



General Certificate of Secondary Education
2010–2011

Science: Double Award (Modular)

Living Organisms and the Processes of Life

End of Module Test

Higher Tier

A

[GDA02]

THURSDAY 24 FEBRUARY 2011, MORNING



Centre Number

71

Candidate Number

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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

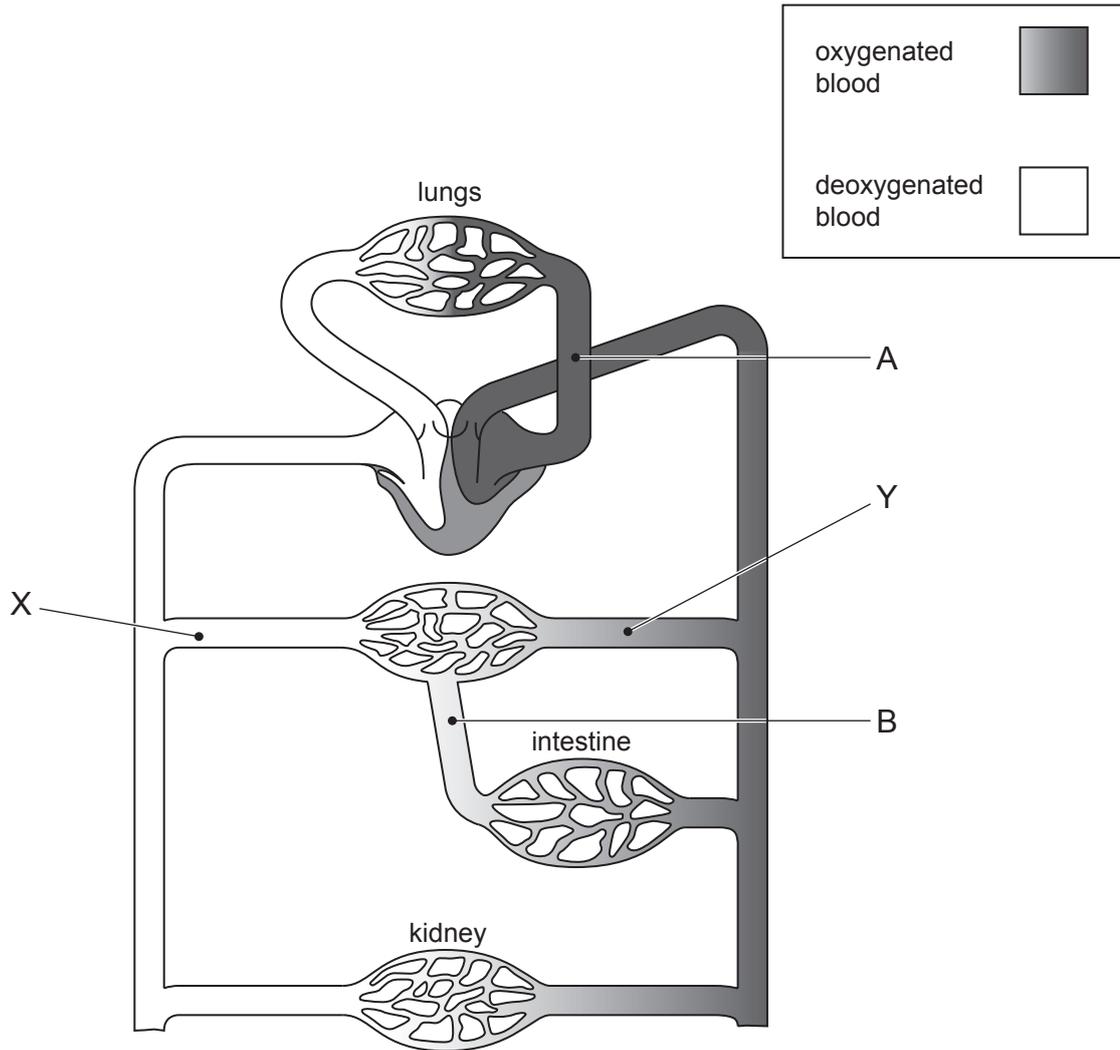
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

Total
Marks

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1 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]

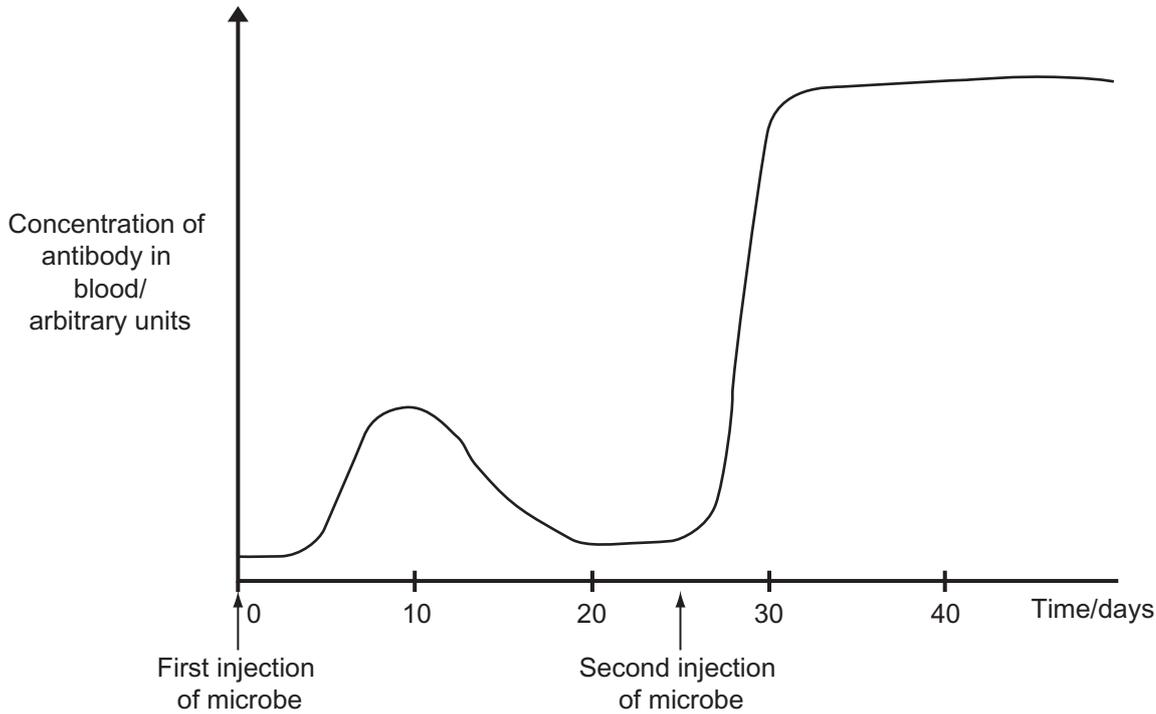
Examiner Only	
Marks	Remark

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

[2]

Examiner Only	
Marks	Remark

2 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

- 3 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.

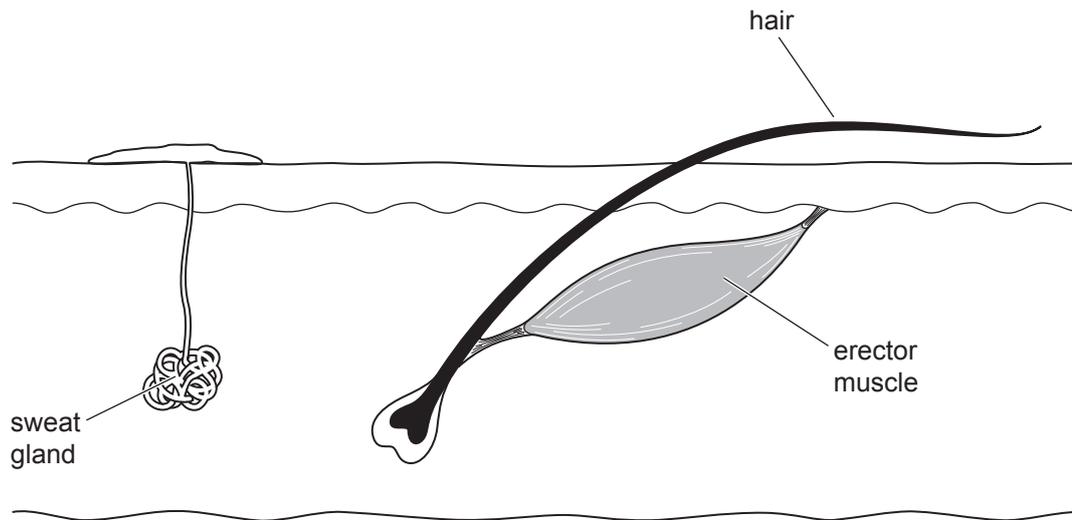
_____ [1]

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

 _____ [4]

Examiner Only	
Marks	Remark

4 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.

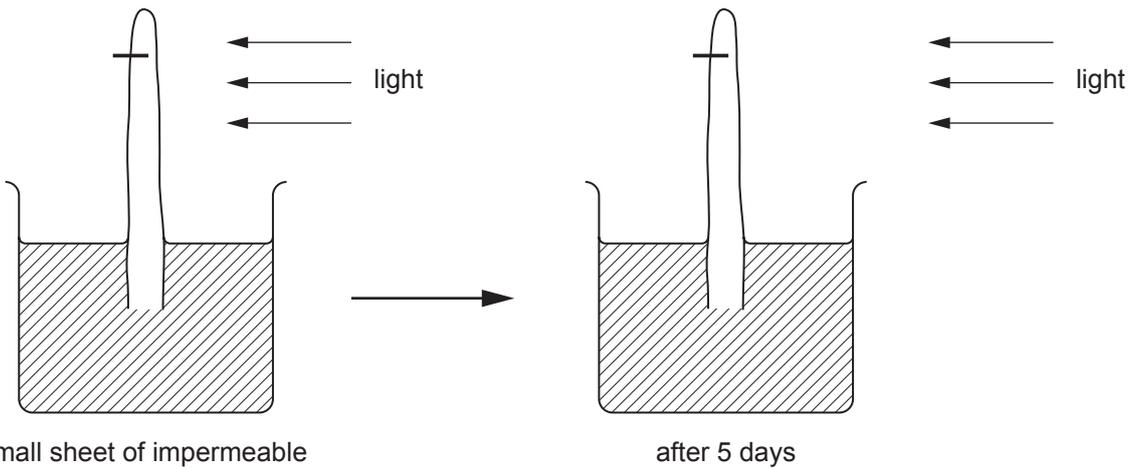
Action	How this helps heat loss
Hair lies flat	
Sweat is produced	

[4]

Examiner Only	
Marks	Remark

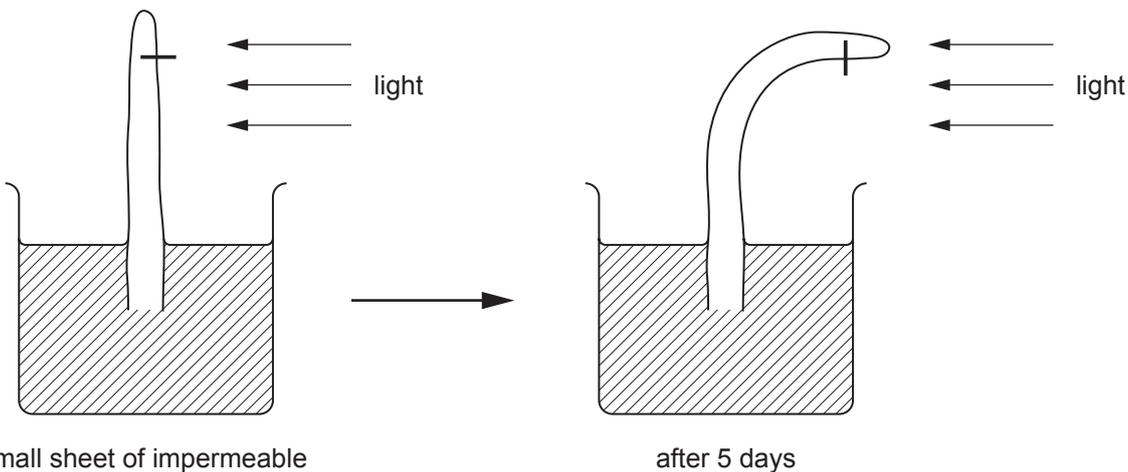
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5 An experiment was carried out to investigate the effect of light shining from one side on a plant shoot.



small sheet of impermeable material placed in shaded side of shoot tip

Experiment A



small sheet of impermeable material placed in illuminated side of shoot tip

Experiment B

(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]

Examiner Only	
Marks	Remark

(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

6 (a) The table gives information about digestive enzymes.

Complete the table.

Enzyme	Food broken down	Product(s) of digestion
amylase		maltose (glucose)
lipase	fat	+

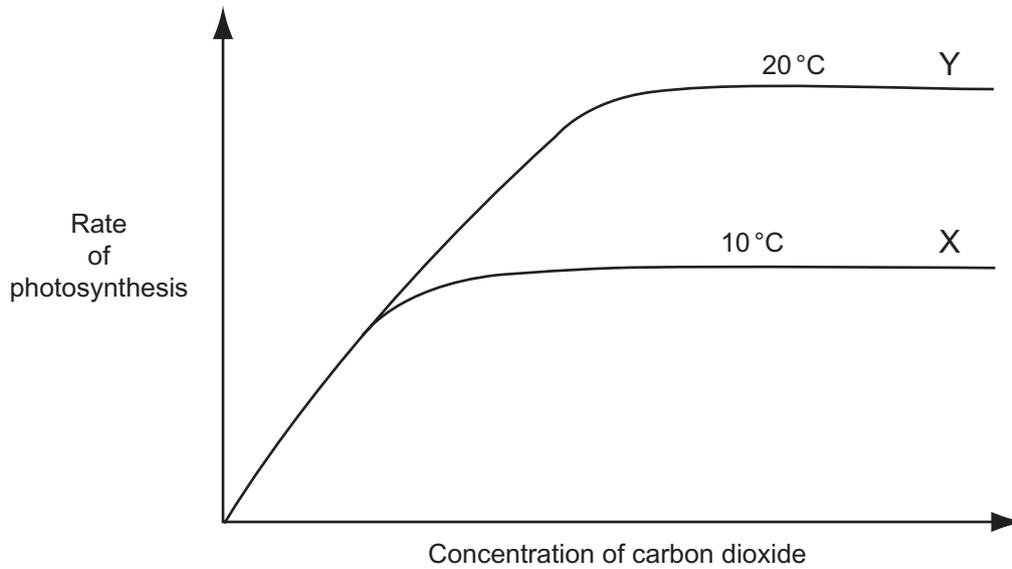
[2]

(b) Explain why lipase will not break down protein.

[2]

Examiner Only	
Marks	Remark

- 8 The graph shows the effect of carbon dioxide on the rate of photosynthesis.



- (a) Which factor is **not** limiting the rate of photosynthesis at both X and Y?

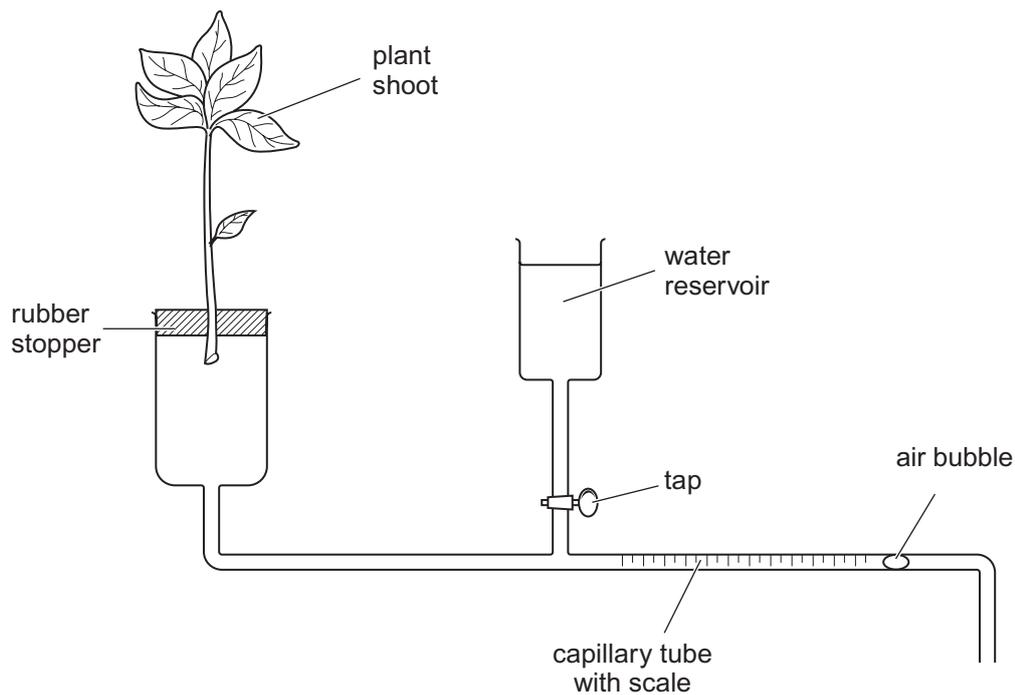
_____ [1]

- (b) Explain why the rate of photosynthesis in plants is higher at 20°C than at 10°C.

 _____ [2]

Examiner Only	
Marks	Remark

- 10 The diagram shows a potometer which is used to measure the rate of water uptake by a leafy shoot.



- (a) Give **two** precautions you would take when setting up the potometer to ensure that no air bubbles are present apart from the one shown in the diagram.

[2]

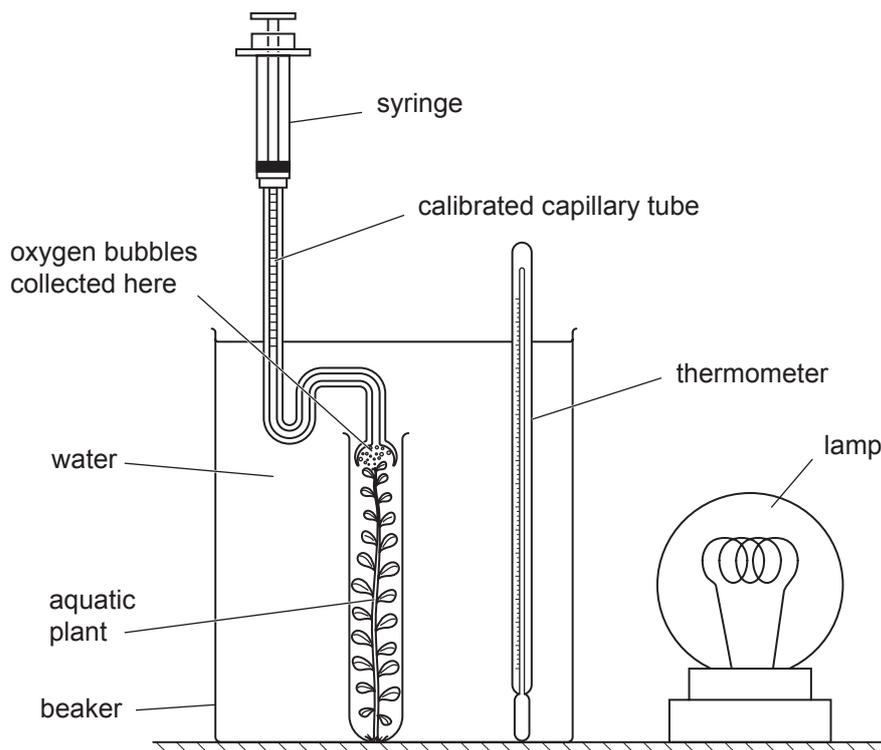
- (b) If a clear polythene bag was placed over the shoot, describe and explain how this would affect the rate of water uptake.

[2]

Examiner Only	
Marks	Remark

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- 11 The diagram shows apparatus used to investigate the effect of light on the release of oxygen during photosynthesis by an aquatic plant.



- (a) Suggest why the boiling tube containing the aquatic plant is placed in a beaker of water.

_____ [1]

- (b) Suggest how the apparatus is used to measure the rate of oxygen production at a particular light intensity.

 _____ [3]

- (c) Suggest **one** reason why the oxygen released by the plant is an underestimation of the oxygen produced by photosynthesis.

 _____ [1]

Examiner Only

Marks Remark

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