



Rewarding Learning

General Certificate of Secondary Education
2016

Centre Number

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Candidate Number

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Agriculture and Land Use

Unit 1
Soils, Crops and Habitats

[GAL11]

FRIDAY 27 MAY, AFTERNOON



GAL11

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	
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3 (a) Define the term 'ecosystem'.

 [2]

Ecosystems 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]

(iii) Name the apparatus you would use to measure the abiotic factor you have named in **part (ii)**.

 [1]

(iv) How would you make sure the measurements are reliable?

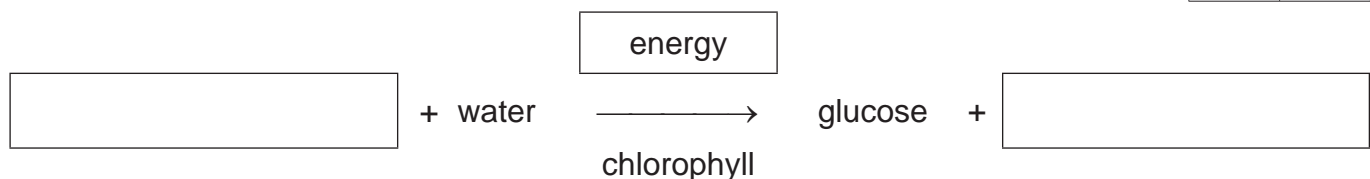
 [1]

Examiner Only	
Marks	Remark

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

Examiner Only	
Marks	Remark

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



[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]

(ii) Explain why there is no starch found in the other part of the leaf.

[2]

5 Most fertilisers contain nitrogen.

(a) Why do plants need nitrogen?

_____ [2]

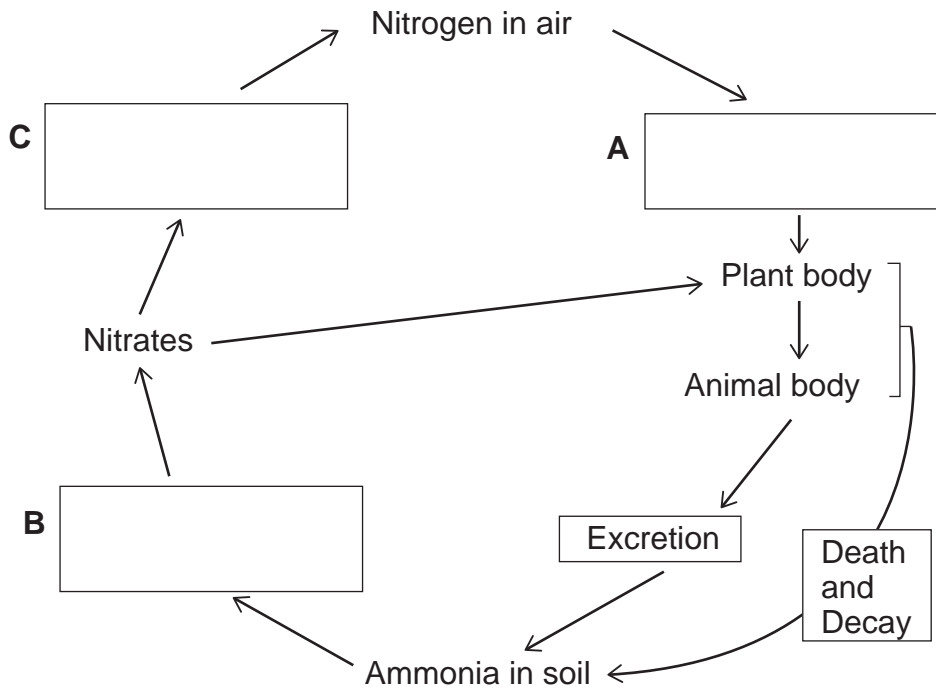
(b) (i) **A, B and C** are **three** processes that occur in the nitrogen cycle.

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]

Examiner Only	
Marks	Remark

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

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

- (i) 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.**

_____ [3]

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

_____ [1]

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

1. _____

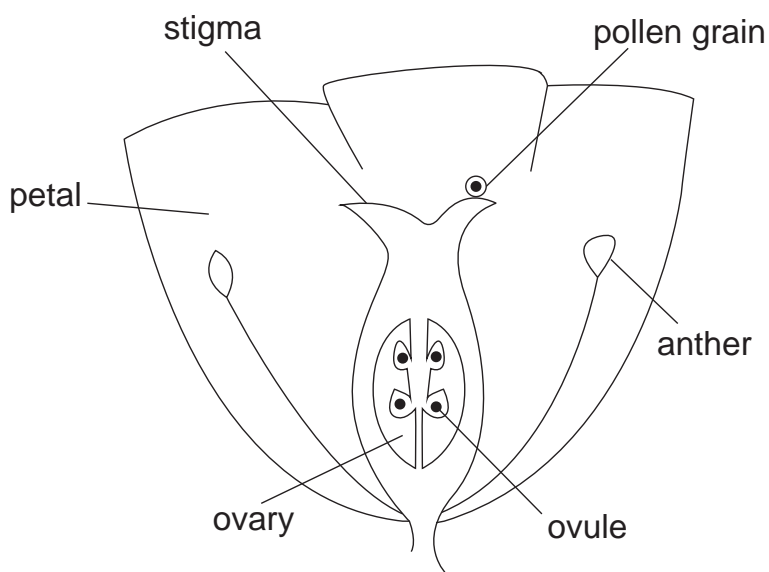
2. _____

_____ [2]

Examiner Only

Marks Remark

- 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]

Examiner Only	
Marks	Remark

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