



General Certificate of Secondary Education  
2014

## Agriculture and Land Use

### Unit 1

### Soils, Crops and Habitats

[GAL11]

MONDAY 2 JUNE, AFTERNOON

Centre Number

71

Candidate Number

#### 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	
<b>Total Marks</b>	

1 (a) Look at the photographs of these three plants.

Identify the plants shown in each photograph.  
Draw lines to match each plant to its common name.



© iStock/ Thinkstock

wheat



© iStock/ Thinkstock

maize

potato



© Hemera/ Thinkstock

clover

[3]

(b) Name **two** weeds that are found in grasslands in Northern Ireland.

**Circle** your answers from the list below:

barley

chickweed

cocksfoot

dandelion

perennial ryegrass

[2]

Examiner Only	
Marks	Remark



(b) In the past, the trees in many deciduous forests were cleared to make space for farm land. This has reduced biodiversity in Northern Ireland.

(i) What does **biodiversity** mean?

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

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

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

Examiner Only	
Marks	Remark



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

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

\_\_\_\_\_

[1]



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

Circle the correct answer:

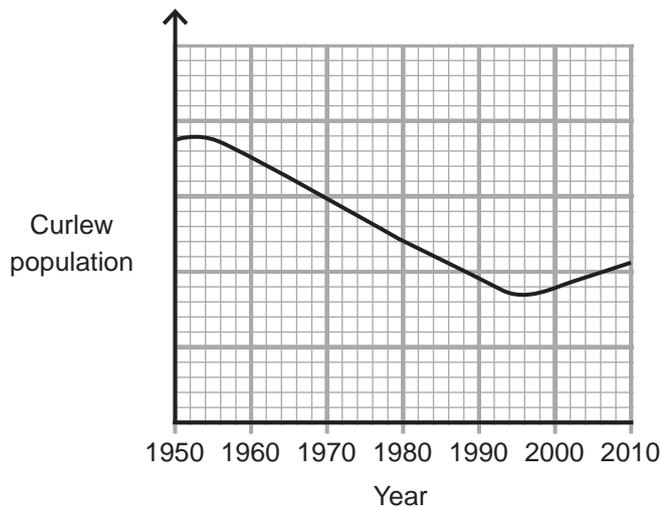
forest

town centre

wetland

[1]

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



Source: Chief Examiner

Examiner Only	
Marks	Remark

- (i) Use your knowledge and the graph opposite to complete the sentences below.

Choose the missing words from the following list:

**not changed      decreased      increased      pollution      run-off**

The curlew population at Lough Neagh has \_\_\_\_\_  
from 1950 to 1995 as more mechanised farming was developed.

Government regulations help to control the use of fertiliser on  
farms. Therefore, there is less water \_\_\_\_\_.

Since 1995, the curlew population at Lough Neagh has  
\_\_\_\_\_ because Lough Neagh became an Area  
of Special Scientific Interest (ASSI). [3]

- (ii) The curlew population at Lough Neagh had still not recovered by  
2010. How is this shown in the graph opposite?

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

- (c) An Area of Special Scientific Interest (ASSI) is a protected area  
established to conserve wildlife.

Explain how being an ASSI benefits priority species in Northern  
Ireland.

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

Examiner Only	
Marks	Remark

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

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

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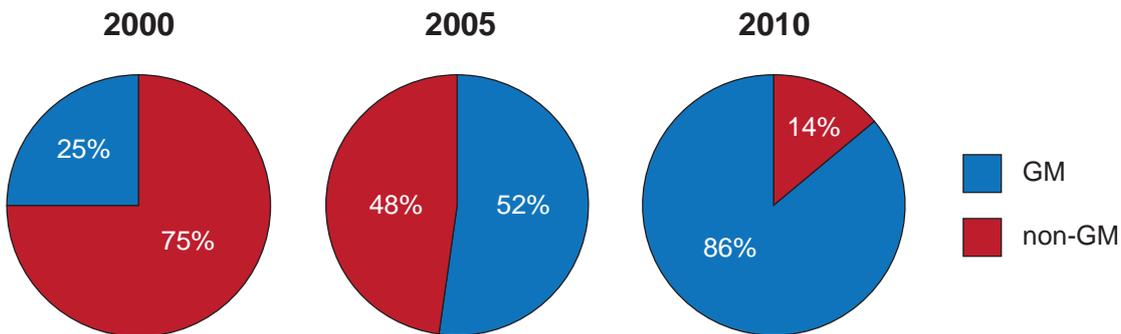
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 [2]

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



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

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 [1]

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

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 [1]

(ii) Give **one** disadvantage of growing GM crops.

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 [1]

Examiner Only	
Marks	Remark





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[9]

Examiner Only	
Marks	Remark

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



© Chris Hellier / Science Photo Library

- (a) Name the type of protected cultivation shown in the photograph.

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

- (b) State **one** disadvantage of growing soft fruit in this type of protected cultivation.

Explain your answer.

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

- (c) Good quality soil is required to grow soft fruit.

- (i) Nitrogen (N) is an essential element found in soil.  
 Name **two** other essential elements found in soil.

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

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

- (ii) Explain why plants need nitrogen (N).

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

Examiner Only	
Marks	Remark

(d) Compost can be made by recycling plant waste.

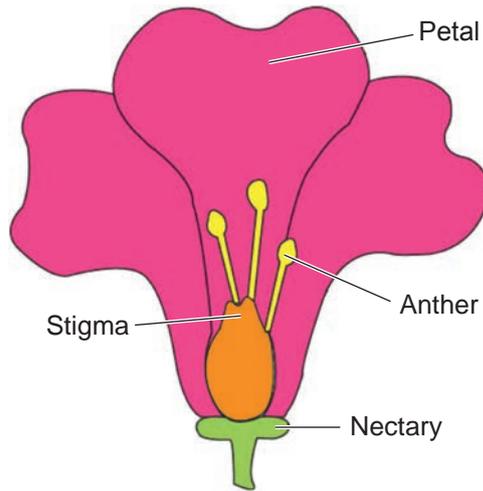
Give **one** benefit of composting.

\_\_\_\_\_

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

Examiner Only	
Marks	Remark

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



Source: Chief Examiner

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

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

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

Examiner Only

Marks Remark

(c) Bees are important for pollinating flowers. However, the bee population is declining in the UK.

Suggest **one** way that farmers can help to increase the bee population.

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

Examiner Only	
Marks	Remark

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

soil

glucose

nitrogen

carbon dioxide

\_\_\_\_\_ + water + light energy → \_\_\_\_\_ + oxygen

[2]

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

\_\_\_\_\_

[1]

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



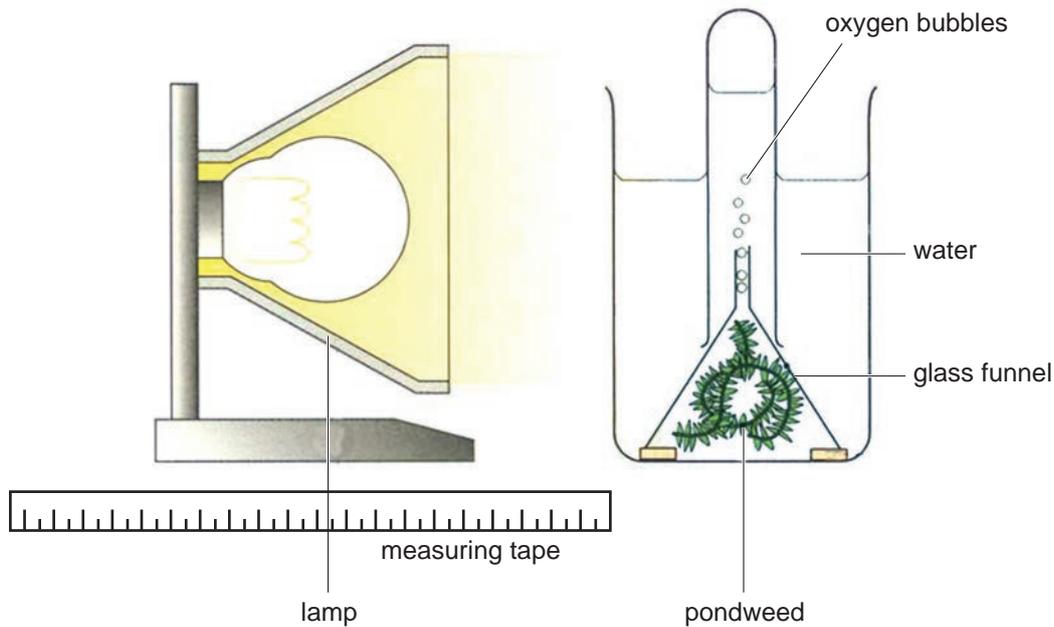
© iStock/ Thinkstock

Explain why rainforests are important for maintaining life on earth.

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

Examiner Only	
Marks	Remark

- (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 <sup>3</sup>
10	5
20	3
30	1

Describe and explain the results shown in the table above.

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[3]

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Marks	Remark



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[9]

Examiner Only	
Marks	Remark

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**THIS IS THE END OF THE QUESTION PAPER**

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