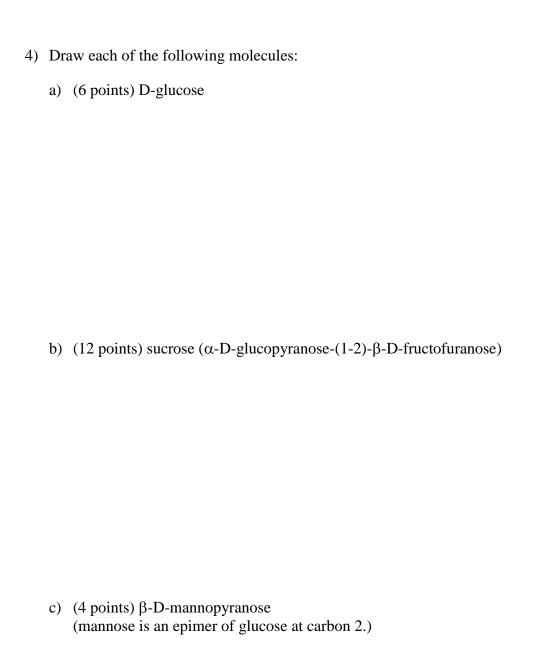
CHEM 160A Exam	3
November 19, 2004	

Name	
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1) (12 points) On a single graph, draw the oxygen binding curves for myoglobin and hemoglobin. Use this graph to describe how hemoglobin delivers  $O_2$  from the lungs to myoglobin in the muscle.

2)	(6 points) Explain why myoglobin does not show positive cooperativity upon binding oxygen, while hemoglobin does show positive cooperativity.
3)	(10 points) In order to stay underwater for long periods of time, crocodiles can utilize virtually 100% of the $O_2$ in its hemoglobin. Humans, however, can use only about 65% of the $O_2$ in their hemoglobin. Crocodile deoxyhemoglobin preferentially binds $HCO_3^-$ . How does this help the crocodile use more $O_2$ ?



5)	(14 points) Compare and contrast amylose and cellulose in terms of structure, function, and source organism.
6)	(10 points) Structurally and functionally, how does amylopectin differ from amylose? How does the structure of each determine its function?

7)	(4 points) Structurally and functionally, chitin is most similar to which one of the following
	polysaccharides?
	a) amylose
	b) cellulose
	c) amylopectin
	d) glycogen

8) (6 points) Why can't triacylglycerols be used in biological membranes?

- 9) (4 points) Salts of fatty acids, in aqueous solutions, form...
  - a) Triacylglycerols
  - b) Diacylglycerols
  - c) Micelles
  - d) Lipid bilayers
- 10) (6 points) Discuss the functional similarities and differences between steroid hormones and eicosanoids.

11) (6 points) When bacteria growing at 20°C are warmed to 30°C, are they more likely to synthesize membrane lipids with saturated or unsaturated fatty acids? Explain your reasoning.