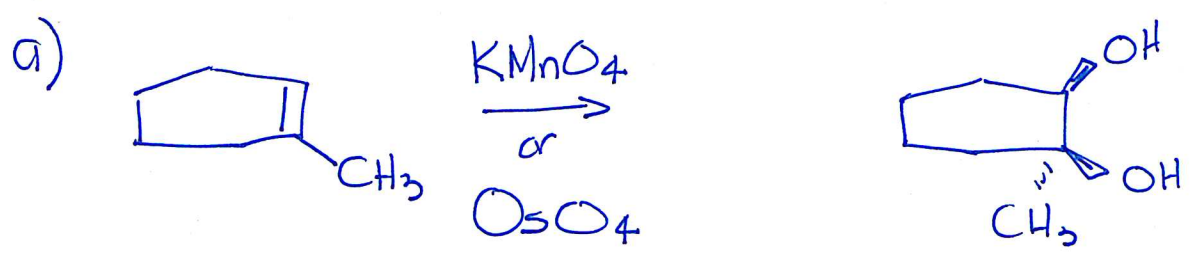
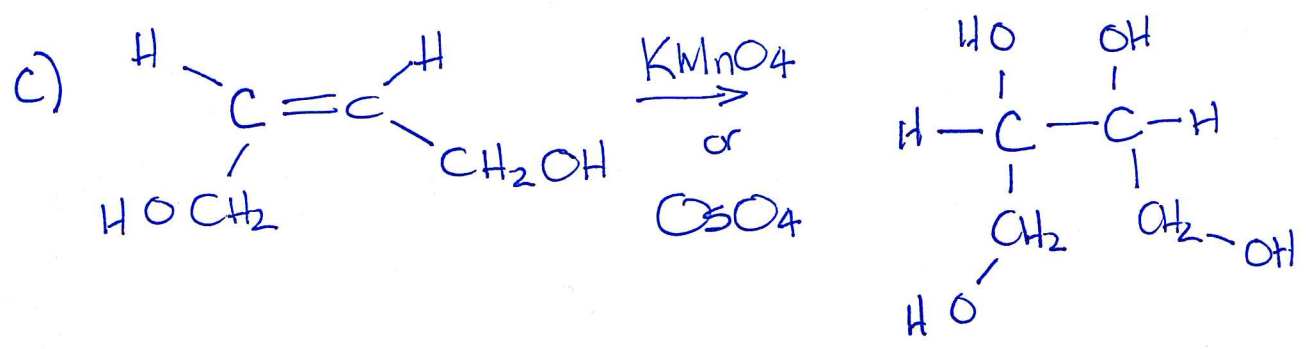
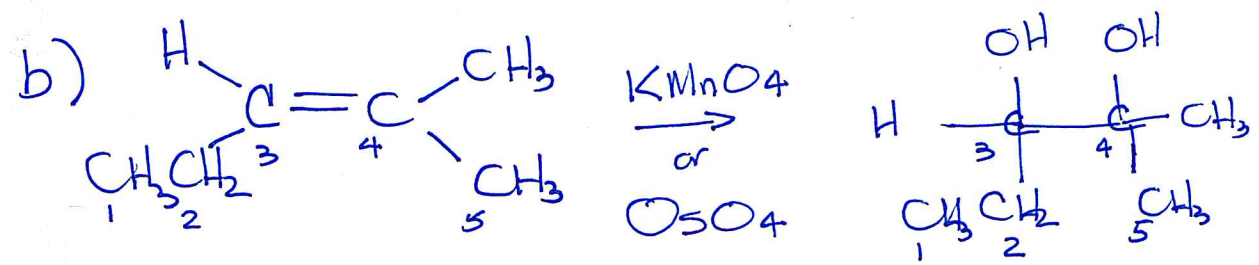


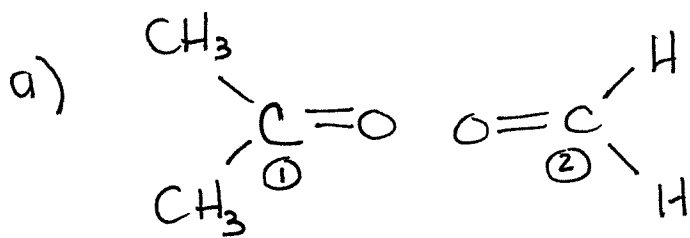
8.14



oxidation occurs to give cis-diol

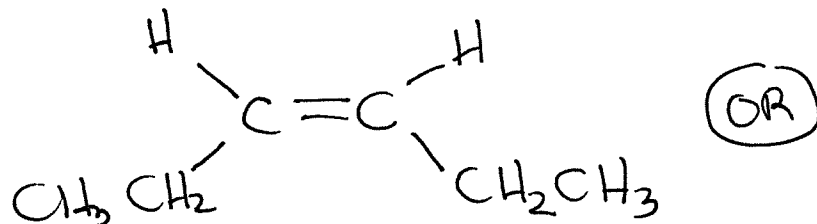
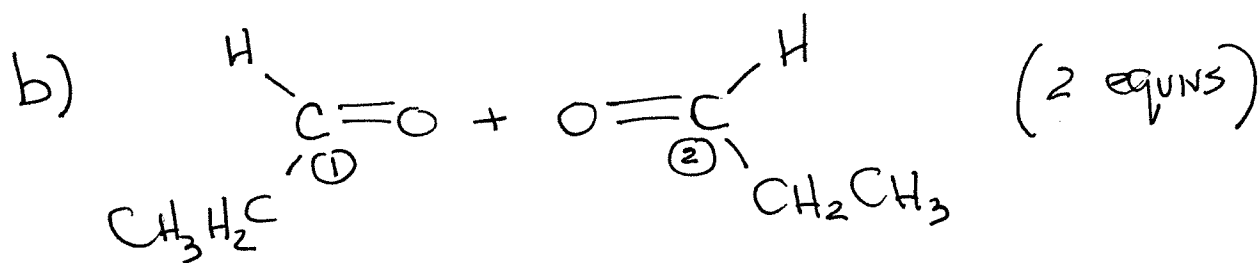
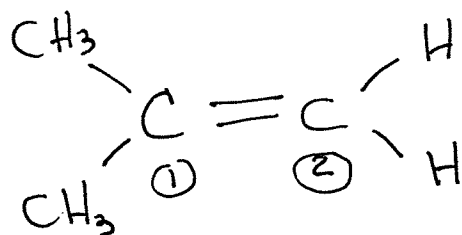


8.16

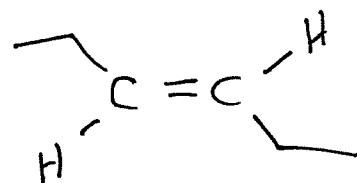


C₁ and C₂ are derived from the carbons of the alkene functional group in the starting material.

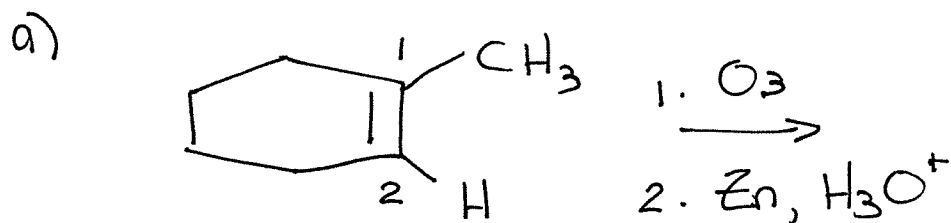
The alkene starting material has 2 sp² carbons. Each of these carbons ends up as the carbonyl carbon in the product(s)



Starting alkene could be E or Z

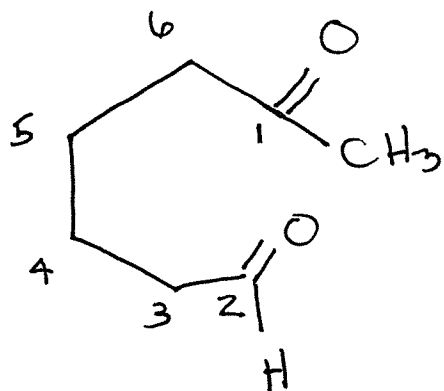


8.28a

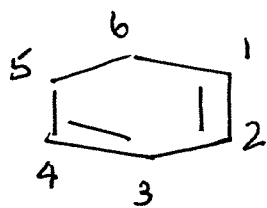


In the ozonolysis, each of the two carbons of the alkene are oxidized to an aldehyde or ketone, depending on the substituents of the alkene

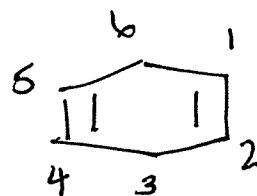
The alkene bonds break in the process



8.45

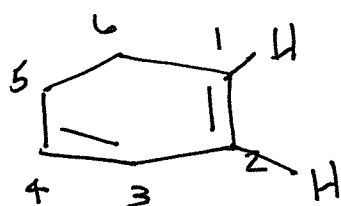


A



B

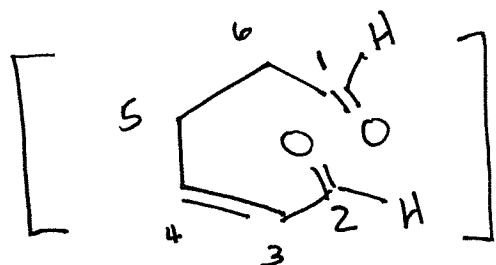
Oxidative cleavage of A would give a different set of products than oxidative cleavage of B. Analysis of these products by IR, NMR and mass spectrometry would allow the two diene starting materials to be distinguished.



Both the C₁-C₂ alkene and the C₃-C₄ alkene react w/

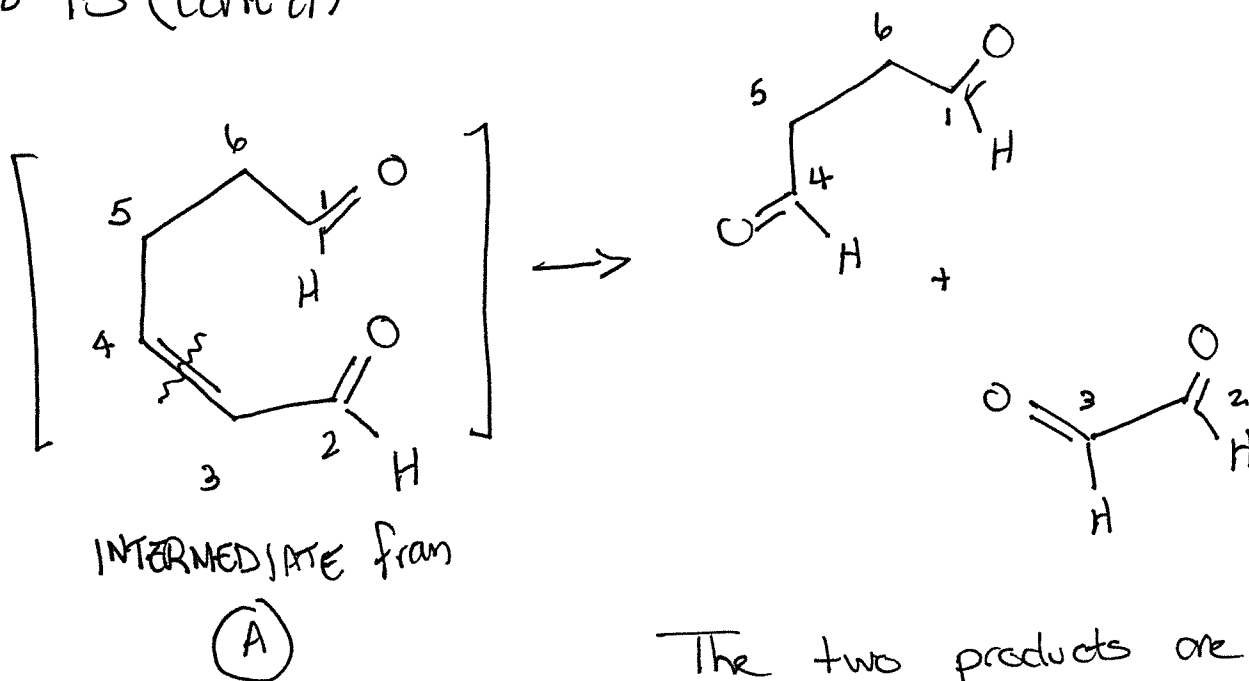
1. O₃
2. Zn, H₃O⁺

to give carbonyl products



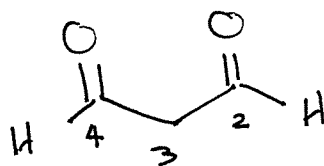
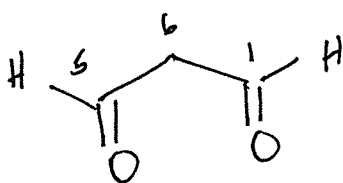
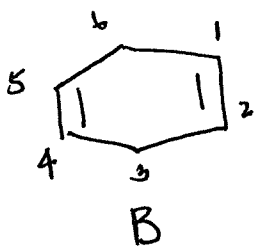
This is an INTERMEDIATE that would form from C₁-C₂ reaction.....

8.45 (cont'd)



The two products are generated as FINAL products in the oxidative cleavage of (A)

Both the C₁-C₂ and C₄-C₅ alkenes undergo oxidative cleavage in an ozonolysis

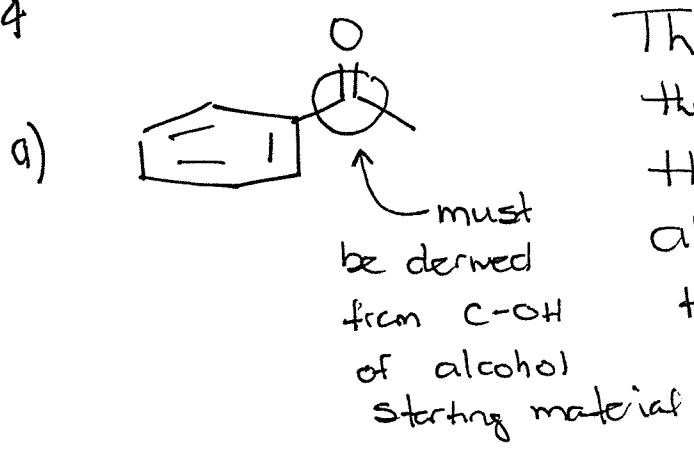


So A : B can be distinguished by the # of products formed in the oxidative cleavage. A has 2, B has 1.

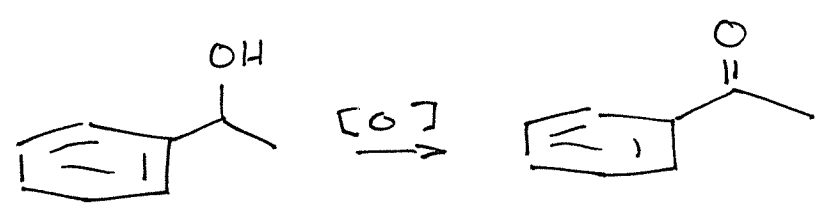
These are EXACTLY the same product.

One product is generated in the oxidative cleavage of (B)

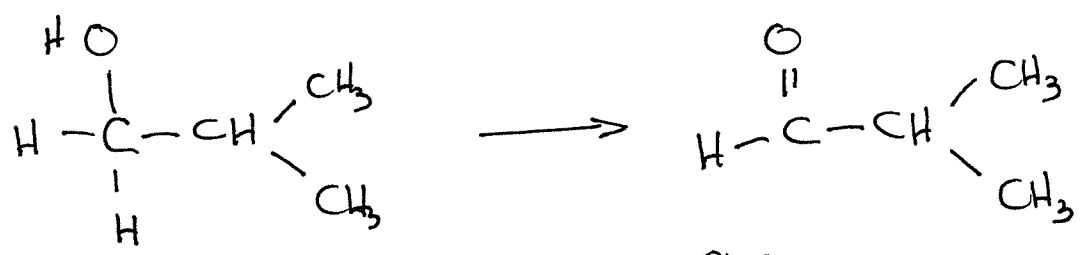
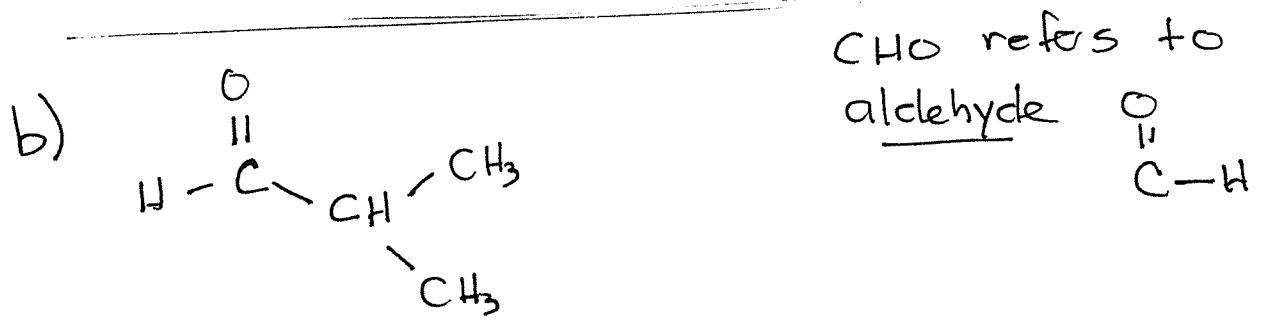
17.14



The carbonyl carbon of the product is derived from the C atom of the alcohol (i.e. sp^3C bonded to OH)

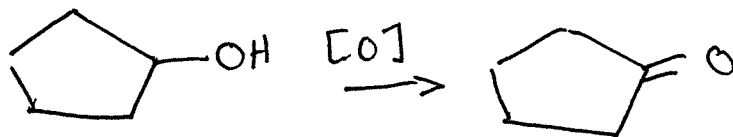


could use....
 PCC or PDC
 Jones or $Na_2Cr_2O_7$



could use PCC or PDC
NOT Jones or $Na_2Cr_2O_7$

17.14 (cont'd)



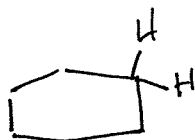
could use

PCC or PDC

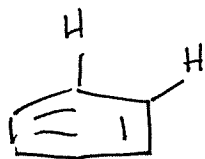
Jones or $\text{Na}_2\text{Cr}_2\text{O}_7$

10.12

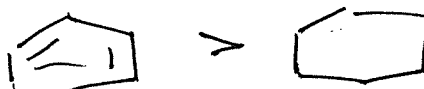
9) Consider all carbons and all H/O bonds to the carbons in this set of compounds.

 C_6H_{12}

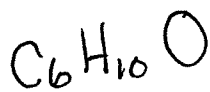
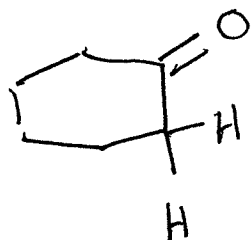
All 6 carbons are bonded to 2 H

 C_6H_6

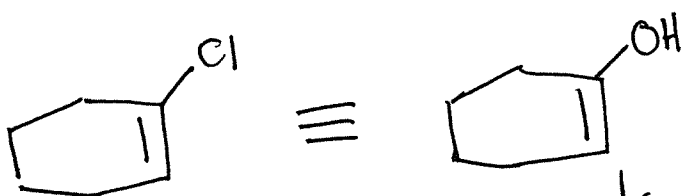
All 6 carbons are bonded to 1 H

Benzene is more oxidized b/c fewer Hs

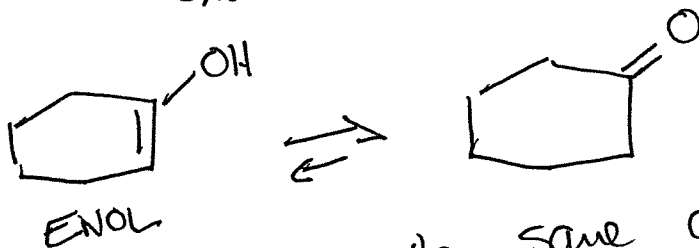
10.12 (cont'd)



5 carbons bonded
to 2 hydrogens
1 carbon bonded
to 1 oxygen



These two compounds
have the SAME
oxidation state

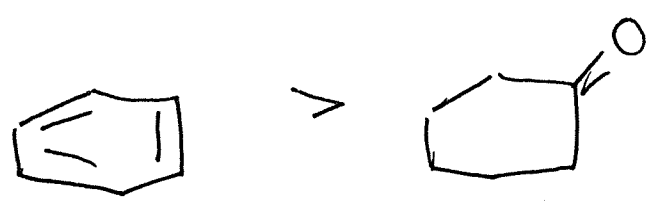


This enol
state as cyclohexanone
has the same oxidation

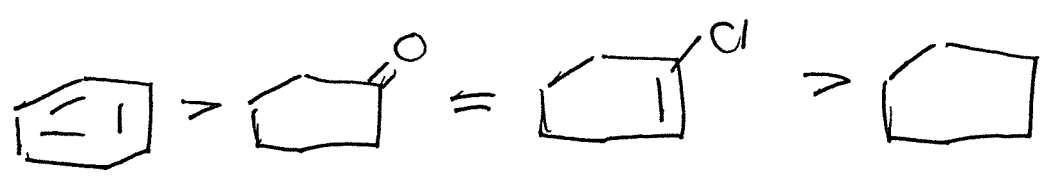


SAME OXIDATION
STATE

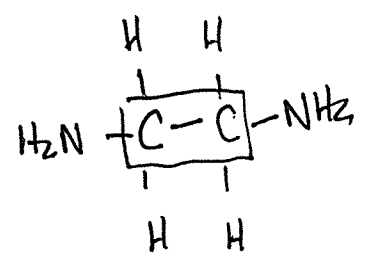
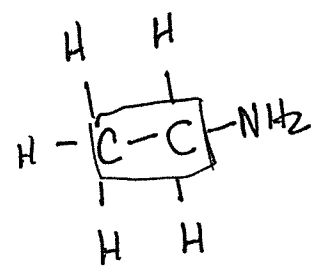
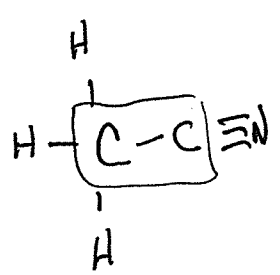
10.12 (cont'd)



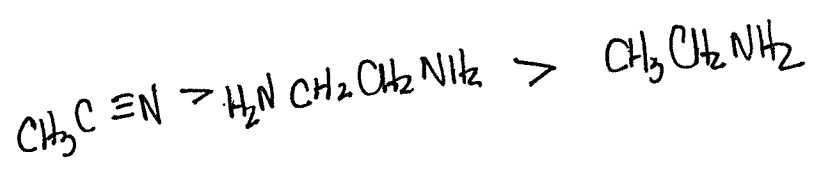
1 C oxidized as ketone in cyclohexanone, but all 6 C in benzene "partially" oxidized.



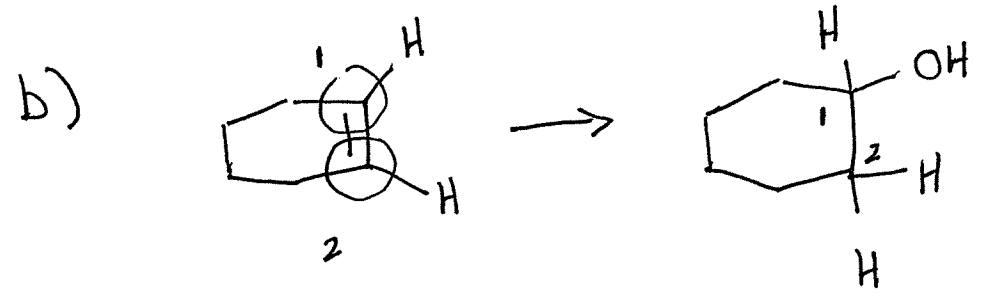
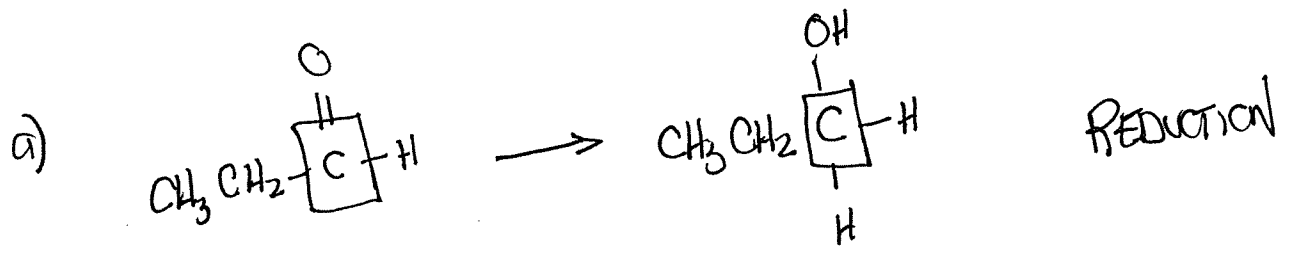
b)



Follow oxidation state of carbons
 Fewest H, more oxidized.

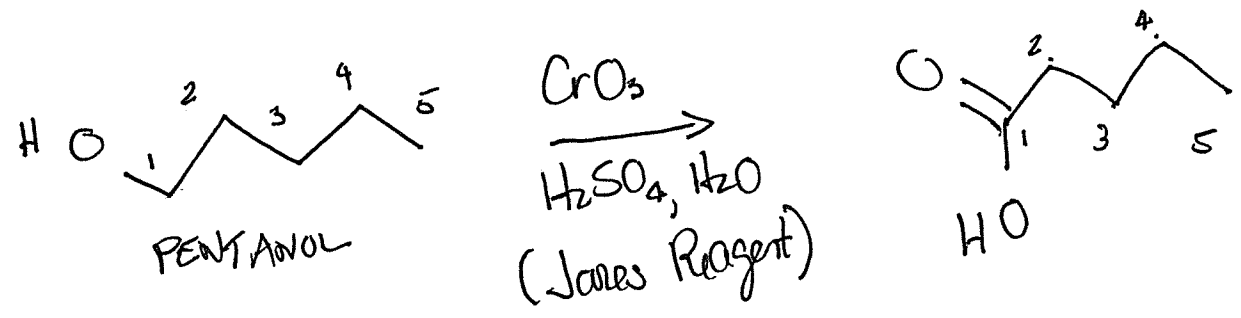


10.13



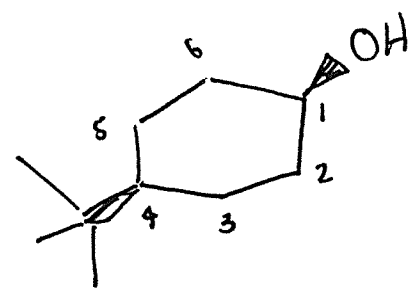
C_1 is oxidized (\uparrow bonds to O)
 C_2 is reduced (\uparrow bonds to H)
 NET result is NO change (NEITHER)

17.34c

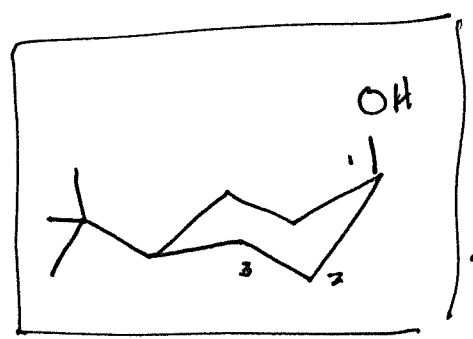


1° Alcohol of 1-pentanol is oxidized to a carboxylic acid with Jones reagent

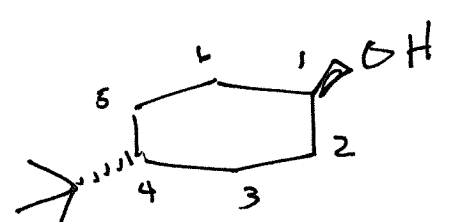
17.62



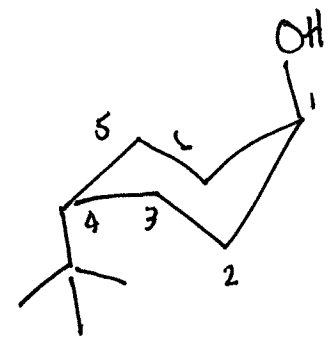
cis-tert-butyl
cyclohexanol



For oxidation of the alcohol, alcohol should be axial
 Ideally, want the t-Bu equatorial when the OH is axial since this is the more stable (predominant) conformation.



trans-tert-butyl
cyclohexanol



In the trans isomer, cannot get OH axial AND t-Bu equatorial. Therefore, the cis isomer is better set up for oxidation and would occur faster.