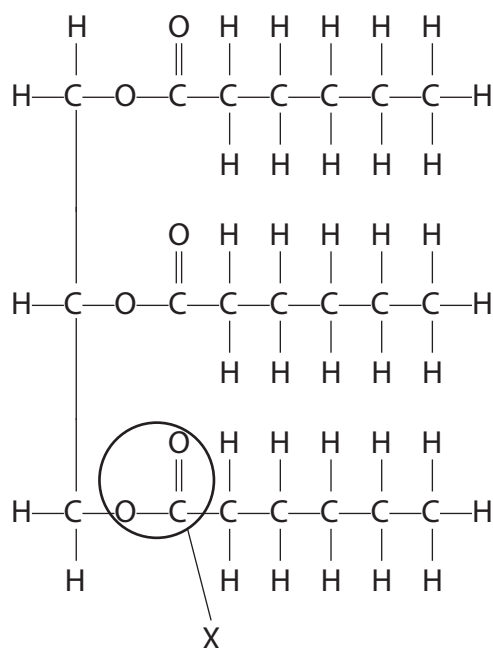


6 Hydrolytic enzymes are released by organs in the digestive system.

(a) Cells in the pancreas and small intestine synthesise lipase. Lipase hydrolyses lipids in food.

The diagram shows a triglyceride molecule.



(i) Which of the following is the name of the bond labelled X?

(1)

- A ester bond
- B glycosidic bond
- C hydrogen bond
- D phosphodiester bond

(ii) Name the process by which enzymes leave the cells of the pancreas and small intestine.

(1)

(iii) Explain why the pH in the small intestine would change after lipase hydrolyses lipids.

(2)



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(b) The triglyceride in the diagram can combine with protein to form a lipoprotein.

Explain the effect that large quantities of this lipoprotein would have on blood cholesterol levels.

(4)

Area with horizontal dotted lines for writing the answer.



(c) Glycogen and starch can be hydrolysed by enzymes.

Which row shows the correct features of the structure of glycogen?

(1)

<input type="checkbox"/> A	1,4-glycosidic bonds only	branched
<input type="checkbox"/> B	1,6-glycosidic bonds only	unbranched
<input type="checkbox"/> C	1,4-glycosidic bonds and 1,6-glycosidic bonds	branched
<input type="checkbox"/> D	1,4-glycosidic bonds and 1,6-glycosidic bonds	unbranched

(d) Starch contains two different molecules, amylose and amylopectin. The percentage of each molecule found in starch varies depending on its source.

The effect of amylose content on the hydrolysis of starch from different sources by enzymes was investigated.

Source of starch	Amylose content (%)	Percentage of starch hydrolysed after 4 hours (%)
Cassava	20.0	51.9
Peruvian carrot	18.7	54.2
Potato	28.9	39.6
Yellow maize	35.8	37.5

(i) Calculate the ratio of amylose to amylopectin in cassava. Give your answer in simplest form.

(1)

Answer



(ii) Explain the relationship between the composition of the starch and the rate of hydrolysis by enzymes.

(4)

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(Total for Question 6 = 14 marks)



P 4 9 8 2 9 A 0 1 9 2 8