

7. Human nutrition

7.4 Chemical digestion

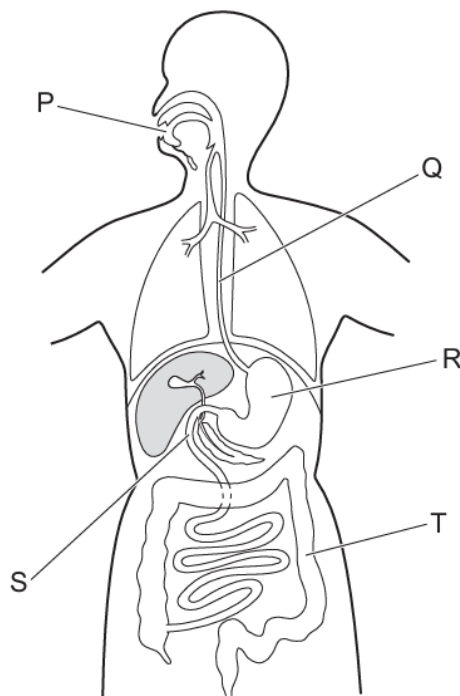
Paper 1 and 2

Question Paper

Paper 1

Questions are applicable for both core and extended candidates

- 1 The diagram shows the human digestive system.



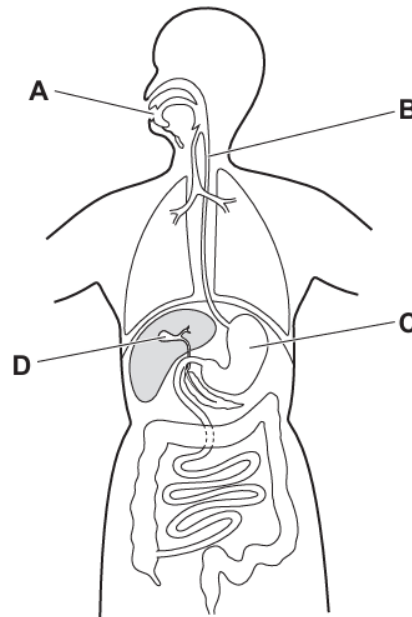
Which letters show where amylase acts during digestion?

- A** P and R **B** P and S **C** Q and R **D** Q and T
- 2 What are the products of protein digestion in the stomach?
- A** amino acids
B fatty acids
C glycerol
D proteases

- 3 A person ate food X. Chemical digestion of food X occurred in the mouth and small intestine but **not** in the stomach.

What was in food X?

- A fat
 - B ions
 - C protein
 - D starch
- 4 Where does protease act?



- 5 What is meant by chemical digestion?
- A Large insoluble molecules are broken down into small soluble molecules.
 - B Large soluble molecules are broken down into small insoluble molecules.
 - C Small insoluble molecules are built up into large soluble molecules.
 - D Small soluble molecules are built up into large insoluble molecules.

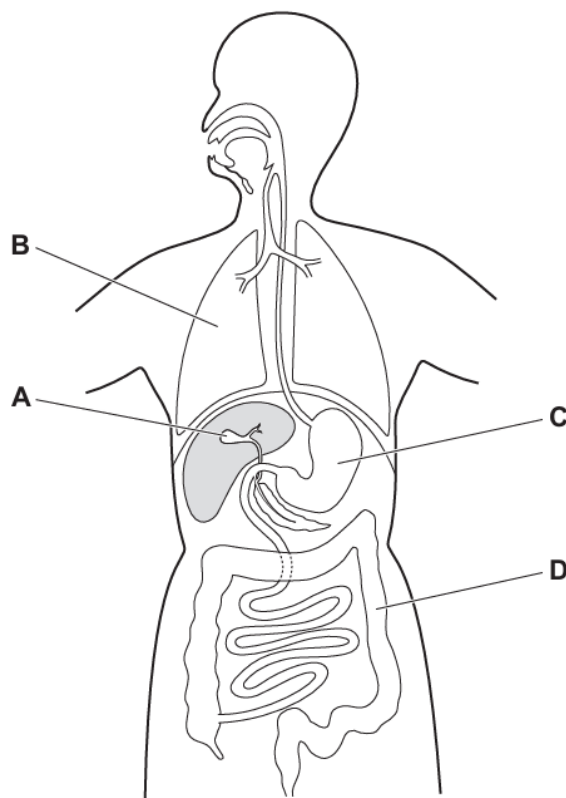
- 6 Some medicines are made into tablets which are coated in a starch-like substance.

The coating protects the medicine from the effects of gastric juice.

Which enzyme digests the coating and what is produced by this action?

	enzyme	products
A	amylase	fatty acids and glycerol
B	amylase	simple reducing sugars
C	lipase	fatty acids and glycerol
D	lipase	simple reducing sugars

- 7 Which organ secretes hydrochloric acid?



- 8 A piece of bread begins to taste sweet when it is mixed with saliva and chewed for several minutes.

Which substance in saliva causes this change?

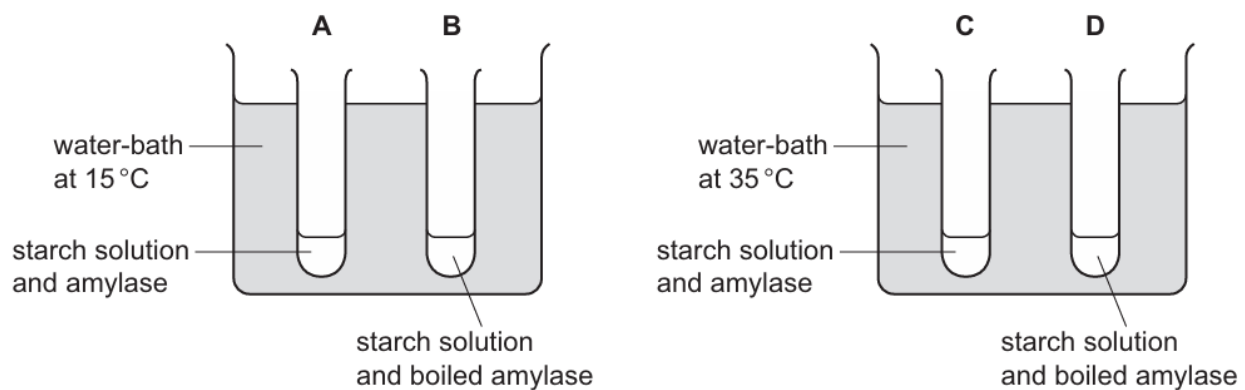
- A amylase
- B hydrochloric acid
- C lipase
- D protease

- 9 Which statement is correct?

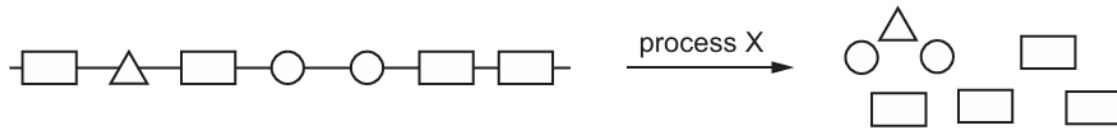
- A Amylase breaks down glucose to starch.
- B Amylase is secreted into the mouth and small intestine.
- C Lipase breaks down glycerol to fatty acids.
- D Protease is secreted into the oesophagus and stomach.

- 10 Four test-tubes were set up as shown in the diagram.

In which test-tube is the starch digested most quickly?

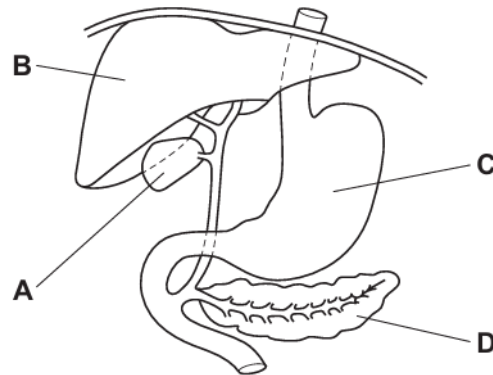


- 11 The diagram shows a large food molecule changing into smaller molecules.

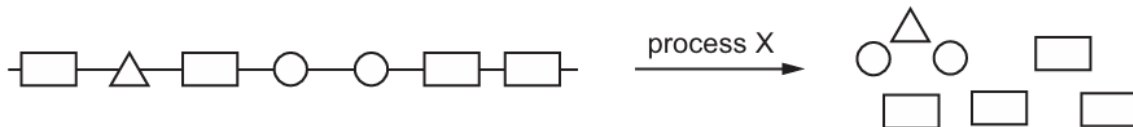


What is process X?

- A** absorption
 - B** chewing
 - C** digestion
 - D** secretion
- 12 The diagram shows part of the human alimentary canal and associated organs.
- Which structure produces hydrochloric acid?



- 13 The diagram shows a large food molecule changing into smaller molecules.



What is process X?

- A** absorption
- B** chewing
- C** digestion
- D** secretion

14 Starch is digested by amylase in the mouth, but it is not digested in the stomach.

What is the reason for this?

- A** All starch digestion is completed in the mouth.
- B** The pH in the stomach is not suitable for the amylase to work.
- C** The starch does not stay in the stomach long enough to be digested.
- D** The temperature in the stomach is not suitable for the amylase to work.

15 What are the products when proteins are broken down?

- A** amino acids
- B** fatty acids
- C** glycerol
- D** simple sugars

16 What is the definition of chemical digestion?

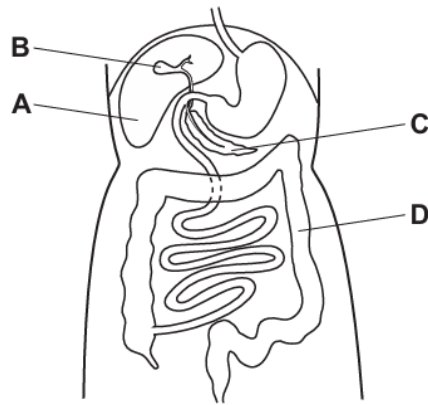
- A** Large insoluble molecules are changed into smaller soluble molecules.
- B** Large soluble molecules are changed into smaller soluble molecules.
- C** Small insoluble molecules and ions are passed through the wall of the small intestine.
- D** Small soluble molecules and ions are passed through the wall of the small intestine.

17 Which organ secretes amylase?

- A** colon
- B** liver
- C** pancreas
- D** stomach

18 The diagram shows part of the alimentary canal.

Which structure produces lipase?



Paper 2

Questions are applicable for both core and extended candidates unless indicated in the question

- 19 A student investigates the breakdown of fats in milk by lipase. Four test-tubes labelled **A**, **B**, **C** and **D** are set up.

The table shows the contents of each test-tube.

In which test-tube will the contents become acidic most quickly? (extended only)

	milk	bile	boiled lipase	lipase	key ✓ = present x = absent
A	✓	✓	x	✓	
B	✓	✓	✓	x	
C	✓	x	✓	x	
D	x	✓	✓	✓	

20 The diagrams show carbohydrate molecules as they pass through the alimentary canal.

Which row represents the molecules correctly?

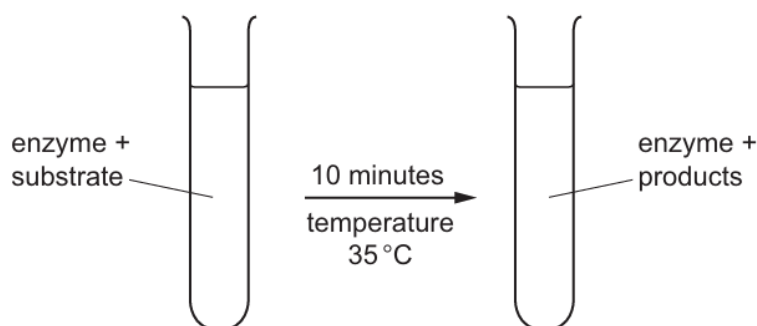
	before taking into the mouth	after some time in the mouth	after some time in the small intestine
A			
B			
C			
D			

21 Which row shows correct information about three digestive enzymes in humans? **(extended only)**

	lipase	maltase	trypsin
A	acts in acidic conditions	acts in the stomach	secreted by the pancreas
B	secreted by the pancreas	secreted in the mouth	acts in acidic conditions
C	secreted by the small intestine	acts in alkaline conditions	secreted in the stomach
D	acts in the small intestine	acts in the small intestine	acts in alkaline conditions

- 22 Which substance is the product of protein digestion?
- A amino acids
 - B fatty acids
 - C glucose
 - D glycerol
- 23 Which organ produces amylase?
- A gall bladder
 - B kidney
 - C oesophagus
 - D pancreas
- 24 Which statement about enzymes in digestion is correct?
- A Amylase catalyses the breakdown of fats to fatty acids and glycerol.
 - B Amylase catalyses the breakdown of oils to fatty acids and glucose.
 - C Lipase catalyses the breakdown of fats to fatty acids and glycerol.
 - D Lipase catalyses the breakdown of oils to fatty acids and glucose.

- 25 The diagram shows a test-tube at the start and at the end of an enzyme experiment.



At the end of the experiment, the mixture in the test-tube contains glycerol.

Which row correctly identifies the enzyme and the substrate it acts on?

	enzyme	substrate it acts on
A	amylase	fat
B	amylase	glucose
C	lipase	fat
D	lipase	glucose

- 26 What is meant by chemical digestion?

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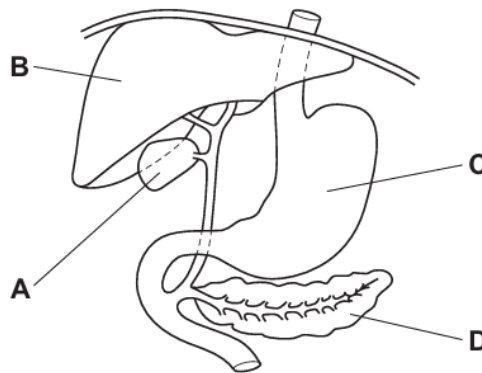
	enzyme	products
A	amylase	fatty acids and glycerol
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28 In which region of the alimentary canal is maltose digested? **(extended only)**

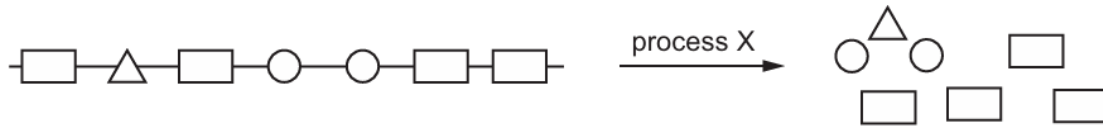
- A** colon
- B** rectum
- C** small intestine
- D** stomach

29 The diagram shows part of the human alimentary canal and associated organs.

Which structure produces hydrochloric acid?



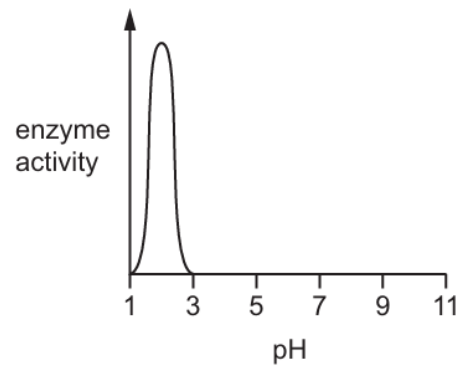
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What is process X?

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- 33 The activity of amylase is measured in four parts of the alimentary canal.
- Which two parts have the most amylase activity?
- A colon and duodenum
 - B colon and stomach
 - C mouth and duodenum
 - D stomach and mouth

34 The graph shows the effect of pH on the activity of an enzyme.



In which part of the alimentary canal would this enzyme be **most** active?

- A large intestine
- B mouth
- C small intestine
- D stomach