

/60 = %

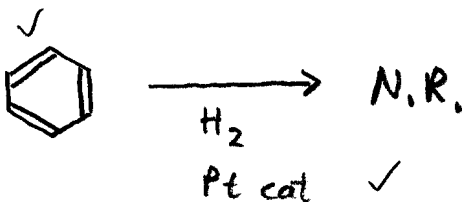
Name: \_\_\_\_\_

Organic Chemistry - SCH 4U  
Reactions Test

1. Give brief point form definitions for:

conjugated double bonds	alternate double and single bonds
electronic resonance	bond bonds can flip position
resonance stabilization	lower energy position resulting from elec. resonance
delocalized electrons	electrons that can move location

Draw a common structure to which the above definitions apply. How does this affect the reactivity of the "double bonds" present in this structure? Give a specific example



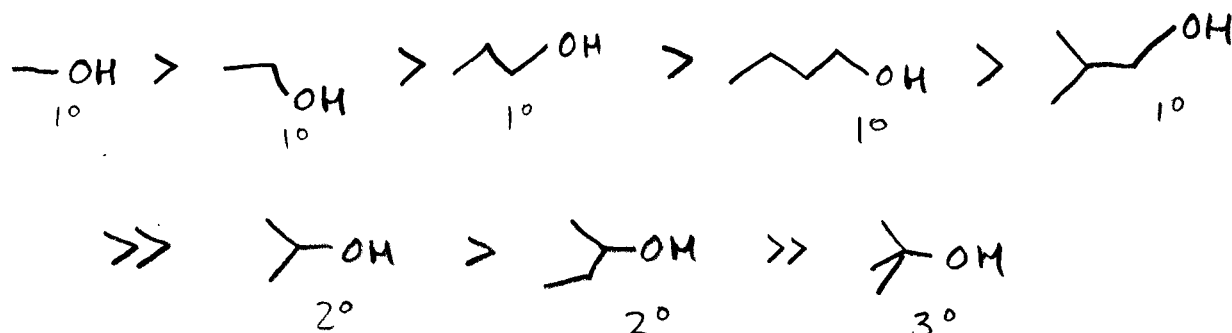
the aromatic double bonds (more like bond and a half) are much less ✓  
reaction (due to resonance stabilization)

4

3

7

2. Consider the reaction between an alcohol and sodium metal. In this reaction, the alcohol group must come into contact with the surface of the sodium metal in order to react. Draw in order of **DECREASING** reactivity all alcohols that are four carbons or less (total of 8 different alcohols). Label each alcohol carbon as 1°, 2° or 3° as appropriate. State the principle at work, and provide two details for this principle. Do not consider any impurities in the alcohols or alternate reaction pathways when answering this question.

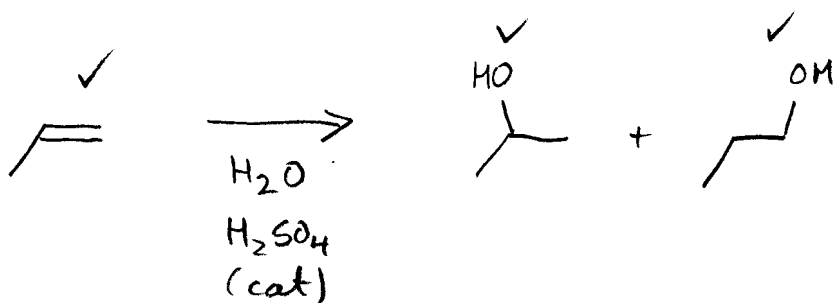


### Steric Hindrance ✓

- non-reactive portion of a molecule blocks the reactive site ✓
- degree of reactive center, higher degree, greater blocking, slower reaction ✓
- length of carbon chains, longer chains, greater blocking, slower reaction ✓
- degree matters more than chain length

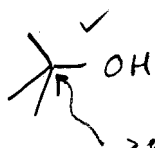
3. What are the requirements for an asymmetric addition to alkenes. Write an example reaction that will result in an asymmetric addition (with two possible products).

- asymmetric alkene ✓
- asymmetric molecule is added ✓



5

4. Why are third degree alcohols non-reactive to oxidation reactions? (Hint, this does not have anything to do with steric hindrance). Explain with reference to the structure of a third degree alcohol the observed reactivity.



3° center has no hydrogen present ✓

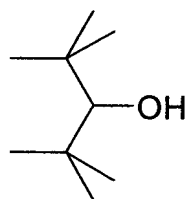
∴ no carbonyl bond is possible ✓

(no C=O can form)

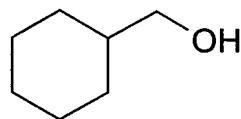
3

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5. What class of compounds will form when each of the following alcohols is oxidized?



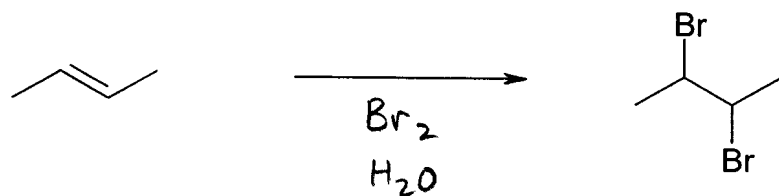
ketone



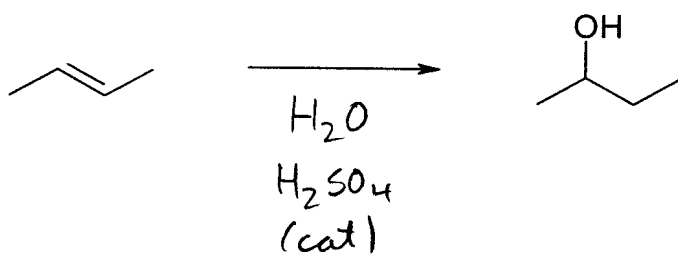
carboxylic acid

1/2

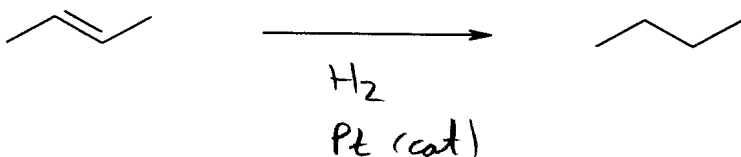
6. Complete each reaction sequence by adding products, reactants or reaction conditions as appropriate.



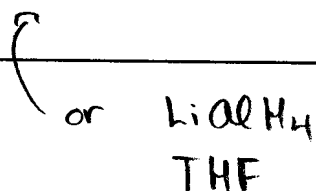
1



1

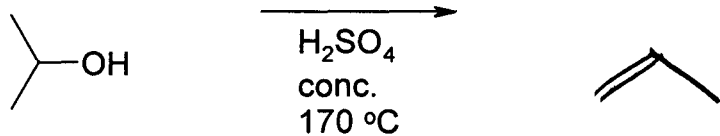


1/3

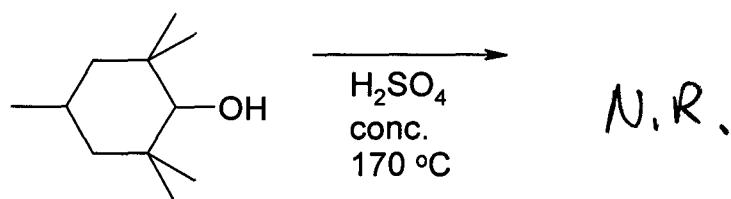


1

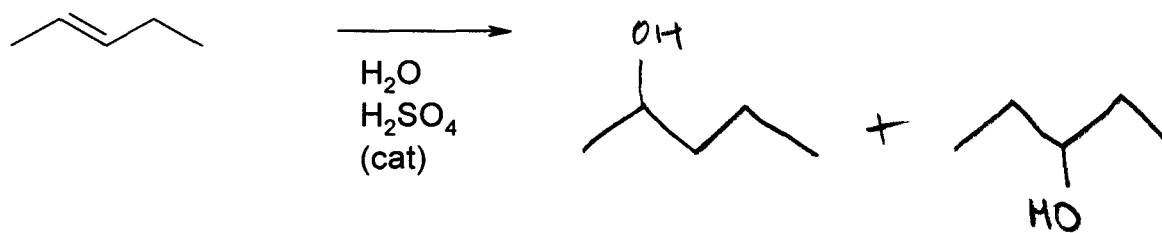
1/5



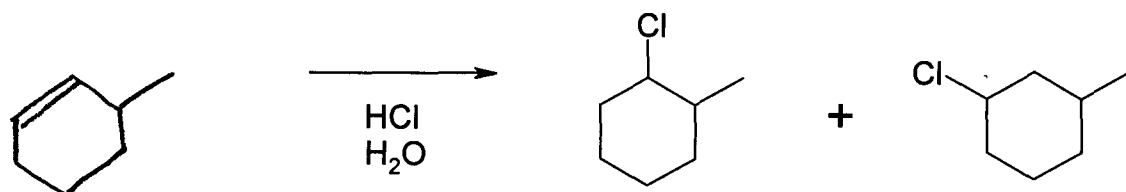
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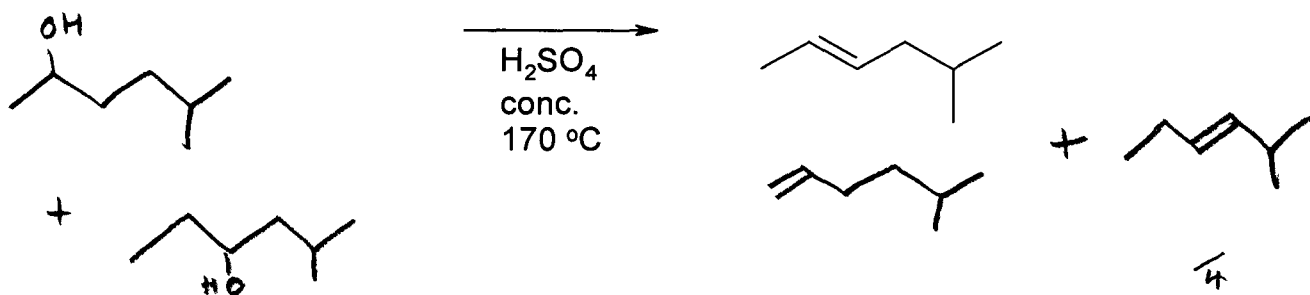
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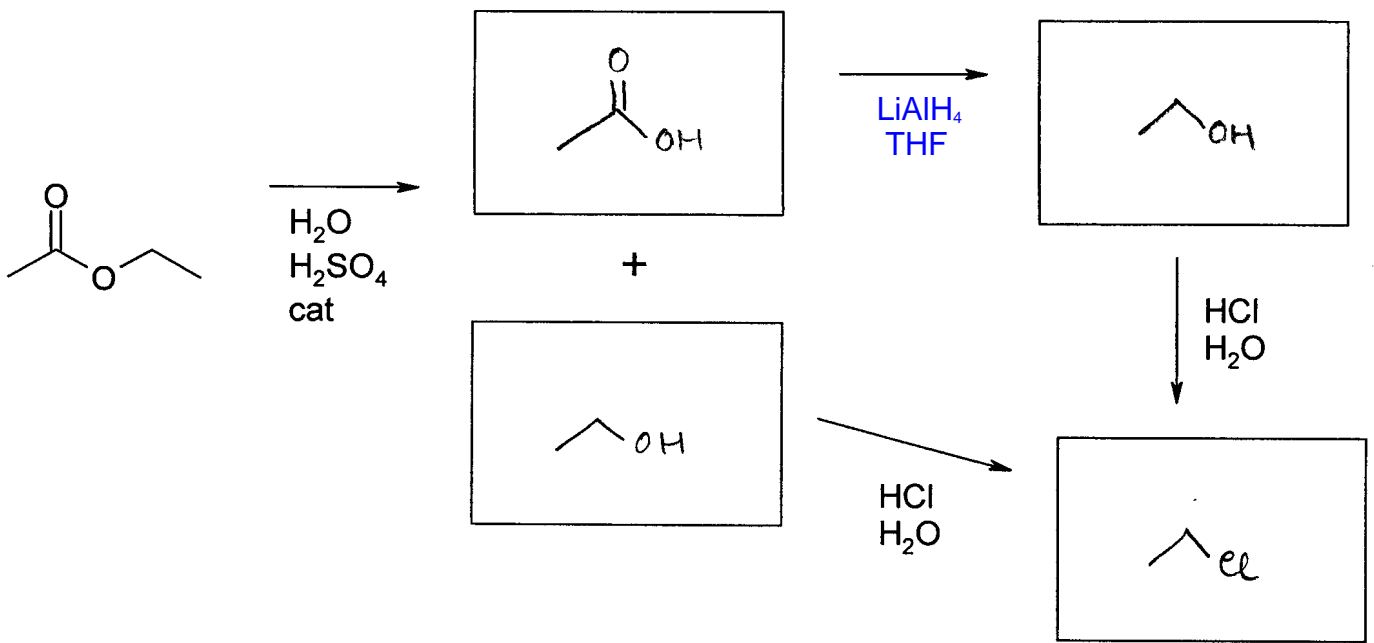
2



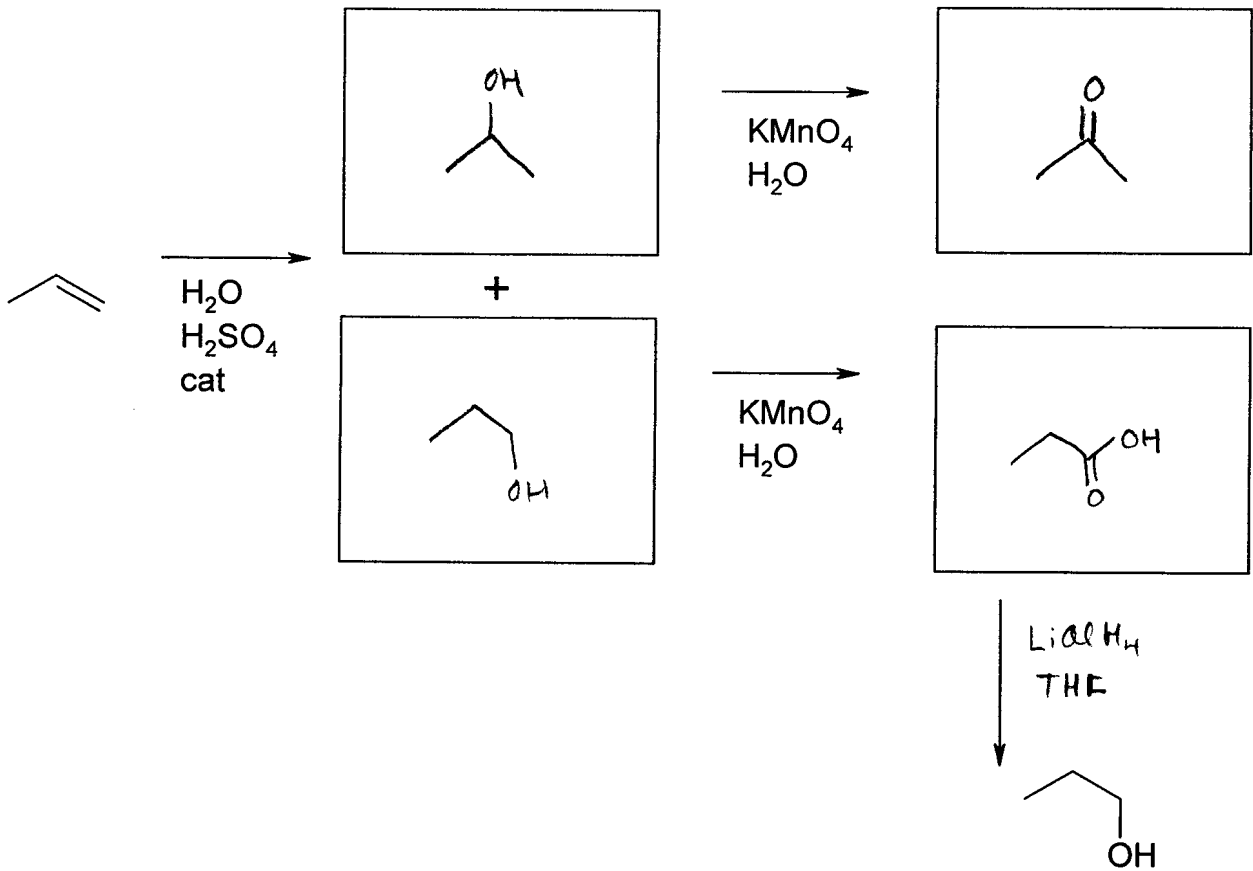
1



4



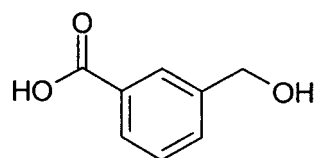
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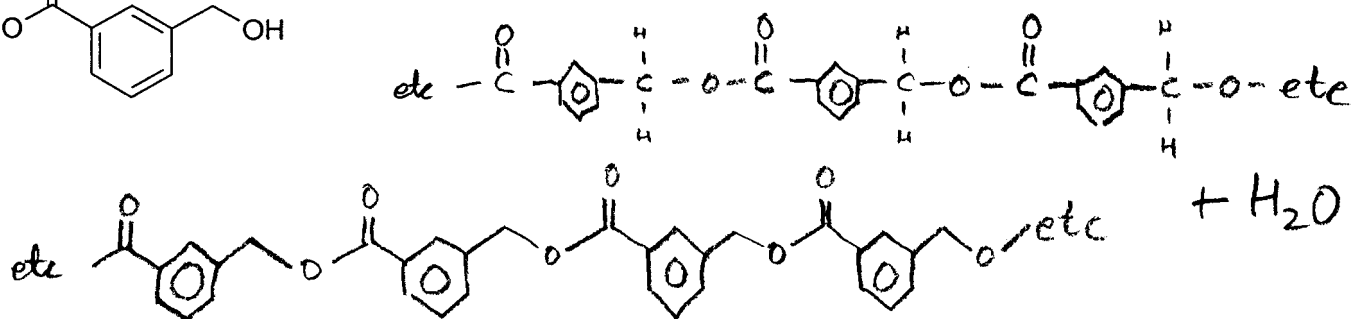
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/9

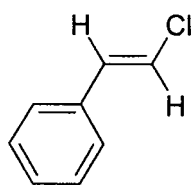
7. For the following monomers, write:
- whether the monomer will undergo an addition or condensation polymerization
  - a polymer structure that is at least four monomer units long
  - necessary reaction condition for addition reactions
  - stable by-product for condensation reactions
- It may be helpful to show all carbons and all hydrogens and draw your structure straight (as in not with a zig zag)



type: condensation

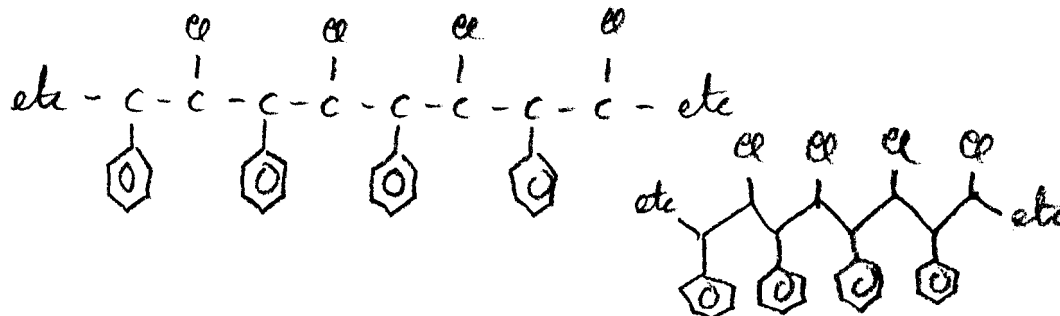


4

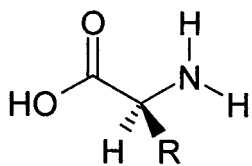


type: addition

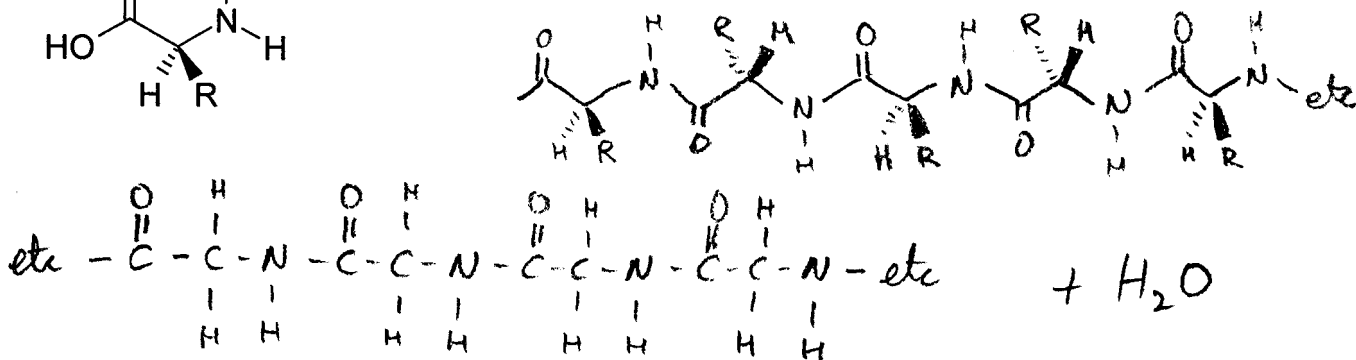
free radical initiator



4



type: condensation



4