

Names: _____

General Instructions **(Deadline extended to 11/25/2020)**

Work with the other members of your group and provide suitable responses for the problems shown below. Please work on your own if your schedule does not permit you to work with the other members of your group. The assignment is to be completed and returned by 11:30 pm EDT on Wednesday, November 25, 2020. Where applicable, show your work to receive full credit. Late assignments will be assessed a penalty of 5% of the overall grade per day late.

How to Return This Assignment

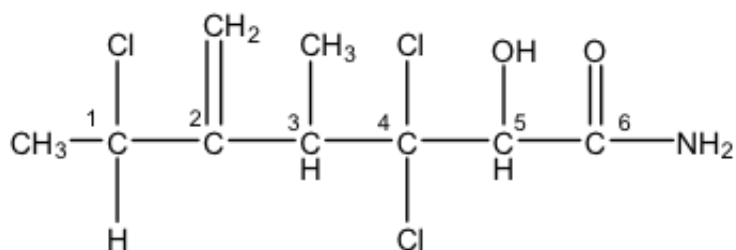
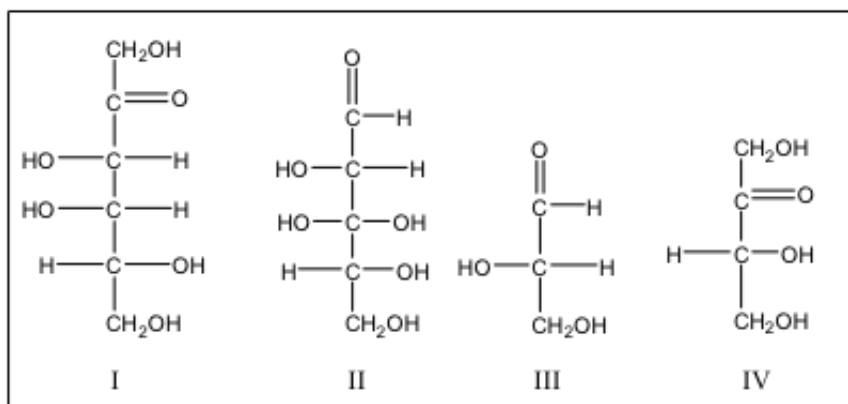
You may upload the document to the drop box in Canvas as a Word file, a pdf file, a jpeg file, a scanned file, etc. The document may also be returned as an email attachment in canvas. If the file is too large, try compressing it using free services such as wecompress.com. Do not return the file using my outlook email. For those who save each page of the assignment as a pdf or image file, you may combine them into one document as follows:

- *Locate the files in Windows File Explorer.*
- *Right click on the first file.*
- *Choose "Combine Supported Files in Acrobat..." A new dialog box will pop up, but you may have to minimize other files to see it.*
- *Drag the files from Explorer into this box.*
- *If necessary, change the order of the files using "Move Up" or "Move Down."*
- *Click on "Combine Files." You will be prompted for a file name.*

If all else fails, you may fax the document to the attention of Dr. Farrell using Fax: 407-303-8136. Please ensure that your work is legible, and your file is complete before sending.

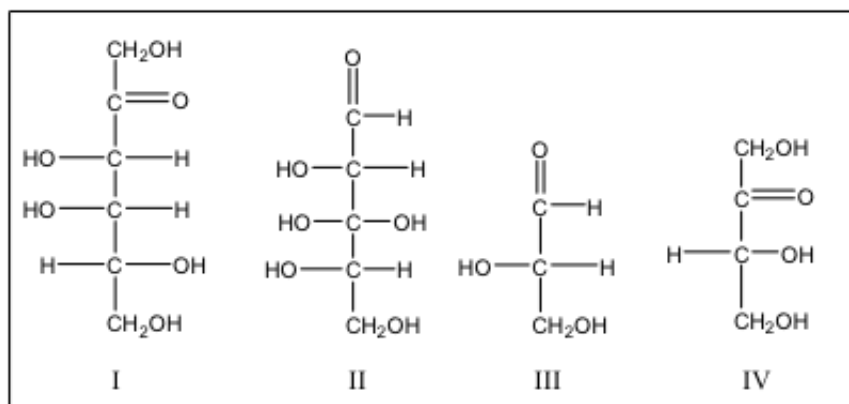
Names: _____

1. Classify each of the monosaccharides shown below as a(n) *aldotriose, ketotriose, aldotetrose, ketotetrose, ketopentose aldopentose, aldohexose, ketohexose, aldoheptose, or ketoheptose*. (4 pts)

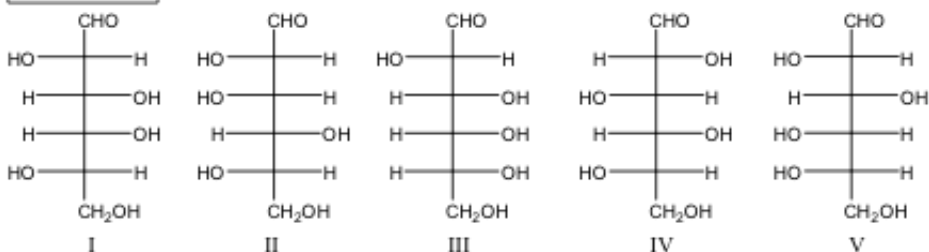
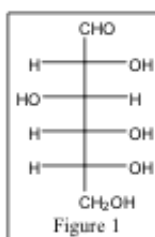


2. Use an asterisk to identify the stereogenic (chiral) carbons in the structure shown below: (4 pts)

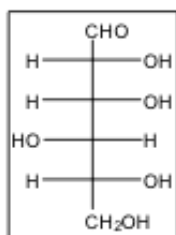
3. Classify each of the following monosaccharides as a D- or L- sugar: (4 pts)

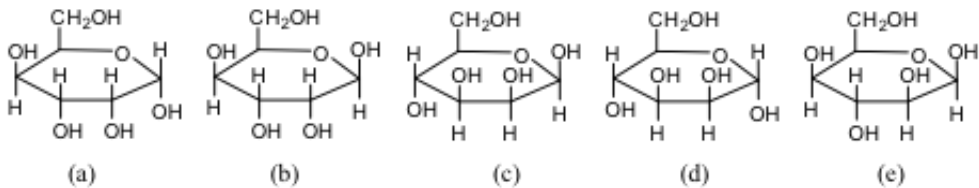


4. Identify the enantiomer of the monosaccharide in Figure 1. Is the enantiomer a D-sugar or an L-sugar? (4 pts)

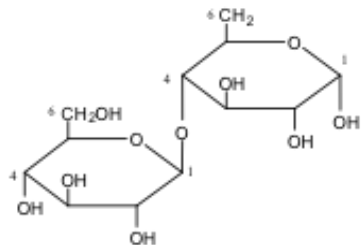


5. Identify the ***b***-anomer that is formed from the cyclization of the open-chain monosaccharide shown below. (3 pts)





6. What type of glycosidic bond links the two monosaccharides shown below? (3 pts)

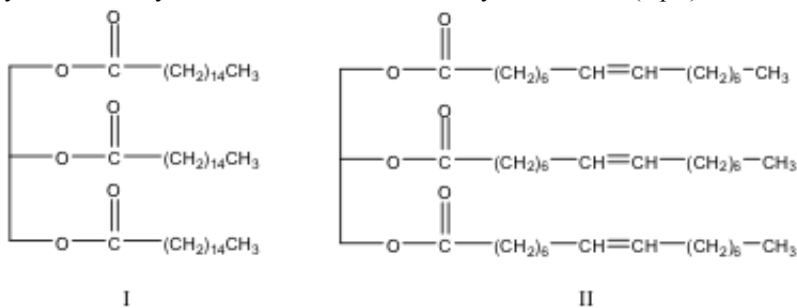


- (a) **a**-1,4-Glycosidic bond
 (b) **b**-1,4-Glycosidic bond
 (c) **b**-1,6-Glycosidic bond
 (d) **a**-1,6-Glycosidic bond
 (e) **b**-1,2-Glycosidic bond

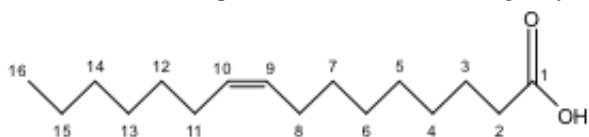
7. Identify a polysaccharide that has **b** -1, 4-glycosidic bonds but is not digestible by mammals. (3 pts)

- (a) Cellulose
 (b) Amylose
 (c) Starch
 (d) Glycogen
 (e) Amylopectin

8. Each of the triglycerides shown below contains fatty acids that are 16 carbons long. Which triglyceride is likely to be a fat? Which one is likely to be an oil? (3 pts)

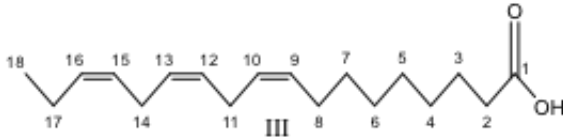
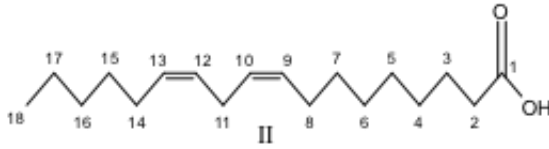
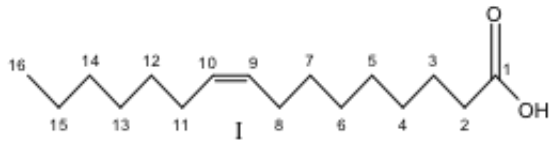


9. What is the correct lipid number for the following fatty acid? (3 pts)



- (a) 18:0 (b) 16:0 (c) 18:1 (d) 18:3 (e) 16:1

10. Label the omega-3 and omega-6 fatty acids from the compounds shown below. (3 pts)



11. Calculate the pI of an amino acid with two ionizable groups. Assume that the pKa values for this amino acid are 3.22 and 10.08. (3 pts)

12. Which of the following macromolecules are held together by peptide bonds? (3 pts)

- (a) Proteins
- (b) Lipids
- (c) Nucleic acids
- (d) Polysaccharides
- (e) All of the above

13. Carbohydrates that cannot be hydrolyzed into simpler sugars are called: (3 pts)

- (a) Monosaccharides
- (b) Disaccharides
- (c) Cellulose
- (d) Oligosaccharides
- (e) Polysaccharides

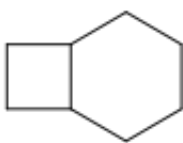
14. Sucrose is a disaccharide composed of: (3 pts)

- (a) Two glucoses
- (b) Maltose and lactose
- (c) Glucose and fructose
- (d) Galactose and fructose
- (e) Two fructose molecules

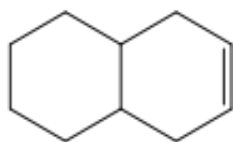
15. Virtually all naturally occurring sugars and amino acids are: (3 pts)

- (a) L-sugars and L-amino acids
- (b) D-sugars and L-amino acids
- (c) D-sugars and D-amino acids
- (d) L-sugars and D-amino acids
- (e) None of the above

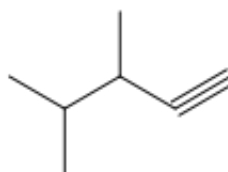
16. Classify the following alkanes as saturated and unsaturated hydrocarbons: (3 pts)



I

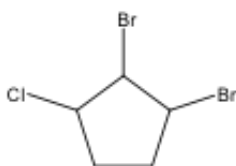


II

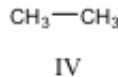
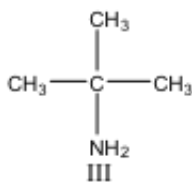
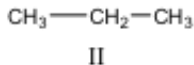
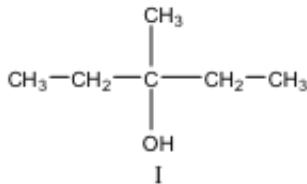


III

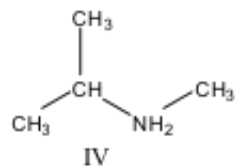
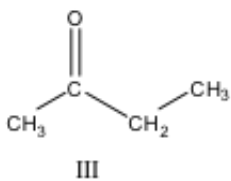
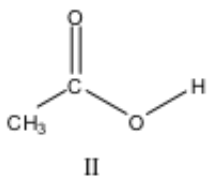
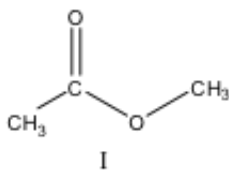
17. Give the correct IUPAC name for the compound shown below. (3 pts)



18. Rank the following compounds in order of increasing (lowest to highest) boiling point: (3 pts)



19. Identify each of the functional groups shown below. (3 pts)



20. Classify the following compounds as cis or trans isomers. (3 pts)

