Biochemistry of Proteins 2.463 Term Test-2 March 6, 2000

Answer all questions in the Exam Booklets. Put your name and student number on all exam booklets. You may use a calculator and diagrams where appropriate.
The total number of marks is 50, and you have 50 minutes to complete the exam, so spend about 1 minute per mark i.e. 15 min. for a 15 mark question etc.

Answer questions 1. It is worth 7 marks.

1. Draw the chemical structure of the peptide Leu-Gln at pH 7 and label all the dihedral angles with Greek letters or names.

Answer question 2. It is worth 6 marks.

2. Explain what is a dihedral angle. Give a definition of the angle ϕ.

Answer question 3 OR question 4. Each is worth 15 marks.

3. Explain the process by which a protein can be sequenced using mass spectrometry.

OR

4. Outline, in chemical detail, the solid-phase synthesis of a peptide.
Describe the functions of the solid-phase support in peptide synthesis and comment on the advantages and disadvantages of solid phase and solution phase syntheses.

Answer question 5. It is worth 12 marks.

5. Explain the chemical reactivity of the amino acid Cys, give some examples, and describe the role of this chemistry in the folding of proteins.

Answer questions 6. It is worth 10 marks.

6. The figure below shows an analysis of a tubulin peptide. Describe the experiment that produced the data and explain the meanings of the various peaks and the labels above them. What is the biological role of tubulin?