

General Certificate of Secondary Education 2014

Ce	ntre Number
71	
Cand	didate Number

Agriculture and Land Use

Unit 1

Soils, Crops and Habitats

[GAL11]

MONDAY 2 JUNE, AFTERNOON

TIME

1 hour 15 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 nine** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 75.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question. Quality of written communication will be assessed in questions 5 and 9.

For Examiner's use only				
Question Number	Marks			
1				
2				
3				
4				
5				
6				
7				
8				
9				

Total	
Marks	

(a) Look at the photographs of these three plants. 1 **Examiner Only** Identify the plants shown in each photograph. Draw lines to match each plant to its common name. wheat © iStock/ Thinkstock maize potato © iStock/ Thinkstock clover © Hemera/ Thinkstock [3] **(b)** Name **two** weeds that are found in grasslands in Northern Ireland. (Circle) your answers from the list below: barley chickweed cocksfoot perennial ryegrass dandelion [2]

2 (a) Deciduous forests are a habitat for many species.

Examiner Only				
Marks	Remark			



© Simon Fraser / Science Photo Library

(i)	What is a habitat ?						
(ii)	Describe how you would measure the number of plant species in a habitat.						
	[4]						

ii) What does biodiversity mean? [1] iii) Identify three ways that farmers can increase biodiversity on their land. Circle the three correct answers from the list below: plant hedges use chemicals for weed control prevent soil erosion protect plant species grow the same crop on a large scale [3] iii) Give two reasons why it is important to increase biodiversity. 1		ace for farm land. This has reduced biodiversity in Northern Ireland.	
ii) Identify three ways that farmers can increase biodiversity on their land. Circle the three correct answers from the list below: plant hedges use chemicals for weed control prevent soil erosion protect plant species grow the same crop on a large scale [3] iii) Give two reasons why it is important to increase biodiversity. 1	i)	What does biodiversity mean?	
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use chemicals for weed control prevent soil erosion protect plant species grow the same crop on a large scale [3] iii) Give two reasons why it is important to increase biodiversity. 1	(Circle the three correct answers from the list below:	
protect plant species grow the same crop on a large scale [3] iii) Give two reasons why it is important to increase biodiversity. 1		plant hedges	
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1		grow the same crop on a large scale [3]	
1	iii)	Give two reasons why it is important to increase biodiversity.	
2	,		
		[1]	
[1]		2	
		[1]	

(c)	Many peop	le work in	conservation	in	Northern	Ireland
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Examiner Only			
Marks	Remark		

This advertisement for a conservation worker was in a newspaper.

JOB ADVERTISEMENT

CONSERVATION WORKER NEEDED

- must like working outdoors
- must be interested in nature

(i)	What does conservation mean?				
		[1]			
(ii)	Describe any two tasks that a conservation worker might do. 1				
	2				
		[2]			

3 (a) (i) The curlew is a priority species in Northern Ireland.

Name **one** other priority species in Northern Ireland.

Examiner Only

Marks Remark

[1]



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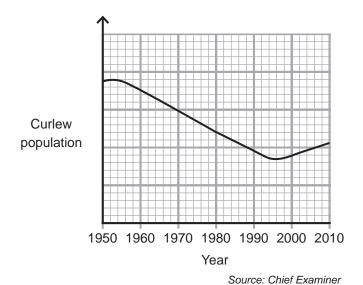
(ii) Which of the following is a common habitat for a curlew?

Circle the correct answer:

forest town centre wetland [1]

6

(b) The graph below shows the trend in the **curlew population** at Lough Neagh between 1950 and 2010.



	(i)	Use your knowledge and the graph opposite to complete the sentences below.				Examine Marks	er Only Remark	
		Choose	the missing wo	rds from the foll	owing list:			
not c	han	ged	decreased	increased	pollution	run-off		
		The curl	ew population a	nt Lough Neagh	has			
		from 195	50 to 1995 as m	ore mechanised	d farming was	developed.		
		Governn	nent regulations	s help to control	the use of ferti	liser on		
		farms. T	herefore, there	is less water		·		
		Since 19	995, the curlew	population at Lo	ough Neagh ha	S		
				because Lougl	n Neagh becan	ne an Area		
		of Specia	al Scientific Inte	erest (ASSI).		[3]		
	(ii)		ow is this show	at Lough Neagh n in the graph o	pposite?	·		
(c)			special Scientific to conserve wild	: Interest (ASSI) Ilife.	is a protected	area		
	Exp		being an ASSI	benefits priority	species in Nor	thern		
						[2]		

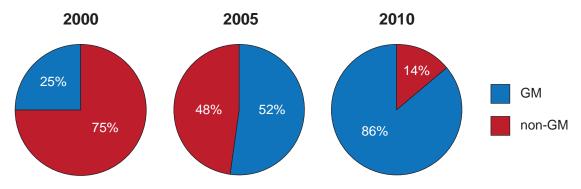
4	In an effort to increase world food production, some countries grow
	Genetically Modified (GM) crops.

Examiner Only			
Marks	Remark		

(a) Define what is meant by Genetically Modified (GM) crops.

_____[2]

The pie charts below show the percentage (%) of GM and non-GM corn grown in the USA in the years 2000, 2005 and 2010.



Source: Chief Examiner

(b) Describe the trend shown in these pie charts.

_____[1]

(c) (i) Growing GM crops increases food production. Give **one** other advantage of growing GM crops.

[1]

(ii) Give one disadvantage of growing GM crops.

_____[1]

	wing GM crops is not allowed in Northern Ireland. Iorthern Ireland, other farming methods are used to increase crop d.		Examin Marks	er Only Remark
(d)	Two factors that impact on crop yield are:			
	weatherpests and diseases			
	Discuss how farmers in Northern Ireland can reduce the negative impact of these two factors.			
	• Weather			
		[2]		
	Pests and diseases			
		[2]		

Consider the following steps in your answers: • production • harvesting • preservation • storage In this question you will be assessed on your written communication skills including the use of specialist terms.	Discuss how farmers can produce the best quality silage with maximum yield.	Examiner Only Marks Remark
 harvesting preservation storage In this question you will be assessed on your written communication	Consider the following steps in your answers:	
In this question you will be assessed on your written communication skills including the use of specialist terms.	harvestingpreservation	
	In this question you will be assessed on your written communication skills including the use of specialist terms.	

	Exami Marks	iner Only Remark
[9]		

6 Protected cultivation is an important way to grow soft fruit in Northern Ireland.

Examin	er Only
Marks	Remark

_ [2]

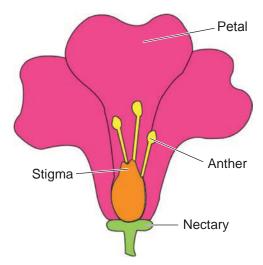


© Chris Hellier / Science Photo Library

(a)	Nar	me the type of protected cultivation shown in the photograph.	[4]
(b)	cult	te one disadvantage of growing soft fruit in this type of protected ivation.	[1]
(c)	God (i)	od quality soil is required to grow soft fruit. Nitrogen (N) is an essential element found in soil. Name two other essential elements found in soil.	[2]
	(ii)	Explain why plants need nitrogen (N).	[1] [1]

[1]	

7 (a) Below is a diagram of an insect-pollinated flower.



Source: Chief Examiner

Examiner Only

(i)	Use the diagram to describe two ways that this flower is adapted for insect pollination.

1.		

(ii) Bees pollinate flowers. Name **one other** insect that might pollinate flowers.

	[1
--	----

(b) The following statements describe the process of **fertilisation**.

1.	Pollen lands on the stigma and grows a pollen tube
2.	Insects transfer pollen to the flower
3.	The fertilised egg cell (ovule) develops into an embryo
4.	The nucleus of the pollen grain fertilises the egg cell (ovule) nucleus

Put these statements in the correct order. The first one has been done for you.

2			Γ 1	
	 		Γ.	

Suggest one way the population.	at farmers can	help to increas	se the bee		
				[1]	
				[.,]	

8 (a) (i) Complete the equation for photosynthesis. Choose your answers from the list below.

soil	glucose	nitrogen	carbon dioxide	
	+ water	$+$ light energy \rightarrow		_ + oxygen
			[2]	Examiner Only

(ii) Where does photosynthesis take place in green plants?

[1]

Marks Remark

(b) The photograph below shows part of a rainforest. A lot of photosynthesis takes place in rainforests.

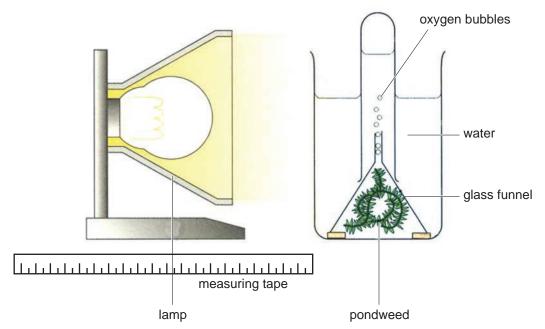


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Explain why rainforests are important for maintaining life on earth.	
	[2]

(c) Look at the diagram below. It shows how Sarah carried out an experiment to investigate the effect of light on photosynthesis.





© Science for You (Biology) by Nick Paul, published by Nelson Thornes, 2002. Reproduced by kind permission of Oxford University Press.

During this experiment, Sarah changed the distance between the lamp and the beaker.

The pondweed got more light when the lamp was closer to the beaker. At each distance, she measured the volume of oxygen released in 5 minutes.

Sarah's results are shown in the table below.

Distance between lamp and beaker/cm	Volume of oxygen released in 5 minutes/cm ³
10	5
20	3
30	1

Describe and explain the results shown in the table above.			

Different sources of renewable energy can be used in different locations.	Examir Marks	ner Only Remark
Evaluate two sources of renewable energy which could be used for energy production in Northern Ireland.		
In your answer, include:		
 location cost efficiency environmental impact 		
In this question you will be assessed on your written communication skills including the use of specialist terms.		

		Examin Marks	
		Marks	Remark
	[0]		
	_ [9]		
	•		
THIS IS THE END OF THE QUESTION PAPER			

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