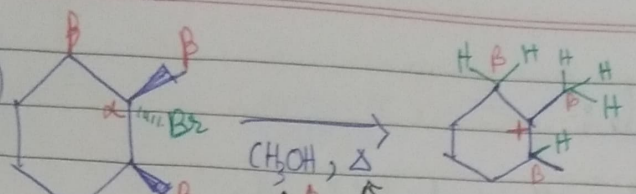
Reactions:- (1)



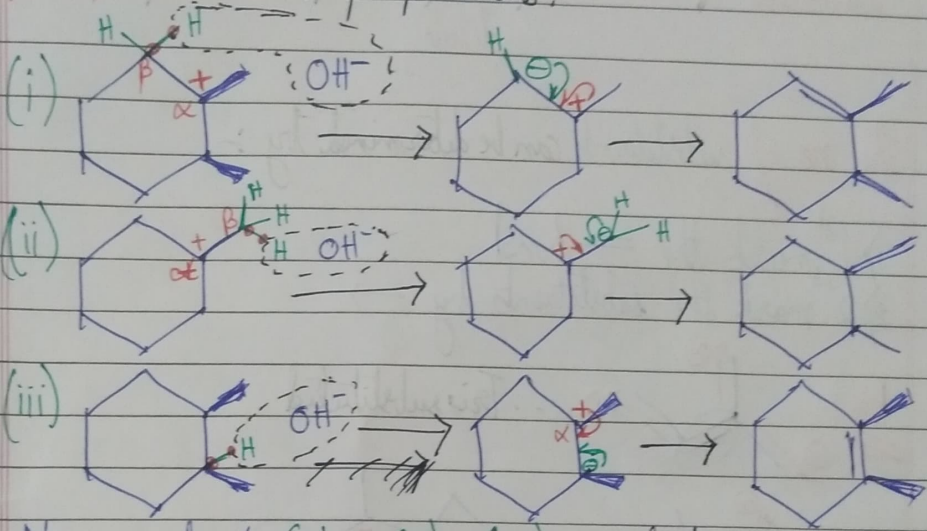
$\rightarrow CH_3^+ + OH^-$ [for E^1]

CH_3OH → weak base SN^2 can't take place because a strong nucleophile is required for SN^2

Also, Polar Aprotic solvents → SN^2

CH_3OH is not Polar Aprotic

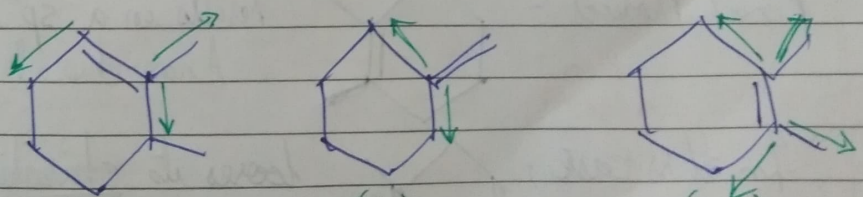
Here, we have 3 β-positions :-



Now, out of (i), (ii), (iii) :- Which one is correct product? [Which is the major/minor product out of these ?]

For determining this, we apply Zaitsev's Rule

The most substituted alkene is most stable.



(i) Trisubstituted

(ii) Disubstituted (minor)

(iii) Tetrasubstituted (major)

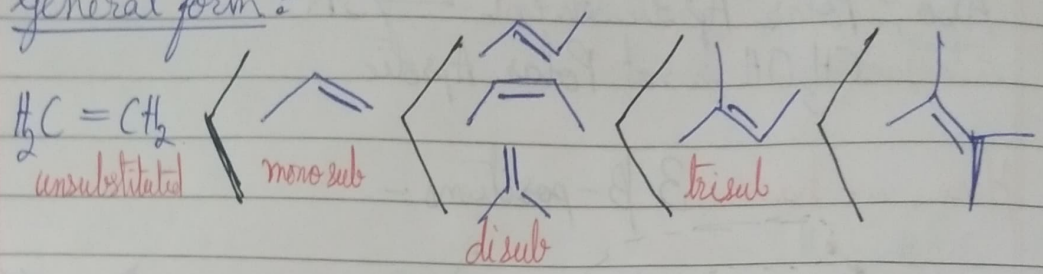
∴ (iii) > (i) > (ii)

Zaitsev's Rule :-

This rule tells us the most stable alkene

A/c to this rule, the alkene with most substituents is most stable
(most substituted alkene)

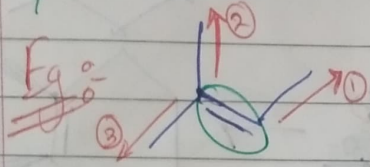
General form :-



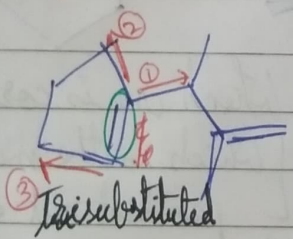
The no. of substituents can be determined by :-

1) 1st mark the = bond
2) 2nd mark the substituents by →

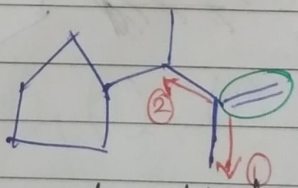
Eg :-



∴ Trisubstituted



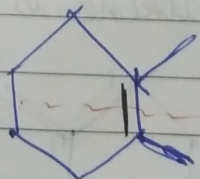
Trisubstituted



disubstituted

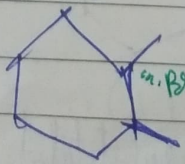
In previous example,

Final Product :-

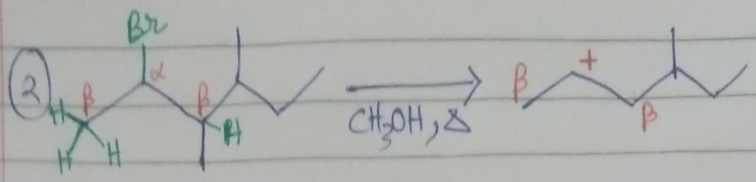


Plane of symmetry

Results in a sp^2 molecule
∴ A non-chiral compound

∴ In this case, 

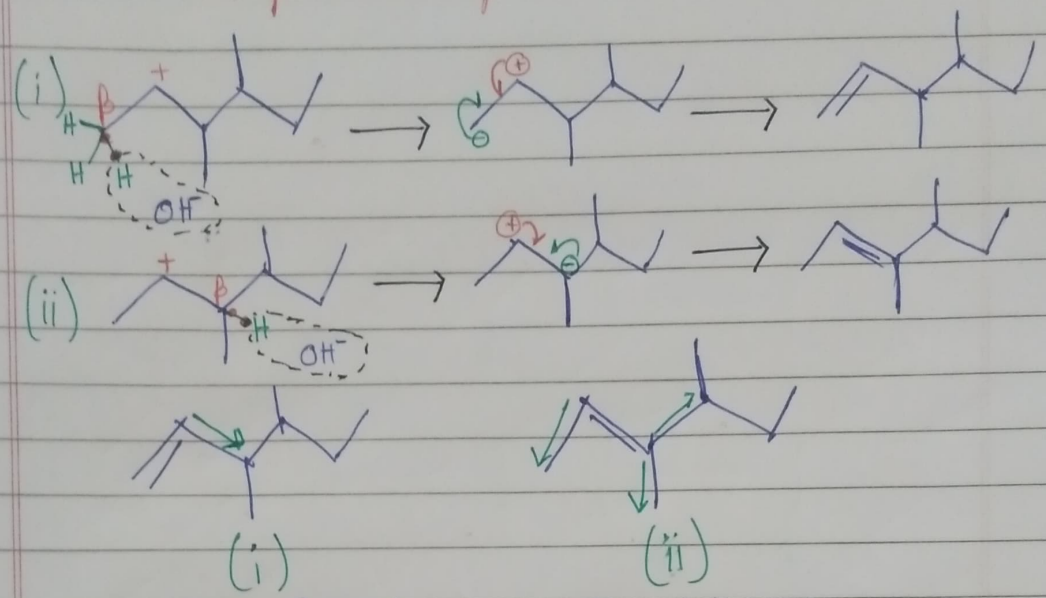
looses its chirality



Here, CH_3OH → Polar Protic & weak base
(favours SN^1 & E^1)

Δ → $E^1 > SN^1$ (elimination favoured)

We have 2 β-Carbon positions :-



(i) Mono substituted

(ii) Trisubstituted

∴ (ii) > (i) [But this is incorrect]

Remember the hydride shift takes place when there is a 3° carbon near 2° carbon with ⊕