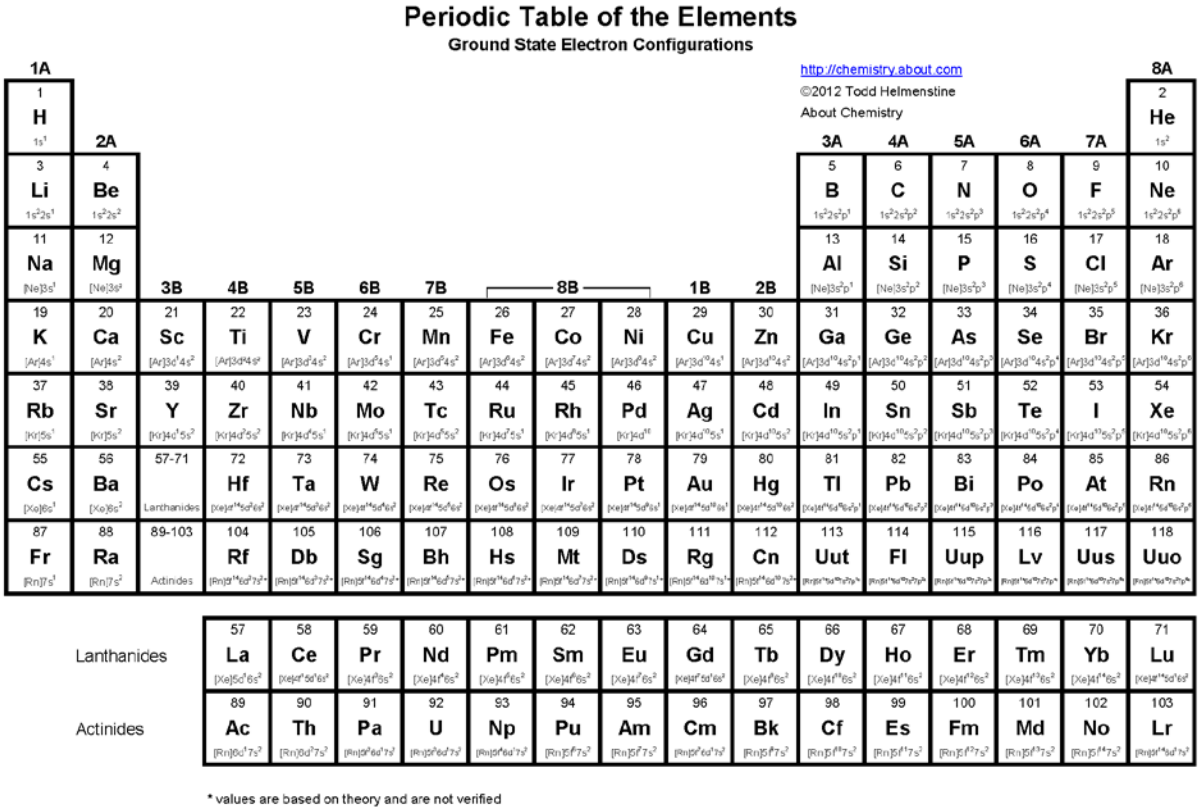
Your Name _____

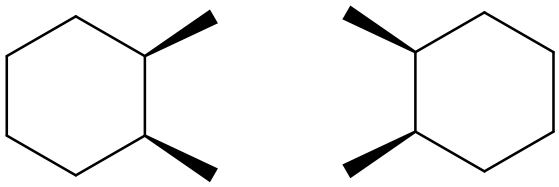
Lab Instructor Belyayeva Malek Mollica

ORGANIC CHEMISTRY FOR HEALTH AND NUTRITION
MIDTERM II
April 20, 2016



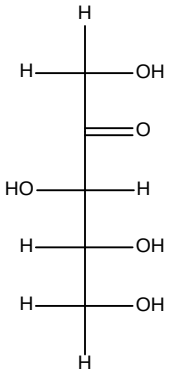
Good luck on this exam!
Please try to relax. Remember it is your job to simply SHOW ME WHAT YOU KNOW.

1. What is the relationship between the following two molecules? Are they identical, constitutional isomers, enantiomers or diasteriomers? (5 pts)

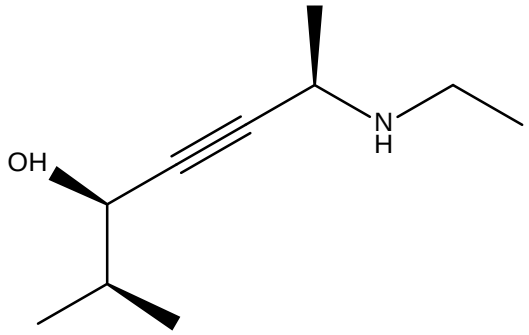


2. What is the relationship between the following two molecules? Are they identical, constitutional isomers, enantiomers or diasteriomers? (5 pts)

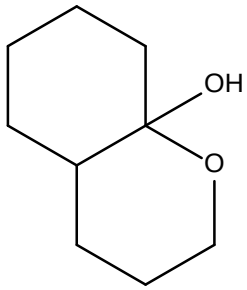
3. Label each chiral center in the molecule below with a star. (5 pts)



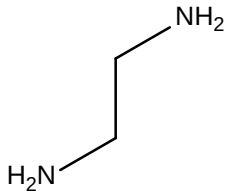
4. Determine the R/S configuration of all chiral centers in the molecule shown below. Make sure to clearly indicate the priority (1, 2, 3 or 4) of each group attached to a chiral carbon. (12 pts)

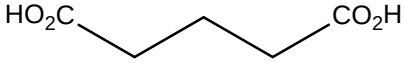


5. Which functional group (acetal or hemiacetal) is shown below? (12 pts)
Draw the structure of the ketone/aldehyde plus alcohol(s) that were used to synthesize it.



6. Draw the structure of the polymer that would form upon polymerization of the following two compounds *with each other*. (6 pts)





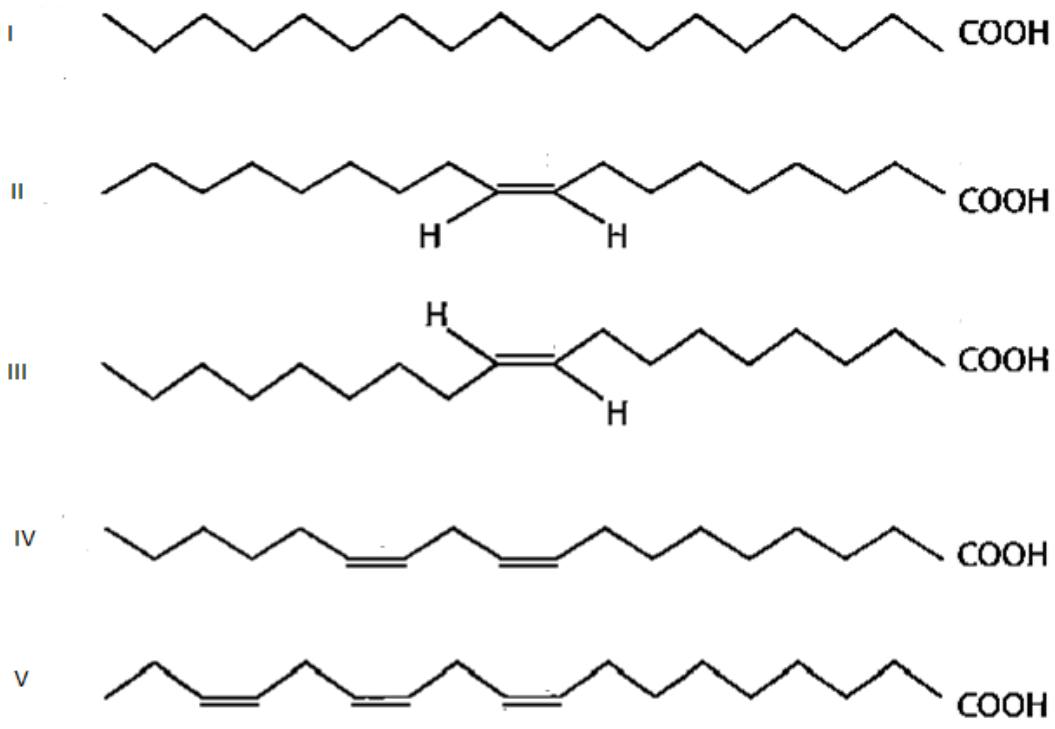
7. Four fatty acids are shown below. Each has 18 carbons: (10 pts)

   a. Which of the four has the highest melting point?

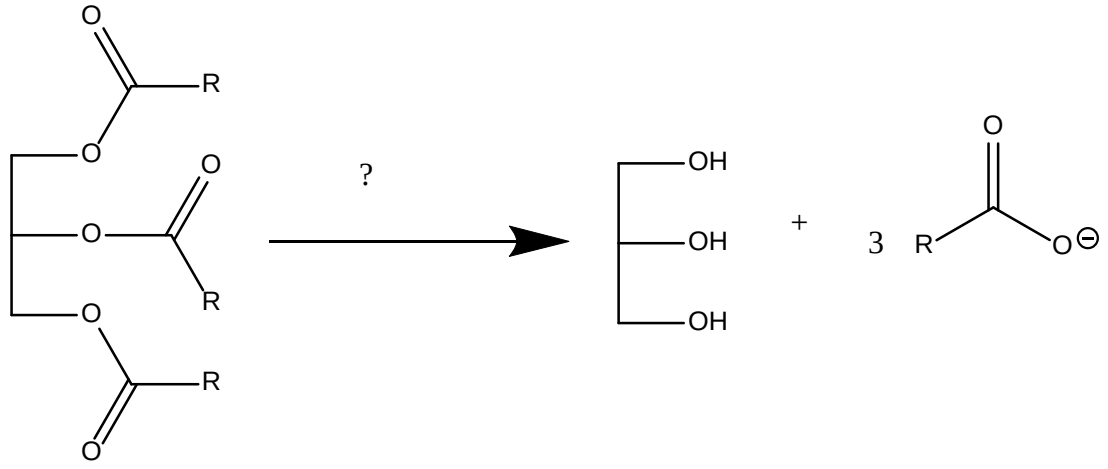
   b. Which is most likely to be a liquid at room temperature?

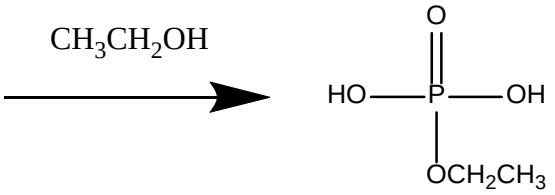
   c. Which is most likely to be synthetic or man-made?

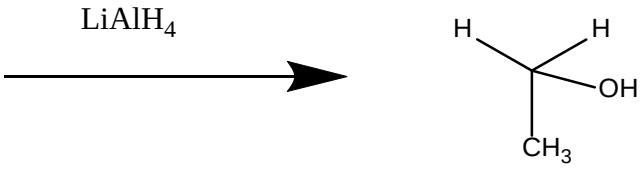
   d. Which is/are omega-9 fatty acid(s)?

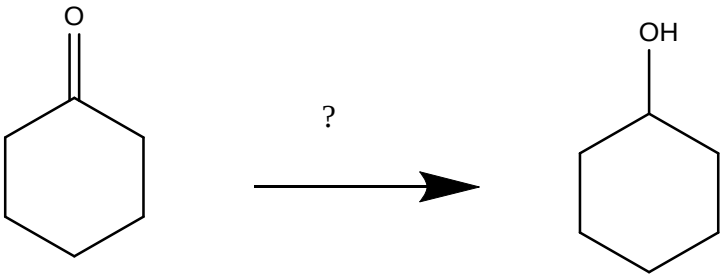


8. Fill in the missing reagent(s) needed to accomplish each of the following reactions. (20 pts)

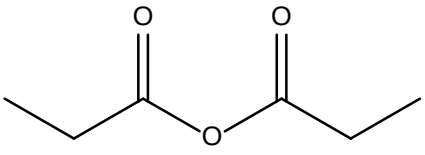
a. 

b. ? 

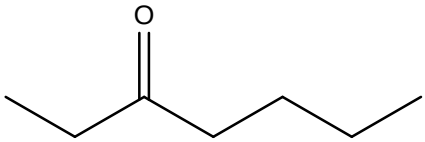
c. ? 

d. 

9. Give the product(s) of each of the following reactions. (25 pts)

a. 

2 equivalents CH_3CH_2OH →

b. 

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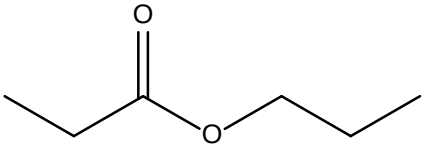
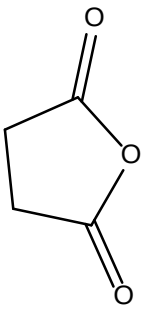
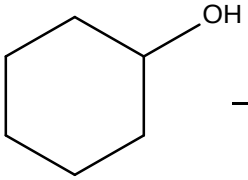
c. 

1 equivalent CH_3CH_2OH →

d. 

2 equivalents NH_3 →

e. 

$Ag(NH_3)_2^+$ →

key

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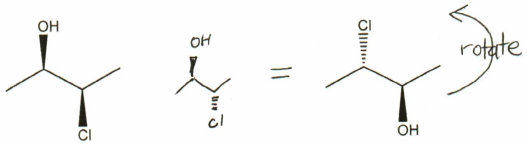

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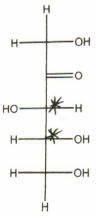

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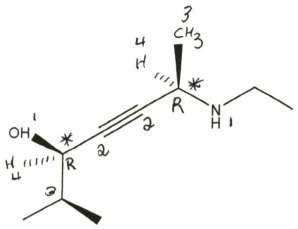

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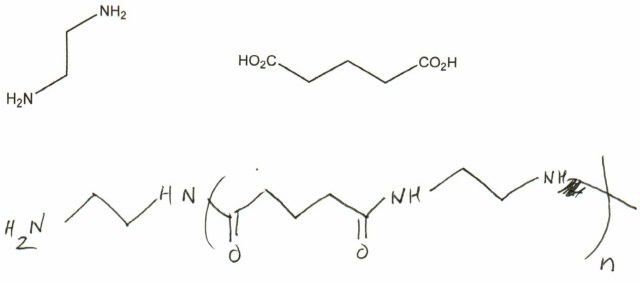

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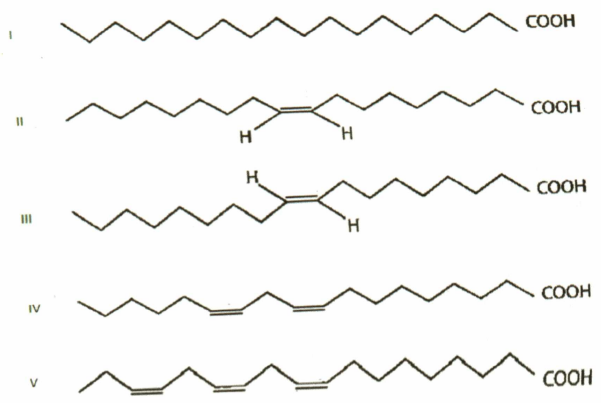

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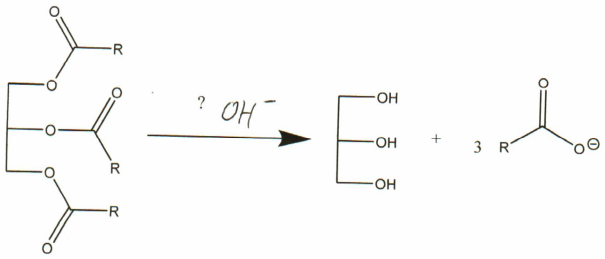

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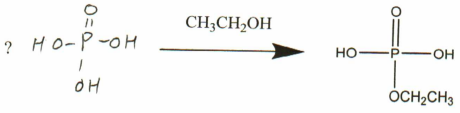
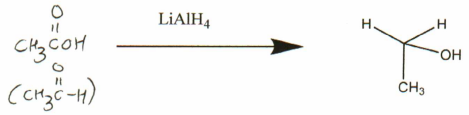
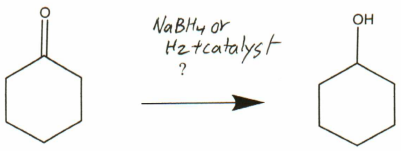


c.



d.



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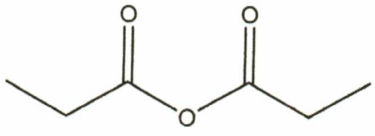
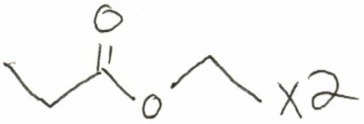
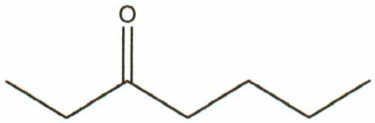
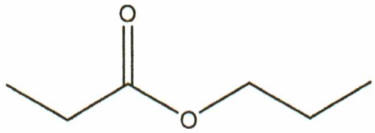
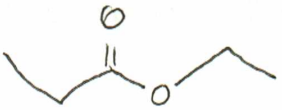
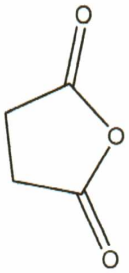
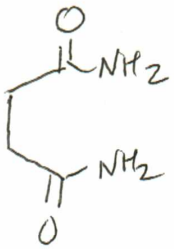
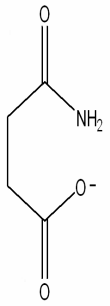
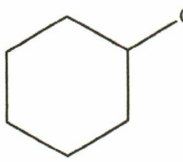
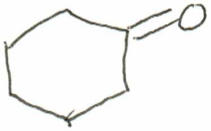
a.  2 equivalents CH_3CH_2OH 

b.  2 equivalents CH_3CH_2OH 

c.  1 equivalent CH_3CH_2OH 

d.  2 equivalents NH_3  OR 

e.  $Ag(NH_3)_2^+$  or NO RXN