

Chapter 2 Practice Questions

[106 marks]

1a. Outline the structure of proteins.

[3 marks]

[illegible]

[7 marks]

1c. Outline the range of functions of proteins in cells.

[5 marks]

This image shows a full page of primary-ruled paper. It features multiple horizontal rows, each defined by two parallel dotted lines. The rows are evenly spaced and cover most of the page area, leaving small margins at the top and bottom. The paper itself is white, and the dotted lines are a light gray or blue color. There is no handwriting or other markings on the page.

Pastry cream or confectioners' custard is made with a combination of milk (rich in casein and lactose), egg yolks, sugar, starch and a flavouring such as vanilla.

2a. Describe the structure of starch.

[5 marks]

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This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

2b. Explain how amino acids in casein could reach the liver, starting from the moment when the person takes a bite of pastry cream pie. [7 marks]

[illegible]

2c. Congenital lactase deficiency is a type of lactose intolerance that occurs [3 marks] in infants. It is inherited in an autosomal recessive pattern. Calculate the chance of congenital lactose intolerance in a child whose parents are both carriers for the disorder, showing fully how you reached your answer.

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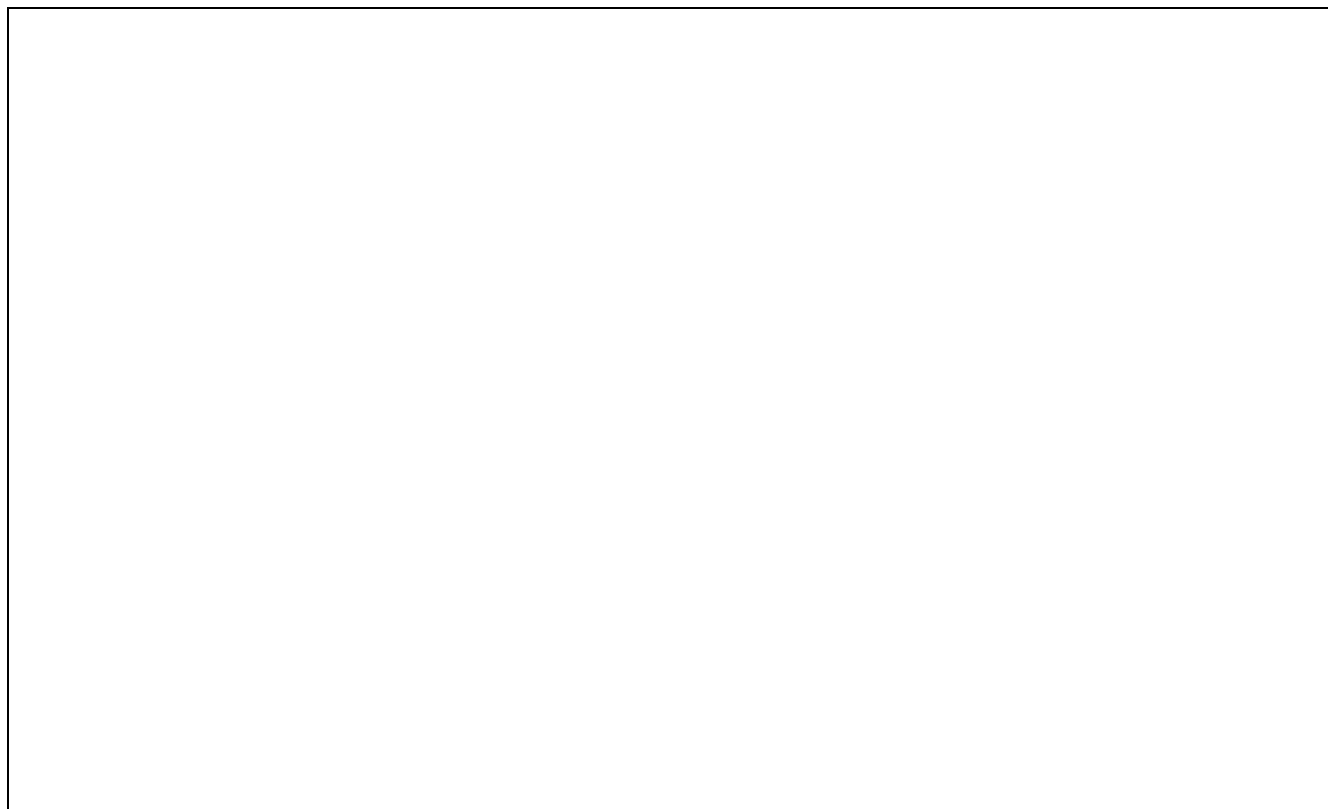
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Life is based on carbon compounds.

3a. Draw a molecular diagram of alpha-D-glucose.

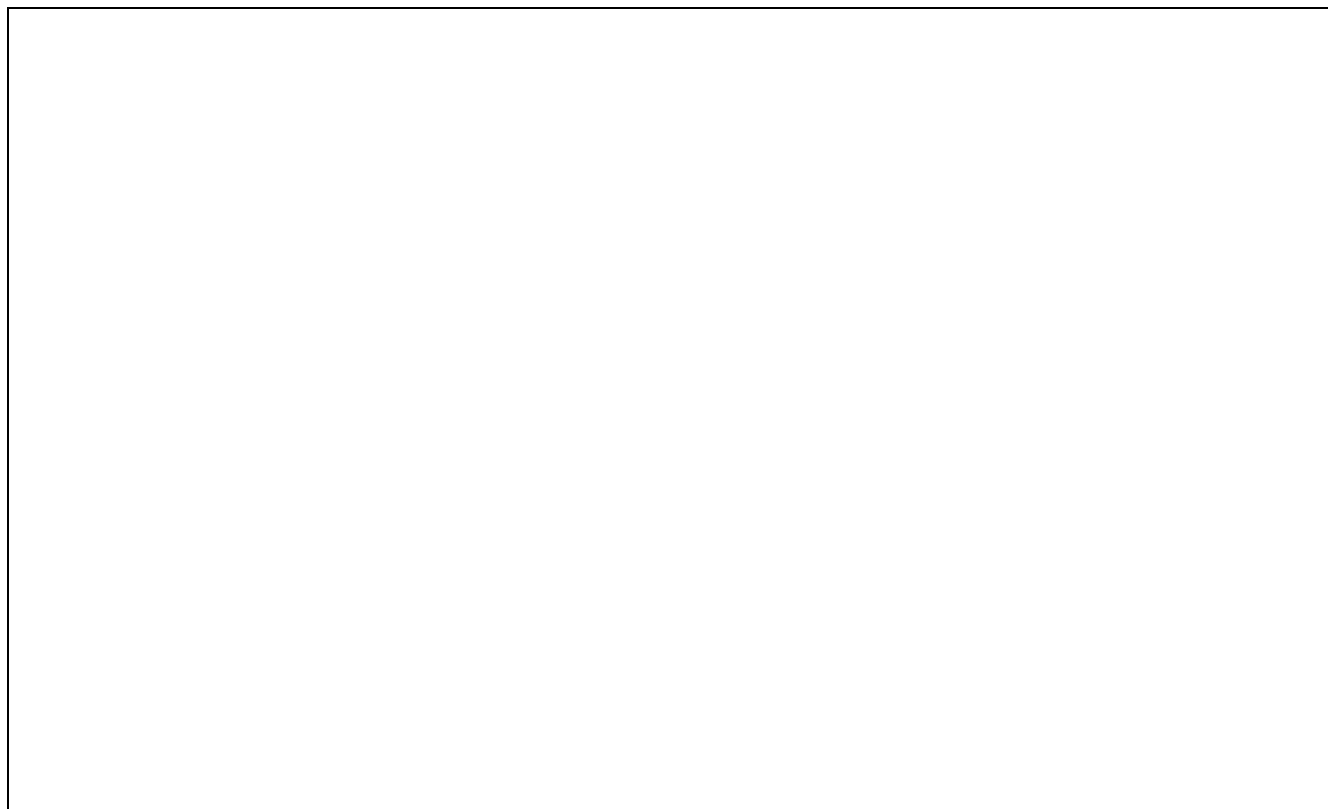
[3 marks]



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4b. Draw the structure of a dipeptide.

[3 marks]



4c. Explain the action of enzymes in digestion and the different roles of at least **two named** enzymes that are produced in the pancreas. [8 marks]

5a. Describe briefly the endosymbiotic theory.

[3 marks]

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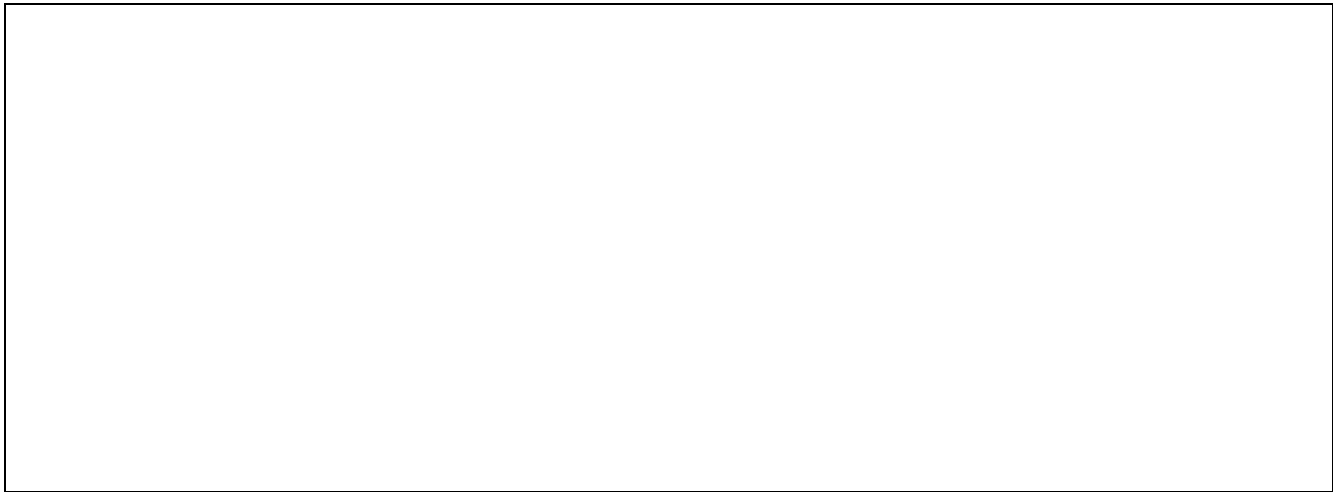
5b. Outline how photosynthesis produces glucose.

[4 marks]

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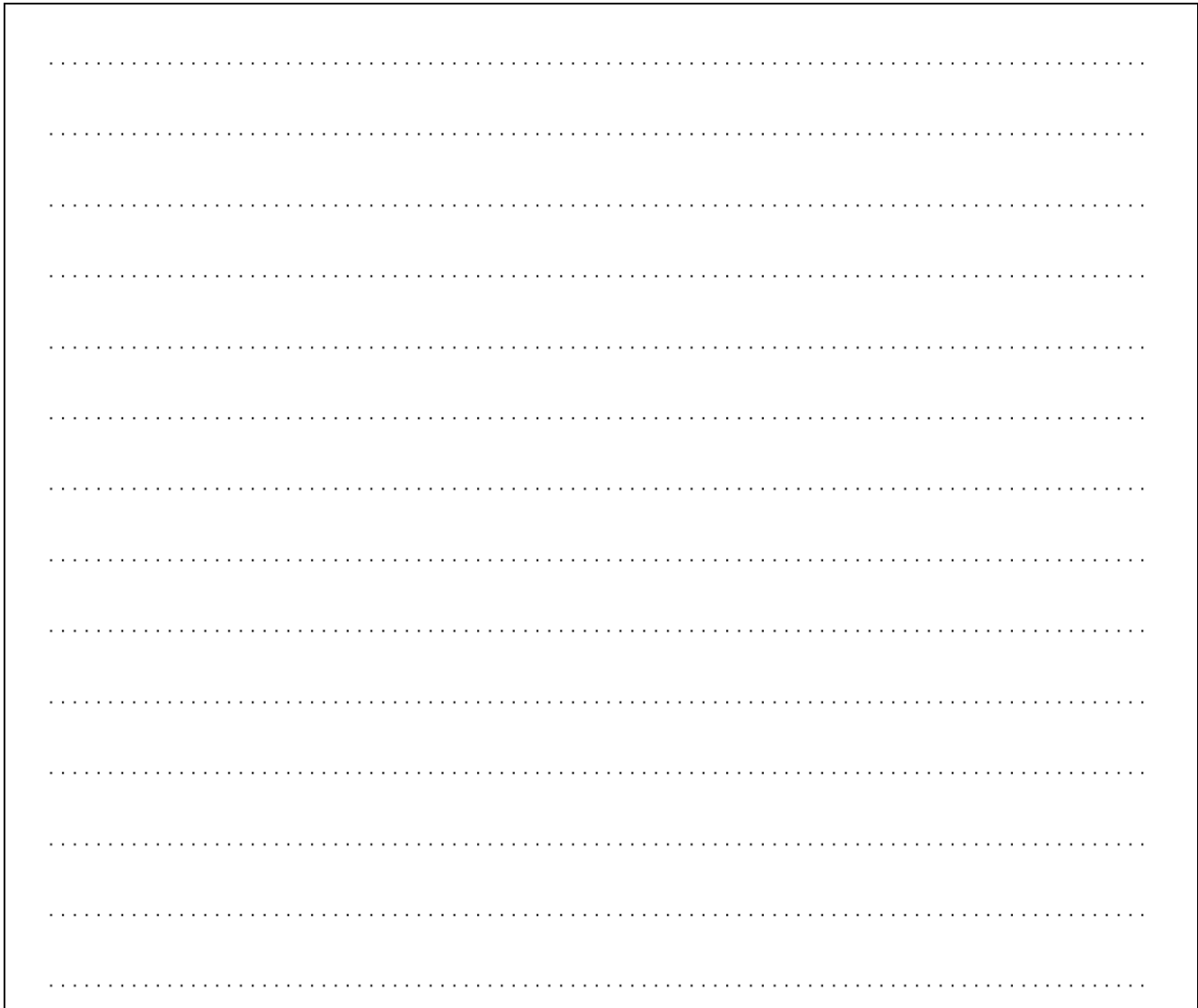
6a. Draw a molecular diagram of an amino acid to show its general structure.

[3 marks]



6b. Outline the role of ribosomes in translation.

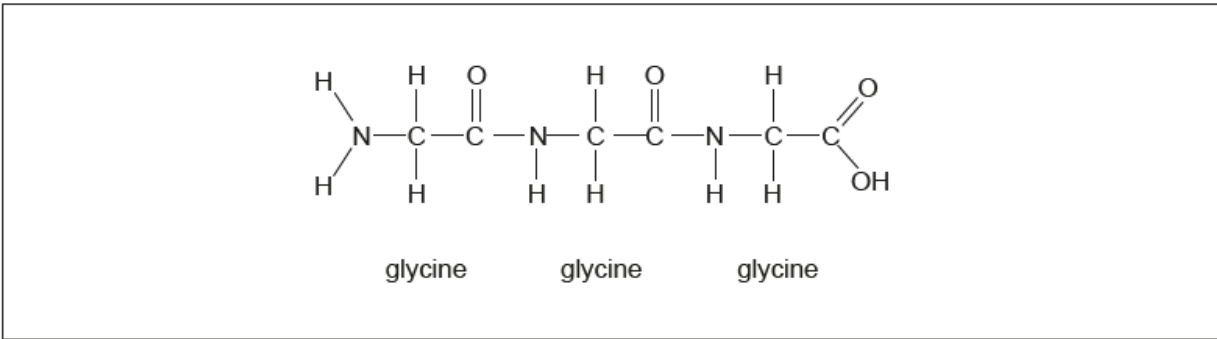
[4 marks]



This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins or other markings on the paper.

7a. The figure shows a tripeptide.

[1 mark]



Label **one** peptide bond in this molecule.

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7b. Outline the specific functions of **three named** proteins.

[3 marks]

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7c. Outline the action taken by the diaphragm during inhalation.

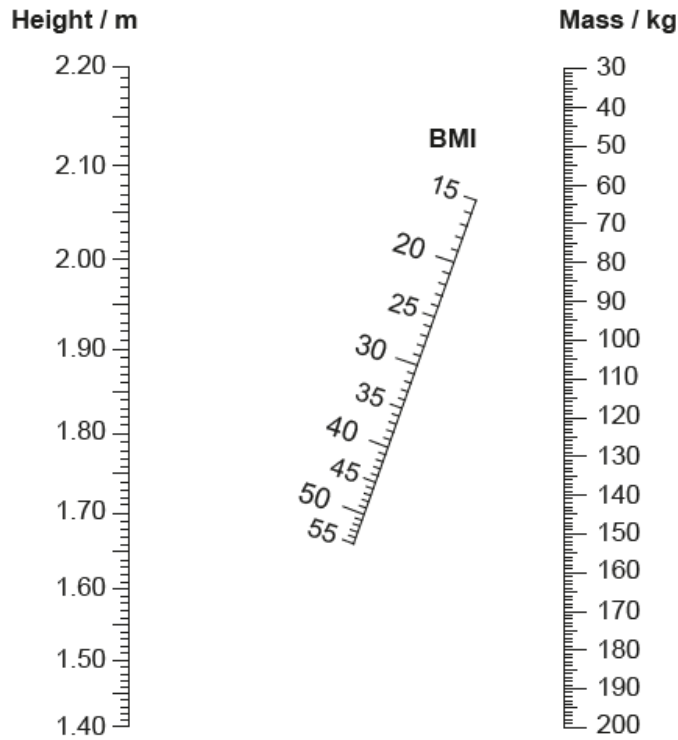
[1 mark]

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A nomogram can be used to determine the body mass index (BMI) of an individual.



8a. State the BMI of a person of mass 80 kg and 1.80 m in height. [1 mark]

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8b. Explain how measurement of BMI could help to assess whether a person [2 marks] has an increased risk of type II diabetes.

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A short base sequence of mRNA and a table of the genetic code are shown below.
Sequence of mRNA

AUGAGCCGAAGGUAGCUG

Table of the genetic code

		2nd letter					
		U	C	A	G		
1st letter	U	Phe	Ser	Tyr	Cys	U	3rd letter
		Phe	Ser	Tyr	Cys	C	
		Leu	Ser	STOP	STOP	A	
		Leu	Ser	STOP	Trp	G	
	C	Leu	Pro	His	Arg	U	
		Leu	Pro	His	Arg	C	
		Leu	Pro	Gln	Arg	A	
		Leu	Pro	Gln	Arg	G	
	A	Ile	Thr	Asn	Ser	U	
		Ile	Thr	Asn	Ser	C	
		Ile	Thr	Lys	Arg	A	
		Met/START	Thr	Lys	Arg	G	
	G	Val	Ala	Asp	Gly	U	
		Val	Ala	Asp	Gly	C	
		Val	Ala	Glu	Gly	A	
		Val	Ala	Glu	Gly	G	

9a. Outline the function of codons. [1 mark]

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9b. Determine the sequence of amino acids that could be translated from the [1 mark] sequence of mRNA.

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9c. Determine the DNA base sequence transcribed to form this sequence of mRNA. [1 mark]

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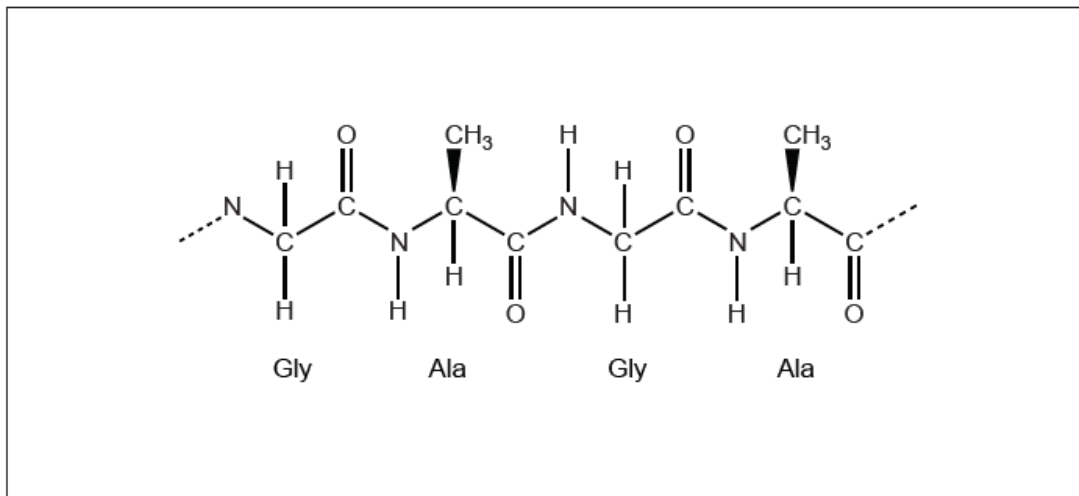
9d. Suggest a hypothesis that accounts for the slightly different meaning of some codons in a very limited number of organisms. [1 mark]

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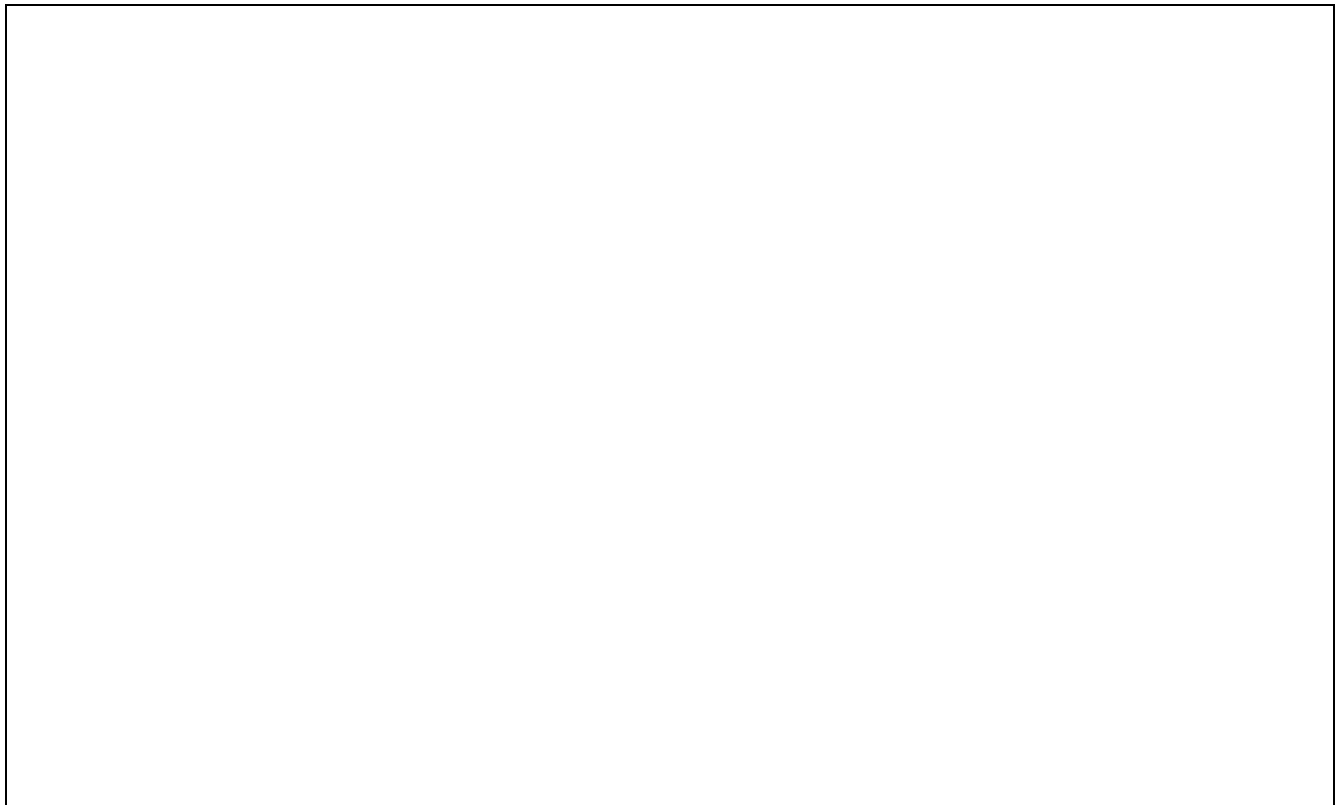
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The diagram shows a section of a polypeptide.



9e. Annotate the diagram to show a peptide bond between two amino acids. [1 mark]



9f. State the type of reaction that removes water while linking amino acids together to form polypeptides. [1 mark]

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9g. Outline the function of Rubisco and of spider silk in relation to their three-dimensional conformation. [2 marks]

	Function	Conformation
Rubisco		
Spider silk		