



Rewarding Learning

General Certificate of Secondary Education

Centre Number

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Candidate Number

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# Agriculture and Land Use

Unit 1  
Soils, Crops and Habitats

**MV18**

[GAR11]

## ASSESSMENT

Assessment Level of Control    Tick the relevant box (✓)

**Time**

Controlled Conditions	<input type="checkbox"/>
Other	<input type="checkbox"/>

1 hour 15 minutes, plus your additional time allowance.

### 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 at the end of each question indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in Questions **7** and **9**.

1 (a) The photographs below show four types of farm machinery.

Draw a **line** to match the photograph to each farm machine. [4 marks]

A



Disc harrow

B



Plough

C



Seed drill

D



Roller

**(b)** The stages of preparing the ground for growing a new crop are shown in the photographs on page 2. Place these photographs in the correct order using the letters **A, B, C** and **D**. [2 marks]

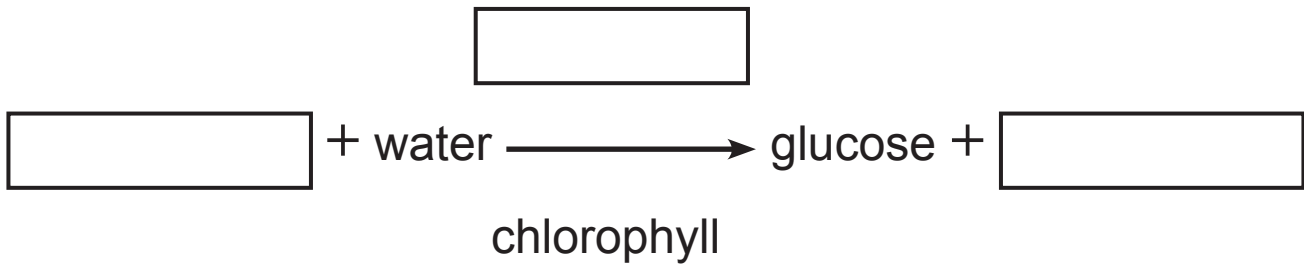
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2 (a) Complete the word equation for **photosynthesis**.  
[3 marks]

Choose your answers from the list below.

- nitrogen
- carbon dioxide
- light
- oxygen
- starch



(b) (i) Glucose can be stored as starch in a plant's leaves. Describe how you would test a leaf for the presence of starch. [3 marks]

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(ii) Give one safety precaution when carrying out this experiment. [1 mark]

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3 Potatoes provide over £20 million per year to the Northern Ireland economy. Potatoes can be classified into one of three groups, **first earlies**, **second earlies** and **main crop potatoes**.

(a) Jill wants to produce a crop of first earlies which will be planted in early spring and ready for harvesting in early summer. The time it takes the seed potato to grow to a potato plant ready for harvesting can be affected by many factors, such as soil type.

(i) What soil type would be best suited to growing an early potato crop? [1 mark]

Soil Type \_\_\_\_\_

(ii) Describe and explain why you have chosen this soil type. [2 marks]

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(b) (i) Suggest a risk of growing **first earlies**. [1 mark]

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(ii) Give **two** reasons why a farmer may want to grow **first earlies** instead of **later** harvesting potatoes. [2 marks]

1. \_\_\_\_\_

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2. \_\_\_\_\_

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(c) After harvesting, the potatoes are processed and stored like any other farm crop.

Describe how potatoes are stored and what factors must be controlled in storage to ensure a healthy desirable product. [3 marks]

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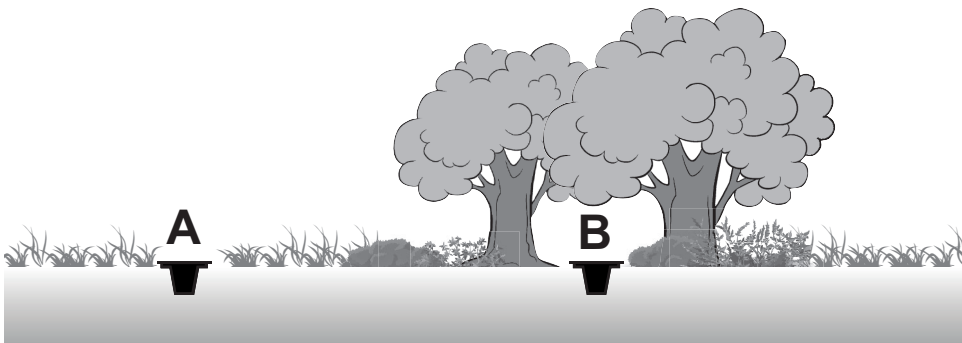
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- 4 A group of students carried out an investigation to compare the biodiversity of two different areas in their school grounds. They placed pitfall trap A in one area and pitfall trap B in another area. The diagram shows the locations of both pitfall traps.



- (a) The number of invertebrates in each pitfall trap was counted each day for five days. The results are shown in the table below.

Day	Number of invertebrates found	
	Pitfall trap A	Pitfall trap B
1	13	27
2	7	16
3	21	35
4	14	22
5	20	30
Average	_____	26

- (i) Calculate the average number of invertebrates collected in pitfall trap **A** over the five days. Write your answer into the table on page 8. [2 marks]

Show your working.

- (ii) Suggest **one** reason why there were more invertebrates collected in pitfall trap **B** than pitfall trap **A**. [1 mark]

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- (iii) Describe **two** factors students should have kept the same to ensure a fair test. [2 marks]

1. \_\_\_\_\_
2. \_\_\_\_\_

- (b) (i) What else could have been recorded in the **same** investigation to help students measure the biodiversity of the two different areas? [1 mark]

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(ii) Describe **one** way the students could have improved the reliability of their investigation. [1 mark]

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(iii) What is the job title of someone who carries out biodiversity investigations? [1 mark]

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(c) Describe **two** ways in which the biodiversity in your school grounds could be improved. [2 marks]

1. \_\_\_\_\_

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2. \_\_\_\_\_

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**(Questions continue overleaf)**

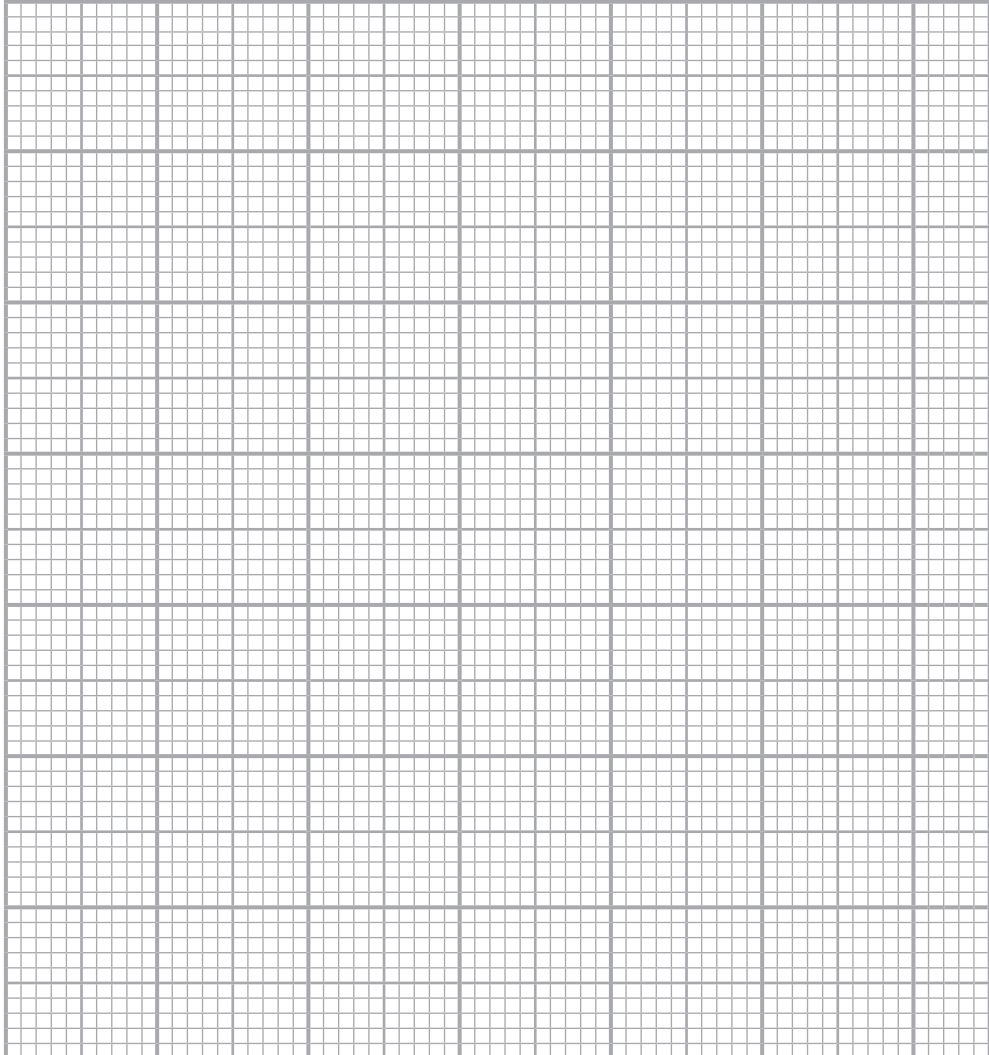
- 5 Grass is the most common crop in Northern Ireland but many other crops can also be grown successfully.

The total yield of four common crops grown in Northern Ireland is shown in the table below.

<b>Crop</b>	<b>Total yield (thousand tonnes)</b>
Potatoes	130
Oats	12
Wheat	60
Barley	125

(a) Using the grid provided below, plot a bar chart of **Total yield** versus **Crop**. Choose a suitable scale and include labels on the bars. [4 marks]

Total yield (thousand tonnes)



Crop

- (b)** The total land area harvested for oats was 2300 hectares. Using the information in the table on page 12, calculate the average yield per hectare for oats.  
[2 marks]

Show your working.

\_\_\_\_\_ tonnes/hectare

Apples are also grown in Northern Ireland. They can be used to produce cider and apple sauce.

- (c)** Choose **one** of the crops in the table opposite and state **two** products it can be used to produce: [2 marks]

Chosen crop: \_\_\_\_\_

Products made from the crop:

1. \_\_\_\_\_

2. \_\_\_\_\_

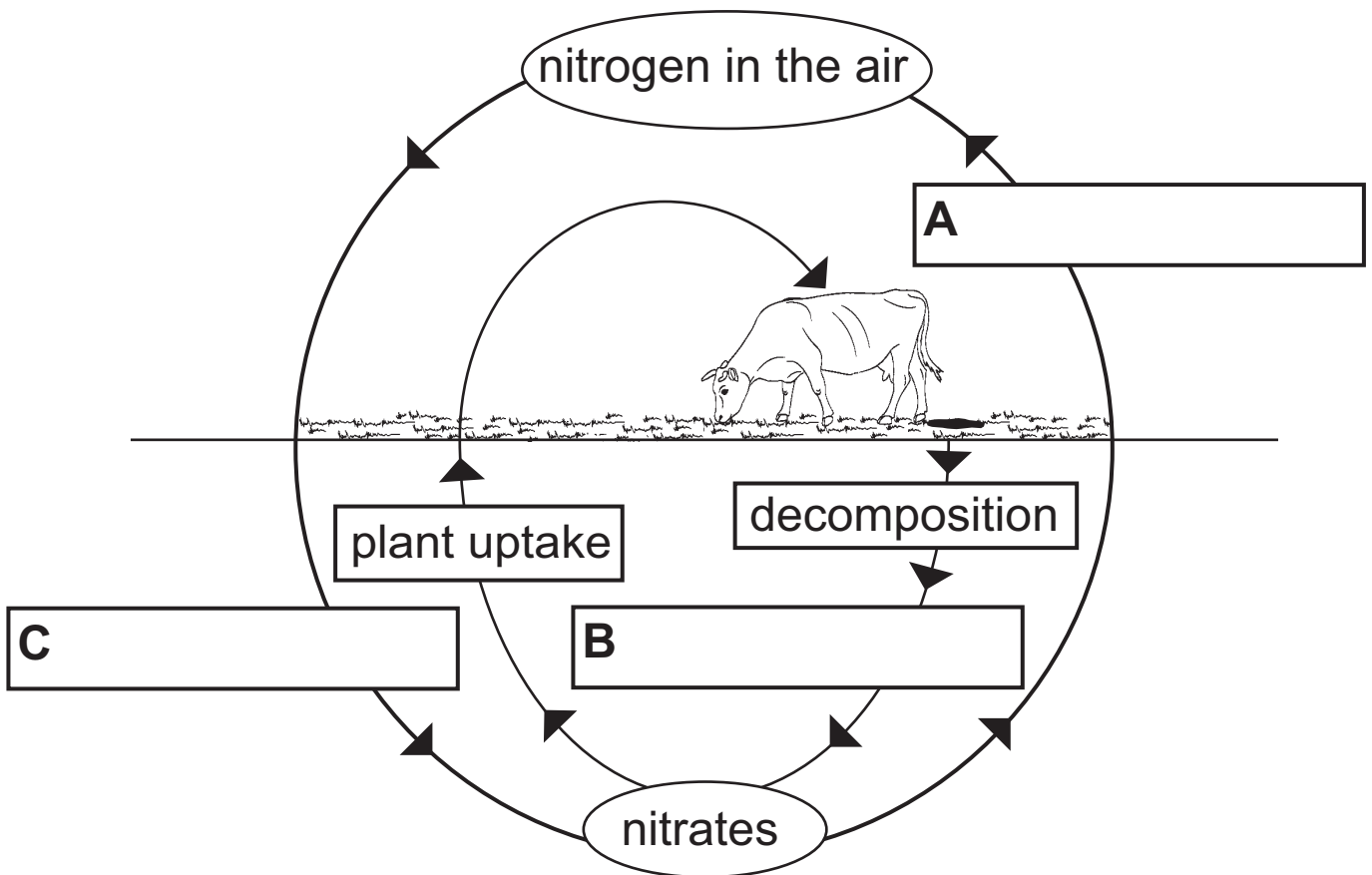
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**(Questions continue overleaf)**

6 Nitrogen is needed by all living things. Plants use nitrogen in the form of nitrates.

(a) A simplified diagram of the nitrogen cycle is shown below.

(i) Label the processes **A**, **B** and **C** in the diagram using the words from the list below. [3 marks]

- Assimilation
- Nitrification
- Respiration
- Nitrogen fixation
- Denitrification



(ii) What type of organism carries out the processes **A**, **B** and **C**? [1 mark]

\_\_\_\_\_

(iii) State **two** other important minerals needed by plants. [2 marks]

1. \_\_\_\_\_

2. \_\_\_\_\_

Spreading artificial fertiliser increases the amount of nitrates in the soil.

(iv) State **two** other ways farmers can help increase the amount of nitrates in the soil. [2 marks]

1. \_\_\_\_\_

2. \_\_\_\_\_

(b) Leaching is a process by which nitrates are washed out of the soil and into waterways.

(i) Suggest **two** disadvantages of leaching. [2 marks]

1. \_\_\_\_\_

2. \_\_\_\_\_

(ii) Describe **two** ways a farmer could reduce the risk of leaching when spreading fertiliser. [2 marks]

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_





- 8 (a) (i) Using your knowledge, complete the sentence below. [2 marks]

**DAERA** is an acronym for the **Department of Agriculture, \_\_\_\_\_** and \_\_\_\_\_ **Affairs.**

- (ii) Describe **two** ways that DAERA helps farmers. [2 marks]

1. \_\_\_\_\_

\_\_\_\_\_

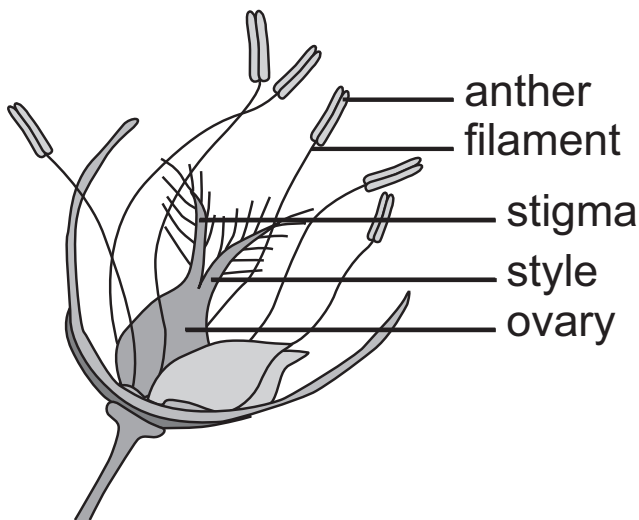
2. \_\_\_\_\_

\_\_\_\_\_

- (b) Name one other agency which helps the environment. [1 mark]

\_\_\_\_\_

9 A diagram of a wheat flower is shown below.



Use the diagram to help describe the differences between a wheat flower and an insect-pollinated flower. Describe the process of pollination in a wheat flower and give the conditions needed for seed germination. [9 marks]

In your answer you should include:

- at least **three** differences between a wheat flower and an insect-pollinated flower
- a description of the pollination process in a wheat flower
- **two** conditions needed for the new seed to germinate

**In this question you will be assessed on your written communication skills including the use of specialist terms.**

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**This is the end of the question paper**

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Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
<b>Total Marks</b>	

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