



QUESTION WORKBOOK

Proteins: from one amino acid to a working shape

Biological molecules, water and inorganic ions · Unit B02

AQA 3.1.4.1, 3.1.4.2 · OCR A 2.1.2 (e)–(h) · Edexcel A Topic 1.9–1.11 · CAIE 2.3.1–2.3.6

7 questions · 21 marks

NAVY SCREEN EDITION

SECTION A · Short, 1 to 2 marks

A1 State the three groups that every amino acid carries on its central carbon, and state what varies between the twenty amino acids. [2]

A2 Name the bond formed when two amino acids are joined together, and name the molecule released as it forms. [2]

SECTION B · Standard, 3 to 5 marks

B1 Describe the four levels of protein structure, naming in each case the type of bond that holds that level together. [4]

B2 Compare the structure of haemoglobin with the structure of collagen, and relate the difference in each case to what the protein does. [4]

- B3** While one molecule of a polypeptide was being assembled, water of total relative mass 3582 was released. Taking the relative molecular mass of water as 18, calculate the number of amino acids in that polypeptide. [3]

- B4** A patient's body temperature rises to 43 °C and several of her proteins stop working. Explain what has happened to those proteins, referring to the bonds involved. [3]

- B5** A protein taken from a bacterium living in a hot spring contains far more cysteine than the equivalent human protein does. Suggest why this helps the bacterial protein keep its shape at high temperature. [3]