



General Certificate of Secondary Education  
2010–2011

Centre Number

71

Candidate Number

## Science: Double Award (Modular)

Living Organisms and the Processes of Life  
End of Module Test

# A

Foundation Tier

[GDA01]



THURSDAY 19 MAY 2011, MORNING

### TIME

45 minutes.

### INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.  
Write your answers in the spaces provided in this question paper.  
Answer **all thirteen** questions.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 50.  
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's  
use only

Question Number	Marks
1	
2	
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Total  
Marks

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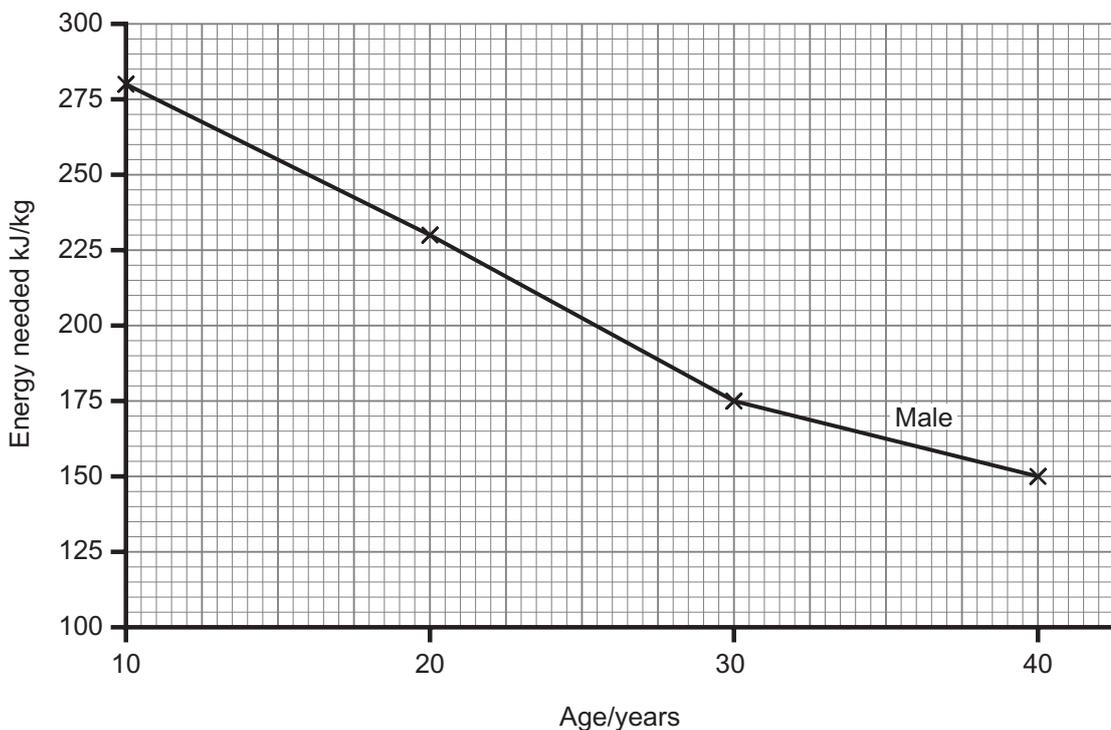


- 1 The table below gives the average daily energy needed by males and females of different ages.

Male		Female	
Age/years	Energy needed kJ/kg	Age/years	Energy needed kJ/kg
10	280	10	220
20	230	20	200
30	175	30	150
40	150	40	130

- (a) The figures for males have been plotted on the graph below.

Plot the figures for females. Join each point with a straight line.



[2]

- (b) Use your graph to give the energy needed by a 15-year-old female.

\_\_\_\_\_ kJ/kg [1]

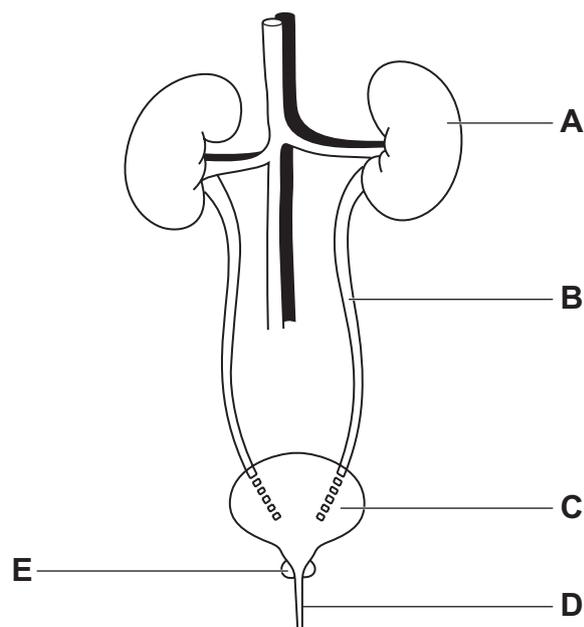
- (c) Suggest why the energy requirements of a 10-year-old male are higher than those of a 40-year-old male.

\_\_\_\_\_ [1]

Examiner Only

Marks Remark

2 The human excretory system is shown in the diagram.



(a) Which part, **A**, **B**, **C** or **D**, is the ureter?

\_\_\_\_\_ [1]

(b) Name structure **E** that controls the release of urine from the bladder.

\_\_\_\_\_ [1]

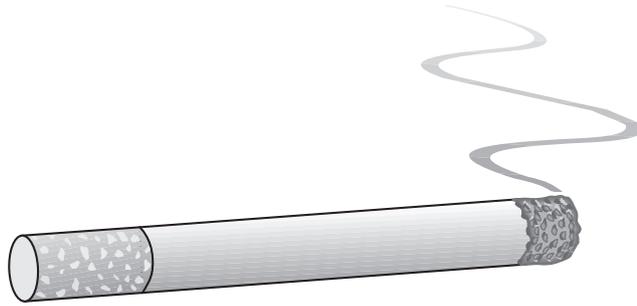
(c) The kidney controls the level of water in the body. What name is used to describe the control of water balance?

\_\_\_\_\_ [1]

Examiner Only

Marks Remark

3 Smoking cigarettes affects the health of an individual.



(a) Complete the table about the chemicals in cigarettes and how they affect health.

Chemical	Effect on the body
Tar	
Nicotine	
	Displaces oxygen in the red blood cells

[3]

(b) Explain what is meant by passive smoking.

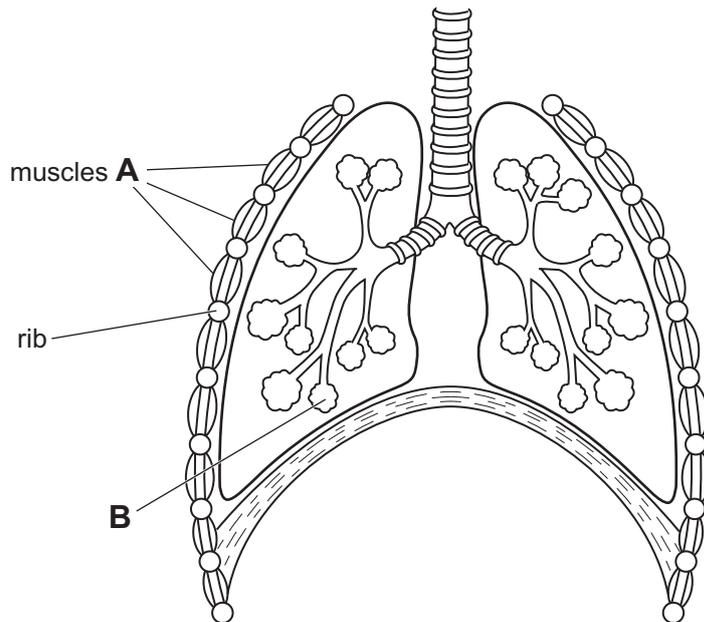
\_\_\_\_\_ [1]

Examiner Only

Marks

Remark

4 The human respiratory system is shown in the diagram.



(a) Name the muscles **A** shown in the diagram.

\_\_\_\_\_ [1]

(b) (i) Structure **B** is an alveolus.  
What structures, not shown in the diagram, surround the alveoli?

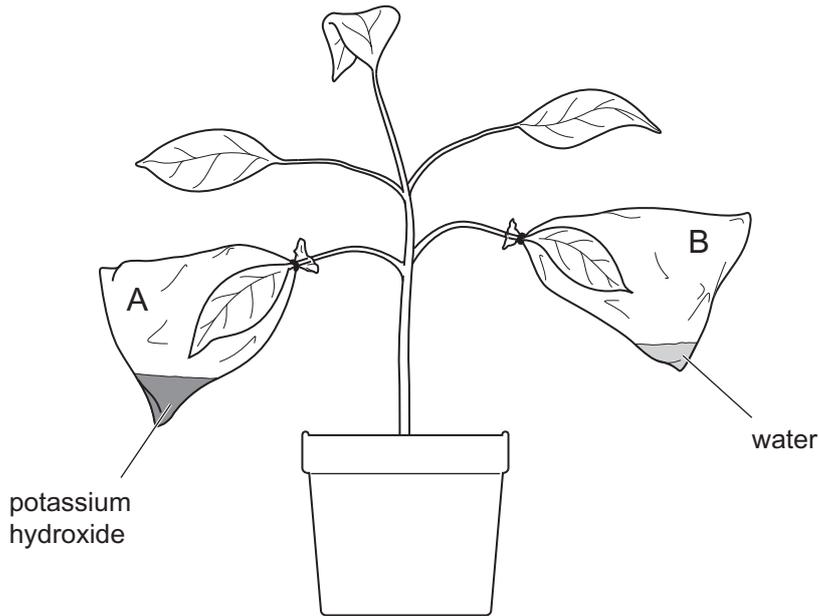
\_\_\_\_\_ [1]

(ii) State **one** other way (apart from the presence of these structures in (i)) that alveoli are adapted for efficient gas exchange.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

5 The diagram shows a plant used in a photosynthesis experiment.



(a) Describe how all the starch in the plant leaves could be removed before the start of the experiment.

\_\_\_\_\_ [1]

(b) Name the gas used in photosynthesis that is absorbed by the potassium hydroxide.

\_\_\_\_\_ [1]

(c) After the plant was left in the light for 24 hours, leaves A and B were tested for starch.

(i) What substance is used to test for starch?

\_\_\_\_\_ [1]

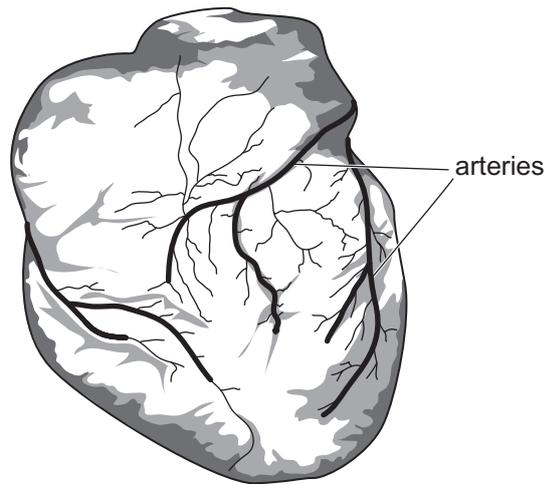
(ii) Complete the table below to give the colour of leaf A and leaf B at the end of the experiment, after they have been tested for starch.

	Colour after starch test
Leaf A	
Leaf B	

[2]

Examiner Only	
Marks	Remark

- 6 The photograph shows the arteries, on the surface of the heart, that carry blood to the heart muscle.



- (a) Name these arteries.

\_\_\_\_\_ [1]

- (b) Name the two raw materials for respiration in the heart muscle cells that are carried by these arteries.

1. \_\_\_\_\_

2. \_\_\_\_\_ [2]

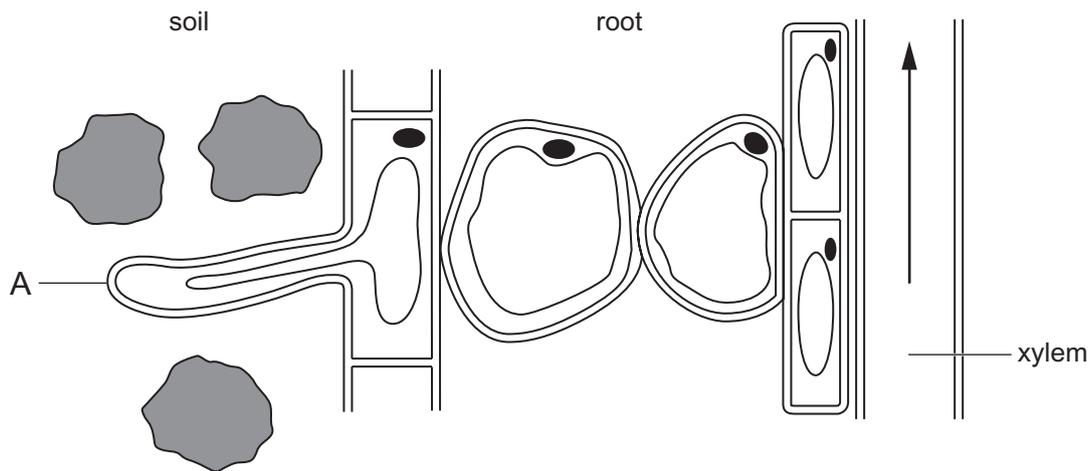
- (c) If these arteries become blocked, this can lead to a heart attack. Suggest two lifestyle changes that can reduce the risk of having a heart attack.

1. \_\_\_\_\_

2. \_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

7 The diagram shows part of a root of a plant.



(a) Name cell type A.

\_\_\_\_\_ [1]

(b) Explain how the extension of cell A helps it to carry out its function.

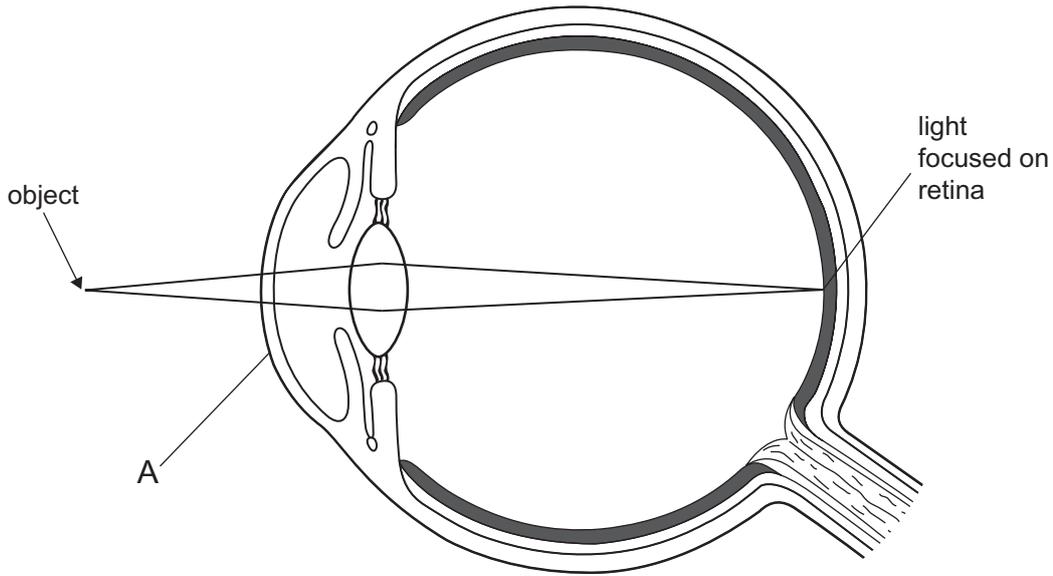
\_\_\_\_\_  
 \_\_\_\_\_ [2]

(c) Suggest why the cells in the diagram do not have chloroplasts.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

8 The diagram shows light from an object being focused by a human eye.



(a) Name part A.

\_\_\_\_\_ [1]

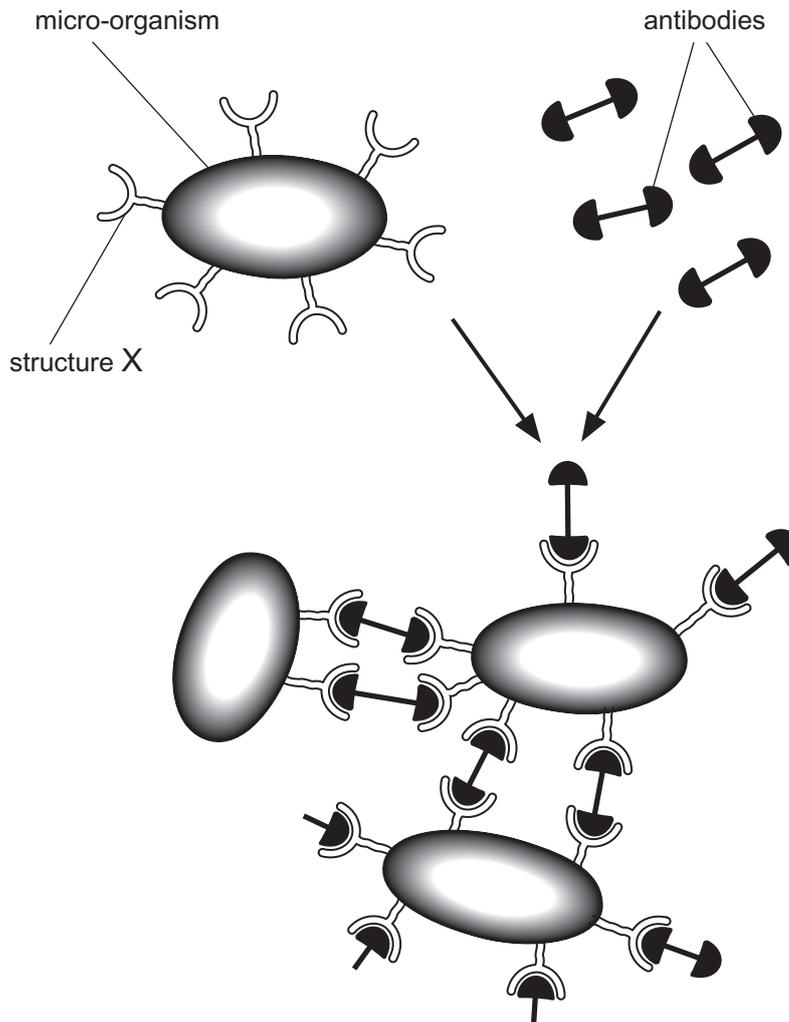
(b) Describe how the image is focused on the retina and relayed to the brain.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [3]

Examiner Only	
Marks	Remark



- 10 One way that the body deals with invading micro-organisms is to produce antibodies. The diagram shows the sequence of events following the production of antibodies.



- (a) Name structure X on the micro-organism that causes the production of antibodies.

\_\_\_\_\_ [1]

- (b) Explain what will happen to the clump shown in the diagram.

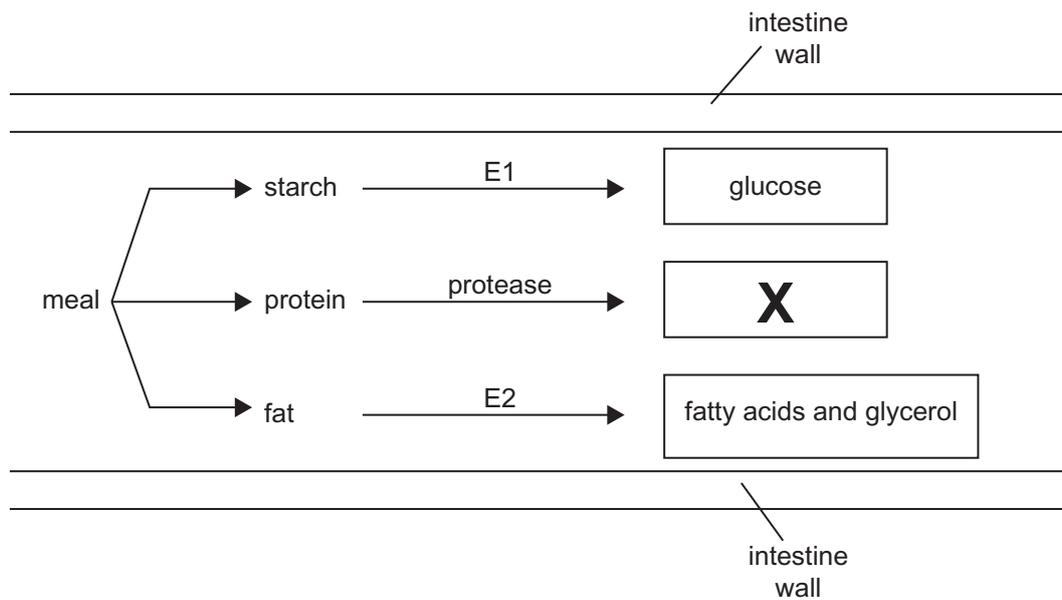
\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [2]

- (c) Suggest why a person is unlikely to get the same disease twice, once antibodies have been produced.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

- 11 The diagram shows some of the processes going on in the small intestine after a meal has been eaten.



- (a) Use the diagram to name the enzymes, E1 and E2.

E1 \_\_\_\_\_

E2 \_\_\_\_\_ [2]

- (b) Name substance X.

\_\_\_\_\_ [1]

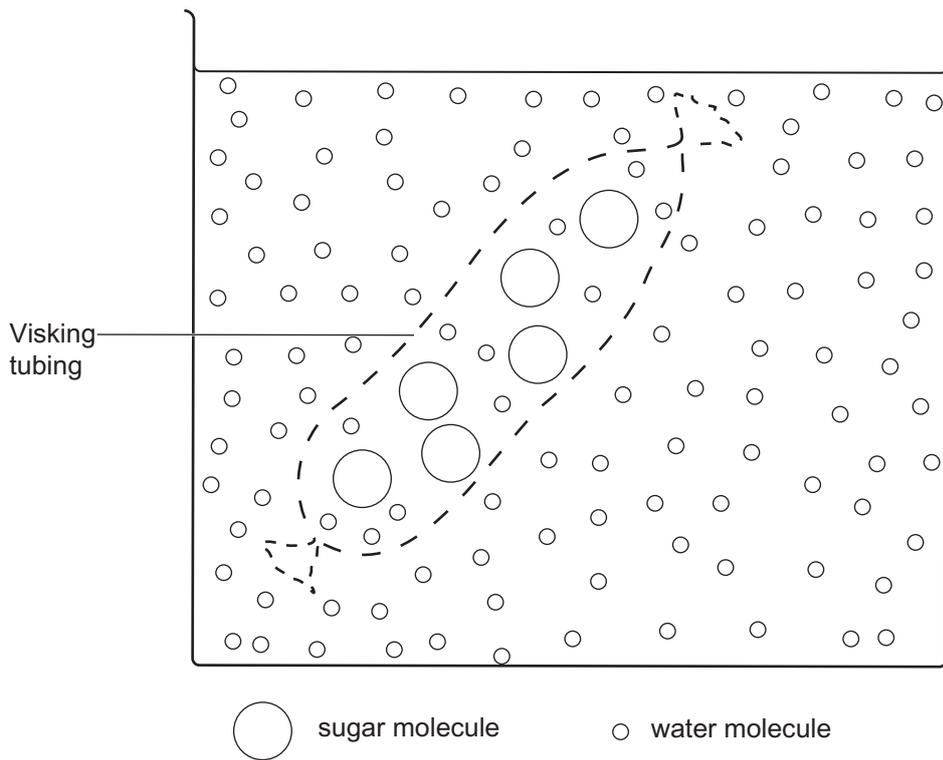
- (c) Give **one** way (not shown on the diagram) that the intestine wall is adapted for absorption.

\_\_\_\_\_ [1]

Examiner Only

Marks Remark

12 Visking tubing was filled with sugar solution and then placed in a beaker of water.



The Visking tubing is partially permeable.

Use the information in the diagram to describe and explain what would happen if the Visking tubing was left in the water for 24 hours.

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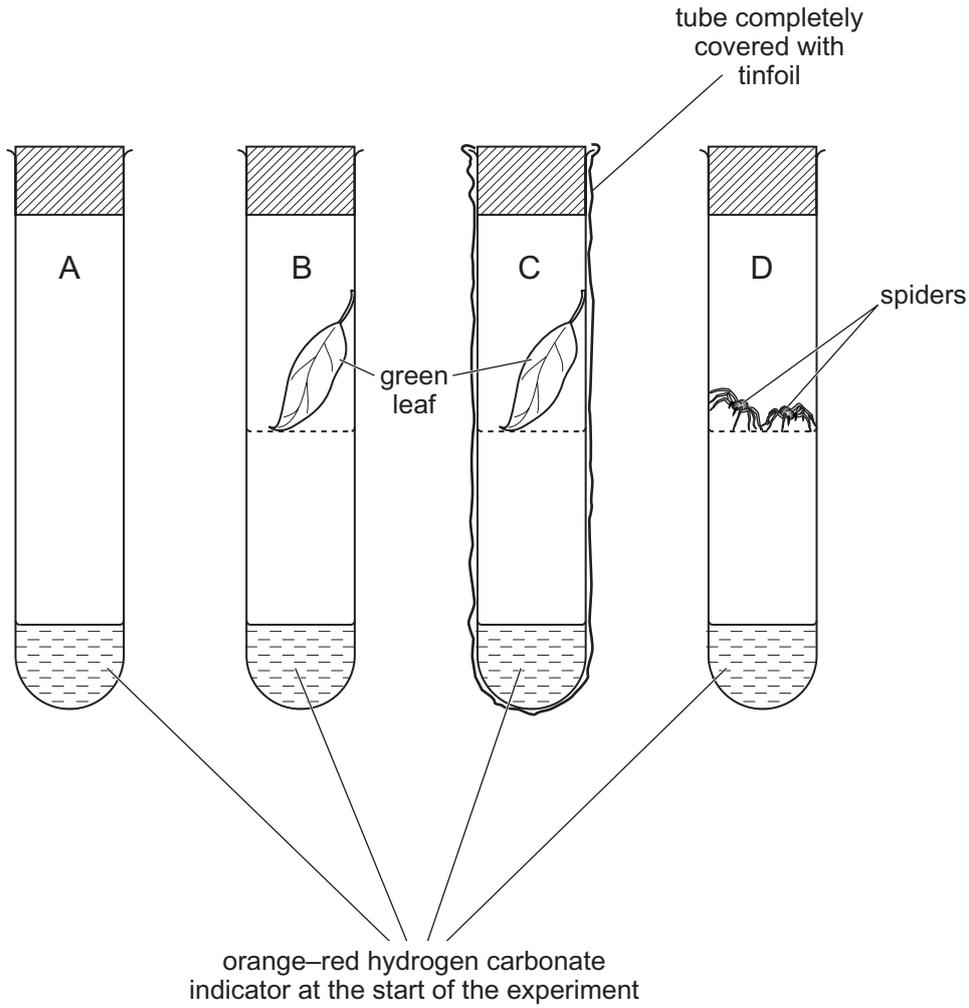


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[3]

Examiner Only	
Marks	Remark

13 This experiment was set up to investigate gas exchange.



The colour changes of hydrogen carbonate indicator are shown below.

Purple ← Less carbon dioxide — Orange-red — More carbon dioxide → Yellow

Examiner Only	
Marks	Remark

The tubes were left in bright light for 10 hours.

Complete the table below to state and explain the results of this experiment.

Tube	Colour of hydrogen carbonate indicator	Explanation of results
A	Orange-red	No living organisms present. No photosynthesis. No respiration.
B		Leaf in light. Uses more carbon dioxide in photosynthesis than it produces in respiration.
C		
D	Yellow	

[4]

Examiner Only

Marks Remark

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**THIS IS THE END OF THE QUESTION PAPER**

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