SL Paper 3

a. Outline primary and quaternary protein structures. [2]

Primary protein structure:

Quaternary protein structure:

b. List **three** limiting factors of photosynthesis. [3]

Outline the differences between these two proteins.

Explain the significance of polar and non-polar amino acids in proteins.

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a. Define *quaternary structure* in proteins. [1]

b. Outline the importance of polar and non-polar amino acids in proteins. [2]

c. Describe non-competitive inhibition. [2]

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a. State **two** functions of proteins, giving a **named** example of each. [2]

b. Explain the significance of polar and non-polar amino acids. [3]

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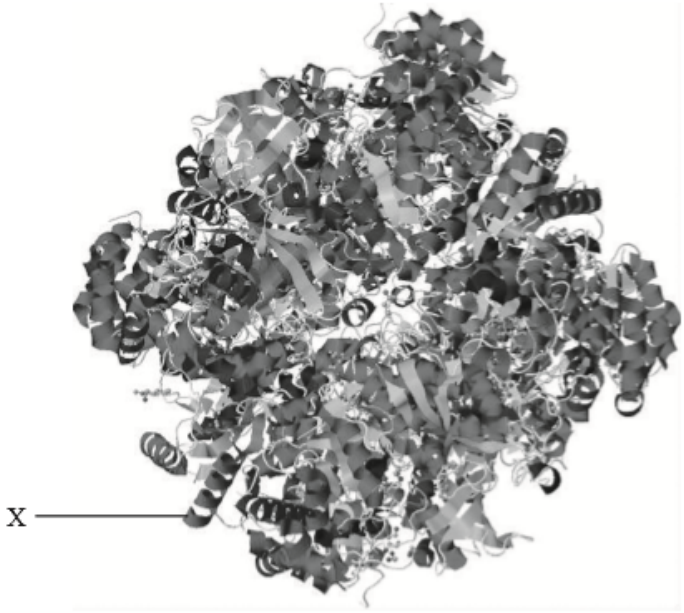
a. List **three** functions of proteins, giving a **named** example of each. [3]

b. Explain the significance of polar amino acids and non-polar amino acids in membranes. [2]

b. Distinguish between the secondary structure and tertiary structure of proteins. [3]

c. Explain what is meant by allosteric inhibition. [3]

The following image represents a model of ribulose bisphosphate (RuBP) carboxylase (also known as Rubisco) from the green alga *Chlamydomonas*.



[Source: Image from the RCSB Protein Data Bank: http://www.pdb.org/pdb/explore/jmol.do?structureId=1GK8&bionumber=1]

a (i). Identify the level of protein structure of the part labelled X. [1]

a (ii). State the role of ribulose bisphosphate (RuBP) carboxylase in the Calvin cycle. [1]

c. Explain non-competitive inhibition. [2]