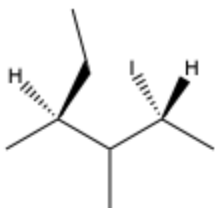
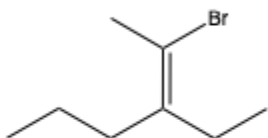


CHEM 2300 Exam 2 Review Solution

1. Name/draw the following molecules

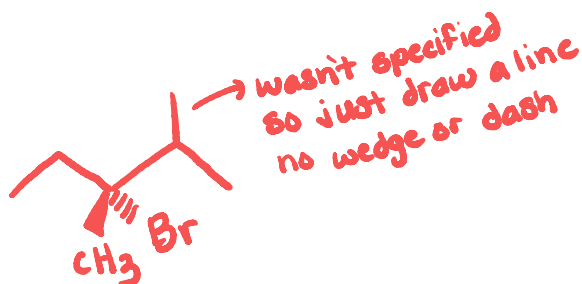


(2R,4S)-2-iodo-3,3,4-trimethylhexane

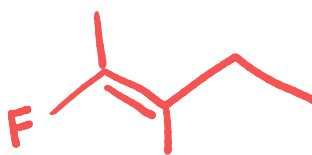


(E)-2-bromo-3-ethyl-2-hexene

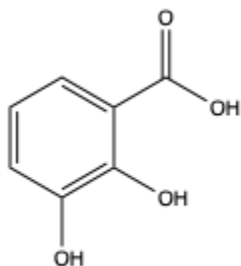
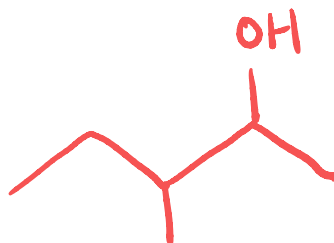
(R)-3-bromo-2,3-dimethylpentane



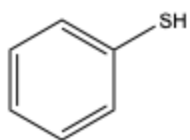
(E)-2-fluoro-3-methylpent-2-ene



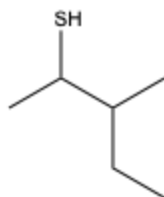
3-methylpentan-2-ol



2,3-dihydroxybenzoic acid



thiophenol



3-methyl-2-pentane-thiol

2. Draw all stereoisomers for (2R,4S)-2,4-dimethylpentane and list if it is an enantiomer or diastereomer



enantiomer
(but identical
so meso)

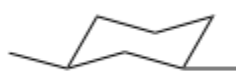
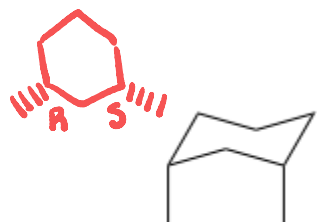


diastereomer



diastereomer

3. State whether the molecules are diastereomer, enantiomer, or identical.



enantiomers but
mirror image is the
same → meso (identical)

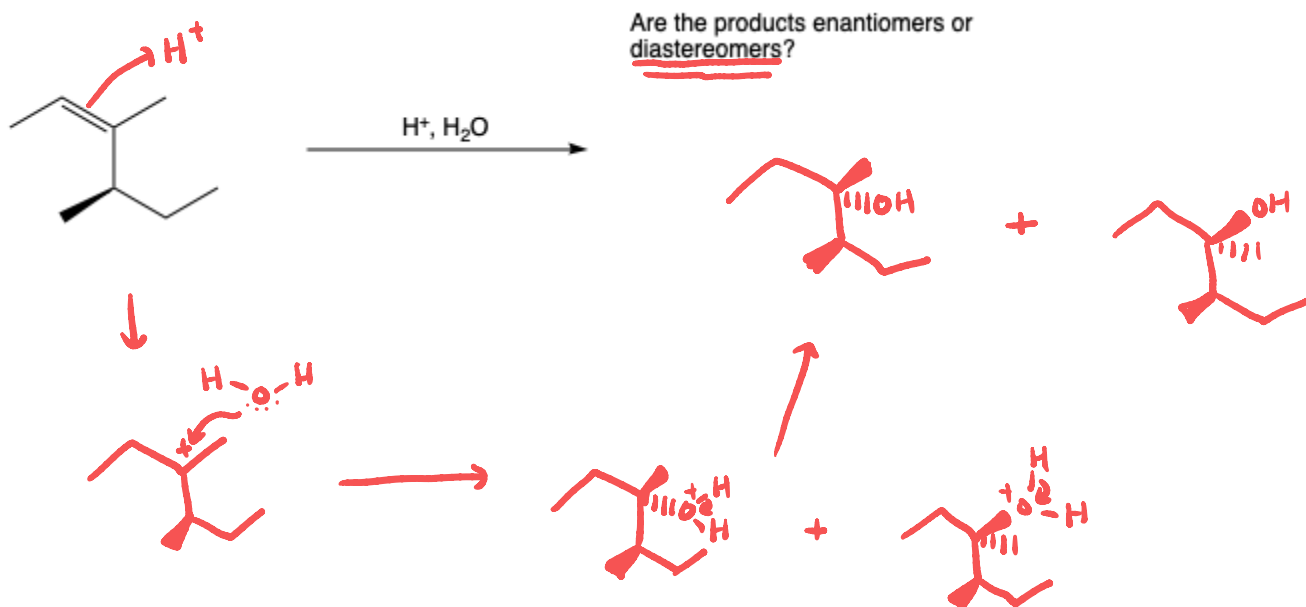


diastereomers



identical

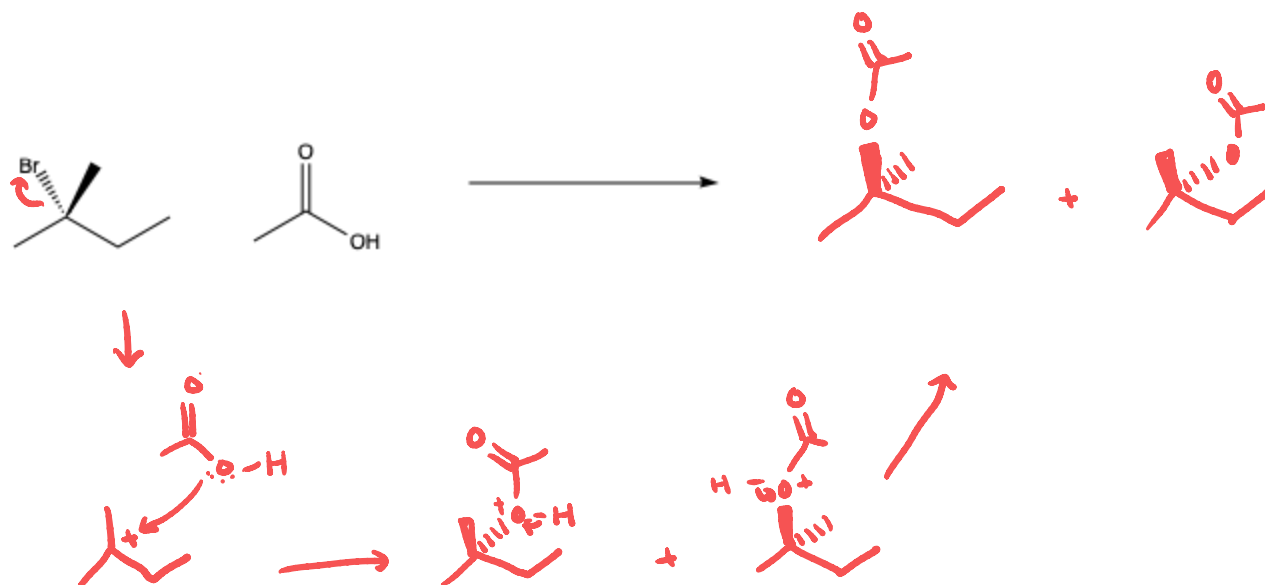
4. Draw the major product(s) and the mechanism for the following reactions



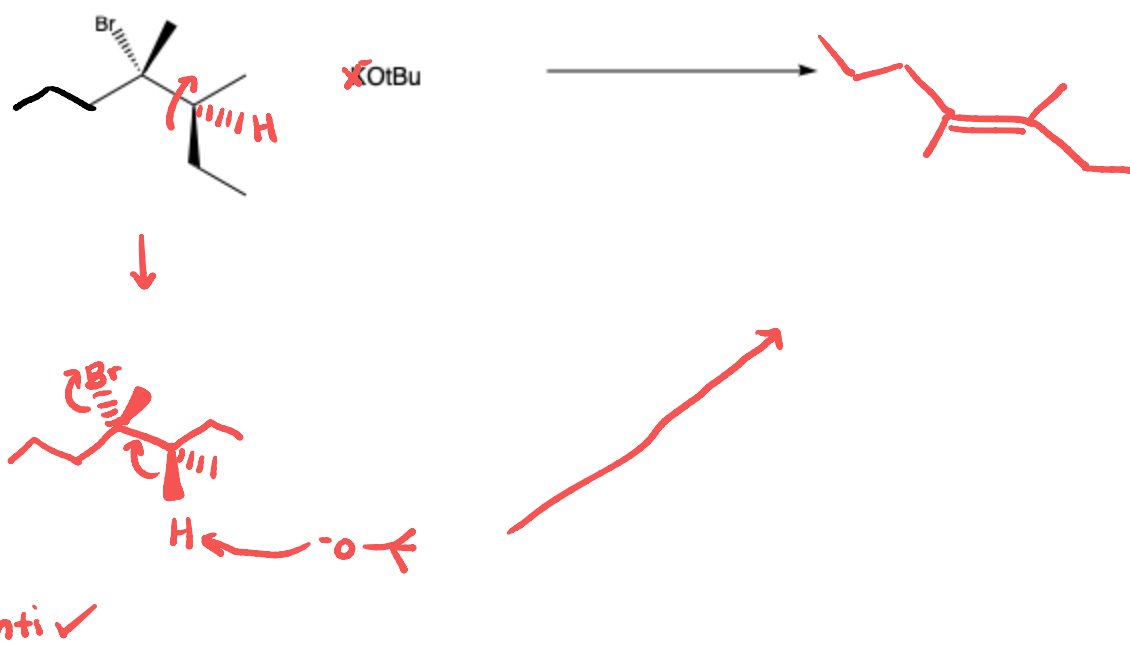
S_N2

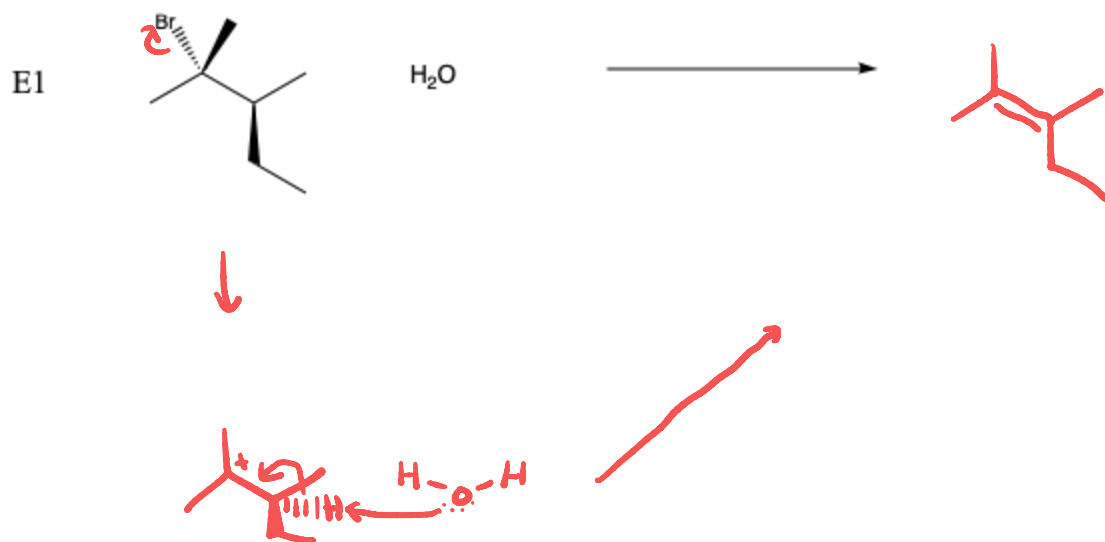


S_N1



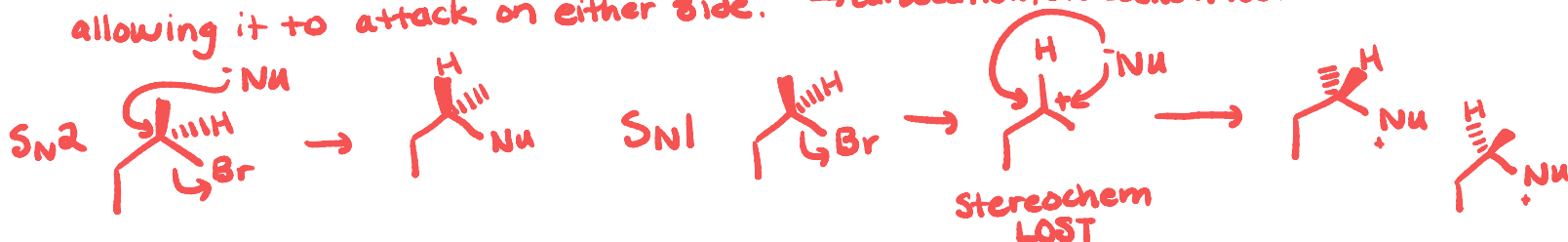
E2





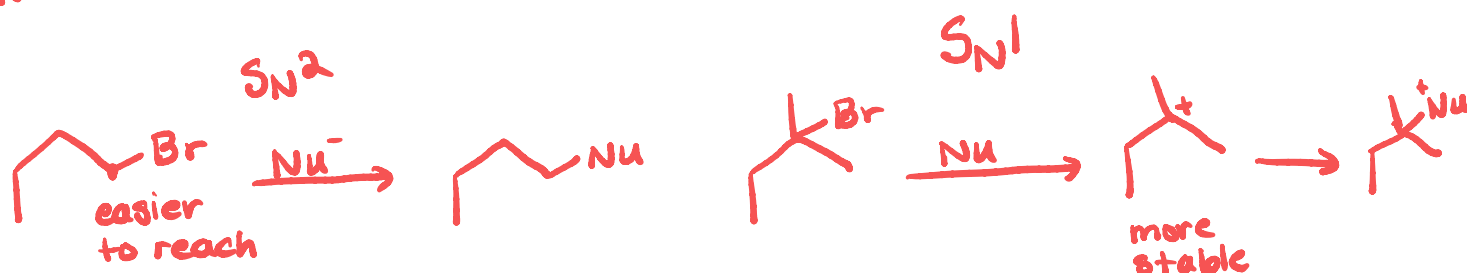
5. Why do we want a strong nucleophile/base for S_N2 and E2 but don't need that for S_N1 and E1 but we need a good leaving group for those?

Because in S_N2 the leaving group leaves at the same time as Nu, only attacking on one side. S_N1 however, the leaving group leaves and then the Nu attacks, allowing it to attack on either side. → carbocation, stereochem lost



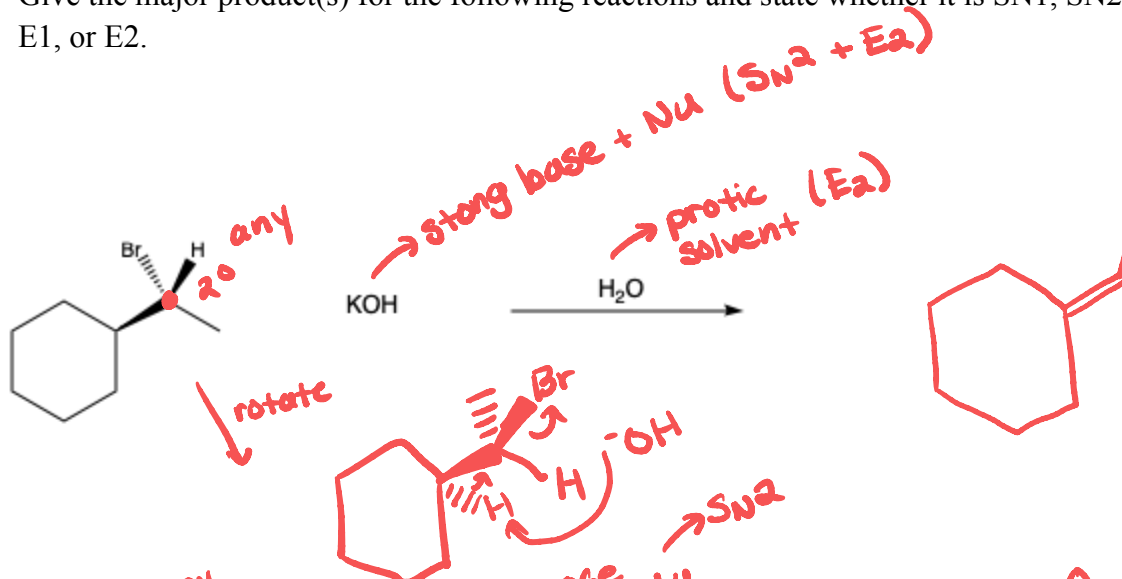
6. Why do primary carbons prefer S_N2 while tertiary carbons prefer S_N1 ? Use the intermediate.

S_N1 have a carbocation intermediate which is more stable on 3° C. S_N2 doesn't do this so it wants an easier attack which occurs on 1° C.

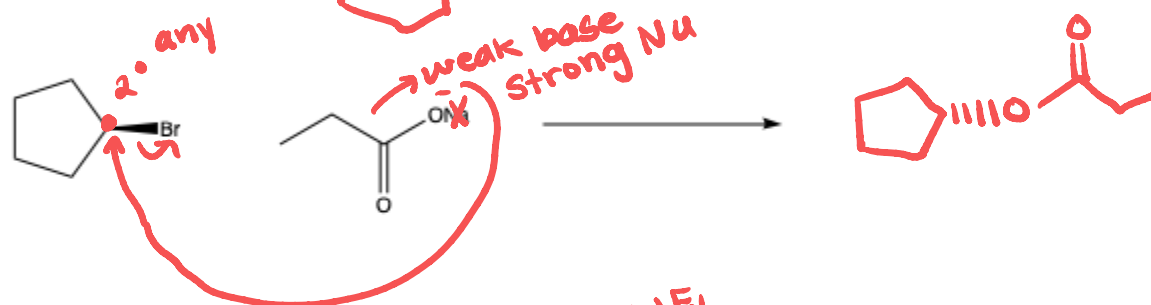


7. Give the major product(s) for the following reactions and state whether it is SN1, SN2, E1, or E2.

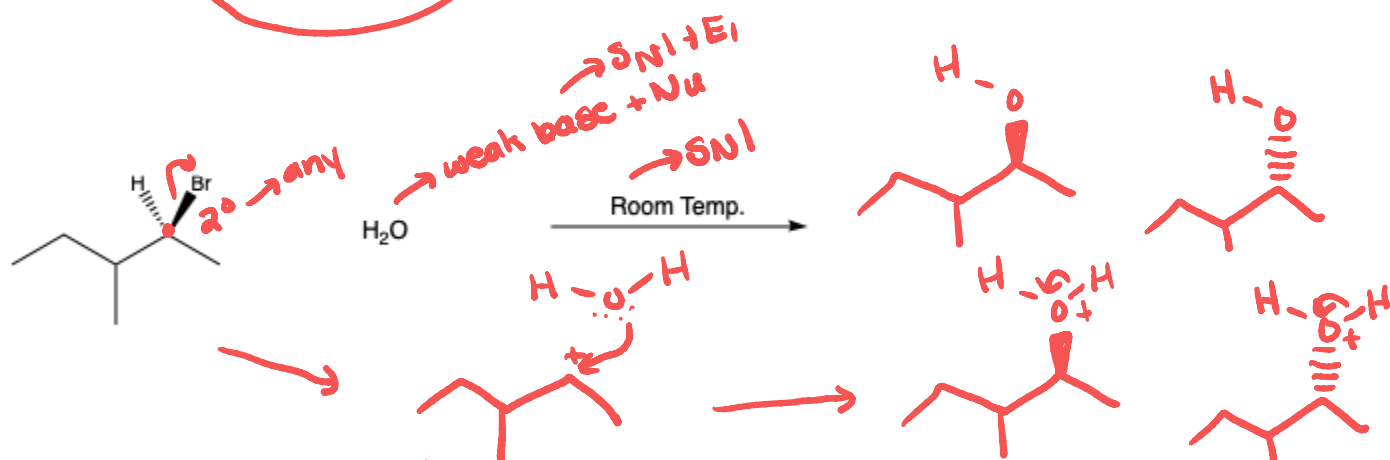
E2



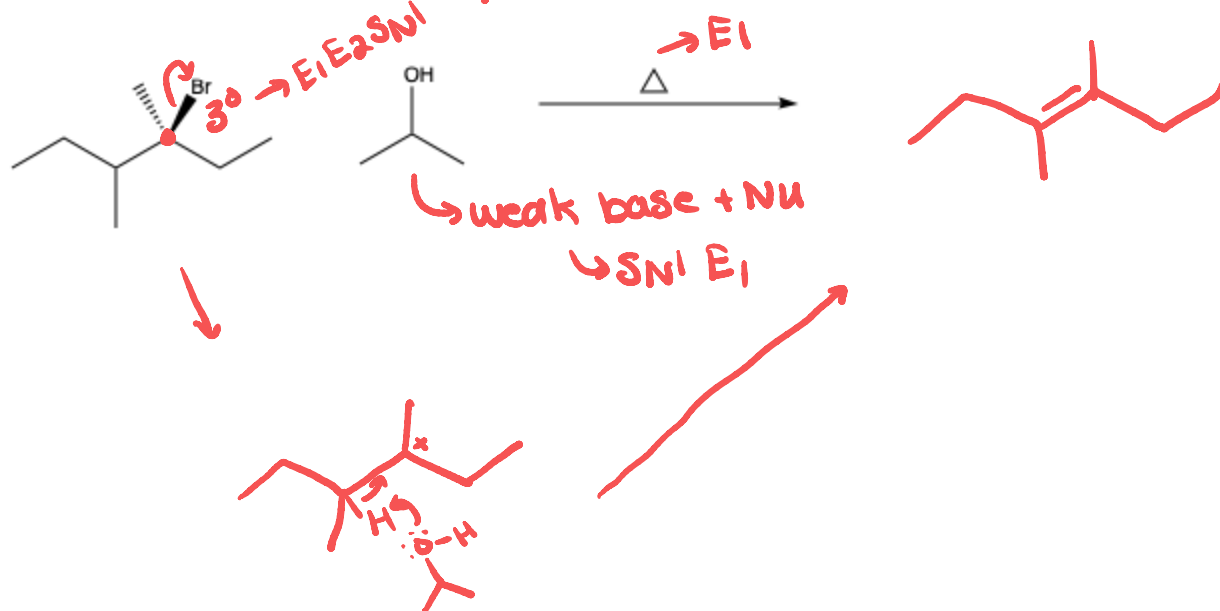
SN2



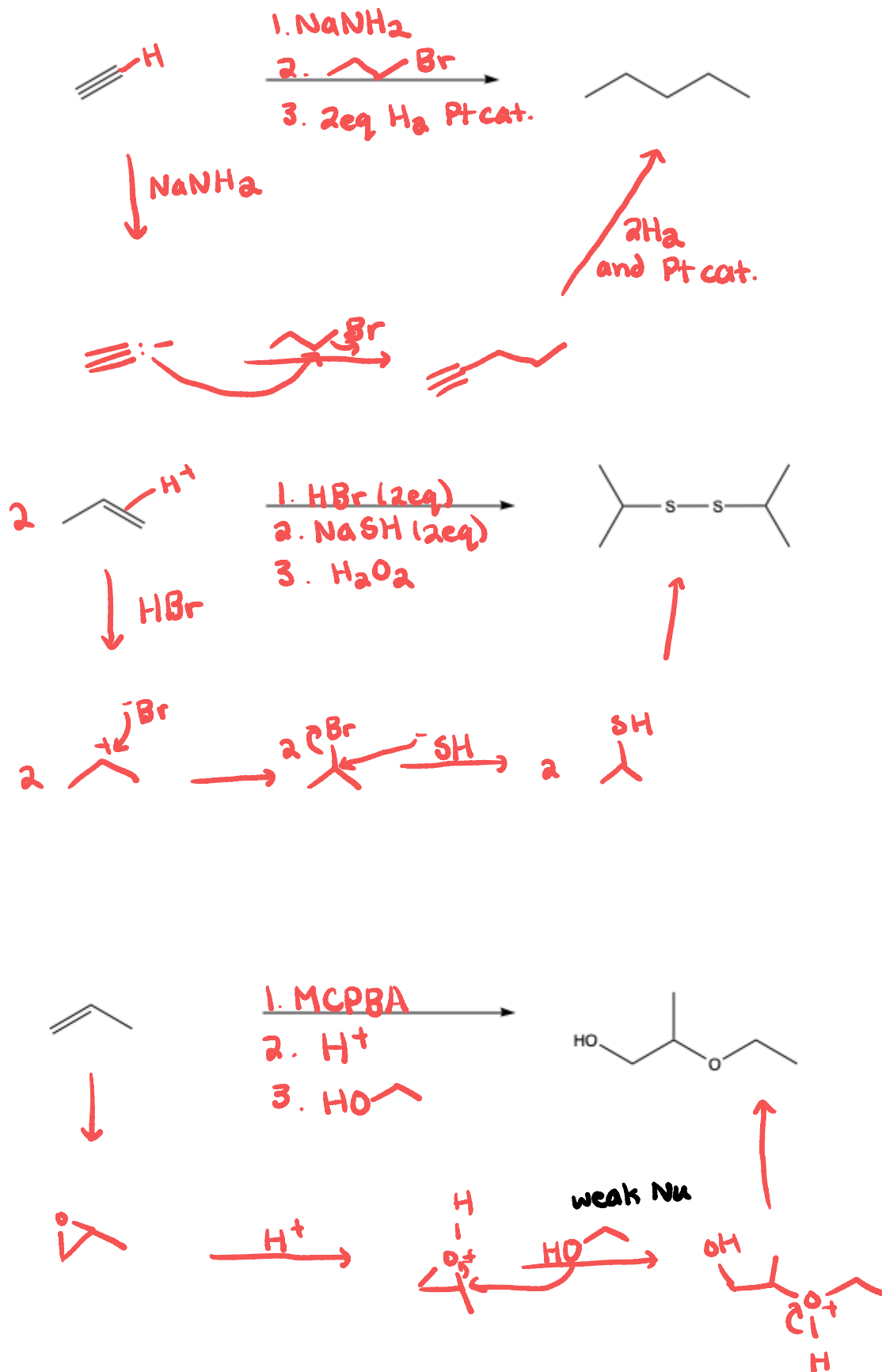
SN1



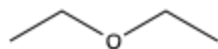
E1



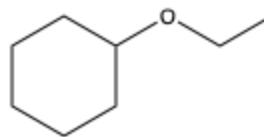
8. Give a synthetic route for these reactions.



9. Name the following ethers

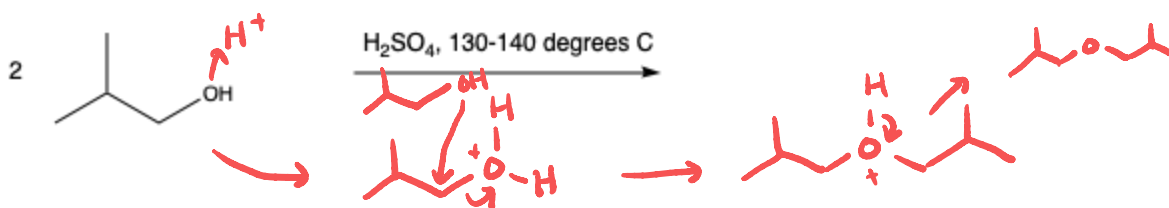
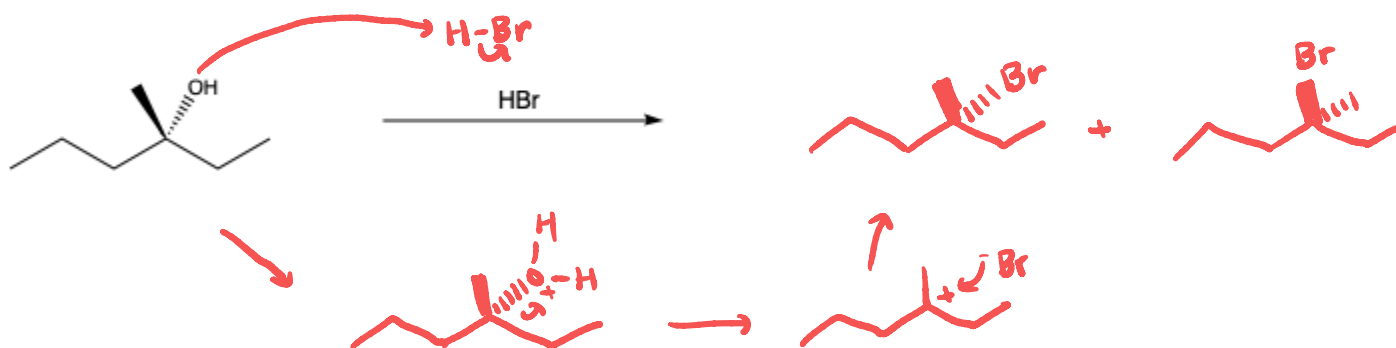
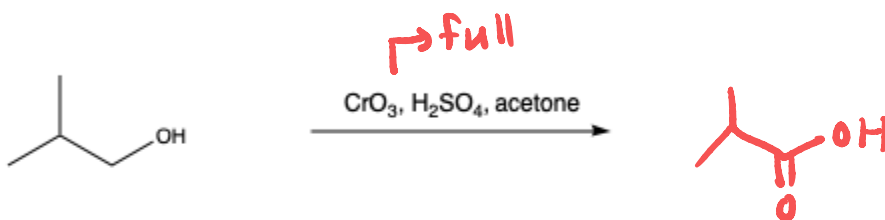
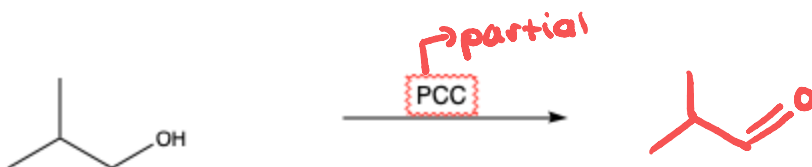


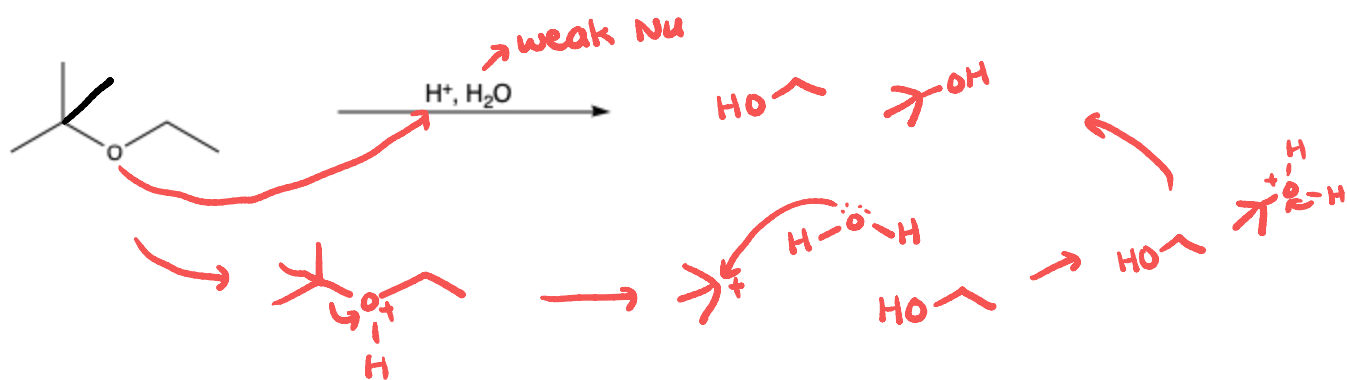
diethyl ether



ethoxycyclohexane

10. Give the product(s) of the following reactions





11. Draw a [24]crown-8

