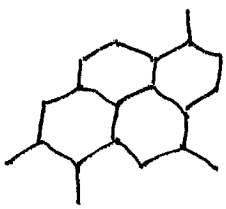
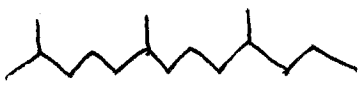
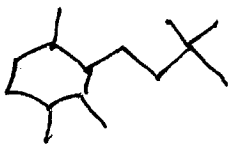
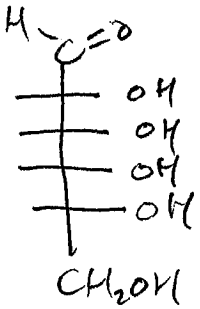
Tuesday, June 5th 2007 Name: _____
Exam #3

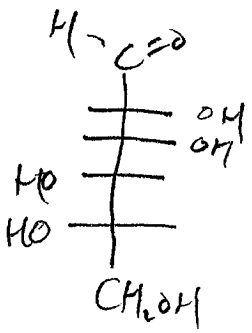
1. In the space below, draw (separately):
   (a) a trans fat
   (b) a soap
   (c) a prostaglandin
   (d) a wax

2. Are the following molecules terpenes?

3. Draw the following monosaccharides in their pyranose ring form. Draw the beta form in each case.





4. What are the four forces that hold a protein together?

5. List all the ways a protein could be denatured.

6. There are four levels of protein structure: primary, secondary, tertiary, and quaternary. What does each refer to?

7. Consider the topic of reducing sugars.
   (a) Are monosaccharides reducing sugars?

   (b) Are disaccharides?

   (c) Are polysaccharides?

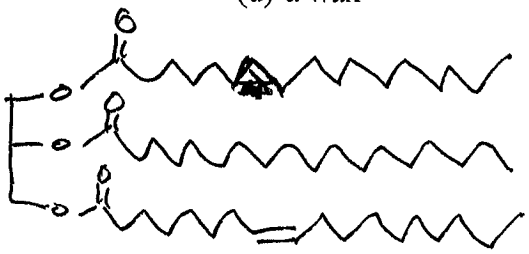
   (d) What is an easy test to determine whether or not a sugar is a reducing sugar?

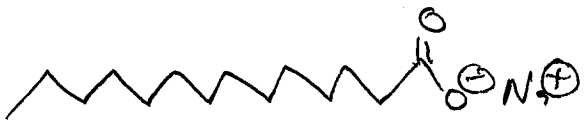
   (e) What color change occurs with this test?

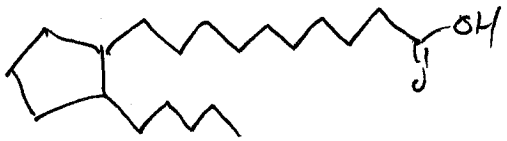
Tuesday, June 5th 2007
Exam #3

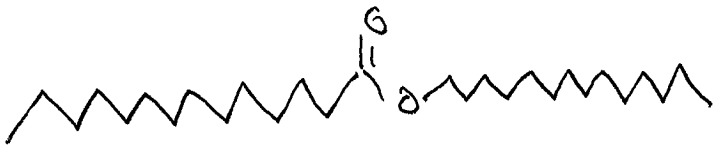
Name: Key

1. In the space below, draw (separately):
   (a) a trans fat
   (b) a soap
   (c) a prostaglandin
   (d) a wax

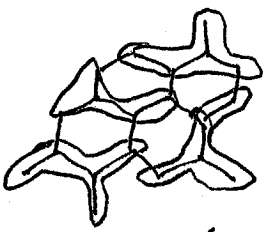




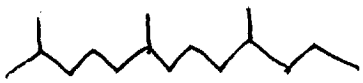




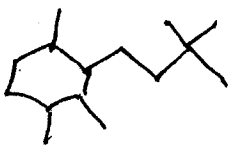
2. Are the following molecules terpenes?



Yes

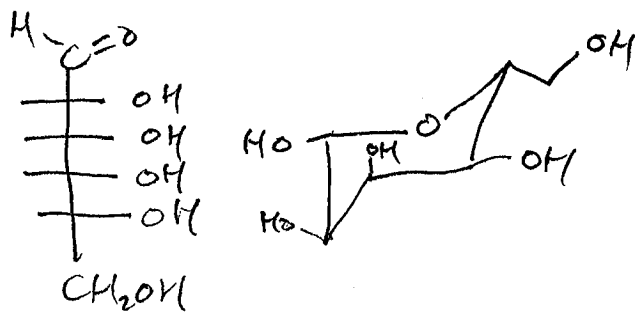


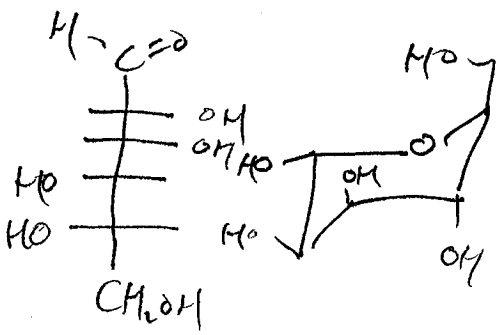
No



No

3. Draw the following monosaccharides in their pyranose ring form. Draw the beta form in each case.





4. What are the four forces that hold a protein together?

H-Bonding
Hydrophobic
Salt Bridge
Disulfide bridge

5. List all the ways a protein could be denatured.

Redox agents
Reducers
Heavy metals
Mechanical Agitation
Non-polar solvents
Heat
pH changes.

6. There are four levels of protein structure: primary, secondary, tertiary, and quaternary. What does each refer to?

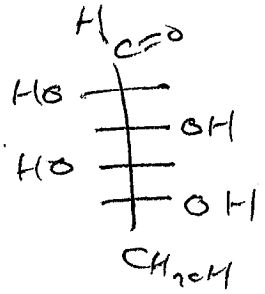
1° - sequence of amino acids
2° - projection of chain (e.g. α-helix)
3° - overall shape of protein
4° - shape relative to other proteins.

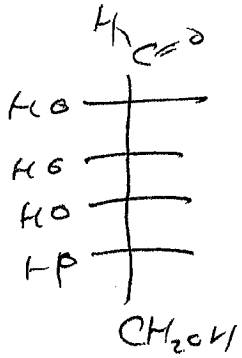
7. Consider the topic of reducing sugars.
   (a) Are monosaccharides reducing sugars? Yes
   (b) Are disaccharides? Sometimes
   (c) Are polysaccharides? No
   (d) What is an easy test to determine whether or not a sugar is a reducing sugar? Benedicts
   (e) What color change occurs with this test?

blue to red

Tuesday, Nov. 24th, 2009 Name: _____
Exam #3

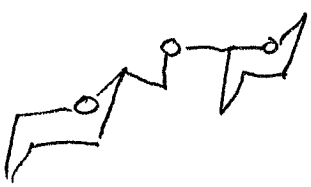
1. Draw the following sugars in their pyranose ring form. Be sure to draw both in their beta form.

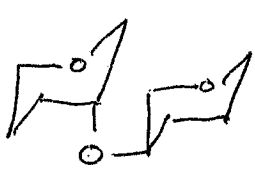


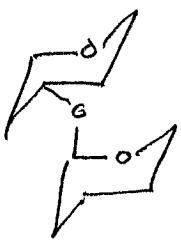


2. In the space below, draw (separately)
   (a) a fatty acid
   (b) a steroid that is also a terpene
   (c) a prostaglandin that has no chiral carbons
   (d) a phospholipid

3. Identify the type of bridges in the dissacharides below:







4. There are four ways that we discussed to inhibit proteins. List the four below, and describe each one.

5. Define the following:
   (a) Turnover Number

   (b) Active Site

   (c) Mutaroration

   (d) Reducing Sugar

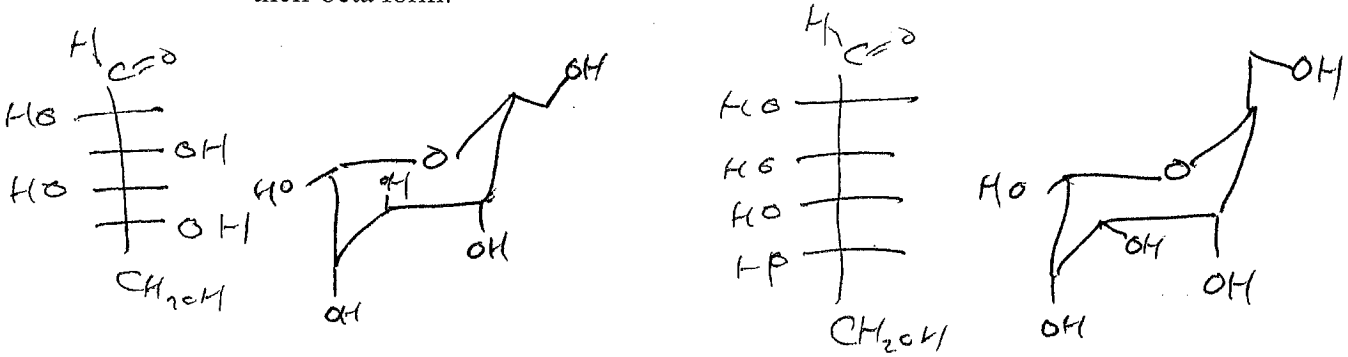
6. How would you make the polypeptide His-Gly-Trp starting from the individual amino acids.

7. How would you separate three amino acids with isoelectric points of 6, 8, and 10? Be specific about where each amino acid ends up.

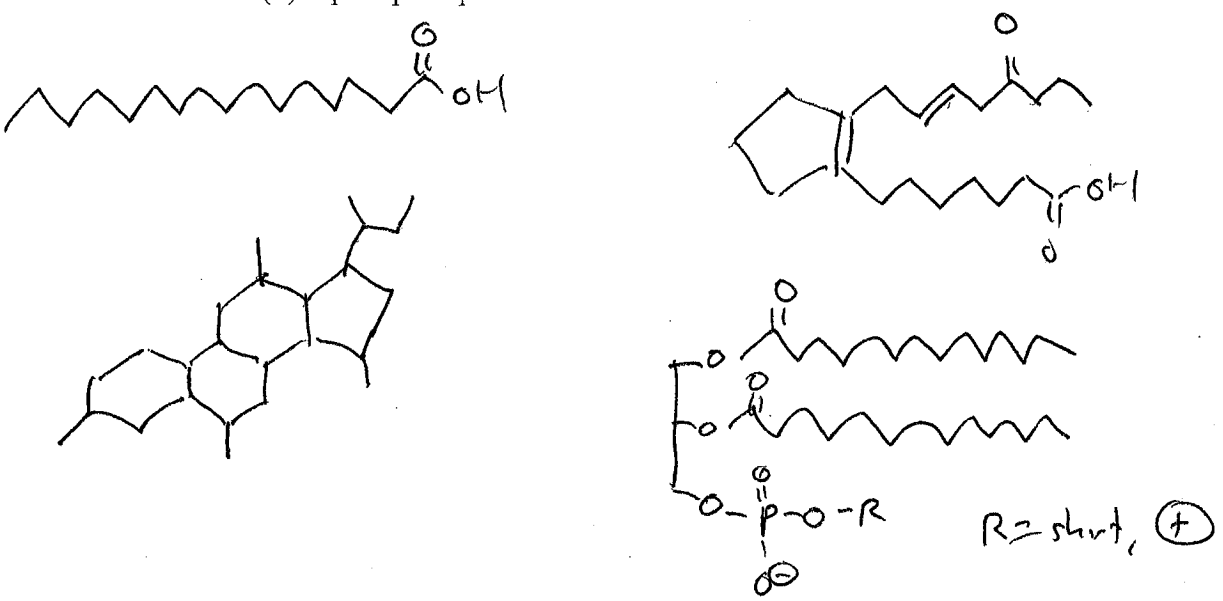
Tuesday, Nov. 24th, 2009
Exam #3

Name: K

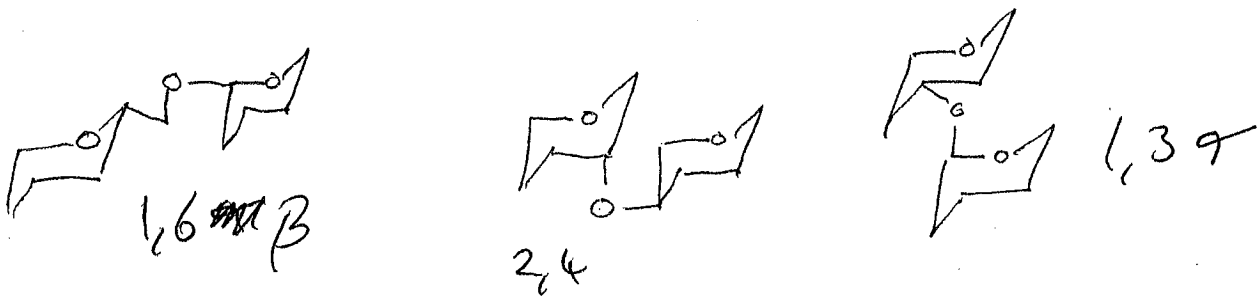
1. Draw the following sugars in their pyranose ring form. Be sure to draw both in their beta form.



2. In the space below, draw (separately)
   (a) a fatty acid
   (b) a steroid that is also a terpene
   (c) a prostaglandin that has no chiral carbons
   (d) a phospholipid



3. Identify the type of bridges in the dissacharides below:



4. There are four ways that we discussed to inhibit proteins. List the four below, and describe each one.

Competitive Inhibition: "Dummy" molecule, compete w/ substrate for active site.

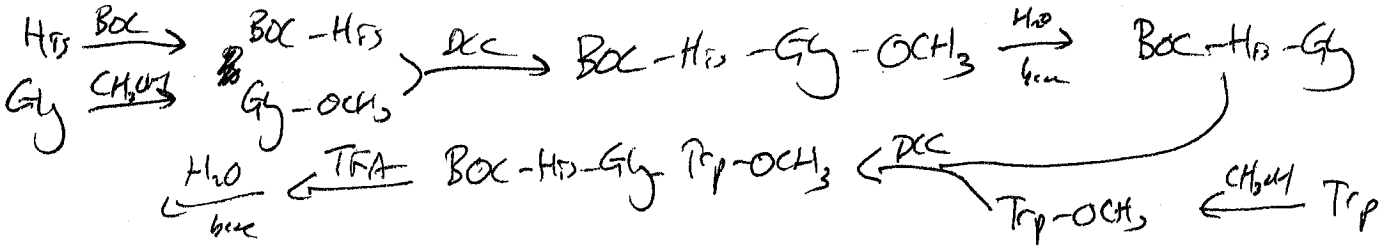
Allosteric Control: Regulates, turn proteins on or off by entering second site.

Zymogens: Proteins are not completed until needed.

Co-Factor: The introduction or denial of a non-amino acid portion of a protein causes protein to stop or start.

5. Define the following:
   (a) Turnover Number # of substrate processed per second.
   (b) Active Site Specifically shaped cavity where catalysis of substrate occurs.
   (c) Mutaroration Equilibrium between α, β, and straight chain forms.
   (d) Reducing Sugar Monosaccharide that turns Benedicts blue → red.

6. How would you make the polypeptide His-Gly-Trp starting from the individual amino acids.



7. How would you separate three amino acids with isoelectric points of 6, 8, and 10? Be specific about where each amino acid ends up.

Set pH of buffer to 8.

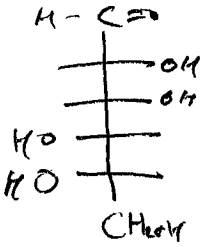
"8" is Zwitterion, in middle of gel.

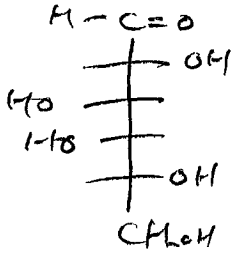
"6" is anion — goes to + electrode.

"10" is cation, goes to − electrode.

Monday, June 4th, 2012 Name: _____
Exam #3

1. Draw the following monosaccharides as pyranose rings.





2. In the space below, draw (separately) an oil, a prostaglandin, a wax, and a detergent, each with NO chiral carbons.

3. Draw a steroid that is also a terpene.

4. Construct Pro-Ala-Gly-Ser from the individual amino acids.

5. Draw a typical amino acid...
   (a) As it looks out of solution
   (b) As it looks dissolved in an acidic solution
   (c) As it looks dissolved in a basic solution
   (d) As it looks dissolved in a solution whose pH is equivalent to the amino acid's isoelectric point.

6. For a hexose aldose, which numbered carbon... (more than one answer may be needed)
   (a) Is never found in a bridge?
   (b) Must be accompanied by an alpha or beta in a bridge?
   (c) Is not chiral?
   (d) Determines whether it is a D sugar or an L sugar?

7. There are seven standard ways of denaturing a protein. What are they?

8. Explain the concept of allosteric control.

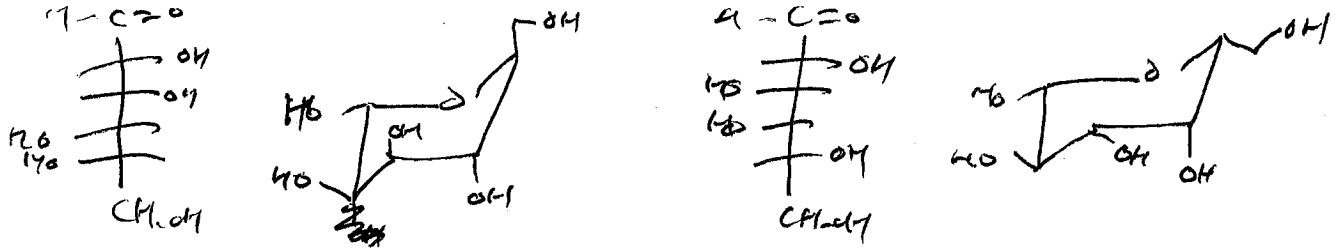
9. What is the difference between the so-called Lock-and-Key Model and the Induced Fit Model for protein shape?

10. What ions are typically found in hard and soft water?

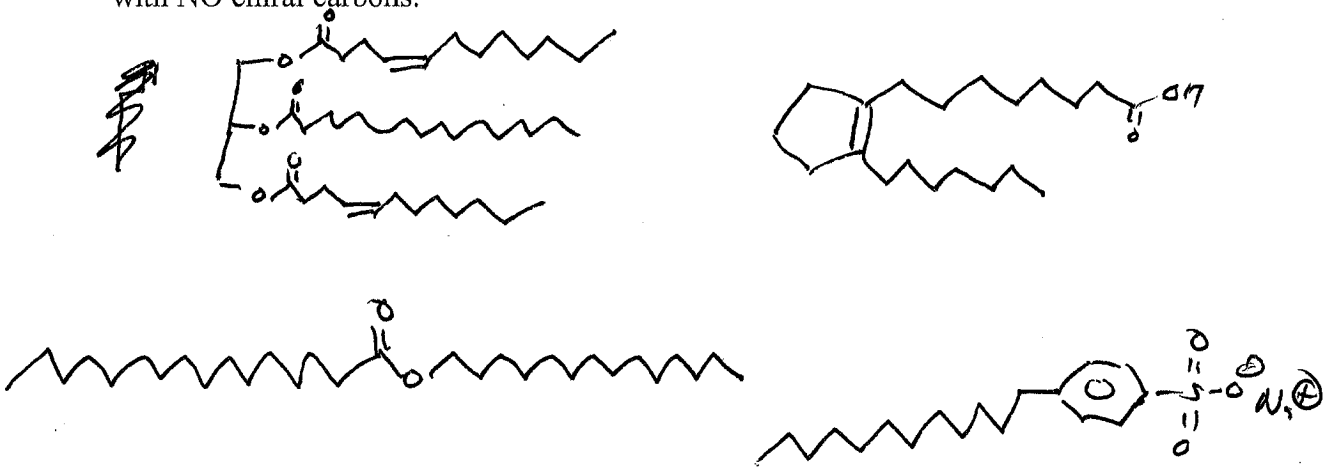
Monday, June 4th, 2012
Exam #3

Name: Key

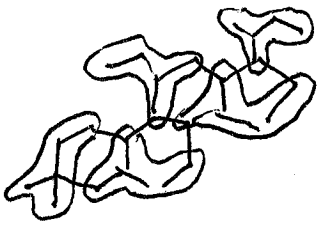
1. Draw the following monosaccharides as pyranose rings.



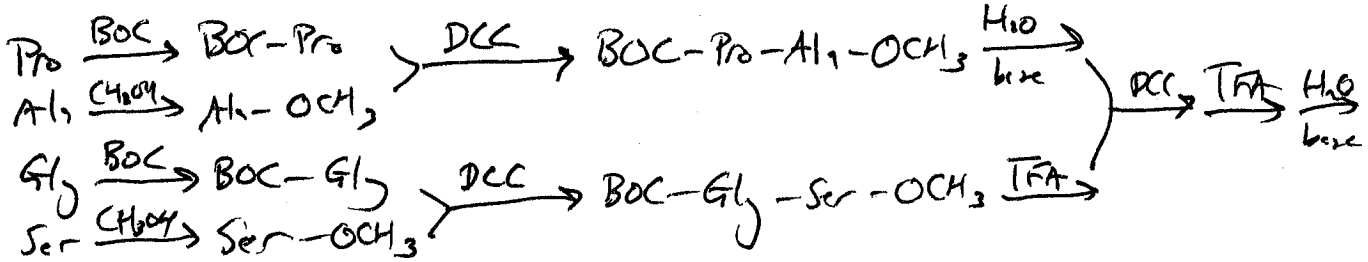
2. In the space below, draw (separately) an oil, a prostaglandin, a wax, and a detergent, each with NO chiral carbons.



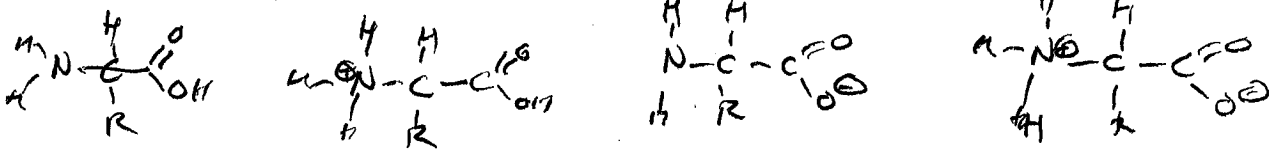
3. Draw a steroid that is also a terpene.



4. Construct Pro-Ala-Gly-Ser from the individual amino acids.



5. Draw a typical amino acid…
   (a) As it looks out of solution
   (b) As it looks dissolved in an acidic solution
   (c) As it looks dissolved in a basic solution
   (d) As it looks dissolved in a solution whose pH is equivalent to the amino acid's isoelectric point.



6. For a hexose aldose, which numbered carbon… (more than one answer may be needed)
   (a) Is never found in a bridge? 5
   (b) Must be accompanied by an alpha or beta in a bridge? 1
   (c) Is not chiral? 6 (and 1 when in straight chain)
   (d) Determines whether it is a D sugar or an L sugar? 5

7. There are seven standard ways of denaturing a protein. What are they?

Non-polar solvents
Mechanical agitation
Heat
pH changes
Radiation
Redox agents
Heavy metals

8. Explain the concept of allosteric control.

A protein has a secondary site. When this site is entered by a regulator, it causes the active site to open (positive) or close (negative), thus providing a way to turn the protein on or off.

9. What is the difference between the so-called Lock-and-Key Model and the Induced Fit Model for protein shape?

Lock-and-Key (incorrectly) assumes Active Site is always in the correct shape. Induced Fit (correctly) assumes Active Site adapts. (correct shape only when entered by substrate.

10. What ions are typically found in hard and soft water?

Ca^{+2}
Fe^{+2}
Mg^{+2}

Na^{+}
K^{+}
or
none