Chemistry 3785 - Fall 2003 – Final exam

Name (Printed): _____,_____
(last) (first)

Signature:_____

Social Security Number:_____ /30 (Final Exam Grade in %)

1. (10 points) For Glycogen synthesis, use text and graphics to discuss the following. In the 1st box, describe why priming is required and what the term priming means. In the 2nd box, describe the process by which priming occurs.

/10 (Question #1)

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2. (10 points) For this question, use text and graphics to discuss the following. In the 1st box, describe the structure of free (non-bonded) NAM_6.[1] In the 2nd box, describe the structure of NAM_6 bound to Lysozyme making sure to explain clearly how the exact structure of this enzyme-substrate complex predisposes the hexamer to cleave where and how it does.[2]

/10 (Question #2)

[1] In the 1st box only, draw in **every atom** of at least one repeating unit of NAM_6.
[2] In the 2nd box, I am **NOT** looking for you to draw or explain the steps of mechanism of this reaction.

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3. (10 points) For the following tripeptide, draw the accurate molecular structure at the indicated pH in the space provided. Be sure to draw in **every atom** and also to **draw in any lone pairs and/or charges** on Nitrogen, Oxygen, and Sulfur atoms. Estimate the net (total) charge for the tripeptide at this pH.

Leu-Tyr -Pro

pH = 11.68

Total Charge = _____

Amino Acid	pK_1	pK_2	pK_R
Leu	2.33	9.74	-
Pro	1.95	10.64	-
Tyr	2.20	9.21	10.46

/10 (Question #3)

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4. (5 points) For this **bonus** question, use text and graphics to discuss the following. In the 1st box, describe the structure of Amylose.[3] In the 2nd box, predict the detailed structure of the product which would be formed if Glycogen Branching Enzyme (and any required cofactors) were added to a solution of Amylose (give your reasoning).

/5 (Question #4, Bonus)

[3] For the 1st box only, draw in **every atom** for at least one example of each of the type(s) of repeating unit(s).