Human nutrition – 2023 June IGCSE Biology 0610

1. June/2023/Paper_0610/11/No.14

The haemoglobin concentration in the blood of a person is 80 g / dm^3. The accepted normal concentration is 120 g / dm^3 or above.

Which substance may be lacking in their diet?

A calcium

B fats

C fibre

D iron

2. June/2023/Paper_0610/11/No.15

Which statement about physical digestion is correct?

A It increases the surface area of food.

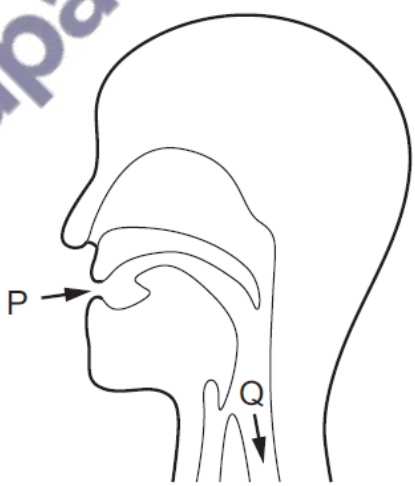
B It involves enzymes.

C It takes place in the mouth only.

D It produces smaller molecules.

3. June/2023/Paper_0610/11/No.16

Solid food enters the mouth at P and enters the oesophagus at Q.



How does the food at Q differ from the food at P?

A It contains less fibre.

B It contains less water.

C It contains less protein.

D It contains less starch.

4. June/2023/Paper_0610/12/No.14

The lack of which component of a balanced diet will lead to the development of scurvy?

A calcium

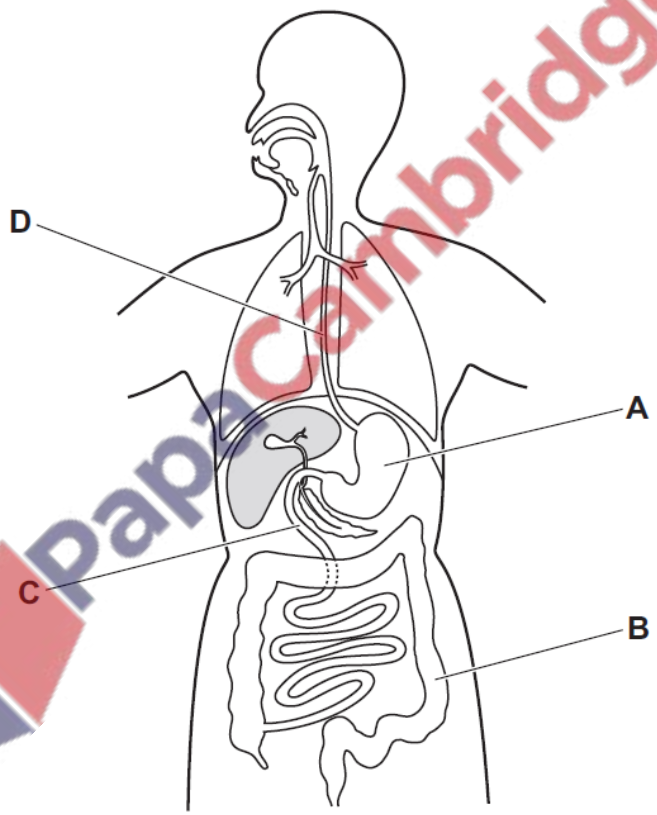
B iron

C vitamin C

D vitamin D

5. June/2023/Paper_0610/12/No.15

Which structure is the duodenum?



6. June/2023/Paper_0610/12/No.16

The food label is from a packet of cereal.

The label can help someone who is concerned about their diet.

Nutrition	
Typical values	100 g contains
Energy	985 kJ 235 kcal
Fat	1.5 g
of which saturates	0.3 g
Carbohydrate	45.5 g
of which sugars	3.8 g
Fibre	2.8 g
Protein	7.7 g
Salt	0.5 g

A person eats 45 g of cereal.

One of the food types listed in the label can help prevent constipation.

How many grams of this food type does the person eat?

A 1.3 g **B** 2.8 g **C** 3.5 g **D** 7.7 g

7. June/2023/Paper_0610/13/No.14

In humans, which two components of the diet can be broken down to release energy?

A carbohydrate and fat

B carbohydrate and mineral ions

C protein and water

D vitamins and protein

8. June/2023/Paper_0610/13/No.15

Which is a part of the small intestine?

A colon

B ileum

C oesophagus

D rectum

9. June/2023/Paper_0610/21/No.13

The haemoglobin concentration in the blood of a person is $80\,g/dm^3$. The accepted normal concentration is $120\,g/dm^3$ or above.

Which substance may be lacking in their diet?

A calcium

B fats

C fibre

D iron

10. June/2023/Paper_0610/21/No.14

Which statement about physical digestion is correct?

A It increases the surface area of food.

B It involves enzymes.

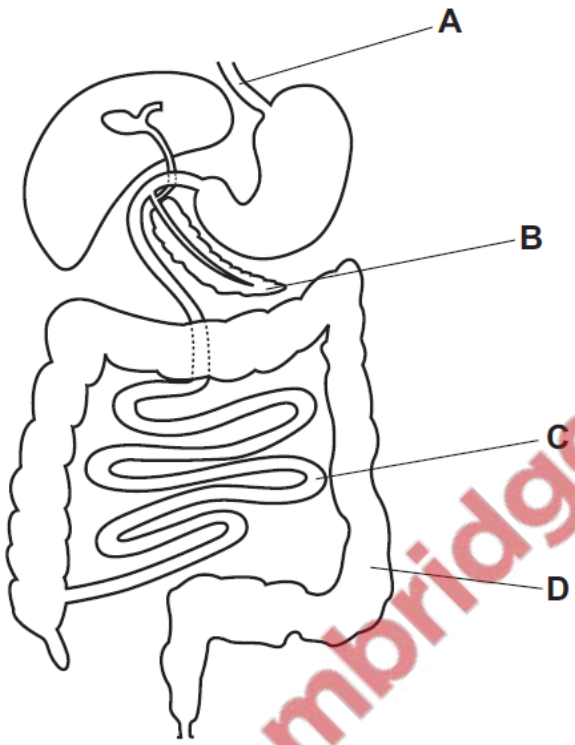
C It takes place in the mouth only.

D It produces smaller molecules.

11. June/2023/Paper_0610/22/No.7

The diagram shows the human alimentary canal.

In which structure is most glucose absorbed into the blood?



12. June/2023/Paper_0610/22/No.9

In which region of the alimentary canal is maltose digested?

A colon

B rectum

C small intestine

D stomach

13. June/2023/Paper_0610/22/No.13

The lack of which component of a balanced diet will lead to the development of scurvy?

A calcium

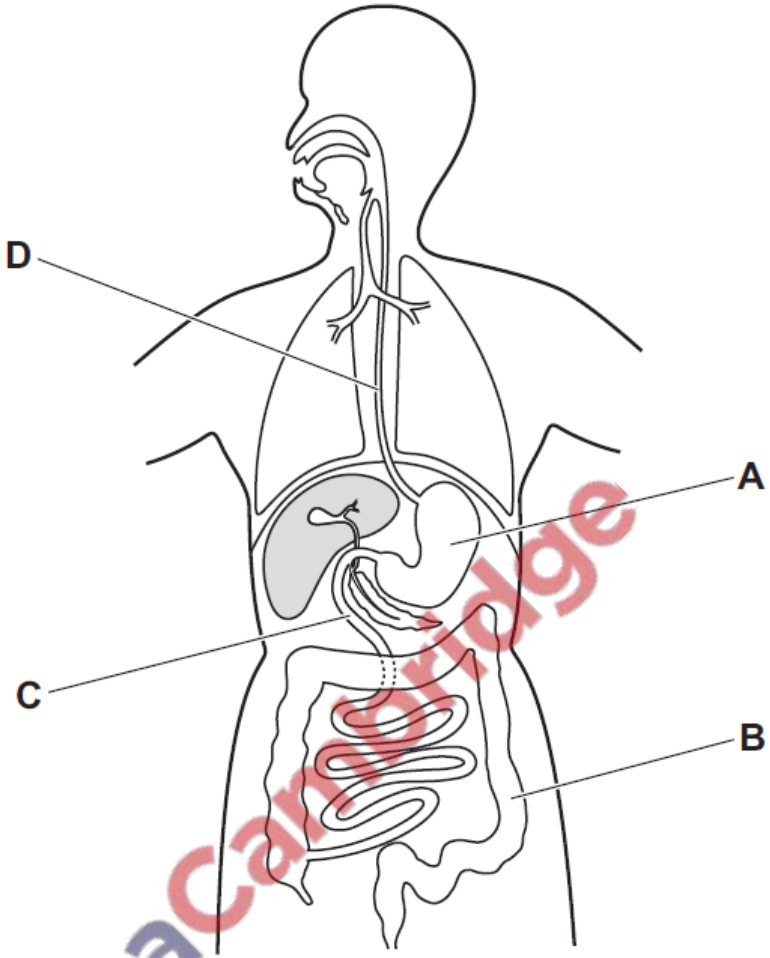
B iron

C vitamin C

D vitamin D

14. June/2023/Paper_0610/22/No.14

Which structure is the duodenum?



15. June/2023/Paper_0610/23/No.13

In humans, which two components of the diet can be broken down to release energy?

A carbohydrate and fat

B carbohydrate and mineral ions

C protein and water

D vitamins and protein

16. June/2023/Paper_0610/23/No.14

Which is a part of the small intestine?

A colon

B ileum

C oesophagus

D rectum

17. June/2023/Paper_0610/31/No.2

(a) Fig. 2.1 is a diagram of a human tooth.

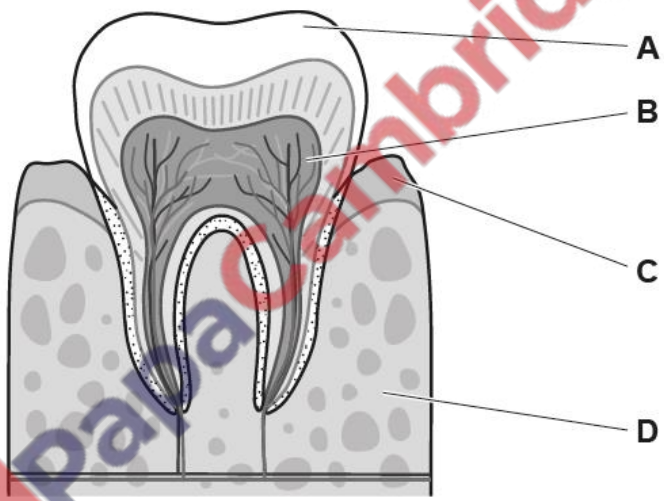


Fig. 2.1

The boxes on the left contain the letters identifying the parts in Fig. 2.1.

The boxes on the right contain the names of some parts shown in Fig. 2.1.

Draw lines to link each letter to its correct name.

Draw **four** lines.

letter in Fig. 2.1	**name**
	bone
A	
	dentine
B	
	enamel
C	
	gum
D	
	pulp

[4]

18. June/2023/Paper_0610/32/No.4

(a) A balanced diet includes foods that contain calcium ions.

(i) Circle the food that has the highest calcium content.

cheese **egg** **orange** **potato**

[1]

(ii) Table 4.1 shows the recommended calcium intake for different age groups.

Table 4.1

age group in years	recommended calcium intake / mg per day
0–3	500
4–8	800
9–18	1300
19–50	1000
51+	1200

The list shows five statements about the data in Table 4.1.

Tick (✓) **two** statements that are correct descriptions of the data shown in Table 4.1.

Age group 51+ has the highest recommended daily intake of calcium.	
As age increases, the recommended daily intake of calcium decreases.	
As age increases, the recommended daily intake of calcium increases, then decreases and then increases again.	
The recommended daily intake of calcium doubles from ages 0–3 to ages 19–50.	
The recommended daily intake of calcium is higher at ages 19–50 than at ages 9–18.	

[2]

(iii) Suggest reasons why some age groups need more calcium in their diet than others.

.....

.....

.....

.....

..... [2]

(b) Some diseases are caused by an unbalanced diet.

The boxes on the left contain the names of two diseases.

The boxes on the right contain some sentence endings.

Draw **one** straight line from each box on the left to a box on the right to make **two** correct sentences.

	is caused by a lack of carbohydrate.
Rickets	
	is caused by a lack of iron.
	is caused by a lack of vitamin C.
Scurvy	
	is caused by a lack of vitamin D.

[2]

(c) **(i)** State **one** dietary source of fibre.

..... [1]

(ii) Describe the importance of fibre in the diet.

.....

.....

..... [1]

(d) Fig. 4.1 is a diagram of part of the digestive system.

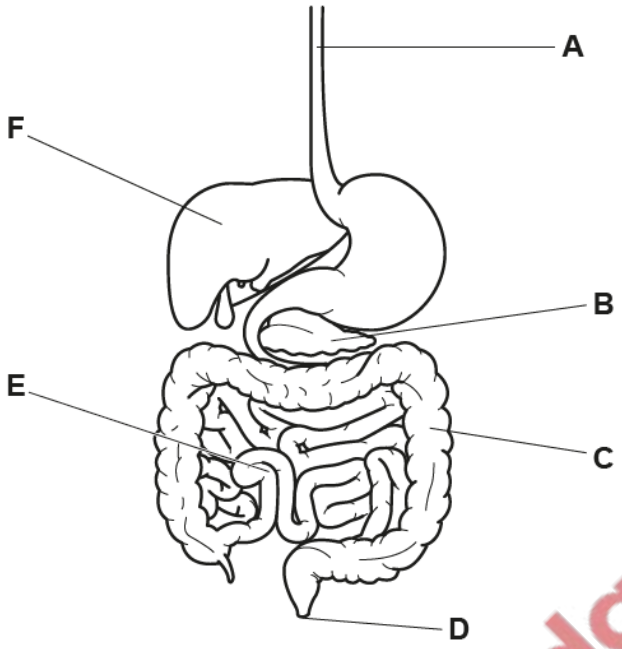


Fig. 4.1

(i) State **one** letter, from Fig. 4.1, that labels the part of the digestive system where egestion occurs.

..... [1]

(ii) State the **two** letters from Fig. 4.1 that label the parts of the digestive system where water is absorbed.

..... and ..... [2]

[Total: 12]

(a) State the meaning of the term chemical digestion.

.....

.....

.....

.....

..... [2]

(b) Enzymes are involved in chemical digestion.

Table 3.1 shows some information about enzymes used for chemical digestion.

(i) Complete Table 3.1.

Table 3.1

enzyme	substrate	products
amylase		simple reducing sugars
lipase	fats and oils	
protease	proteins	

[4]

(ii) State where amylase, lipase and protease are made in the human body.

amylase .....

lipase .....

protease .....

[3]

(c) **(i)** State the name of the acid found in gastric juice.

..... [1]

(ii) State **two** functions of the acid found in gastric juice.

1 .....

2 .....
[2]

[Total: 12]

20. June/2023/Paper_0610/41/No.1

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

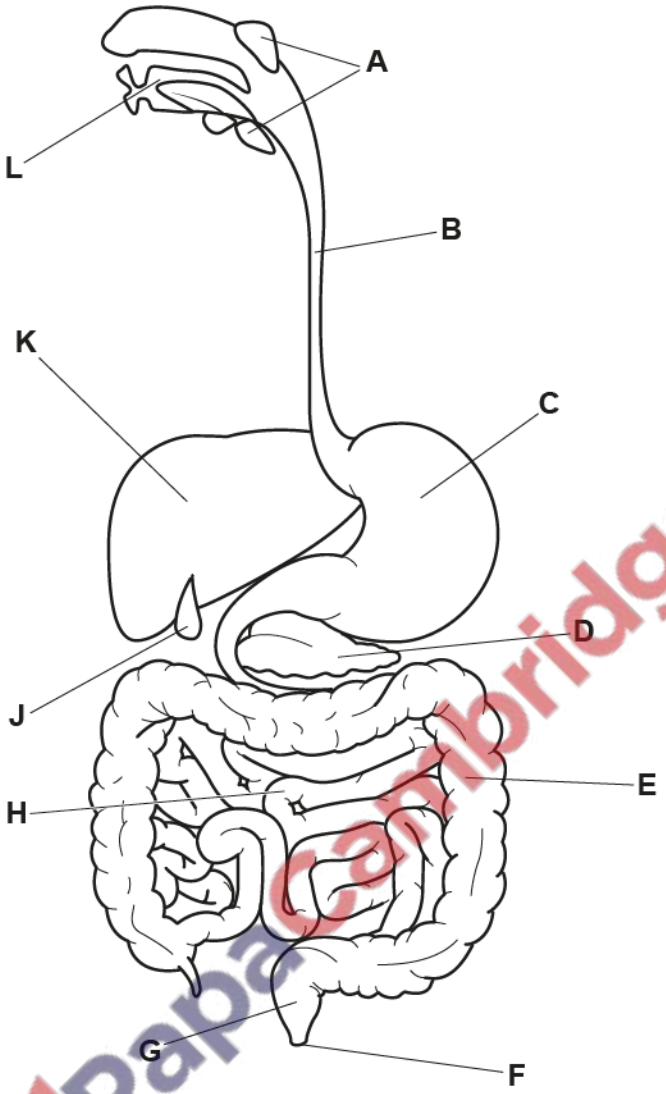


Fig. 1.1

Each letter may be used once, more than once or not at all.

State the letter of the part shown in Fig. 1.1:

that produces bile .....

that produces gastric juice .....

that produces urea .....

where maltose is digested .....

where trypsin acts. .....

[5]

(b) A student investigated the effect of bile on the digestion of fat in milk.

They set up three different test-tubes:

- test-tube **A** contained milk and bile
- test-tube **B** contained milk and lipase
- test-tube **C** contained milk, lipase and bile.

They used an indicator that is pink in alkaline solutions and colourless in acidic solutions. They added the same volume of indicator to each test-tube.

The student observed and recorded the colour of the contents of each test-tube at 0 minutes, 20 minutes and 40 minutes.

Table 1.1 shows the results of the investigation.

Table 1.1

test-tube	indicator colour observed		
	0 minutes	20 minutes	40 minutes
A	pink	pink	pink
B	pink	pink	colourless
C	pink	colourless	colourless

(i) Explain the results for test-tubes **B** and **C** in Table 1.1.

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..... [4]

(ii) Explain the purpose of test-tube **A** in Table 1.1.

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.....

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.....

..... [2]

(c) The action of lipase is affected by temperature.

Fig. 1.2 shows the axes for a graph of the effect of temperature on the activity of lipase.

Complete the graph by:

- drawing a line to show the expected effect of temperature on the activity of lipase
- adding a label line and a label to show the point at which all the lipase has been denatured.

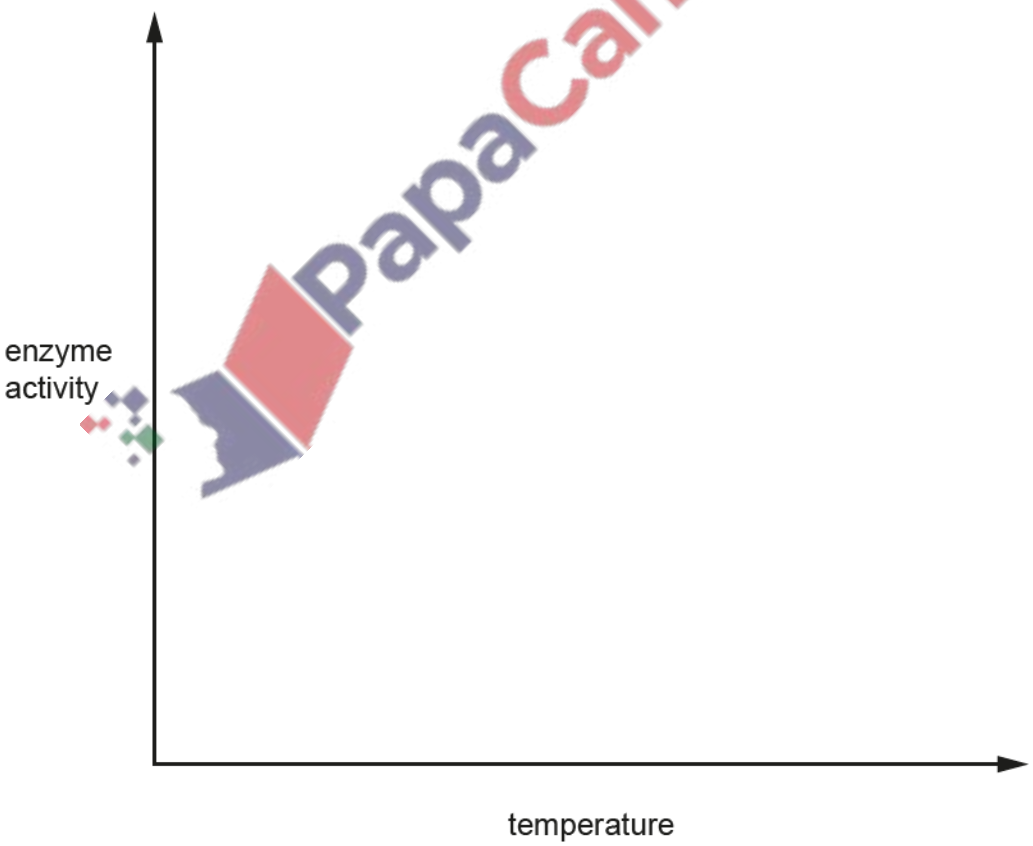

Fig. 1.2

[2]

(d) Explain why lipase cannot be used to catalyse the breakdown of proteins.

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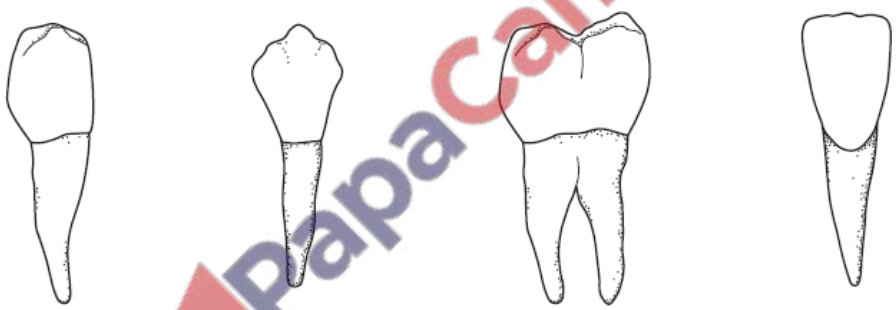
..... [3]

[Total: 16]

21. March/2023/Paper_ 0610/12/No.14

The diagrams show the different types of human teeth.



1 2 3 4

Which teeth are used for grinding food?

	1	2	3	4
A	✓	✗	✓	✗
B	✓	✓	✗	✗
C	✗	✗	✓	✓
D	✗	✓	✗	✓

key

✓ = yes

✗ = no

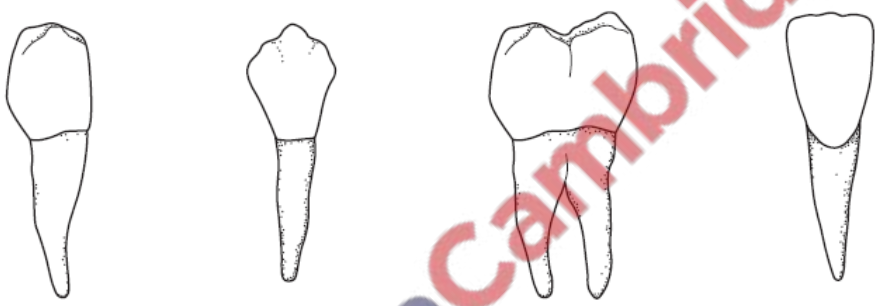
22. March/2023/Paper_ 0610/12/No.15

Which row shows the correct names of parts of the large and small intestines?

	large intestine		small intestine	
A	colon	duodenum	ileum	rectum
B	rectum	colon	duodenum	ileum
C	ileum	rectum	colon	duodenum
D	duodenum	ileum	rectum	colon

23. March/2023/Paper_ 0610/22/No.13

The diagrams show the different types of human teeth.



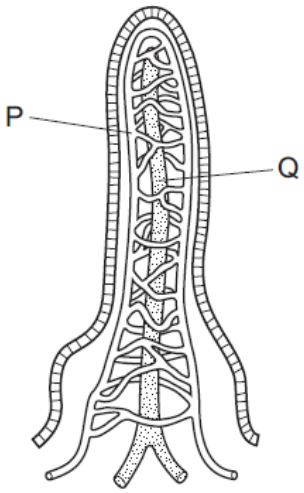
1 2 3 4

Which teeth are used for grinding food?

	1	2	3	4	
A	✓	✗	✓	✗	key
B	✓	✓	✗	✗	✓ = yes
C	✗	✗	✓	✓	✗ = no
D	✗	✓	✗	✓	

24. March/2023/Paper_ 0610/22/No.14

The diagram shows a villus. Structures P and Q absorb different products of digestion.



Which row identifies the products absorbed by P and Q?

	P	Q
A	amino acids	glucose
B	fatty acids	maltose
C	glucose	fatty acids
D	maltose	amino acids

25. March/2023/Paper_ 0610/42/No.2

A student investigated the digestion of starch.

Fig. 2.1 shows the apparatus she used.

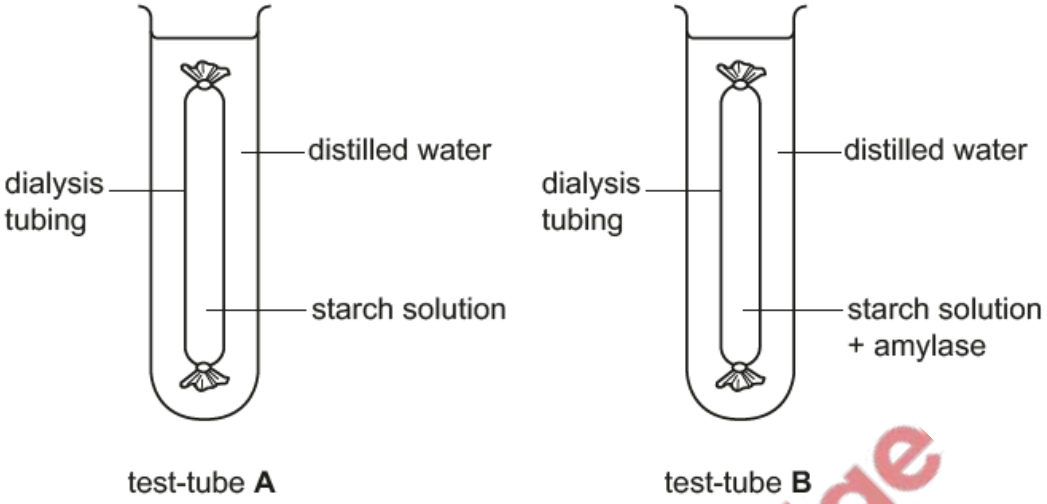


Fig. 2.1

Dialysis tubing is used to represent a cell membrane.

The dialysis tubing material allows small molecules to move across it, but not larger molecules.

Test-tubes **A** and **B** were set up as shown in Fig. 2.1 and placed in a water-bath at 37 °C for 30 minutes.

The liquid outside the dialysis tubing in test-tubes **A** and **B** was tested with Benedict's solution at 0 minutes and after 30 minutes.

Table 2.1 shows the results.

Table 2.1

test-tube	colour with Benedict's solution at 0 minutes	colour with Benedict's solution at 30 minutes
A	blue	blue
B	blue	red

(a) Using the information in Fig. 2.1 and Table 2.1, explain the reasons for the difference in the results for test-tubes **A** and **B** in Table 2.1.

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..... [6]

(b) Complete Table 2.2 by writing in the names of the missing enzymes, substrates and products.

Table 2.2

enzyme	substrate	product or products
pepsin		
		fatty acids and glycerol
trypsin		
		glucose

[4]

(c) State the name of the structures that increase the surface area for absorption in the small intestine.

..... [1]

[Total: 11]