

The logo of Galgotias University is a stylized circular emblem composed of several overlapping, curved segments in shades of yellow, orange, and blue, creating a sense of motion or a globe.

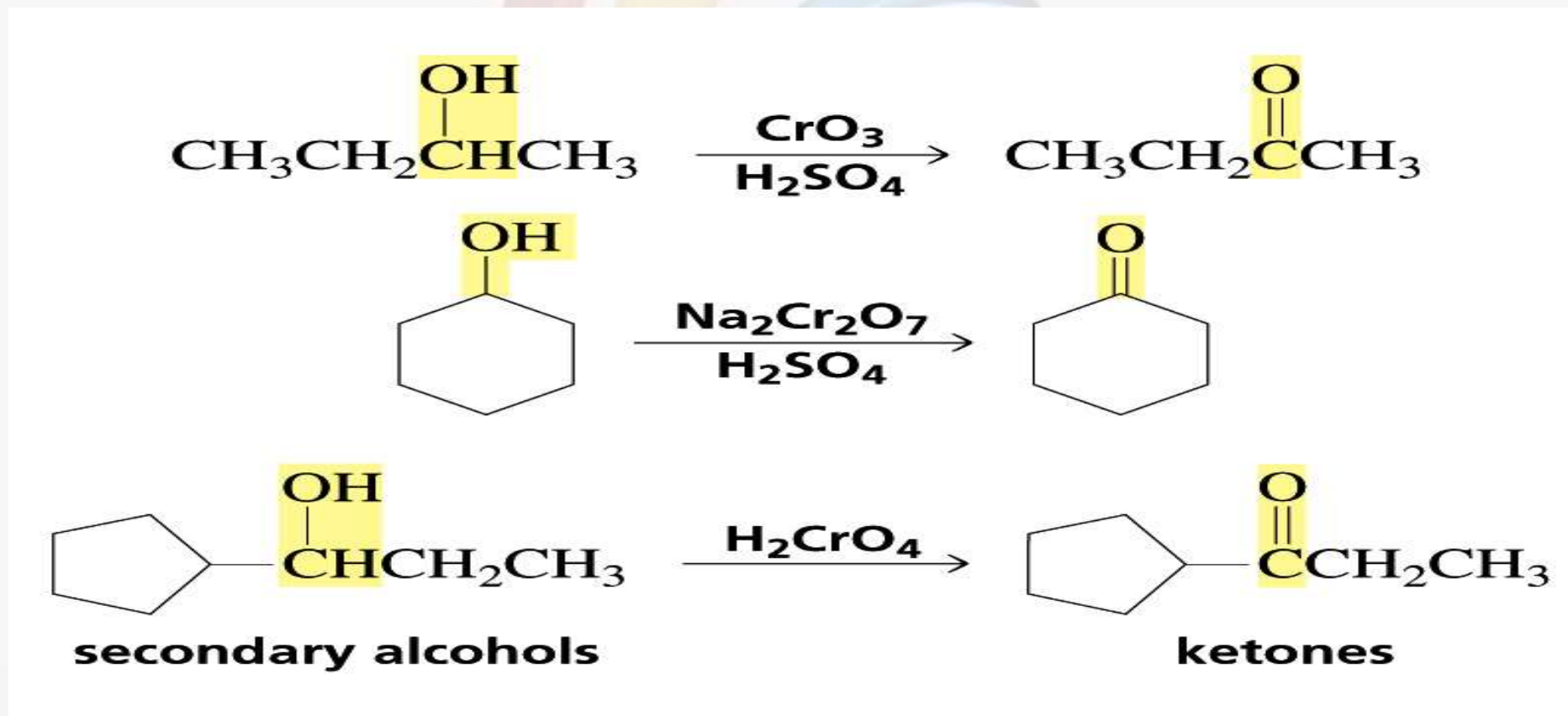
**OXIDIZING REAGENTS**

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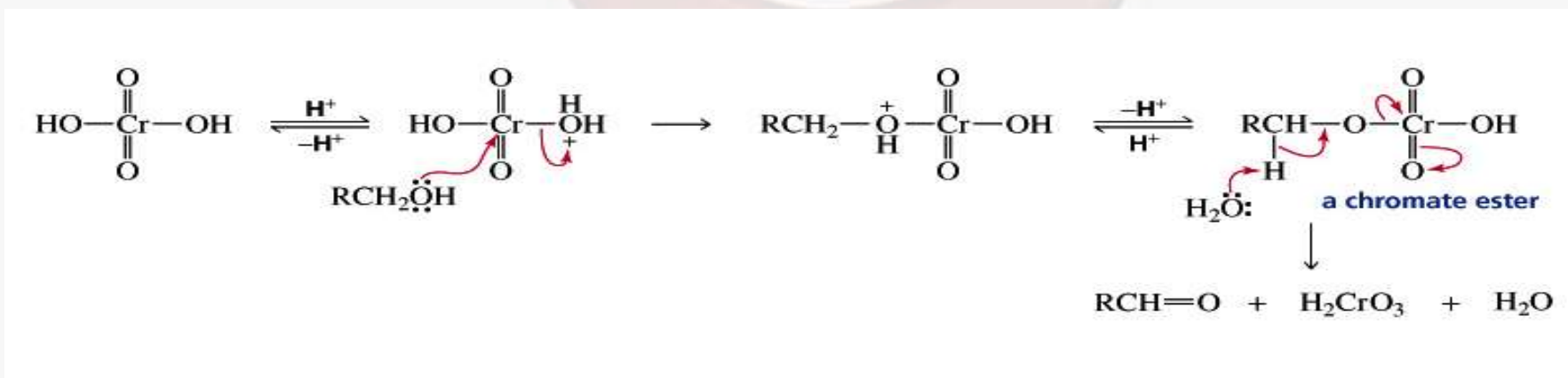
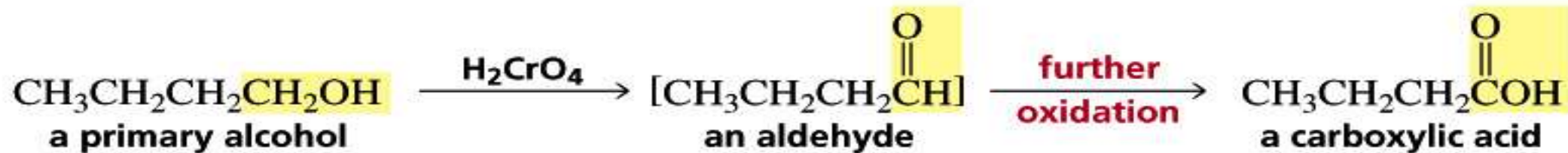
## TOPICS TO BE COVERED

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

## Oxidation of Alcohols

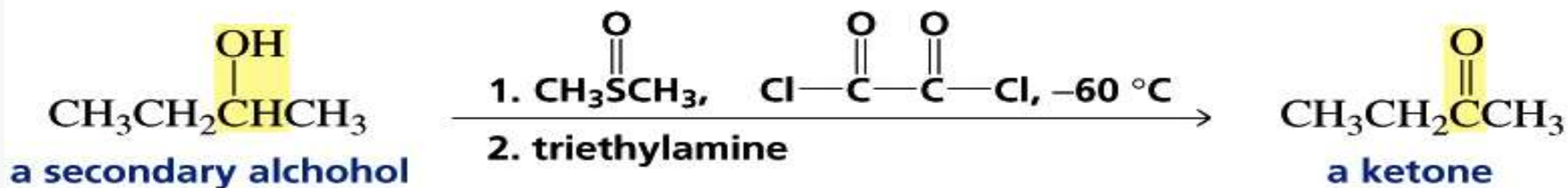
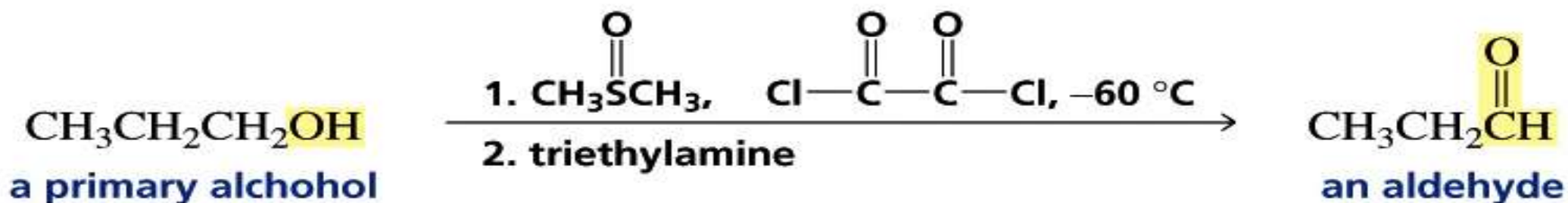


## Oxidation of Alcohols and Mechanism

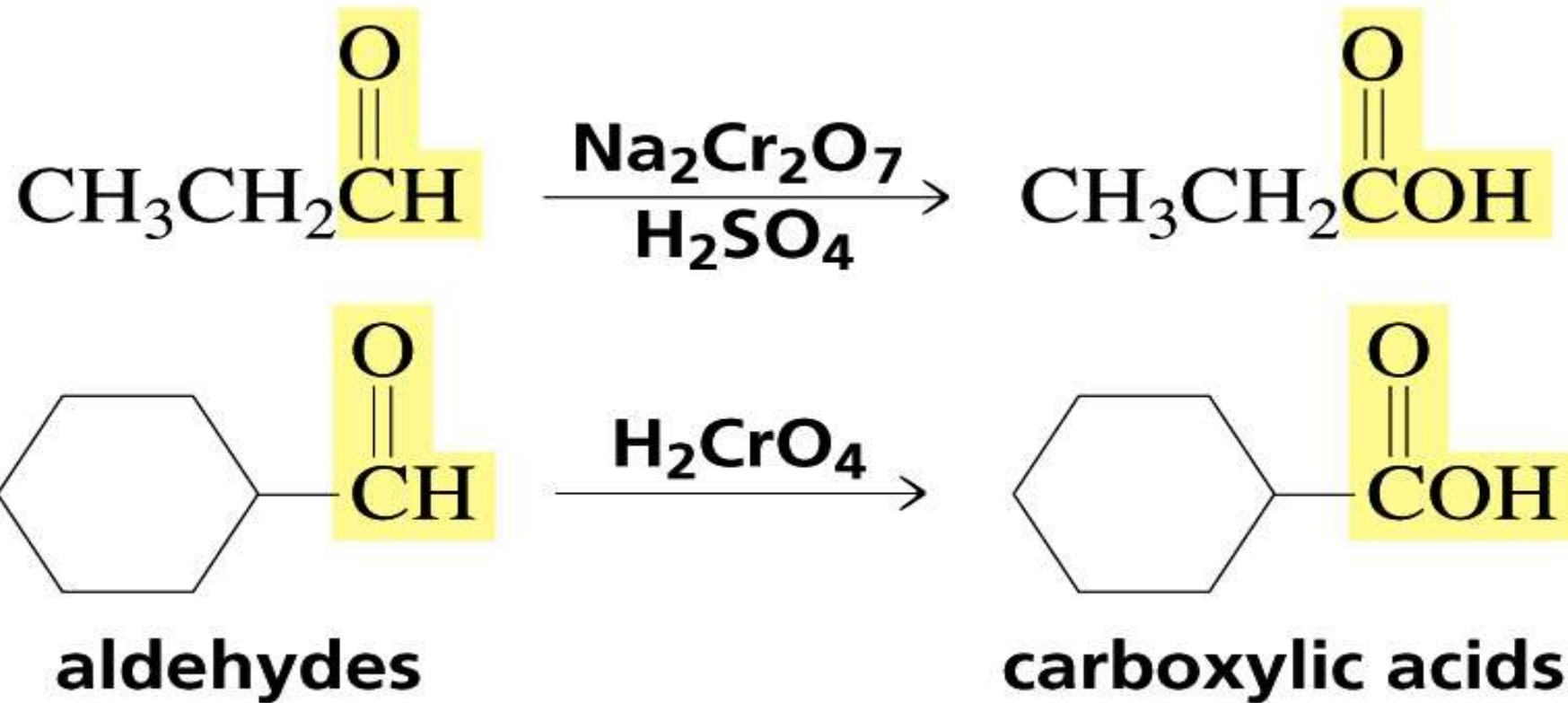


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## The Swern Oxidation



## Oxidation of Aldehydes and Ketones



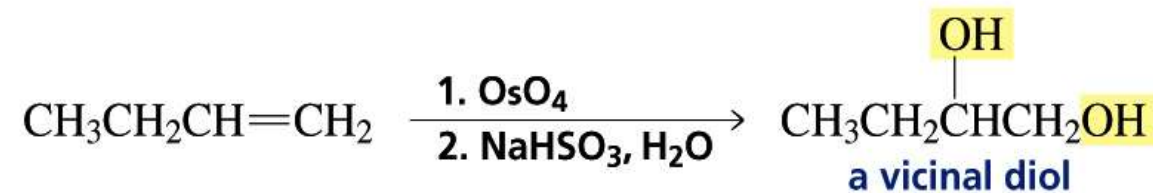
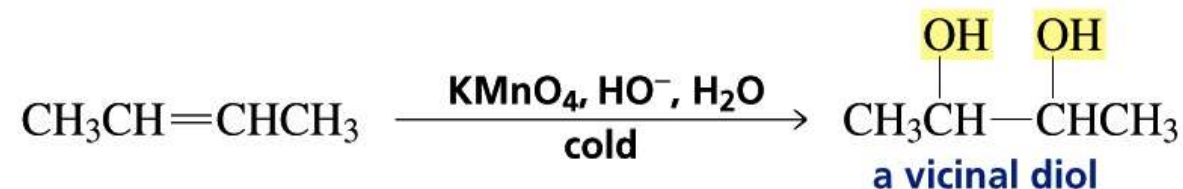
## Hydroxylation of Alkenes

Converting an alkene to a glycol requires addition of  $\text{-OH}$  group to each end of the double bond.

Hydroxylation Reagents:-

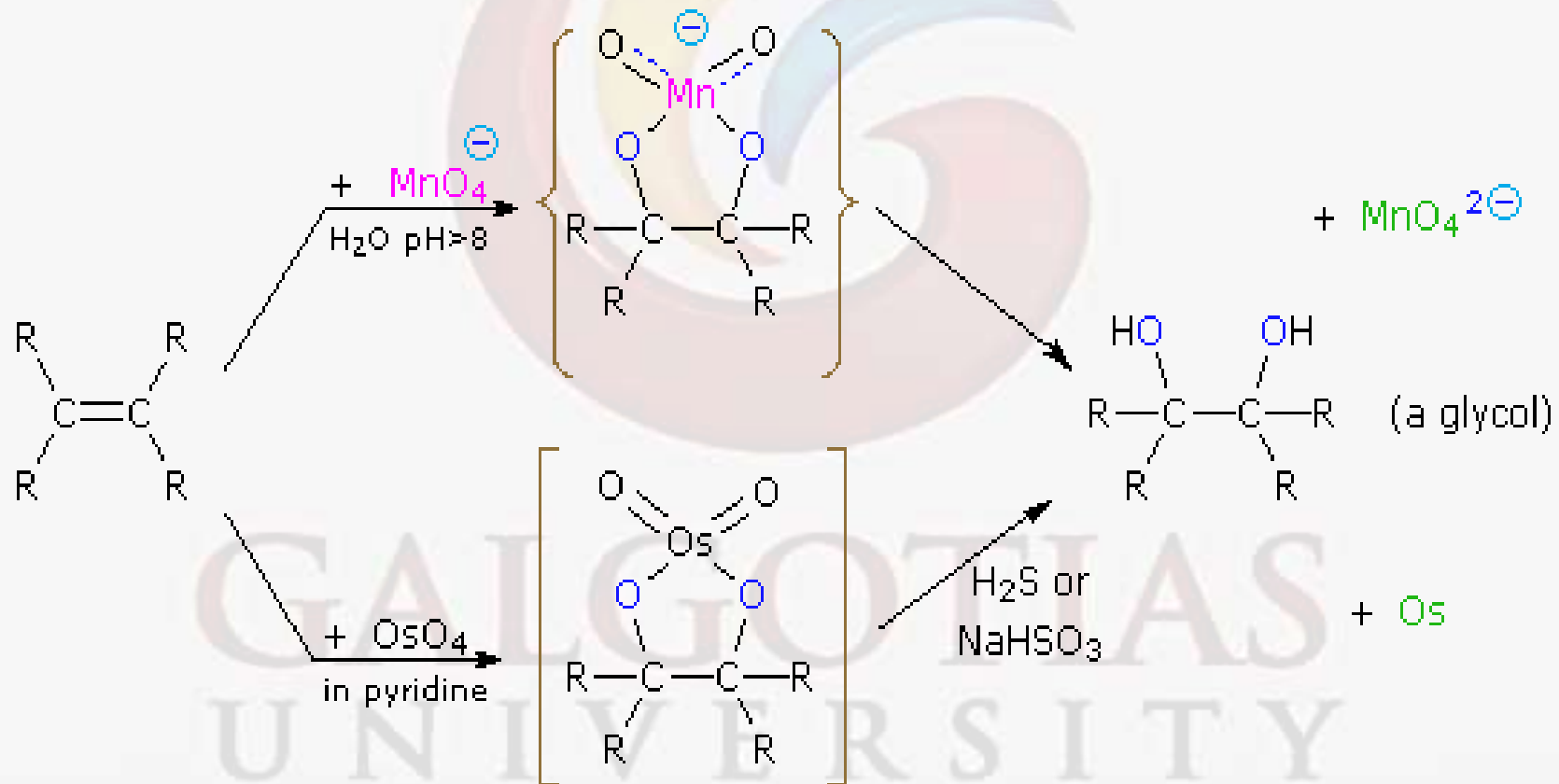
- i. Potassium Permanganate ( $\text{KMnO}_4$ )
- ii. Osmium Tetroxide ( $\text{OsO}_4$ )

It is a Syn-addition reaction giving diol.





## Mechanism of Hydroxylation of Alkenes

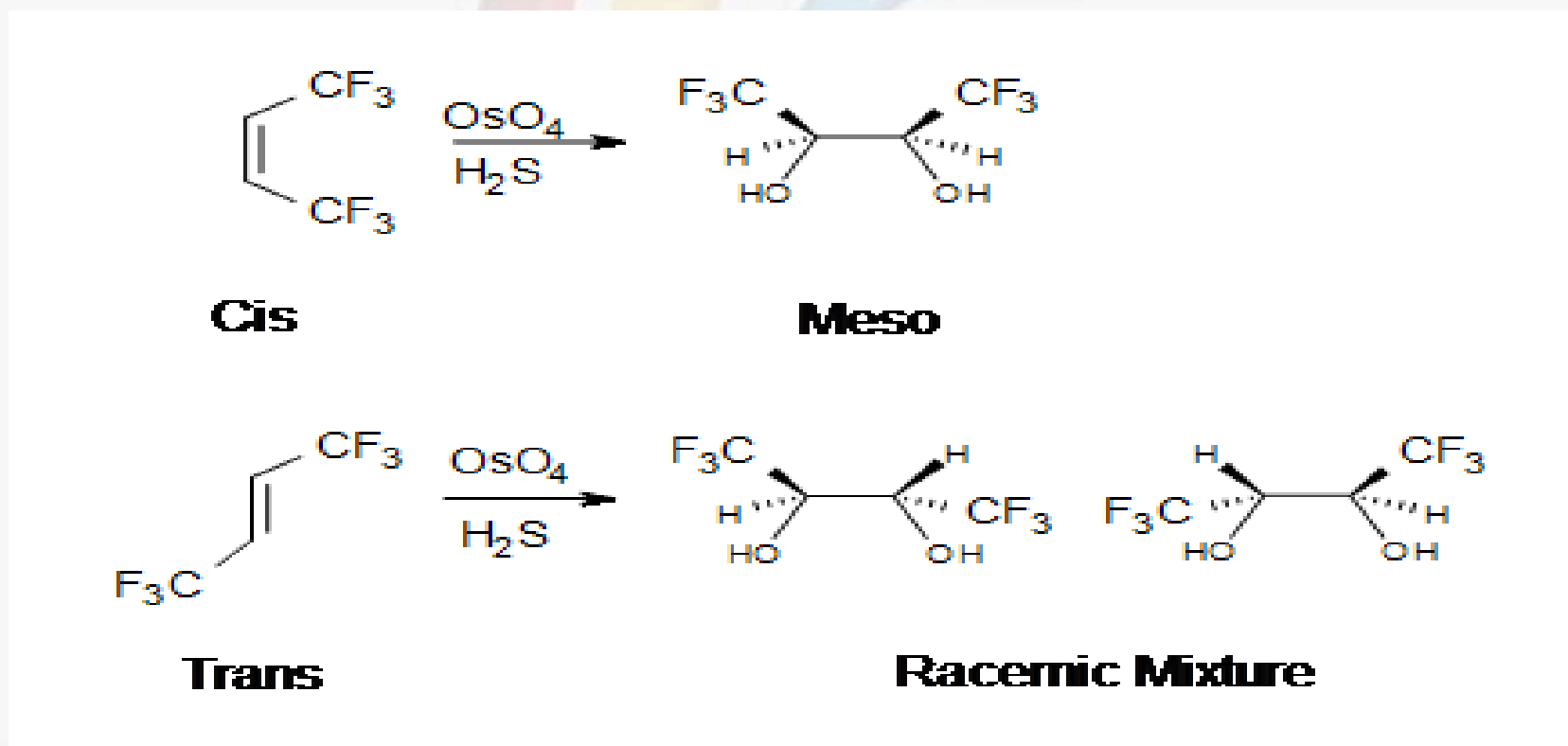




## Mechanism of Hydroxylation of Alkenes

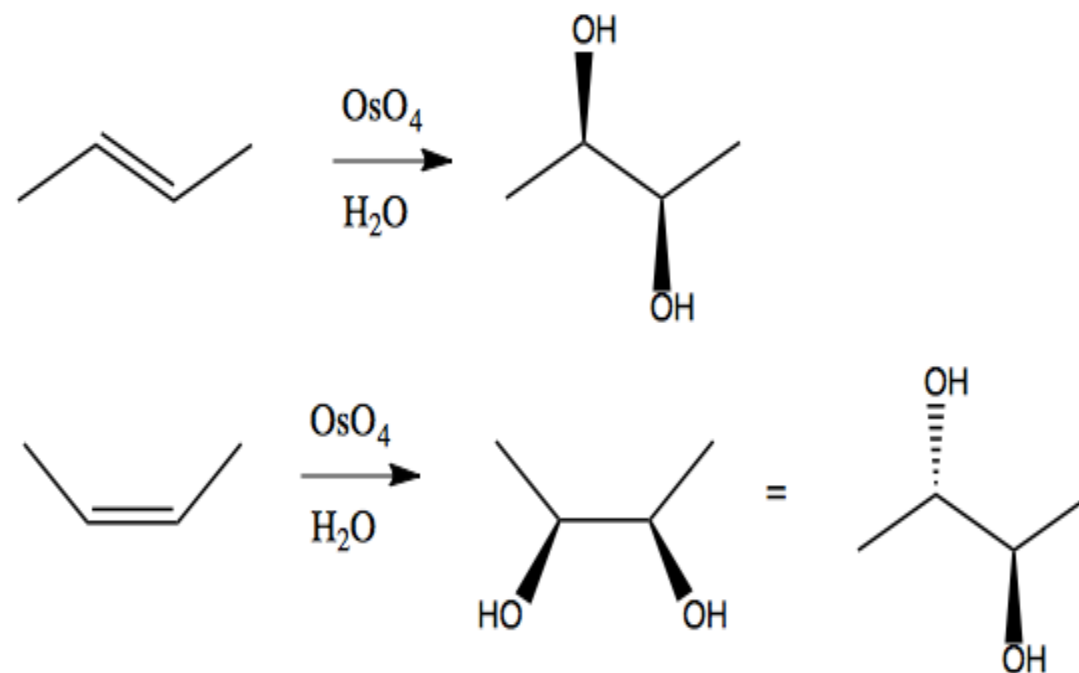


## Stereochemistry of Hydroxylation



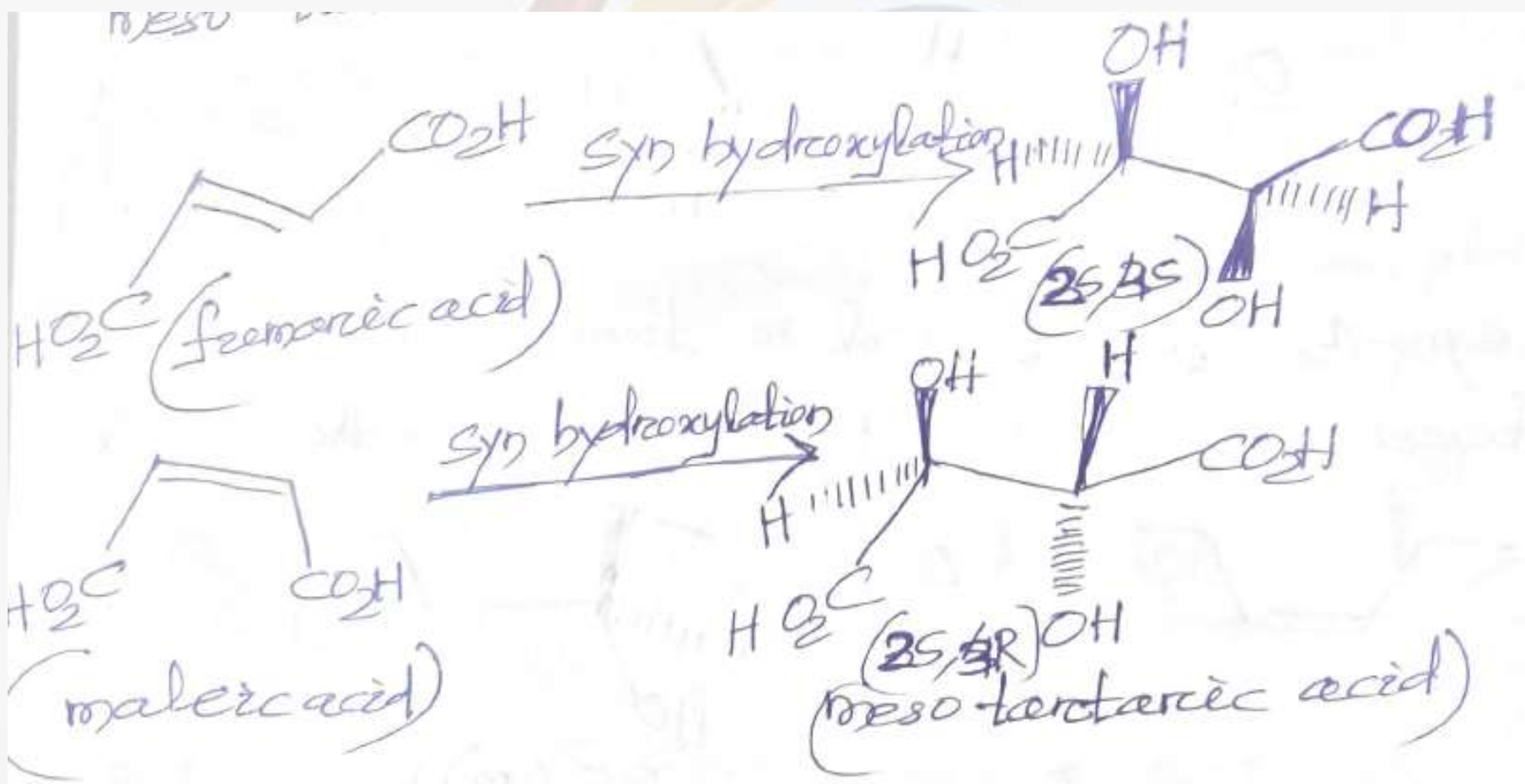
## Stereochemistry of Hydroxylation

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

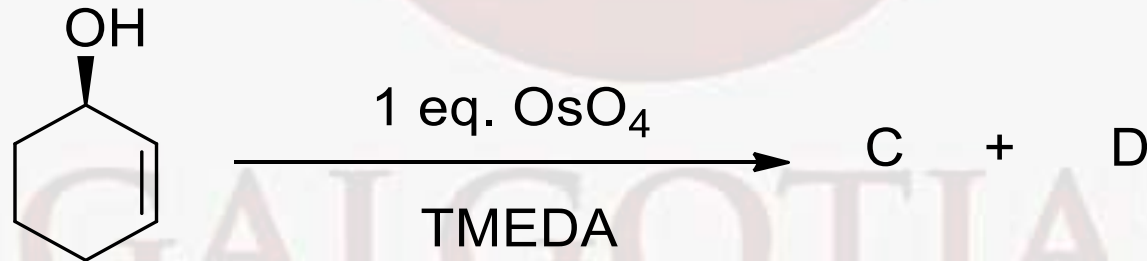
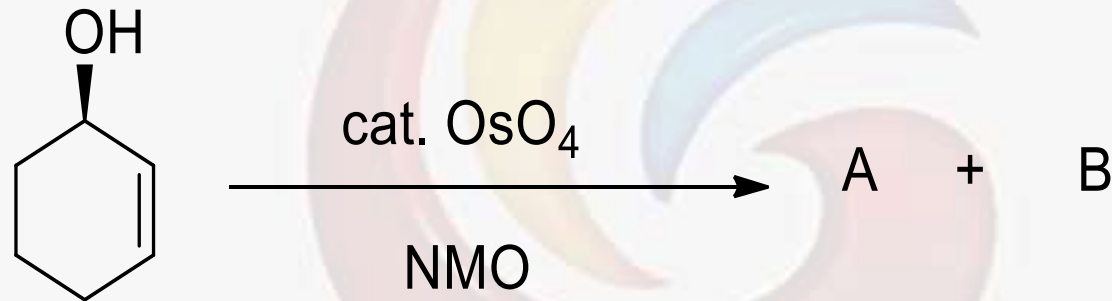


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## Stereochemistry of Hydroxylation



## Problems



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## References

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- J. Clayden, N. Greeves and S. Warren, Organic Chemistry, Oxford University Press, 2nd edition, 2012.
- T.L. Gilchrist, Heterocyclic Chemistry, 3rd edition, Addison-Wesley Longman Ltd., England, 1997.
- [https://www.google.com/search?q=hydroxylation+of+alkenes&tbm=isch&chips=q:hydroxylation+of+alkenes,g\\_1:dihydroxylation&rlz=1C1CHBD\\_enIN920IN920&hl=en&sa=X&ved=2ahUKEwia7O3D3pzsAhUEJLcAHWbsCTgQ4IYoAnoECAEQFg&biw=1349&bih=576#imgrc=JzpRh2KX9hXjPM](https://www.google.com/search?q=hydroxylation+of+alkenes&tbm=isch&chips=q:hydroxylation+of+alkenes,g_1:dihydroxylation&rlz=1C1CHBD_enIN920IN920&hl=en&sa=X&ved=2ahUKEwia7O3D3pzsAhUEJLcAHWbsCTgQ4IYoAnoECAEQFg&biw=1349&bih=576#imgrc=JzpRh2KX9hXjPM)

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# School of Basic and Applied Sciences

Course Code : MSCH6002

Course Name: Reagents and Heterocyclic Chemistry



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