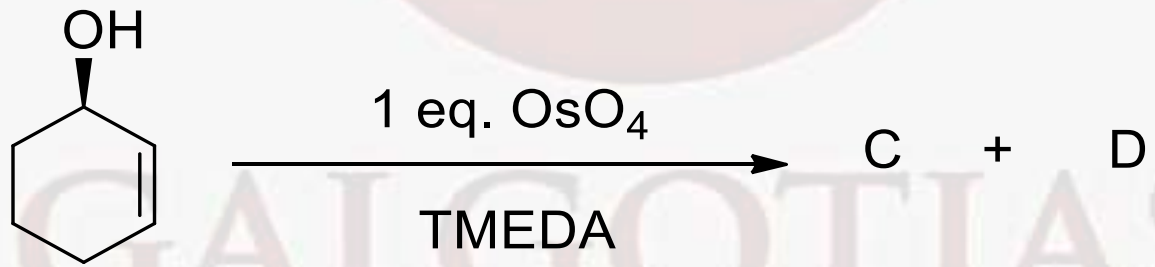


Stereochemistry of Hydroxylation



Problems





References

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- T.L. Gilchrist, Heterocyclic Chemistry, 3rd edition, Addison-Wesley Longman Ltd., England, 1997.
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