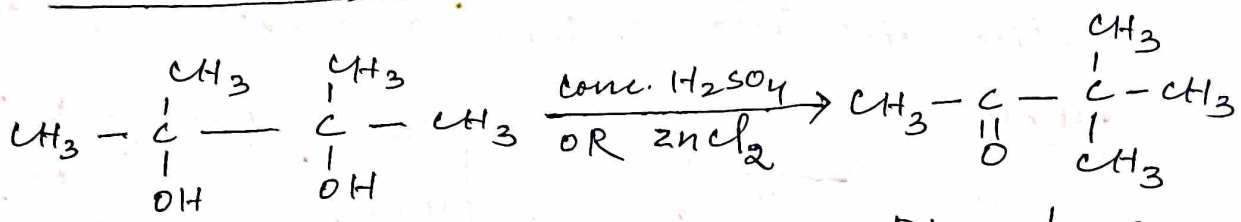
UG. sem - IV
MJC - 6 (T)
Unit - 1

Name - Dr. Vandana Kumari
Asst. Professor
Dept. of Chemistry

Pinacol - Pinacolone rearrangement

"When 1,2-ditertiary alcohols called Pinacol are acted upon by mineral acids, acid chlorides, zinc chlorides or other electrophilic reagents, they rearranges to form ketones called Pinacolones with the elimination of water".

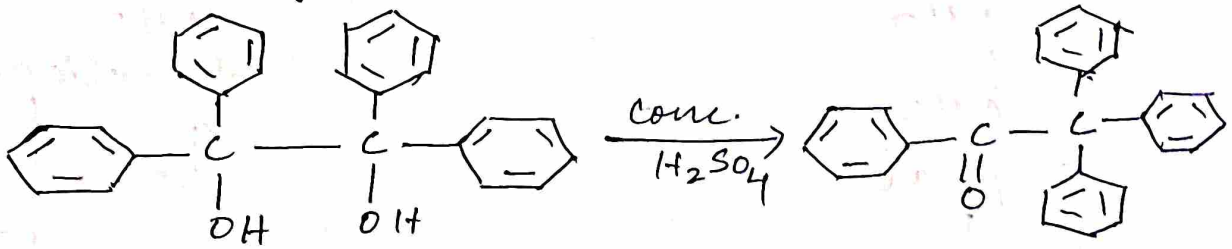
For example —



Pinacol

Pinacolone

[Di-tertiary alcohol is Pinacol and Primary + tertiary Ketone is Pinacolone].



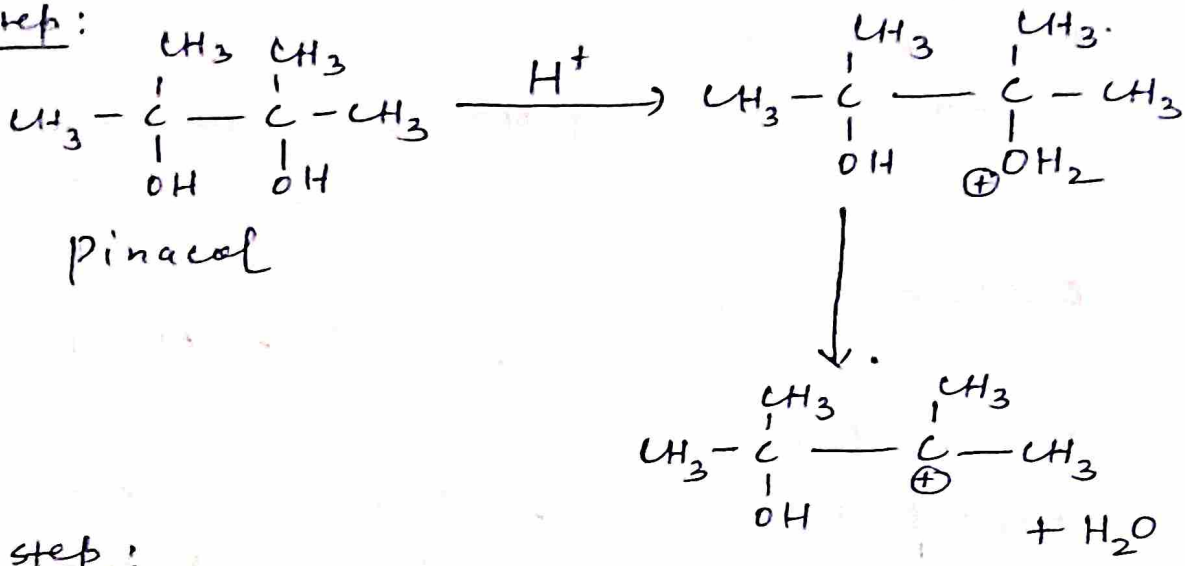
Benzyl Pincacol

Benzyl Pinacolone

Such a rearrangement is called pinacol - Pinacolone rearrangement".

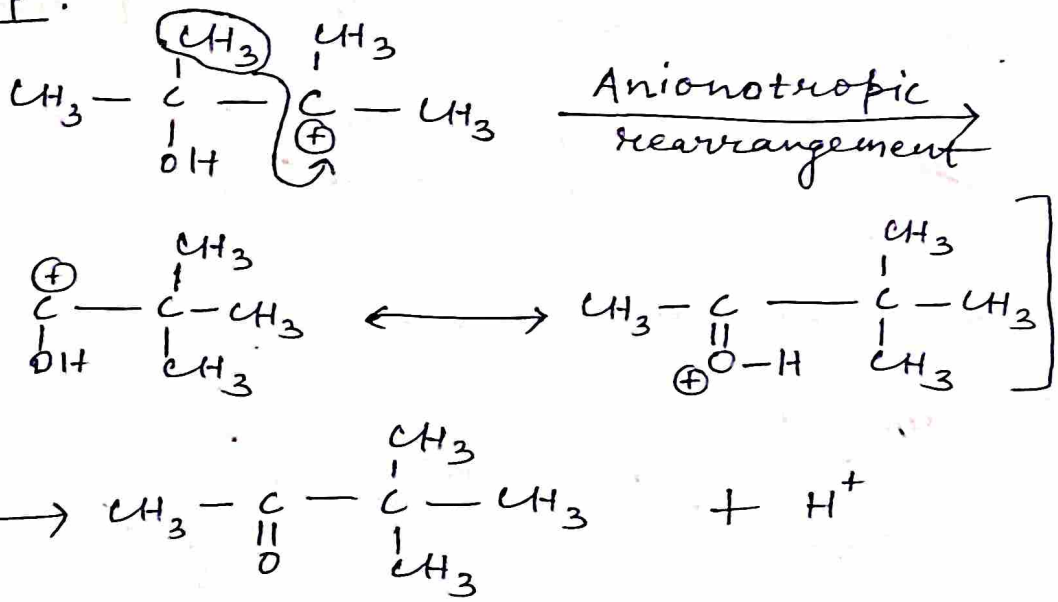
Mechanism of this rearrangement:

1st step:



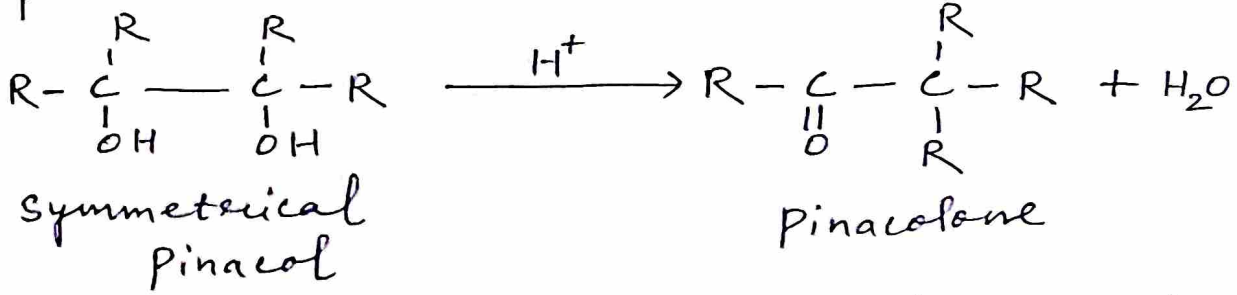
Pinacol

2nd step:



Pinacolone

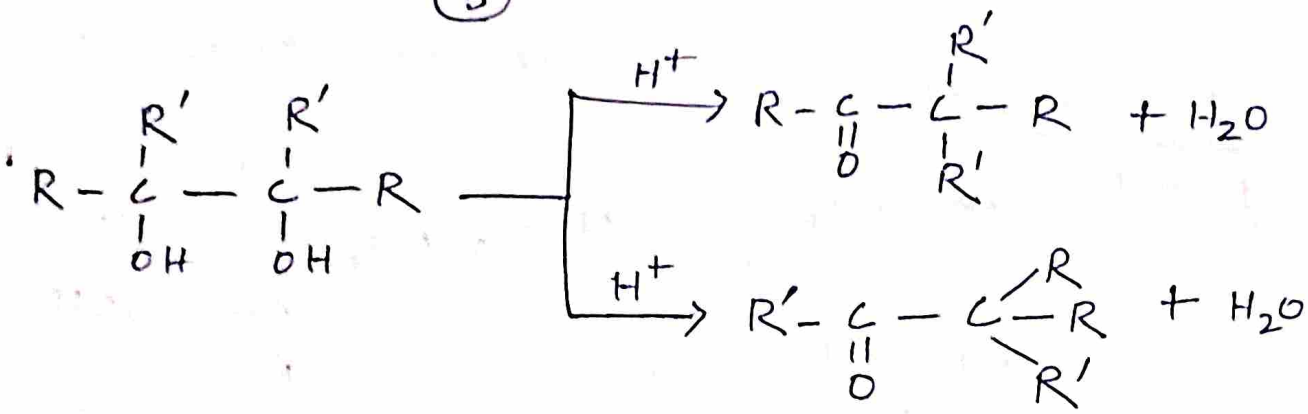
In case of symmetrical pinacol only one product is possible.



Symmetrical Pinacol

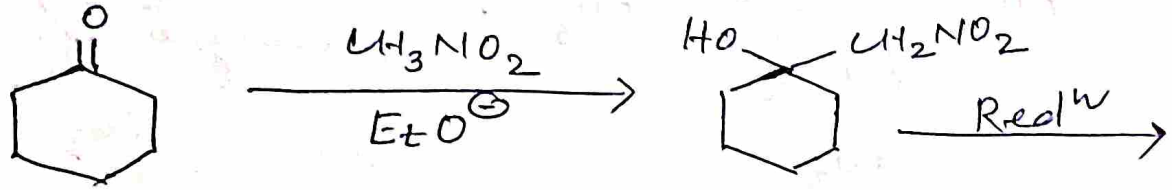
Pinacolone

But in case of unsymmetrical pinacol two products are possible

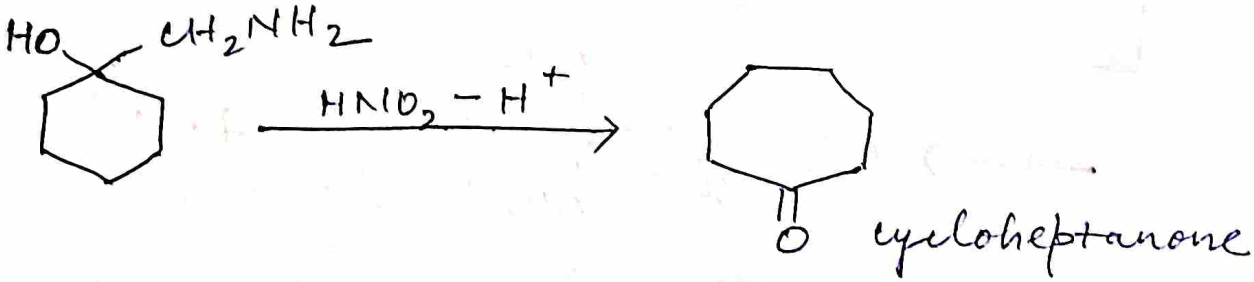


Applications:

The rearrangement is of a particular use in the synthesis of cycloheptanone and related compounds as shown by the following reaction.



cyclohexanone



cycloheptanone