

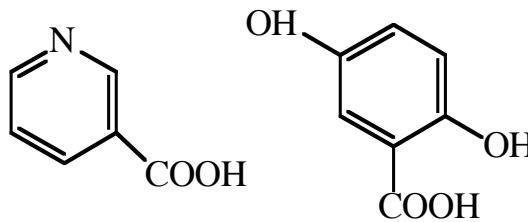
Term Test-2

Answer all questions in the Exam Booklets. Put your name and student number on all exam booklets. You may use a calculator. Use structures and diagrams where appropriate.

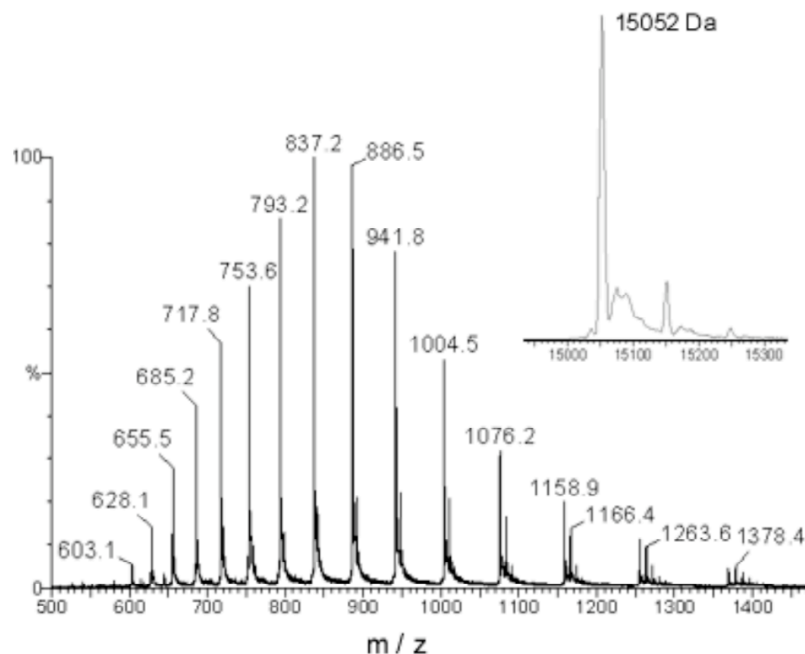
The total number of marks is 50 and you have 50 minutes to complete the exam, so spend about 1 minute per mark i.e. 15 min. for a 15-mark question etc.

Answer question 1.

- (6) 1a. Explain the role of the following molecules in MALDI Mass Spectrometry.



- (8) 1b. Below are 2 mass spectra of the protein CheY. Explain the process by which the protein was introduced into the vacuum of the mass spectrometer. Explain the observation of multiple peaks from a single protein. What can be deduced about the protein from the m/z ratios for each of the peaks?



- (2) 1c. Give a definition of “Proteomics”.
- (2) 1d. What is the role of mass spectrometry in proteomics?

Answer question 2.

- (6) 2a. Outline the steps involved in the solid-phase synthesis of peptides. Molecular structures are required for full marks.
- (4) 2b. Explain the origin of “Termination Peptides” and “Deletion Peptides” in solid-phase peptide synthesis.

Answer questions 3 OR 4.

- (10) 3. With the use of an example, explain the concept of combinatorial peptide synthesis. Describe some advantages and disadvantages.
- (10) 4. Explain why there is such great interest in the HIV-1 protease. Describe the results of a study in which synthetic *D*- and *L*-HIV-1 protease were made.

Answer question 5.

- (12) 5. Describe the structure of the protein ROP and be sure to explain in detail the types of interhelical packing that are present.