CAMBRIDGE IGCSE BIOLOGY · 0610

BIOLOGY



EXAM QUESTION PACK

TOPIC 7: HUMAN NUTRITION

SCORE	PERCENTAGE
/	%

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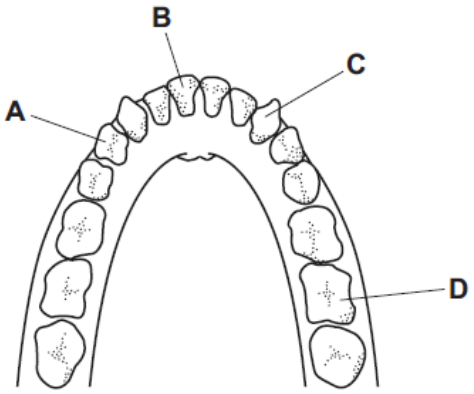
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Human nutrition – 2023 November IGCSE 0610

1. Nov/2023 /Paper_ 0610/11/No.13

The diagram shows the teeth in the lower jaw of a human.

Which tooth is a molar?



2. Nov/2023 /Paper_ 0610/11/No.14

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.

3. Nov/2023 /Paper_ 0610/11/No.15

Which food is a good source of vitamin C?

A bread

B cheese

C chicken

D oranges

4. Nov/2023 /Paper_ 0610/13/No.13

Which human teeth are used for biting and cutting food?

A canines and molars

B incisors and canines

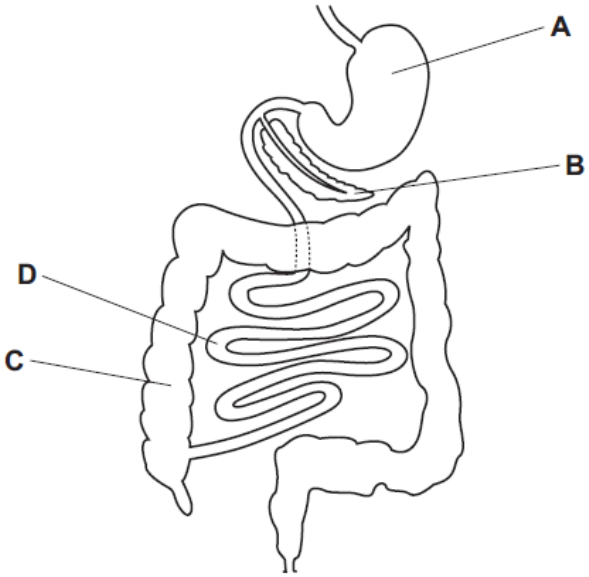
C molars and premolars

D premolars and incisors

5. Nov/2023 /Paper_ 0610/13/No.14

The diagram shows part of the human digestive system.

Which organ produces hydrochloric acid?



6. Nov/2023 /Paper_ 0610/13/No.15

Which part of a balanced diet is missing if a person develops rickets?

A carbohydrates

B iron

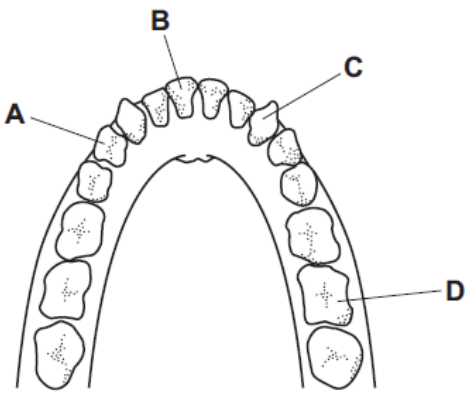
C vitamin C

D vitamin D

7. Nov/2023 /Paper_ 0610/21/No.13

The diagram shows the teeth in the lower jaw of a human.

Which tooth is a molar?



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8. Nov/2023 /Paper_ 0610/21/No.14

What is meant by chemical digestion?

A Large insoluble molecules are broken down into small soluble molecules.

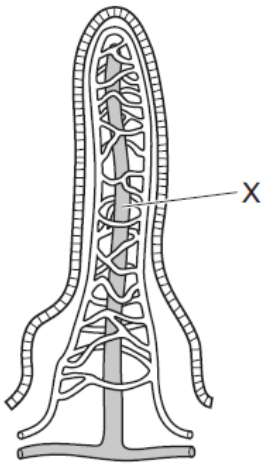
B Large soluble molecules are broken down into small insoluble molecules.

C Small insoluble molecules are built up into large soluble molecules.

D Small soluble molecules are built up into large insoluble molecules.

9. Nov/2023 /Paper_ 0610/21/No.15

The diagram shows a villus in the small intestine.



What is absorbed at X?

A fatty acids

B glucose

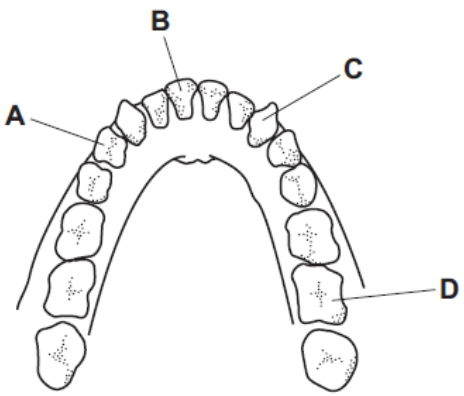
C glycogen

D starch

10. Nov/2023 /Paper_ 0610/22/No.13

The diagram shows the teeth in the lower jaw of a human.

Which tooth is a premolar?

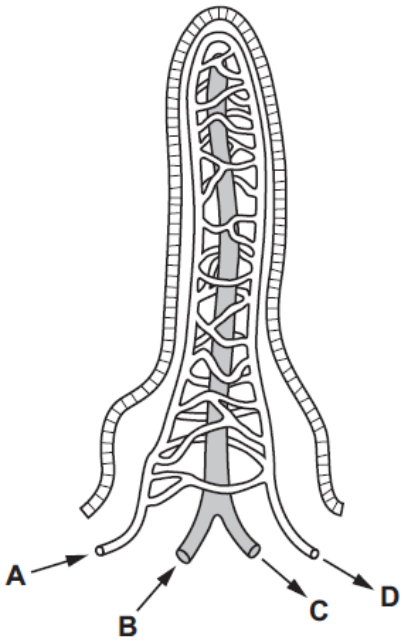


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11. Nov/2023 /Paper_ 0610/22/No.15

The diagram shows a villus. The arrows show the direction of flow within vessels associated with the villus.

Which vessel carries blood to the liver?



12. Nov/2023 /Paper_ 0610/23/No.13

Which human teeth are used for biting and cutting food?

A canines and molars

B incisors and canines

C molars and premolars

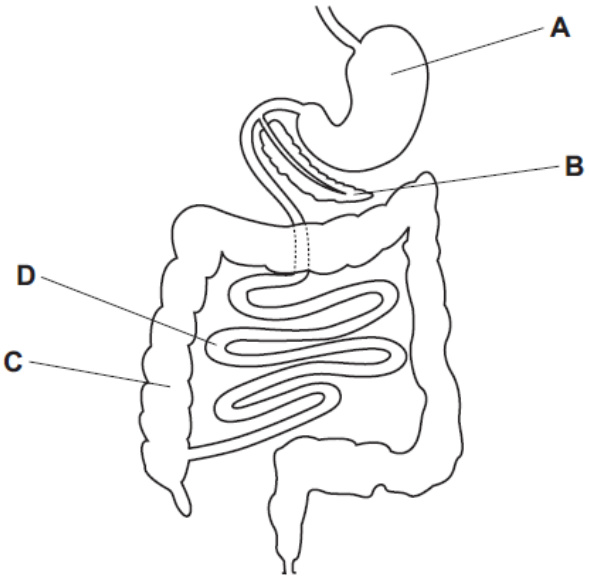
D premolars and incisors

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13. Nov/2023 /Paper_ 0610/23/No.14

The diagram shows part of the human digestive system.

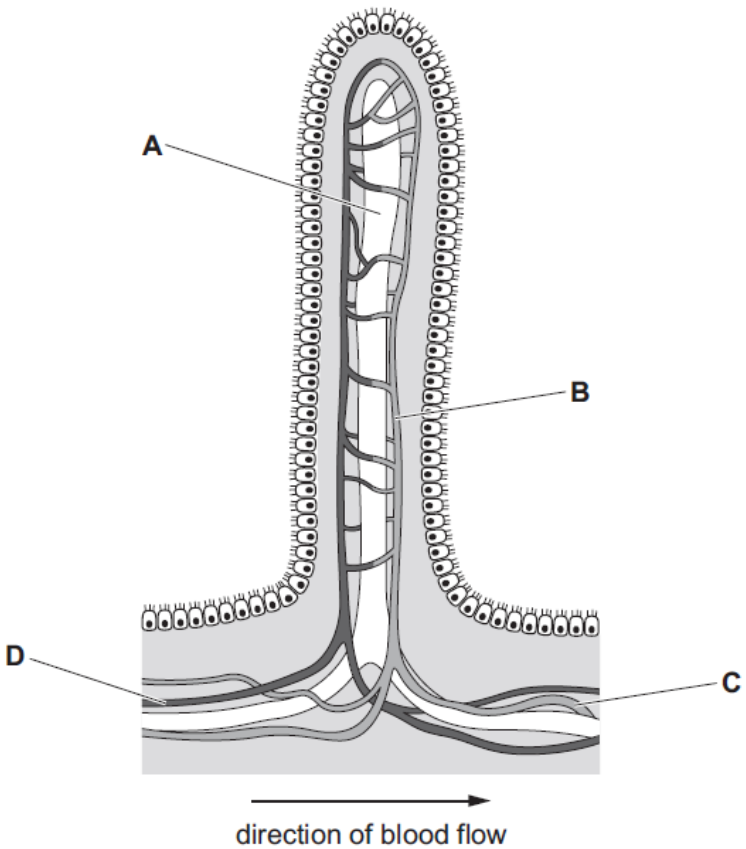
Which organ produces hydrochloric acid?



14. Nov/2023 /Paper_ 0610/23/No.15

The diagram shows the structure of a villus. The artery, capillary, lacteal and vein are labelled with letters.

Which letter shows where nutrients are absorbed into the blood?



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15. Nov/2023 /Paper_ 0610/31/No.2

Fig. 2.1 is a diagram of part of the human digestive system.

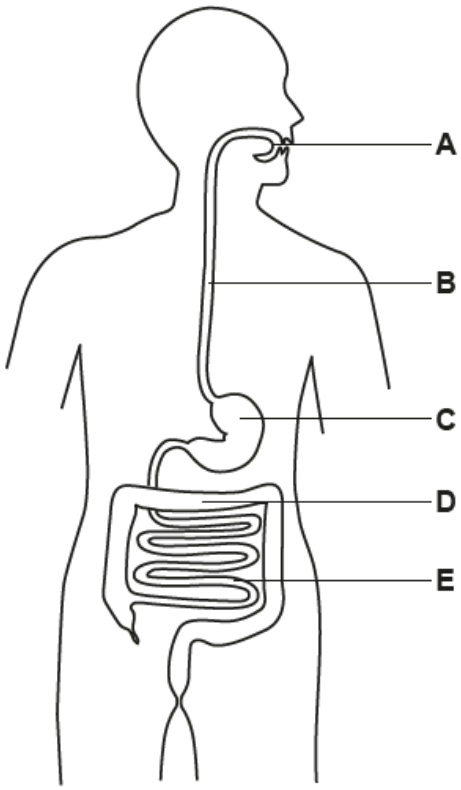


Fig. 2.1

(a) Using the information in Fig. 2.1, state the letters where:

chemical digestion of proteins begins .....

hydrochloric acid is produced .....

physical digestion of food occurs. ..... and .....

[4]

(b) State the names of **three** parts of the large intestine.

1 .....

2 .....

3 .....

[3]

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(c) Many processes occur in the digestive system.

The boxes on the left show some of the processes.

The boxes on the right show descriptions of some processes.

Draw **one** line to link each process to its description.

Draw **four** lines.

process	description
	breakdown of food
absorption	
	movement of nutrients from the intestines into the blood
digestion	
	removal of undigested food from the body as faeces
egestion	
	taking substances into the body
ingestion	
	uptake and use of nutrients by cells

[4]

[Total: 11]

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16. Nov/2023 /Paper_ 0610/32/No.1

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

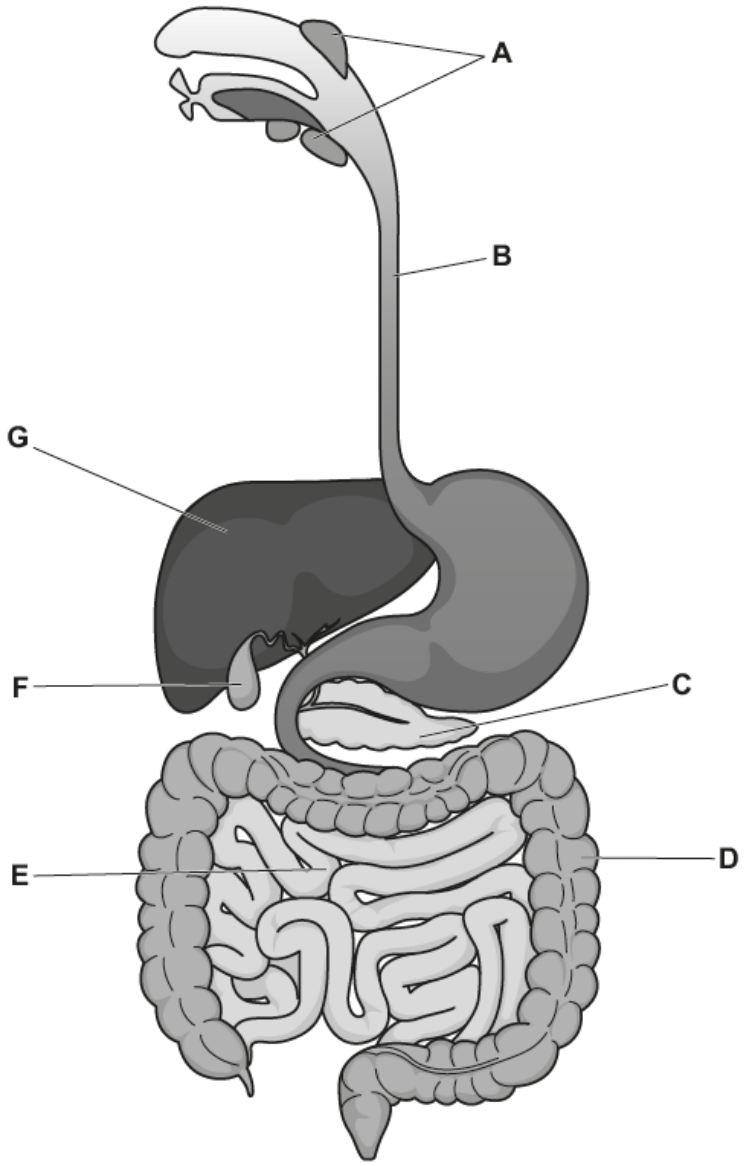


Fig. 1.1

(i) State the letter from Fig. 1.1 that represents:

where salivary amylase is produced .....

where insulin is produced .....

the liver .....

where protease acts. .....

[4]

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(ii) State **one** function of the hydrochloric acid in the stomach.

.....

.....

..... [1]

(b) Amylase is an enzyme.

(i) Describe the function of amylase.

.....

.....

..... [2]

(ii) Define the term enzyme.

.....

.....

..... [2]

[Total: 9]

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(a) The small intestine is lined with many villi and is adapted to absorb glucose.

Fig. 2.1 shows two villi from the lining of the small intestine.

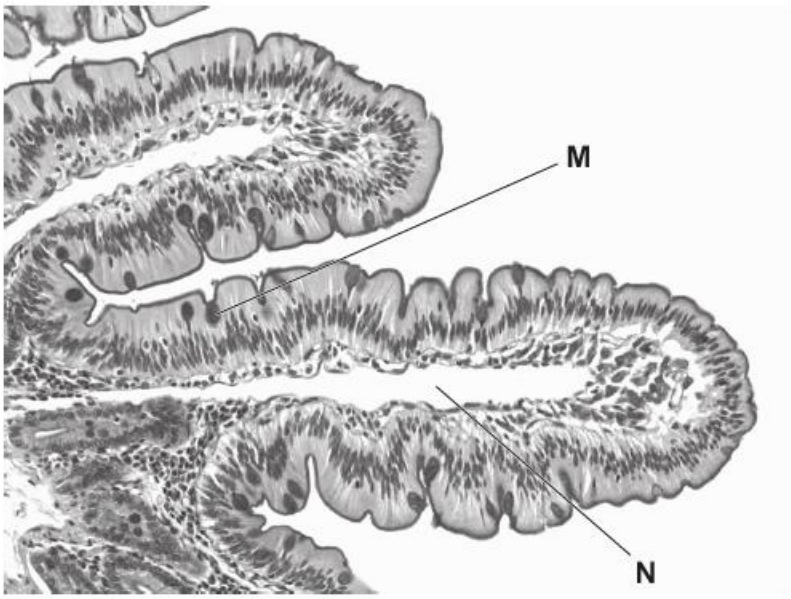


Fig. 2.1

(i) State the name of structure **N** in Fig. 2.1.

..... [1]

(ii) Cell **M** in Fig. 2.1 secretes mucus.

State the name of cell **M**.

..... [1]

(iii) State **one** other place in the body where mucus secreting cells are found.

..... [1]

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(iv) Describe and explain how the structure of a villus is adapted for its function.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(b) State the name of the main blood vessel that takes blood from the small intestine to the liver.

..... [1]

(c) All cells develop from stem cells.

Describe what is meant by the term stem cell.

.....

.....

..... [2]

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(d) Some cells in the small intestine have many mitochondria.

Fig. 2.2 shows the variation in the average number of mitochondria found in three different types of cell.

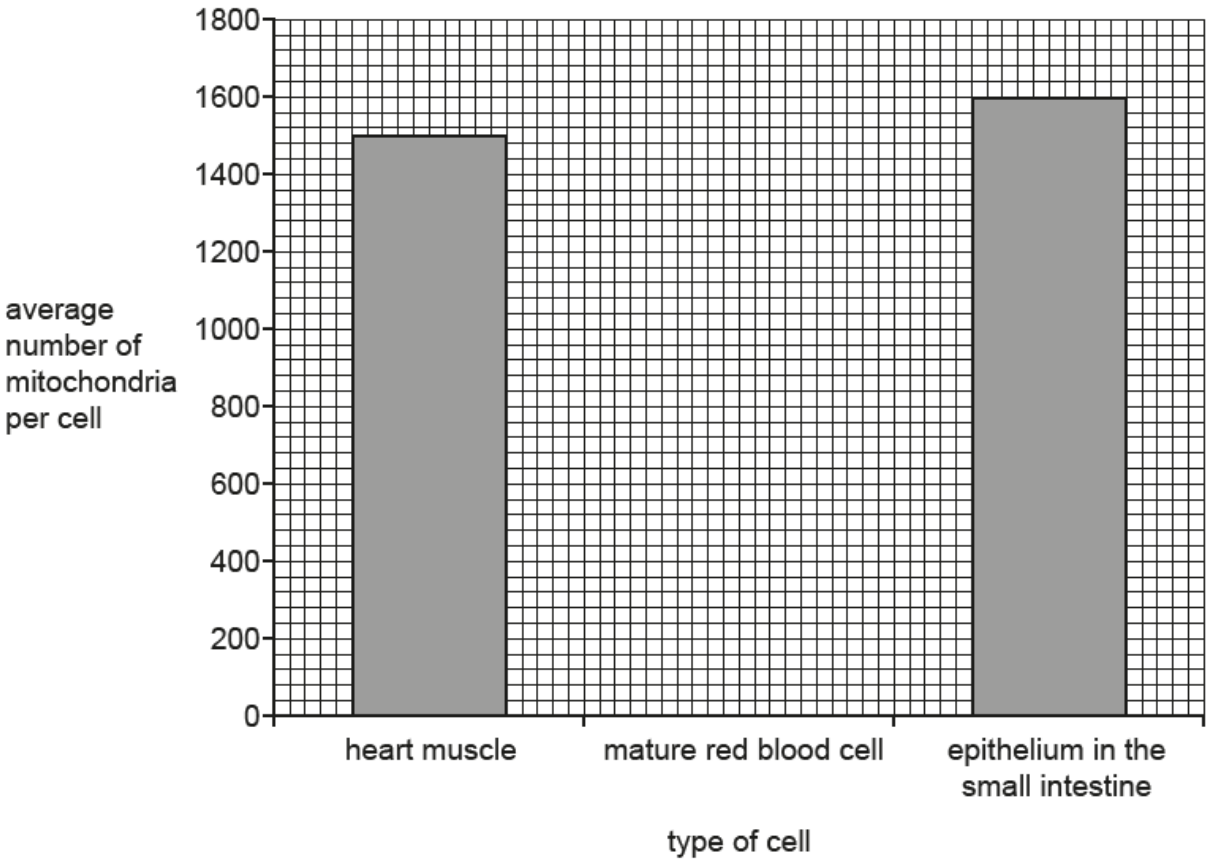


Fig. 2.2

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Explain the differences in the average number of mitochondria in each type of cell.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

[Total: 15]

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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.

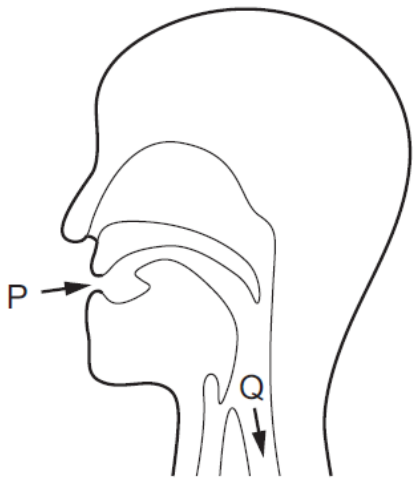
B It involves enzymes.

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.

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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

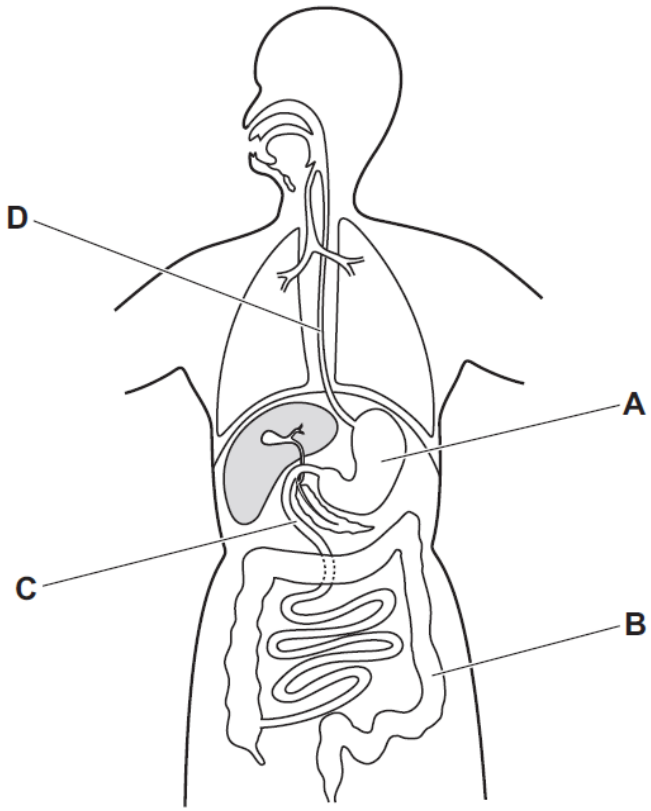
B iron

C vitamin C

D vitamin D

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

Which structure is the duodenum?



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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

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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.

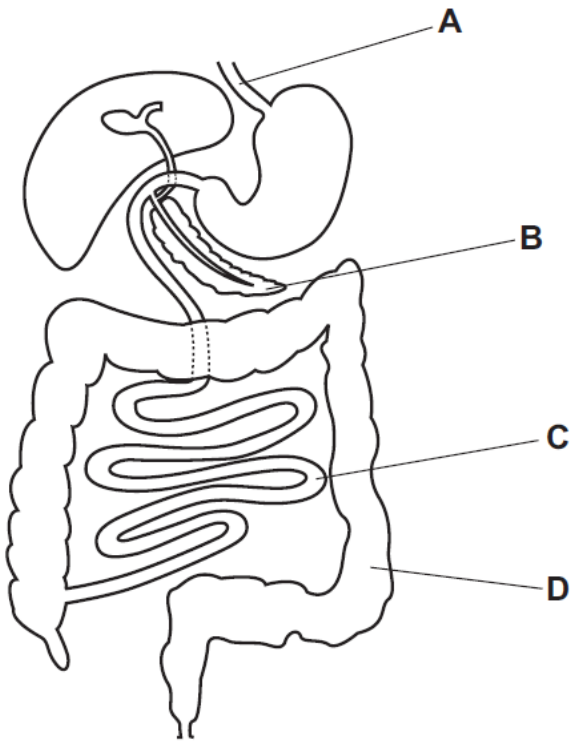
C It takes place in the mouth only.

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

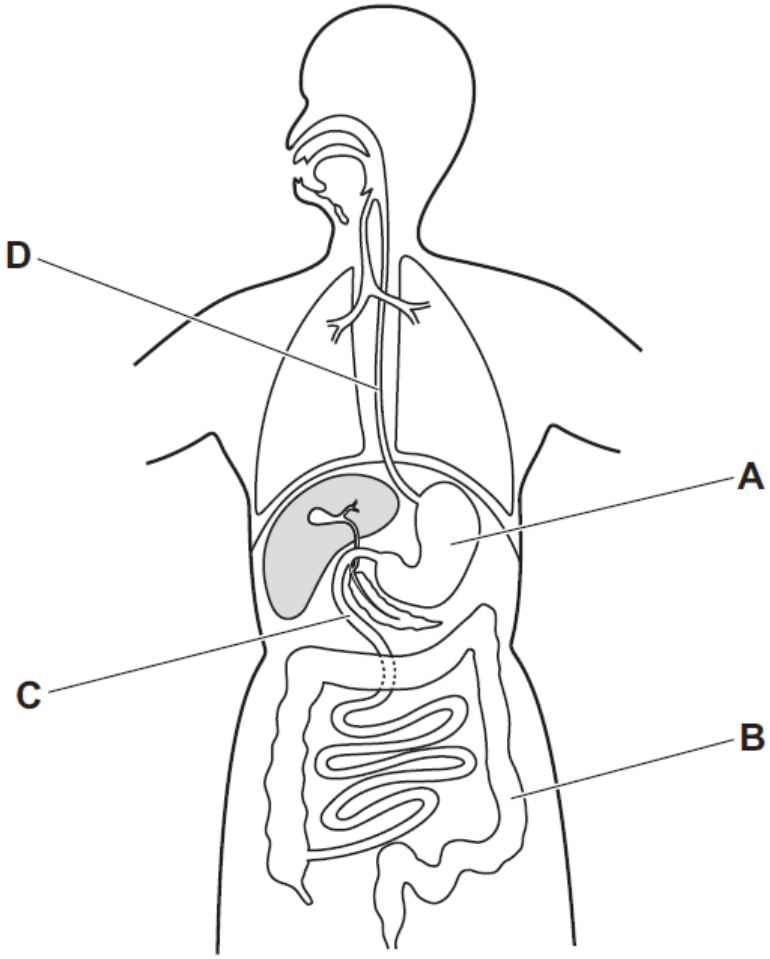
C vitamin C

D vitamin D

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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

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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.

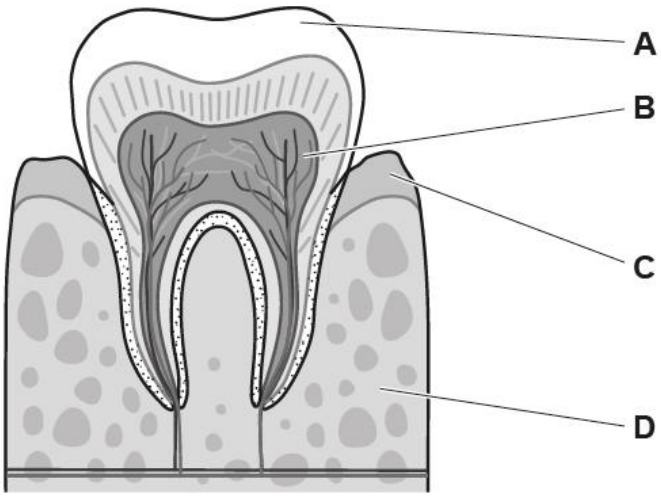


Fig. 2.1

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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]

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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]

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(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]

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

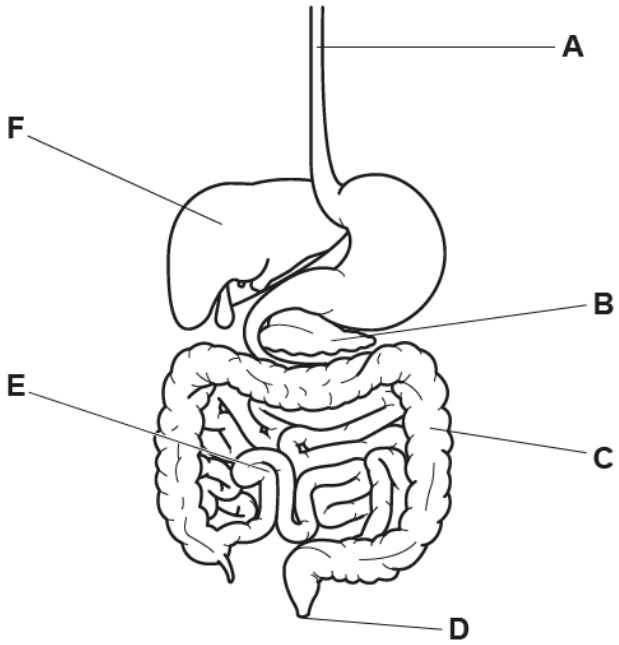


Fig. 4.1

(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]

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19. June/2023/Paper_0610/33/No.3

(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]

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(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]

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

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

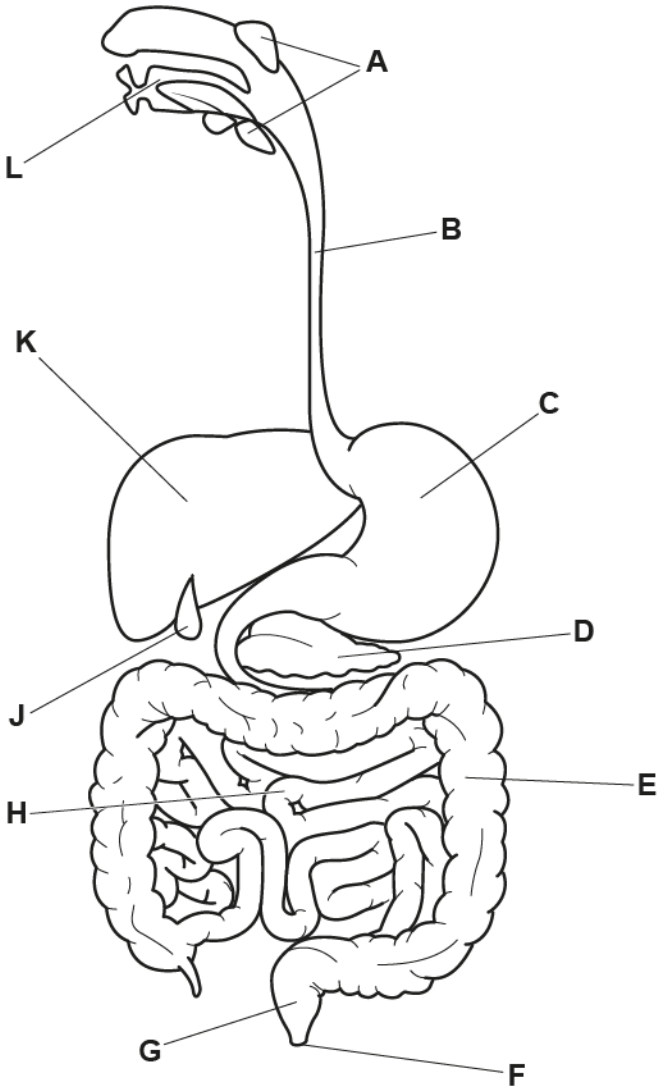


Fig. 1.1

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]

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(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.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

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

.....

.....

.....

.....

..... [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.

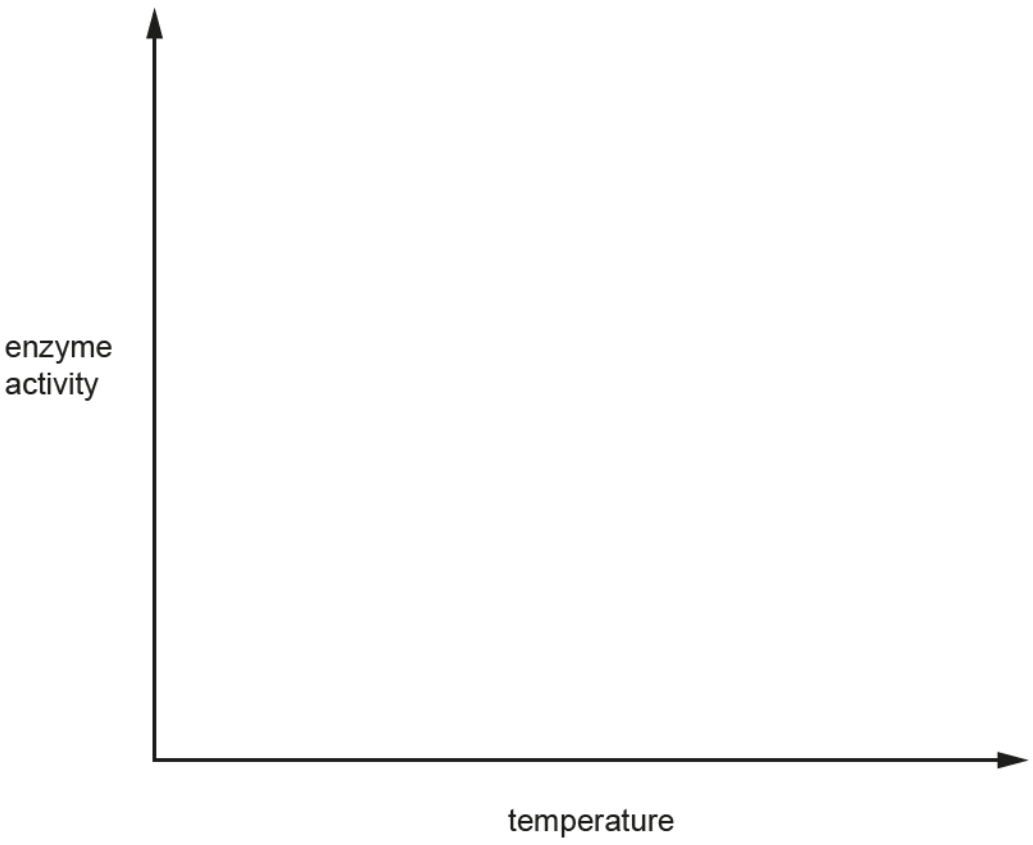


Fig. 1.2

[2]

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

.....

.....

.....

.....

.....

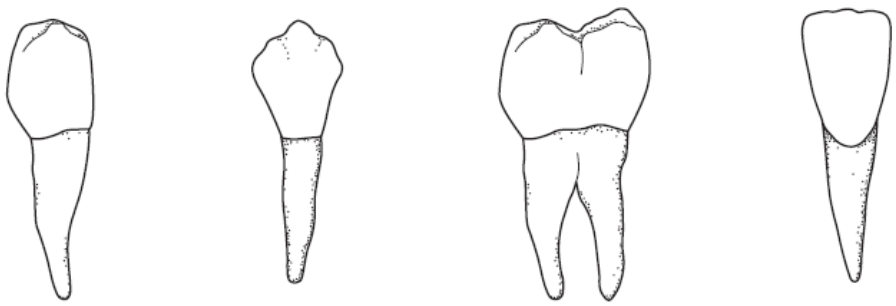
.....

..... [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

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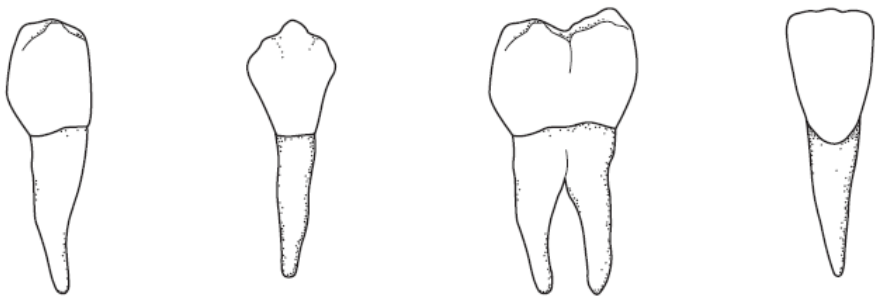
22. March/2023/Paper_ 0610/12/No.15

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	✓	✗	✓	✗
B	✓	✓	✗	✗
C	✗	✗	✓	✓
D	✗	✓	✗	✓

key

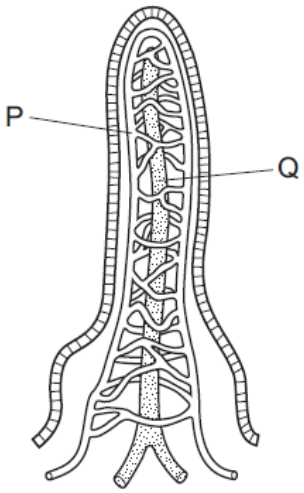
✓ = yes

✗ = no

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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

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

A student investigated the digestion of starch.

Fig. 2.1 shows the apparatus she used.

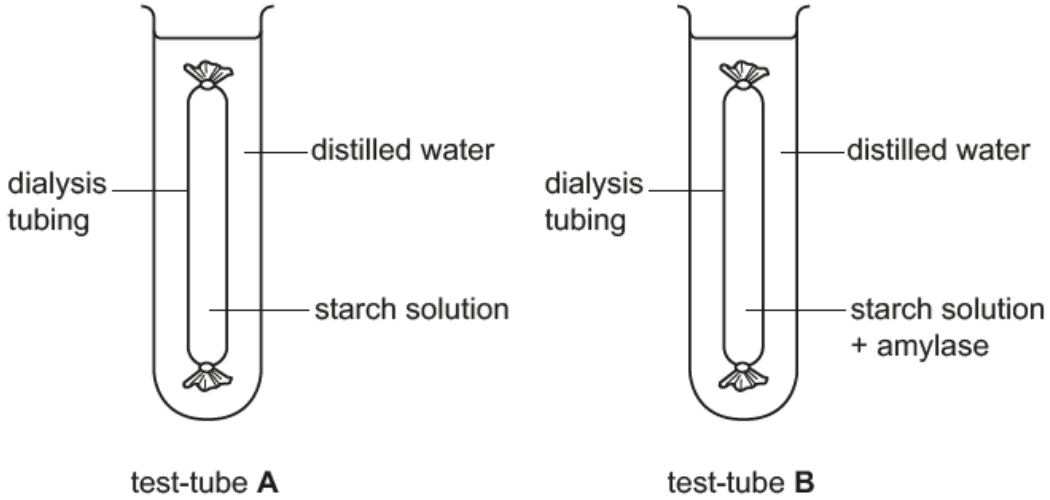


Fig. 2.1

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

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(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]

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(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]

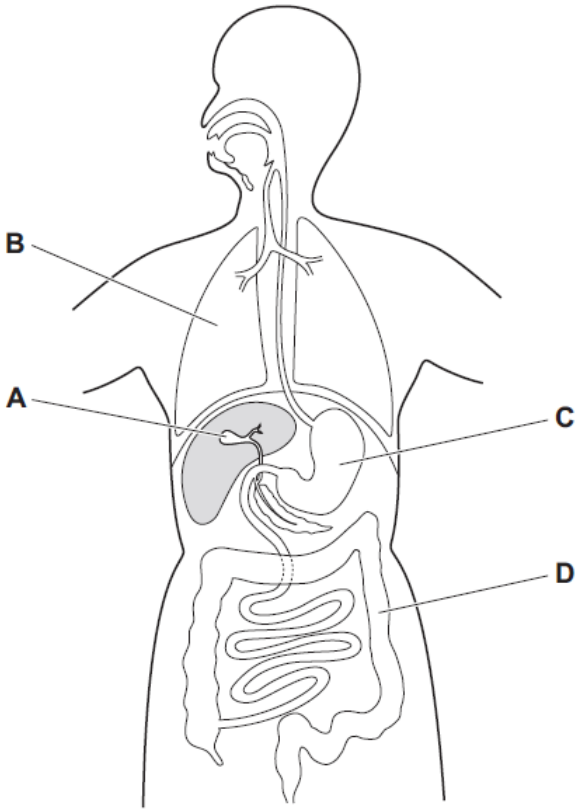
[Total: 11]

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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

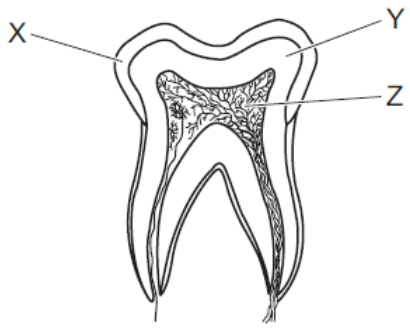
B hydrochloric acid

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

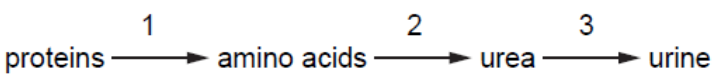
B oesophagus

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.



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

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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

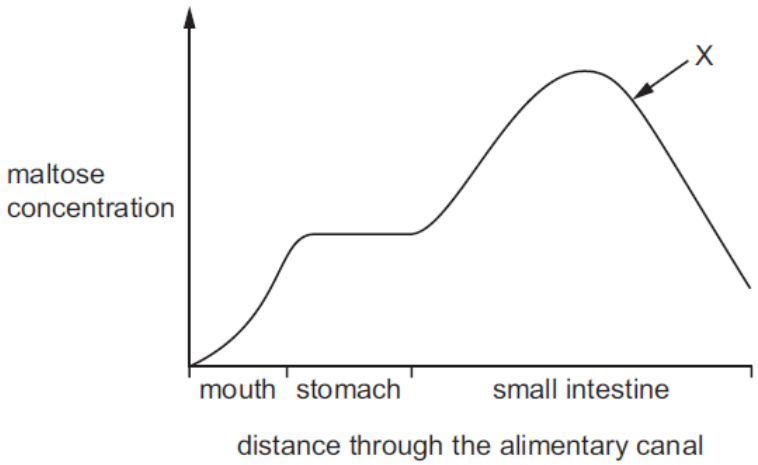
B coronary heart disease

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

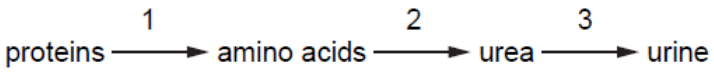
The cholera bacterium produces toxins that cause chloride ions to be secreted into the small intestine.

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.

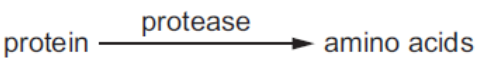


Which row identifies the sites of processes 1, 2 and 3?

	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

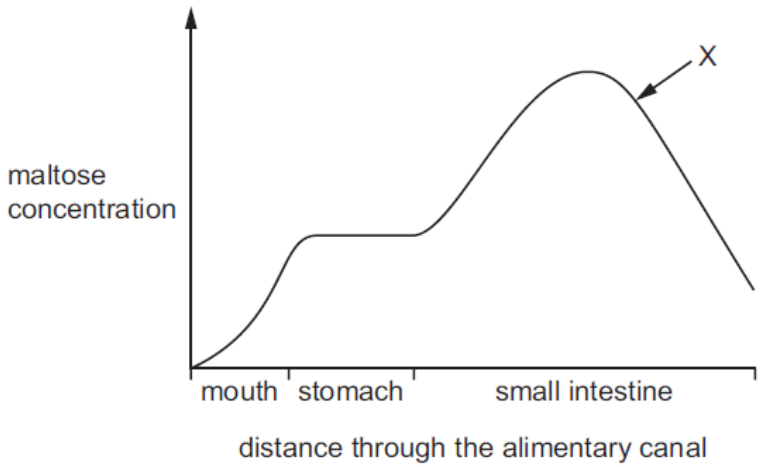
The cholera bacterium produces toxins that cause chloride ions to be secreted into the small intestine.

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

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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.

.....

.....

.....

.....

..... [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]

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

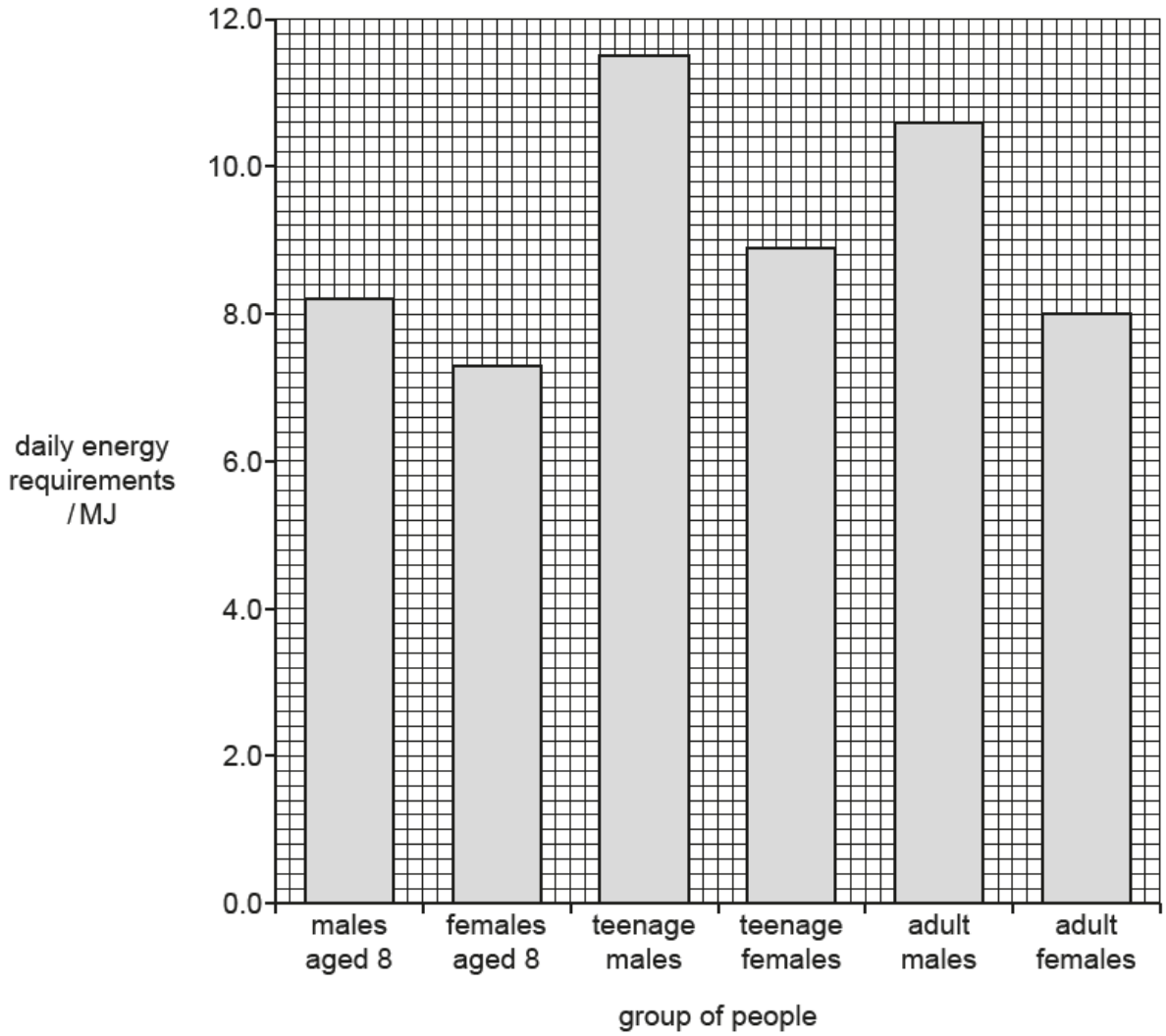


Fig. 4.1

(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.

.....

.....

..... [1]

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

Suggest why.

.....

.....

..... [1]

[Total: 14]

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18. Nov/2022/Paper_32/No.4

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

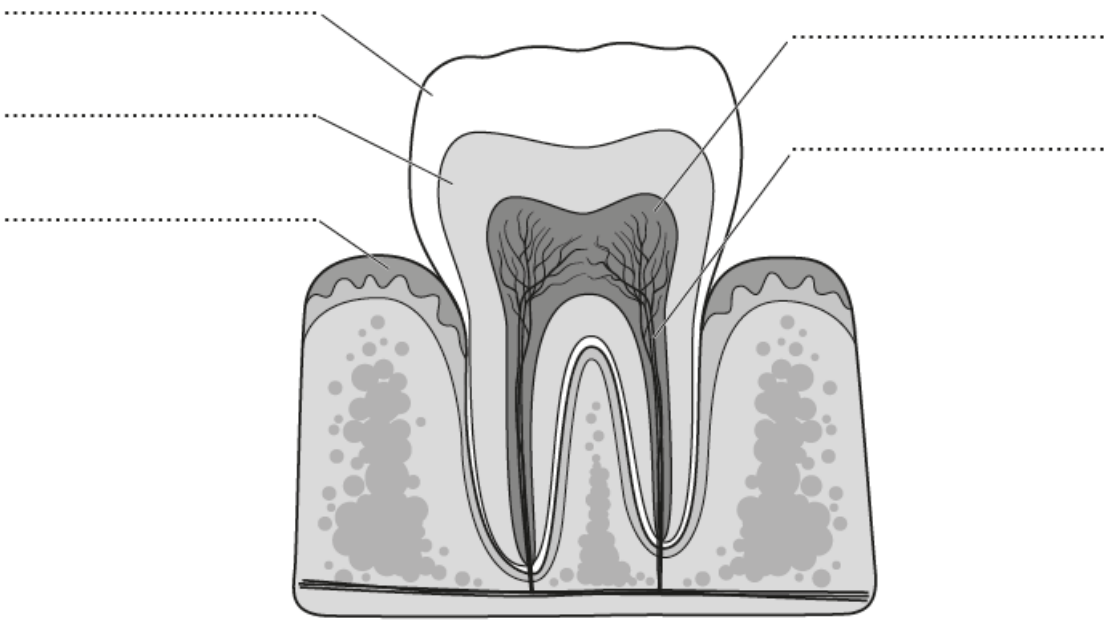


Fig. 4.1

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.

.....

.....

.....

.....

.....

.....

..... [3]

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

1 .....

.....

2 .....

.....

[2]

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

..... [1]

[Total: 12]

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19. Nov/2022/Paper_33/No.7

(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]

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(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.

.....

.....

.....

.....

.....

.....

.....

.....

..... [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.

.....

.....

..... [1]

[Total: 10]

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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]

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

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 7]

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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.

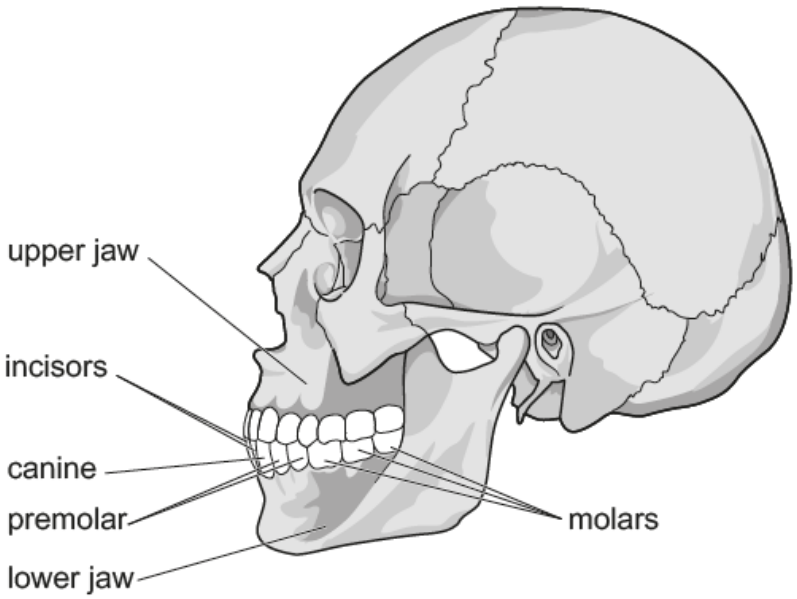


Fig. 1.1

(i) State the function of human teeth.

.....

.....

..... [1]

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

..... [1]

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

.....

.....

.....

.....

.....

.....

..... [3]

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22. Nov/2022/Paper_42/No.2

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

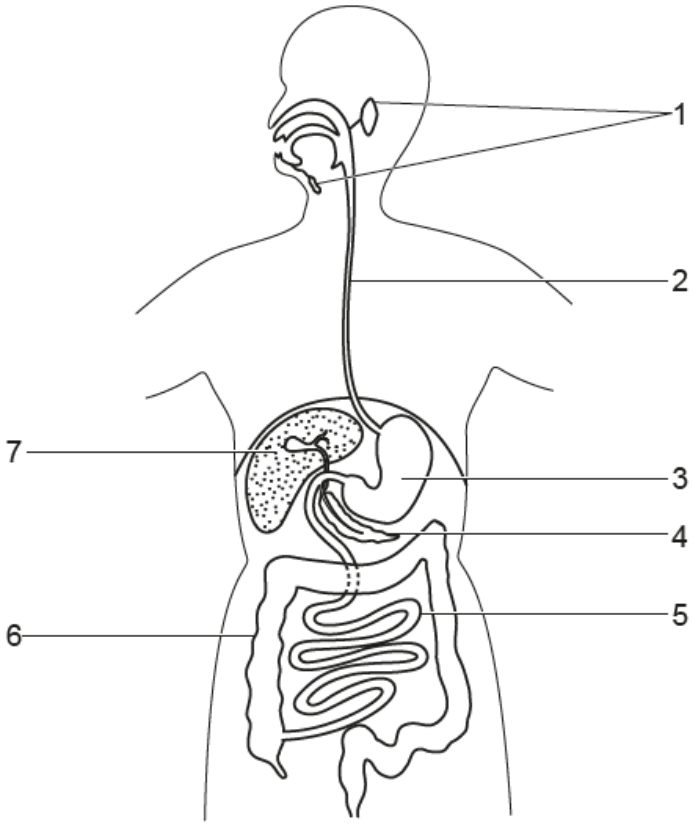


Fig. 2.1

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

Complete Table 2.1.

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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]

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

.....

.....

.....

.....

.....

.....

..... [3]

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

.....

.....

..... [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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.....

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.....

.....

.....

.....

..... [6]

[Total: 14]

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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]

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

The results are shown in Fig. 2.1.

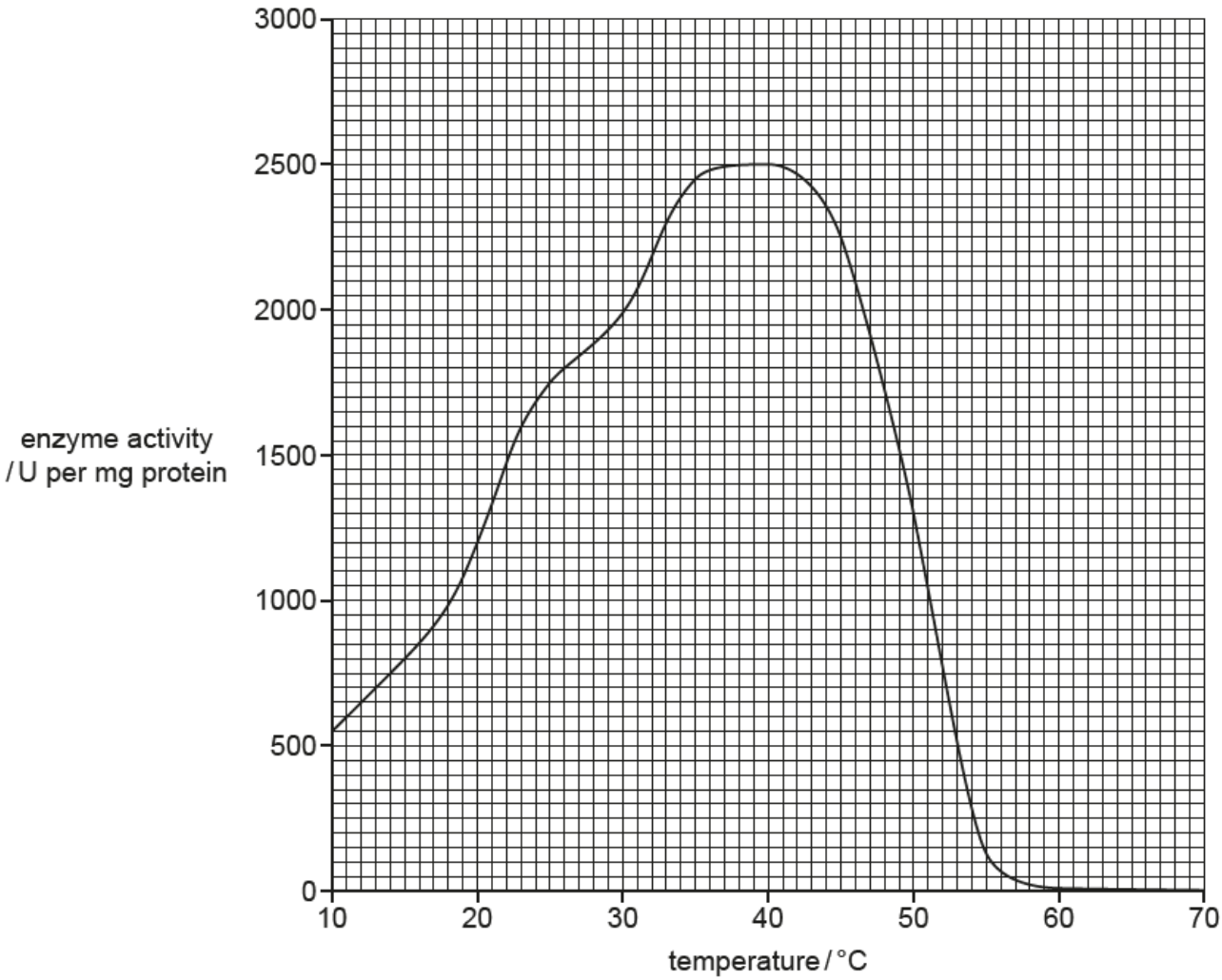


Fig. 2.1

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

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

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [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.

.....

.....

.....

.....

..... [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.

.....

.....

..... [1]

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(iii) Cholera can also cause diarrhoea.

Explain how the cholera bacterium causes diarrhoea.

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 18]

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Human nutrition – 2022 June IGCSE 0610

1. June/2022/Paper_ 11/No.14

What is the dietary importance of fibre in humans?

A for growth and repair of cells

B to help food move through the alimentary canal

C to maintain strong bones and teeth

D to provide energy

2. June/2022/Paper_ 11/No.15

In which part of the alimentary canal does ingestion take place?

A anus

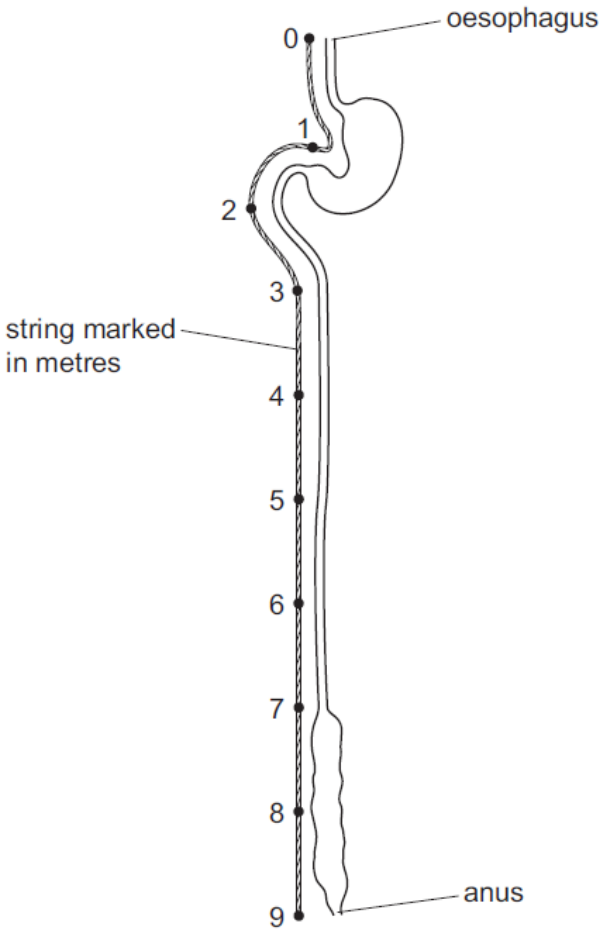
B liver

C mouth

D stomach

3. June/2022/Paper_ 11/No.16

The diagram shows the human alimentary canal, with a string marked in metres beside it.



How long is the small intestine?

A 2 m **B** 6 m **C** 8 m **D** 9 m

4. June/2022/Paper_ 12/No.14

The table shows some different components in a balanced diet.

Which row correctly matches the components to the reasons why they are needed?

	vitamin D	water	fats
A	insulation	bone growth	to make haemoglobin
B	bone growth	transport	insulation
C	transport	to make haemoglobin	bone growth
D	to make haemoglobin	insulation	transport

5. June/2022/Paper_ 12/No.15

Which process involves the removal of material from the rectum?

A egestion

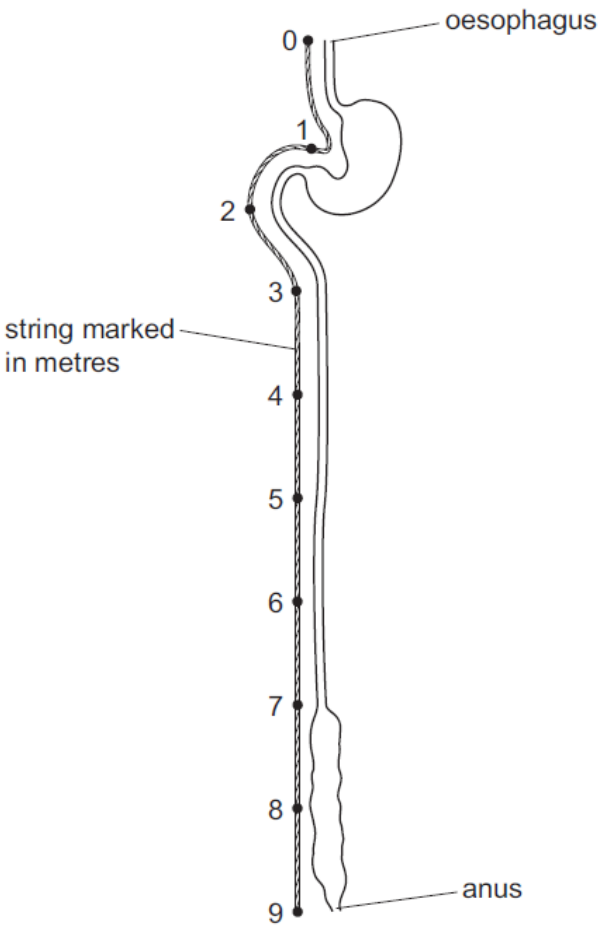
B ingestion

C chemical digestion

D mechanical digestion

6. June/2022/Paper_ 12/No.16

The diagram shows the human alimentary canal, with a string marked in metres beside it.



How long is the small intestine?

A 2 m **B** 6 m **C** 8 m **D** 9 m

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7. June/2022/Paper_ 13/No.14

Which nutrient is required to prevent scurvy?

A calcium

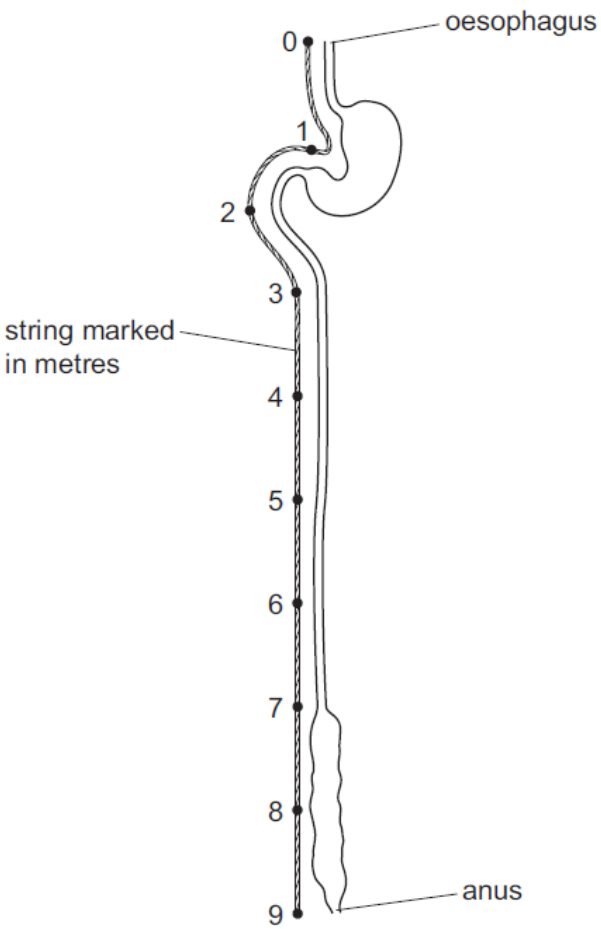
B iron

C vitamin C

D vitamin D

8. June/2022/Paper_ 13/No.16

The diagram shows the human alimentary canal, with a string marked in metres beside it.



How long is the small intestine?

A 2 m **B** 6 m **C** 8 m **D** 9 m

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9. June/2022/Paper_ 21/No.13

What is the dietary importance of fibre in humans?

A for growth and repair of cells

B to help food move through the alimentary canal

C to maintain strong bones and teeth

D to provide energy

10. June/2022/Paper_ 21/No.14

In which part of the alimentary canal does ingestion take place?

A anus

B liver

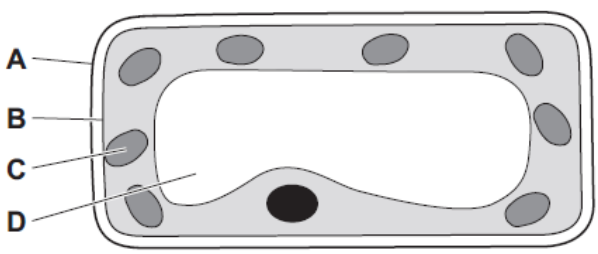
C mouth

D stomach

11. June/2022/Paper_ 23/No.6

The diagram shows a section through a mesophyll cell of a leaf.

Which part is partially permeable?



12. June/2022/Paper_ 23/No.13

Which nutrient is required to prevent scurvy?

A calcium

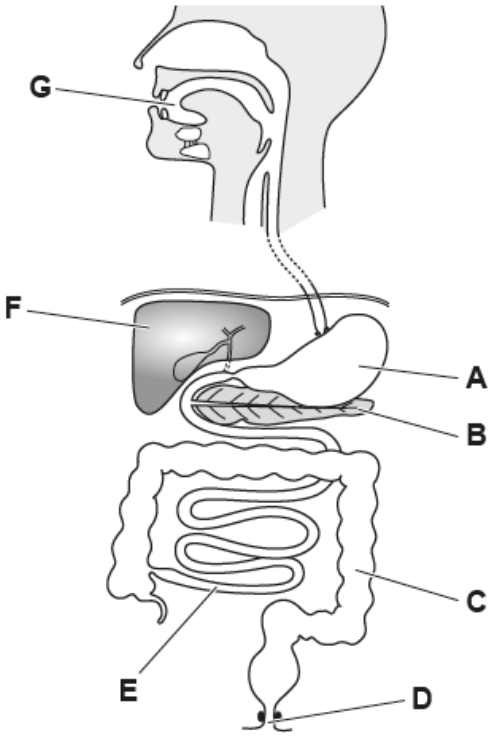
B iron

C vitamin C

D vitamin D

13. June/2022/Paper_ 32/No.3

(a) Fig. 3.1 is a diagram showing part of the human alimentary canal and associated organs.



not to scale

Fig. 3.1

(i) The boxes on the left show three letters from Fig. 3.1 that identify three different organs.

The boxes in the middle show the names of some of the organs in Fig. 3.1.

The boxes on the right show some functions of organs.

Draw **three** lines to link each letter to the name of the organ the letter identifies in Fig. 3.1.

Draw **three** more lines to link these organs to a correct function.

Draw a total of **six** lines.

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letter from Fig. 3.1	name of the organ	function
D	anus	absorption
E	ileum	assimilation
G	mouth	egestion
	pancreas	ingestion

[6]

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(ii) State the letter in Fig. 3.1 that identifies the liver **and** outline **one** function of the liver.

letter in Fig. 3.1 .....

function .....

.....

.....

[2]

(b) Describe the effects of excessive alcohol consumption.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(c) Protein is a large molecule.

Table 3.1 shows the names of some large molecules, the enzymes that catalyse the breakdown of these large molecules and the smaller molecules they are made from.

Complete Table 3.1 by writing the correct large molecule, enzymes and small molecule in the boxes.

Table 3.1

large molecules	enzymes	small molecules
protein	.....	amino acids
.....	amylase	glucose
fats and oils	.....	fatty acids and .....

[4]

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14. June/2022/Paper_ 32/No.3(a)

The pancreas is an organ that has roles in the digestive and hormonal systems of humans.

Fig. 3.1 shows part of the alimentary canal and some of the associated organs.

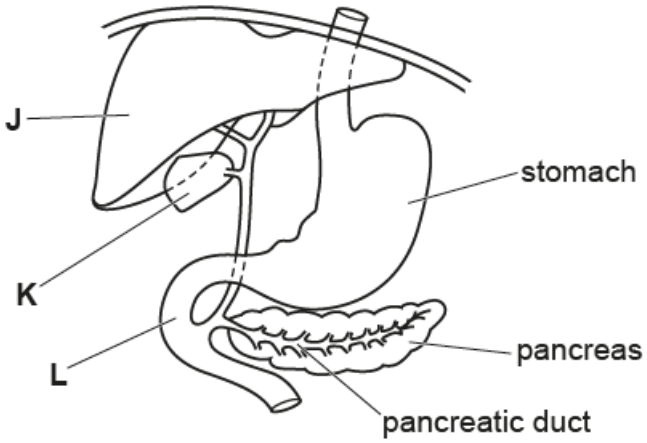


Fig. 3.1

(a) State the names of organs **J**, **K** and **L**.

J .....

K .....

L .....

[3]

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15. June/2022/Paper_ 43/No.4(a_ b)

(a) Fig. 4.1 is a diagram of the alimentary canal.

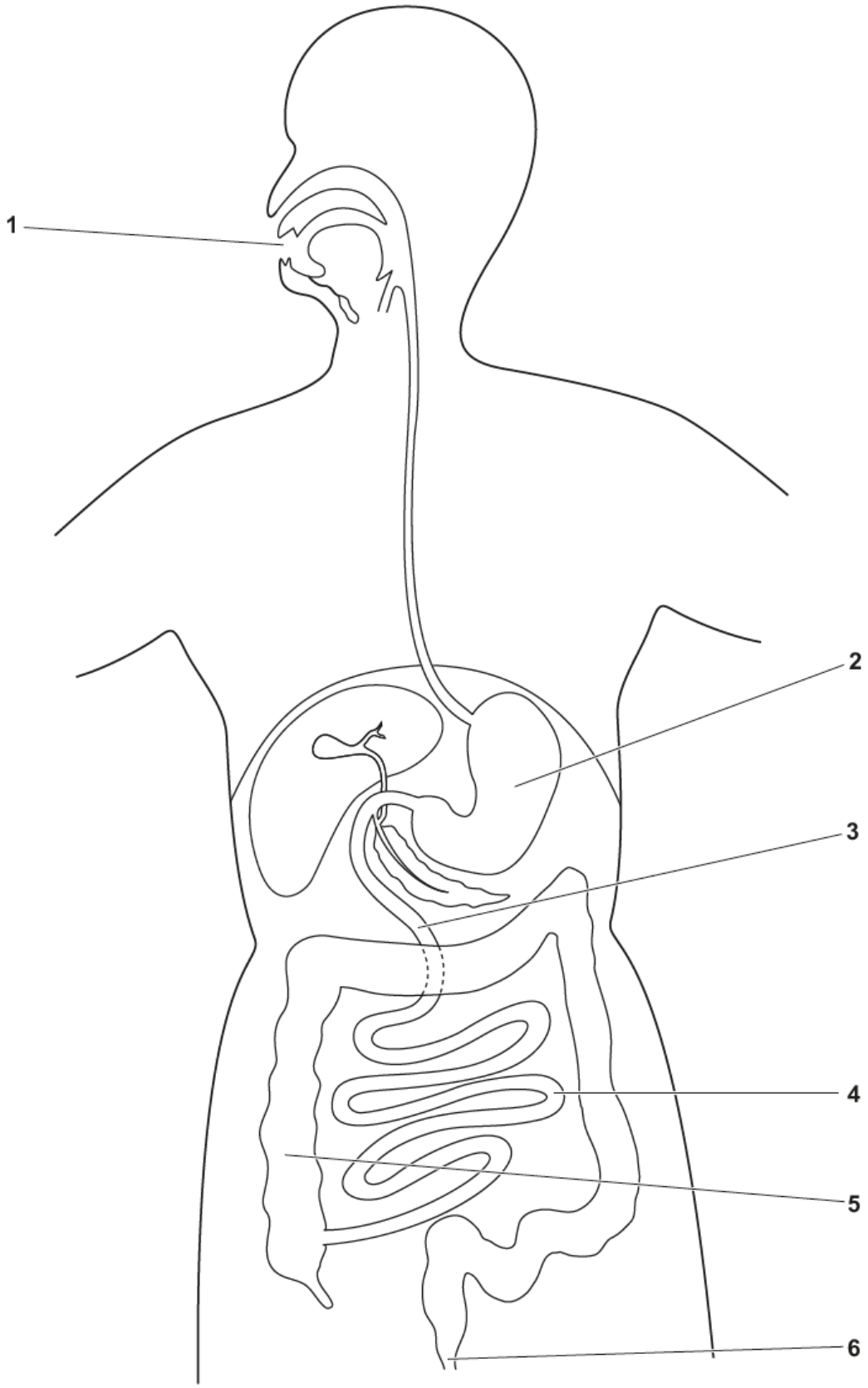


Fig. 4.1

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Complete Table 4.1 by stating:

- the names of the organs from Fig. 4.1
- the letters of **all** the processes shown in the key that occur in each organ.

Key:
A – absorption
C – chemical digestion
E – egestion
I – ingestion
M – mechanical digestion

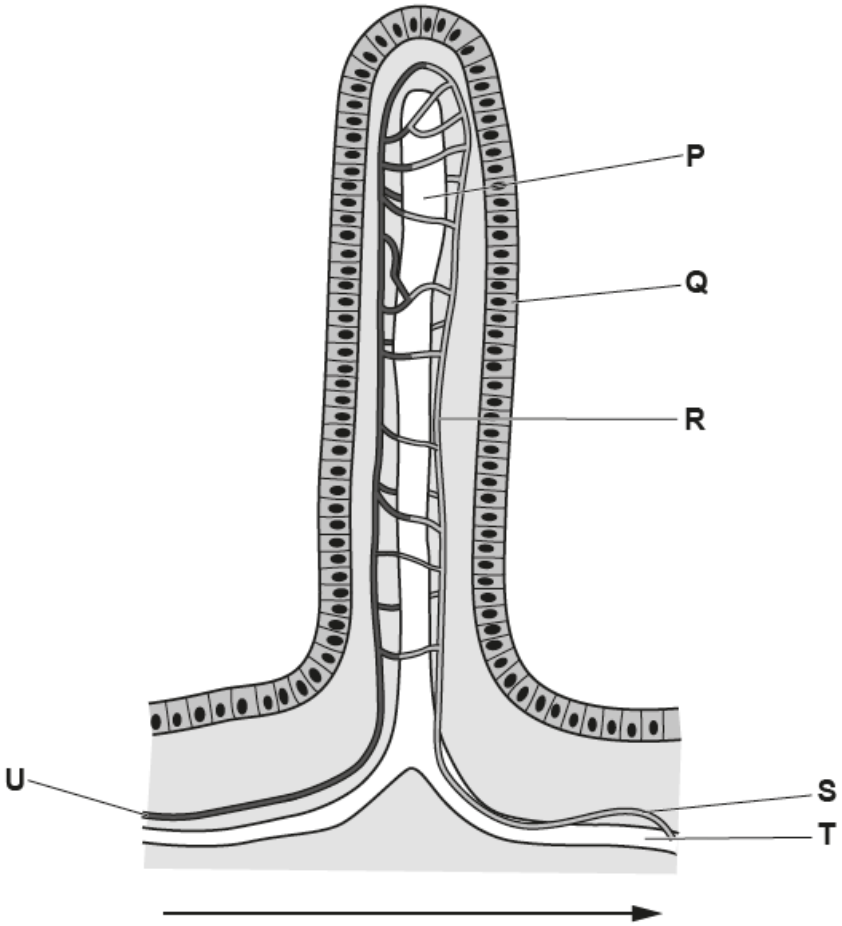
Table 4.1

number from Fig. 4.1	name of the organ	letter or letters of all the processes that occur in the organ
1		
2		
3		
4		
5		
6		

[6]

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(b) Fig. 4.2 is a diagram of a villus. The arrow indicates the direction of blood flow.



not to scale

Fig. 4.2

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Describe the structure of a villus **and** its role in the alimentary canal.

Use the letters in Fig. 4.2 to support your answer.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [6]

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Human nutrition – 2021 IGCSE 0610

1. Nov/2021/Paper_11/No.14

Which reagent is used to test for the presence of vitamin C?

A Benedict's

B biuret

C DCPIP

D ethanol

2. Nov/2021/Paper_11/No.13

Which food is the best source of vitamin C?

A bread

B meat

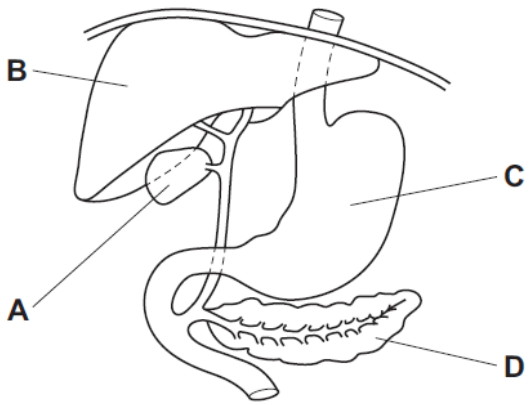
C milk

D oranges

3. Nov/2021/Paper_11/No.16

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

Which structure produces hydrochloric acid?

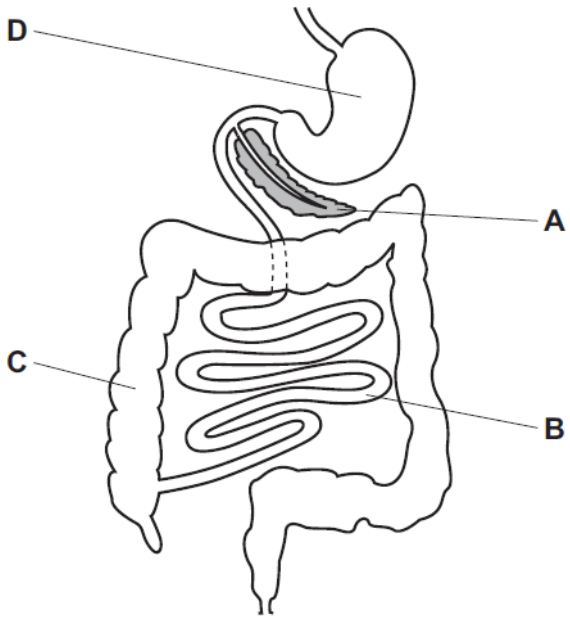


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4. Nov/2021/Paper_12/No.16

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

Where does most water absorption take place?



5. Nov/2021/Paper_13/No.14

A deficiency of which nutrient can cause scurvy?

A calcium

B iron

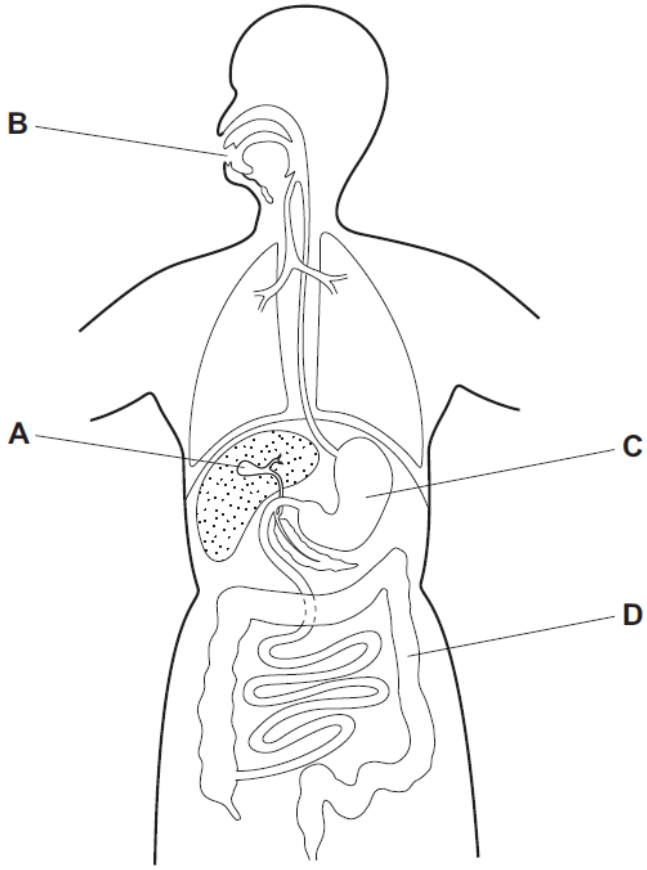
C vitamin C

D vitamin D

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6. Nov/2021/Paper_13/No.16

Which part of the alimentary canal produces an enzyme that digests proteins?



7. Nov/2021/Paper_21/No.13

Which food is the best source of vitamin C?

A bread

B meat

C milk

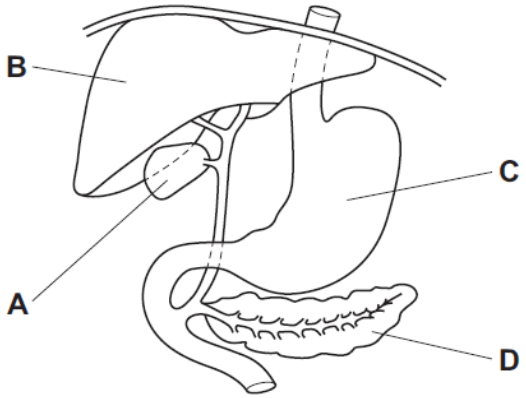
D oranges

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8. Nov/2021/Paper_21/No.14

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

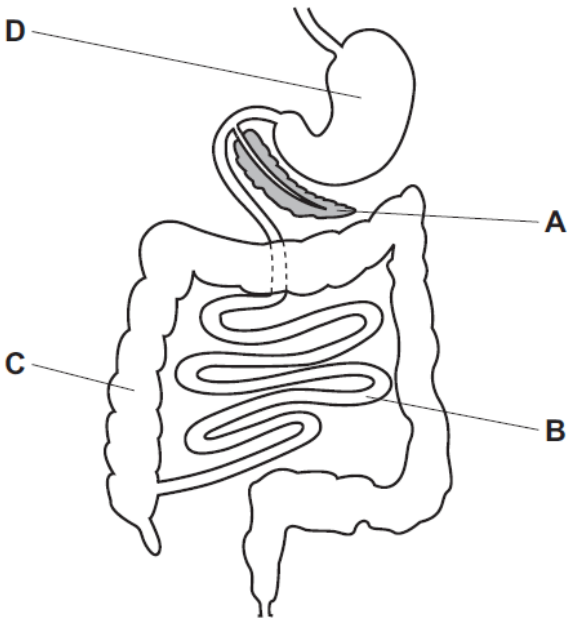
Which structure produces hydrochloric acid?



9. Nov/2021/Paper_22/No.14

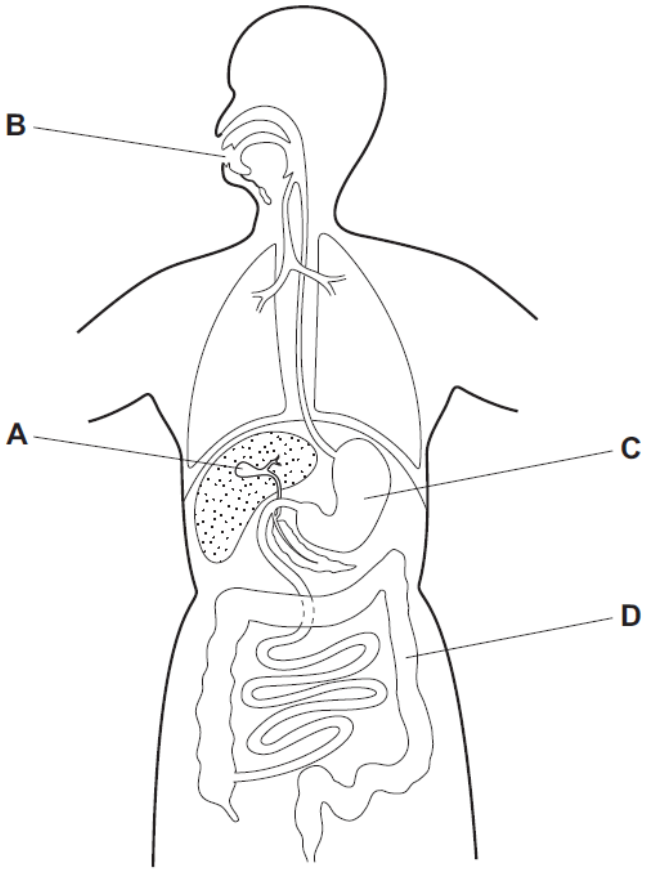
The diagram shows part of the alimentary canal and associated organs.

Where does most water absorption take place?



10. Nov/2021/Paper_23/No.14

Which part of the alimentary canal produces an enzyme that digests proteins?



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11. Nov/2021/Paper_32/No.4

(a) It is important for humans to consume a balanced diet.

Describe what is meant by the term balanced diet.

.....

.....

.....

.....

..... [2]

(b) Table 4.1 shows some of the different components of a balanced diet and their principal sources.

Complete Table 4.1 using words from the list.

Each word can only be used **once** or not at all.

grapefruit **milk** **olive oil** **rice** **tuna fish** **water**

Table 4.1

component	example of principal source
calcium	
carbohydrate	
protein	
vitamin C	

[4]

(c) A diet that does not contain component **X** can cause constipation.

State the name of component **X**.

..... [1]

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(d) A person's diet contains too much energy and too much fat.

Describe the possible risks of this diet.

.....

.....

.....

.....

..... [2]

(e) State why a pregnant woman needs to eat more food than a woman who is not pregnant.

.....

.....

..... [1]

(f) Nutrition is one of the characteristics of living things.

State the names of **three other** characteristics of living things.

1 .....

2 .....

3 .....

[3]

[Total: 13]

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(a) A class of students measured their wrist circumference, as shown in Fig. 5.1.

Wrist circumference is an example of a characteristic that shows **continuous** variation i humans.



Fig. 5.1

Fig. 5.2 shows the results of the investigation.

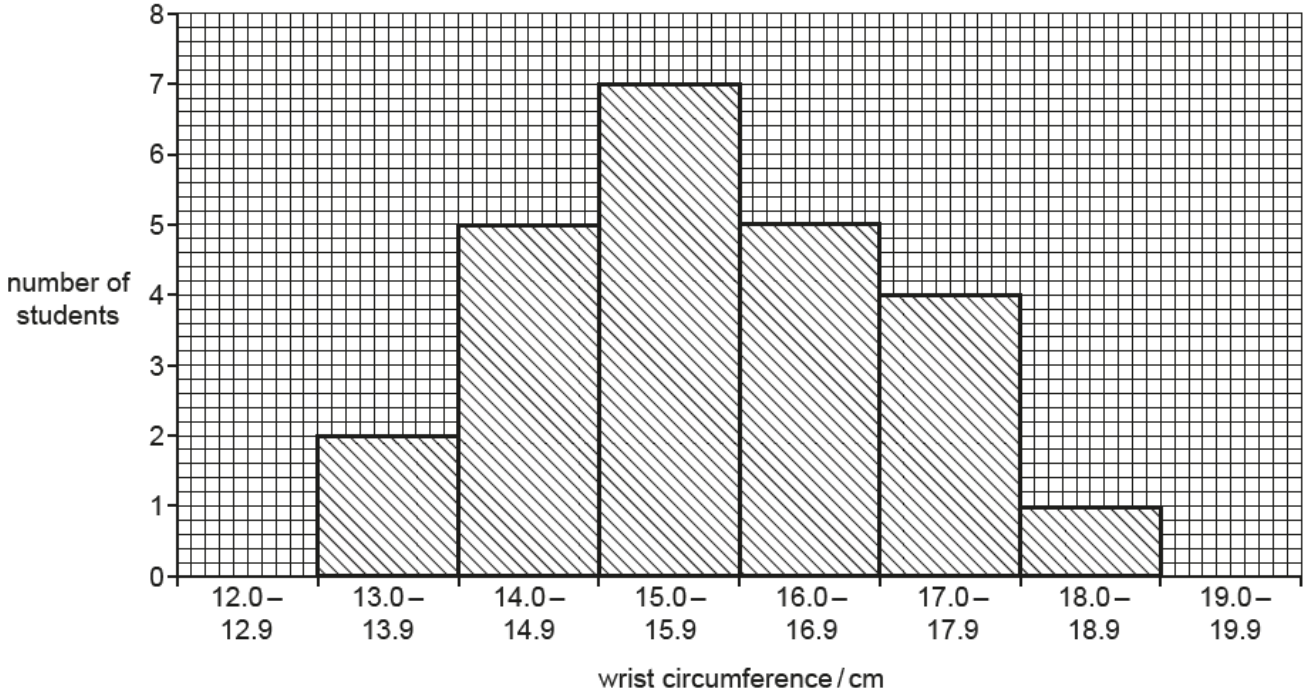


Fig. 5.2

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(i) Calculate the total number of students in this investigation.

..... [1]

(ii) State the most frequent wrist circumference range.

..... [1]

(iii) Explain how these data show that wrist circumference is an example of continuous variation.

.....

.....

..... [1]

(b) State **one** example of discontinuous variation.

..... [1]

(c) Variation can be caused by mutation.

Complete the sentences about mutation.

A mutation is a ..... change.

Mutation is the way new ..... are formed which are versions of a gene.

Mutation can be caused by ..... radiation and some chemicals.

[3]

[Total: 7]

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13. Nov/2021/Paper_42/No.1

Fig. 1.1 shows several villi from the ileum, which is part of the small intestine.

(a) State the name of **one** other part of the small intestine.

..... [1]

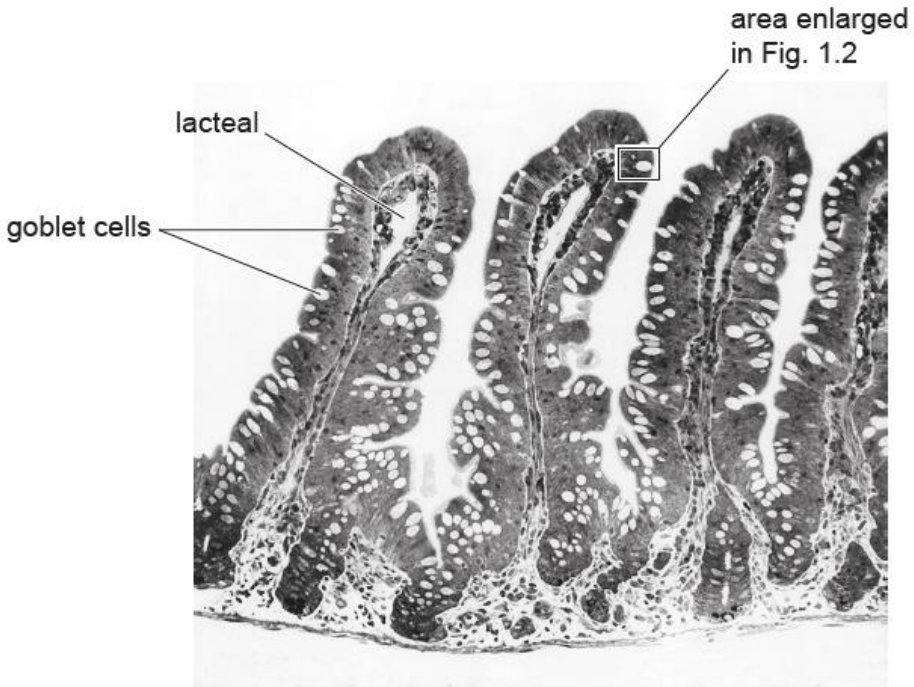


Fig. 1.1

Fig. 1.2 shows the tip of a villus in more detail.

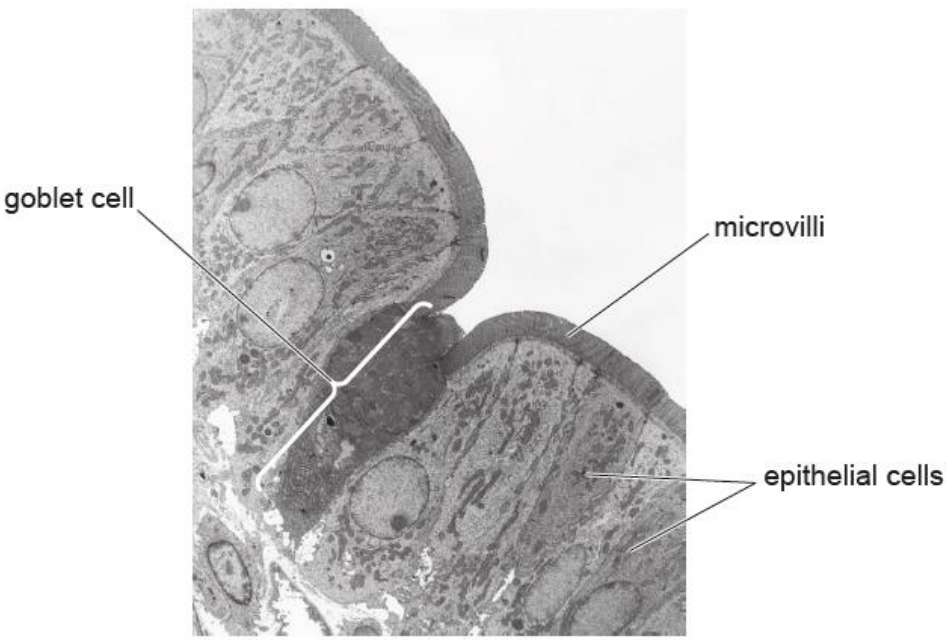


Fig. 1.2

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(b) The epithelial cells of the villi absorb nutrients by diffusion and active transport.

(i) Describe how active transport differs from diffusion.

.....

.....

.....

.....

..... [3]

(ii) Explain the importance of the microvilli shown in Fig. 1.2.

.....

.....

.....

.....

..... [2]

(c) Goblet cells provide protection for the epithelial cells that line the intestine.

(i) State the name of the protective substance produced by goblet cells.

..... [1]

(ii) Suggest why a protective substance is necessary in the intestines.

.....

.....

.....

.....

..... [2]

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(d) Fig. 1.1 shows a lacteal in the centre of each villus.

Describe the roles of lacteals.

.....

.....

.....

.....

..... [2]

(e) Complete Table 1.1 by identifying the level of organisation of each structure.

Choose your answers from the list. Each word or phrase may be used once, more than once or not at all.

cell **cell structure** **organ** **organ system** **organism** **tissue**

Table 1.1

structure	level of organisation
gall bladder	
endoplasmic reticulum	
intestinal epithelium	
ileum	

[4]

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(f) Many fungi are decomposers that feed on dead plants. The fungi secrete enzymes to digest large molecules.

Students made an extract from a species of fungus. The extract contained digestive enzymes.

The students carried out an investigation to find out if amylase and pectinase were present in the fungal extract.

They made agar plates by filling Petri dishes with agar jelly containing either starch or pectin. They cut four holes of the same size in the agar jelly in each Petri dish.

The holes in each Petri dish contained the same volume of:
A – 1% amylase solution
B – 1% pectinase solution
C – distilled water
D – fungal extract.

The Petri dishes were kept at 27 °C for four days. After this time a dye was poured into each dish to stain the areas where starch and pectin remained.

Fig. 1.3 shows drawings of the stained agar in the Petri dishes. The clear zones indicate the areas where no starch or pectin remained.

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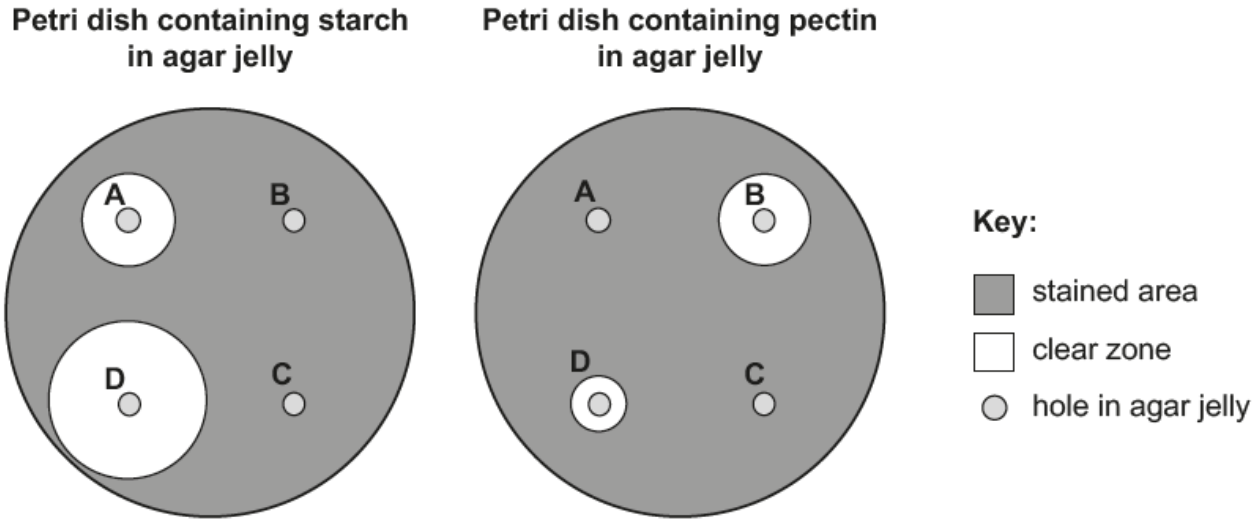


Fig. 1.3

(i) State what conclusions can be made about the enzymes in the fungal extract **and** give evidence from Fig. 1.3 to support your conclusions.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

(ii) The investigation was repeated but at 5 °C instead of at 27 °C.

Predict the effect of the lower temperature on the results.

.....

.....

..... [1]

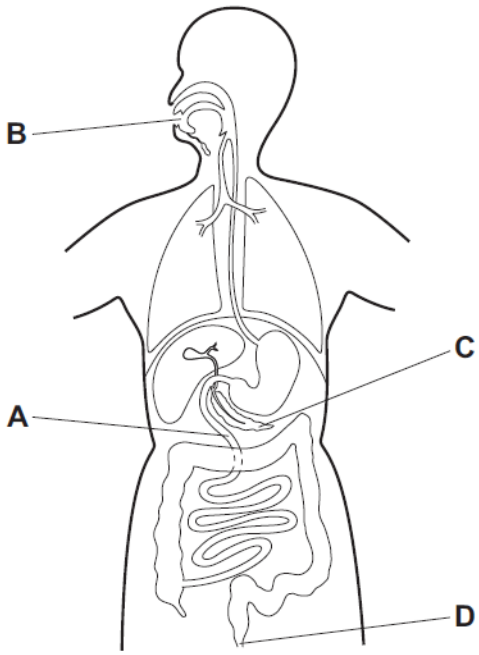
[Total: 21]

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Human nutrition – 2021 IGCSE 0610

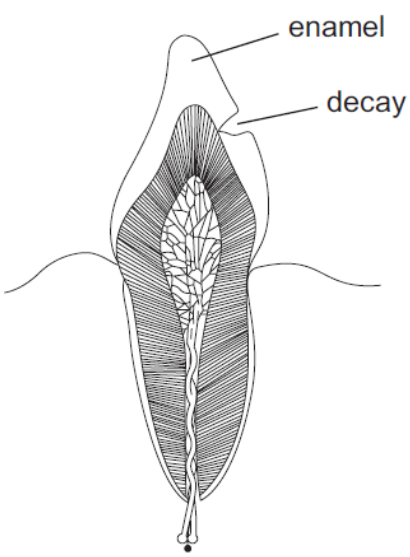
1. March/2021/Paper_12/No.14

Where does egestion take place?



2. March/2021/Paper_12/No.15

The diagram shows a tooth with signs of decay.



What has made the hole in the enamel of the tooth?

A acid

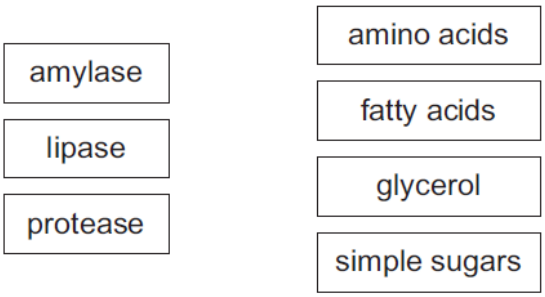
B saliva

C sugar

D toothpaste

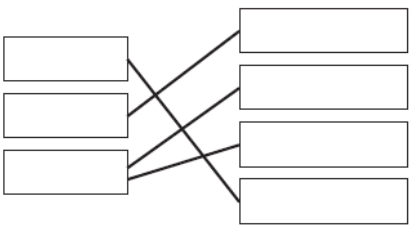
3. March/2021/Paper_12/No.16

The diagram shows enzymes and the products of the reactions they catalyse.

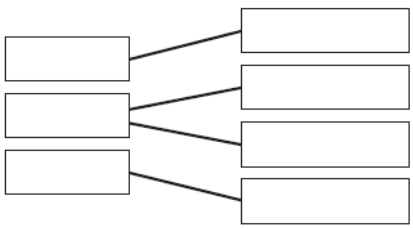


Which diagram matches the enzymes with the correct products?

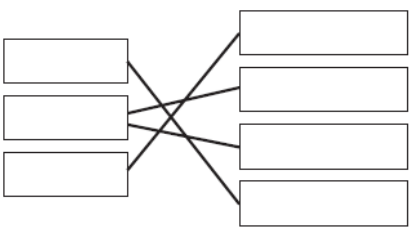
A



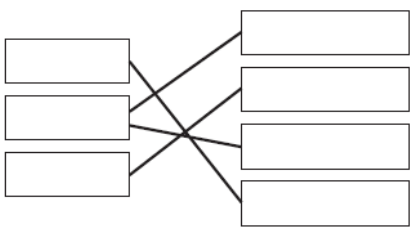
B



C



D



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4. March/2021/Paper_32/No.1

Fig. 1.1 is a diagram of the alimentary canal and associated organs.

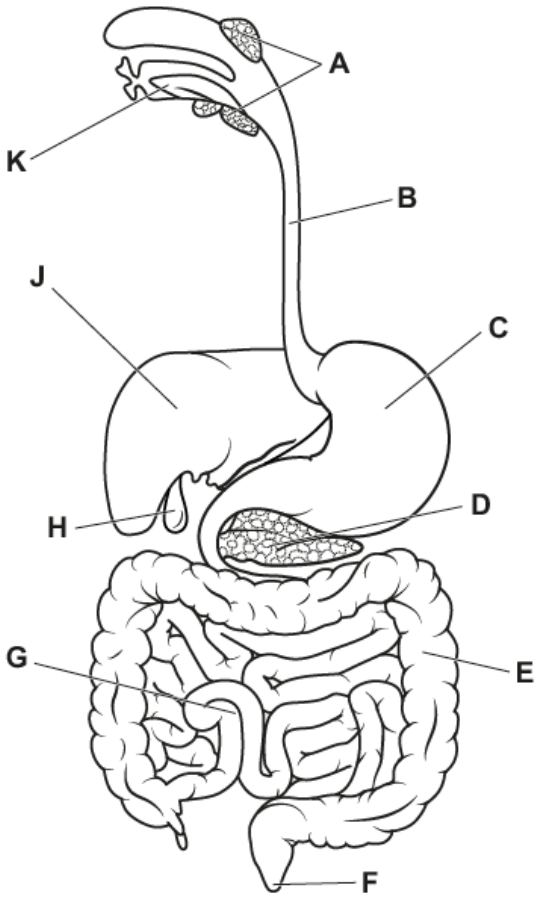


Fig. 1.1

(a) State the letter from Fig. 1.1 that identifies the part where:

alcohol is broken down .....

egestion occurs .....

hydrochloric acid is produced .....

mechanical digestion occurs .....

salivary amylase is produced .....

the most absorption occurs. .....

[6]

(b) State the names of the parts labelled **B** and **H** in Fig. 1.1.

B .....

H .....

[2]

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(c) State the names of the **three** parts of the large intestine.

1 .....

2 .....

3 .....

[3]

[Total: 11]

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5. March/2021/Paper_42/No.1

(a) Fig. 1.1 is a diagram showing the position of some organs in the human body.

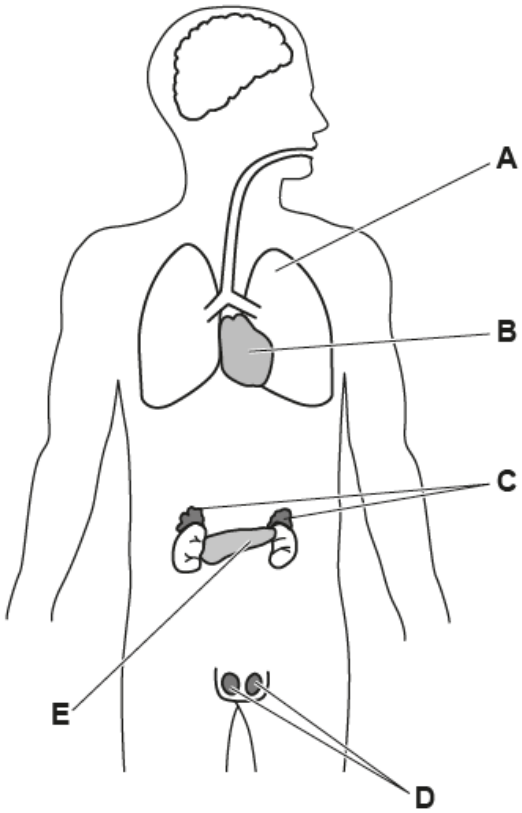


Fig. 1.1

Some of the organs shown in Fig. 1.1 are endocrine glands.

Table 1.1 shows the names of some of the endocrine glands, their identifying letters and the hormones that they produce.

Complete Table 1.1.

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Table 1.1

name of endocrine gland	letter in Fig. 1.1	hormone produced
	C	
		insulin
testes		

[3]

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(b) Fig. 1.2 shows two graphs representing:

- the relative blood concentrations of two hormones, **A** and **B**, released by the ovaries during the menstrual cycle
- the thickness of the lining of the uterus.

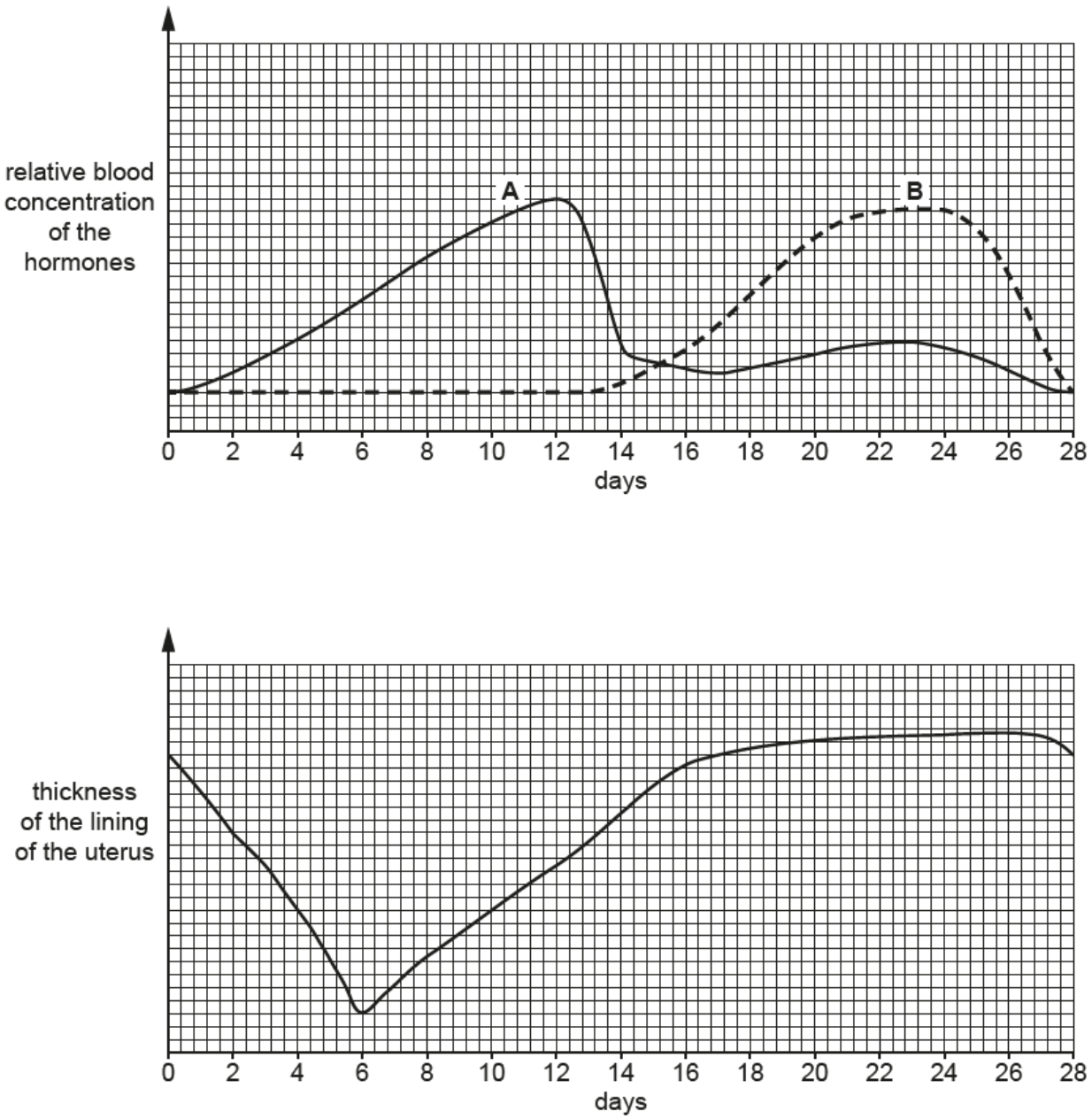


Fig. 1.2

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(i) Describe the roles in the menstrual cycle of hormone **A**.

.....

.....

.....

.....

.....

.....

..... [3]

(ii) State the day in Fig. 1.2 when ovulation is most likely to occur.

..... [1]

(iii) State the days in Fig. 1.2 when the lining of the uterus is lost from the body.

..... [1]

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(c) The female contraceptive pill is a chemical method of birth control, which is available in many countries.

(i) Describe the social implications of the increased availability of the female contraceptive pill.

.....

.....

.....

.....

..... [2]

(ii) The hormones in the female contraceptive pill can enter rivers.

Describe the negative impacts of female contraceptive hormones entering rivers and contaminating drinking water.

.....

.....

.....

.....

.....

.....

..... [3]

(iii) State **two** barrier methods of contraception.

1 .....

2 .....

[2]

[Total: 15]

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6. June/2021/Paper_11/No.14

In humans, where does most of the absorption of digested food take place?

A colon

B kidney

C liver

D small intestine

7. June/2021/Paper_11/No.16

Where does **most** of the absorption of water take place in the alimentary canal?

A colon

B oesophagus

C small intestine

D stomach

8. June/2021/Paper_12/No.10

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.

9. June/2021/Paper_12/No.14

In humans, where does most of the absorption of digested food take place?

A colon

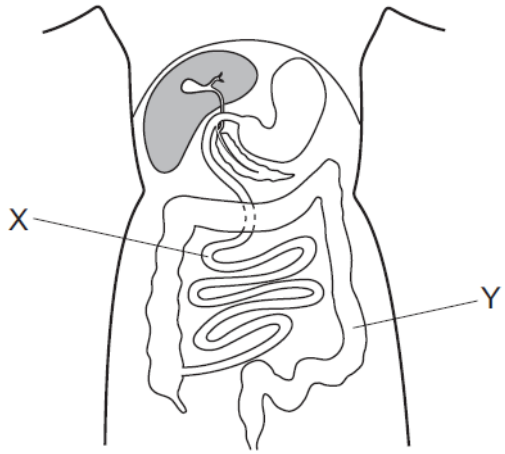
B kidney

C liver

D small intestine

10. June/2021/Paper_12/No.15

The diagram shows part of the human body.



Which statement about organs X and Y is correct?

A X absorbs more water from food than Y.

B X does not absorb water from food.

C Y absorbs more water from food than X.

D Y does not absorb water from food.

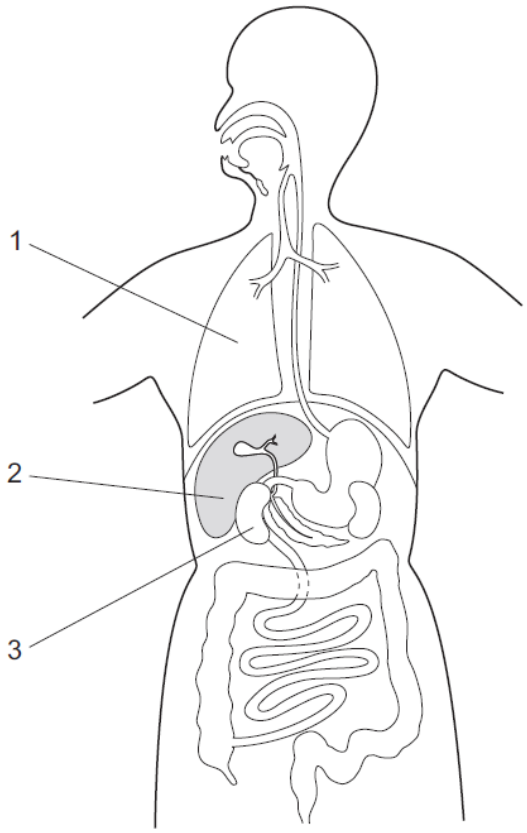
11. June/2021/Paper_12/No.16

What are the functions of human incisors and molars?

	incisors	molars
A	cutting	cutting
B	cutting	grinding
C	grinding	cutting
D	grinding	grinding

12. June/2021/Paper_12/No.25

The diagram shows some of the organs in the human body.



Which row matches the function to the correct organ?

	excretes carbon dioxide	excretes urea	produces urea
A	1	2	3
B	1	3	2
C	2	3	1
D	2	1	3

13. June/2021/Paper_13/No.14

In humans, where does most of the absorption of digested food take place?

A colon

B kidney

C liver

D small intestine

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14. June/2021/Paper_13/No.15

What is the cause of the **start** of dental decay?

A Acid dissolves dentine.

B Acid dissolves enamel.

C Sugars dissolve dentine.

D Sugars dissolve enamel.

15. June/2021/Paper_22/No.11

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.

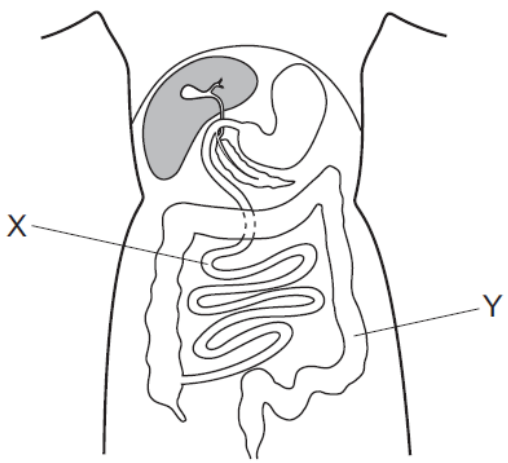
B The pH in the stomach is not suitable for the amylase to work.

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.

16. June/2021/Paper_22/No.16

The diagram shows part of the human body.



Which statement about organs X and Y is correct?

A X absorbs more water from food than Y.

B X does not absorb water from food.

C Y absorbs more water from food than X.

D Y does not absorb water from food.

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17. June/2021/Paper_23/No.11

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.

18. June/2021/Paper_23/No.16

What is the cause of the **start** of dental decay?

A Acid dissolves dentine.

B Acid dissolves enamel.

C Sugars dissolve dentine.

D Sugars dissolve enamel.

19. June/2021/Paper_32/No.5

(a) Fig. 5.1 shows a section through a human molar tooth.

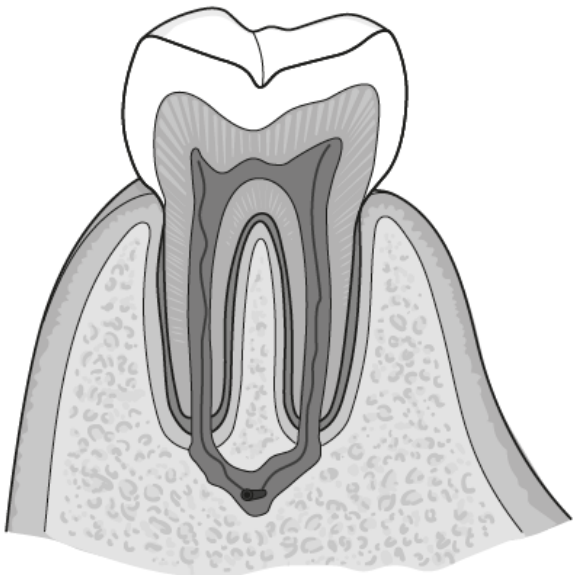


Fig. 5.1

(i) Use label lines and labels to identify these structures **on** Fig. 5.1:

- cement
- gum
- nerves. [3]

(ii) State the function of the canine teeth in humans.

.....

.....

..... [1]

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(b) Sheep are herbivores. They do not have canine teeth, or teeth in the front upper jaw.

The other types of teeth in sheep are similar to humans.

Fig. 5.2 shows an x-ray of the teeth in the skull of a sheep.

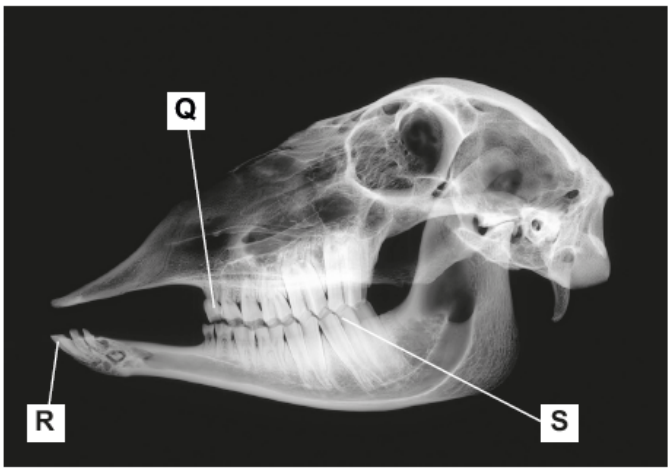


Fig. 5.2

The boxes on the left show a letter from Fig. 5.2.

The boxes in the middle show the name of a type of tooth shown in Fig. 5.2.

The boxes on the right show the function of each type of tooth.

Draw **one** line to link each letter from Fig. 5.2 to its correct name.

Draw **one** line to link each name to its correct function.

Draw a total of **six** lines.

letter from Fig. 5.2	name	function
Q	incisor	
		biting off pieces of food
R	molar	
		grinding food
S	premolar	

[5]

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20. June/2021/Paper_33/No.5

(a) The four boxes on the left contain definitions of processes carried out by the alimentary canal.

The six boxes on the right contain the names of processes.

Draw a straight line to join each definition to the matching process.

Draw only **four** lines.

definition	process
	absorption
The breakdown of large, insoluble molecules into small, soluble molecules.	assimilation
The movement of digested food molecules into the cells of the body where they are used, becoming part of the cells.	chemical digestion
The passing out of food that has not been digested or absorbed, as faeces, through the anus.	egestion
The taking of food substances, e.g. food and drink, into the body through the mouth.	mechanical digestion
	ingestion

[4]

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(b) Fig. 5.1 shows yeast being used to produce alcohol.

A mixture of yeast and fruit juice is placed in a jar. Fruit juice contains sugar.

A valve lets gas out of the jar but stops gas from entering the jar.

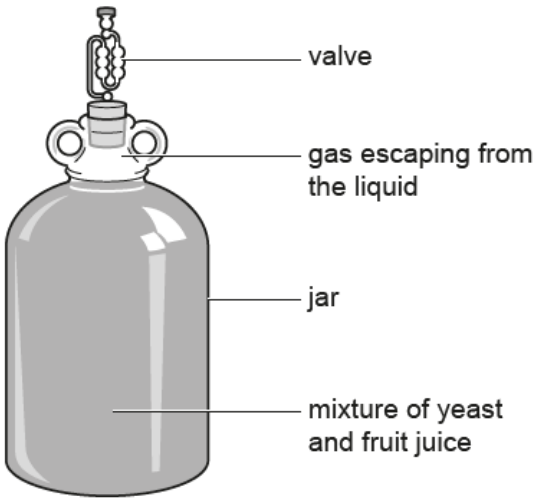


Fig. 5.1

(i) State the name of the process that the yeast uses to make alcohol.

..... [1]

(ii) State the name of the gas produced when yeast makes alcohol.

..... [1]

(iii) State the name of the gas that must be stopped from entering the jar when alcohol is being made.

..... [1]

(iv) State the name of the group of chemicals that yeast uses to catalyse the breakdown of glucose molecules.

Choose your answer from the list.

antibiotics **antibodies** **enzymes** **hormones**

..... [1]

[Total: 8]

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21. June/2021/Paper_33/No.9

(a) Fig. 9.1 is a label taken from a container of semi-skimmed milk.

The milk is pasteurised and some of the milk fat has been removed.

Fresh Pasteurised Semi Skimmed MILK	Nutritional information per 100 cm^3 of milk	
	Energy	209 kJ
	Carbohydrate	4.8 g
	Fat	1.7 g
	Protein	3.6 g
	Fibre	0.0 g
	Salt	0.1 g

Fig. 9.1

(i) Fig. 9.1 gives information about five groups of nutrients.

State **two** parts of a balanced diet that are missing from the label.

1 .....

2 .....

[2]

(ii) State the name of the group of organisms that produce milk to feed their young.

..... [1]

(b) **(i)** Describe the dietary importance of fats, carbohydrates and proteins in the human diet.

fats .....

.....

.....

carbohydrates .....

.....

.....

proteins .....

.....

.....

[3]

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(ii) State the name of the element which is present in a protein but which is **not** found in fats or carbohydrates.

..... [1]

(c) Some doctors recommend that people with a risk of coronary heart disease should drink skimmed or semi-skimmed milk instead of whole milk.

State **two** risk factors for coronary heart disease, **other than** diet.

1 .....

2 .....
[2]

[Total: 9]

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22. June/2021/Paper_43/No.1

(a) (i) The main component of milk is a liquid that is an important solvent in the body.

State the name of this solvent.

..... [1]

(ii) Table 1.1 shows some of the nutrients found in human milk, the elements that make up the nutrients, the enzymes that digest them and the products of digestion.

Complete Table 1.1.

Table 1.1

nutrient	elements	enzyme	products of digestion
protein			
fat			
lactose (milk sugar)	C, H, O		galactose and glucose (simple sugars)

[4]

(b) Milk also contains vitamins and mineral salts.

(i) Explain why vitamin D is important for the nutrition of children.

.....

.....

.....

.....

.....

.....

..... [3]

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(ii) Explain why iron is important in the diet.

.....

.....

.....

.....

.....

..... [2]

(c) Rubella and kwashiorkor are two diseases that affect children.

Rubella is a transmissible disease and kwashiorkor is a non-transmissible disease.

(i) Define the term transmissible disease.

.....

.....

.....

..... [2]

(ii) Explain why women should be vaccinated against rubella before they reach reproductive age.

.....

.....

.....

.....

.....

.....

.....

..... [4]

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(iii) Outline the causes of kwashiorkor.

.....

.....

.....

.....

..... [2]

[Total: 18]

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Human nutrition – 2020 IGCSE 0610

1. Nov/2020/Paper_11/No.14

Which stage of nutrition takes place when food molecules become part of a body cell?

A absorption

B assimilation

C digestion

D ingestion

2. Nov/2020/Paper_11/No.15

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.

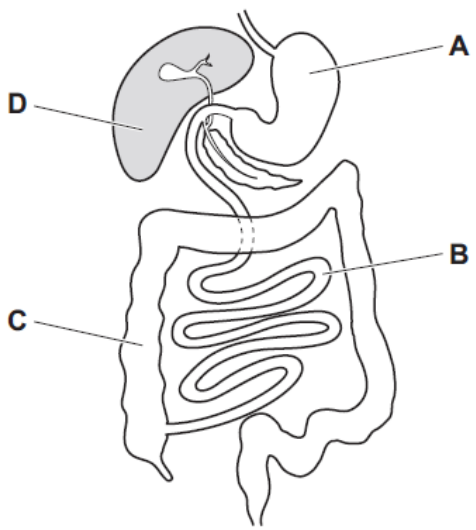
C Small insoluble molecules and ions are passed through the wall of the small intestine.

D Small soluble molecules and ions are passed through the wall of the small intestine.

3. Nov/2020/Paper_11/No.16

The diagram shows the human alimentary canal.

Where is most digested food absorbed into the blood?



4. Nov/2020/Paper_12/No.14

Which stage of nutrition takes place when food molecules become part of a body cell?

A absorption

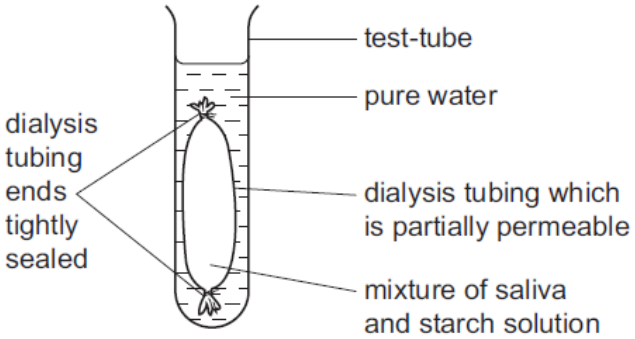
B assimilation

C digestion

D ingestion

5. Nov/2020/Paper_12/No.15

The diagram shows the apparatus used in an experiment to demonstrate two processes that take place in the body.



After one hour, the water outside the dialysis tubing contained reducing sugars.

Which two processes are represented by this experiment?

A absorption and digestion

B absorption and egestion

C digestion and egestion

D digestion and ingestion

6. Nov/2020/Paper_12/No.16

Which type of organism causes tooth decay?

A arachnid

B bacterium

C producer

D virus

7. Nov/2020/Paper_13/No.14

Which stage of nutrition takes place when food molecules become part of a body cell?

A absorption

B assimilation

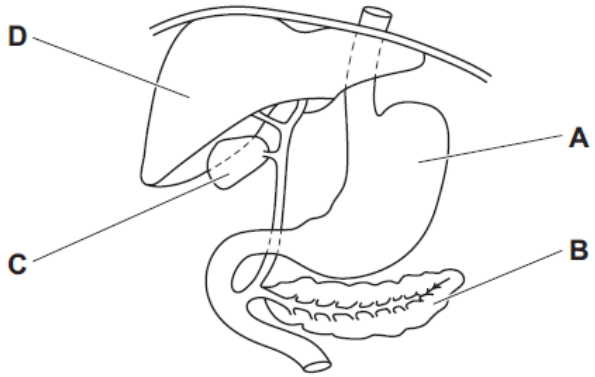
C digestion

D ingestion

8. Nov/2020/Paper_13/No.15

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

Which labelled part stores bile?



9. Nov/2020/Paper_13/No.16

Which human teeth are used for biting and cutting food?

A canines and molars

B incisors and canines

C molars and premolars

D premolars and incisors

10. Nov/2020/Paper_21/No.13

Which stage of nutrition takes place when food molecules become part of a body cell?

A absorption

B assimilation

C digestion

D ingestion

11. Nov/2020/Paper_21/No.14

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.

12. Nov/2020/Paper_22/No.13

Which stage of nutrition takes place when food molecules become part of a body cell?

A absorption

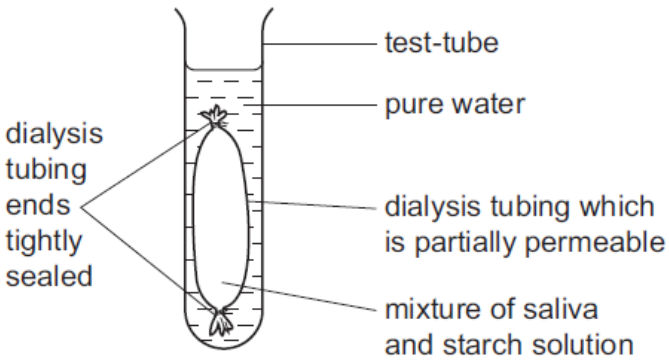
B assimilation

C digestion

D ingestion

13. Nov/2020/Paper_22/No.14

The diagram shows the apparatus used in an experiment to demonstrate two processes that take place in the body.



After one hour, the water outside the dialysis tubing contained reducing sugars.

Which two processes are represented by this experiment?

A absorption and digestion

B absorption and egestion

C digestion and egestion

D digestion and ingestion

14. Nov/2020/Paper_23/No.13

Which stage of nutrition takes place when food molecules become part of a body cell?

A absorption

B assimilation

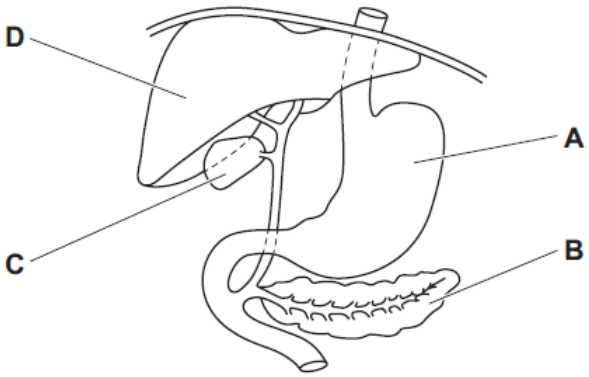
C digestion

D ingestion

15. Nov/2020/Paper_23/No.14

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

Which labelled part stores bile?



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16. Nov/2020/Paper_42/No.2

Fig. 2.1 is a vertical section of a human molar tooth and surrounding structures.

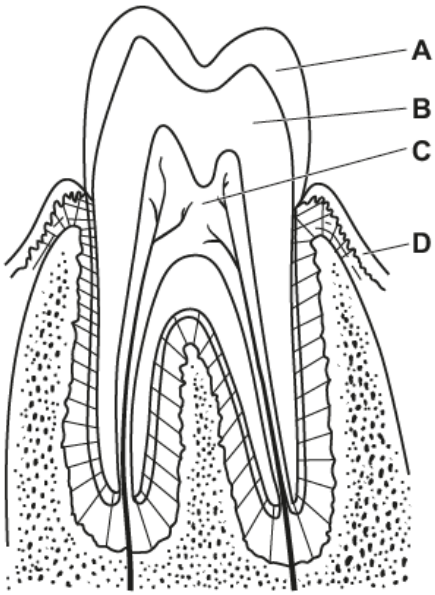


Fig. 2.1

(a) State the names of the parts labelled **A** to **D** on Fig. 2.1.

A .....

B .....

C .....

D .....

[4]

(b) Describe **and** explain the function of molar teeth.

.....

.....

.....

.....

.....

.....

..... [3]

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(c) Fig. 2.2 is an X-ray of decay in a molar tooth.



Fig. 2.2

Explain how tooth decay occurs.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 11]

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17. Nov/2020/Paper_43/No.2

(a) A person ate a meal containing starch and fat.

Fig. 2.1 shows some events that occurred after ingesting this meal.

P	absorption of nutrients in the villi
Q	assimilation of fatty acids in the liver
R	breakdown of large food particles by the teeth
S	movement of small food particles through the oesophagus
T	secretion of amylase from the salivary glands

Fig. 2.1

Put the events in Fig. 2.1 into the correct sequence. One has been done for you.

R				

[2]

(b) The stomach lining contains cells that secrete proteins.

(i) State the names of **two** cell structures that are involved in making or secreting proteins.

1 .....

2 .....

[2]

(ii) State the name of **one** component of gastric juice **and** describe its functions.

.....

.....

.....

.....

.....

.....

.....

[3]

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(iii) There are goblet cells in many parts of the alimentary canal.

State the substance that goblet cells secrete.

..... [1]

(c) Emulsification of fats occurs in the alimentary canal.

(i) Describe the process of emulsification of fats.

.....

.....

.....

.....

..... [2]

(ii) State the name of the organ in the alimentary canal where fats are emulsified.

..... [1]

(iii) State the name of the structure in the villi where digested fats are absorbed.

..... [1]

[Total: 12]

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Human nutrition – 2020 IGCSE 0610

1. March/2020/Paper_12/No.14

The list shows some human health problems.

1 chronic obstructive pulmonary disease

2 constipation

3 coronary heart disease

4 obesity

Which problems can be caused by malnutrition?

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

2. March/2020/Paper_12/No.15

The table shows the percentage of students from two schools who have one or more decayed teeth.

	percentage of students with decayed teeth
school X	30
school Y	60

What might explain these results?

A There is less calcium in the students' diet at school X than at school Y.

B There is less sugar in the students' diet at school X than at school Y.

C There is less vitamin C in the students' diet at school X than at school Y.

D There is less vitamin D in the students' diet at school X than at school Y.

3. March/2020/Paper_12/No.16

Digested proteins are absorbed into the blood as

A amino acids.

B fatty acids.

C glucose.

D glycerol.

4. March/2020/Paper_22/No.16

Which food group is chemically digested in the mouth, passes through the stomach and continues to be broken down by chemical digestion in the small intestine?

A carbohydrates

B mineral salts

C proteins

D vitamins

5. March/2020/Paper_32/No.7

(a) Fig. 7.1 is a diagram of the alimentary canal and associated organs.

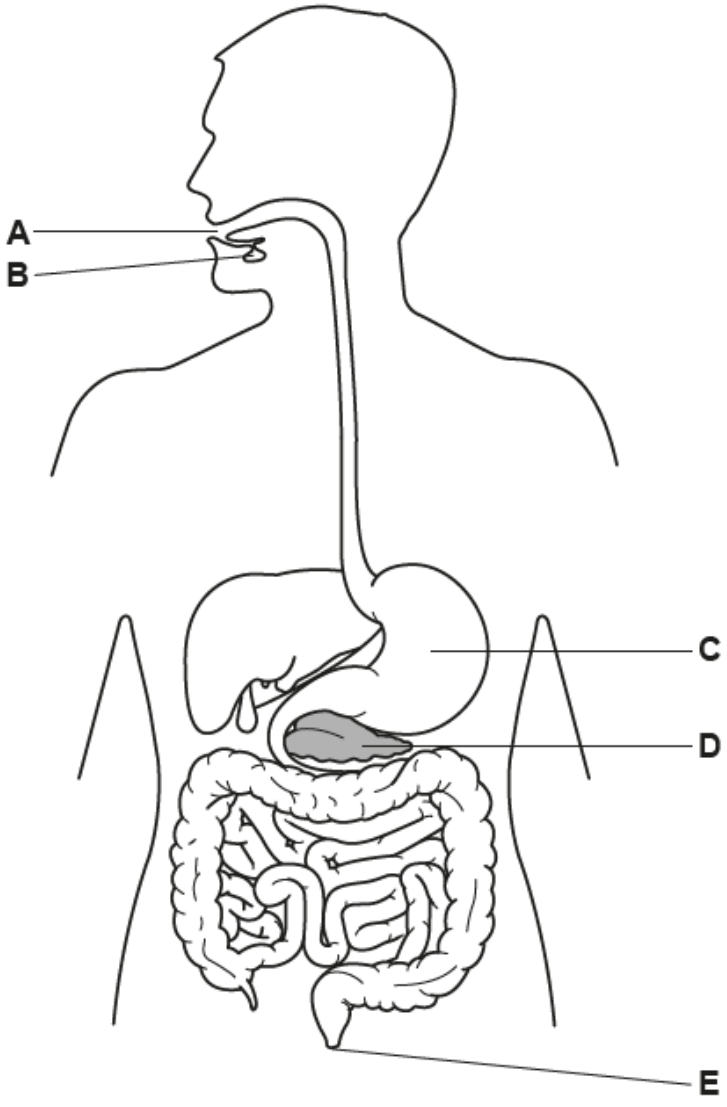


Fig. 7.1

The boxes on the left show the letters on Fig. 7.1.

The boxes in the middle show some of the names of the parts in Fig. 7.1.

The boxes on the right show the functions of the parts.

Draw lines to link each part with its correct letter and function.

letter on Fig. 7.1	name of the part	function
A	anus	contains hydrochloric acid to kill bacteria
B	mouth	production of amylase, protease and lipase
C	pancreas	production of saliva
D	salivary glands	site of egestion
E	stomach	site of ingestion

[6]

(b) The anus is part of the large intestine.

State the names of **two other** parts of the large intestine.

1 .....

2 .....

[2]

(c) State where mechanical digestion occurs in the alimentary canal.

..... [1]

(d) Protein and fats are two of the components of a balanced diet.

State the names of **three** other components of a balanced diet.

1 .....

2 .....

3 .....

[3]

[Total: 12]

6. March/2020/Paper_42/No.4

(a) Describe the similarities and differences between marasmus and kwashiorkor.

similarities .....

.....

.....

.....

.....

differences .....

.....

.....

.....

.....

[4]

(b) Researchers at a hospital recorded the total number of children admitted to the hospital between 1984 and 2002.

A common reason for children being admitted to this hospital was severe diarrhoea.

Table 4.1 shows this information.

Table 4.1

year	total number of children admitted to the hospital
1984	1386
1986	1604
1988	1955
1990	2054
1992	1726
1994	1143
1996	1422
1998	1419
2000	1580
2002	1161

(i) Calculate the percentage decrease in the total number of children admitted to the hospital between 1998 and 2002.

Give your answer to the nearest whole number.

Space for working.

..... %
[3]

(ii) Health workers in the communities near the hospital were trained in the prevention and treatment of diarrhoea. This affected the total number of children being admitted to the hospital.

Suggest the year in which the training took place.

Give a reason for your answer.

year .....

reason .....

.....

.....
[2]

(iii) The health workers provided advice to the community on ways of preventing the spread of the pathogens that cause diarrhoea.

Suggest the advice that was given to the community.

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 12]

7. June/2020/Paper_11/No.11

Which substance found in a healthy diet helps to prevent constipation?

A fat

B fibre

C minerals

D vitamins

8. June/2020/Paper_11/No.12

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

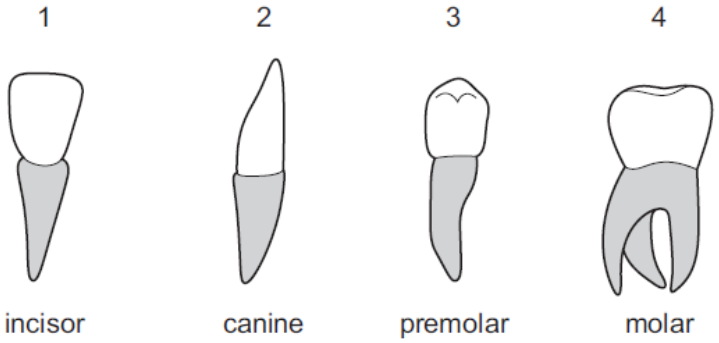
B colon and stomach

C mouth and duodenum

D stomach and mouth

9. June/2020/Paper_12/No.9

The diagram shows the four types of human tooth.



Which teeth are used for grinding food?

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

10. June/2020/Paper_13/No.11

Which substance found in a healthy diet helps to prevent constipation?

A fat

B fibre

C minerals

D vitamins

11. June/2020/Paper_13/No.12

The table shows the percentage of the daily recommended intake of nutrients in a serving of four foods.

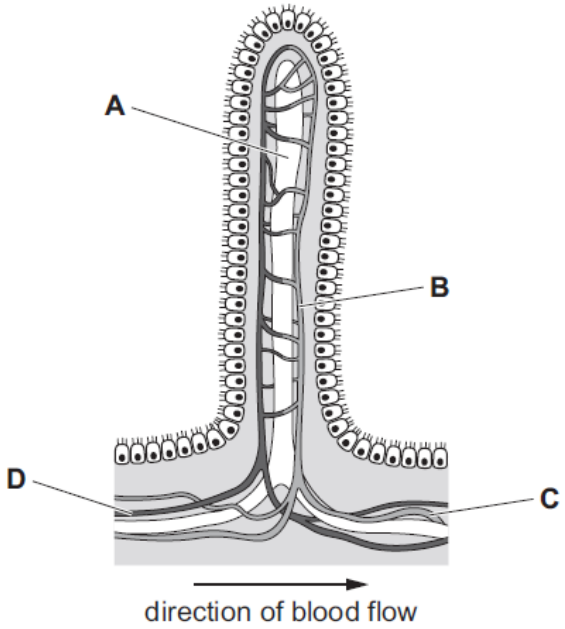
Which food would be the best choice to prevent scurvy?

	percentage of daily recommended intake in a serving of food			
	calcium	iron	vitamin C	vitamin D
A	71	1	0	6
B	24	11	2	73
C	3	3	72	0
D	1	72	1	0

12. June/2020/Paper_22/No.14

The diagram shows the structure of a villus. The arteriole, capillary, lacteal and venule are labelled with letters.

Which letter shows where nutrients are absorbed into the blood?



13. June/2020/Paper_22/No.16

Dodder is a plant that grows on other plants called the hosts. The dodder plant connects to the host's vascular bundles.

The dodder plant does not have green leaves or roots.

What correctly describes the regions for translocation?

	host leaves	dodder
A	sink	sink
B	sink	source
C	source	sink
D	source	source

14. June/2020/Paper_23/No.13

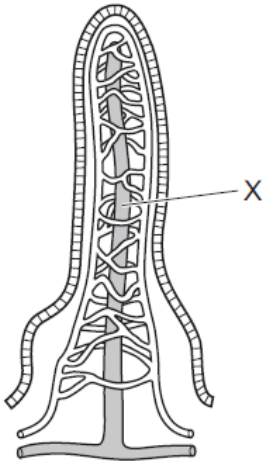
The table shows the percentage of the daily recommended intake of nutrients in a serving of four foods.

Which food would be the best choice to prevent scurvy?

	percentage of daily recommended intake in a serving of food			
	calcium	iron	vitamin C	vitamin D
A	71	1	0	6
B	24	11	2	73
C	3	3	72	0
D	1	72	1	0

15. June/2020/Paper_23/No.14

The diagram shows a villus in the small intestine.



What is absorbed at X?

A fats

B glucose

C glycogen

D starch

16. June/2020/Paper_31/No.1

(a) Fig. 1.1 shows some of the structures involved in excretion.

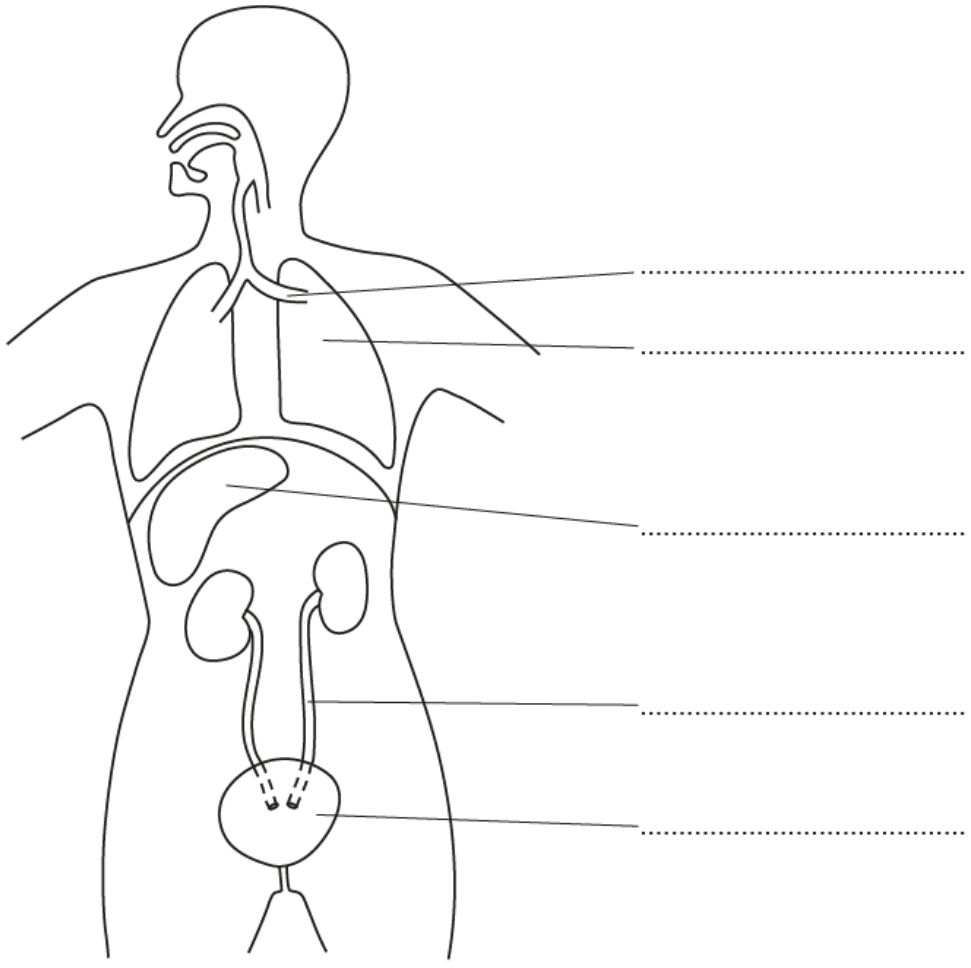


Fig. 1.1

Complete Fig. 1.1 by labelling the structures in the spaces provided.

Choose structures from the list:

bladder	**bronchus**	**heart**	**liver**	**lung**
pancreas	**trachea**	**ureter**	**urethra**	

[5]

(b) Urea is excreted.

(i) State the name of the substance that urea is made from.

..... [1]

(ii) State where in the body urea is made.

..... [1]

(c) Urine produced by the kidneys contains three excretory substances: urea, water and mineral salts.

Table 1.1 shows the average mass of urea, water and mineral salts in 100 g of blood plasma and in 100 g of urine.

Table 1.1

substance	average mass / g	
	in 100 g of blood plasma	in 100 g of urine
water	90.00	95.00
urea	0.03	2.00
mineral salts	0.69	1.35

Calculate the percentage increase in the average mass of mineral salts between blood plasma and urine.

Give your answer to two decimal places.

Space for working.

..... %
[3]

(d) Describe the process that produces the carbon dioxide that is excreted by the lungs.

.....

.....

.....

..... [2]

(e) State the name of the component of blood that transports carbon dioxide to the lungs.

..... [1]

[Total: 13]

17. June/2020/Paper_43/No.1

(a) State **three** uses of energy in the human body.

1 .....

2 .....

3 .....

[3]

(b) Fig. 1.1 shows part of the digestive system of a human.

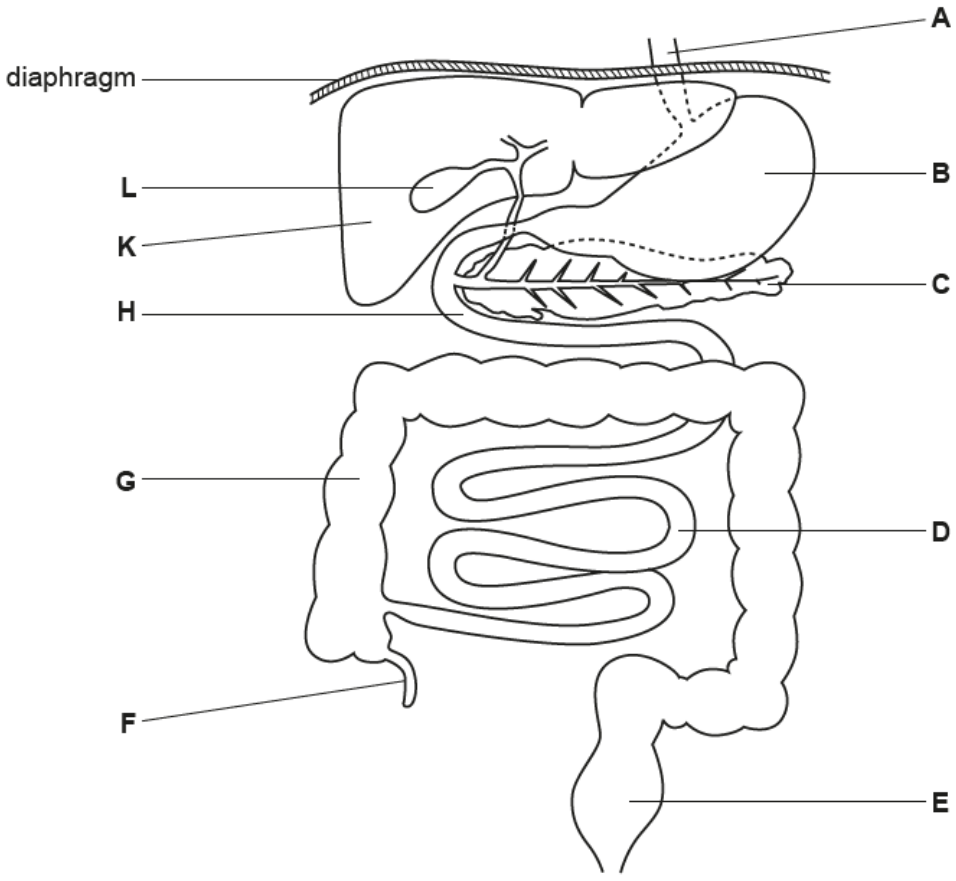


Fig. 1.1

Complete Table 1.1. One row has been done for you.

Table 1.1

function	name of structure	letter from Fig. 1.1
pushes food to the stomach	oesophagus	**A**
assimilation of amino acids to produce plasma proteins		
storage of bile		
secretion of insulin		
absorption of fatty acids and glycerol		
secretion of pepsin		
digestion of starch		

[6]

(c) Describe the role of the liver in the recovery from oxygen debt after strenuous exercise.

.....

.....

.....

.....

..... [2]

(d) Alcohol is a drug.

Define the term drug.

.....

.....

..... [2]

(e) **(i)** State **two** immediate effects of excessive alcohol on the body.

1 .....

2 .....
[2]

(ii) State **two** long-term effects of excessive alcohol on the body.

1 .....

2 .....
[2]

(f) Pregnant women are advised not to drink alcohol as it may have harmful effects on the fetus.

(i) Outline these harmful effects.

.....

.....

.....

.....

..... [2]

(ii) State **two** harmful substances **other than alcohol** that can cross the placenta.

1 .....

2 .....
[2]

[Total: 21]

1. Which type of food is **not** digested before being absorbed by the body?

   A carbohydrate

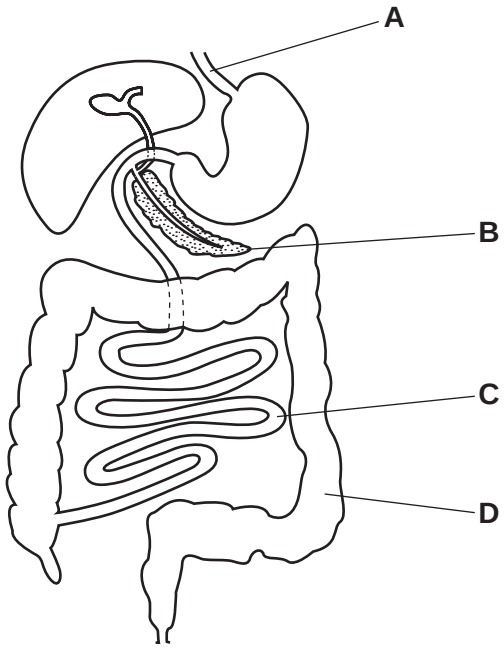
   B fat

   C protein

   D water

2. The diagram shows the human alimentary canal.

   In which structure is most glucose absorbed into the blood?



3. Which dietary component is **unlikely** to be deficient in a meat-free diet?

   A fat

   B fibre

   C protein

   D vitamin D

4. The bacterium *Salmonella enterica* can cause severe food poisoning and the lining of the alimentary canal may be damaged. In these cases absorption of digested food products cannot easily take place.

Which region of the alimentary canal is most affected?

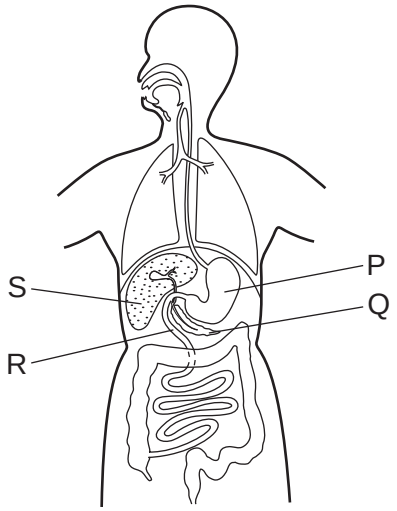
A colon

B ileum

C oesophagus

D stomach

5. The diagram shows some of the organs of the human body.



In which organs does the digestion of proteins take place?

A P and Q **B** P and R **C** Q and R **D** Q and S

6. Which organ produces amylase?

A gall bladder

B liver

C oesophagus

D pancreas

7. Which treatment is best for a person with persistent diarrhoea?

A drinking a solution of sugar and salt

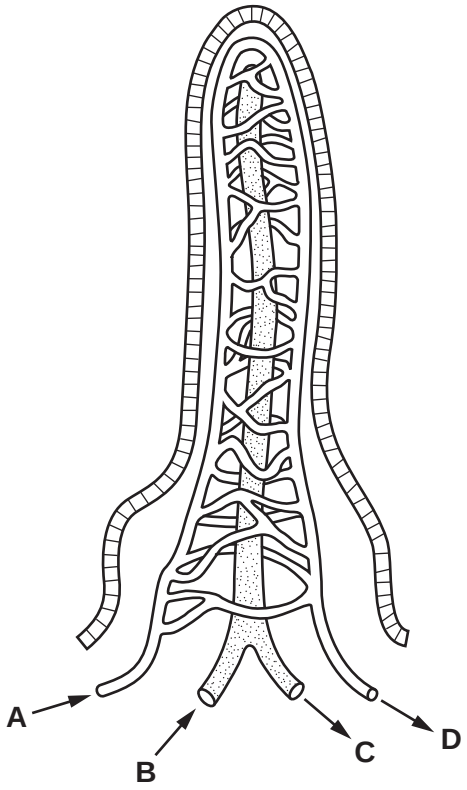
B drinking pure water

C eating more fibre

D eating protein such as boiled eggs

8. The diagram shows a villus. The arrows show the direction of flow within vessels associated with the villus.

Which vessel carries blood to the liver?



9. What is **not** a result of cholera infection?

A intestinal blockage

B loss of salts from blood

C severe dehydration of body tissues

D severe diarrhoea

10. What is the function of bile?

A to acidify food entering the duodenum

B to emulsify starch

C to increase the surface area of fats for digestion

D to provide enzymes for fat digestion

11. In which region of the alimentary canal is maltose digested?

A colon

B rectum

C small intestine

D stomach

12. Which description of the cholera pathogen is correct?

A The bacterium prevents the kidney from absorbing water, so water is secreted into the small intestine, causing diarrhoea.

B The bacterium produces a toxin that causes the secretion of chloride ions into the small intestine, drawing in water by osmosis.

C The virus prevents the kidney from absorbing water, so water is secreted into the small intestine, causing diarrhoea.

D The virus produces a toxin that causes the secretion of chloride ions into the small intestine, drawing in water by osmosis.

13. The diagram shows a fat globule (P) in one part of the alimentary canal and the same globule (Q) as it appears in another part of the alimentary canal.

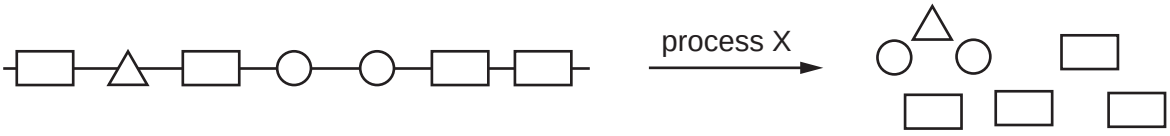


P Q

In which parts of the alimentary canal are P and Q found?

	P	Q
A	duodenum	stomach
B	ileum	oesophagus
C	oesophagus	ileum
D	rectum	ileum

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



What is process X?

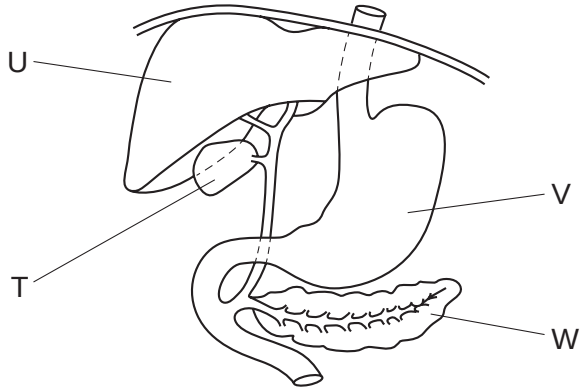
A absorption

B chewing

C digestion

D secretion

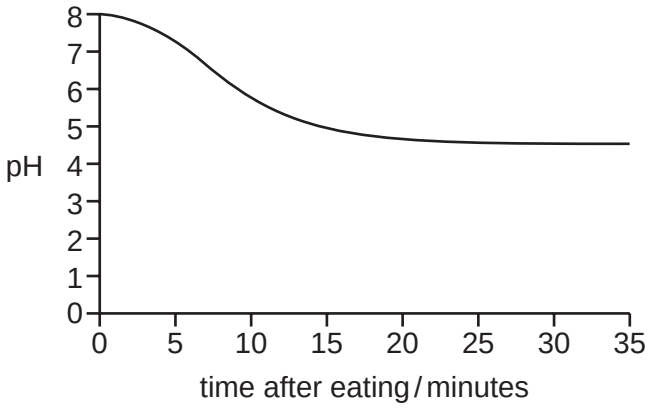
15. The diagram shows part of the alimentary canal and associated organs.



Which structures secrete enzymes that digest proteins?

A T and U **B** U and V **C** V and W **D** W and T

16. The graph shows pH changes in the mouth after eating.



Why is it a good idea to brush teeth after eating?

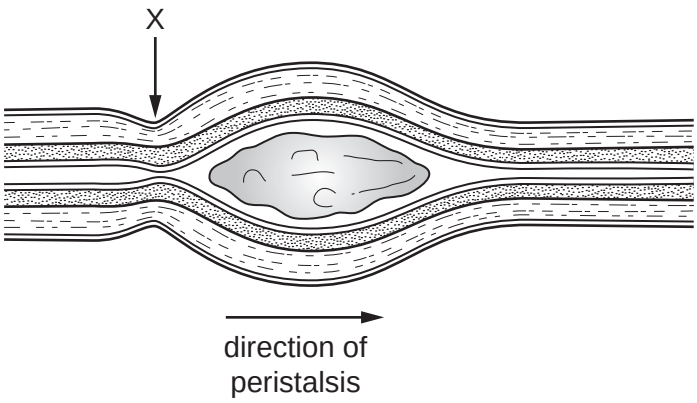
A Acidic conditions help bacteria to grow.

B Acids dissolve tooth enamel.

C Alkaline conditions help bacteria to grow.

D Alkalis dissolve tooth enamel.

17. The diagram shows a piece of small intestine during peristalsis.

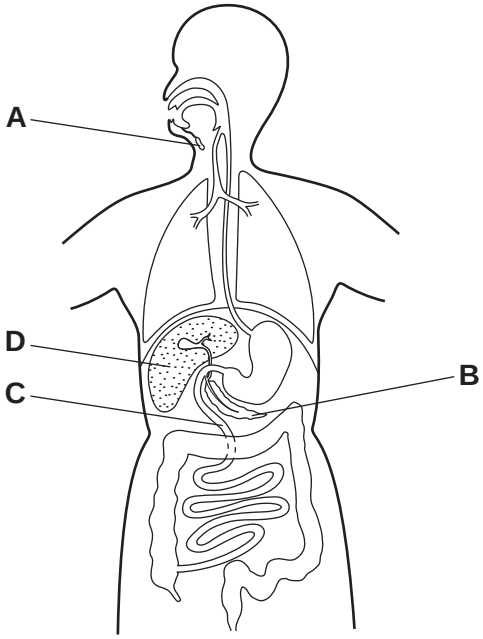


What is happening at X?

	circular muscles	longitudinal muscles
A	contracted	contracted
B	contracted	relaxed
C	relaxed	contracted
D	relaxed	relaxed

18. The diagram shows the human alimentary canal.

Which structure does **not** secrete digestive enzymes?



19. Which substance catalyses the breakdown of fats to fatty acids and glycerol?

A adrenaline

B alcohol

C bile

D lipase

20. Poor nutrition can lead to a condition called rickets in which bones fail to develop properly.

The table shows some minerals and vitamins present in four foods.

Which food would be best for a child who has rickets?

	calcium	iron	vitamin C	vitamin D
A	✓	✗	✓	✗
B	✓	✗	✗	✓
C	✗	✓	✓	✗
D	✗	✓	✗	✓

key

✓ = substance present

✗ = substance absent

21. Which components make up most of the dry mass of a balanced diet?

A calcium compounds, carbohydrates and fats

B carbohydrates, fats and proteins

C fats, proteins and vitamins

D proteins, vitamins and calcium compounds

22. Why does chewing food speed up digestion?

A Bacteria in the food are killed.

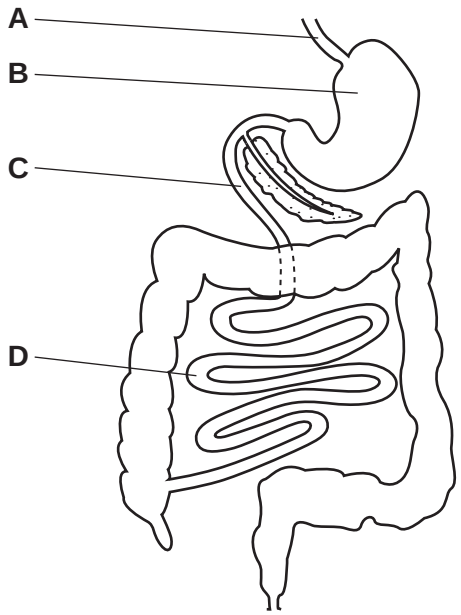
B Food is mixed with protease.

C The surface area of the food is increased.

D The taste of food is improved.

23. The diagram shows part of the human alimentary canal.

In which part does protein digestion begin?



24. A person ate food X. Food X was **not** affected by enzymes until it reached the duodenum.

What was in food X?

A fat

B mineral ion

C protein

D starch

25. Why does chewing food speed up digestion?

A Bacteria in the food are killed.

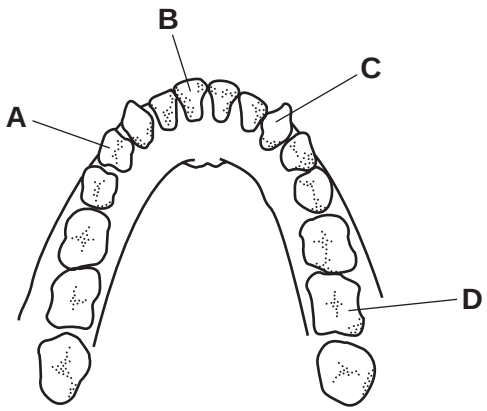
B Food is mixed with protease.

C The surface area of the food is increased.

D The taste of food is improved.

26. The diagram shows the teeth of the lower jaw of a human.

Which tooth is an incisor?



27. What is the function of the anus?

A assimilation

B digestion

C egestion

D excretion

28. A person has their gall bladder removed.

Which statement is correct?

A They cannot eat carbohydrates.

B They can eat fat only in small amounts.

C They can eat only liquid food.

D They must not eat more than one large meal a day.

29. The small intestines of cows are similar in general structure and function to the small intestines of humans.

A disease in cows reduces the number of villi in their small intestines.

The cows lose weight and become weak.

What explains this?

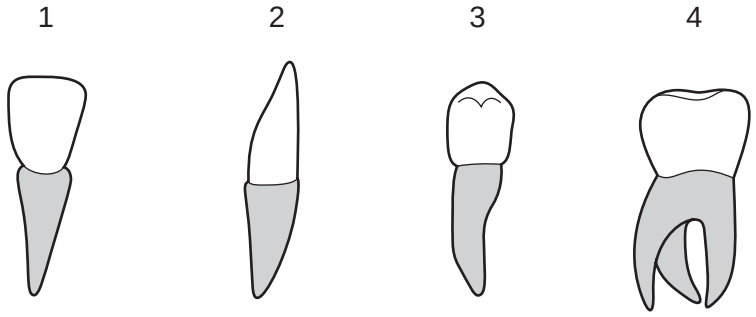
A less amylase produced

B less peristalsis

C slower absorption of nutrients

D slower digestion of proteins

30. The diagram shows the four types of human tooth.



Which teeth are used for cutting rather than grinding food?

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

31. What is the result of a diet lacking iron?

A bleeding gums

B poor wound healing

C reduced number of red blood cells

D weak bones and teeth

32. A child decided to eat only meat, oily fish, cheese and bread, and drink only water.

Which nutrient would be in low levels in this diet?

A calcium

B iron

C vitamin C

D vitamin D

33. Which chemical reaction takes place in the stomach?

A Proteins are digested by protease.

B Proteins are digested into fatty acids.

C Starch is digested into amino acids.

D Starch is digested by lipase.

34. A person has bleeding gums.

This could be caused by a lack of which nutrient?

A calcium

B iron

C vitamin C

D vitamin D

35. The table shows the main contents of four meals.

Which meal will be the most effective at preventing constipation?

	g / 100 g			
	carbohydrate	fat	fibre (roughage)	protein
A	18	12	8	25
B	30	32	2	12
C	38	4	22	10
D	48	15	10	5

36. The activity of lipase is measured in four parts of the gut.

Which part has the most lipase activity?

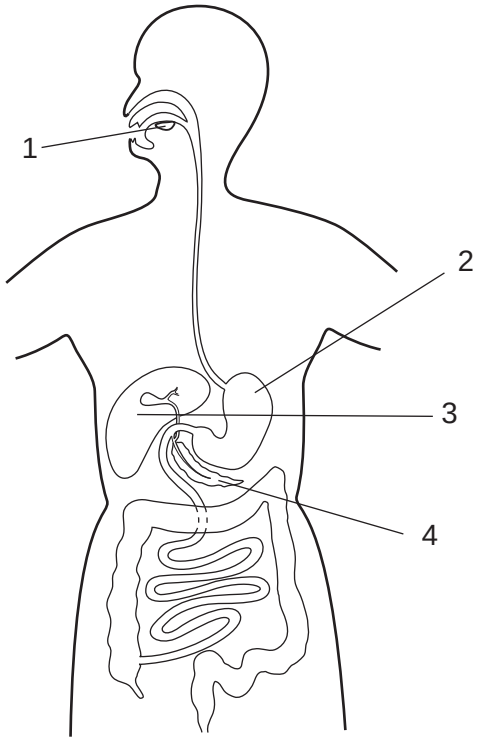
A colon

B duodenum

C oesophagus

D stomach

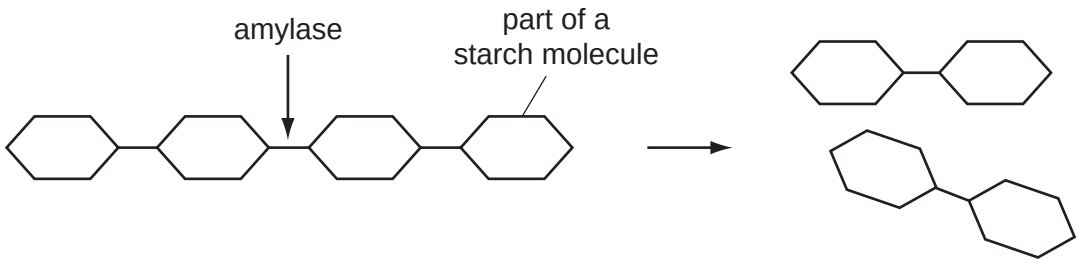
37. The diagram shows some organs of the digestive system.



Where is amylase made?

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

38. The diagram shows the action of amylase.



What is the function of the enzyme amylase?

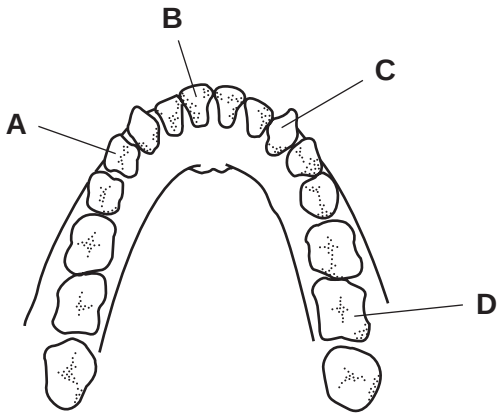
A breaks down the substrate into amino acids

B changes the product into the substrate

C increases the rate of starch breaking down into glucose

D increases the rate of starch breaking down into maltose

39. Which is an incisor tooth?



40. Dietary fibre passes through several structures after leaving the stomach.

In which order does the dietary fibre pass through these structures?

A duodenum → ileum → colon → rectum

B duodenum → ileum → rectum → colon

C ileum → duodenum → colon → rectum

D ileum → duodenum → rectum → colon

ANIMAL NUTRITION P2 QUESTIONS 5090

5. Animal nutrition

Content

5.1 Nutrients
5.2 Diet
5.3 World food supplies
5.4 Human alimentary canal
5.5 Chemical digestion
5.6 Absorption and assimilation

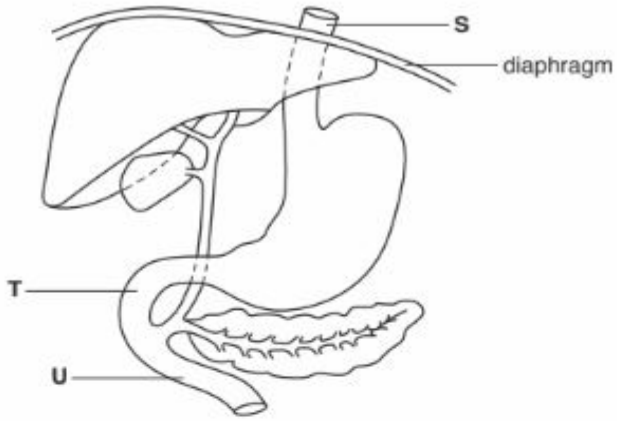
Learning outcomes

Candidates should be able to:
(a) list the chemical elements that make up:
• carbohydrates
• fats
• proteins
(b) describe tests for:
• starch (iodine in potassium iodide solution)
• reducing sugars (Benedict's solution)
• protein (biuret test)
• fats (ethanol emulsion test)
(c) list the principal sources of, and describe the dietary importance of carbohydrates, fats, proteins, vitamins (C and D only), mineral salts (calcium and iron only), fibre (roughage) and water
(d) name the diseases and describe the symptoms resulting from deficiencies of vitamin C (scurvy), vitamin D (rickets), calcium (rickets) and iron (anaemia)
(e) understand the concept of a balanced diet
(f) explain why diet, especially energy intake, should be related to age, sex and activity of an individual
(g) state the effects of malnutrition in relation to starvation, heart disease, constipation and obesity
(h) discuss the problems that contribute to famine (unequal distribution of food, drought and flooding, increasing population)
(i) identify the main regions of the alimentary canal and the associated organs: mouth (buccal) cavity, salivary
glands, oesophagus, stomach, duodenum, pancreas, gall bladder, liver, ileum, colon, rectum and anus
(j) describe the main functions of these parts in relation to ingestion, digestion, absorption, assimilation and
egestion of food, as appropriate
(k) identify the different types of human teeth and describe their structure and functions
(l) state the causes of dental decay and describe the proper care of teeth
(m) describe peristalsis
(n) explain why most foods must be digested
(o) describe:
• digestion in the alimentary canal
• the functions of a typical amylase, protease and lipase, listing the substrates and end-products
(p) describe the structure of a villus, including the roles of capillaries and lacteals
(q) describe the significance of villi in increasing the internal surface area

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N18/21/Q7

The diagram shows a region of the alimentary canal and the associated organs.



(a) (i) Identify part **S**.

.....

[1]

(ii) Name and describe the process which moves food through part **S**.

.....

.....

.....

.....

.....

..... [4]

(b) (i) Draw a (ring) around the correct words to complete the sentence below.

higher than **the same as** **lower than**

The pH at location **U** is ..... that at location **T**. [1]

(ii) Explain how the pH at location **U** results from secretions produced by organs shown in the diagram. Name these organs.

.....

.....

.....

.....

.....

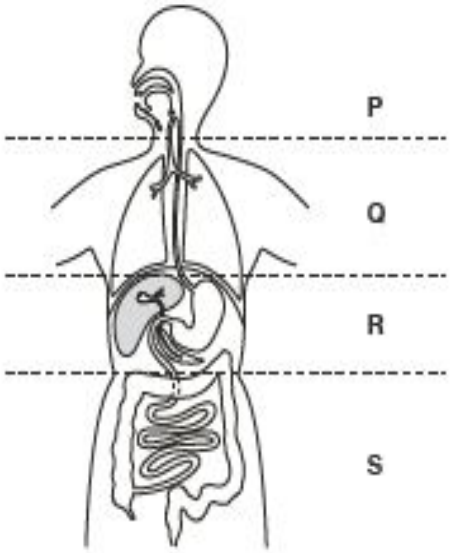
..... [4]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J18/22/Q5

The diagram shows a section through the human body divided into regions P, Q, R and S.



Complete the table below by matching the letters from the diagram to the statements in the table. There may be one or more than one letter for each statement.

contains an organ which	region or regions
... produces an acidic secretion	R
... contains villi	
... digests protein	
... produces insulin	
... contains bronchi	
... secretes amylase	
... ingests food	

[6]

[Total: 6]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J18/22/Q9

(a) Explain why most foods eaten by a human must be digested.

.....

.....

.....

.....

.....

.....

.....[4]

(b) Describe, with reference to the function(s) of named substances produced, the importance of each of the following organs in the process of digestion:

liver .....

.....

.....

.....

.....

.....

.....

pancreas .....

.....

.....

.....

.....

.....

.....

[6]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N17/21/Q1

Fig. 1.1 shows four types of human teeth A, B, C and D.

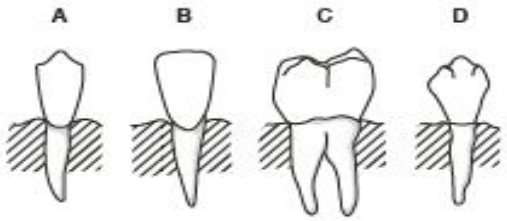


Fig. 1.1

Fig. 1.2 below shows the arrangement of teeth in the lower jaw of a human.

(a) Complete Fig. 1.2 to show the following for each of the two types of teeth indicated:

- the identity of each type of tooth by writing the correct letter A, B, C or D from Fig. 1.1
- the name of each type of tooth
- one function of each type of tooth. [6]

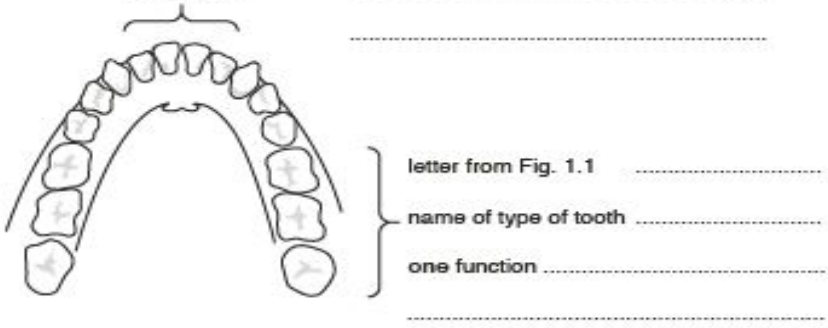


Fig. 1.2

(b) (i) State the causes of dental decay.

.....

.....

.....

.....[2]

(ii) Describe the proper care of teeth.

.....

.....

.....

.....[2]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N17/21/Q8

(a) With reference to specific examples, explain how and why diet should be related to the age and activity of an individual.

.....

.....

.....

.....

.....

.....

.....[4]

(b) Describe digestion in the human stomach.

.....

.....

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.....

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.....

.....

.....[6]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N17/22/Q7

(a) Describe the causes and symptoms of each of the following:

(i) rickets,

.....

.....

.....

.....

.....

.....[4]

(ii) scurvy.

.....

.....

.....

.....

.....

.....[4]

(b) Suggest why the alimentary canal does not produce any enzymes to work on vitamins.

.....

.....

.....[2]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J17/22/Q2

Four of the stages associated with human nutrition are:

absorption **digestion** **egestion** **ingestion**

(a) **(i)** State the stage in nutrition that has **not** been included in the list above.

.....[1]

Fig. 2.1 shows the human alimentary canal.

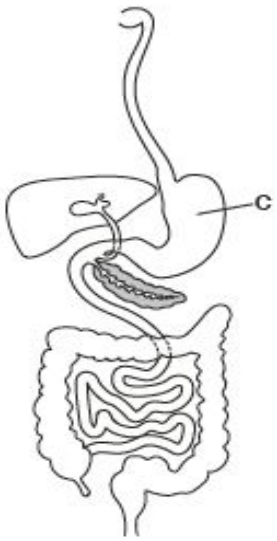


Fig. 2.1

(ii) On Fig. 2.1, use lines labelled **A** and **B** to indicate where egestion (**A**) and ingestion (**B**) occur. [2]

(b) State a component of the diet that is digested in region **C** in Fig. 2.1, and where the products are then absorbed into the blood.

component .....

where products absorbed .....
[2]

(c) Suggest the likely effect on digestion of removing a person's gall bladder.

.....

.....

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.....

.....

.....[5]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N16/21/Q4

Table 4.1a shows some of the recommended dietary allowances for a child under the age of six months.

Table 4.1b shows part of the composition of bottle milk that may be fed to a child under the age of six months.

Table 4.1a

component	recommended dietary allowance
energy	2770 kJ
protein	13 g
vitamin C	30 mg
iron	6 mg

Table 4.1b

component	amount per 100 cm^3 of bottle milk
energy	277 kJ
fat	3.6 g
carbohydrate	7.3 g
protein	1.3 g
vitamin C	3.0 mg
iron	0.6 mg

(a) (I) Calculate the volume of bottle milk that a child under the age of six months should be fed each day to obtain the recommended dietary allowance of each component listed in Table 4.1a.

You may use the space below to work out your answer.

..... [2]

(II) State and explain the health risks to a child who is fed less bottle milk each day than the volume you have calculated.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

ANIMAL NUTRITION P2 QUESTIONS 5090

(b) (I) Many mothers choose to feed their child breast milk rather than bottle milk.

Describe some advantages of breast milk compared with bottle milk.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(II) Suggest **one** reason why a mother may choose to feed her child bottle milk.

.....

.....

..... [1]

[Total: 11]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J16/21/Q3

Digestion in the human alimentary canal is carried out by the action of enzymes. Each food group is the substrate for a specific enzyme.

(a) Fig. 3.1 shows diagrams that each represent the action of a specific enzyme to break down a substrate into one or more end products.

Diagram **F** in Fig. 3.1 has been completed for you.

Complete diagrams **G** and **H** in Fig. 3.1.

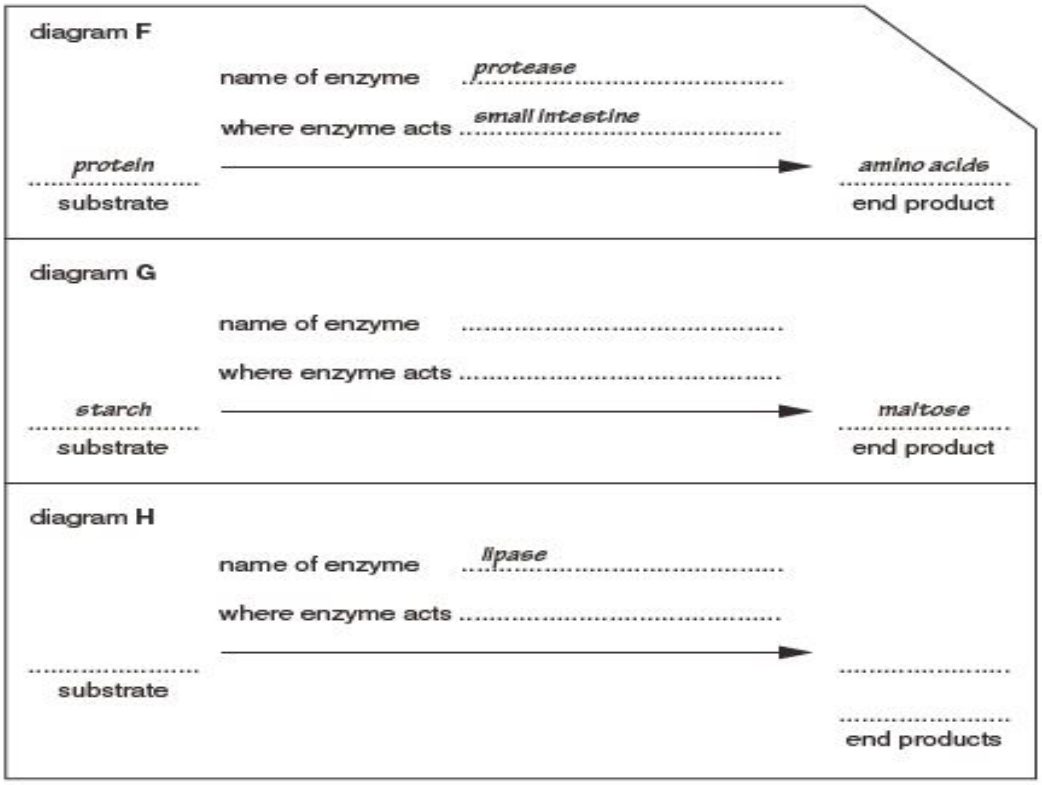


Fig. 3.1

[6]

(b) Amino acids are the end products of protein digestion. Describe what happens to these amino acids from the point of digestion until they reach the liver.

.....

.....

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.....

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.....

.....

..... [4]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J16/22/Q3

Table 3.1 is a list of some of the constituents of a healthy human diet.

Table 3.1

constituent
carbohydrates
fats
proteins
mineral salts
fibre/roughage

(a) State one of these constituents that

(I) does not require digestion, ...[1]

(II) is the body's main storage substance. .....[1]

(b) Name **two** dietary constituents that are missing from the list in Table 3.1 and for each state **two** reasons for its importance in the diet.

constituent: .....

1 .....

.....

2 .....

.....

constituent: .....

1 .....

.....

2 .....

.....[6]

(c) The chimpanzee is an animal whose metabolism is very similar to that of a human, but one type of chimpanzee lacks the gene responsible for the manufacture of amylase.

Suggest how this will affect the diet of this type of chimpanzee.

.....

.....

.....[2]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N15/21/Q6

(a) Explain why most foods must be digested.

.....

.....

.....

.....

.....

..... [3]

(b) Describe the digestion of fats.

You should include reference to the following in your answer:

- named regions of the alimentary canal and associated organs
- named chemicals, including the end products of fat digestion.

.....

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..... [7]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N15/22/Q6

(a) Describe the digestive processes that take place in the mouth (buccal) cavity of a human.

.....

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.....[6]

(b) Explain how food moves from the mouth (buccal) cavity to the stomach.

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.....

.....

.....[4]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J15/21/Q6

Fig. 6.1 shows a structure found in part of the alimentary canal.

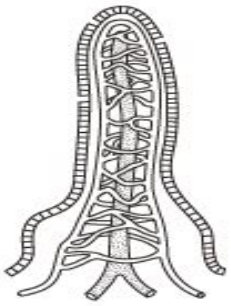


Fig. 6.1

(a) Name the structure shown in Fig. 6.1 and state the part of the alimentary canal in which it is found.

name of structure.....

location in alimentary canal ..... [2]

(b) Explain the ways in which this structure is adapted to enable it to carry out its function.

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..... [8]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N14/21/Q5

Fig. 5.1 shows a decaying tooth.

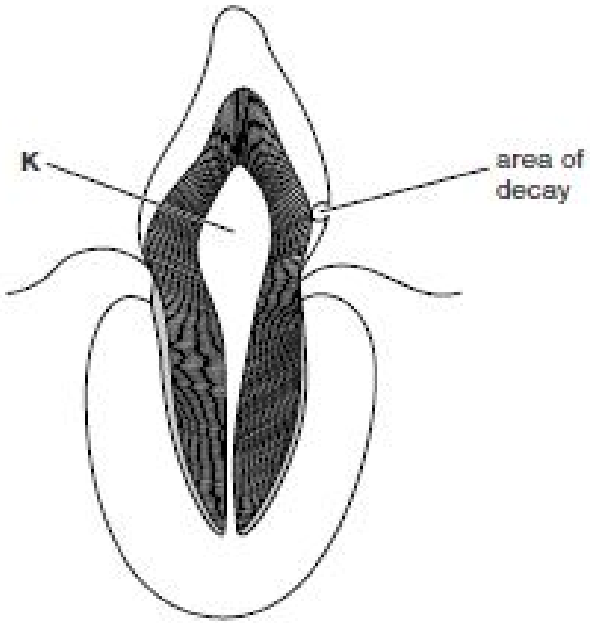


Fig. 5.1

(a) Name the type of tooth shown. ..... [1]

(b) Name **two** structures that are found in region **K**.

1 .....

2 ..... [2]

(c) Explain the causes of the decay shown in Fig. 5.1.

.....

.....

.....

.....

.....

.....

..... [4]

(d) Two different regions were studied to see the effect of fluoridation of drinking water on the mean number of decayed teeth in children living in those regions.

In region **L**, the percentage of children drinking fluoridated water gradually increased over a 30-year period. In region **M**, no fluoride was added to the drinking water over the same period.
Table 5.1 shows the mean number of decayed teeth per child in each region. It also shows the percentage of children drinking fluoridated water in region **L**.

Table 5.1

date	region **L**		region **M**
	percentage	mean number	mean number
1970	28	3.9	2.1
1980	32	3.3	1.9
1990	38	2.7	1.8
2000	60	1.2	1.6

(I) State the effect of adding fluoride to the water supplies in region **L**.

..... [1]

(II) Suggest **three** possible reasons for the results shown for children in region **M**.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 11]

ANIMAL NUTRITION P2 QUESTIONS 5090

ON14/22/Q2

Fig. 2.1 shows parts of the alimentary canal that lie in the upper part of the human body.

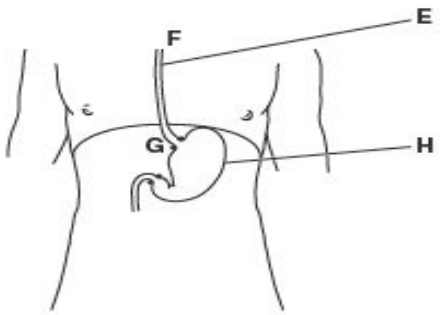


Fig. 2.1

(a) **(i)** Name the part labelled **E**. ..... [1]

(ii) Name the process that carries food from **F** to **G**. ..... [1]

(b) Suggest why the walls of part **H** are normally coated with mucus.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

(c) Sometimes, particularly when a person is lying flat, partly digested food returns into structure **E** through the valve at **G**. This can cause discomfort known as heartburn.

(i) Suggest why heartburn is not a biologically accurate name for this condition.

.....

..... [1]

(ii) Suggest and explain why medications for this condition are often alkaline in nature.

.....

.....

.....

..... [2]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J14/22/Q8(a)

(a) Describe how peristalsis causes food to be moved along the alimentary canal.

.....

.....

.....

.....

.....

.....

.....

.....

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.....

.....

.....[6]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J14/22/Q9

(a) Explain the health risks of each of the following:

(i) a high-fat diet

.....

.....

.....

.....

.....

.....

.....

.....

.....[5]

(ii) a low-protein diet

.....

.....

.....

.....

.....

.....[3]

(b) Explain why women may sometimes require iron supplements to their diet.

.....

.....

.....

.....[2]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N13/21/Q3

(a) Name **two** constituents of a diet that are absorbed without digestion. For each constituent, name the part of the alimentary canal in which it is absorbed.

constituent 1 ..... absorbed in .....

constituent 2 ..... absorbed in ..... [2]

(b) Suggest a constituent of a healthy diet that is never absorbed. .....[1]

(c) Fig. 3.1 is a diagrammatic representation of the small intestine containing three types of food molecule, a fat, a carbohydrate and a protein, before they have been digested. Fig. 3.1 also shows a lacteal and a capillary. The different features in Fig. 3.1 have not been drawn to the same scale.

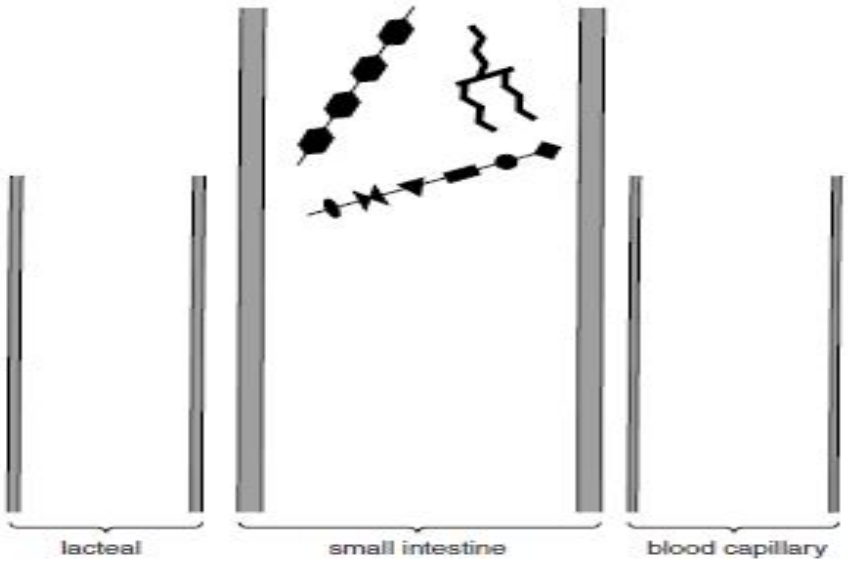


Fig. 3.1

On Fig. 3.1, draw **and** label the molecules as they would appear **after** they have been digested and then absorbed by the lacteal and by the capillary. [4]

(d) Some absorbed molecules travel directly to the liver.

(I) Name **three** of these molecules.

molecule 1 .....

molecule 2 .....

molecule 3 ..... [3]

(II) Explain how these molecules are carried to the liver.

.....

.....

.....

.....[2]

[Total: 12]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J13/21/Q1

(a) Table 1.1 lists the daily requirements for some of the components in the diet of a young child.

Table 1.1

diet component	daily requirement
energy	8 MJ
fat	50 g
protein	19 g
vitamin C	25 mg
vitamin D	0.005 mg
calcium	800 mg
iron	10 mg

State **two** components, other than those in Table 1.1, that are required in a balanced diet.

1. .....

2. .....

[2]

(b) Malnutrition is common in countries where there is famine.

List **two** problems that may contribute to famine.

1. .....

2. .....

[2]

ANIMAL NUTRITION P2 QUESTIONS 5090

(c) Fig. 1.1 shows the label from the packet of a type of food sometimes fed to young children suffering from severe malnutrition.

Emergency Famine Food

92 g pack (provides 2.0 MJ)

Ready to use – does not require water or refrigeration

Contains: peanut paste, vegetable oil, powdered milk, powdered sugar, vitamins (including C and D), minerals (including iron and calcium)

Date of manufacture: June 2012 *Use within 2 years*

Fig. 1.1

(i) State **three** effects of malnutrition which may occur in young children.

1. .....

2. .....

3. .....

[3]

(ii) Explain how this emergency famine food helps to overcome the effects of malnutrition.

.....

.....

.....

.....

.....

.....

.....

.....[4]

[Total: 11]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J13/22/Q2

In 1822, a man, Alexis Bidagan, suffered an injury from a gun fired at close range. The injury was in the form of a hole about 10 cm in diameter, penetrating both his chest and stomach walls, below his diaphragm. When the wound healed, the edge of the hole in his stomach sealed itself with the edge of the hole in his chest wall. Fig. 2.1 shows the position of the opening that remained to Alexis's stomach until he died 58 years later.

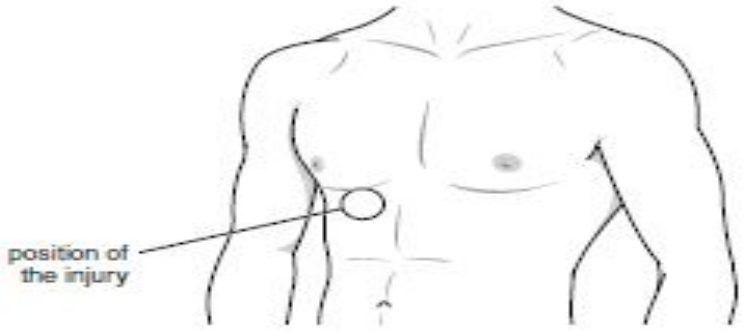


Fig. 2.1

(a) Name **two** organs, other than the stomach, that would have been exposed to infection through the hole **before** the wound healed.

1 .....

2 ..... [2]

(b) Suggest why there would have been less chance of the inside of his stomach suffering from an infection than other organs.

.....

.....

.....

.....[3]

(c) If the wound had extended above his diaphragm, explain why Alexis would have experienced some breathing difficulties until the wound healed.

.....

.....

.....

.....

.....

.....

.....

.....[5]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N12/22/Q1

Fig. 1.1(a) shows a section through a person's head and throat. Fig. 1.1(b) shows the same person swallowing a bolus of food.

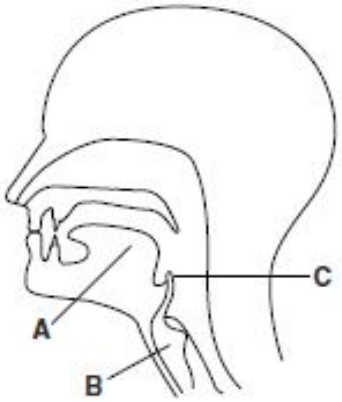


Fig. 1.1(a)

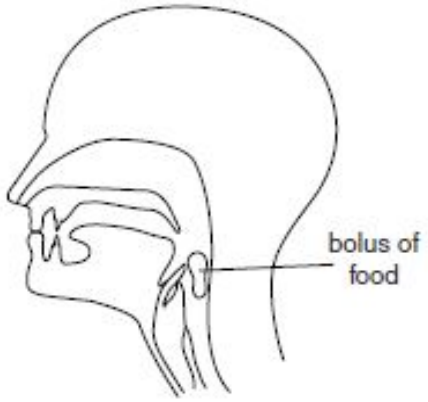


Fig. 1.1(b)

(a) Identify structures **A** and **B** shown on Fig. 1.1(a).

A .....

B ..... [2]

(b) Name the process that will carry the bolus to the stomach.

..... [1]

(c) Describe and explain what happens to structure **C** when the person swallows the bolus.

.....

.....

.....

.....[3]

(d) **(i)** Name a chemical process that may be taking place in the bolus.

.....

(ii) Describe and explain your answer to **(d)(i)**.

.....

.....

.....

.....[4]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J12/21/Q3(c and d)

Fig. 3.1 shows some of the main regions of the alimentary canal in a person.

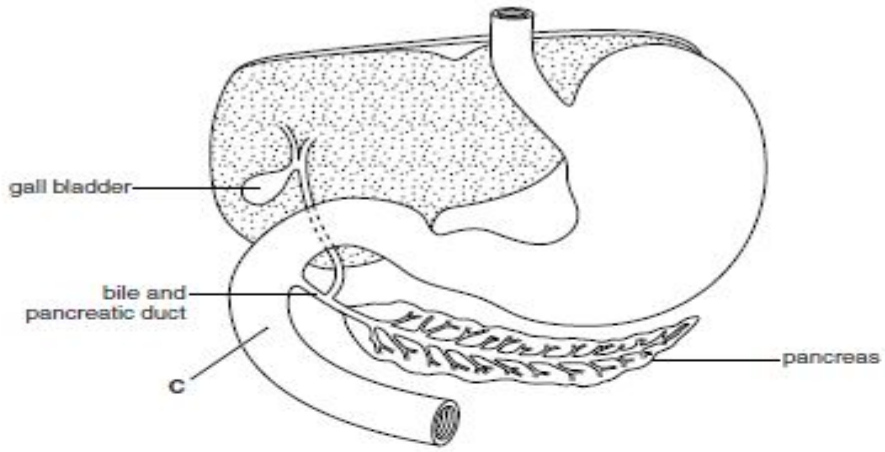


Fig. 3.1

(c) State the name of region **C**.

.....

[1]

(d) One effect of cystic fibrosis is that the bile and pancreatic duct becomes blocked with mucus. Suggest why a person whose bile and pancreatic duct is blocked may find it difficult to gain weight despite eating a balanced diet.

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J12/21/Q5

(a) Fig. 5.1 shows the arrangement of teeth in the lower jaw of an adult person.

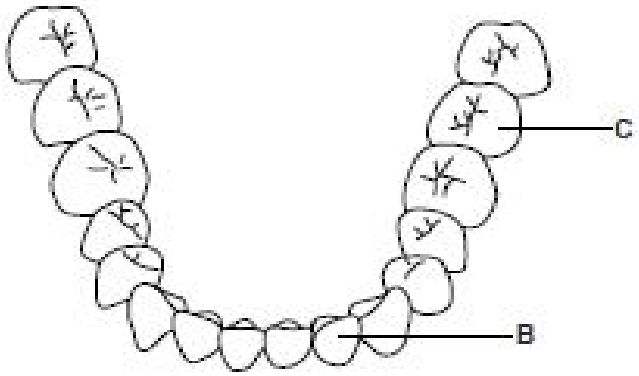


Fig. 5.1

Identify the types of teeth labelled **B** and **C** and state one function of each.

type **B** .....

function ..... [2]

type **C** .....

function ..... [2]

(b) During a single day two people ate the same amount of food containing a large amount of carbohydrate.

Person D ate the food in three equal portions at 7.00 am, 1.00 pm and 6.00 pm, following which he brushed his teeth using toothpaste before going to bed.

Person E ate the food in smaller portions more frequently during the day and did not brush her teeth before going to bed.

(i) List the chemical elements that make up carbohydrates.

..... [1]

(ii) If persons **D** and **E** continue their eating habits for several years, suggest in which person dental decay will occur first. Explain your reasoning.

person .....

explanation .....

.....

.....

.....

..... [3]

[Total: 6]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J12/22/Q2

Fig. 2.1 shows some of the information on the packets of two breakfast cereals.

Cereal C

Nutrition Information

Typical value per 100 g

ENERGY	1623 kJ	
PROTEIN	13 g	
CARBOHYDRATE	78 g	
of which sugars	24 g	
starch	54 g	
FAT	1.5 g	
of which saturates	0.5 g	
FIBRE	2.5 g	
SODIUM	0.4 g	
SALT	1 g	
VITAMINS:	**(% GDA)**	
VITAMIN D	7.4 µg	(147)
VITAMIN C	88 mg	(147)
THIAMIN (B_1)	2.1 mg	(147)
RIBOFLAVIN (B_2)	2.4 mg	(147)
NIACIN	26.5 mg	(147)
VITAMIN B_6	2.9 mg	(147)
FOLIC ACID	294 µg	(147)
VITAMIN B_{12}	1.47 µg	(147)
MINERALS:		
IRON	16.2 mg	(73)

Cereal D

Nutrition Information

Typical value per 100 g

ENERGY	1600 kJ	
PROTEIN	10 g	
CARBOHYDRATE	68 g	
of which sugars	20 g	
starch	48 g	
FAT	5 g	
of which saturates	0.9 g	
FIBRE	9 g	
SODIUM	0.01 g	
SALT	0.03 g	
VITAMINS:	**(% GDA)**	
THIAMIN (B_1)	1 mg	(73)
RIBOFLAVIN (B_2)	2.3 mg	(145)
NIACIN	13.1 mg	(73)
VITAMIN B_6	2.9 mg	(145)
FOLIC ACID	290 µg	(145)
VITAMIN B_{12}	0.73 µg	(73)
MINERALS:		
IRON	10.2 mg	(73)

Fig. 2.1

(a) The Guideline Daily Amount (GDA) of energy for an average adult is 8 400 kJ.

(I) Calculate the percentage of this GDA a person would obtain by eating **one 25 g** serving of Cereal **D**. Show your working in the space provided.

Answer .....% [3]

(II) State how the daily energy requirement of a hard-working farmer would differ from the GDA described above.

..... [1]

ANIMAL NUTRITION P2 QUESTIONS 5090

(b) Cereal **D** is considered to be better for people suffering from constipation than Cereal **C**. Suggest a reason for this.

.....[1]

(c) Rickets is a condition that affects some children.

(i) Describe the symptoms of rickets.

.....

.....[2]

(ii) State which cereal, **C** or **D**, should be eaten by children to prevent rickets and explain your answer.

cereal .....

explanation .....

.....

.....[2]

[Total: 9]

ANIMAL NUTRITION P2 QUESTIONS 5090

Mark Scheme

; separates marking points

/ alternatives

() contents of brackets are not required but should be implied

R reject

A accept (for answers correctly cued by the question, or guidance for examiners)

Ig ignore (for incorrect but irrelevant responses)

AW alternative wording (where responses vary more than usual)

AVP alternative valid point (where a greater than usual variety of responses is expected)

ORA or reverse argument

underline actual word underlined must be used by candidate

+ statements on both sides of the

+ are needed for that mark

O/N18/21/Q7

7(a)(i) oesophagus / gullet ; 1

7(a)(ii) peristalsis ;

wave of / rhythmic + contraction ;

circular muscles ;

behind / pushing (food) ;

Ig longitudinal muscles

7(b)(i) higher than ; 1

7(b)(ii) liver ;

bile ;

pancreas ;

pancreatic juice / secretions / hydrogencarbonate ;

bile / pancreatic juice

+ alkaline / high pH ;

4 Ig gall bladder

A any pH above 7

M/J18/22/Q5

5
contains an organ which region or regions
 produces an acidic secretion (R)
 contains villi R / S **;**
 digests protein R / S **;**
 produces insulin R **;**
 contains bronchi Q **;**
 secretes amylase P + R **;**
 ingests food P **;**

M/J18/22/Q9

9(a) **1** broken down / hydrolysed **;**
2 (to) small / smaller / simpler **+** molecules **;**
3 soluble / dissolve **;**
4 (to enable) absorption **;**
5 (by) diffusion / active transport **;**
6 into **+** blood / capillaries **;**
7 into **+** lymph/ lacteal **;**
8 (to enable) assimilation **or** named small to named large molecule **;**

9(b) *(**either** liver **or** pancreas)*
1 neutralisation **;**
2 optimum **AW** pH for enzyme activity **or** avoid denaturation of enzymes **;**
*(liver **only**)*
3 bile **;**
4 emulsification **+** fats **or** large fat droplets into smaller droplets **AW ;**
5 increased surface area **;**
6 lipase **+** production **AW** of fatty acids **and** glycerol **;**
*(pancreas **only**)*
7 production / release **+** enzymes **;**
8 protease / trypsin / lipase/ amylase **;**
9 named substrate **+** named products for a correct named enzyme **;**
10 production of **+** alkali / hydrogencarbonate / bicarbonate **;**

O/N17/21/Q1

1(a) **B ;**
incisor **;**
biting / cutting / tearing / gripping **;**
C ;
molar **;**
chewing / crushing / grinding **;**
6
1(b)(i) sugar **;**
bacteria **;**
respiration **;**
acid **;**
plaque **;**
2 A named sugar, **Ig** sweets
1(b)(ii) reference to brushing **;**

flossing **;**
fluoride **;**
reference to dental check-ups **;**
2
A fluorine

O/N17/21/Q8

8(a) active **+** more energy **;**
reference to carbohydrates / fats **;**
child **AW +** growth **;**
reference to protein / calcium / vitamin D **;**
(post-pubertal **AW**) female **+** iron **;**
reference to menstrual loss of blood **;**
old person **+** less growth / less active / no menstruation **;**
reference to reduced need for correct named nutrient **;**
4 marks are linked in pairs
8(b) muscle **+** wall **;**
contracts / churn / mechanical digestion **;**
acid **;**
optimum **AW** pH **;**
enzyme **;**
protease / pepsin **;**
protein(s) **;**
to amino acids / (poly)peptides **;**
6 answer must refer to the stomach and not other
parts of the alimentary canal

O/N17/22/Q7

7(a)(i) *(causes)*
1 children **;**
2 lack / deficiency **AW +** calcium **;**
3 lack / deficiency **AW +** vitamin D **;**
4 lack of any reasonable named food containing calcium / vitamin D **;**
5 lack of sunlight **;**
(symptoms)
6 bones **+** soft / weak / bent / brittle / likely to fracture / do not develop properly **;**
7 teeth **+** soft / decay / do not develop properly **AW ;**
8 bowed legs **;**
4
7(a)(ii) *(causes)*
1 lack / deficiency **AW +** vitamin C **;**
2 lack of any reasonable named food containing vitamin C **;**
(symptoms)
3 gums bleed **;**
4 teeth loose / fall out **;**
5 wound healing slow / poor **;**
6 joint pain **;**
7 shortness of breath **;**
8 rough **AW** skin / weak connective tissue / damaged **AW** epithelium **;**
4
7(b) **1** small / soluble / dissolved **;**
2 not digested / not broken down / already in simplest form **;**

3 diffusion **;**
4 through **+** villi / capillary / cell membrane / partially **AW** permeable membrane **;**

M/J17/22/Q2

2(a)(i) assimilation **; 1**
2(a)(ii) (egestion)
line ending / letter written below rectum **+** labelled '**A**' / 'egestion' **;**
(ingestion)
line ending / letter written to left of or inside mouth **+** labelled '**B**' / 'ingestion' **;**
2
2(b) (component) protein **;**
(where absorbed) ileum / small intestine / villi / capillaries **;**
2 R amino acids
Ig any reference to fat
A jejunum
2(c) **1** reference to bile (salts) **;**
2 (bile) not stored **;**
3 less / slower **+** release (of bile) **;**
4 less / slower **+** emulsification **AW ;**
5 less / slower / not optimum **+** digestion (of fats) / (lipase) enzyme action **;**
6 fewer fatty acids / less glycerol **+** produced / absorbed **;**
7 incorrect pH / more acidic / less alkaline **+** in small intestine / duodenum **;**

O/N16/21/Q4

4(a)(i) 1000 / 1 **;**
cm^3
/ dm^3 **;**
2 A 1 litre / 1 dm^3 for 2 marks
A ml in place of cm^3, unit must match figure for second mark
4(a)(ii) malnutrition / deficiency disease **;**
lack of balanced diet **;**
reference to low / lack of energy (intake into body) **;**
(leads to) general lethargy **;**
reference to lack of fat or carbohydrate (for energy) **;**
reference to specified problem **;**
kwashiorkor / named symptom **+** lack of protein **;**
scurvy / named symptom **+** lack of vitamin C **;**
anaemia or described **+** lack of iron **;**
4
A muscle contraction / protein synthesis / cell division / active transport / growth / passage of nerve impulses / maintenance of a constant body temperature / mend or repair tissues

4(b)(i) sterile / not contaminated / no additives **;**
antibodies / hormones **;**
no need to warm / at correct temperature **;**
bonding between mother and child **;**
better proportions of nutrients **AW ;**
does not cost money **;**
supply / availability on demand **;**
4

4(b)(ii) lack of awareness of the
benefits **;**
mother unable / chooses not to breast-feed **;**
reference to advertising by bottle milk providers **;**
not available to do so (e.g. at work / child in care) **;**
infection / drug addiction / damaged nipples **;**
mother does not produce (enough) milk **;**
1
Total: 11

M/J16/22/Q3

3 (a) (i) mineral salts / fibre / roughage ; [1]
(ii) fat / lipid ; [1]

(b) constituent: water ;
reasons for importance:
solvent /
constituent of urine /
reference to chemical reactions /
constituent cells OR cyto-, protoplasm
OR blood /
temperature regulator OR sweating /
transporter /
osmoregulator AW /
prevents dehydration /
lubrication /
prevents constipation ;;
constituent: (named) vitamin ;
reasons for importance:
prevent deficiency disease AW /
reference to correct specified benefit
of any vitamin ;;
[1]
[max 2]
[1]
[max 2]
(c) little or no starch in diet / cannot digest
starch AW ;
relies on sugar or named sugar AW ;
(needs to) eat fruit / animals / fewer
plants ;
may rely on fat / protein (for energy) ;
[max 2]

O/N15/21/Q6

6 (a) molecules large + must be converted to smaller ;
insoluble + need to be converted to soluble / non-diffusible to
diffusible AW ;
to be absorbed ;
from (small) intestine / ileum ;
into blood / capillaries / lymph / lacteals ;
[max. 3]
A across intestine wall / into villi
(b) bile from + liver / gall bladder / bile duct ;

ref. emulsification ;
increased surface area ;
ref. provision of optimum pH / alkaline conditions ;
small intestine / duodenum ;
lipase ;
from pancreas ;
fatty acids ;
glycerol ;
[max. 7]

O/N15/22/Q6

6 (a) any named tooth ;
cut / tear food * ;
crush / grind / smash food * ;
ref. saliva(ry) ;
moistening / lubricating / softening ;
ref. action of tongue ;
ref. to (optimum) pH ;
(salivary) amylase ;
acts on starch ;
changing it to maltose ;
ref. terms mechanical / chemical + digestion ; [max 6]
*A chew / masticate / bite / break
up alone for one mark
R crush / cut + molecules
A reducing sugar
(b) ref. swallowing ;
peristalsis ;
oesophagus / gullet ;
wave of / rhythmic contraction AW ;
of circular muscles ;
behind / pushing + food / bolus ;
[max 4]
I references to longitudinal

M/J15/21/Q6

6 (a) villus / villi ;
small intestine / ileum ;
[2

(b) increased surface area ;
many / good supply +
capillaries / blood ;
lacteal ;
absorption ;
two marks for two correctly named
absorbed products ;;
one cell thick / thin walls ;
reduced distance / increased speed of
molecular movement AW ;
diffusion ;
active transport ;
goblet cells ;

mucus + lubricate AW ;
production / release + enzymes;
ref digestion + named products ;

O/N14/21/Q5

5 (a) Incisor / canine ; [1]
(b) blood vessels or named ;
nerves / nerve endings ;
[2]
(c) sugar ;
ref. bacteria ;
(converted) to acid ;
dissolves enamel ;
teeth not cleaned / build-up of plaque / tartar ;
weak enamel / ref. lack of Ca / F / vit. D ;
[max. 4]
(d) (i) reduction in tooth decay ; [1]
(ii) fluoride occurs naturally / addition in toothpaste ;
diet with less carbohydrate ;
better education / teeth cleaned more often ;
genetic differences / teeth less prone to acid attack ;
[max. 3]

O/14//22/Q2

2 (a) (i) oesophagus / gullet ; [1]
(ii) peristalsis ; [1]
(b) ref. protection / barrier / prevents damage / breakdown / digestion ;
of walls ;
acid / HC*l* ;
ref. protease ;
walls are made of protein ;
ref. lubrication ;
[max. 5]
(c) (i) heart not involved / no connection between E and the heart / AW ; [1]
(ii) less mucus in E ;
acid (from stomach) ;
(acid) damages the cells / walls ;
(acid) neutralised (by the medication) ;
[max. 2]
[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J14/22/Q8(a)

(a) muscles ;
circular ;
contract ;
behind food ;
longitudinal ;
relax behind food / contract in front of food ;
pushing / forcing / squeezing (bolus / AW) ;
wave action / rhythmic ;
[6] R if mention of parts outside of alimentary canal,
e.g. trachea
R if mention of contraction of longitudinal muscles
behind food
Ig moving

M/J14/22/Q9

9 (a) (i) obesity ;
strain on skeleton / effect on joints ;
strain on heart / pumps harder / pumps faster ;
breathing difficulties ;
risk of diabetes ;
social implications / example, e.g. bullying, clothing ;
atheroma / AW ;
high blood pressure ;
heart disease / heart attack / other cardiovascular condition /
AW ;
[5]
R ref. in veins / on arteries
Ig blood vessels
A cholesterol
(ii)
poor muscle development ;
stunted / poor growth ;
heart failure ;
lack of / deficiency in one named protein,
e.g. haemoglobin / antibodies / enzymes / hormones / thrombin ;
AVP, e.g. reduced / deficient RBC production / poor wound
healing / poor tissue / cell / organ repair / blood clotting /
anaemia ;
[3] Reference to a negative effect required.

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N13/21/Q3

3 (a) water + any part of the alimentary canal after the oesophagus;
ions / minerals / named + ileum;
vitamins / named + ileum / colon
glucose + ileum
[max 2]
A small intestine for ileum
(b) fibre / roughage / cellulose / fruits / seeds / tomato skins / maize pericarps;
[1]
A any suitable named plant part
(c) products drawn in correct absorptive vessel –
All correct = 2 marks 2 correct = 1 mark ;;
all molecules totally digested ;
2 products correctly named ;
[max 4]
I any diagrams in the intestine
R any products drawn in both capillaries and lacteals
All bonds must be broken – a minimum of 3 products of each type required.
(d) (i) amino acids;
glucose/ other named monosaccharide;
vitamins / named;
ions / salts / minerals / named;
water;
[max 3]
(ii) in solution;
in blood / plasma;
by (hepatic) portal vein;
[max 2]

M/J13/21/Q1

1 (a) Carbohydrate;
Water;
roughage / fibre;
other named mineral / other named vitamin;
[max 2]
(b) (Environmental):
Drought;
Flooding;
Infertile land e.g. poor soil structure;
Natural disasters e.g. earthquakes/ very severe weather;
(Political):
Significant increase in population;
unequal distribution / supply of food;
poverty / economic breakdown;

war / political considerations;
[max 2]
Accept rain if qualified to suggest that
it is below the required level for crop
growth e.g. inadeguate rainfall
Ignore: tornadoes
(c) (i) Diseases:
Rickets;
Scurvy;
Kwashiorkor;
Marasmus;
beri-beri;
Symptoms:
stunted growth;
low body weight /death;
weak/brittle bones;
lowers immunity;
anaemia;
bleeding membranes;
fatigue;
obesity;
[max 3]
A any other relevant descriptions of
Symptoms

M/J13/22/Q2

2 (a) any 2 from:
#duodenum / small intestine*;
#ileum / small intestine*;
#colon / large intestine;
(# OR intestine for one mark)
kidney;
pancreas;
liver;
gall bladder;
spleen;
named blood vessel; Max 2
*credit (small intestine) once only.
(b) bacteria / virus / fungus / microoganism / pathogen;
(stomach contents) acid(ic) / ref. HCl;
(and/or) enzyme / protease;
destroys / kills / ref. wrong pH for growth (of microorganism or
colony implied);
Max 3
Ignore germs
(c) chest / thorax no longer airtight;
ref. intercostal muscles (damage or action);
diaphragm (damage or action);
correct volume / pressure reference;
air drawn in / out through hole;
lungs / alveoli damaged or infected;
insufficient / less air or oxygen in lungs / not properly inflated; Max 5
[Total: 10]

ANIMAL NUTRITION P2 QUESTIONS 5090

O/N12/22/Q1

1 (a) A – tongue;
B – larynx/voice box; [2]
(b) peristalsis; [1]
(c) closes/covers;
trachea/windpipe/air passage/larynx/voice box/B;
helped by raising of larynx AW;
preventing the entry of food / preventing food going to lungs or respiratory system / prevents choking AW / allows food to enter oesophagus AW; [Max 3]
(d) (i) digestion / enzymatic action / hydrolysis;
& (ii) amylase;
(from) saliva / salivary glands;
starch;
to maltose;
neutralisation / ref. pH; [Max 4]
(each marking point allowed under (i) or (ii))
[Total: 10]

M/J12/21/Q3(c and d)

(c) duodenum / small intestine; [1]
(d) reduction in enzymes / pancreatic juice entering duodenum;
correct ref. to (reduced) bile action;
less digestion / emulsification AW;
especially of fats;
fewer molecules to absorb / less absorption qualified;
and use for assimilation into larger molecules;
used in growth;
ref. less fat stored /AW; [4]
[Total: 10]

M/J12/21/Q5

5 (a) B incisor;
cutting / biting / nibbling R holding; [2]
C molar (R pre-molar / wisdom);
grinding / crushing / chewing R shearing; [2]
(b) (i) carbon + hydrogen + oxygen (A C H O); [1]
(ii) (person) E; [1]
(more frequent meals) allows more sugar build up on teeth;
no brushing to remove bacteria / sugar / plaque;
more acid contact with teeth;
ref. toothpaste is alkaline;
ref no / less neutralisation of acid; [2]
[Total: 8]
[Total: 50]

ANIMAL NUTRITION P2 QUESTIONS 5090

M/J12/22/Q2

2 (a) (i) Mark as follows:
Award 2 marks for a correct answer with no working;;
Award 3 marks for a correct answer with any working;;;
Award 2 marks max. for correct working with no or wrong answer;;
Answer: 4.7(6)(%) (A 4.7 / 4.8);;
Examples of correct working are as shown below :
4
1600
/ OR 1600 ×
100
25
/ OR 400 (;)
8400
400
(;) [3]
(ii) higher (R ref. to higher GDA); [1]

(b) more or a high amount AW fibre / roughage; [1]
(c) (i) bones;
soft / weak / deformed / bent / ref. bandy legs ; [2]
(R bent 'legs' – that is the effect of the knee joint.)
(Mark the first effect in a list)
(ii) C;
vitamin D / uptake of calcium / calcium used by bones AW; [max. 2]