

6.1 Digestion & Absorption

Question Paper

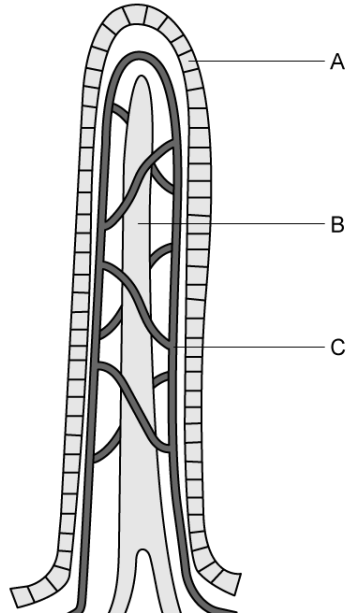
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|------------|----------------------------|
| Course | DP IB Biology |
| Section | 6. Human Physiology |
| Topic | 6.1 Digestion & Absorption |
| Difficulty | Easy |

Time allowed: 50
Score: /40
Percentage: /100

Question 1a

a)

The diagram below shows a structure found in the small intestine.



Identify this structure.

[1 mark]

[1 mark]

Question 1b

b)

Identify structures **B** and **C** in the diagram in part a).

[2 marks]

[2 marks]

Question 1c

c)

i)

Identify structure **A** in the diagram in part a).

[1 mark]

ii)

State **one** function of structure **A**.

[1 mark]

[2 marks]

Question 1d

d)

The products of digestion are absorbed by means of different membrane transport mechanisms.

List **two** mechanisms by which the products of digestion can be absorbed.

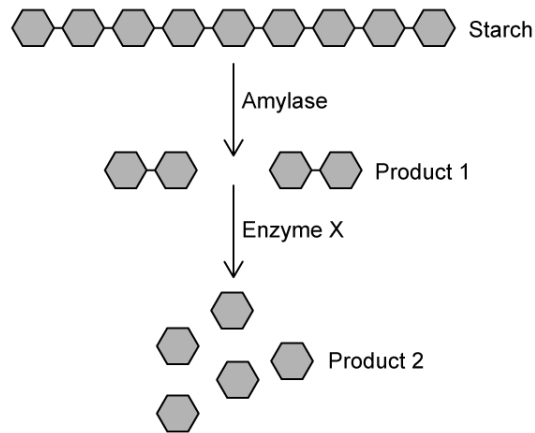
[2 marks]

[2 marks]

Question 2a

a)

The following diagram illustrates the steps involved in the digestion of starch.



State the name of **product 1**.

[1 mark]

[1 mark]

Question 2b

b)

Enzyme X is responsible for completing the digestion of starch.

i)

State the name of **enzyme X**.

[1 mark]

ii)

Identify the type of bond that is broken by **enzyme X** to form **product 2**.

[1 mark]

[2 marks]

Question 2c

c)

The digestion of starch occurs in various parts of the digestive system.

Identify **two** parts of the digestive system where starch digestion occurs.

[2 marks]

[2 marks]

Question 2d

d)

Product 2 represents the final product of starch digestion.

Identify **product 2**.

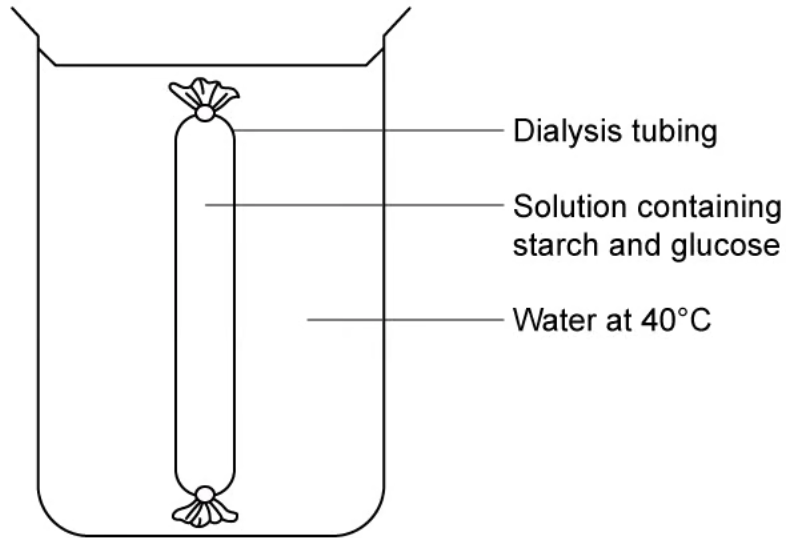
[1 mark]

[1 mark]

Question 3a

a)

A group of students set up an experiment to investigate membrane permeability using dialysis tubing. The diagram below shows their experimental set-up.



The students measured the mass of the dialysis tubing and its contents at the start of the experiment (0 minutes) and then again at 5 minute time intervals for 30 minutes. Their results are shown in the following table.

| Time / min | Mass / g |
|------------|----------|
| 0 | 15.4 |
| 5 | 15.8 |
| 10 | 16.1 |
| 15 | 16.5 |
| 20 | 16.9 |
| 25 | 17.2 |
| 30 | 17.6 |

Calculate the increase in mass. Show your working.

[2 marks]

[2 marks]

Question 3b

b)

Using the results in part a), state the direction in which water moved during the experiment.

[1 mark]

[1 mark]

Question 3c

c)

Dialysis tubing is often used to model digestion and absorption in the small intestine.

Describe **one** characteristic of dialysis tubing that makes it suitable for this purpose.

[2 marks]

[2 marks]

Question 3d

d)

The students also tested the water surrounding the dialysis tubing for the presence of glucose and starch throughout the investigation.

State their expected results.

[1 mark]

[1 mark]

Question 4a

a)

The following micrograph shows the different layers of the small intestine.

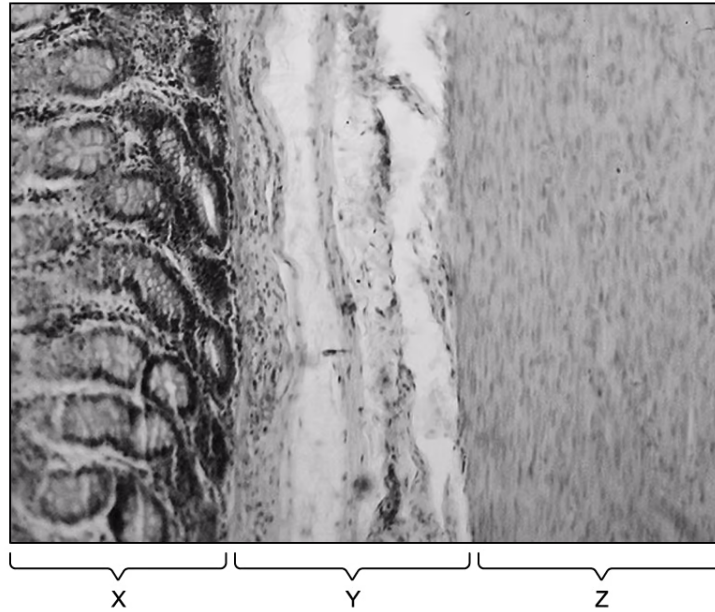


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Layer **Z** is responsible for peristalsis in the small intestine.

State **one** function of peristalsis in the small intestine.

[1 mark]

[1 mark]

Question 4b

b)

Layer **Z** contains two layers of smooth muscle.

i)

Identify the two layers of smooth muscle.

[1 mark]

ii)

State the role of each muscle layer.

[2 marks]

[3 marks]

Question 4c

c)

Layer **X** is responsible for absorption.

State what is meant by the term 'absorption'.

[2 marks]**[2 marks]****Question 4d**

d)

Layer **Y** contains important structures that facilitate transport of absorbed substances.

i)

Identify layer **Y**.**[1 mark]**

ii)

Identify **two** structures found in layer **Y** that facilitate the transport of absorbed substances.**[1 mark]****[2 marks]**

Question 5a

One mark is available for clarity of communication throughout this question.

a)

Absorption of digested food molecules, vitamins, and minerals occurs in the ileum.

State **three** adaptations of the ileum that increases the surface area for absorption.

[3 marks]

[3 marks]

Question 5b

b)

Draw a labelled diagram of the digestive system.

[5 marks]

[5 marks]

Question 5c

c)

Outline the roles of pancreatic juice. Include the names of relevant enzymes in your answer.

[5 marks]**[5 marks]**