

71
Candidate Num

General Certificate of Secondary Education 2011

Science: Biology

Paper 2 Foundation Tier

[G0902]





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	
171661143	

6298

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

	Recycling 14%
Landfill 66%	Burning 20%

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

Way of treating rubbish	Percentage
Recycling	
Burning	
Landfill	

[2]

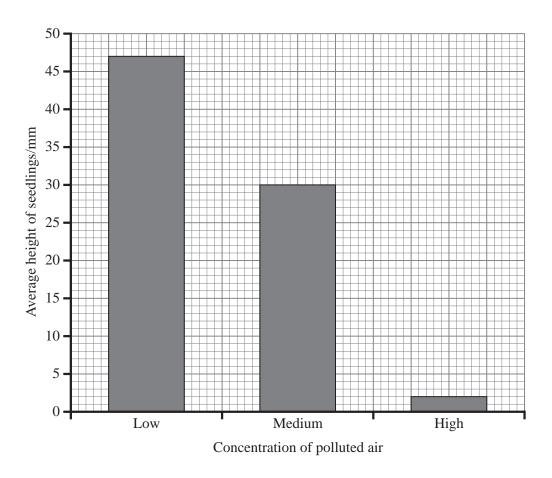
Examiner Only

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

|--|

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

[2]



(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]

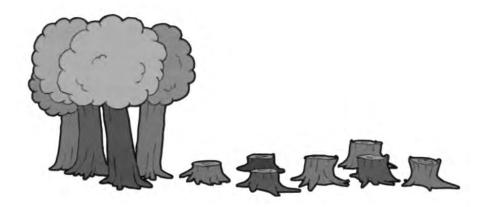
(iii) Suggest two ways air pollution can be reduced.

((iv)	Give	one	source	of	air	no1	lutio	n
٨	1 4	, OIVC	UIIC	Source	$\mathbf{O}_{\mathbf{I}}$	an	poi	Iuuoi	ш,

Examiner Only		
Marks	Remark	

_____[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]

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

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Marks	Remark

Grey Squirrel

Red Squirrel





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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.

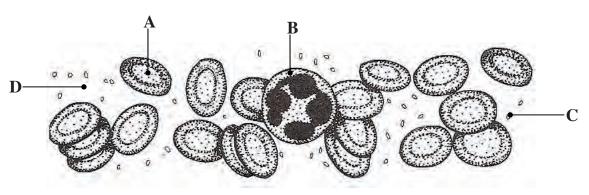
(i) Use the photographs and the passage to help complete the table comparing grey and red squirrels.

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

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

2 The diagram shows a sample of blood.

Examiner Only		
Marks	Remark	



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

A	[1]	

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

	r.	1 7
		I

Cell A contains haemoglobin.

(iii) What is the function of haemoglobin?

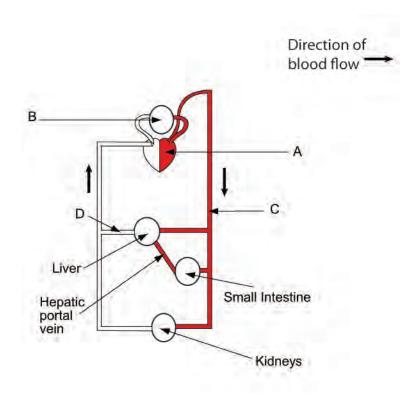
_____[1]

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

_____[2]

ne part of the bloc	d sample labelle	ed D is a pale y	vellow liquid.		Examiner Or
) Name the pale	yellow liquid D	and give its fu	nction.		
				[2]	
) Which of the pain clotting?	arts of the blood	sample, A, B,	C, or D is invol	lved	
	_			[1]	
i) Explain why c	lotting is necessa	ary.			
				[2]	

The diagram shows part of the circulatory system.



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

Organ A	[1]

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

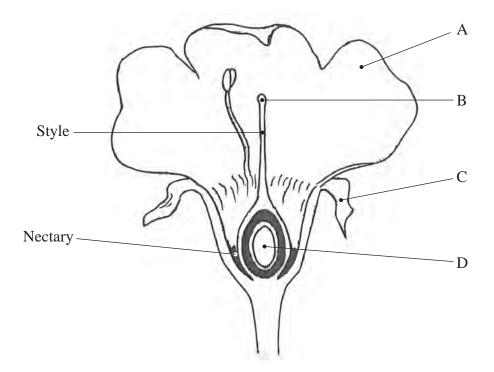
(c) Complete the table of blood vessels.

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

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[5]

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





- 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		

(iii) What is pollination?

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

1. [1]

2. ______[1]

(b) The diagram shows half an apple.



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(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]

((iii)	Suggest	why t	he seed	must	have a	tough	outer	coat.
	. ,								

Examiner Only			
Marks	Remark		

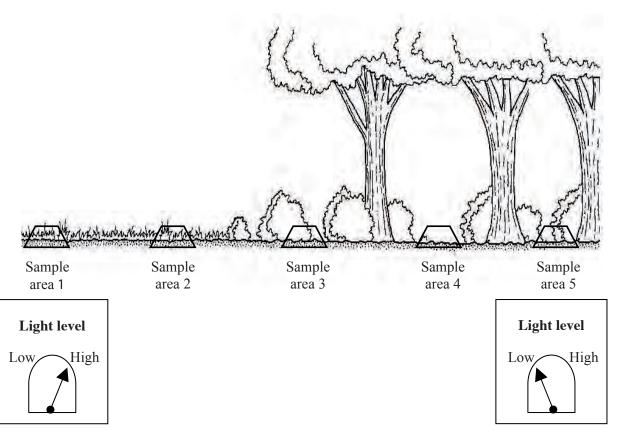
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			1

(iv) Complete the table.

Example	Type of dispersal	
Apple		
	Animal	
© iStockphoto / Thinkstock		
Creeping thistle		
© iStockphoto / Thinkstock		[1]
Vetch © Hemera / Thinkstock		[1]
Burdock		
		[1]
© iStockphoto / Thinkstock		[1]

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									
vith the apple.									
	Colour o	f reagent							
Test for	start	end							
Starch	Yellow/brown	Yellow/brown							
Sugar	Blue	Brick red							
Sugai	Diuc	Diffex red							
	1. 1								
iii) Explain what thes	e results show.								
iii) Explain what thes	e results show.								
iii) Explain what thes	e results show.								
iii) Explain what thes	e results show.								
iii) Explain what thes	e results show.	[2]							
iii) Explain what thes	e results show.	[2]							
iii) Explain what thes	e results show.	[2]							
iii) Explain what thes	e results show.	[2]							

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



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

Sample area	1	2	3	4	5
Number of plant species	12	11	7	4	3

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

[1]

	er Only
Marks	Remark

(ii)	Explain	how	light	is	used	by	plants
------	---------	-----	-------	----	------	----	--------

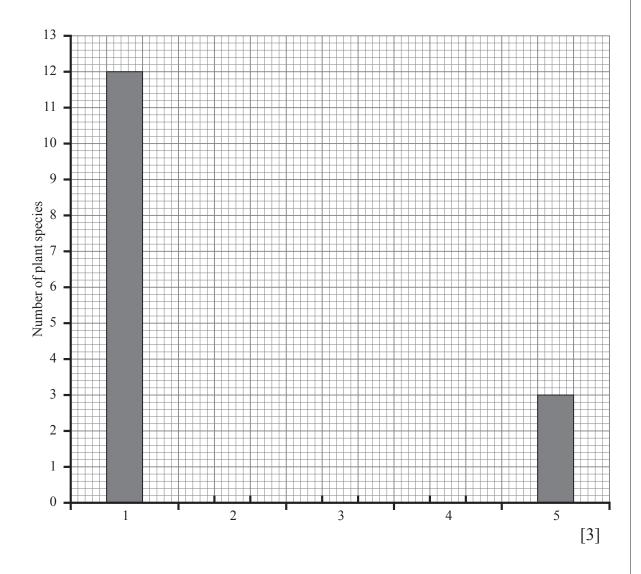
Examiner Only					
Marks	Remark				

[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.



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



A -© *iStockphoto / Thinkstock*

B - @ iStockphoto / Thinkstock

 $C - \otimes Brand \ X \ Pictures \ / \ Thinkstock$

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]

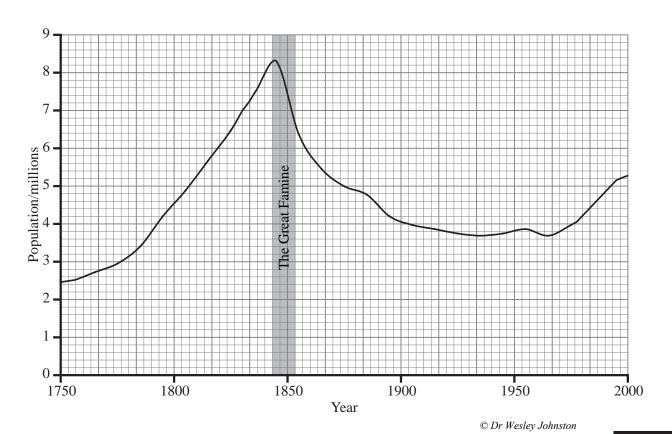
(iii) To which group do insects belong?

[1]

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

[1]

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



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

			F 2 3
			[2]

After the Great Famine, the population decreased mainly due to

(ii) What is emigration?

emigration.

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

1. _____[1]

2. [1]

5 (a) (i) Complete the table on organ systems.

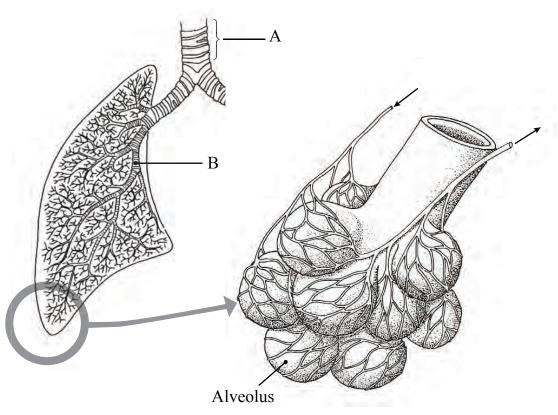
	Organ systems	Function	
	Skeletal		[1]
		Breaks down food for absorption	[1]
	Circulatory		[1]
		Controls and co-ordinates body functions	[1]
(ii)	What is meant by an o	organ system?	
			_[1]
(iii)		espiratory system is gas exchange. dvantage to take air in through the nose	

Marks	Remark	

[2]

(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.

|--|

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

•	
	[3
•	-

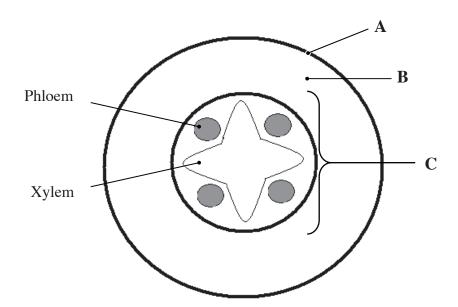
Quality of written communication [2]

c)	Use	this passage about smoking cigar	rettes to help answer the questi	ions.	Examine Marks	r Only Remark
	dise	ne UK about 120,000 people per yases. 82% of all deaths from lung bronchitis and emphysema and t disease are linked to smoking.	g cancer, 83% of all deaths	1		
	Peop the r risk over	ple who smoke between 1 and 14 risk of dying from lung cancer co increases the more cigarettes are 25 cigarettes a day have 25 time	5			
	smo smo	ny smokers would like to quit. Ten king the risk of getting lung cance ker and the risk of having a heart ang smoked.	eer has fallen to half that of a	10		
	(i)	How many people die of smokin	g-related diseases each year?			
				[1]		
	(ii)	Complete the table. (Lines 2–4)				
		Cause of death	Percentage linked to smoking			
		Bronchitis and emphysema		[1]		
			25	[1]		
				[1]		
		Describe the difference in the ris compared to 30 cigarettes per da		day		
				[2]		
	(iv)	Which chemical in cigarette smo	oke can cause lung cancer?			
				[1]		
	(v)	Suggest why people who smoke	cigarettes find it hard to stop.			
				Г17		

$$\checkmark$$
 = present \checkmark = absent

Cell structure	Plant cell	Animal cell
Cell wall	✓	
Cytoplasm		
Chloroplast		
Vacuole		×

(b) The diagram shows a section through a plant root.



(i) Name parts A, B and C.

A					

[1]

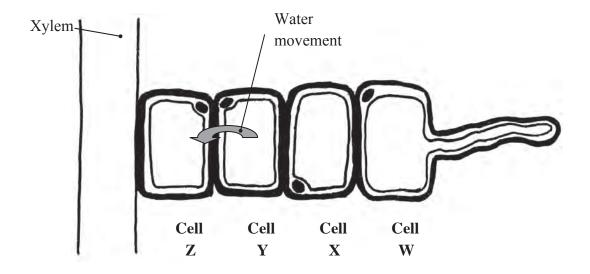
[1]

[1]

Examiner Only				
Marks	Remark			

			[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]
	L ^ J

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

(vi) Draw cell X enlarged three times.		Examiner Only	
		Marks	Remark
	[3]		
	[2]		
(vii) Name cell W and describe how it is adapted for its function			
	[3]		
	[2]		
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