



General Certificate of Secondary Education  
2010–2011

## Science: Double Award (Modular)

Living Organisms and the Processes of Life

End of Module Test

Foundation Tier

**A**

[GDA01]

THURSDAY 24 FEBRUARY 2011, MORNING



Centre Number

71

Candidate Number

### 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 twelve** 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

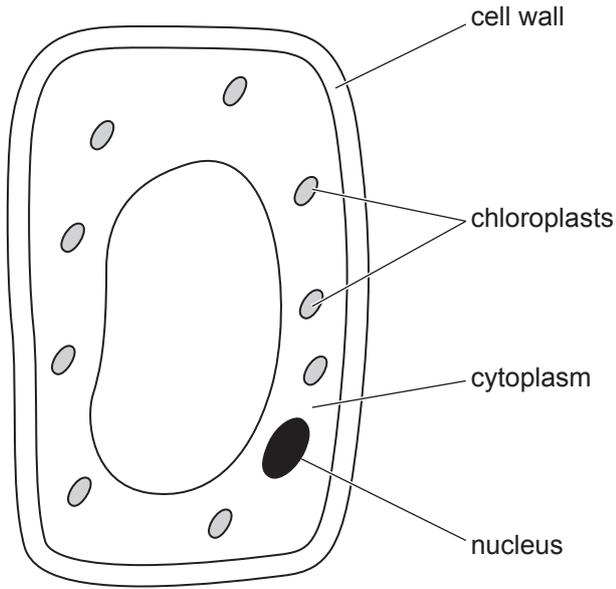
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

Total  
Marks

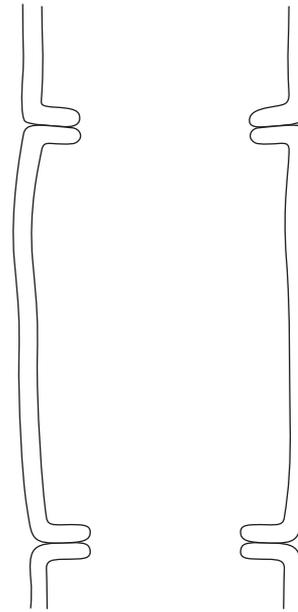
--



1 The diagrams show two plant cells.



palisade cell



xylem cell

(a) Name the mineral needed for cell wall formation.

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

(b) Suggest why the xylem cell has no internal structures, e.g. no nucleus or cytoplasm.

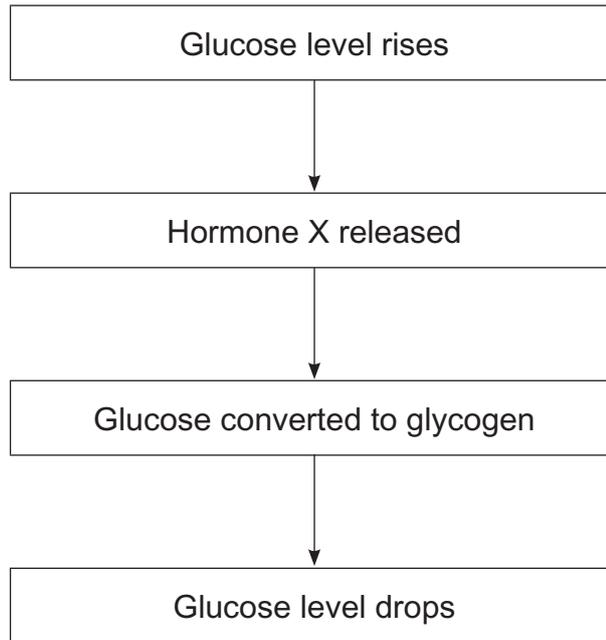
\_\_\_\_\_ [1]

(c) In which part of the plant are palisade cells found?

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

Examiner Only	
Marks	Remark

2 The flowchart shows how the level of glucose is controlled in the blood.



(a) Suggest what causes a rise in blood glucose levels.

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

(b) Name hormone X.

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

(c) Name the condition where the body does not produce enough of this hormone.

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

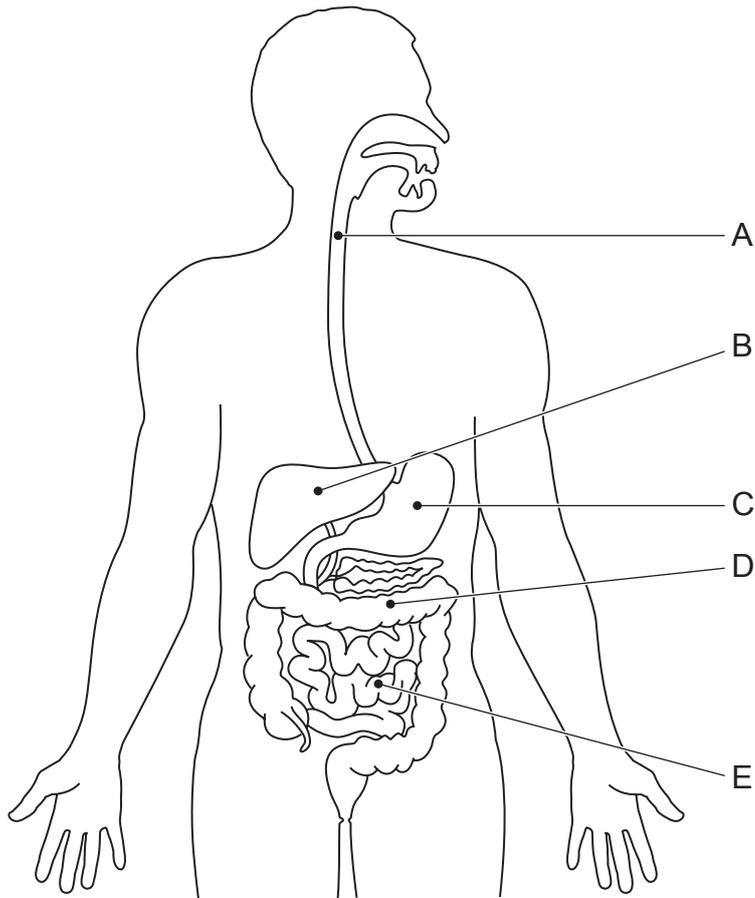
(d) If a person does not produce enough hormone X then the person is treated with injections of this hormone (a protein).

Suggest why this hormone cannot be taken in tablet form.

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

Examiner Only	
Marks	Remark

3 The diagram shows the digestive system.



(a) Explain why it is important that food is digested.

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

(b) Using letters from the diagram give the regions where protein digestion occurs.

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

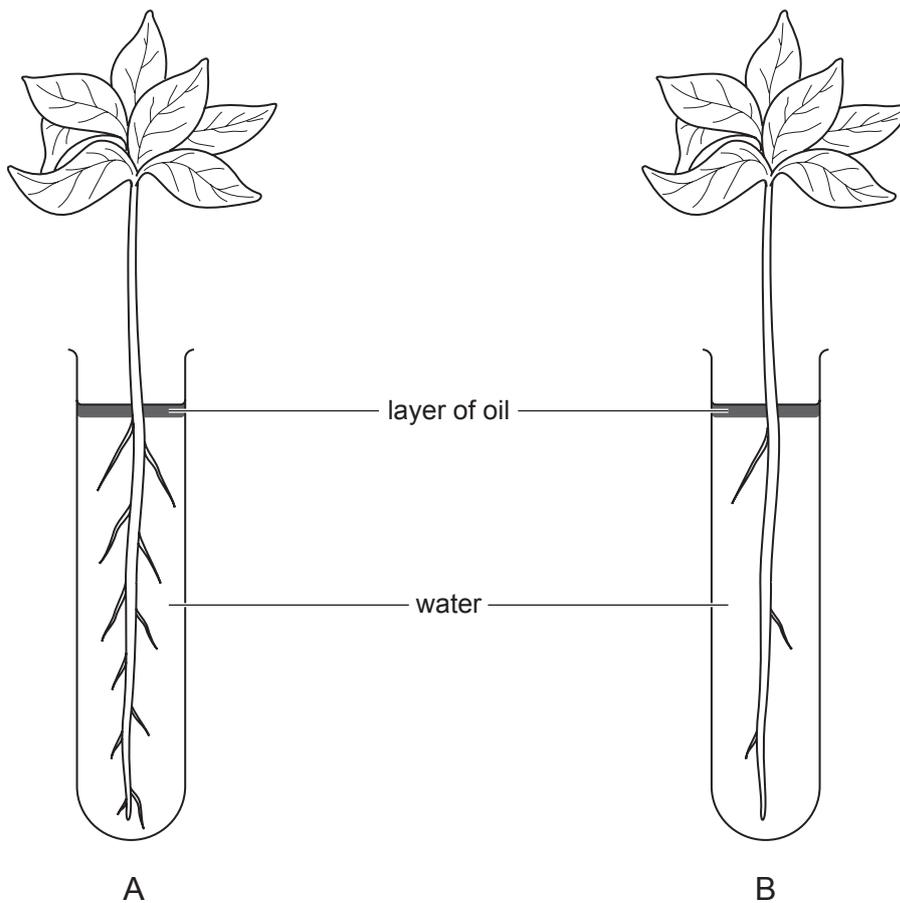
(c) What is the function of region D?

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

Examiner Only	
Marks	Remark

**BLANK PAGE**  
**(Questions continue overleaf)**

- 4 The diagram shows an experiment to investigate the loss of water from seedlings A and B.



The seedlings were placed in a bright room. The mass of each test tube was recorded at the beginning of the experiment and after 24 hours.

- (a) Name the process where water is lost from the seedling leaves.

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

- (b) The results of the experiment are shown in the table.

Seedling	A	B
Mass at start/g	200	200
Mass after 24 hrs/g	152	176
Loss in mass after 24 hrs/g		
Rate of water loss g/hr		

Complete the table to show the loss in mass after 24 hours and the rate of water loss for A and B. [2]

Examiner Only	
Marks	Remark

(c) Describe and explain the results for the two seedlings.

---

---

[2]

Examiner Only	
Marks	Remark

- 5 A student examined the percentage of gases in inhaled and exhaled air. The results are shown below.

Gas sample	Percentage oxygen	Percentage carbon dioxide	Percentage nitrogen
A	16.1	4	79
B	20.5	0.04	79

- (a) Use the information in the table to explain how you know sample A is exhaled air.

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

- (b) Suggest why the total percentage of the gas samples is slightly less than 100%.

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

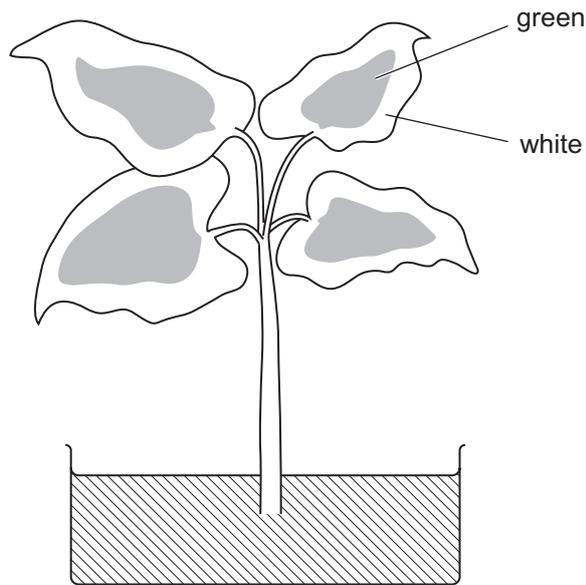
- (c) Name the type of respiration that does **not** use oxygen.

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

Examiner Only

Marks Remark

- 6 You are provided with a variegated plant (part of each leaf is green, the rest is white).



Using the plant and any other apparatus that is required, describe an experiment to show that chlorophyll is needed for photosynthesis.

---



---



---



---



---



---



---



---



---

[4]

Examiner Only	
Marks	Remark

7 Excretion is the removal of waste products from the body.

(a) Name **one** waste product of respiration.

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

(b) Explain how the waste from respiration is removed from the body.

\_\_\_\_\_

\_\_\_\_\_

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

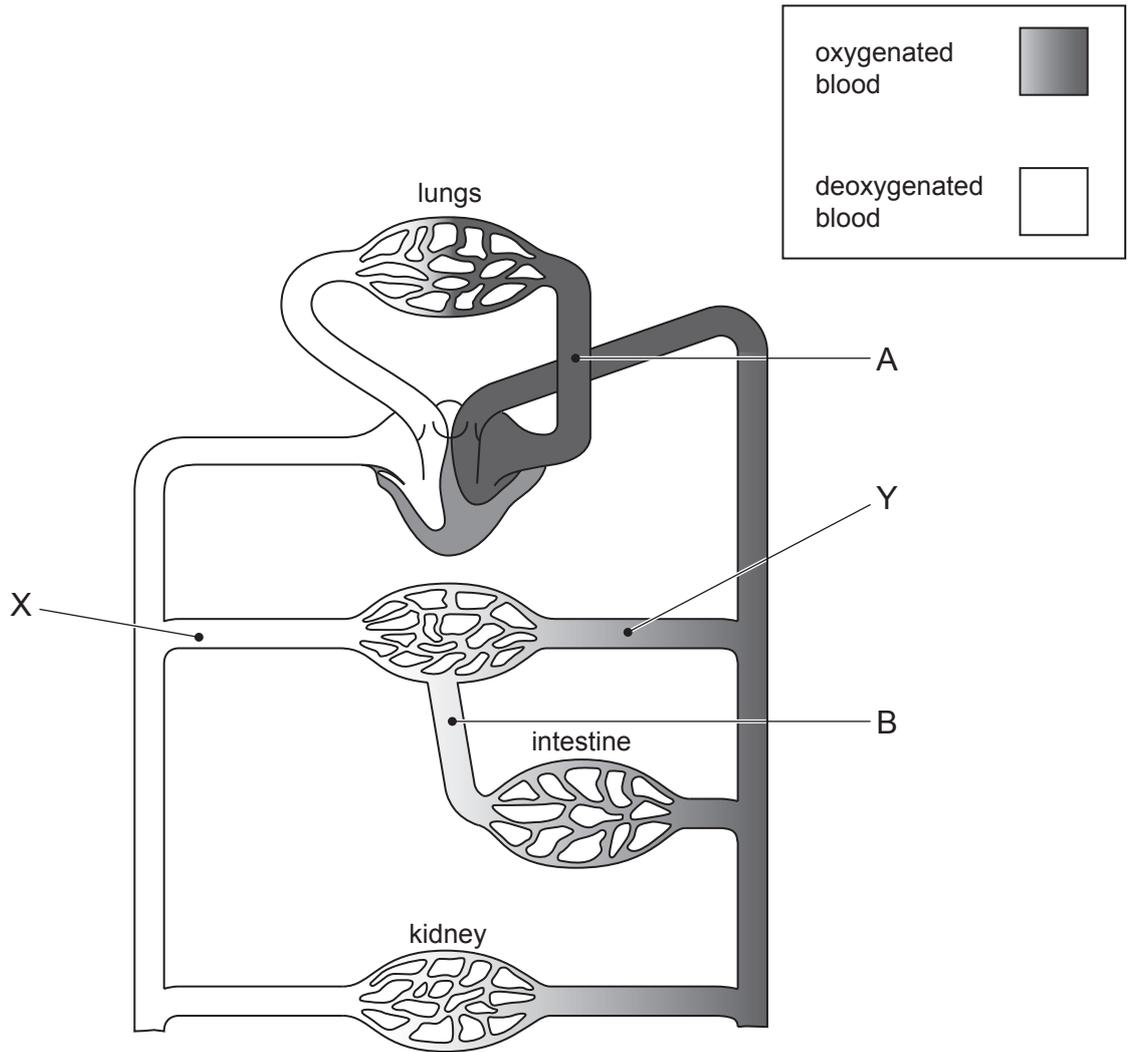
Examiner Only

Marks

Remark

**BLANK PAGE**  
**(Questions continue overleaf)**

8 The diagram shows part of the circulatory system.



© Human Biology: An Active Approach by P Rowlinson and M Jenkins, published by Cambridge University Press, 1982

(a) What is meant by **double circulation**?

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

(b) Name the blood vessels:

A \_\_\_\_\_

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

Examiner Only	
Marks	Remark

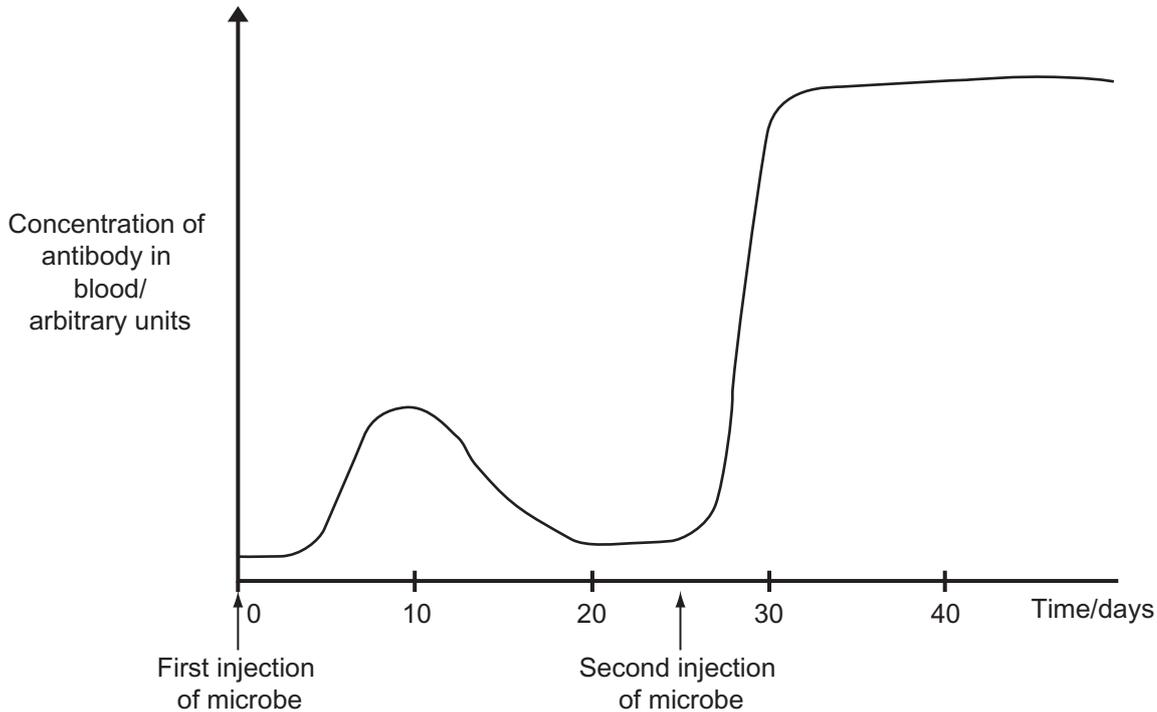
(c) Explain why the concentration of oxygen is lower in vessel X than in vessel Y.

\_\_\_\_\_

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

Examiner Only	
Marks	Remark

9 The graph shows the body's response to the injection of a microbe.



(a) Name the method of fighting disease where a weakened form of the microbe is injected into the body.

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

(b) Use the graph to give two differences between the responses to the first and second injections.

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

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

(c) The antibodies connect with the microbes to form a clump. Name the process by which the body destroys the clump.

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

Examiner Only	
Marks	Remark

- 10** In blood donation, blood is taken from a vein in a person's arm and used to treat patients who need a blood transfusion.



© US Federal Government

The photograph shows a needle inserted into a blood vessel in a donor's arm.

- (a)** Suggest why the needle is inserted into a vein rather than an artery.

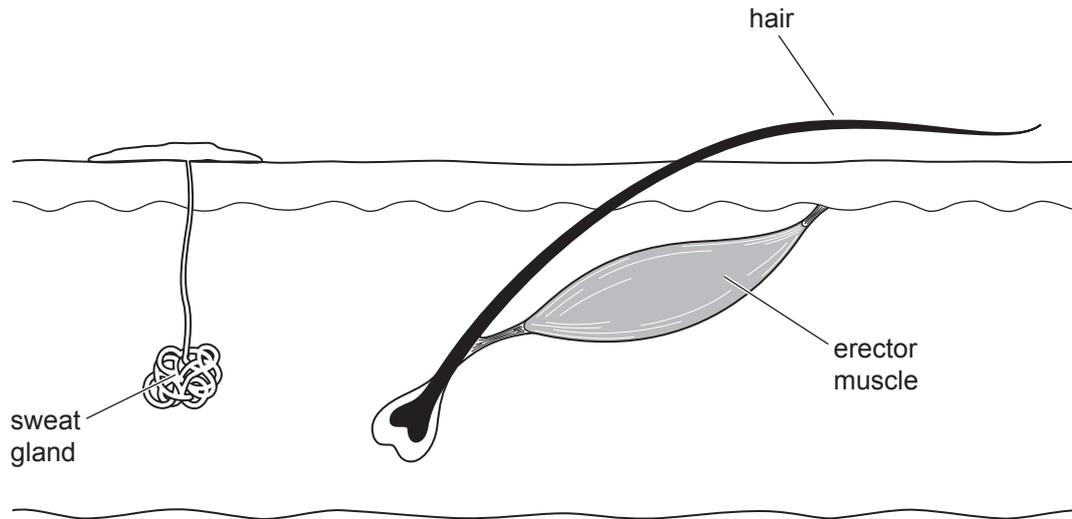
\_\_\_\_\_ [1]

- (b)** Use your knowledge of osmosis to explain why the blood cells could be damaged if water was added to the donated blood by mistake.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [4]

Examiner Only	
Marks	Remark

11 The skin plays an important role in temperature regulation.



The diagram shows the skin on a hot day. Complete the table to show how the following actions help the body lose heat.

Action	How this helps heat loss
Hair lies flat	
Sweat is produced	

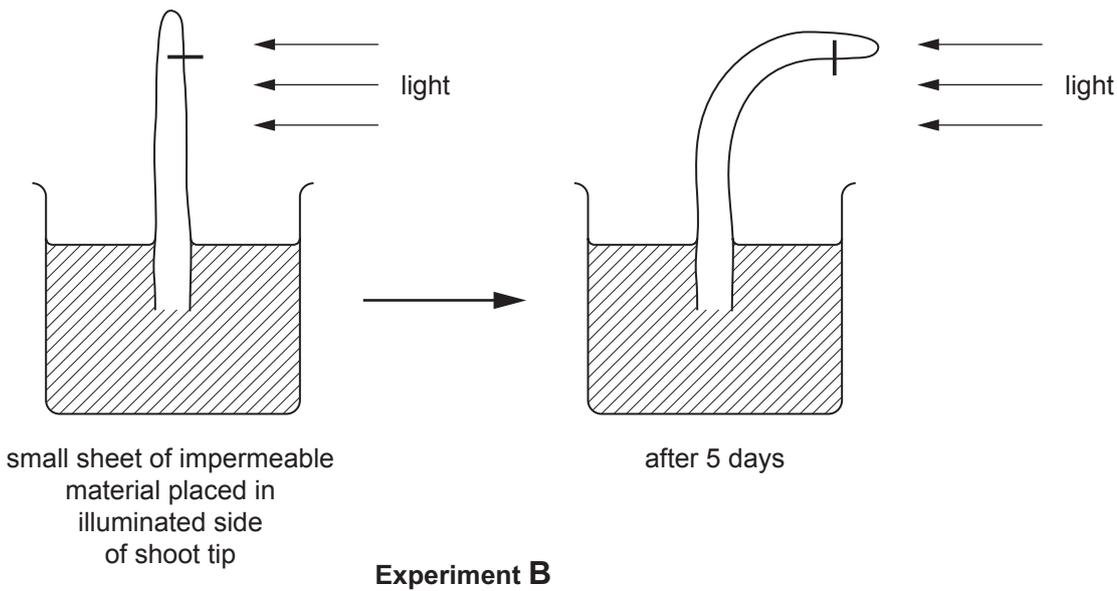
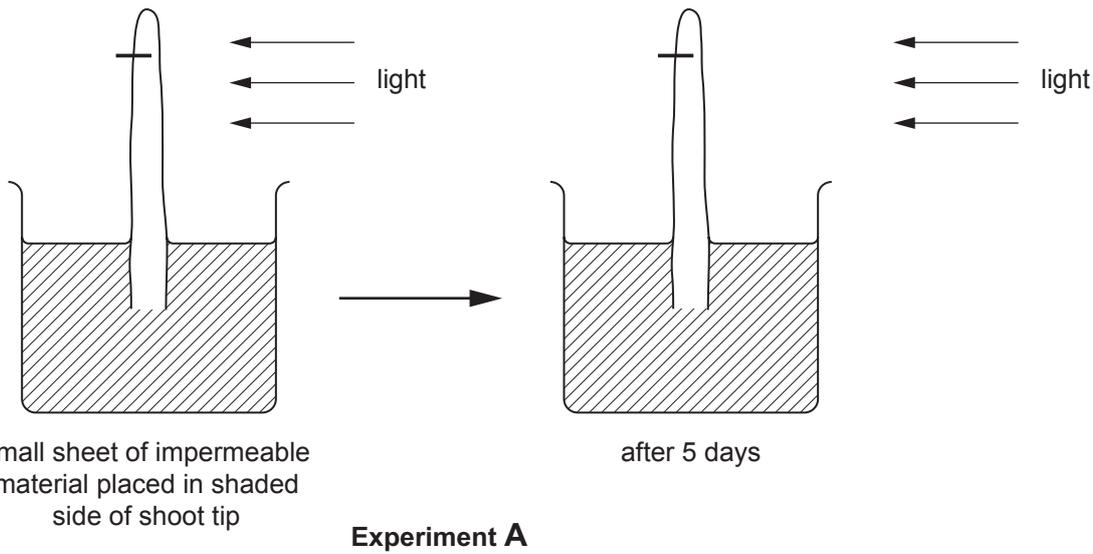
[4]

Examiner Only	
Marks	Remark

**BLANK PAGE**  
**(Questions continue overleaf)**

12 An experiment was carried out to investigate the effect of light shining from one side on a plant shoot.

Examiner Only	
Marks	Remark



(a) A plant hormone (auxin) causes the bending response. Auxin is produced in the tip and travels downwards to cause the cells to elongate. Use the results to explain which side of the shoot the auxin travels downwards in.

---



---

[2]

(b) (i) Name the response shown by the shoot in experiment B.

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

(ii) Explain how this response will benefit the plant.

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

Examiner Only	
Marks	Remark

---

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

---

Permission to reproduce all copyright material has been applied for.  
In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA  
will be happy to rectify any omissions of acknowledgement in future if notified.