

- ① SOLVENT
- ② REARRANGEMENT
- ③ NEIGHBORING GROUP PARTICIPATION
- ④ PHASE TRANSFER CATALYSIS
- ⑤ INTRO TO β ELIMINATION
- ⑥ MECHANISMS
- ⑦ STEREOCHEMISTRY
- ⑧ SUMMARY

3RD READ 8.6-8.10, Q 8.30-8.41
 4th READ 9.5-9.11, Q 9.31-9.42

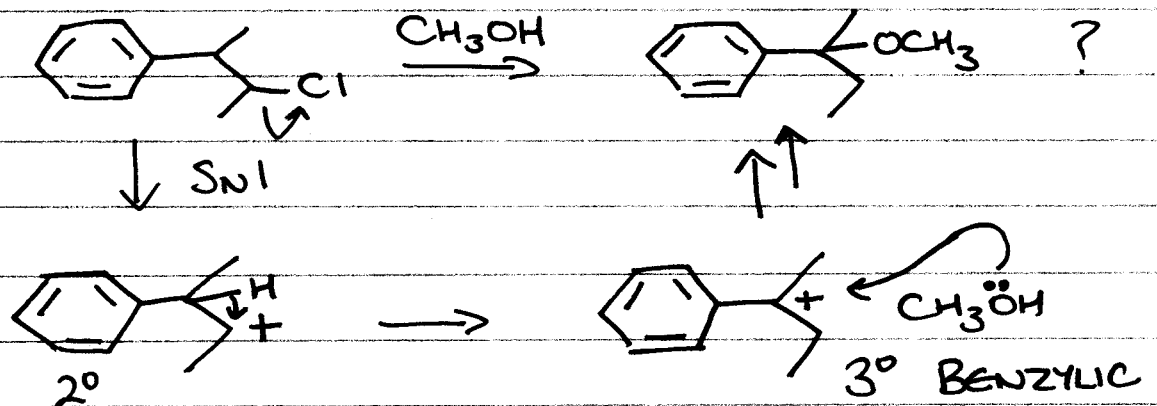
① SOLVENT

S_N2 DISFAVORED IN PROTIC SOLVENTS
 (ground state energy Nuc^\ominus lowered by solvation)

S_N1 FAVORED IN PROTIC SOLVENTS
 (transition state energy lowered by solvation)

② REARRANGEMENT (S_N1 / C^+)

e.g

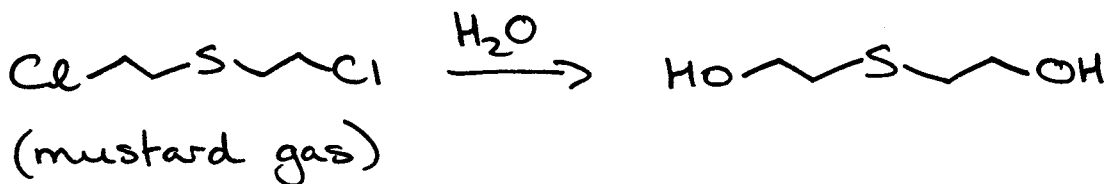


Summary

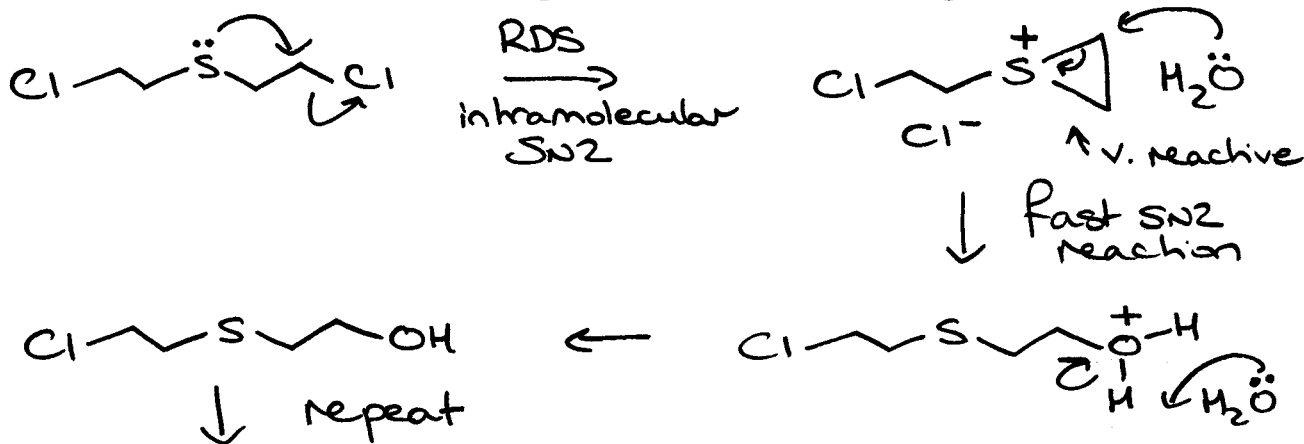
ELECTROPHILE	SN2	SN1
Me/1°	✓	X
2°	GOOD NUC POLAR APROTIC	POOR NUC POLAR PROTIC (GOOD LG)
3°	X	✓

- gets complicated => ELIMINATION

③ NEIGHBORING GROUP PARTICIPATION



V. RAPID, even though H₂O is very poor Nuc



overall rate = $k[\text{ClCCSCC(Cl)C}]$

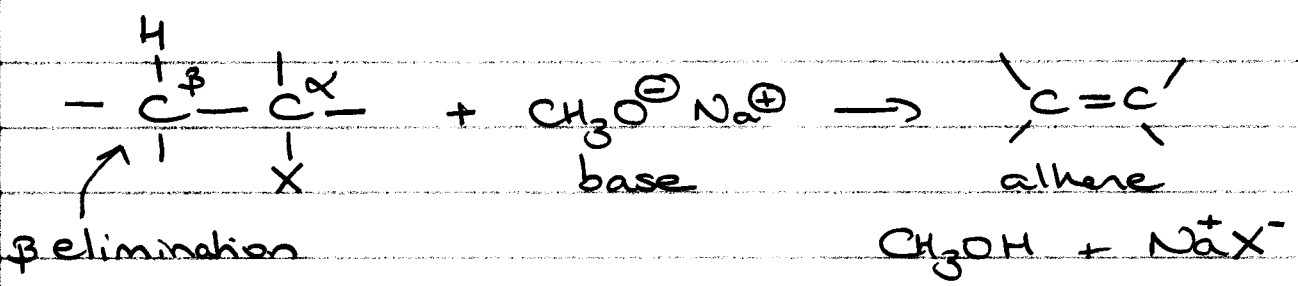
INDEPENDENT of [Nuc]

Two consecutive SN2 reactions with SN1 KINETICS

④ PHASE TRANSFER CATALYSIS
(read section in the book)

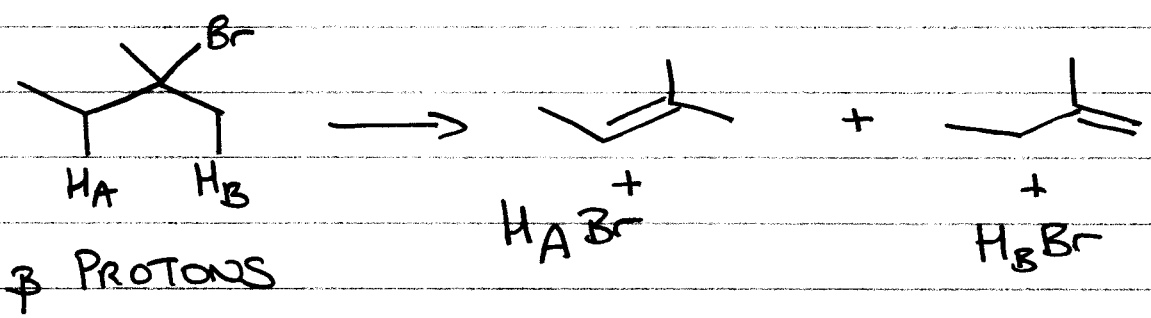
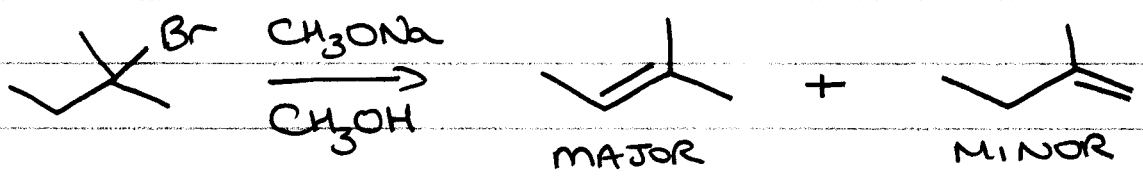
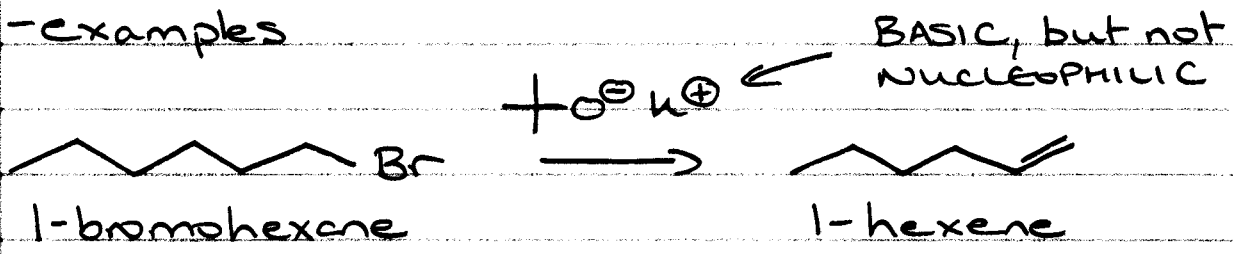
⑤ INTRO TO β-ELIMINATION

- dehydrohalogenation (one example)



- ELIMINATION competes w/ SUBSTITUTION

- examples



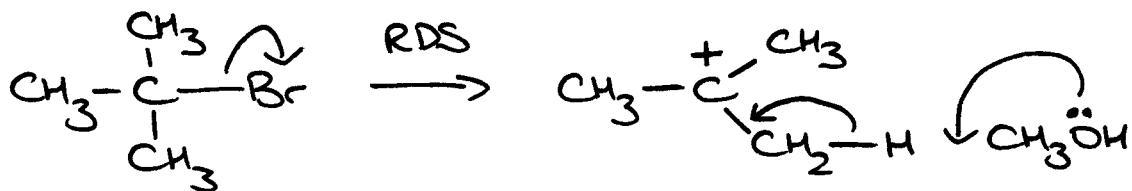
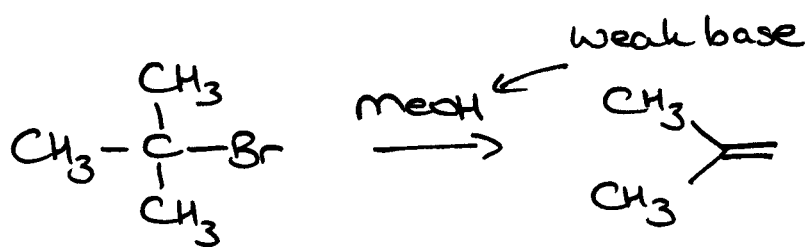
ZAITSEV'S RULE \rightarrow major product is the most SUBSTITUTED ALKENE (more stable)

.... and there are EXCEPTIONS to this rule.

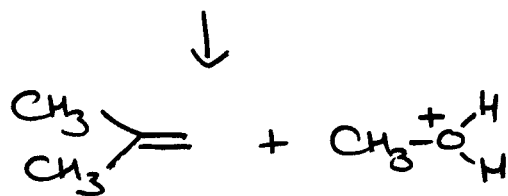
⑥ MECHANISMS

(like S_N reactions, two limiting ones)

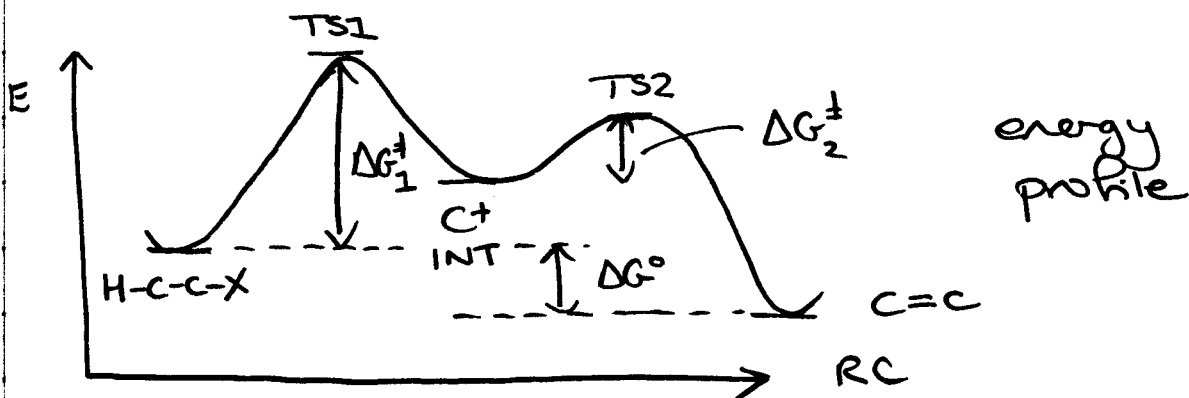
E1 (elimination unimolecular)



COMPETES with S_N1 REACTION



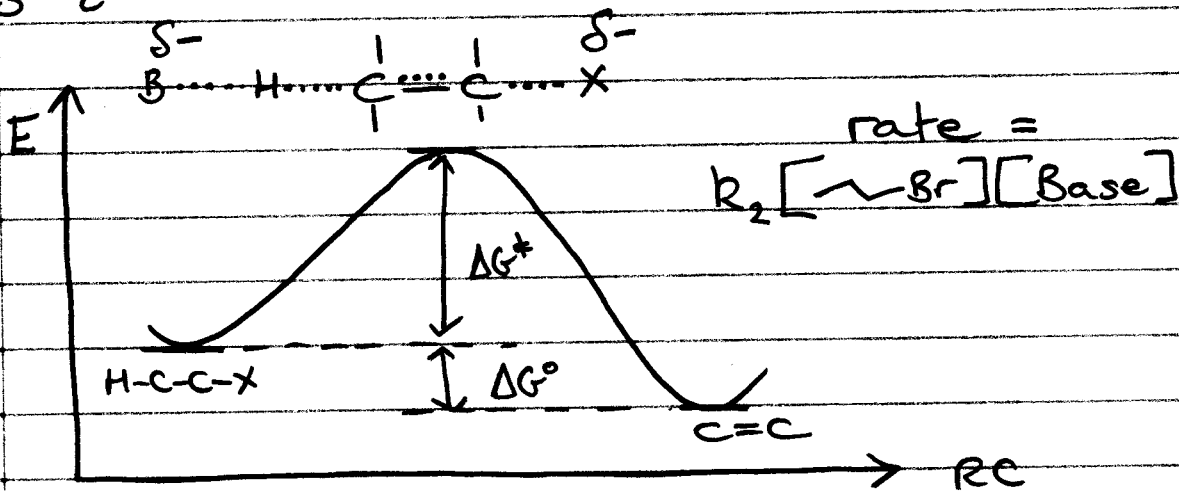
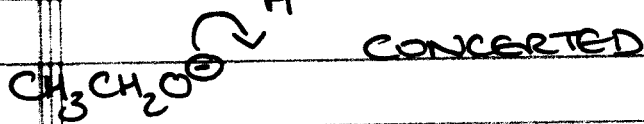
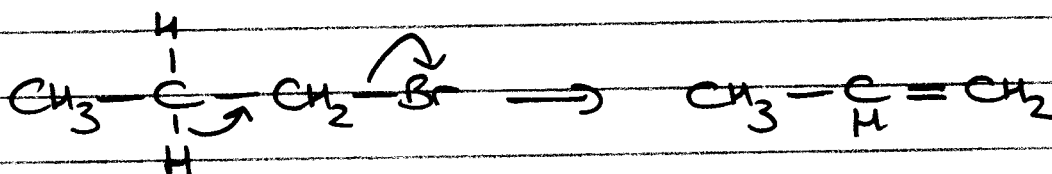
rate = $k_1 [(\text{CH}_3)_3\text{C}-\text{Br}]$



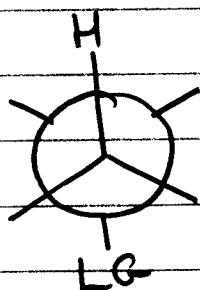
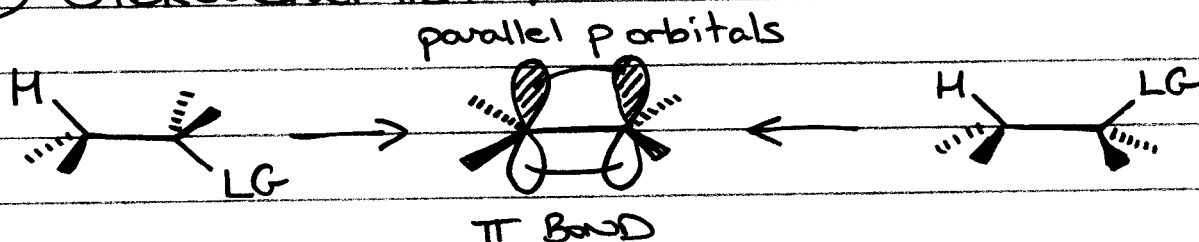
E2 (ELIMINATION BIMOLECULAR)



(competes with S_N2)

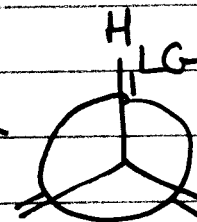


7) STEREOCHEMISTRY



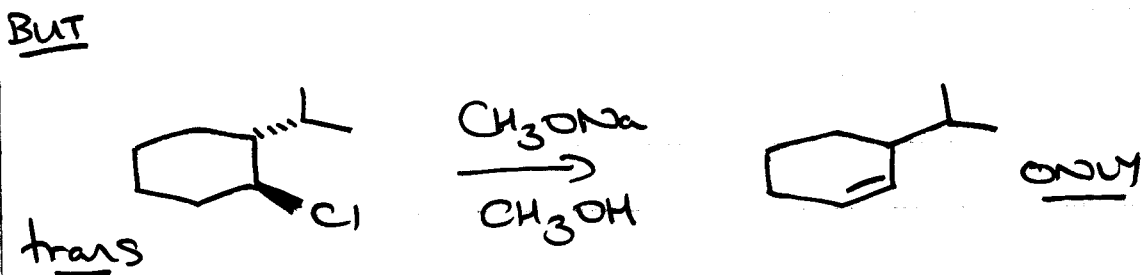
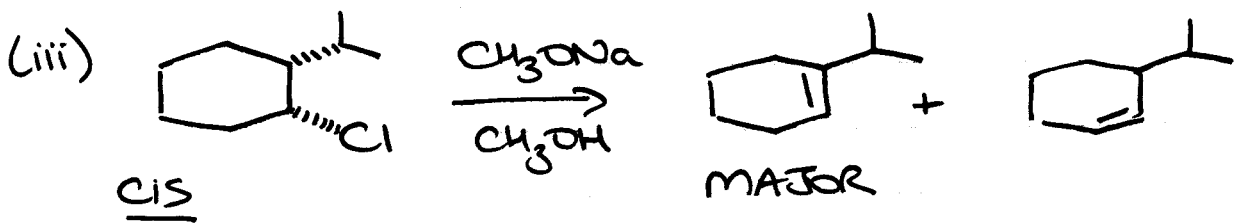
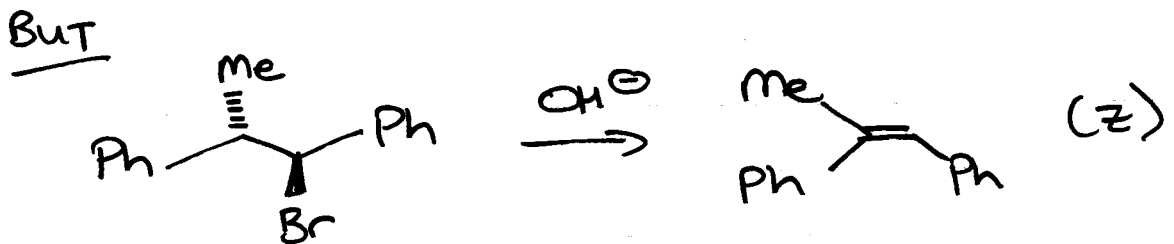
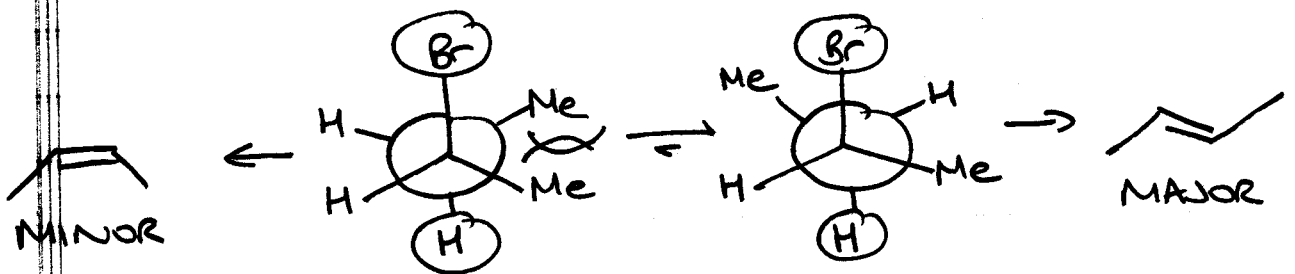
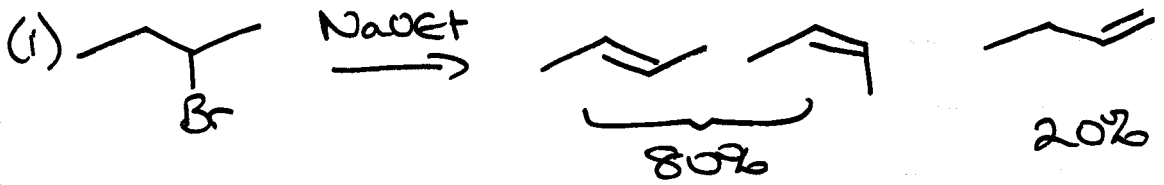
ANTI PERIPLANAR (staggered)

SYN PERIPLANAR (eclipsed)

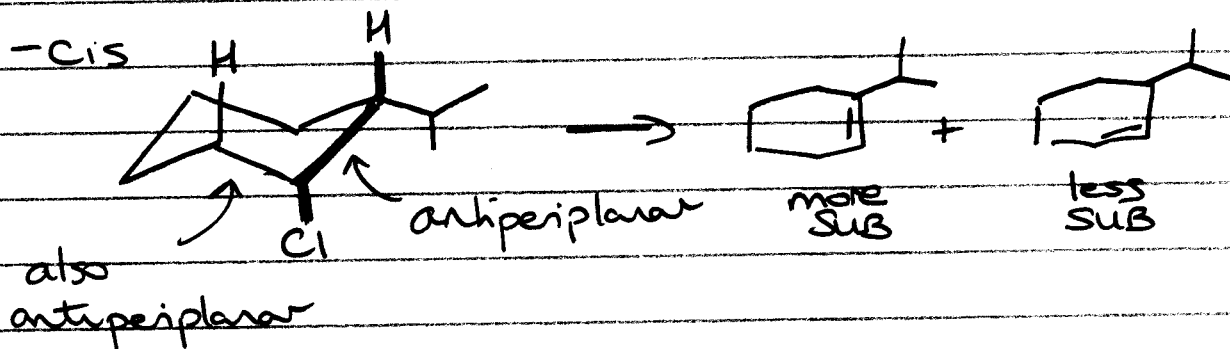


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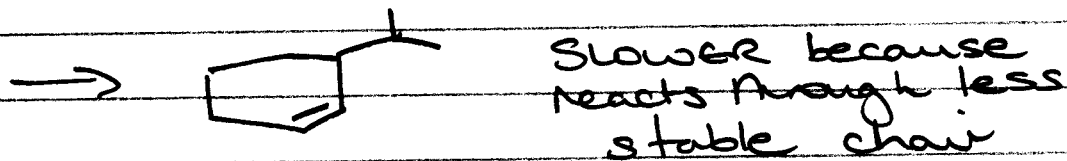
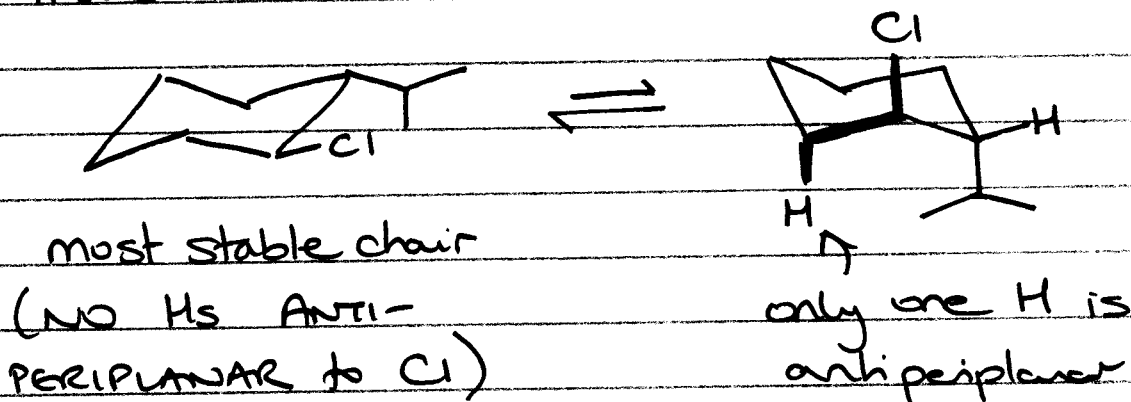
Generally, antiperiplanar geometry is preferred in an E2 reaction (exceptions)



also, cis reacts faster \Rightarrow WHY?



-trans



⑧ SUMMARY E1/E2

alkyl halide

E1

E2

METHYL

- ELIMINATION IMPOSSIBLE -

1° (RCH₂X)

DOES NOT HAPPEN

Favored ELIM MODE

2° (R₂CHX)

H₂O/ROH
weak bases
(allylic/benzylic sub)

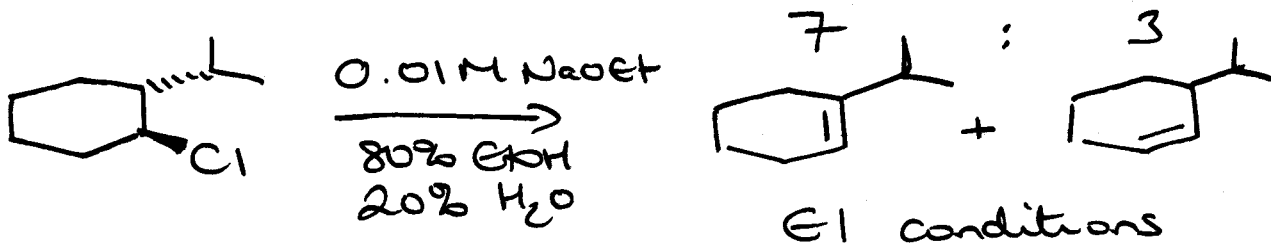
Strong RO⁻
bases HO⁻

3° (R₃C-X)

weak bases

strong bases

Reaction CONDITIONS



UP NEXT

SUB vs E

