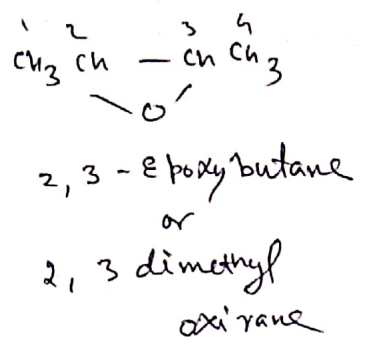
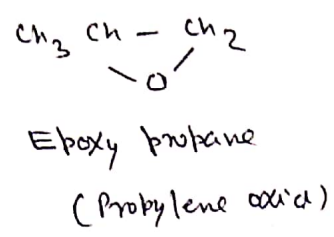
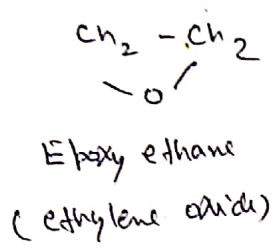
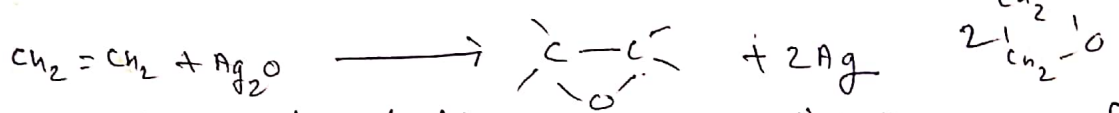
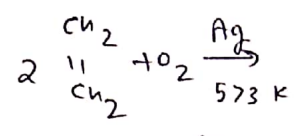
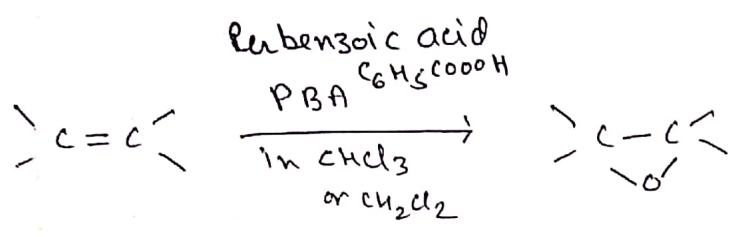


# EPOXIDES

Three membered cyclic ethers are called epoxides (Oxiranes) -



Prep<sup>n</sup>



Reactions -

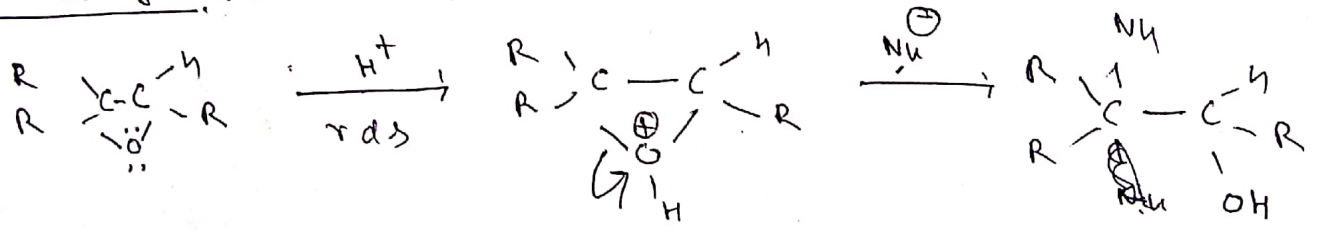
epoxide suffers acute angle strain because of the distortion of normal bond angles from  $109.5^\circ$  to approx  $60^\circ$ . bond angles from -

opening of the oxide ring release strain of the molecule and provides a driving force for the reaction.

Mechanism

1. Acid-catalysed react<sup>n</sup>

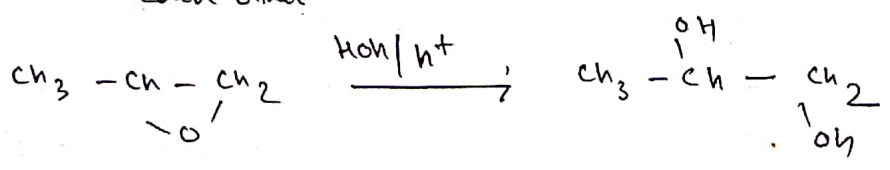
(S<sub>N</sub><sup>2</sup>)



attack of Nu<sup>⊖</sup> will be at more hindered carbon [i.e. where

-OH and -Nu are always trans to each other.

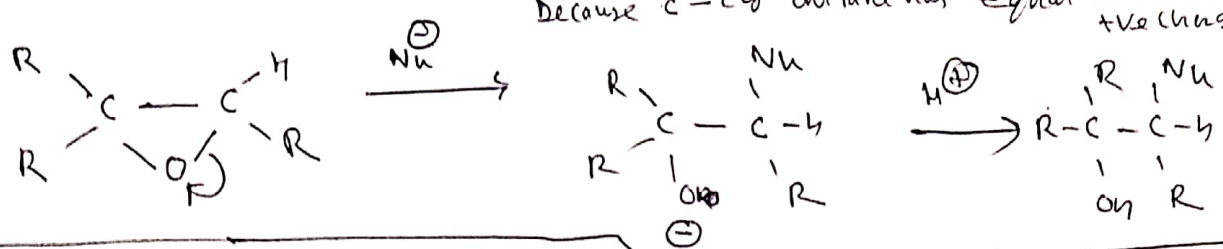
Carbonium ion is more stable



Base Catalysed

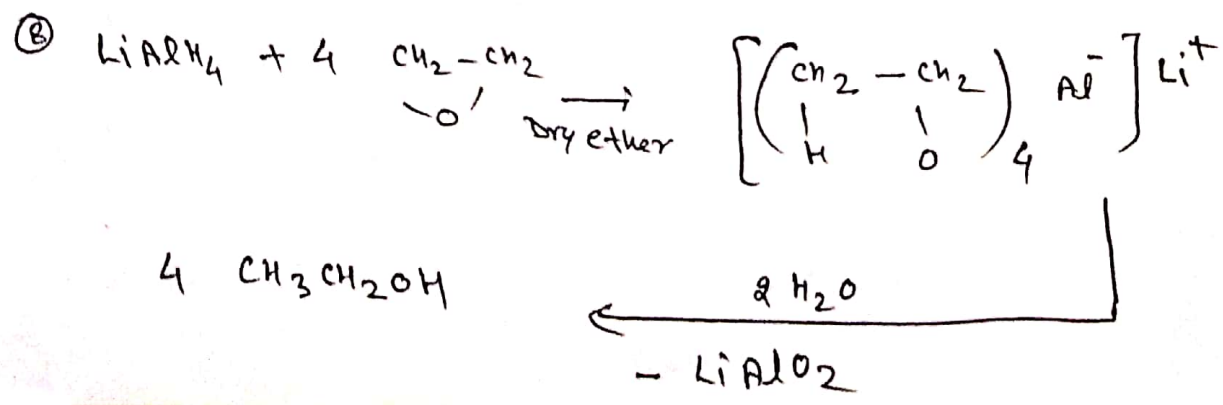
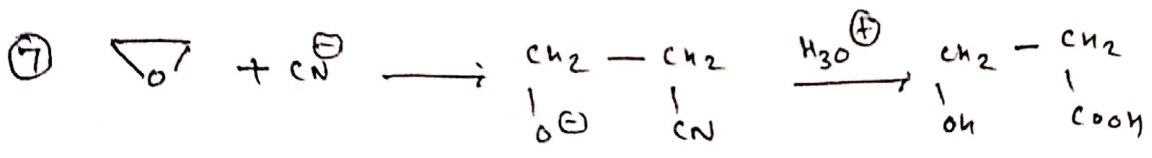
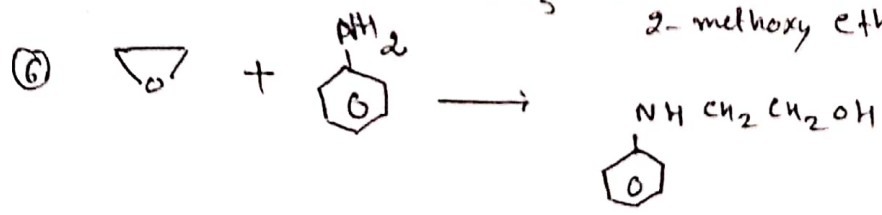
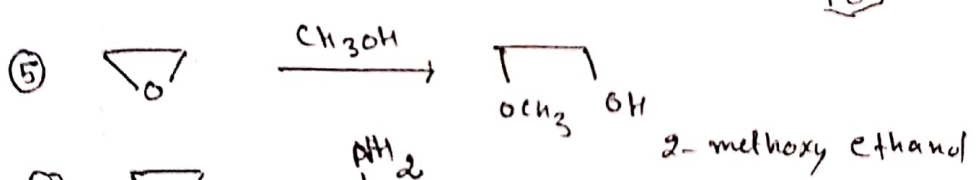
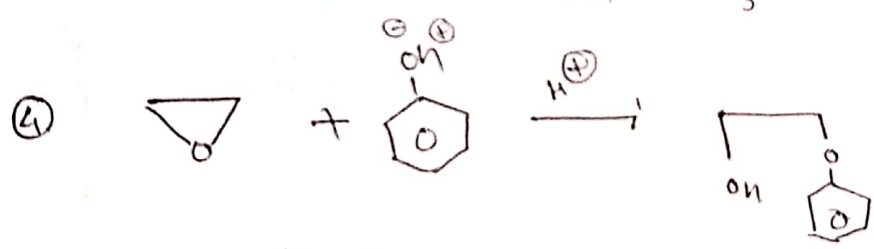
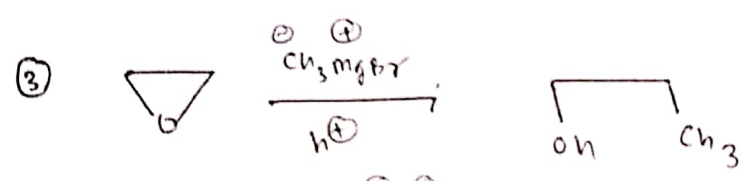
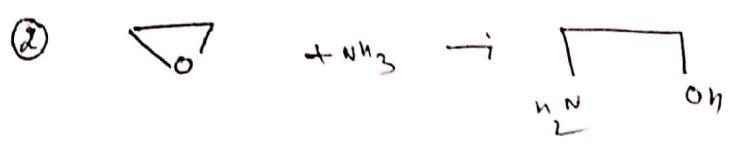
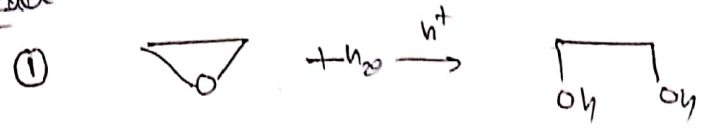
Nu<sup>⊖</sup> attack on less hindered carbon of the ring.

Because C-C of oxirane has equal amount of +ve charge.

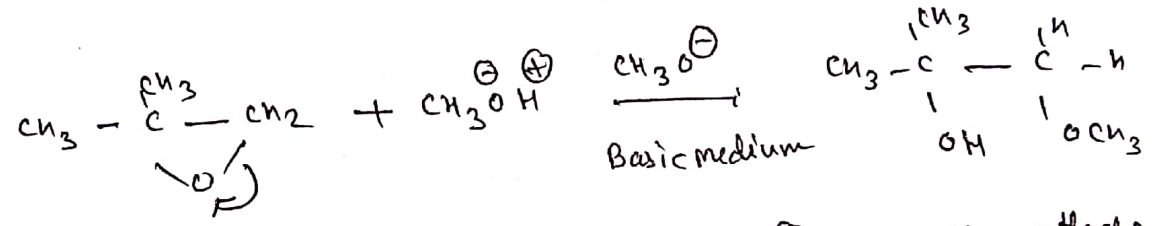
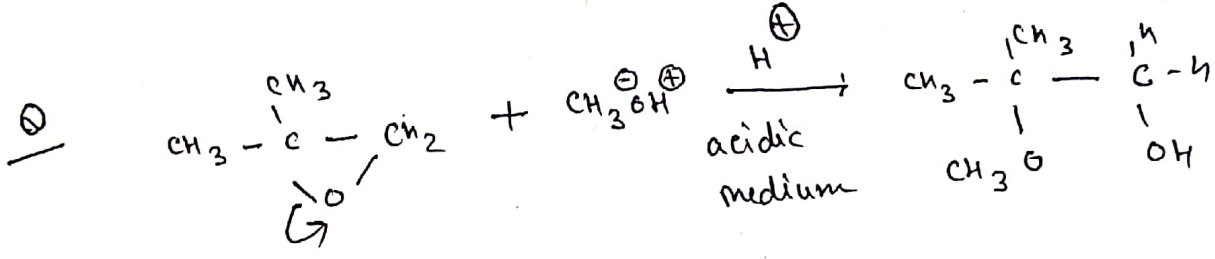
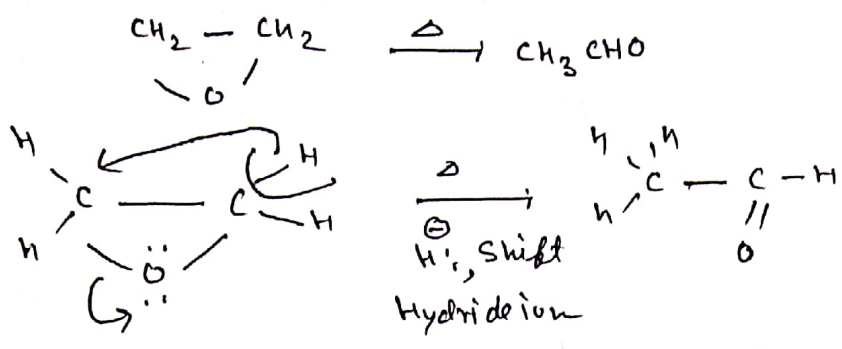


Some Reactions -

~~Ex:~~



Q Ethylene oxide on heating gives acetaldehyde. Explain. (3)



In acidic medium, the nucleophile  $\text{CH}_3\text{OH}^{\oplus}$  generally attacks the more substituted carbon while in basic medium the nucleophile attacks the less substituted carbon.

m.s  
Q Reaction of Epoxide with G.R and RLi

