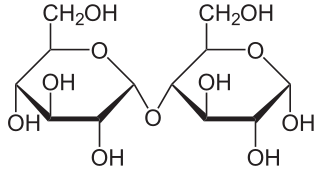
**Mock Exam for CH 107 Exam 2**. **This is a similar format to the exam. Remember to pace yourself with the questions; you do not want to run out of time.**

1. What is the IUPAC name for this molecule? CH3CH2CH2COOH \_\_\_\_\_
   1. Butanal
   2. Benzoic acid
   3. Butyl acid
   4. Butanoic acid
2. Which of the following molecules have the formula C6H12O \_\_\_\_\_
   1. Hexanoic acid
   2. 3-methyl-2-pentanone
   3. 4-methyl-3-hexanone
   4. 3-methylcyclohexanoic acid
3. Primary alcohols react to form \_\_\_\_\_
   1. Aldehydes
   2. Ketones
   3. Carboxylic acids
   4. A and B
   5. A and C
4. 4-methyl-4-octanol oxidizes to form \_\_\_\_\_
   1. 4-methyl-4-octanal
   2. 4-methyl-4-octanone
   3. Butyl butanoate
   4. None of the above
5. The reduction of pentanal yields \_\_\_\_\_
   1. 2-pentanol
   2. Pentene
   3. Pentanoic acid
   4. 1-pentanol
6. What is the molecular formula for butyl pentanoate? \_\_\_\_\_
   1. C9H20O2
   2. C9H18O
   3. C8H16O2
   4. C9H18O2
7. Which of the following is NOT a reducing sugar? \_\_\_\_\_
   1. Maltose
   2. Sucrose
   3. Glucose
   4. Galactose
8. The formation of sugar alcohols comes from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_

of monosaccharides.

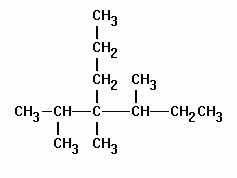
* 1. Oxidation
  2. Fermentation
  3. Reduction
  4. Halogenation

1. What is the name of the enzyme that cleaves the glycosidic bond in lactose? \_\_\_\_\_
   1. Lactese
   2. Lactase
   3. Sucrose
   4. Benzanoic acid
2. The reduction of 2-methyl-3-heptanone will yield \_\_\_\_\_
   1. 2-methyl-2-heptanol
   2. 2-methylheptanal
   3. 2-methyl-3-heptanol
   4. Ethyl pentanoate
3. Which of the following will have the highest water solubility? \_\_\_\_\_
   1. 2-methylpentanal
   2. 1-pentanol
   3. Pentane
   4. Methyl butyl ether
4. Which of the following is NOT soluble? \_\_\_\_\_
   1. 2-hexanone
   2. Butanone
   3. Pentanal
   4. Butanal
5. The reaction of an aldehyde or ketone with an alcohol will form a(n) \_\_\_\_\_
   1. Acetal
   2. Hemicacetal
   3. Carboxylic acid
   4. Ester
6. Which of the following does NOT have a α-1,4 linkage? \_\_\_\_\_
   1. Glycogen
   2. Amylopectin
   3. Cellulose
   4. Amylose
7. The reaction of a carboxylic acid with a(n) \_\_\_\_\_\_\_\_\_\_ forms an ester. \_\_\_\_\_
   1. Ether
   2. Alcohol
   3. Alkane
   4. Aldehyde
8. What is the name of this molecule? CH3CH2CH2COOCH2CH3 \_\_\_\_\_
   1. Pentyl ester
   2. Propyl ethanoate
   3. Propyl acetate
   4. Ethyl butanoate
9. These tend to have pleasant odors and are used for flavor. \_\_\_\_\_
   1. Ethers
   2. Carboxylic acids
   3. Carbohydrates
   4. Esters
10. The neutralization of acetic acid by KOH produces \_\_\_\_\_
    1. Potassium acetylaldehyde
    2. Potassium acetate + H2O
    3. Potassium permanganate
    4. Ethyl alcohol
11. The reaction of a carboxylic acid with an alcohol with produce a(n) \_\_\_\_\_
    1. Ether
    2. Carboxylic acid salt
    3. Ester
    4. Hemiacetal
12. The reaction in number 19 is known as \_\_\_\_\_
    1. Saponification
    2. Neutralization
    3. Esterification
    4. Reduction
13. In the following carbohydrate, identify the linkage. \_\_\_\_\_



* 1. α-1,3
  2. β-1,4
  3. ϒ-1,4
  4. α-1,4

1. Identify how many chiral carbons are in the following molecule. \_\_\_\_\_



* 1. 4
  2. 3
  3. 2
  4. 8

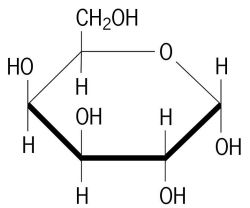
1. What determines if a molecule is a reducing sugar? \_\_\_\_\_
   1. It has an anomeric –OH available
   2. It is a monosaccharide
   3. It is a disaccharide
   4. It must be a β linkage
2. Amylose is a principle component of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Blood
   2. Plant starch
   3. Wood
   4. Chondroitin
3. Which of the following is the molecular formula for ethyl butanoate? \_\_\_\_\_
   1. C6H10O2
   2. C7H12O
   3. C6H12O2
   4. C6H12O
4. Which of the following is the basis for aspirin and oil of wintergreen? \_\_\_\_\_
   1. Acetic acid
   2. Salicylic acid
   3. Hexanol
   4. Formic acid
5. Under acidic conditions, esters hydrolyze to \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ \_\_\_\_\_
   1. Carboxylic acid and a base
   2. Carboxylic acid and water
   3. Carboxylic acid salt and base
   4. Carboxylic acid and alcohol
6. Alcohols and ethers are considered to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Chiral
   2. Structural isomers
   3. Stereoisomers
   4. Enantiomers
7. 3-hexanol will oxidize to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. 3-hexanal
   2. 3-hexanone
   3. 3-hexanoate
   4. No reaction
8. Which of the following is a major component of the exoskeletons of \_\_\_\_\_

insects and crustaceans?

* 1. Cellulose
  2. Chondroitin
  3. Chitin
  4. N-Acetyl-glucosamine

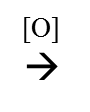
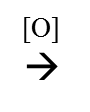
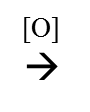
**Short Answer: Answer any 4 of the following 6 questions. If you do all 6, he will only grade the first 4 (even if you got number 5 right and number 3 wrong, you will get ¾ correct…so be careful!)**

1. Given the following structure of galactose, answer the following questions.



1. Number the carbons and label the anomeric carbon.
2. Draw the Fischer projection of galactose.
3. Is this α-galactose or β-galactose?
4. Glucose differs from galactose in that carbon #4’s –OH is D. Draw the ringed form of glucose.

Make a disaccharide of glucose and galactose with a β-1,6 glycosidic bond. Circle the anomeric carbons and label the glycosidic bond.

1. Name and draw the product for the following oxidation reactions.
   1. 2-pentanol  H2O +
   2. 3-ethyl-1-heptanol  H2O +
   3. 3-ethyl-3-heptanol H2O +
2. Compare and contrast amylose and amylopectin; include at least 4 points. Bullet statements are fine.
3. Discuss salicylic acid, including the molecules that it is the basis for.
4. Discuss the difference between blood types. Include an explanation universal donors and universal recipients.
5. Draw and name any 5 molecules with the formula C7H14O. (on the back is okay)