

0 2

This question is about digestion.

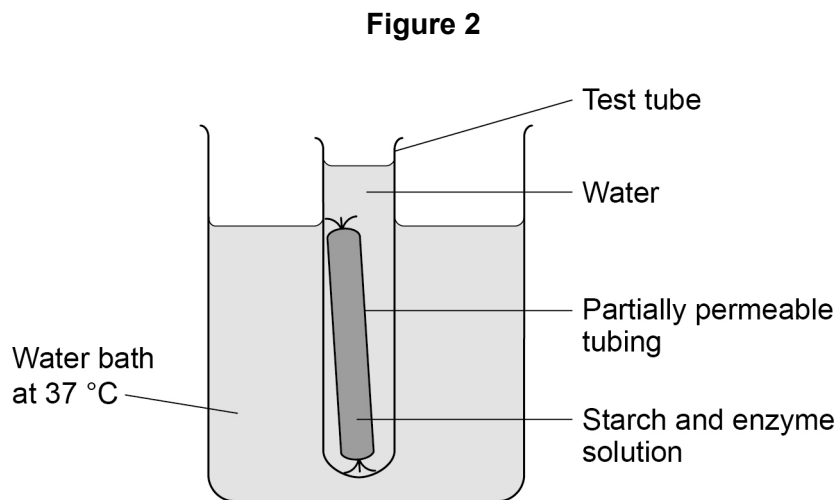
0 2 . 1

Name the enzyme that digests starch in the human digestive system.

**[1 mark]**

A student set up a model to represent the digestion and absorption of food molecules in the digestive system.

**Figure 2** shows the student's model.



This is the method used.

1. Fill a test tube with water at 37 °C
2. Test the water for starch and for sugar.
3. Mix together starch and enzyme solution and immediately test it for starch and for sugar.
4. Fill some partially permeable tubing with the starch and enzyme mixture.
5. Seal the tubing and place it in the test tube of water.
6. Place the test tube in a water bath at 37 °C
7. After 30 minutes, test the mixture inside the partially permeable tubing and test the water in the test tube for starch and for sugar.

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Suggest which parts of the body the partially permeable tubing and the water in the test tube represent.

**[2 marks]**

Partially permeable tubing \_\_\_\_\_

Water in the test tube \_\_\_\_\_

**Turn over ►**

**Table 2** shows the results.

**Table 2**

Test	Description of liquid	Result of starch test	Result of sugar test
1	Mixture inside tubing at start	✓	✗
2	Water in the test tube at start	✗	✗
3	Mixture inside tubing after 30 minutes	✓	✓
4	Water in the test tube after 30 minutes	✗	✓

**Key**

✓ = Present

✗ = Not present

**0 2 . 3** Name the reagents used to test for starch and for sugar.

**[2 marks]**

Starch \_\_\_\_\_

Sugar \_\_\_\_\_

**0 2 . 4** Why was there no sugar present in test 1?

**[1 mark]**

\_\_\_\_\_  
\_\_\_\_\_

**0 2 . 5** Explain the results for test 3.

**[2 marks]**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Do not write  
outside the  
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0 2 . 6

Explain the results for test 4.

[2 marks]

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Turn over for the next question

Turn over ►



Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.1	amylase	allow phonetic spelling allow carbohydrase ignore references to source of enzyme e.g. salivary / pancreatic do <b>not</b> accept amylose	1	AO1 4.2.2.1
02.2	(partially permeable tubing) small intestine  (water in test tube) blood	allow stomach ignore intestine unqualified do <b>not</b> accept large intestine  allow plasma	1  1	AO3 4.2.2.1
02.3	(Starch): Iodine (solution)  (Sugar): Benedict's (solution)	allow phonetic spelling  ignore iodide unqualified	1  1	AO1 4.2.2.1
02.4	enzyme had not started to work <b>or</b> none of the starch had been digested / broken down	allow idea of not enough time (for digestion)	1	AO2 4.2.2.1
02.5	(enzyme) digested / broke down starch to form sugar  (however) not all the starch was digested / broken down		1  1	AO2  AO3 4.2.2.1
02.6	sugar molecules formed are small enough to pass through tubing  (but) starch molecules too large (to pass through tubing)		1  1	AO3 4.2.2.1  AO2 4.2.2.1
<b>Total</b>			<b>10</b>	