



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	

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



© Simon Fraser / Science Photo Library

(i) What is a **habitat**?

_____ [1]

(ii) Describe how you would measure the **number** of plant species in a habitat.

_____ [4]

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:

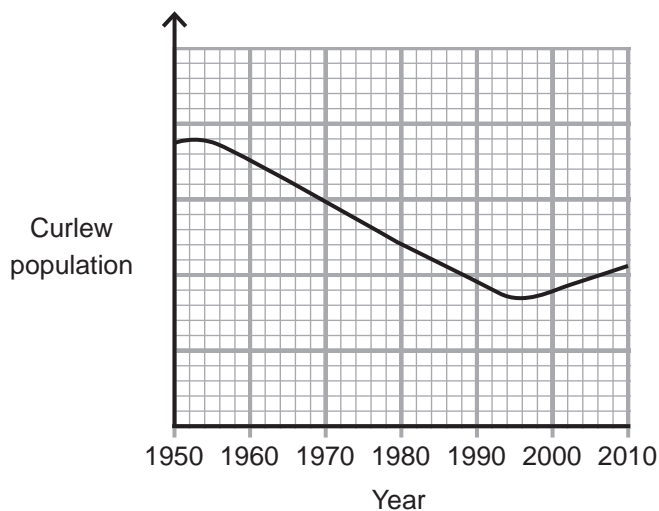
forest

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

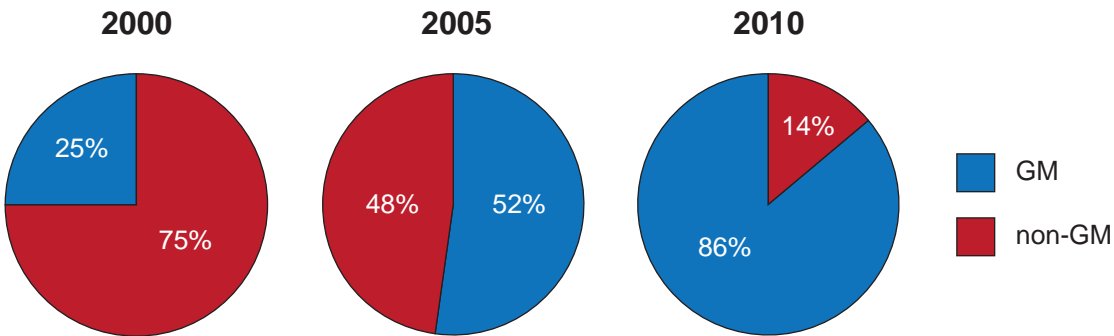
Examiner Only	
Marks	Remark

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.

[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]

Examiner Only	
Marks	Remark

[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

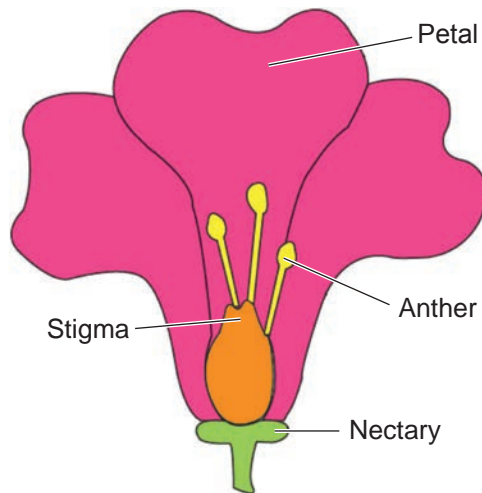
(d) Compost can be made by recycling plant waste.

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.



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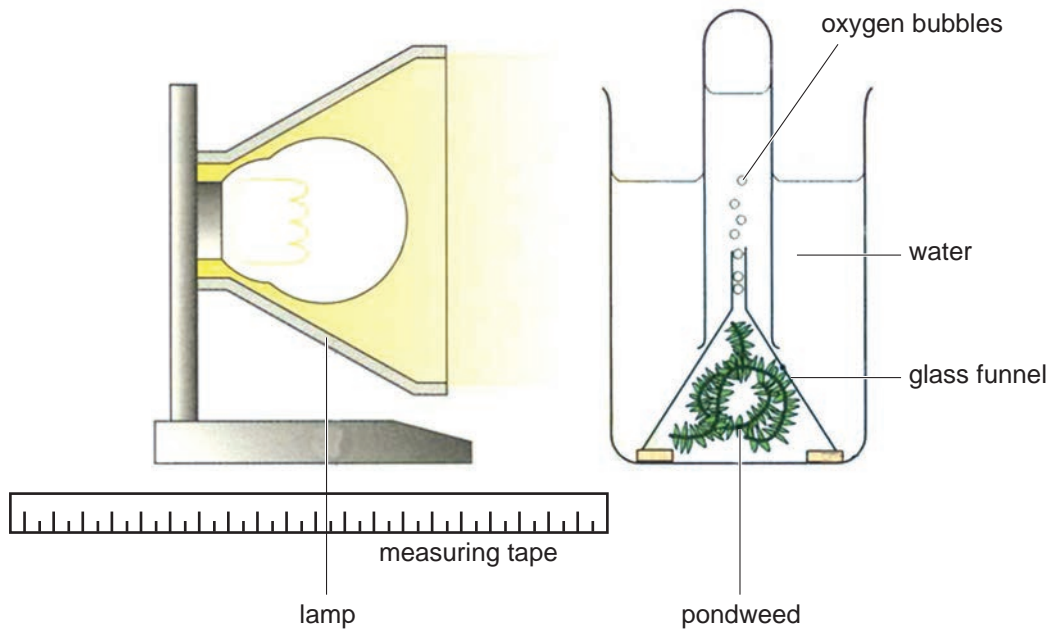
Explain why rainforests are important for maintaining life on earth.

_____ [2]

Examiner Only	
Marks	Remark

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(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.
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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.

[3]

Examiner Only	
Marks	Remark

[9]

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Marks	Remark

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