



General Certificate of Secondary Education  
2011

Centre Number

71

Candidate Number

## Science: Biology

Paper 2  
Foundation Tier

[G0902]



THURSDAY 2 JUNE, MORNING

### TIME

1 hour.

### 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 six** questions.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 120.

Quality of written communication will be assessed in question **5(b)(ii)**.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Details of calculations should be shown.

Units must be stated in numerical answers where appropriate.

For Examiner's  
use only

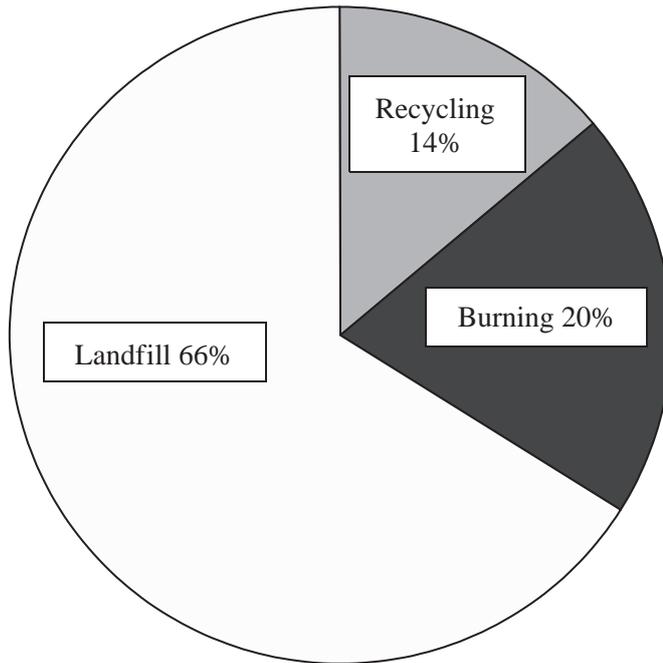
Question Number	Marks
1	
2	
3	
4	
5	
6	

Total  
Marks

--



1 (a) The pie chart shows different ways of treating rubbish



(i) Complete the table using the information in the pie chart.

Way of treating rubbish	Percentage
Recycling	
Burning	
Landfill	

[2]

(ii) Which way of treating rubbish is used least?

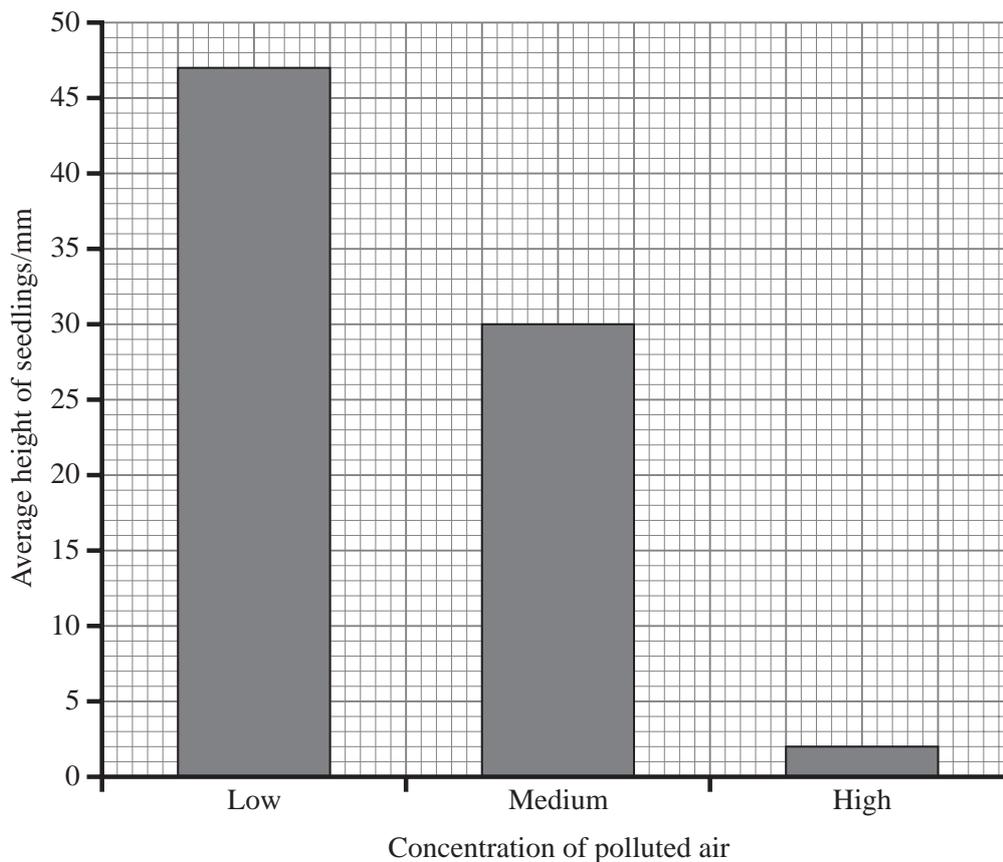
\_\_\_\_\_ [1]

(iii) Describe **two** ways landfill is damaging to the environment.

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

Examiner Only	
Marks	Remark

- (b) The graph shows the average height of seedlings grown in different concentrations of polluted air.



- (i) Give the average height of seedlings grown in the medium concentration of polluted air.

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

- (ii) How does increasing the concentration of polluted air affect the average height of seedlings?

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

- (iii) Suggest **two** ways air pollution can be reduced.

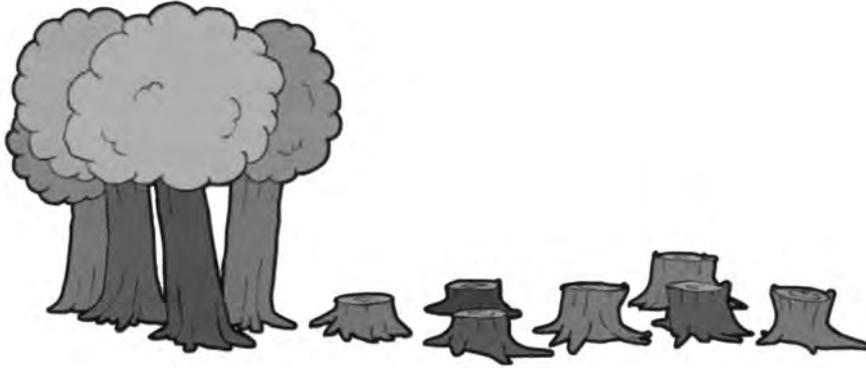
\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

(iv) Give **one** source of air pollution.

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

The diagram shows the process of deforestation.



Source: www.edupics.com

(c) (i) What is deforestation?

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

(ii) Give **two** advantages to the environment of reducing deforestation.

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

2. \_\_\_\_\_  
\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

(d) The photographs show a grey and a red squirrel.

Grey Squirrel



© iStockphoto / Thinkstock

Red Squirrel



© iStockphoto / Thinkstock

There are now more of the larger grey squirrels (height 25–30 cm) in Ireland than the smaller red squirrels (height 19–23 cm). The red squirrels are hard to find as they spend a lot of their time in trees. At a weight of 300g red squirrels are half the weight of grey squirrels. Red squirrels also have large tufted ears and a longer bushy tail compared to the short and rounded tail of grey squirrels.

(i) Use the photographs and the passage to help complete the table comparing grey and red squirrels.

Feature	Grey Squirrel	Red Squirrel	
Height/cm			[1]
Weight/g			[2]
Tail			[1]

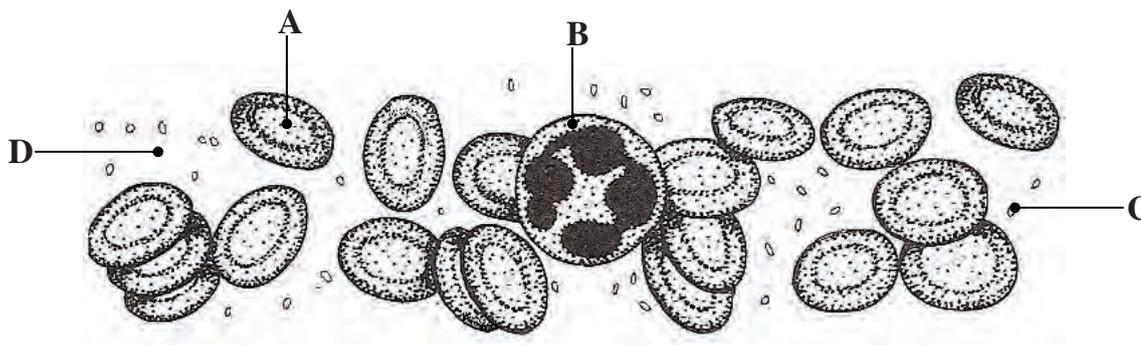
(ii) Suggest **one** reason why grey squirrels now outnumber red squirrels.

\_\_\_\_\_

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

Examiner Only	
Marks	Remark

2 The diagram shows a sample of blood.



Adapted from © Illustrated Biology Questions for homework and revision by P Booth and G Hall, published by Heinemann Educational, 1986, ISBN 0435591002. Reproduced by permission of Pearson Education, publishers.

(a) (i) Name the parts A, B and C.

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

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

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

(ii) Use the diagram to find the ratio of cell type A to cell type B.

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

Cell A contains haemoglobin.

(iii) What is the function of haemoglobin?

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

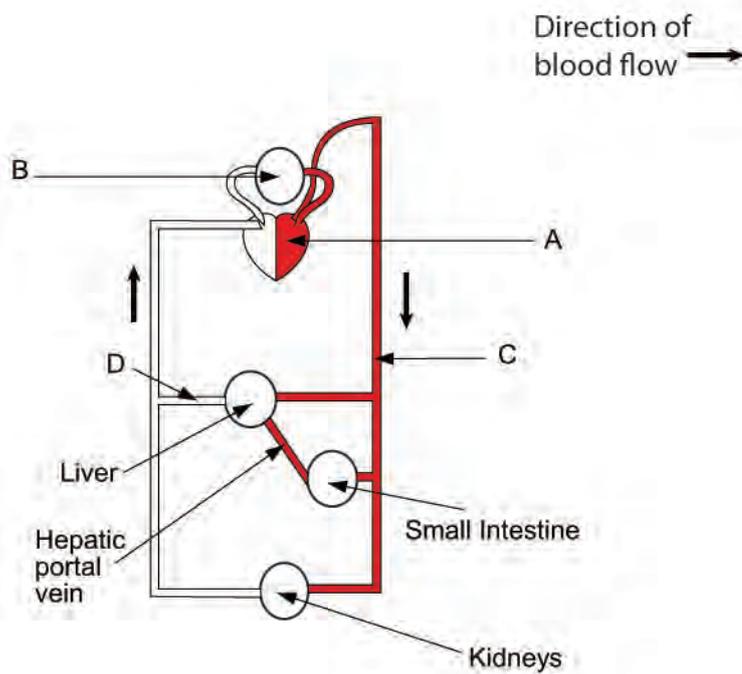
(iv) Give **two other** differences, shown in the diagram, between cells A and B.

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

Examiner Only	
Marks	Remark



The diagram shows part of the circulatory system.



© CCEA

**(b) (i)** Name organs A and B, artery C and vein D.

Organ A \_\_\_\_\_ [1]

Organ B \_\_\_\_\_ [1]

Artery C \_\_\_\_\_ [1]

Vein D \_\_\_\_\_ [1]

**(ii)** Draw an arrow on the hepatic portal vein to show the direction of blood flow. [1]

Examiner Only	
Marks	Remark

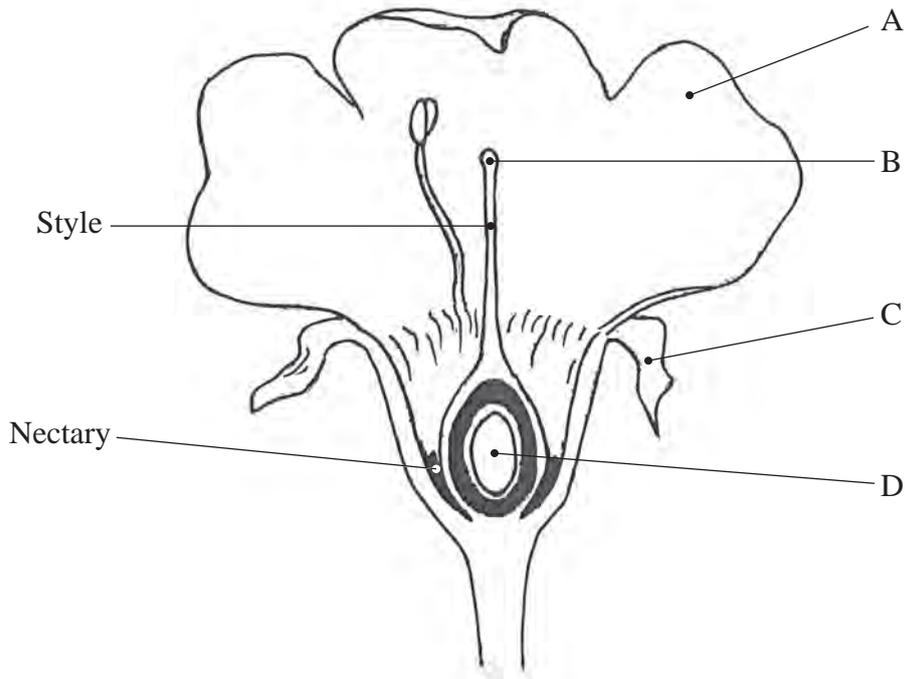
(c) Complete the table of blood vessels.

Type of blood vessel	Thickness of wall	Valves present	Speed of blood flow
Artery		No	
Vein	Thin		
Capillary	1 cell thick		Very slow

[5]

Examiner Only	
Marks	Remark

3 (a) The diagram shows part of an apple flower.



(i) Name parts A, B, C and D.

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

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

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

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

The stamens of an apple flower are just longer than the style.

(ii) **Draw a stamen** on the diagram. One has already been drawn for you. [2]

Examiner Only	
Marks	Remark

Apple flowers are pollinated by insects.

(iii) What is pollination?

\_\_\_\_\_

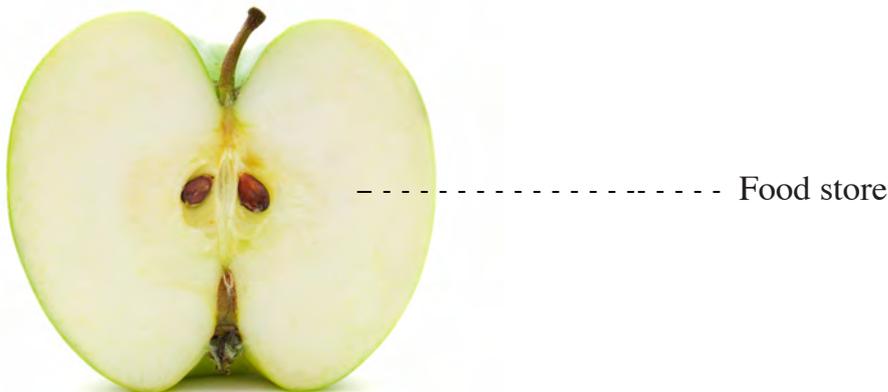
\_\_\_\_\_

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

(iv) Give **two** ways apple flowers are adapted for pollination by insects.

1. \_\_\_\_\_ [1]
2. \_\_\_\_\_ [1]

(b) The diagram shows half an apple.



© iStockphoto / Thinkstock

(i) Use a line to label a seed on the diagram. [1]

Apples are dispersed by animals.

(ii) Suggest **two** ways apples are adapted to attract animals.

1. \_\_\_\_\_ [1]
- \_\_\_\_\_
2. \_\_\_\_\_ [1]
- \_\_\_\_\_

Examiner Only	
Marks	Remark

(iii) Suggest why the seed must have a tough outer coat.

\_\_\_\_\_

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

(iv) Complete the table.

Example	Type of dispersal
<p>Apple</p>  <p>© iStockphoto / Thinkstock</p>	<p>Animal</p>
<p>Creeping thistle</p>  <p>© iStockphoto / Thinkstock</p>	
<p>Vetch</p>  <p>© Hemera / Thinkstock</p>	
<p>Burdock</p>  <p>© iStockphoto / Thinkstock</p>	

[1]

[1]

[1]

Examiner Only	
Marks	Remark

(c) The apple was tested to find out whether it contained starch or sugars in the food store.

(i) Name the reagent used to test for starch.

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

(ii) Describe how you would test the apple for sugars.

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

The table shows the colour of the reagent at the start and after testing with the apple.

Test for	Colour of reagent	
	start	end
Starch	Yellow/brown	Yellow/brown
Sugar	Blue	Brick red

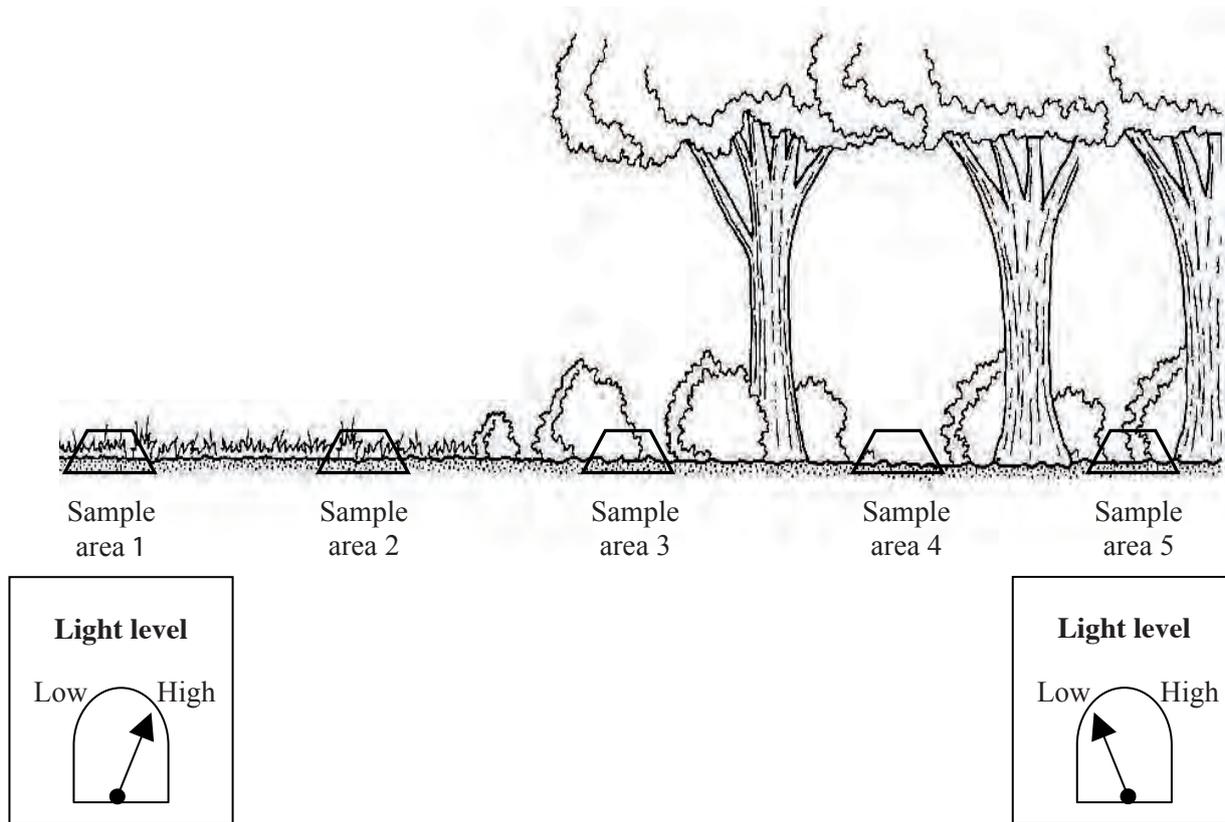
(iii) Explain what these results show.

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

Examiner Only

Marks Remark

4 (a) The diagram shows where light measurements and samples were taken in a habitat study.



Adapted from © A Second Biology Course by P T Bunyan, published by Stanley Thornes Ltd, 1985.  
Reproduced by permission of P T Bunyan

The table shows the number of plant species in each sample area.

<b>Sample area</b>	1	2	3	4	5
<b>Number of plant species</b>	12	11	7	4	3

(i) Suggest why the number of plant species decreases from sample area 1 to sample area 5.

\_\_\_\_\_

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

Examiner Only	
Marks	Remark

(ii) Explain how light is used by plants.

---



---



---

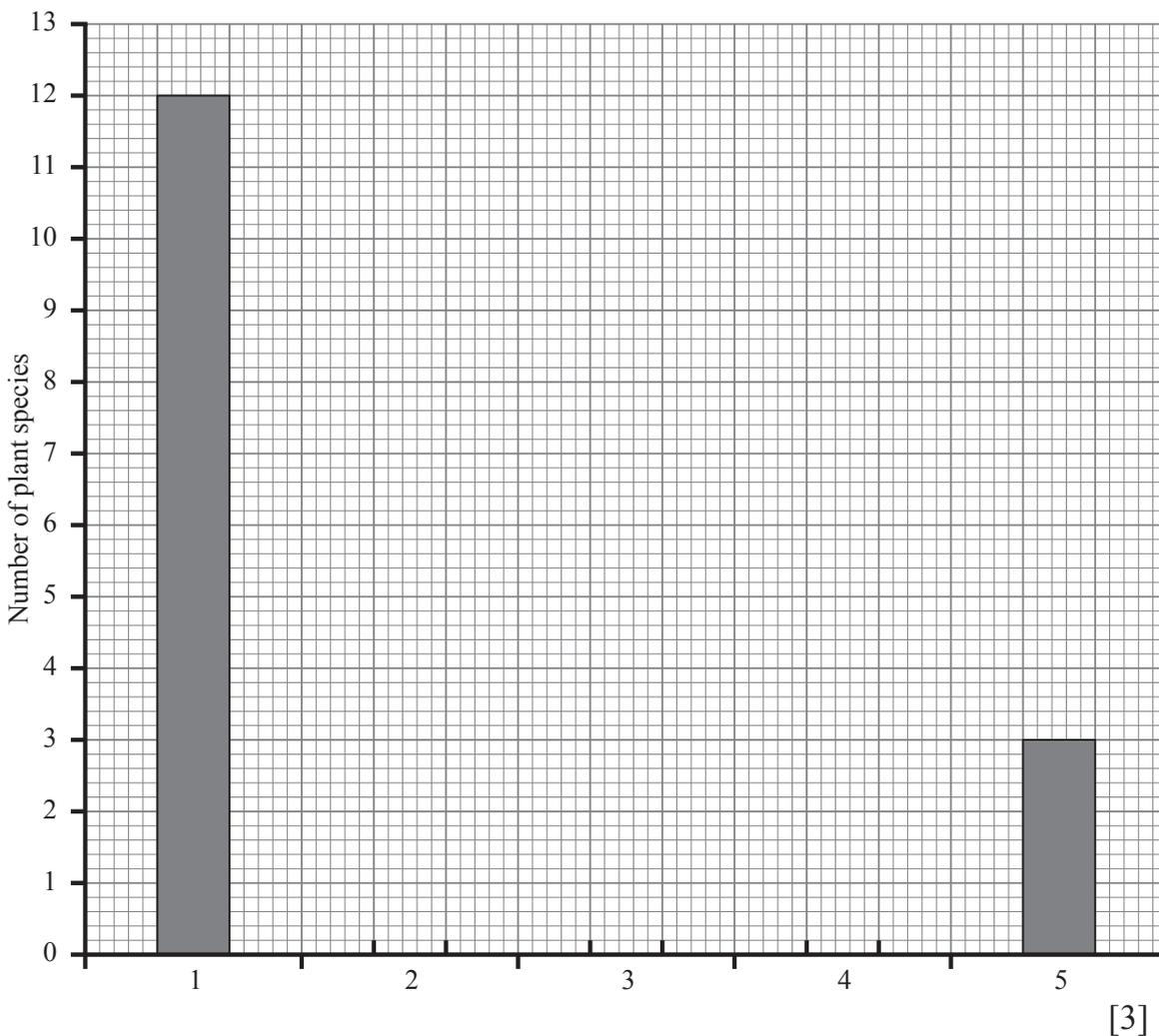
[2]

(iii) Give **two other** environmental factors which could affect the plants found.

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

2. \_\_\_\_\_ [1]

(iv) Use the results table to label the axis of the graph and complete the bar graph.



[3]

Examiner Only	
Marks	Remark

- (b) The diagram shows a sample of the animals collected during the habitat study.



A – © iStockphoto / Thinkstock  
 B – © iStockphoto / Thinkstock  
 C – © Brand X Pictures / Thinkstock  
 D – © iStockphoto / Thinkstock E – © Hemera / Thinkstock

- (i) Give the letters of the animals which are insects.

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

- (ii) Give **two** features of insects **not visible** in the diagram.

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

2. \_\_\_\_\_ [1]

- (iii) To which group do insects belong?

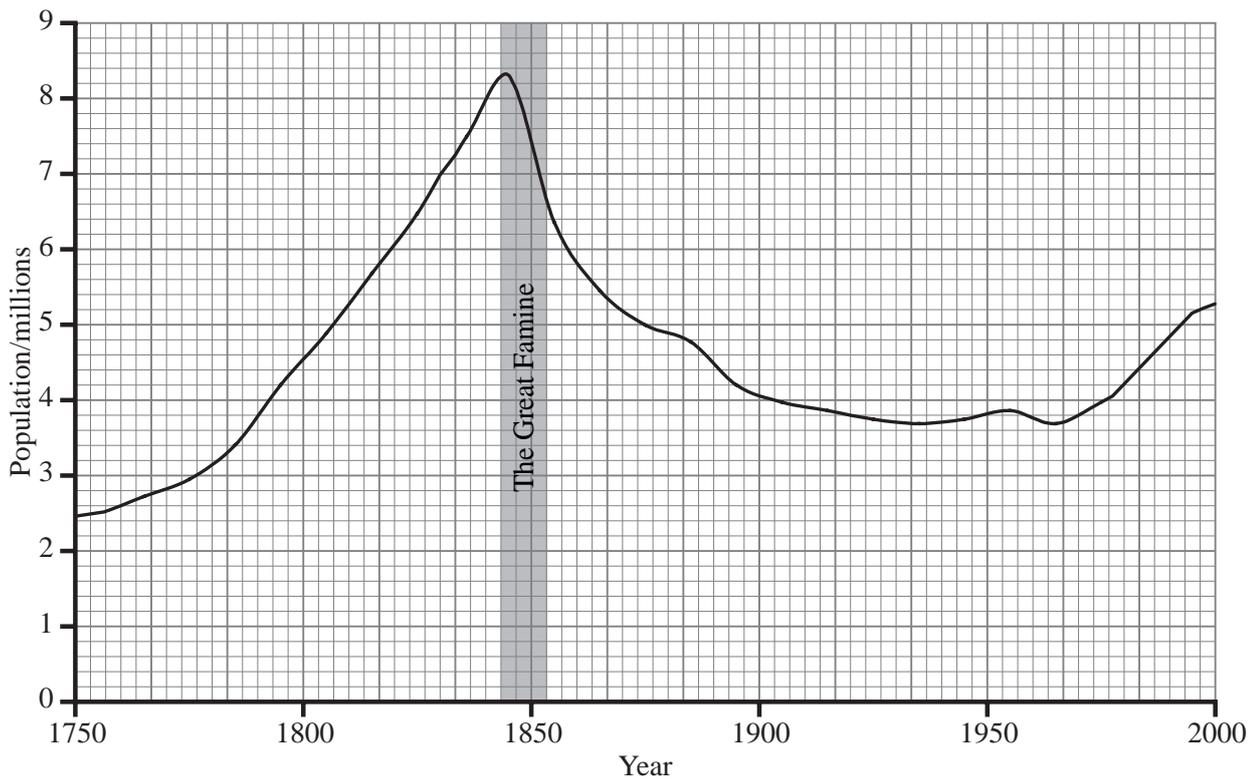
\_\_\_\_\_ [1]

- (iv) Give **one** feature **visible** in the diagram, which adapts all of these animals for life on land.

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

Examiner Only	
Marks	Remark

(c) The graph shows changes in the population of Ireland between 1750 and 2000.



© Dr Wesley Johnston

(i) Explain, in terms of birth rate and death rate, the population change during the Great Famine.

\_\_\_\_\_

\_\_\_\_\_

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

After the Great Famine, the population decreased mainly due to emigration.

(ii) What is emigration?

\_\_\_\_\_

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

(iii) Suggest **two** reasons why the population started to increase after 1960.

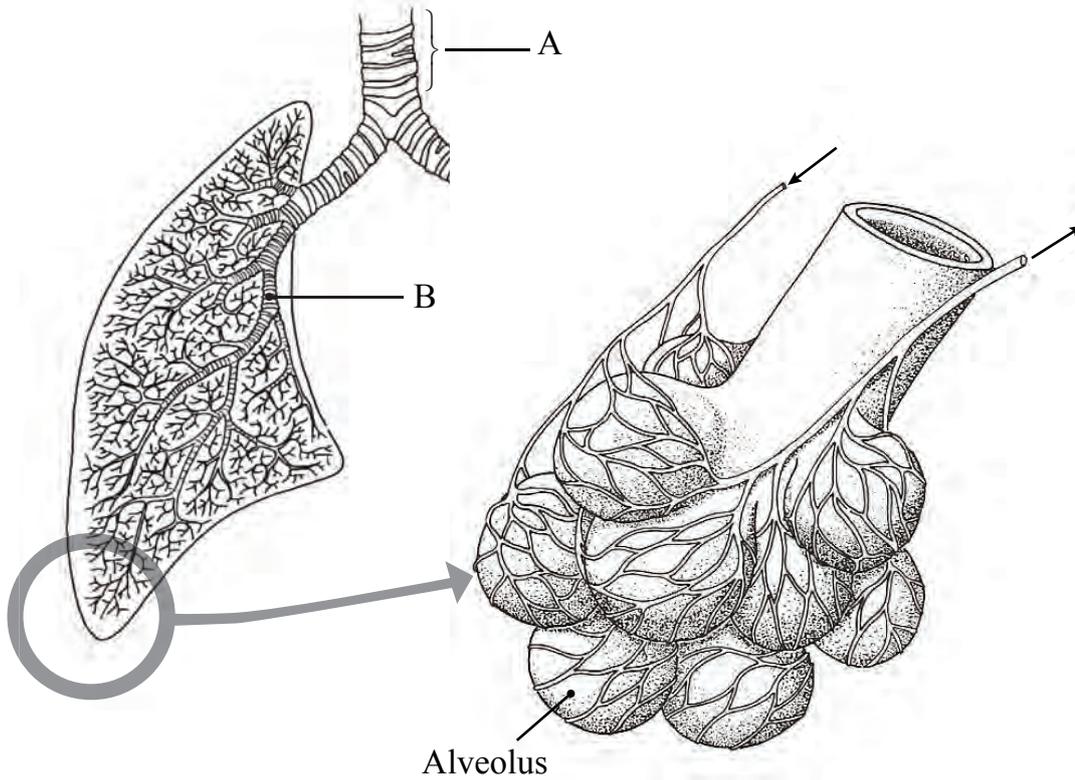
1. \_\_\_\_\_ [1]

2. \_\_\_\_\_ [1]

Examiner Only	
Marks	Remark



(b) The diagrams show part of the human respiratory system.



© Introduction to Biology by D G Mackean, published by John Murray, 1978, ISBN 0719534496

(i) Name parts A and B.

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

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

(ii) Describe how an alveolus is adapted for gas exchange.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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

Quality of written communication [2]

Examiner Only	
Marks	Remark



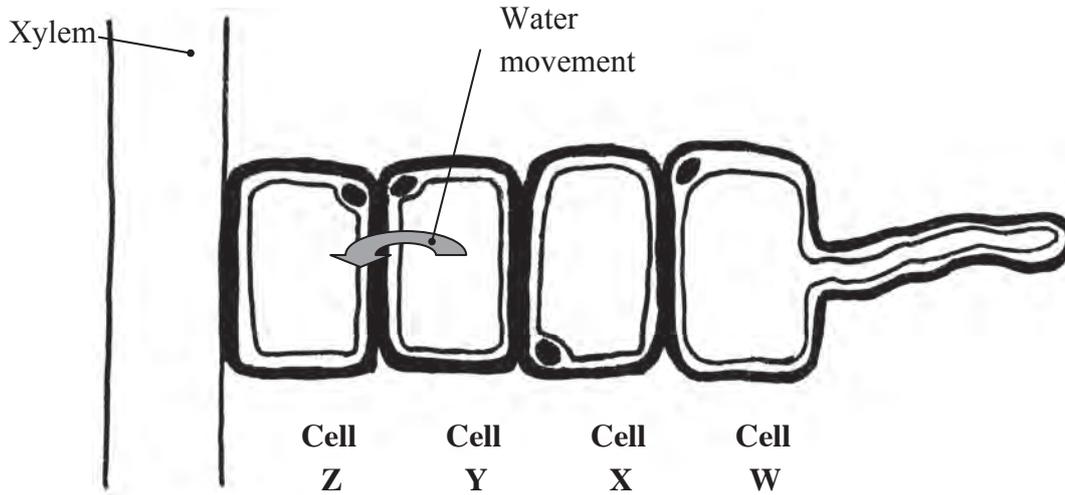


(ii) Describe the function of phloem.

\_\_\_\_\_

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

The diagram shows an enlarged section through part of the plant root.



(iii) On the diagram draw an arrow to show the direction water moves in the xylem. [1]

(iv) Give the name of this movement of water in the xylem. [1]

\_\_\_\_\_

(v) Name the process by which water diffuses from cell Y to cell Z. [1]

\_\_\_\_\_

Examiner Only	
Marks	Remark



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.