

Past-paper walk-through

Chemical digestion ■ 7.4

eXercise

Questions in this set

- 0610/21 N25 Q10 ■ 1 mark
- 0610/21 N25 Q11 ■ 1 mark
- 0610/22 N25 Q7 ■ 1 mark
- 0610/22 N25 Q9 ■ 1 mark
- 0610/23 N25 Q11 ■ 1 mark
- 0610/22 J25 Q12 ■ 1 mark
- 0610/23 J25 Q12 ■ 1 mark
- 0610/43 J25 Q1 ■ 15 marks
- 0610/22 M25 Q14 ■ 1 mark

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 10

0610/21 N25 ■ Q10 ■ 1 mark

10 What is a role of bile?

- A** It contains enzymes that digest starch.
- B** It emulsifies fats, increasing their surface area.
- C** It kills bacteria in food.
- D** It provides the optimum pH for pepsin activity.

Solution 10

Answer: **B**

Why

- Bile contains no enzymes at all.
- It emulsifies fat, breaking large droplets into many small ones.
- That increases the surface area for lipase to work on – and it makes conditions alkaline, not acidic.

Question 11

0610/21 N25 ■ Q11 ■ 1 mark

- 11** Where in the alimentary canal is the enzyme trypsin found and what are the products of the reaction trypsin catalyses?

	where trypsin is found	products
A	duodenum	amino acids
B	duodenum	fatty acids
C	ileum	proteins
D	stomach	amino acids

Solution 11

Answer: **A**

Why

- Trypsin is made by the pancreas and released into the duodenum.
- It is a protease, so it digests protein.
- It breaks proteins down into peptides and then amino acids.

Question 7

0610/22 N25 ■ Q7 ■ 1 mark

7 Which function is performed in the duodenum?

A assimilation

B digestion

C egestion

D ingestion

Solution 7

Answer: **B**

Why

- The duodenum is the first part of the small intestine.
- Pancreatic and intestinal enzymes act there, so chemical digestion is completed.
- Ingestion happens at the mouth, egestion at the anus, and assimilation inside the body cells.

Question 9

0610/22 N25 ■ Q9 ■ 1 mark

- 9 Which row names a small molecule and where that molecule is absorbed in the digestive system?

	name of the small molecule	small intestine	colon
A	amino acid	x	✓
B	glucose	x	✓
C	maltose	✓	x
D	water	✓	✓

key

✓ = molecule is absorbed

x = molecule is **not** absorbed

Solution 9

Answer: **D**

Why

- Amino acids and glucose are absorbed in the small intestine, not the colon.
- The colon absorbs mainly *water* and some ions.
- So match each small molecule to the small intestine, and only water to the colon.

Question 11

0610/23 N25 ■ Q11 ■ 1 mark

- 11** What is an example of chemical digestion?
- A** breaking down starch into reducing sugars
 - B** churning of food by muscular contractions of the stomach wall
 - C** grinding of food by teeth
 - D** mixing of food with bile

Solution 11

Answer: **A**

Why

- Chemical digestion uses enzymes to break molecules into smaller ones.
- Starch to reducing sugars is exactly that, catalysed by amylase.
- Chewing and churning are *physical* digestion – the molecules themselves are unchanged.

Question 12

0610/22 J25 ■ Q12 ■ 1 mark

12 The table shows the substrates and end products in four enzyme-controlled chemical reactions.

Which reaction was controlled by lipase?

	substrate	end product
A	maltose	starch
B	oil	fatty acids and glycerol
C	protein	amino acids
D	starch	maltose

Solution 12

Answer: **B**

Why

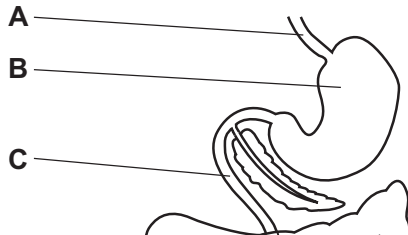
- Lipase breaks down fats and oils.
- The products are fatty acids and glycerol.
- So look for oil as the substrate, not starch, maltose or protein.

Question 12

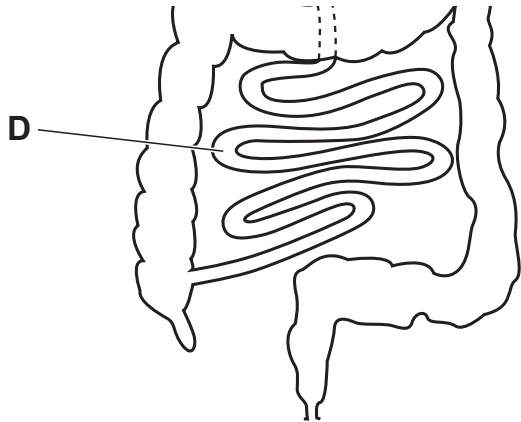
0610/23 J25 ■ Q12 ■ 1 mark

12 The diagram shows part of the human digestive system.

In which part does protein digestion **begin**?



Question 12



Solution 12

Answer: **B**

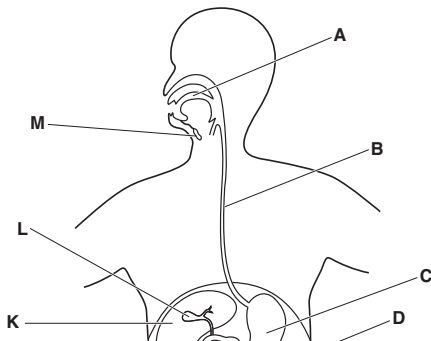
Why

- Protein digestion begins in the stomach, with pepsin in acid conditions.
- It is not the mouth – only starch digestion starts there.
- So find the stomach: the wide muscular sac below the oesophagus.

Question 1

0610/43 J25 ■ Q1 ■ 15 marks

- 1 (a) Fig. 1.1 is a diagram of the human digestive system.



Question 1

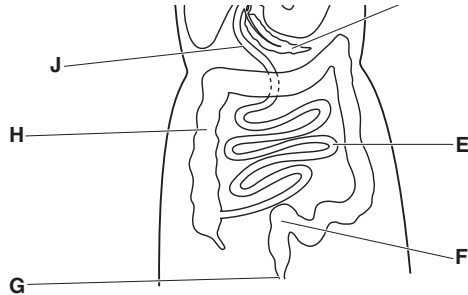


Fig. 1.1

Table 1.1 shows information about some of the structures shown in Fig. 1.1.

Complete Table 1.1, using Fig. 1.1.

—

Question 1

Table 1.1

name of the structure	function	letter in Fig. 1.1
		G
	produces amylase	
gall bladder		
	transports food to the stomach	

[4]

Question 1

- (b) (i)** Describe the role of chemical digestion.

Question 1

(ii) Maltose is digested by maltase.

State the name of the product of this reaction.

Question 1

- (iii) Describe where maltose is digested in the small intestine.

Question 1

- (iv) Explain why amylase digests starch in the small intestine but does **not** digest starch in the stomach.

Question 1

[Total: 15]

Solution 1

(a) Mark scheme

- name of structure
- function
- letter in Fig. 1.1
- anus
- egestion / removal
- of, undigested
- food / faeces
- G

Solution 1

- salivary glands
- / pancreas
- produce amylase
- M / D
- gall bladder
- stores bile
- L
- oesophagus
- transports food to
- the stomach

Solution 1

- B
- ;;;
- 4 one mark per correct row

Solution 1

(b)(i)

Mark scheme

- (the breakdown) of large molecules into small molecules ;
- idea of (only) small molecules can be absorbed ;
- idea of insoluble (molecules) to soluble (molecules) ;
- 3

Solution 1

(b)(ii)

Mark scheme

- glucose ;
- 1

Solution 1

(b)(iii)

Mark scheme

- (the membranes of the) epithelium lining, epithelial cells (of, small intestine /
- villi) ;
- 1

Solution 1

(b)(iv) Mark scheme

- any six from:
- 1
- stomach produces, gastric juice / hydrochloric acid / HCl ;
- 2
- acidic / low pH, in stomach ;
- 3
- (acid) denatures, amylase / enzyme ;
- 4

Solution 1

- changes shape of the active site ;
- 5
- (active site) no longer complementary (shape) to, substrate / starch ;
- 6
- cannot form enzyme-substrate complexes ;
- 7
- bile is released into the, small intestine / duodenum ;
- 8
- bile is an alkaline mixture ;
- 9

Solution 1

- neutralises the acidic mixture ;
- 10 idea of suitable pH for amylase to work in small intestine ;
- 6
- MP1 A stomach contains gastric juice / HCl
- MP7 A pancreatic juice instead of bile
- 0610/43
- May/June 2025
- Guidance

Question 14

0610/22 M25 ■ Q14 ■ 1 mark

14 Which substance causes the change in pH when food enters the small intestine?

- A** amylase
- B** bile
- C** gastric juice
- D** trypsin

Solution 14

Answer: **B**

Why

- Stomach contents arrive in the small intestine strongly acidic from the gastric juice.
- Bile is alkaline and is released into the duodenum.
- It neutralises the acid, raising the pH so the intestinal enzymes can work.