

Spring 2008, Dr. Hunter**Chemistry 1506: 3rd Exam - Final**Name: _____

Answers

Last name
First name

Student Number (your social security number): _____

Signature: _____

In addition to this cover page, this midterm exam consists of 6 pages of questions for 7 pages in total. Please make sure you place your name (last name first) and your student number (i.e., your Social Security number) in the spaces above and sign on the line. ***Initial each page in the top right hand corner*** (i.e. near the page number) in case your exam pages get separated.

To obtain maximum credit for each question, show your work in detail. Partial credit for questions will not be assigned if no work is shown. **Be sure and indicate the positions and bonding of all atoms!** On some questions, full credit will not be granted if work is not shown. Feel free to use short text explanations to explain your drawings if your pictures are ambiguous. If you have to make guesses, assumptions, etc., write me a short note with your reasoning so I can follow your thinking and assign part marks.

On those pages where you are given a choice about which parts to answer, circle those parts you want me to grade. *If you don't do so, I will grade them in order* (e.g., only the first two out of three or the first three out of four).

You may use molecular models to help you answer questions. Feel free to ask me questions.

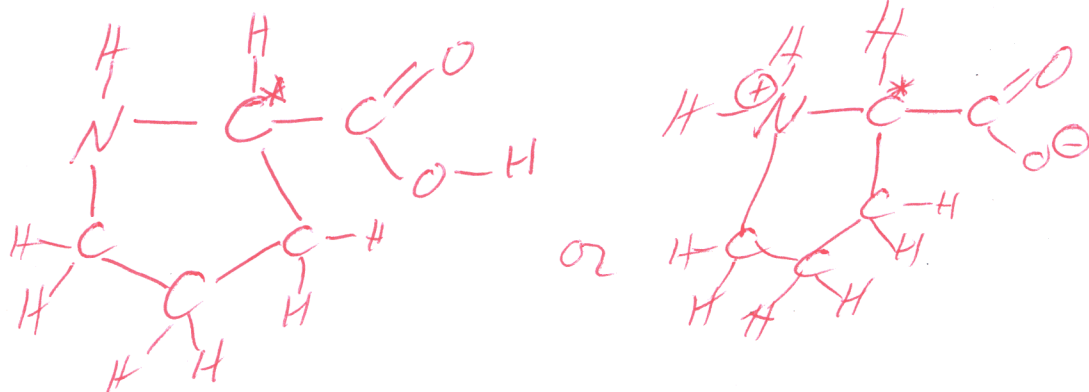
You may bring in one 8.5 x 11 sheet of paper with whatever you want written on it into the exam.

This midterm is worth 200 points out of the 600 points for this semester (i.e., 25% of the final grade).

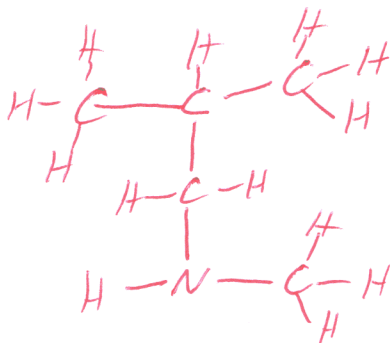
/200

1. [60 points maximum] For each of the following structures or names, give an IUPAC name or draw the correct structure (**including all atoms**), as required. Put a star (*) on any chiral carbon atoms.

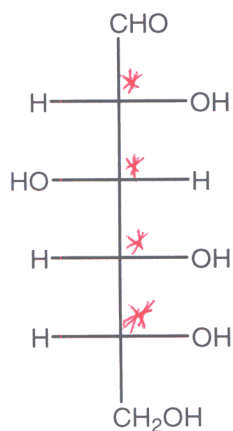
(a) Proline



(b) *iso*-butyl methyl amine

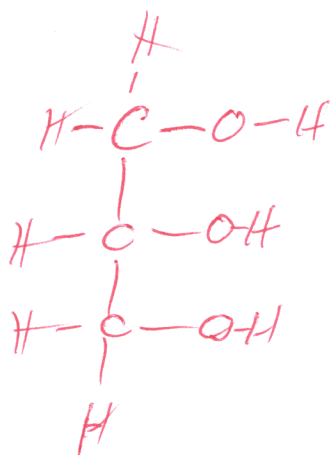


(c)

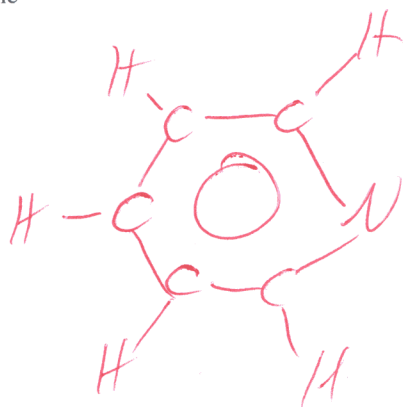


α -D-Glucose

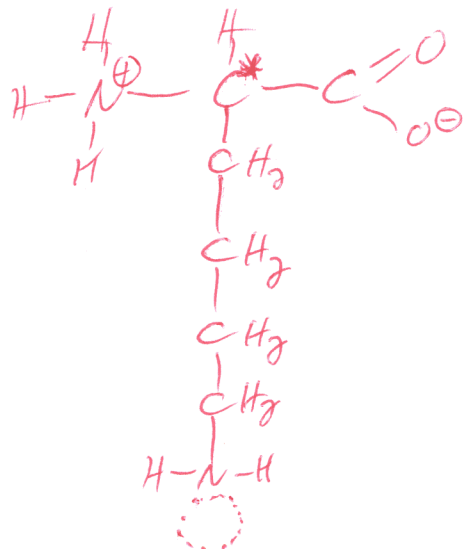
(d) Glycerol



(e) Pyridine



(f) Lysine



2. [40 points maximum] Draw the structure of a mitochondrion and then using text and diagrams relate this structure to the details of how the mitochondrion generates ATP.

/40

3. [40 points maximum] For *two out of three* of the following parts, give an answer in the space provided. **Clearly show which ones you want me to grade by circling its letter.** Show your reasoning and/or your work. Use pictures where appropriate.

(a) Describe the roles of lipids in cells.

(b) Describe the roles of proteins in cells.

(c) Describe and draw the structure of a cell membrane, labeling each of its parts.

4. [30 points maximum] For *three out of four* of the following parts, give an answer in the space provided. **Clearly show which ones you want me to grade by circling its letter.** Show your reasoning and/or your work. Use pictures where appropriate.

- (a) Describe the structure of ATP and its role in cells & organisms.
- (b) Clearly describe what the secondary structure of a protein is.
- (c) Clearly describe the structure and function of Glycerophospholipids in cells & organisms.
- (d) Clearly describe the structure and function of Cellulose in cells & organisms.

5. [30 points maximum] For *three out of four* of the following parts, give an answer in the space provided. **Clearly show which ones you want me to grade by circling its letter.** Show your reasoning and/or your work. Use pictures where appropriate.

(a) Clearly describe the structure and function of Acetyl CoA in cells & organisms.

(b) Clearly describe the structure and function of Peptide Bonds.

(c) Clearly describe what cofactors are and what they do in cells & organisms.

(d) Clearly describe the "Lock and Key" model for enzymes.