LEC (16) CHEM 30A Nov 7th

(1) ADDITION of HOCl/HOBr
(2) OXYMERCURATION
(3) HYDROBORATION
(4) OXIDATION

Office hrs start at 5:30 pm
Quiz on WEDS
NO CLASS FRIDAY

- mechanism summarys

READ rest of Ch6

PROBLEMS 6.8, 6.9, 6.12, 6.16–6.40

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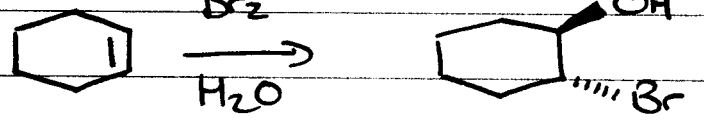
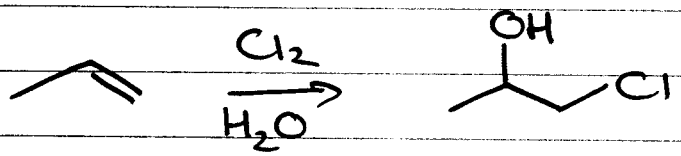
(1) ADDITION of HOCl/HOBr



ANTI STEREOSPECIFIC & (REGIOSELECTIVE)

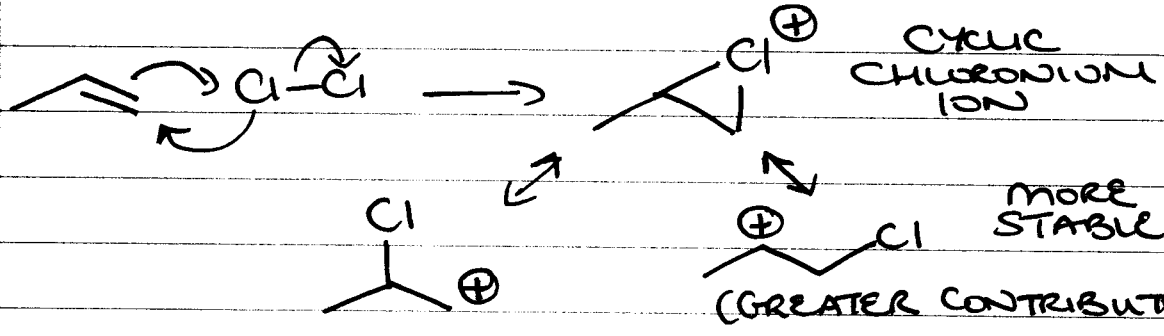
not an inert solvent

BROMOHYDRIN (halohydrin)

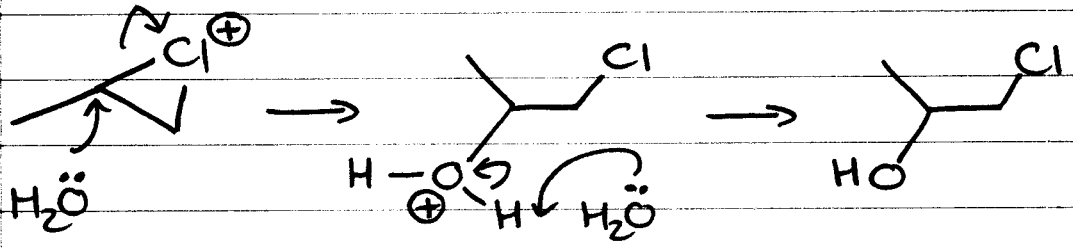


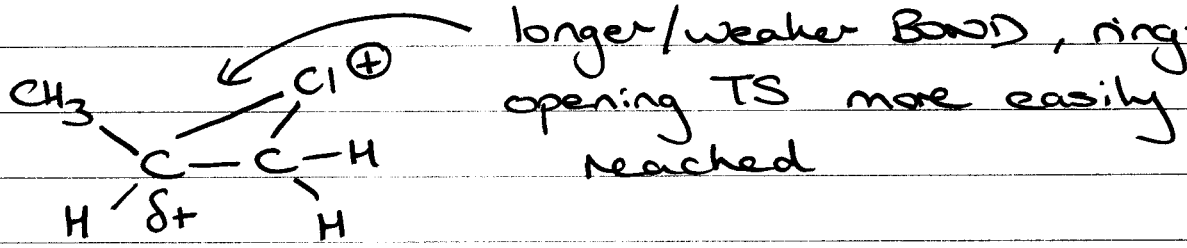
-OH adds to more SUBSTITUTED C atom

mechanism:

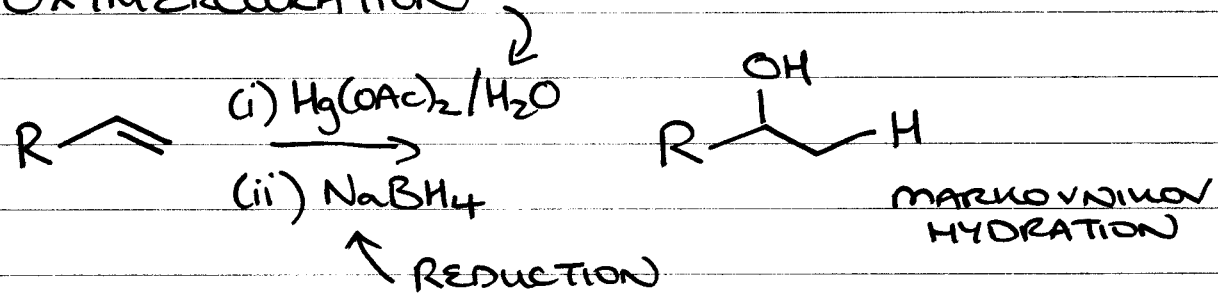


OPENS VIA MORE STABLE C^+

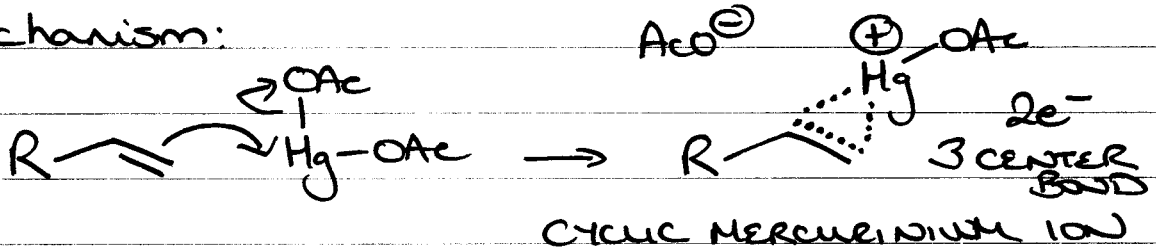




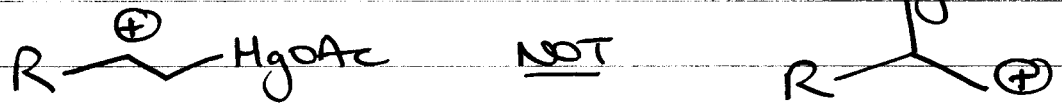
(2) OXYMERCURATION



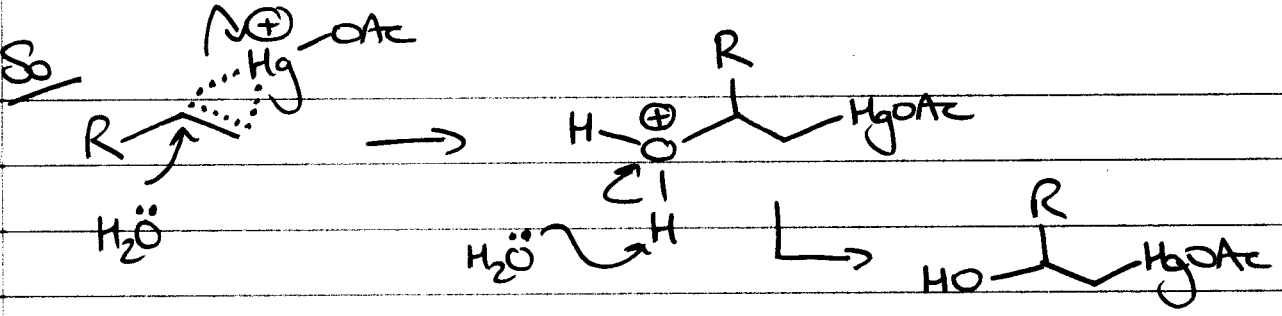
mechanism:



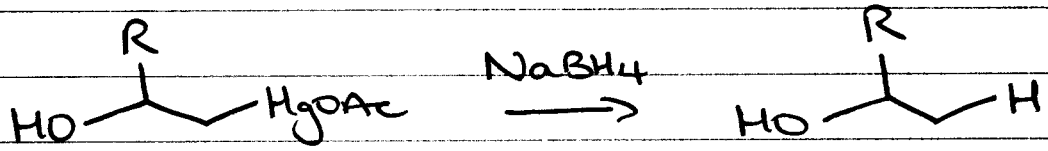
Opens via more stable C^+



So

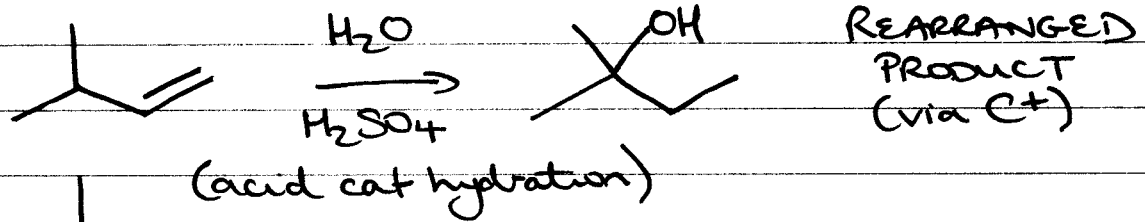


organomercury compound reduced w/ $NaBH_4$



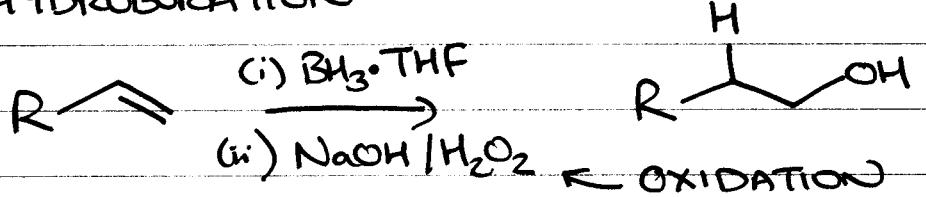
replaces HgOAc for H
(don't need to know mechanism for this)

WHY IS THIS USEFUL?
consider:

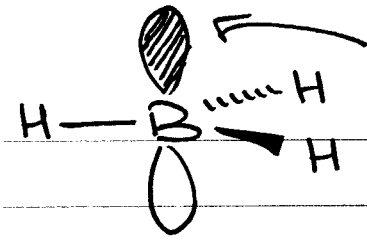


REGIOSELECTIVE, w/ ANTISTEREOSPECIFICITY (HOBr/HOCl)

③ HYDROBORATION

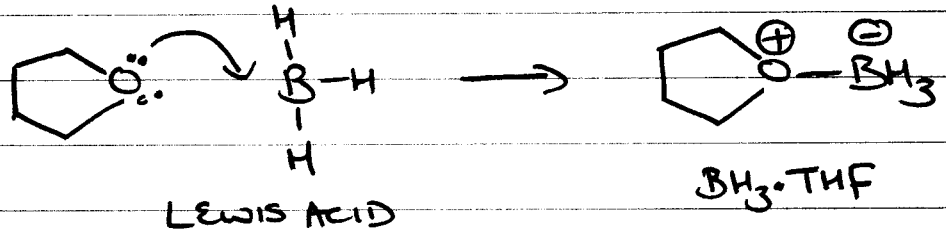


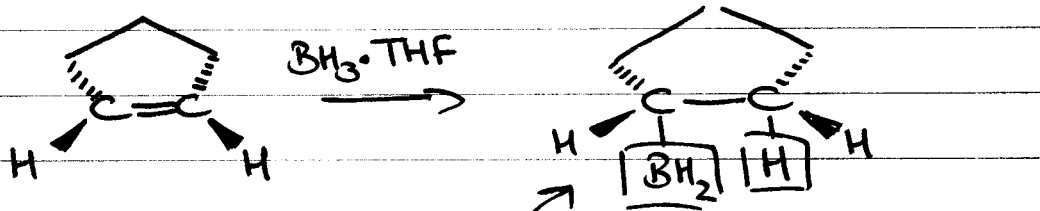
Borane (BH_3)



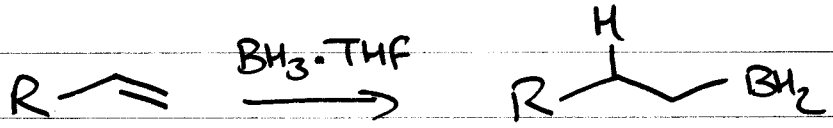
(actually exists as B_2H_6 – structure?)

LEWIS BASE



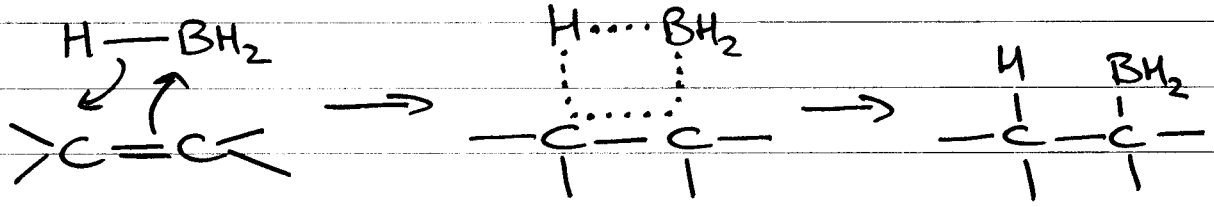


- SYN STEREOSPECIFIC

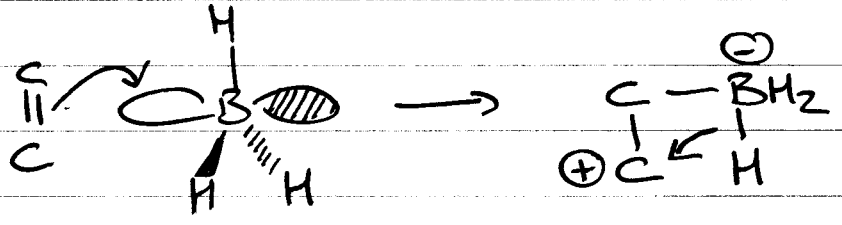


BORON ADDS TO LESS SUBSTITUTED C ATOM

mechanism:



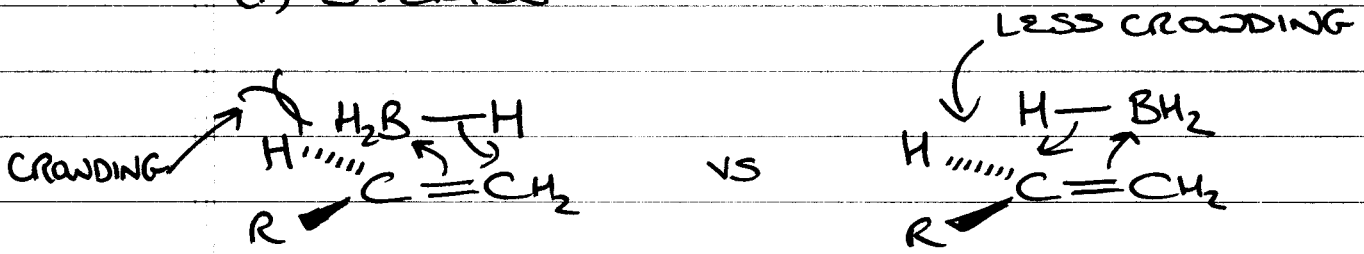
i.e



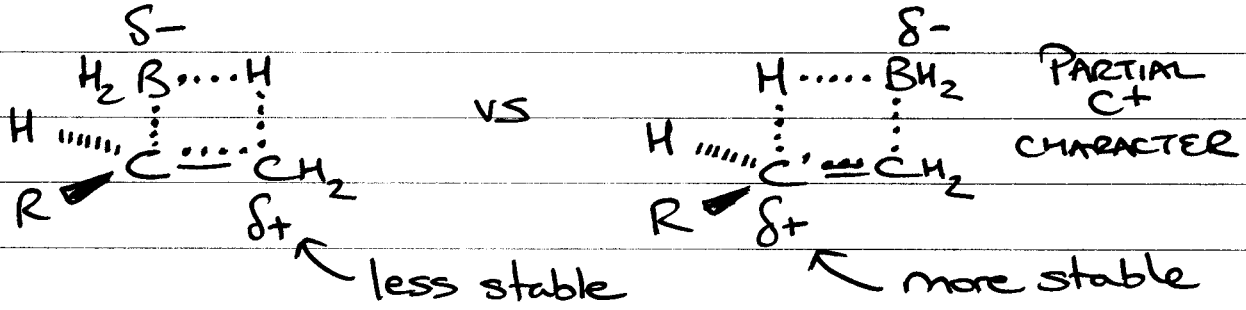
- BUT, NO REARRANGEMENTS (concerted mechanism)

WHY REGIOSELECTIVE?

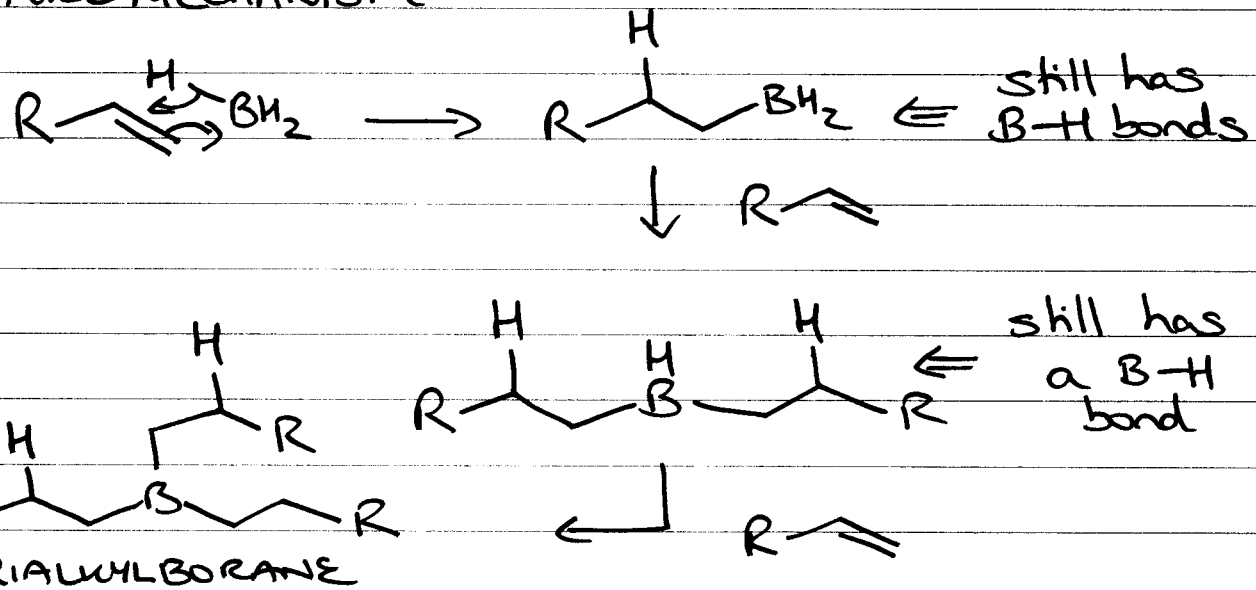
(i) STERICS



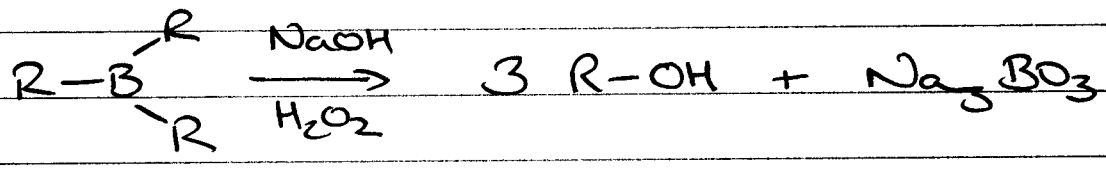
(ii) ELECTRONICS

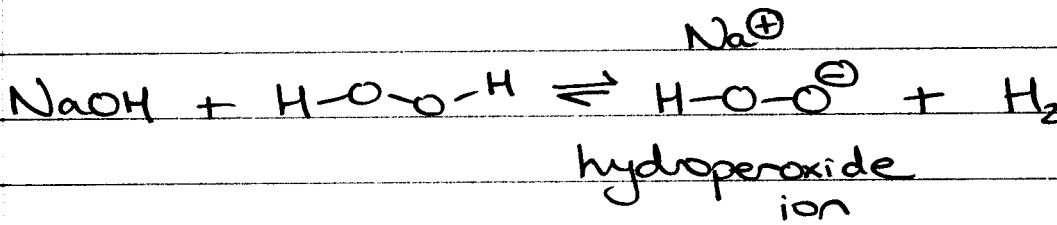


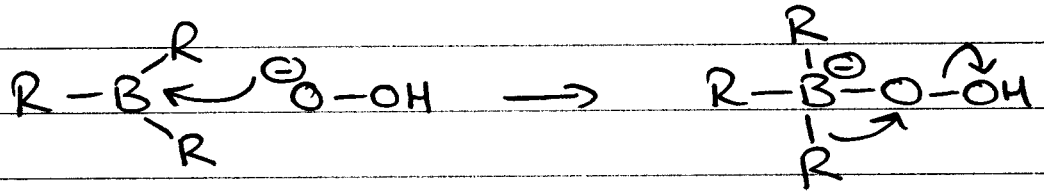
FULL MECHANISM

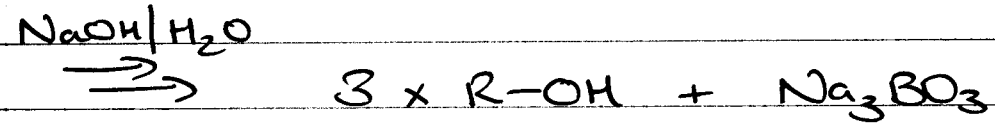


SECOND STEP



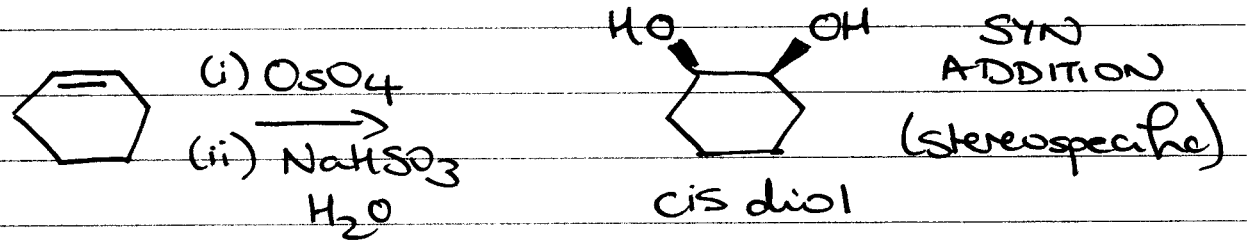


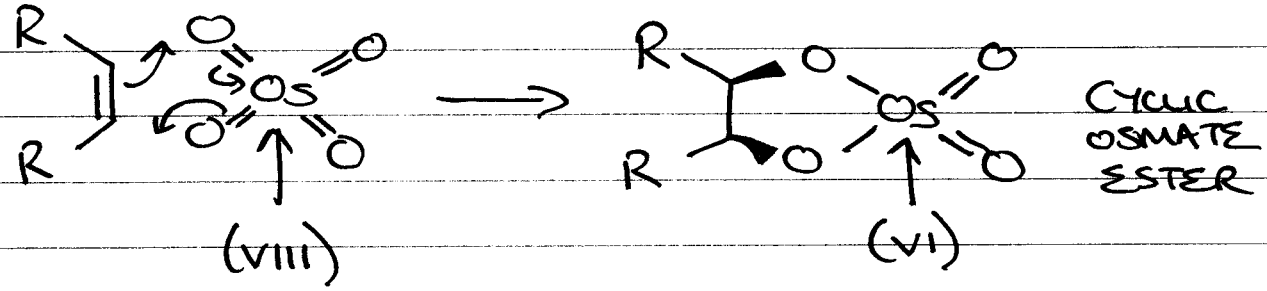


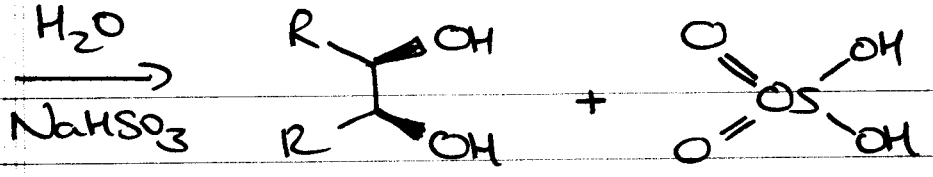


④ OXIDATION

(i) OSO_4 osmium tetroxide



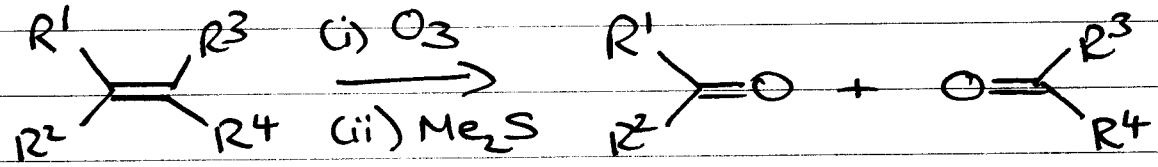


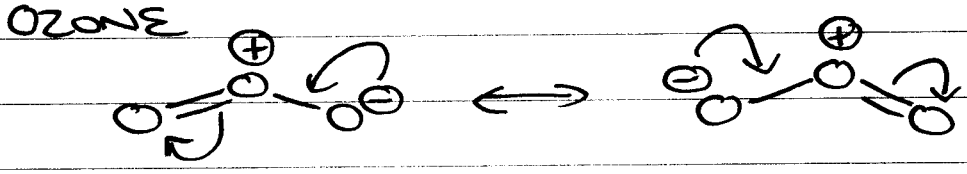


needs to be re-oxidised
- expensive
- toxic

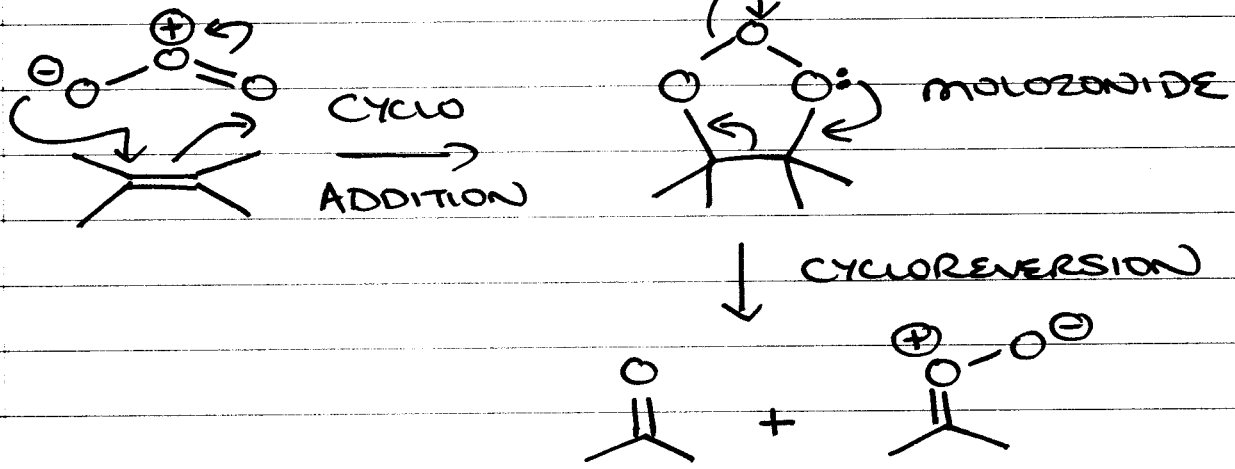
OS REDUCED (VIII → VI), ALKENE OXIDISED

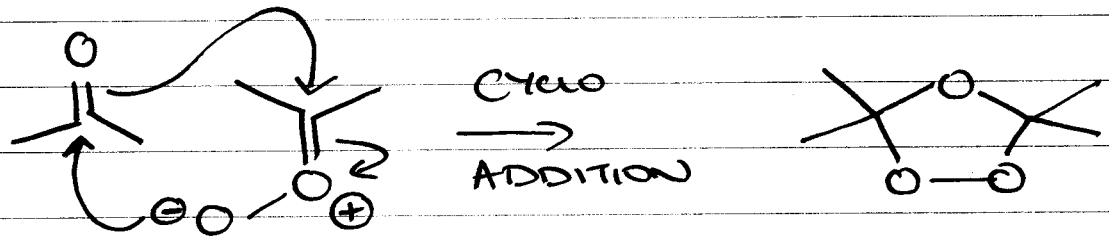
(ii) OZONOLYSIS



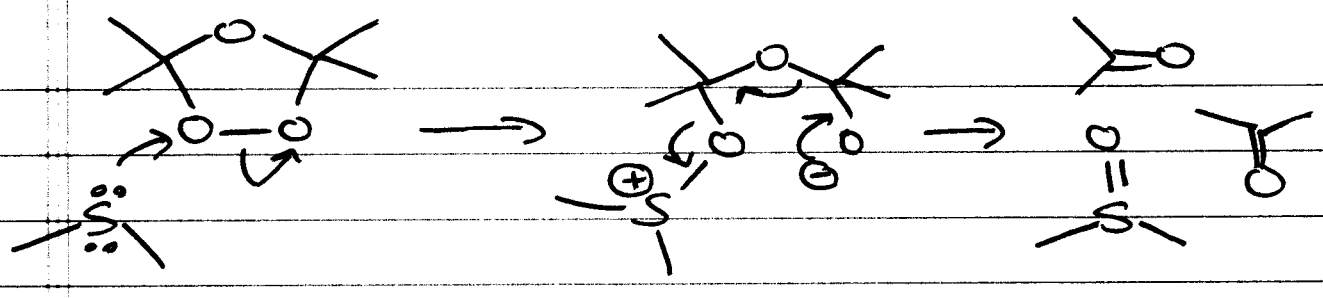


mechanism:





OZONIDE



next up... REDUCTION