CHM 234, Spring 2018

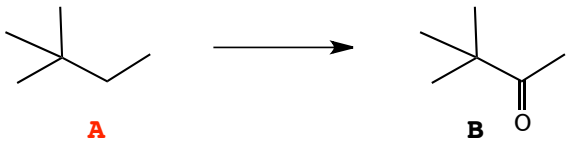
QUIZ #3 ANSWER KEY

(hit the RETURN Button to return to the Main Quiz Page)

QUESTION 1

MC28t

What are the best reagents/conditions to perform the following simple synthesis?



A

1. NBS/hν
2. K^+ $^-$O-t-Bu
3. Br_2
4. Excess $NaNH_2$
5. H_2O
6. $HgSO_4/H_2SO_4/H_2O$

B

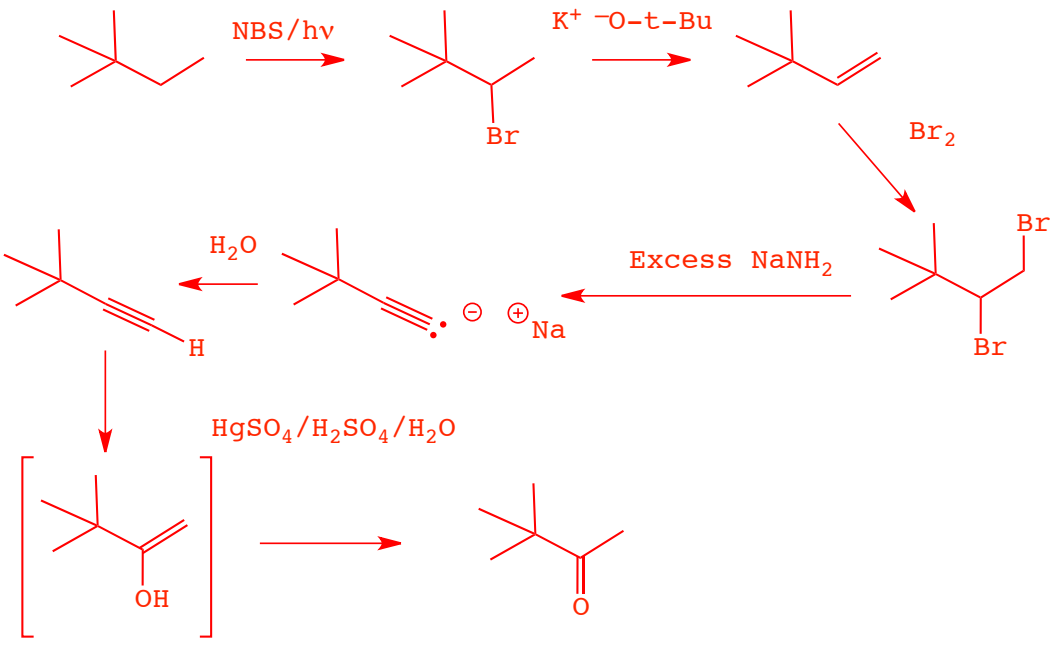
1. Br_2/hν
2. Na^+ $^-$OMe
3. Br_2
4. Excess $NaNH_2$
5. H_2O
6. $HgSO_4/H_2SO_4/H_2O$

C

1. NBS/hν
2. Na^+ $^-$OMe
3. Br_2
4. Excess $NaNH_2$
5. H_2O
6. $HgSO_4/H_2SO_4/H_2O$

D

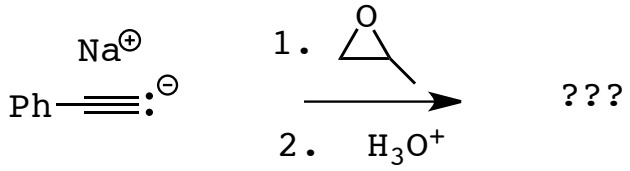
1. NBS/hν
2. K^+ $^-$O-t-Bu
3. 2 Equiv. HBr
4. Excess $NaNH_2$
5. H_2O
6. $HgSO_4/H_2SO_4/H_2O$

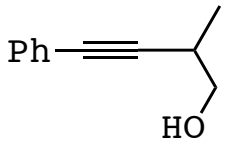


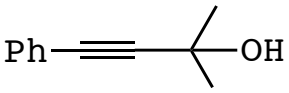
QUESTION 2

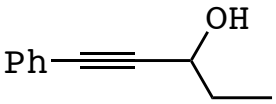
MC28s

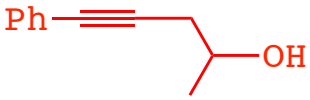
Give the product of the following reaction

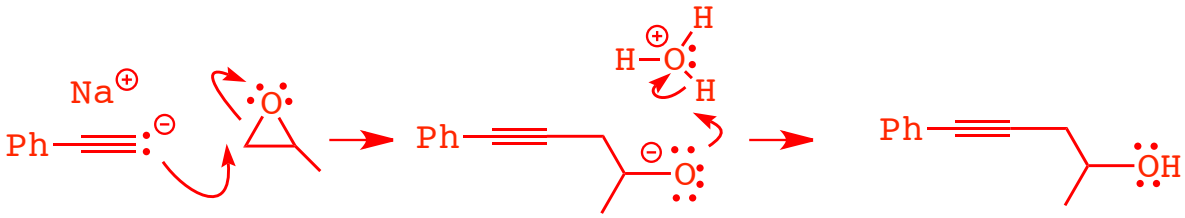


A 

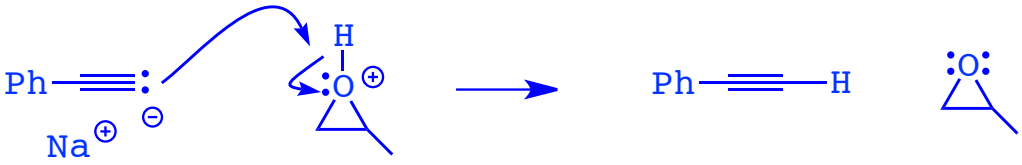
C 

B 

D 



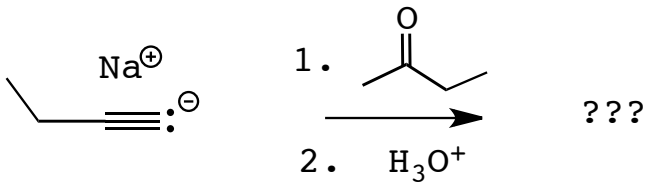
the acetylide anion attacks LEAST substituted end for steric reasons, there is no ELECTRONIC reason to atatck the most substituted end as there would be if the oxygen were protonated, although in that case it still wouldn't actually attack the most substituted end, the acetylide would simply remove the proton from the oxygen!

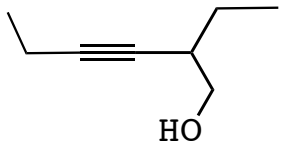


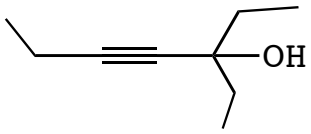
QUESTION 3

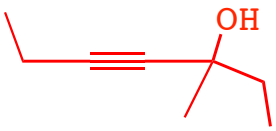
MC28y

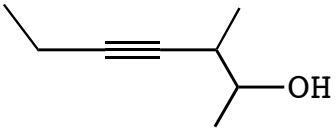
Give the product of the following reaction

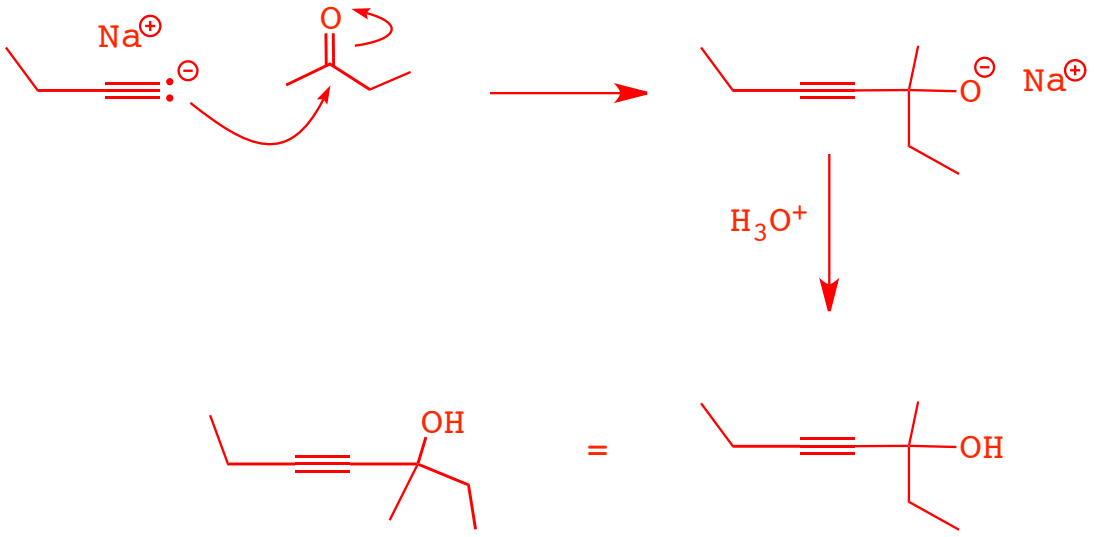


A 

C 

B 

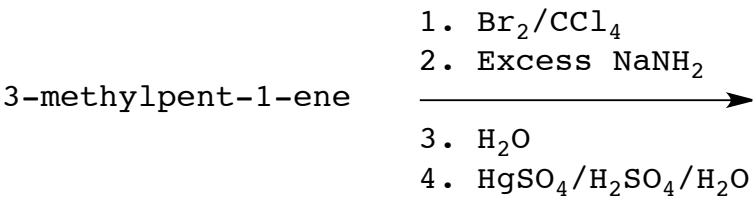
D 

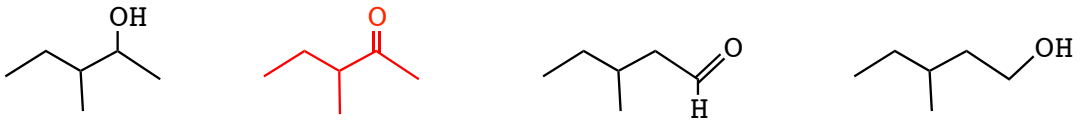


QUESTION 4

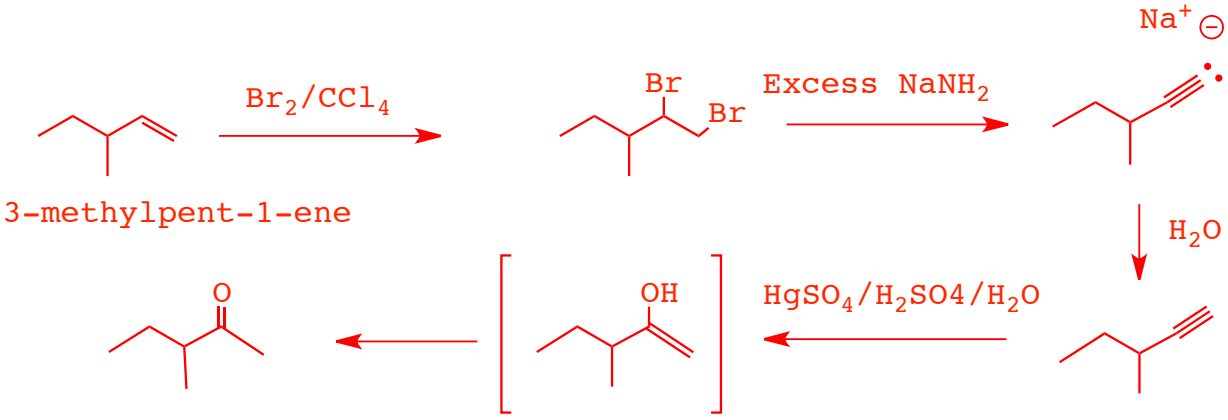
Which will be the product of the following reaction sequence?

MC281





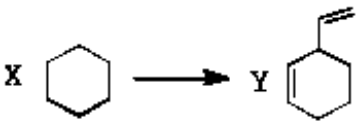
A B C D



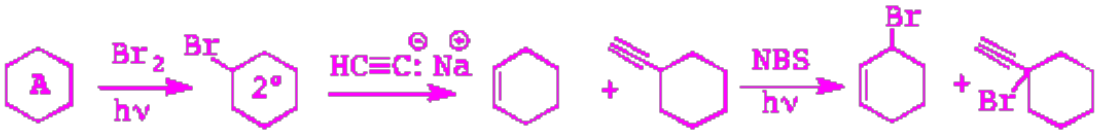
QUESTION 5

MC28k

Which represents the best synthesis of Y from X?

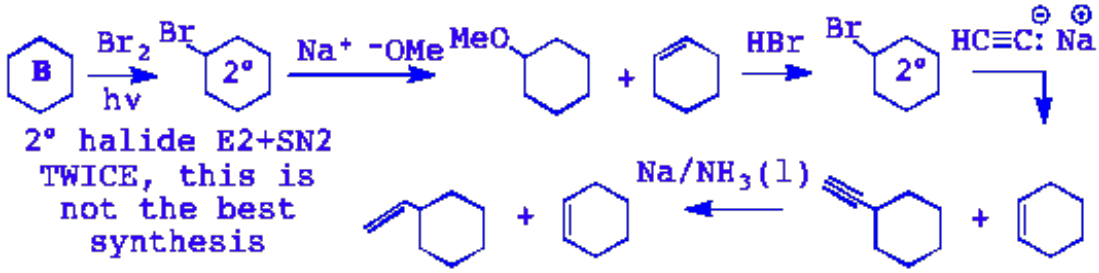


A	B	C	D
1. Br_2/hν	1. Br_2/hν	1. Br_2/hν	1. Br_2/hν
2. $HC{\equiv}C^-$ ^+Na	2. Na^+ ^-OMe	2. t-BuO^- ^+K	2. t-BuO^- ^+K
3. NBS/hν	3. HBr/ROOR	3. HBr/ROOR	3. NBS/hν
4. $HC{\equiv}C^-$ ^+Na	4. $HC{\equiv}C^-$ ^+Na	4. $HC{\equiv}C^-$ ^+Na	4. $HC{\equiv}C^-$ ^+Na
5. H_2/Pd/C	5. $Na/NH_3(l)$	5. H_2/Lindlar	5. $Na/NH_3(l)$

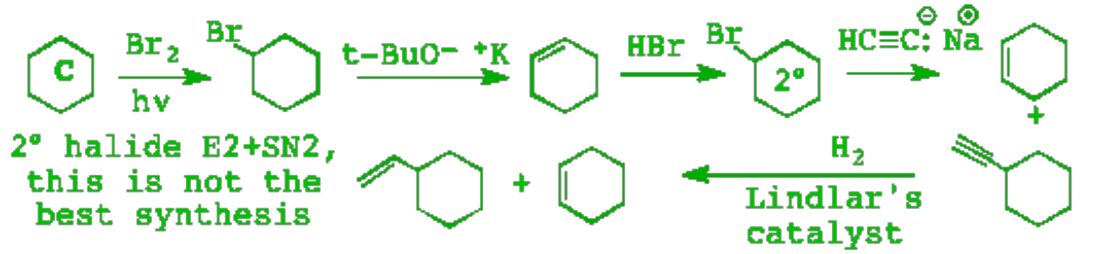


2° halide E2+SN2, this is not the best synthesis

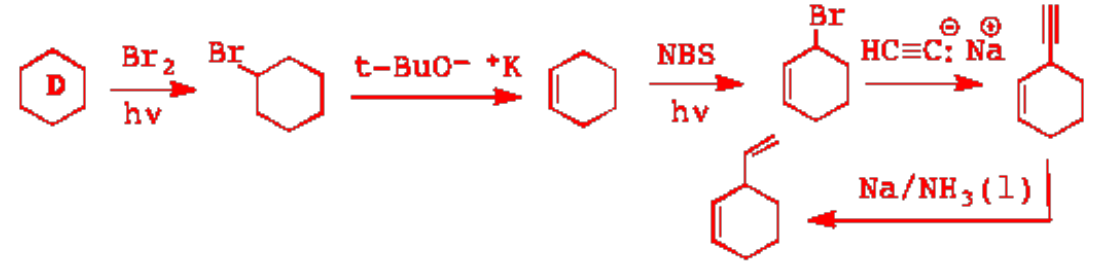
after this it is a mess!



2° halide E2+SN2 TWICE, this is not the best synthesis



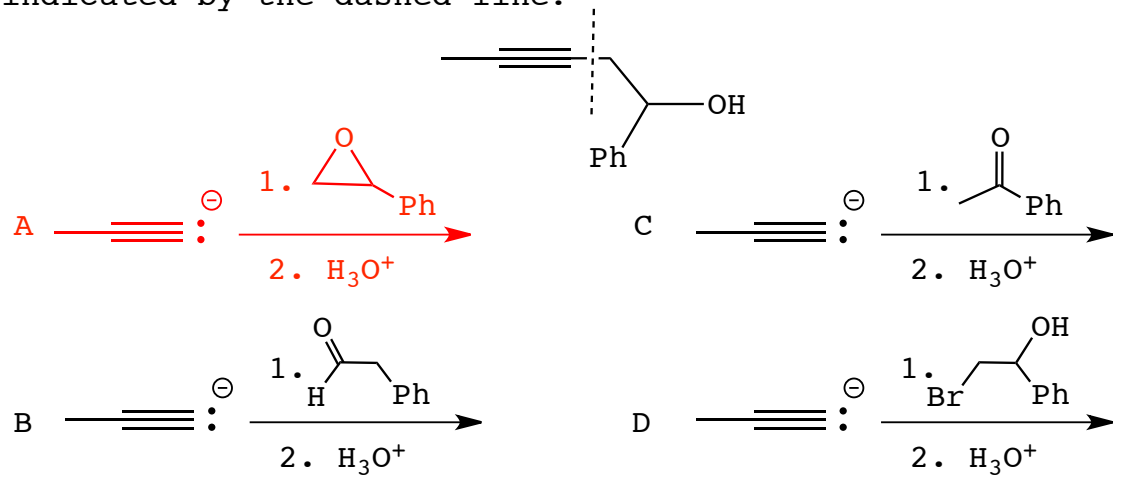
2° halide E2+SN2, this is not the best synthesis

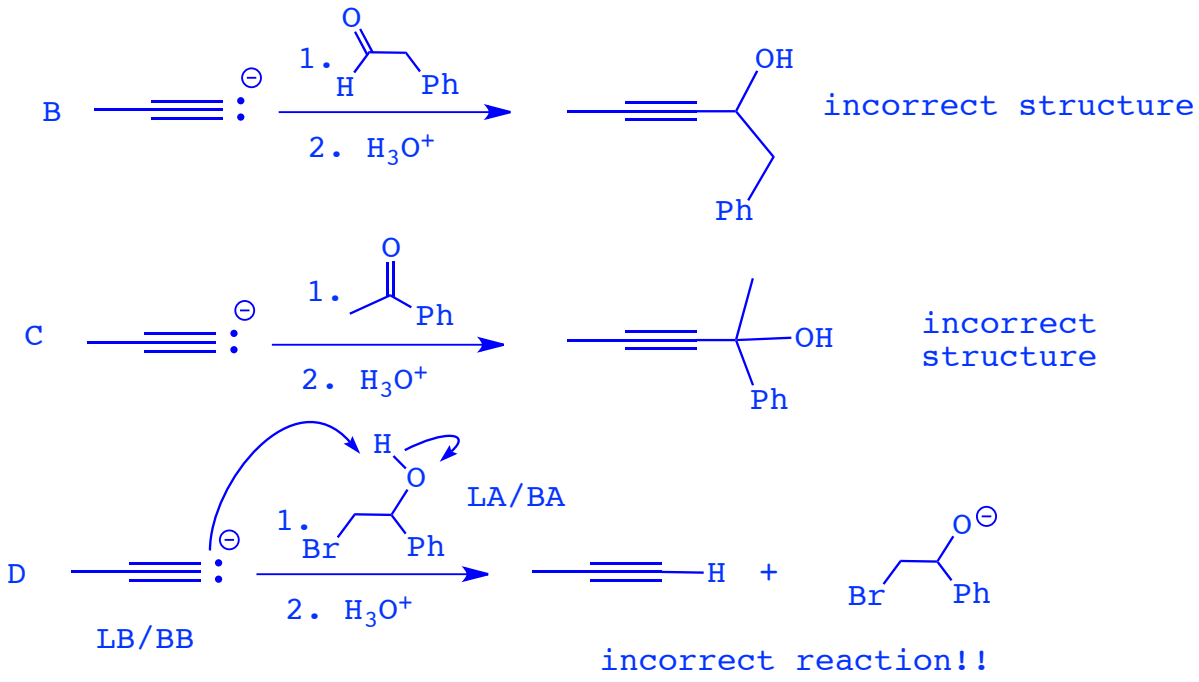


QUESTION 6

MC28o

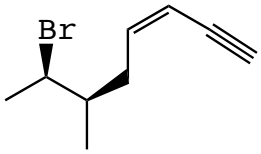
Which of the following rections will make the bond indicated by the dashed line?





QUESTION 7

Which is the correct IUPAC name for the following structure?



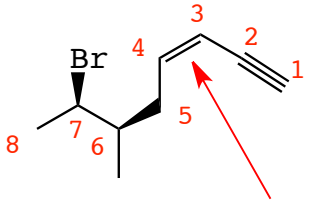
MC28e

A. (2R)-bromo-(3R)-methyloct-(5Z)-en-7-yne

B. (7S)-bromo-(6S)-methyloct-(3Z)-en-1-yne

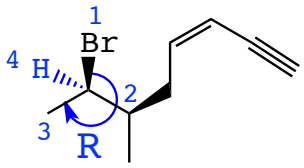
C. (2S)-bromo-(3S)-methyloct-(5E)-en-7-yne

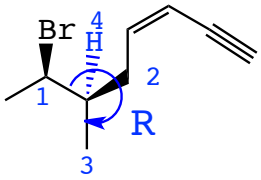
D. (7R)-bromo-(6R)-methyloct-(3Z)-en-1-yne



longest chain that CONTAINS the functional groups, number to give the alkene lowest number

Z-alkene (or in this case, cis- would also be unambiguous)

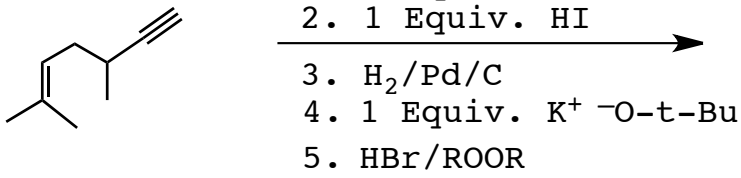


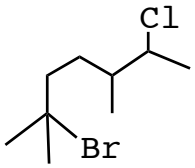


QUESTION 8

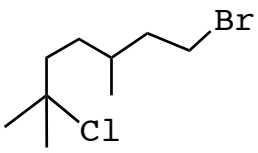
MC28i

Which best describes the products of the following reaction sequence? Stereochemistry is ignored in this problem.

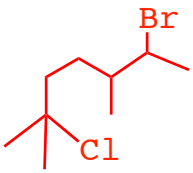




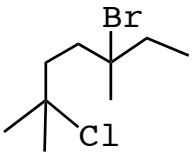
A



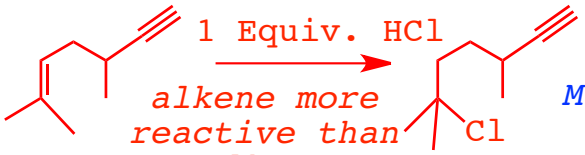
B

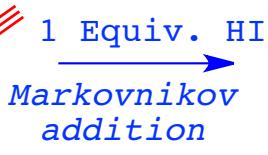


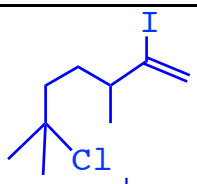
C

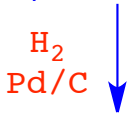


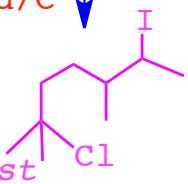
D

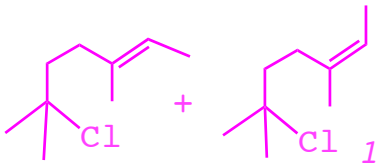






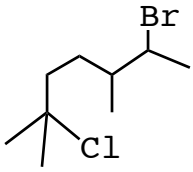






1 Equiv. K^+ $^-$O-t-Bu

HBr/ROOR



1. t-butoxide gives the most substituted alkene here (Sayetzeff) with the secondary halide, it would have given the least substituted (Hoffmann) alkene if the halide had been tertiary
2. iodide is a better leaving group than chloride
3. both cis- and trans-alkenes must be formed

luckily stereoisomers have been ignored througout this problem, we will have a horrible mixture of diastereomers and enantiomers by now