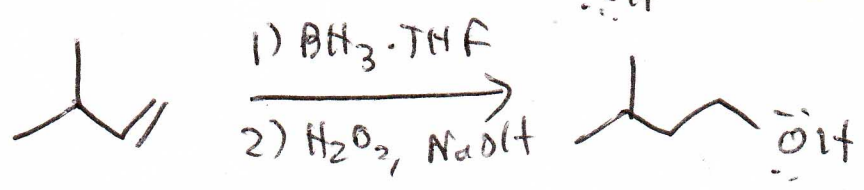
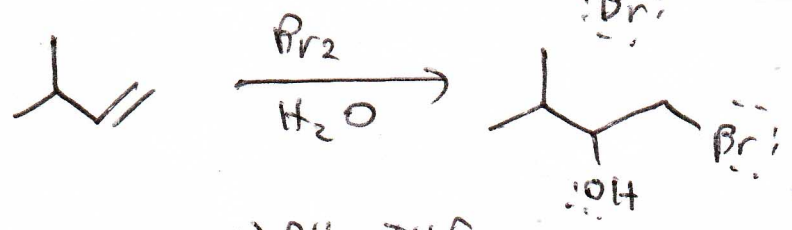
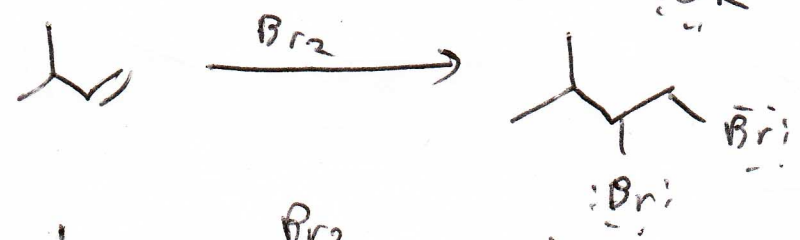
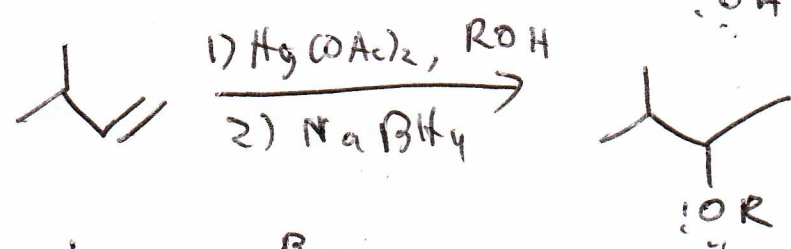
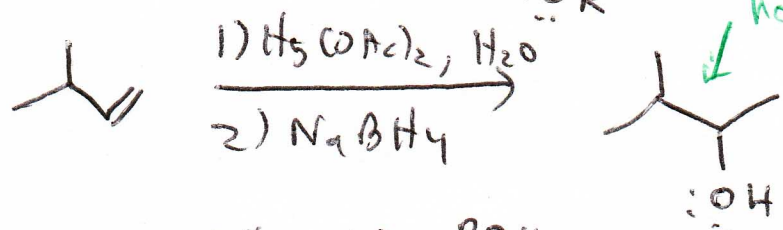
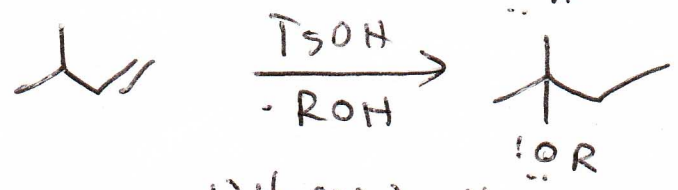
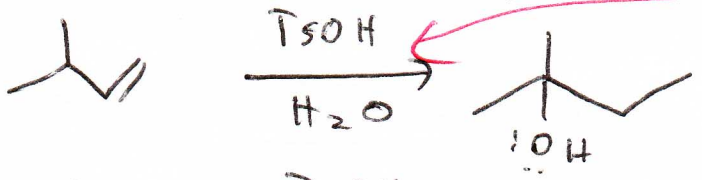
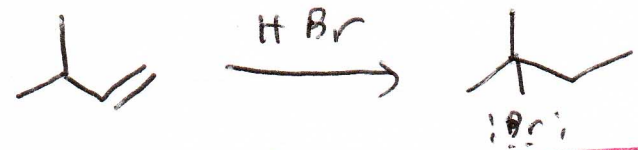


### Summary of rxns

$S_N1, S_N2, E1, E2$   
free-radical halogenation



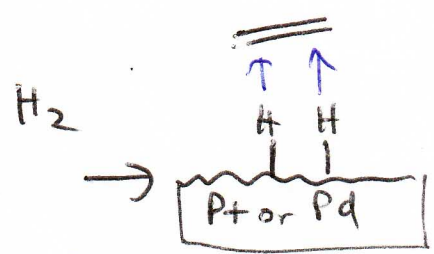
simple electrophilic addition

no 1) 2)

no rearrangement

electrophilic additions w/ cyclic intermediate

# Hydrogenation

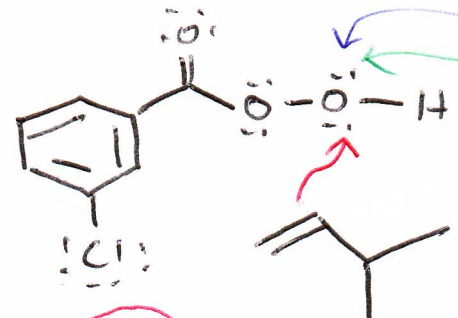


Hydrogenation is a syn addition because both hydrogens ~~are~~ react on the same face of the alkene as the alkene approaches the catalyst

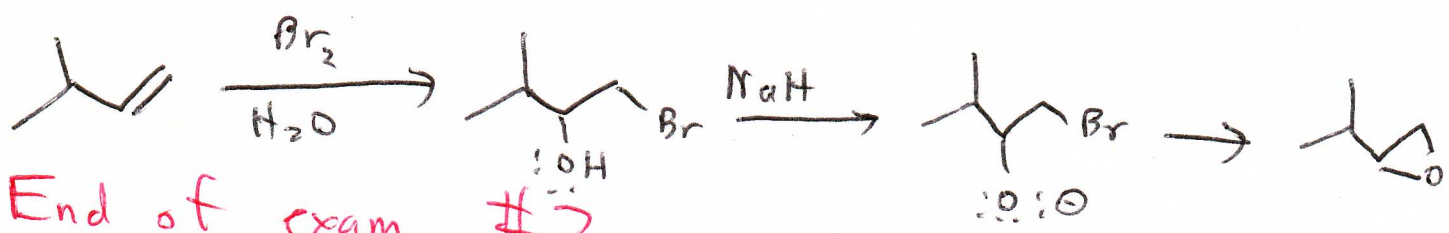
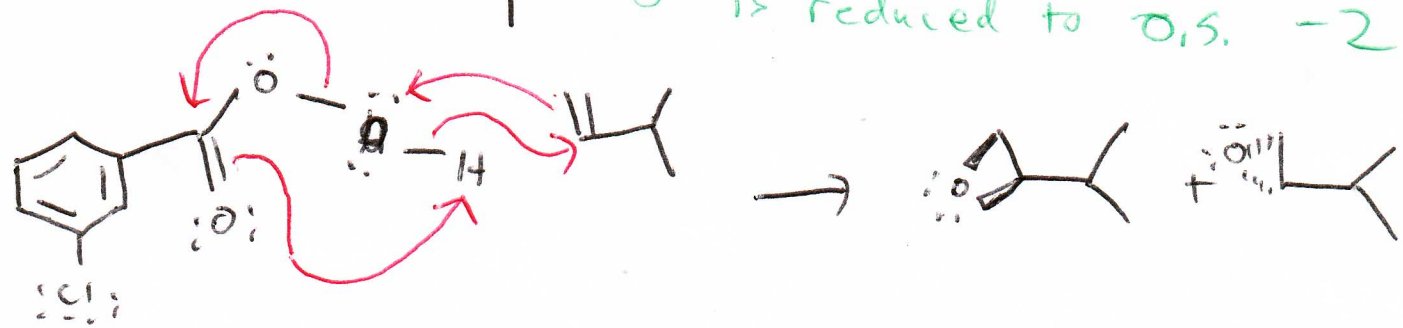
- 1) utility : alkene  $\rightarrow$  alkane
- 2) reagents :  $H_2(g)$  ; Pd or Pt (catalyst)
- 3) conditions : \_\_\_\_\_
- 4) mechanism : \_\_\_\_\_
- 5) stereochemistry : syn addition ; enantiomers
- 6) regiochemistry : no rearrangement

# Epoxidation

MCPBA - meta-chloroperoxybenzoic acid

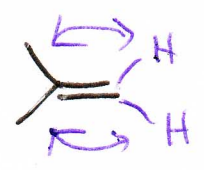


Each oxygen has an oxidation state of -1, so the reaction occurs because each O is reduced to 0, i.e. -2



End of exam #2

E vs Z vs cis vs trans



NOT cis or trans since both substituents on one side are the same



cis  
E



trans  
Z

cis + trans can be used because there is exactly one substituent on each side

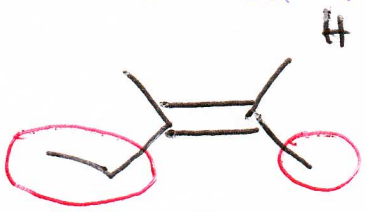


not cis or trans

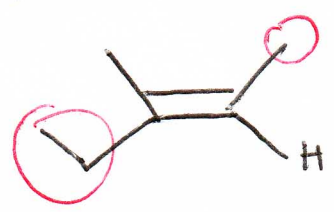


cannot be cis or trans (more than one substituent on ~~each~~ one side)

For E + Z, determine the most important substituent each side, then determine whether those substituents are on the same or opposite faces.



Z



E



hex-1-ene

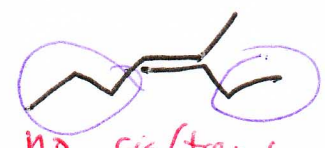
no cis/trans/E/Z



cis-hex-3-ene

(Z)-hex-3-ene

cis/trans or E/Z  
only one C=C



no cis/trans

(two subs one side)

(Z)-3-methylhex-3-ene



trans-hexa-1,3-diene

(E)-hexa-1,3-diene



E/Z must be used since multiple C=C have a config.

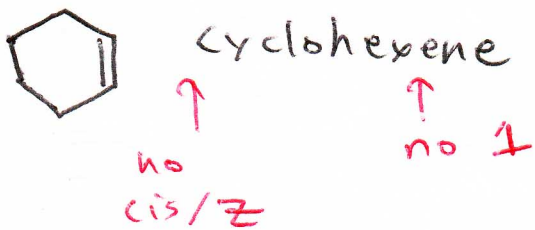
~~(2E)~~

(2E,4E)-hexa-2,4-diene

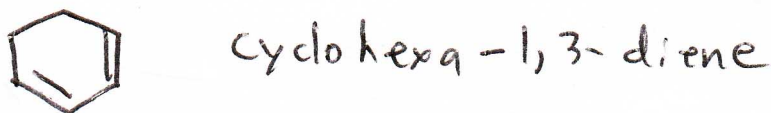
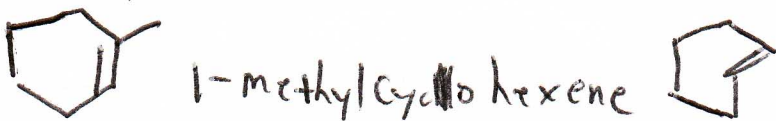


(2E,4Z)-hexa-2,4-diene

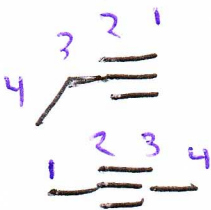
E > Z



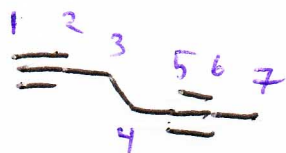
Trans-cyclohexene cannot be synthesized due to incredible geometric strain, so "cis" is not needed



Alkynes  $\equiv$  ethyne



but-1-yne



hepta-1,5-diyne

but-2-yne

