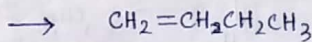
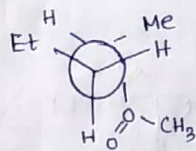
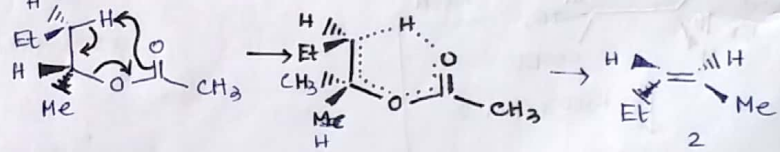
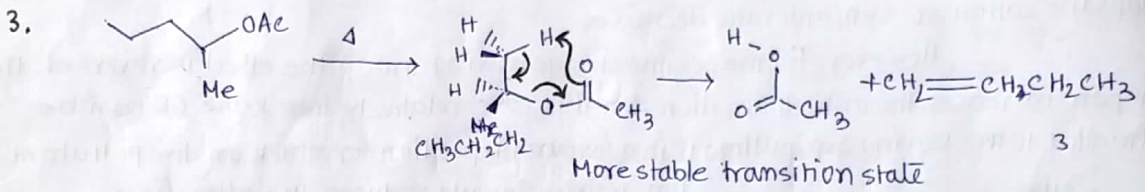
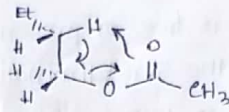
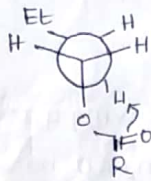
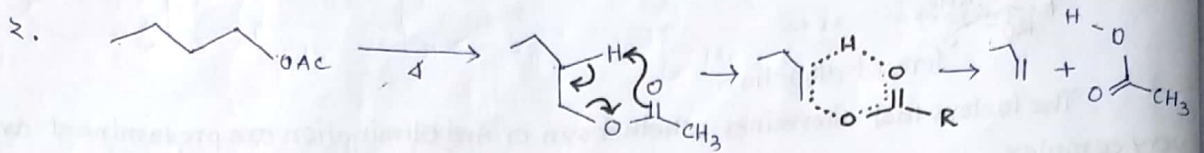
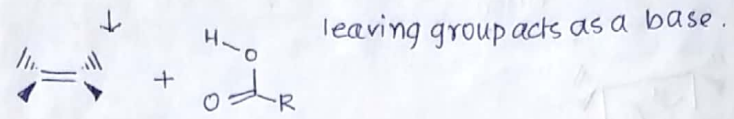
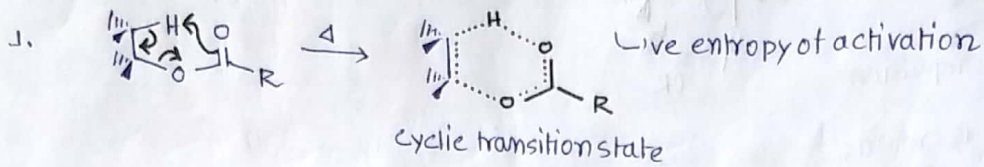
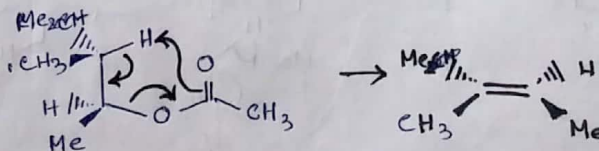
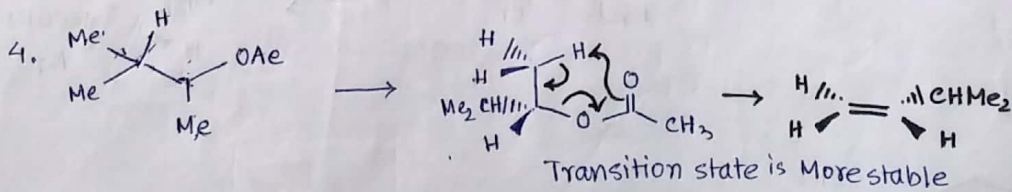
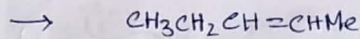
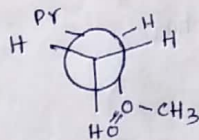


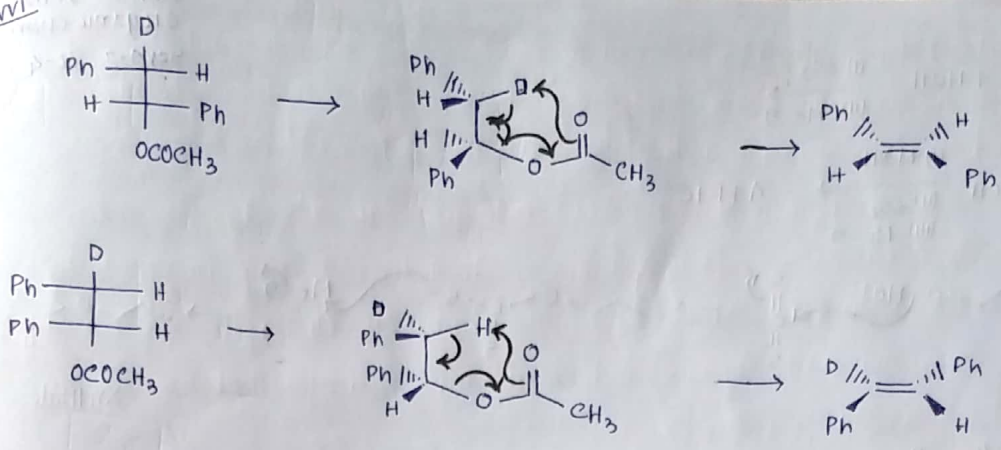
Pyrolysis of Ester:



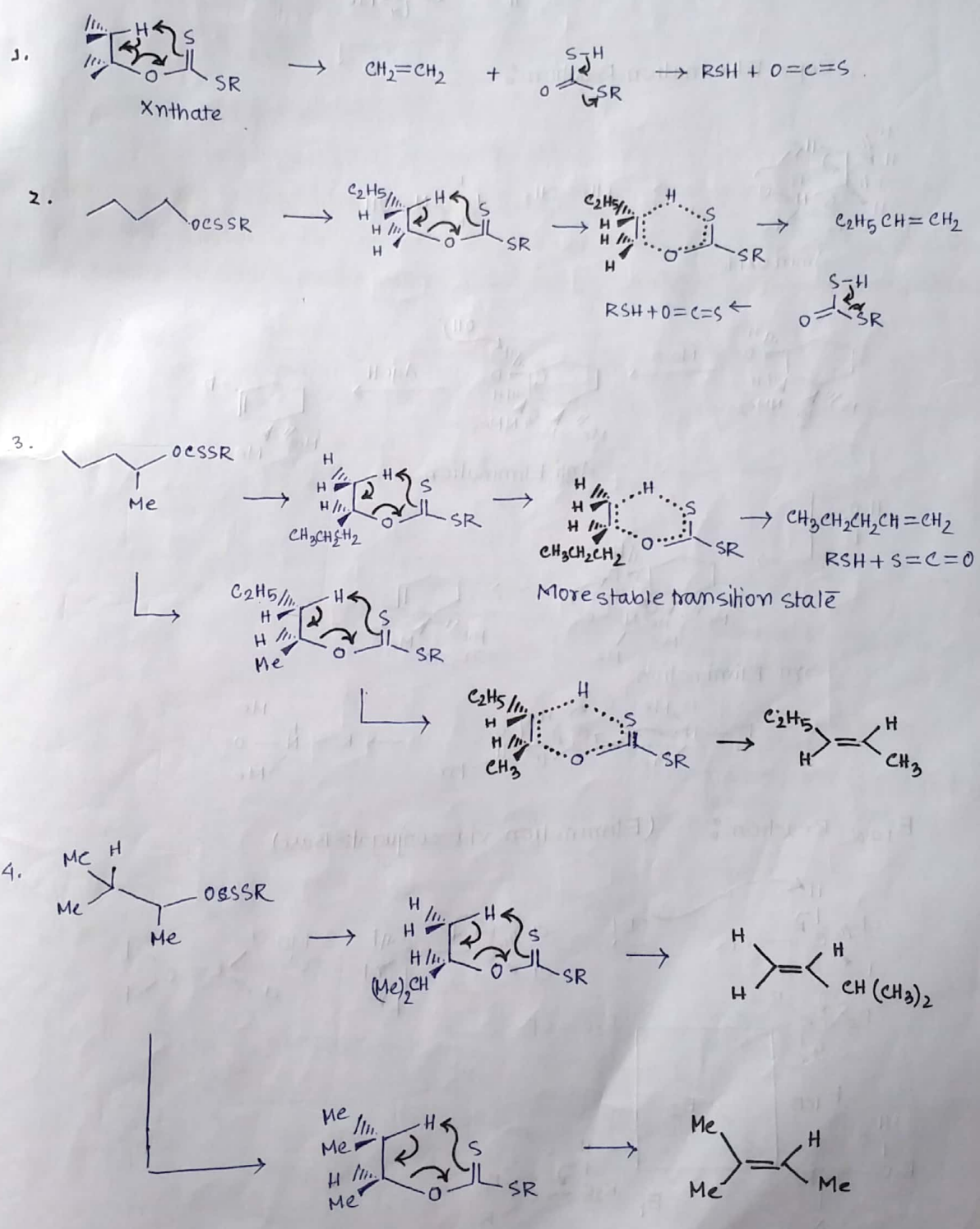
Product ratio = 3:2

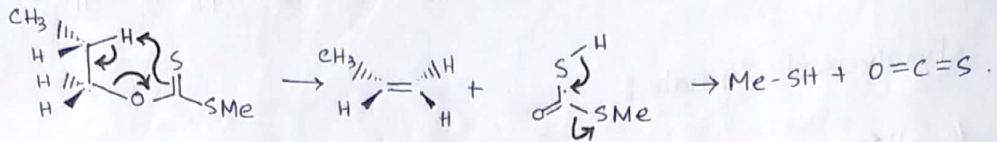
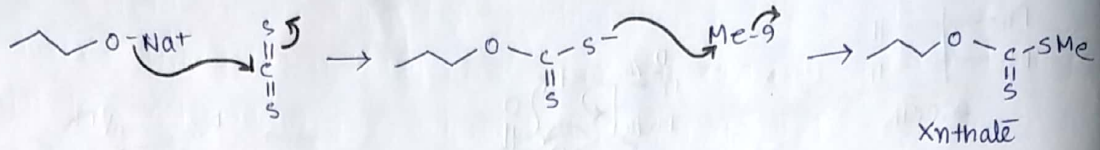
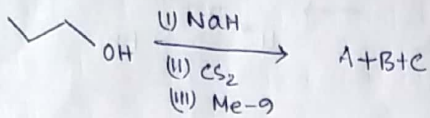
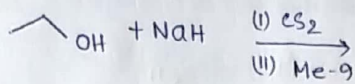


VVVV1

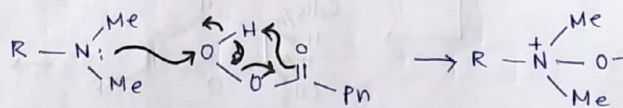
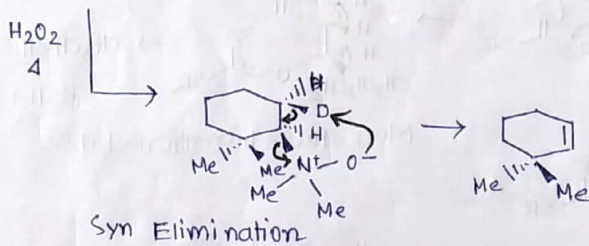
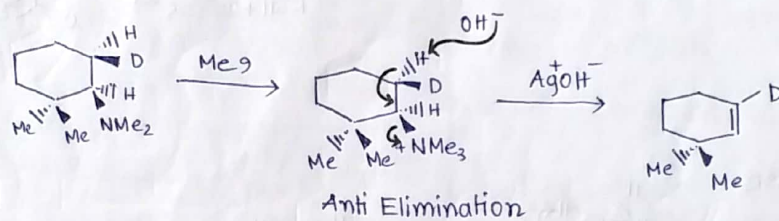
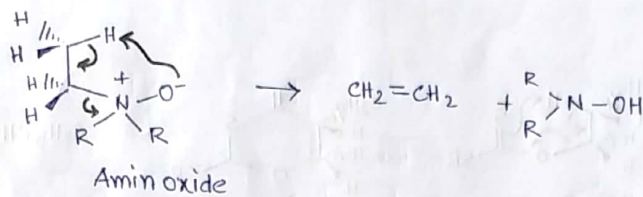


Pyrolysis of Xanthate:

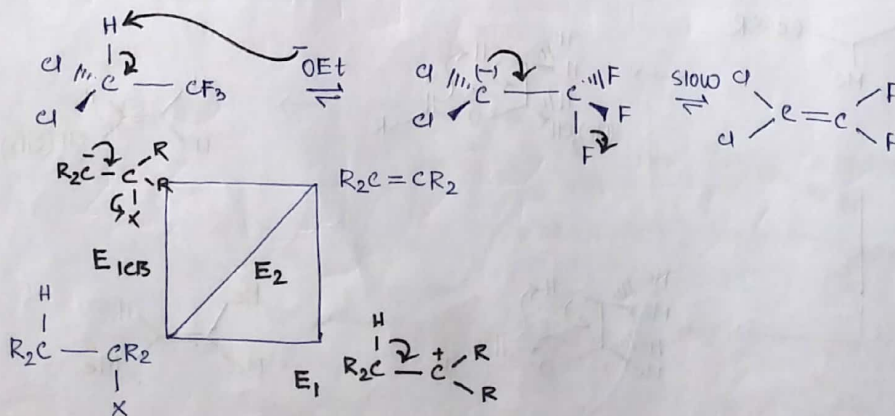




Cope Elimination Reaction :



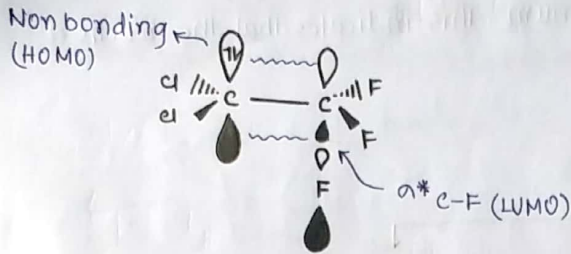
E_{1cB} Reaction : (Elimination via conjugate Base)



E_{1cB} reaction depends upon the following factors —

- (i) Acidity of the β-H atom.
- (ii) Bad leaving group.
- (iii) Stability of the conjugate base.
- (iv) solvent polarity.

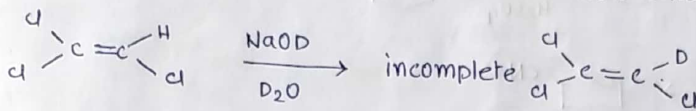
Molecular Orbital diagram %



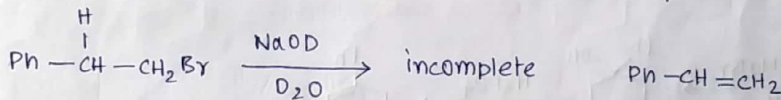
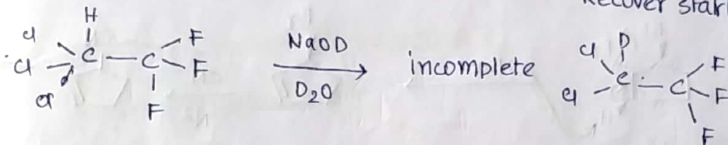
V.U 2017

R₂E

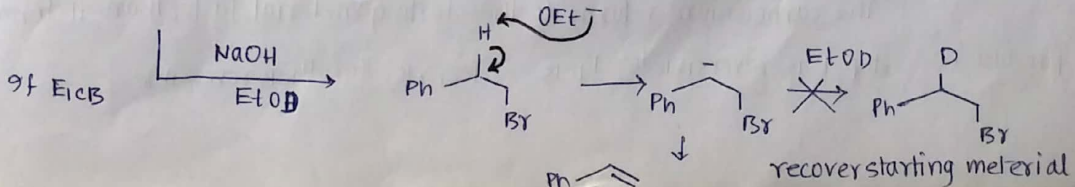
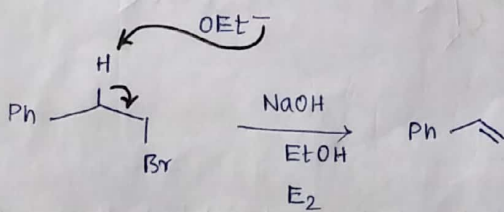
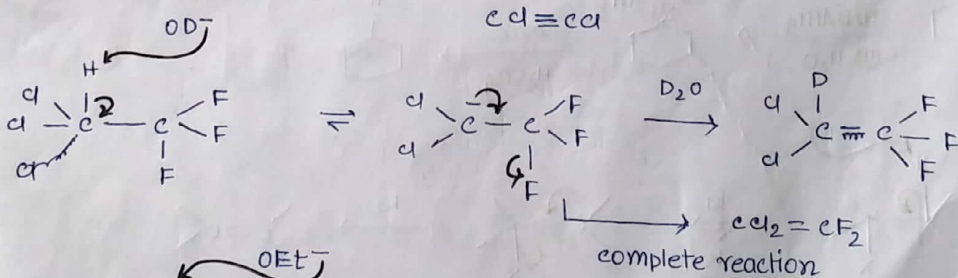
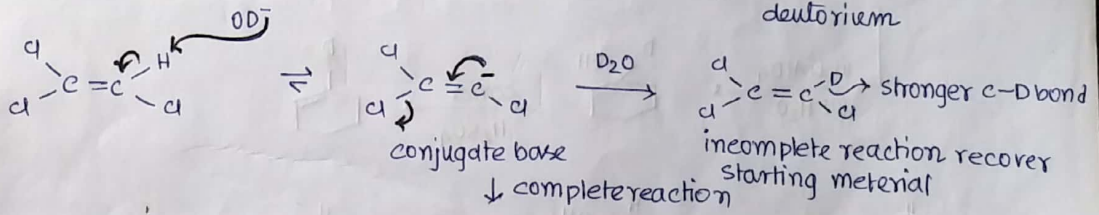
Reaction of $\text{Cl}_2 = \text{CHCl}$ with NaOD in D_2O affords $\text{Cl-C}\equiv\text{C-Cl}$. When the reaction is stopped before completion of the recovered alkenes contains deuterium. Suggest a mechanism of this reaction consistent with this observation.



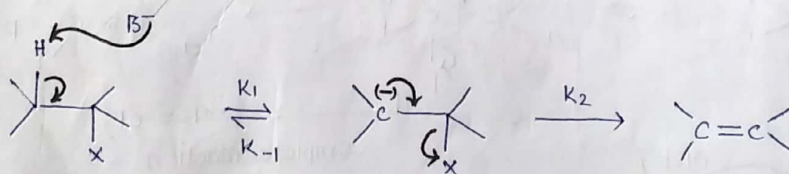
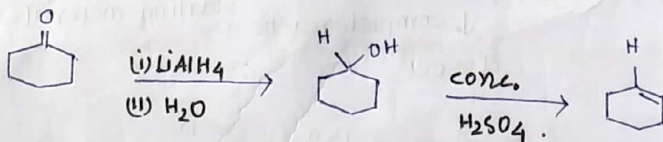
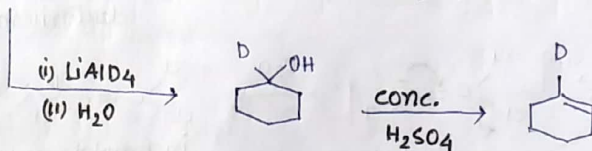
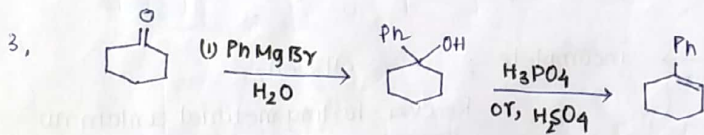
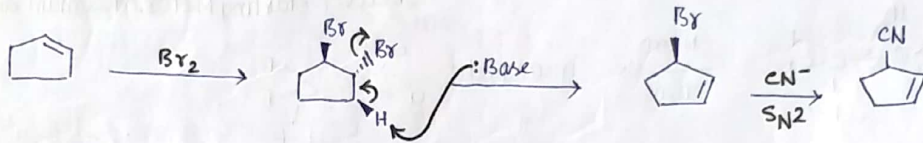
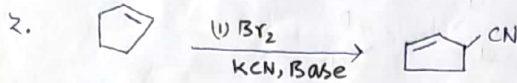
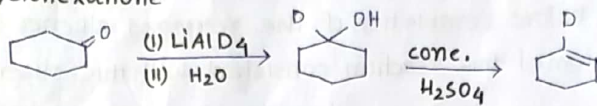
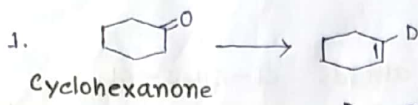
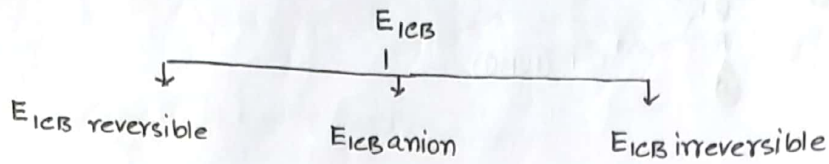
Recovered starting material contains deuterium



Recovered starting material contains no deuterium



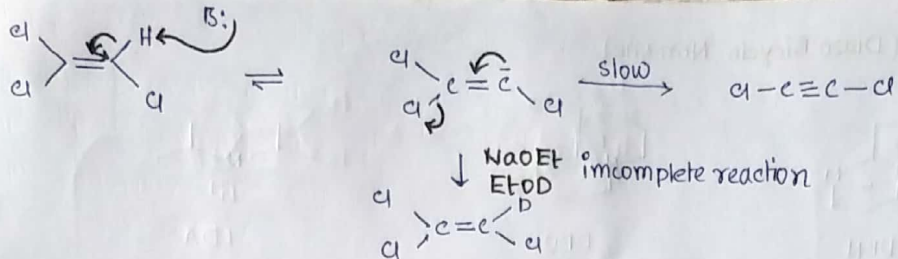
First step of the E_{1cB} mechanism involves a reversible exchange of proton between substrate and base. In that case of D is present on the solvent molecule then the recover starting material should have D. This is found to be the case in the treatment of $\text{CH}_2\text{Cl}-\text{CF}_3$ with NaOEt and EtOD to give $\text{CH}_2\text{Cl}_2=\text{CF}_2$. When the reaction is stopped before completion of the reaction there is a D-incorporation in the recover starting material. But in case of $\text{Ph}-\text{CH}_2-\text{CH}_2\text{Br}$ the recover starting material does not contain any deuterium. This indicates that the reaction follows E₂ mechanism pathway.



E_{1cB} reversible :

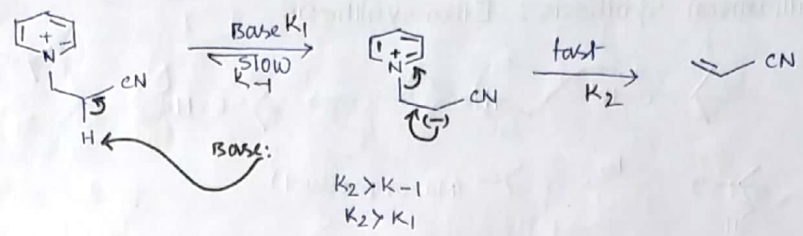
$$k_1, k_{-1} > k_2$$

The carboanion returns to the starting material faster than it forms product i.e. step 1 is reversible for E_{1cB}. $k_{-1} > k_2$ for E_{1cB} reversible.



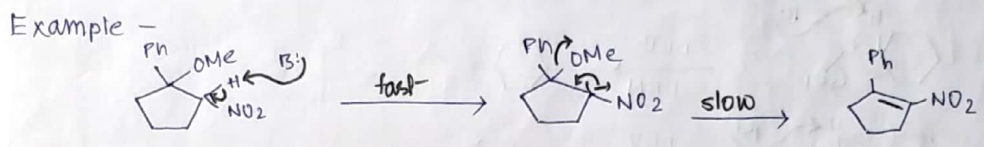
E1cB irreversible:

Step 1 is slow and the formation of product is faster than the return of the carboanion to the starting material i.e. last step is irreversible step.



E1cB anion:

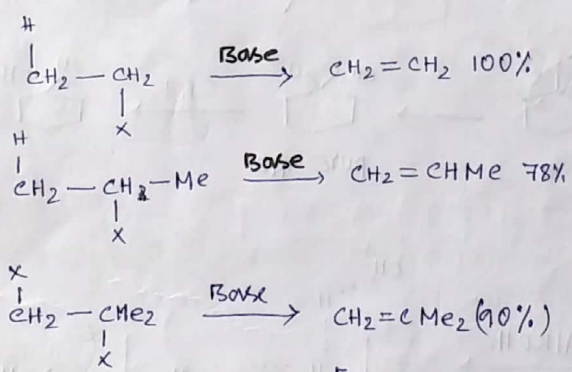
Step 1 is rapid and the carboanion is slowly converted to the product. This occurs only with the more stable carboanion. In this case the step 1 is irreversible.



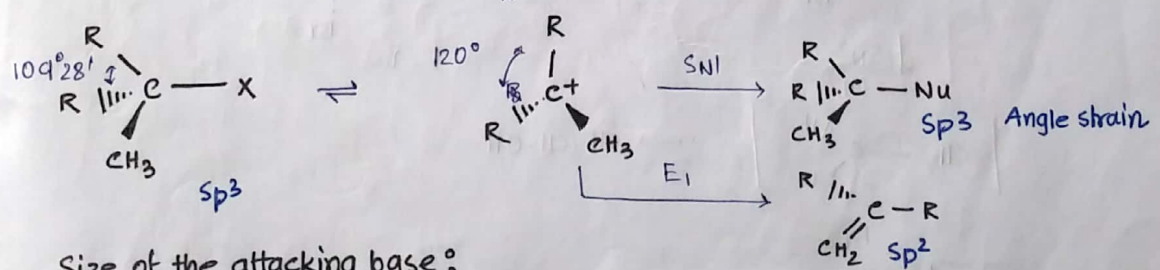
Elimination vs substitution reaction:

Effect of the substrate:

Strong basic condition favours E₂ elimination reaction.



Branching increases $\frac{E_2}{S_N2}$ increases.



Size of the attacking base:

