

		Centre Number				
Candidate Number						
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General Certificate of Secondary Education 2016

Agriculture and Land Use

Unit 1 Soils, Crops and Habitats



[GAL11] FRIDAY 27 MAY, 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 6 and 9.

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

Total	
Marks	

- 1 The photographs show four different plants.
 - (a) Draw a line to link each plant to its name.

Examiner Only			
Marks	Remark		

Plant



© Nigel Cattlin / Science Photo Library



perennial ryegrass



© Wolfgang Hoffman / Agstockusa / Science Photo Library





© vsanderson / iStock / Thinkstock





© Matt Johnston / Science Photo Library

white clover

2

[3]

)	Give two reasons why it is important to continually produce r varieties of grass.	new
	•	
	1	
	2	
		_ [-]
)	What name is given to a person employed to develop new varieties of grass?	
		[1]

2 Grass is the most common crop grown in Northern Ireland.

Examiner Only		
Marks	Remark	

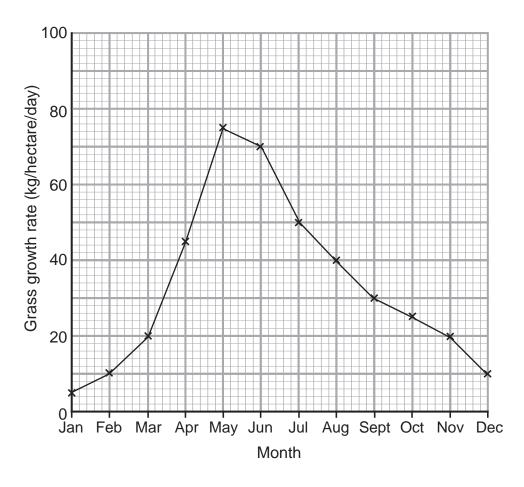
(a) Name one other common crop grown in Northern Ireland.

	[1
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(b) Give one method of preserving grass.

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_____
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(c) The graph below shows the grass growth rate in each month in a hectare of land.



(i)	Describe the trend	in the graph	from January to	December.
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[2	2]

	(ii)	Use the graph to give the grass growth rate in September.		Examin Marks	
		kg/hectare/day	[1]	Walks	Remark
(d)	(i)	Use the graph to choose a suitable month for harvesting the grass.	[4]		
			[1]		
	(ii)	Suggest two reasons why this is the most suitable month for harvesting grass.			
		1			
		2			
			_ [4]		
	(iii)	Weeds are unwanted plants in a crop. Name one weed farmers do not want in their grassland.			
			[1]		

(a) [Defi	ne the term 'ecosystem'.		Examin Marks	er (
-			[2]		
Ecos	syste	ems are affected by both biotic and abiotic factors.			
b) ((i)	What is an 'abiotic' factor?			
			[1]		
((ii)	Give an example of an abiotic factor.			
			_ [1]		
(Name the apparatus you would use to measure the abiotic fa you have named in part (ii) .	ctor		
			_ [1]		
((iv)	How would you make sure the measurements are reliable?			
			_ [1]		

(c) The photograph shows bluebells growing in deciduous woodland.

Examiner Only			
Marks	Remark		



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Bluebells are adapted to living in deciduous woodland.

(i)	Give two adaptations of bluebells living in deciduous woodland.
	1

2. ______[2]

(ii) Bluebells are protected by law to preserve them for future generations.

Name an organisation which helps to protect and maintain areas where protected plants grow.

_____ [1]

(iii) Many plants are found in hedgerows.

Name **two** plant species that can be used for hedging in Northern Ireland.

1. _____

2. ______ [2

4 Plants make their own food using the process of photosynthesis.

Examin	er Only
Marks	Remark

(a) (i) Complete the equation for photosynthesis by writing in the boxes.

	energy			
+ water		glucose	+	
	chlorophyll			[2]

(ii) What is the energy source for photosynthesis?

[1]

(b) Plants store the glucose made by photosynthesis as starch. The presence of starch in a leaf shows that photosynthesis has taken place.

The picture below shows a leaf which could be used to find out if plants need chlorophyll for photosynthesis.



© Dr Keith Wheeler / Science Photo Library

(i)	In the picture above add an X to the part of the leaf where you	
	expect starch to be found.	[1

8

[2]

5 Most fertilisers contain nitrogen.

Examin	er Only
Marks	Remark

(a) Why do plants need nitrogen?

		[2

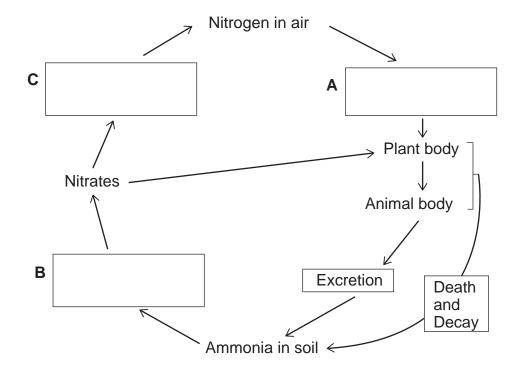
(b) (i) A, B and C are three processes that occur in the nitrogen cycle.

Complete the diagram of the nitrogen cycle below by filling in the boxes using the correct words from the list.

Choose from:

Nitrogen fixation : Denitrification : Nitrification : Combustion

[3]



(ii) What type of organism carries out processes A, B and C?

_____[1]

(iii) Why do farmers not want process C occurring in their soil?

______[1]

Climate change has affected many regions across the world.	Examiner Only Marks Remark
Discuss how climate change has affected Northern Ireland .	
In your answer you should include the following:	
the effects of climate change on crop production	
the effects of climate change on the weather patterns	
how farmers can reduce the risk of flooding downstream.	
In your answer, you will be assessed on your written communication skills including the use of specialist terms.	-
	-
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	Examin	er Only
	Marks	Remark
[O]		
[9]		

7 (a) The table below shows how different fertiliser treatments affect the average yield of wheat in one hectare of land.

Examiner Only		
Marks	Remark	

Fertiliser treatment	Average yield of wheat (tonnes/hectare)
none	4.5
nitrogen only	7.5
nitrogen and phosphorus	9.0
nitrogen, phosphorus and potassium	11.0
farmyard manure	12.5
complete artificial fertiliser	13.0

Use the data in the table to describe the effect of using nitrogen only on the average yield of the wheat.
[2]

(ii) If the farmer has 50 hectares of land, how much more wheat would they expect to produce using farmyard manure compared with nitrogen only? You should show your working out.

(iii) Suggest **one** reason why using farmyard manure has produced a greater average yield of wheat than using nitrogen, phosphorus and potassium.

		r.

(iv) Suggest two advantages of using artificial fertiliser instead of farmyard manure.

1		
2		

(b) Making compost has many advantages. The photograph shows a gardener mixing compost.

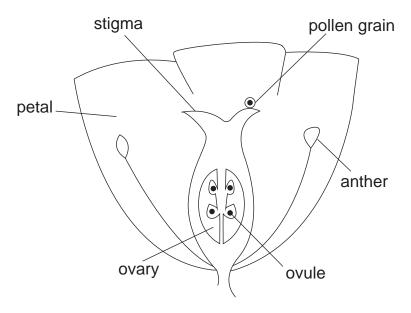
Examiner Only			
Remark			



© Bjorn Svensson / Science Photo Library

(i)	Give one environmental advantage of adding compost to the soil.		
		[1]	
(ii)	Give one economic benefit to the gardener of composting.		
		[4]	

8 (a) The following diagram shows a section through a flower which has just been pollinated.



Source: Chief Examiner

Fertilisation is the next step after pollination. Describe the process of fertilisation.						
[4]						

(b) The photograph below shows the inside of a beehive.

Examiner Only			
Marks	Remark		



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		Why are farmers concerned about the decrease in the bee opulation?				
			[2]			
(c)	(i)	Apart from insect pollination, name one other way that plants cabe pollinated.				
	(ii)	Give an example of a plant that is pollinated in the way you have given in (c)(i) .	[1]			
			[1]			

	armers can use the organic matter content of a soil to indicate soil rtility.	Exa Mark	miner Only S Remark
	escribe how you would measure the organic matter content of a soil ample and then calculate the percentage of organic matter present.		
In	your answer you should include the following:		
•	the equipment you would use		
•	the method you would use		
•	how you would calculate the percentage of organic matter content of the soil sample.		
	your answer, you will be assessed on your written communication kills including the use of specialist terms.		
		-	
		-	
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		1	1

		Marks	Remark
	[9]		
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THIS IS THE END OF THE QUESTION PAPER			
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