

Name: _____
Chemistry 114, Spring 2004
Exam 3, April 14, 2004

General Instructions: Read each question carefully and answer each question in the expected format, using proper English grammar, punctuation and spelling.

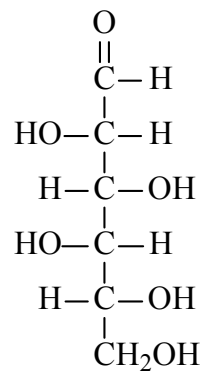
Part A. Definitions (2 points each)

1. Chiral carbon-
2. _____ are two sugars which differ in the configuration around one carbon, other than the anomeric carbon.
3. Reducing sugar-
4. _____ is a four carbon sugar which contains a ketone group.
5. Oligosaccharide-
6. _____ is an important lipid of cell membranes based on the alcohol sphingosine.
7. Integral protein-
8. _____ is a fatty acid containing one or more double bonds.
9. Essential fatty acid-
10. _____ is a water-insoluble molecule that can be extracted using a nonpolar solvent such as chloroform.

Part B. Structures

13. Draw a phospholipid containing palmitic acid, oleic acid and ethanolamine. (5 points)

14. Convert the following Fischer projection into a Haworth projection. (5 points)



15. Draw the structure of ribose(β 1 \div 2)mannose. (5 points)

16. Draw the structure of the following molecules

a. α -D-mannose (4 points)

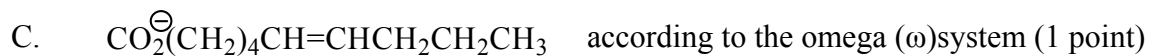
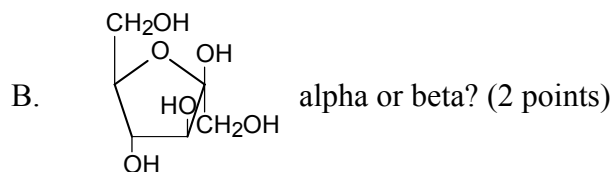
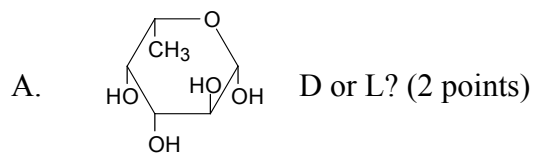
b. Cholesterol (3 points)

c. Stearic acid (2 points)

d. $16:3\Delta^{7,10,13}$ (2 points)

e. A triglyceride (4 points)

17. Indicate the requested information for each of the following three molecules.



Part C. Concepts and Applications thereof

18. Explain why lettuce is pushed as something good to eat for those persons who are dieting. (5 points)

19. Diagram and describe a membrane in terms of the fluid mosaic model. (10 points)

20. Explain the difference(s) between a fat and an oil and describe the structural features of each. (5 points)

21. List the fat soluble vitamins and one water soluble vitamin. (5 points)

22. Describe the importance of cholesterol to a mammalian organism. (5 points)