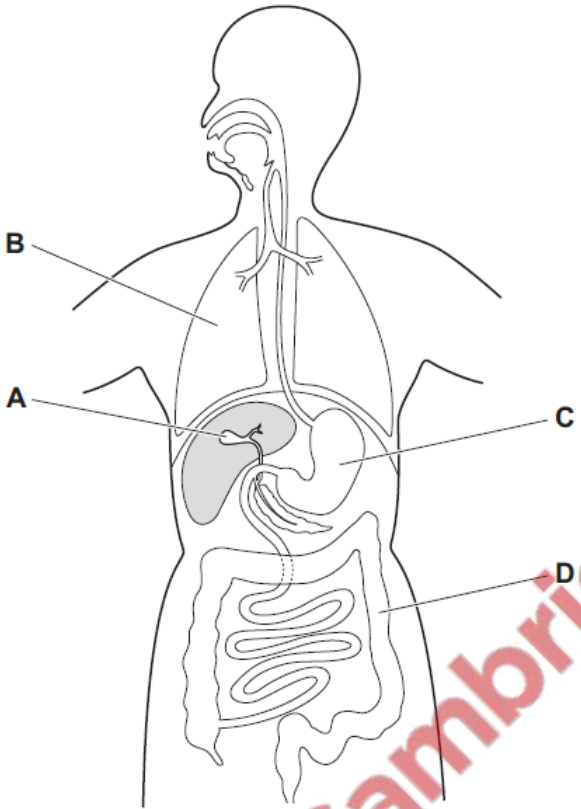
Human nutrition – 2022 November IGCSE 0610 Biology

1. Nov/2022/Paper_11/No.14

Which organ secretes hydrochloric acid?



2. Nov/2022/Paper_11/No.15

Which statements correctly describe the process of dental decay?

1 Food and bacteria coat the teeth.

2 The bacteria use the sugar in the food for respiration.

3 The bacteria produce acids.

4 The sugar dissolves the enamel.

A 1 and 2 only **B** 2 and 3 only **C** 3 and 4 **D** 1, 2 and 3

3. Nov/2022/Paper_11/No.16

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

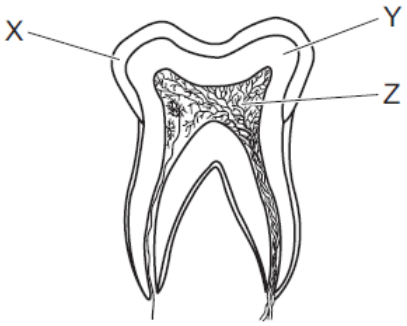
B hydrochloric acid

C lipase

D protease

4. Nov/2022/Paper_12/No.14

The diagram shows a cross-section of a human tooth.



Which row identifies the labels in the diagram?

	X	Y	Z
A	dentine	enamel	pulp cavity
B	dentine	pulp cavity	enamel
C	enamel	pulp cavity	dentine
D	enamel	dentine	pulp cavity

5. Nov/2022/Paper_12/No.16

Where is most water absorbed in the alimentary canal?

A large intestine

B oesophagus

C small intestine

D stomach

6. Nov/2022/Paper_12/No.25

A person eats foods containing proteins. Some of the amino acids in the proteins are converted to urea and excreted from the body.

proteins —(1)→ amino acids —(2)→ urea —(3)→ urine

Which row identifies the sites of processes 1, 2 and 3?

	site of process 1	site of process 2	site of process 3
A	stomach	liver	kidney
B	liver	kidney	bladder
C	stomach	kidney	liver
D	liver	stomach	kidney

7. Nov/2022/Paper_13/No.14

What is the order of the processes that take place when food is eaten?

A digestion → absorption → assimilation → ingestion → egestion

B digestion → ingestion → egestion → absorption → assimilation

C ingestion → digestion → egestion → assimilation → absorption

D ingestion → digestion → absorption → assimilation → egestion

8. Nov/2022/Paper_13/No.15

Dental decay is caused when bacteria break down sugars and produce acids.

In which order are the parts of the teeth damaged by acid?

A dentine → pulp → enamel

B enamel → dentine → pulp

C enamel → pulp → dentine

D pulp → dentine → enamel

9. Nov/2022/Paper_13/No.29

The table shows the recommended daily amounts (RDA) of some nutrients for a person with special dietary requirements, and their actual intake of those nutrients.

dietary component	RDA for this person	actual intake
carbohydrate / g	260	265
protein / g	44	41
fat / g	33	32
vitamin C / mg	60	5
vitamin D / µg	10	11
fibre / g	26	27
iron / mg	15	15
calcium / mg	700	710

What would the person be at risk of developing if they continued with the same daily intake of these nutrients?

A constipation

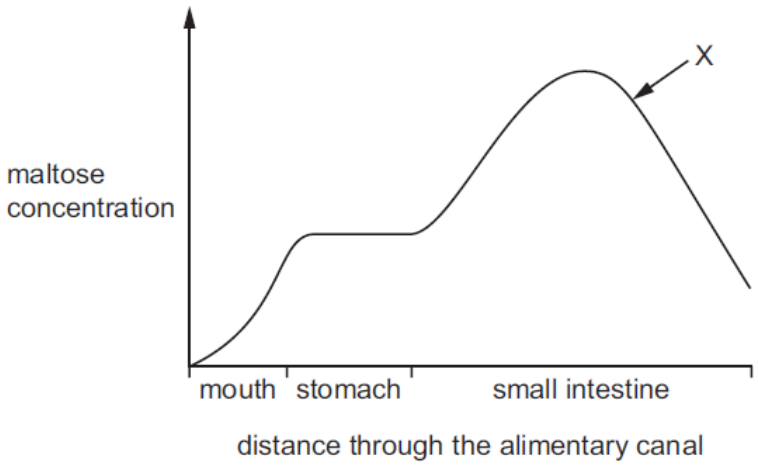
B coronary heart disease

C obesity

D scurvy

10. Nov/2022/Paper_21/No.14

The graph shows the concentration of maltose in different parts of the alimentary canal.



What causes the change in concentration at X?

A absorption of maltose

B action of amylase

C action of maltase

D assimilation of maltose

11. Nov/2022/Paper_22/No.13

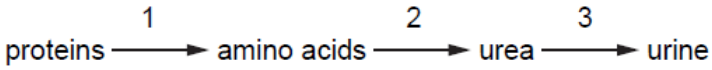
The cholera bacterium produces toxins that cause chloride ions to be secreted into the small intestine.

What is the immediate effect of this on the water potential of blood in the intestinal capillaries, and on the water potential of the contents of the small intestine?

	water potential	
	blood in capillaries	contents of small intestine
A	lowered	lowered
B	lowered	raised
C	raised	lowered
D	raised	raised

12. Nov/2022/Paper_22/No.23

A person eats foods containing proteins. Some of the amino acids in the proteins are converted to urea and excreted from the body.

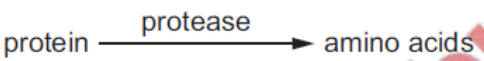


Which row identifies the sites of processes 1, 2 and 3?

	site of process 1	site of process 2	site of process 3
A	stomach	liver	kidney
B	liver	kidney	bladder
C	stomach	kidney	liver
D	liver	stomach	kidney

13. Nov/2022/Paper_23/No.10

The equation shows the digestion of protein to amino acids.



In the equation, what is protease?

A a catalyst

B a product

C a solvent

D a substrate

14. Nov/2022/Paper_23/No.13

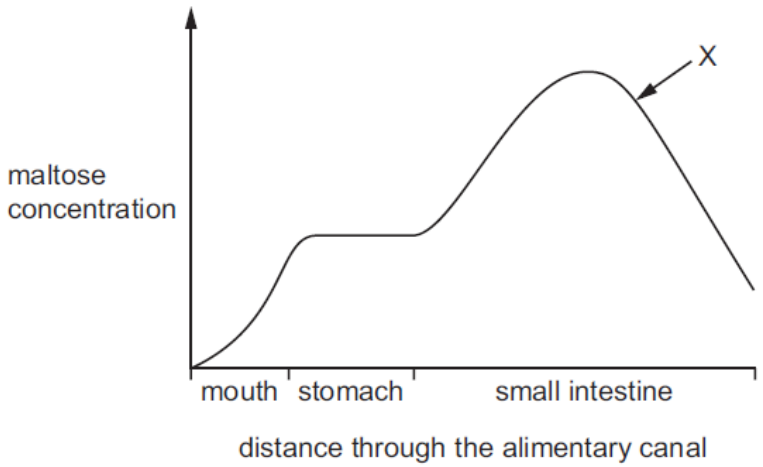
The cholera bacterium produces toxins that cause chloride ions to be secreted into the small intestine.

What is the immediate effect of this on the water potential of blood in the intestinal capillaries, and on the water potential of the contents of the small intestine?

	water potential	
	blood in capillaries	contents of small intestine
A	lowered	lowered
B	lowered	raised
C	raised	lowered
D	raised	raised

15. Nov/2022/Paper_23/No.14

The graph shows the concentration of maltose in different parts of the alimentary canal.



What causes the change in concentration at X?

A absorption of maltose

B action of amylase

C action of maltase

D assimilation of maltose

16. Nov/2022/Paper_23/No.27

The table shows the recommended daily amounts (RDA) of some nutrients for a person with special dietary requirements, and their actual intake of those nutrients.

dietary component	RDA for this person	actual intake
carbohydrate / g	260	265
protein / g	44	41
fat / g	33	32
vitamin C / mg	60	5
vitamin D / µg	10	11
fibre / g	26	27
iron / mg	15	15
calcium / mg	700	710

What would the person be at risk of developing if they continued with the same daily intake of these nutrients?

A constipation

B coronary heart disease

C obesity

D scurvy

17. Nov/2022/Paper_31/No.4

(a) A balanced diet is needed to maintain health.

(i) State what is meant by the term balanced diet.

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.....

..... [2]

(ii) Fat is an important component of a balanced diet.

Draw (circles) around **two** foods that are a good source of fat.

apples **beans** **bread** **cheese**

pasta **rice** **vegetable oil**

[2]

(iii) State **two** health problems associated with having an excessive amount of fat in the diet.

1 .....

2 .....

[2]

(iv) List **two** nutrient groups, other than fat, in a balanced diet and outline their dietary importance.

nutrient 1 .....

importance 1 .....

.....

nutrient 2 .....

importance 2 .....

.....

[4]

(b) Fig. 4.1 shows the estimated daily energy requirements for different groups of people.

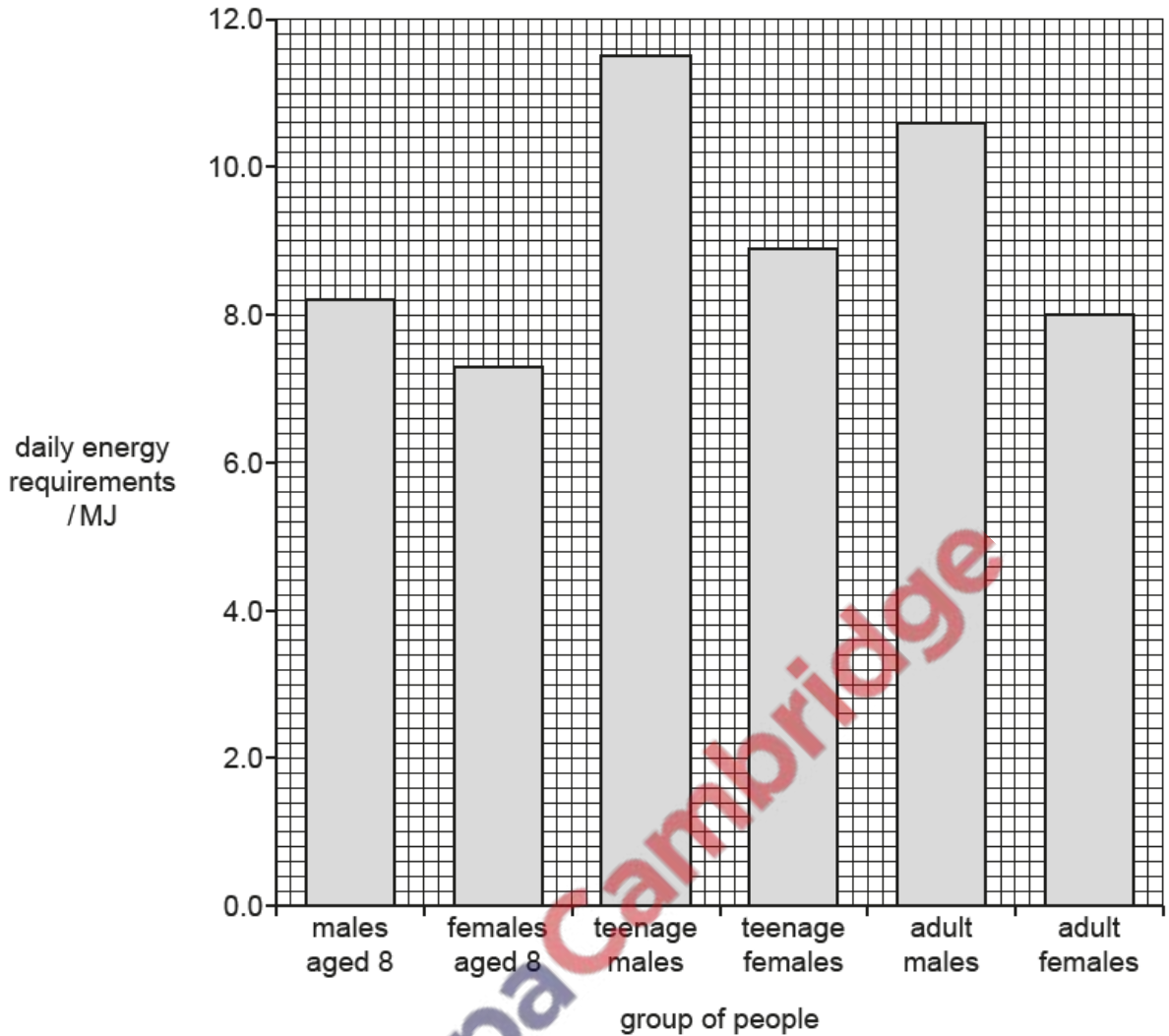

Fig. 4.1

(i) State the group of people shown in Fig. 4.1 that have the greatest daily energy requirements.

..... [1]

(ii) Using the information in Fig. 4.1, calculate the difference in energy requirements between adult males and adult females.

..... MJ [1]

(iii) Describe the overall trend between males and females shown in Fig. 4.1.

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..... [1]

(iv) Pregnant females have a larger daily energy requirement than females who are not pregnant.

Suggest why.

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..... [1]

[Total: 14]

18. Nov/2022/Paper_32/No.4

(a) Fig. 4.1 shows the structure of a human tooth.

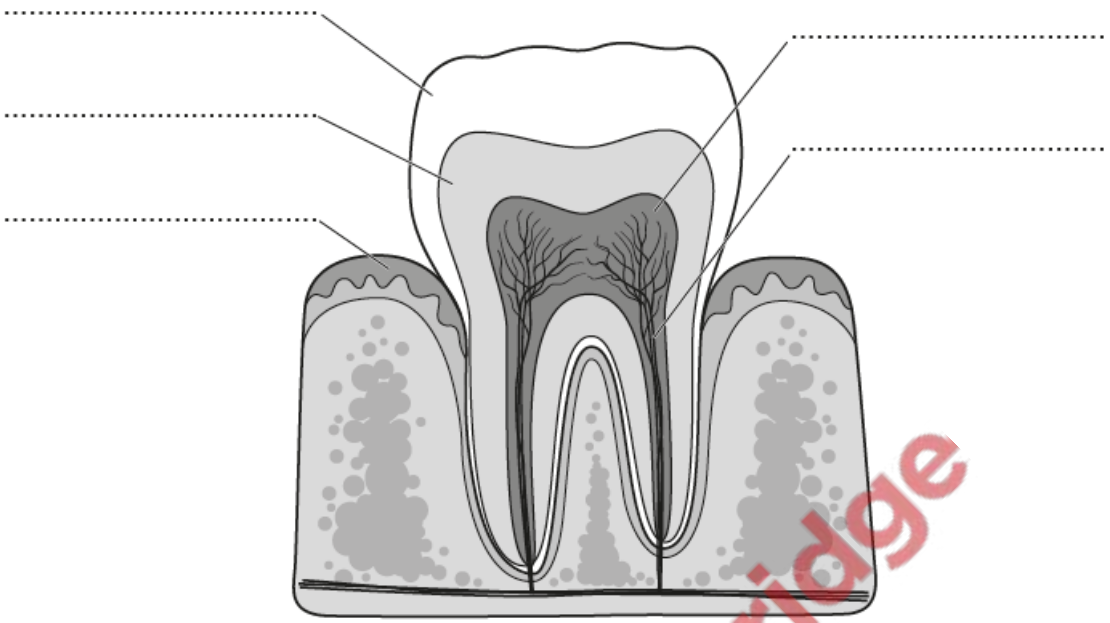

Fig. 4.1

Complete Fig. 4.1 by labelling the parts, in the spaces provided, using words from the list.

dentine **enamel** **gum** **nerves** **pulp**

[4]

(b) State the names of **two** types of human teeth.

1 .....

2 .....

[2]

(c) Describe the causes of dental decay.

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..... [3]

(d) Describe **two** ways of caring for teeth.

1 .....

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2 .....

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[2]

(e) State the type of digestion that teeth are involved in.

..... [1]

[Total: 12]

(a) Fig. 7.1 shows some names and functions of structures in the alimentary canal and associated organs.

The boxes on the left show the names of structures.

The boxes on the right show functions.

Draw a straight line from each structure to the correct function.

Draw **three** lines.

structure	**function**
	absorption of small food molecules through the wall of the alimentary canal into the blood
anus	
	break down of food into smaller pieces without chemical change
pancreas	
	control the egestion of faeces
small intestine	
	secretion of lipase

Fig. 7.1

[3]

(b) (i) Bread is a food that contains carbohydrates. A piece of bread is ingested.

Describe what happens to a piece of bread from the moment it enters the mouth until it reaches the stomach.

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..... [4]

(ii) State the name of a structure in the alimentary canal or an associated organ, that secretes protease.

..... [1]

(c) (i) Water is absorbed into the blood from the alimentary canal.

State where most of the water is absorbed in the alimentary canal.

..... [1]

(ii) Diarrhoea occurs when less water is absorbed from the alimentary canal.

State a treatment for diarrhoea.

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..... [1]

[Total: 10]

20. Nov/2022/Paper_33/No.8

(a) Large molecules are made from smaller molecules.

State the name of the **two** small molecules that make fats and oils.

1 .....

2 .....

[2]

(b) Palm oil is used in many food products. Oil palm plants can be grown as a large-scale monoculture.

Table 8.1 shows the total area used for growing oil palm plants from 1970 to 2010, in one country.

Table 8.1

year	total area of land used for growing oil palm plants / million hectares
1970	0.13
1980	0.25
1990	1.13
2000	4.16
2005	5.50
2010	7.82

(i) Using the information in Table 8.1, calculate the percentage increase in the total area of land used for growing oil palm plants between 1980 and 2005.

..... %

[2]

(ii) Describe the negative impacts to an ecosystem of growing plants such as oil palm as a large-scale monoculture.

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..... [3]

[Total: 7]

21. Nov/2022/Paper_41/No.1(a)

(a) Fig. 1.1 is a side view of a human skull indicating the four types of teeth and the jaws.

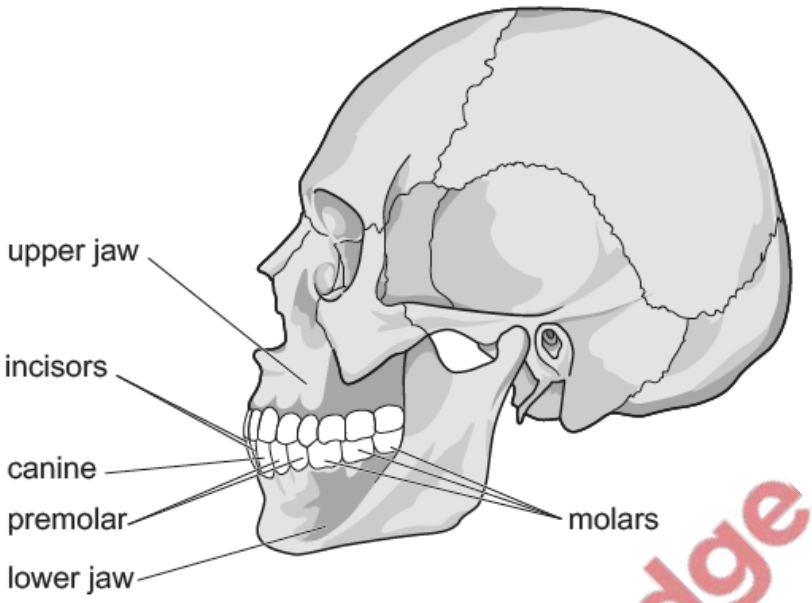

Fig. 1.1

(i) State the function of human teeth.

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..... [1]

(ii) State the name of the visible outer layer of the teeth.

..... [1]

(iii) Explain the process of tooth decay in humans.

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..... [3]

22. Nov/2022/Paper_42/No.2

Fig. 2.1 is a diagram of the human alimentary canal and associated organs.

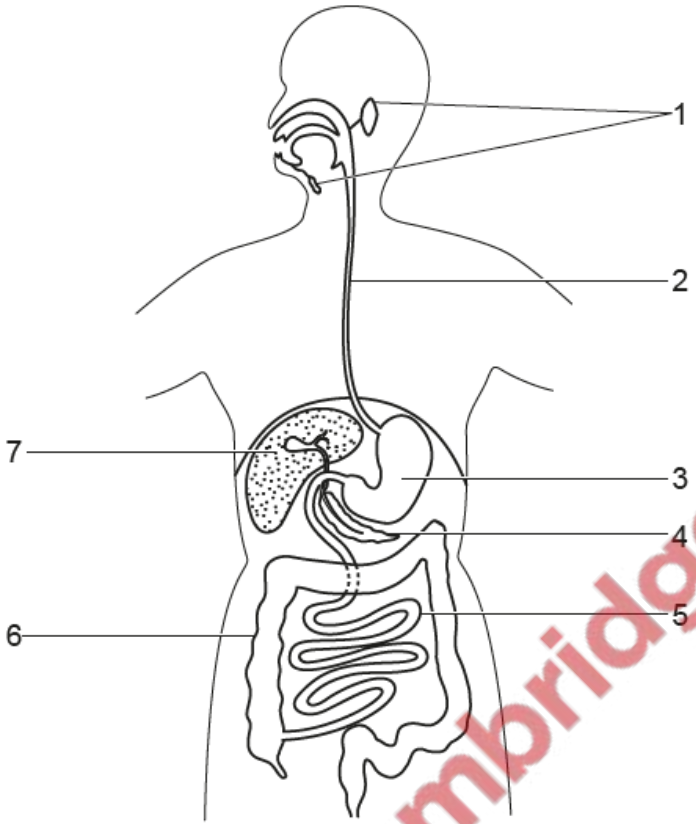

Fig. 2.1

(a) Table 2.1 shows enzymes, the organs that secrete these enzymes, their substrates and products.

Complete Table 2.1.

Table 2.1

enzyme	organ that secretes the enzyme	number identifying the organ on Fig. 2.1	substrate	product or products
amylase		1		
		3	protein	
lipase		4		
maltase				

[4]

(b) Explain the role of hydrochloric acid in the alimentary canal.

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..... [3]

(c) State a function of the region of the alimentary canal labelled 6 in Fig. 2.1.

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..... [1]

(d) Describe how food eaten by humans is reduced to smaller pieces **and** explain how this makes chemical digestion more efficient.

You may refer to Fig. 2.1 in your answer.

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..... [6]

[Total: 14]

23. Nov/2022/Paper_43/No.2

(a) Digestive enzymes are secreted into the alimentary canal.

(i) As well as enzymes, other substances that are important for digestion are also secreted into the alimentary canal.

State the names of **two** of these other substances.

1 .....

2 .....

[2]

(ii) Table 2.1 summarises some facts about the enzymes that are secreted into the alimentary canal.

Complete Table 2.1.

Table 2.1

name of the enzyme	organ where the enzyme is secreted	organ when the enzyme acts	products of digestion involving this enzyme
	salivary glands		
pepsin			
	pancreas		fatty acids and glycerol
	small intestine	epithelial lining of the small intestine	

[4]

(b) The activity of the enzyme pepsin was measured at different temperatures.

The results are shown in Fig. 2.1.

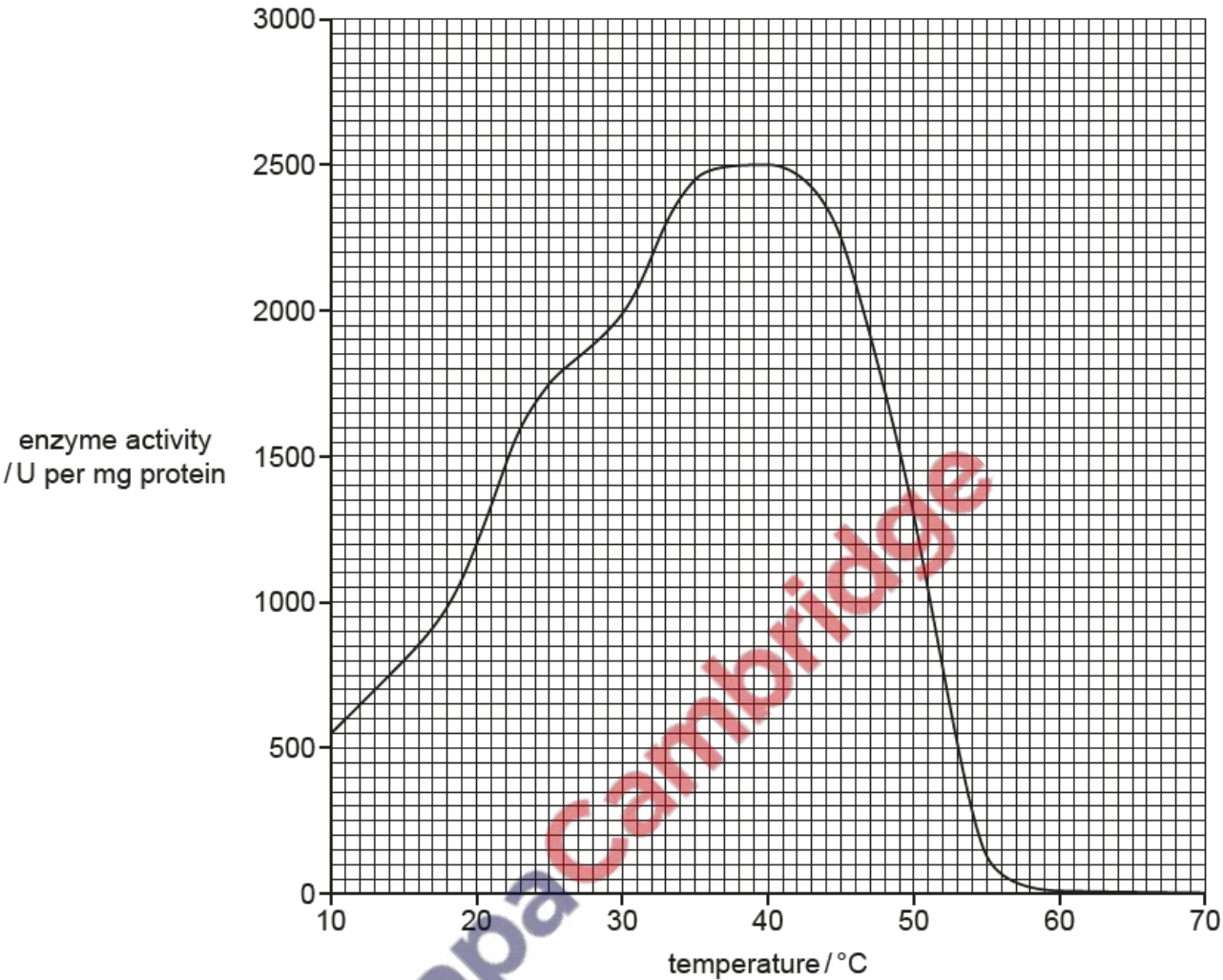

Fig. 2.1

Describe and explain the effect of temperature on the activity of pepsin.

Use the information in Fig. 2.1 to support your answer.

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..... [6]

(c) Lactase is another digestive enzyme, which is produced by human babies.

(i) Explain why lactase is important for the nutrition of young babies.

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..... [2]

(ii) Most people stop producing lactase when they become adults. If they drink milk, this may give them diarrhoea.

Describe the symptoms of diarrhoea.

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..... [1]

(iii) Cholera can also cause diarrhoea.

Explain how the cholera bacterium causes diarrhoea.

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..... [3]

[Total: 18]