



General Certificate of Secondary Education
2024–2025

Centre Number

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Candidate Number

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Double Award Science: Biology

Unit B1
Foundation Tier



[GDW11]

GDW11

WEDNESDAY 26 FEBRUARY 2025, MORNING

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Complete questions in black ink and use a dark HB pencil for drawings and graphs.

Do not write with a gel pen.

Answer **all eight** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 60.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You may use a scientific calculator.

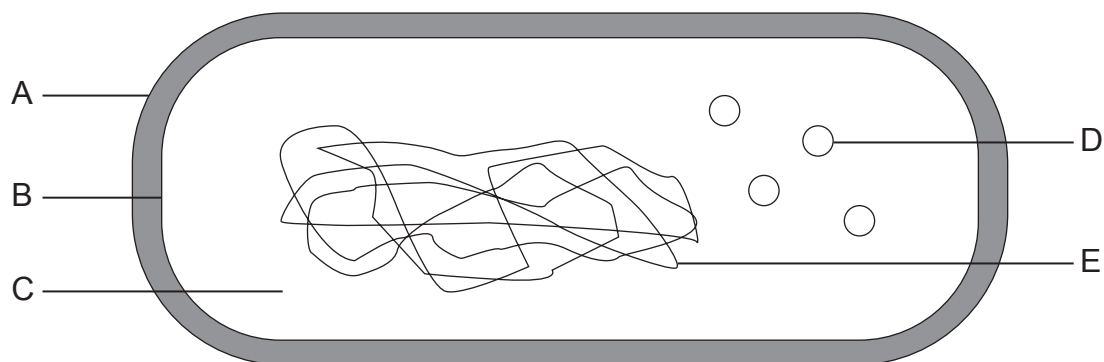
Quality of written communication will be assessed in Question **7(b)**.

14857



20GDW1101

1 The diagram shows a bacterial cell.



(a) Give the **letter** from the diagram that labels each of the following structures:

cell wall _____

plasmid _____

[2]

(b) Name **two** structures found in a plant cell that are **not** found in a bacterial cell.

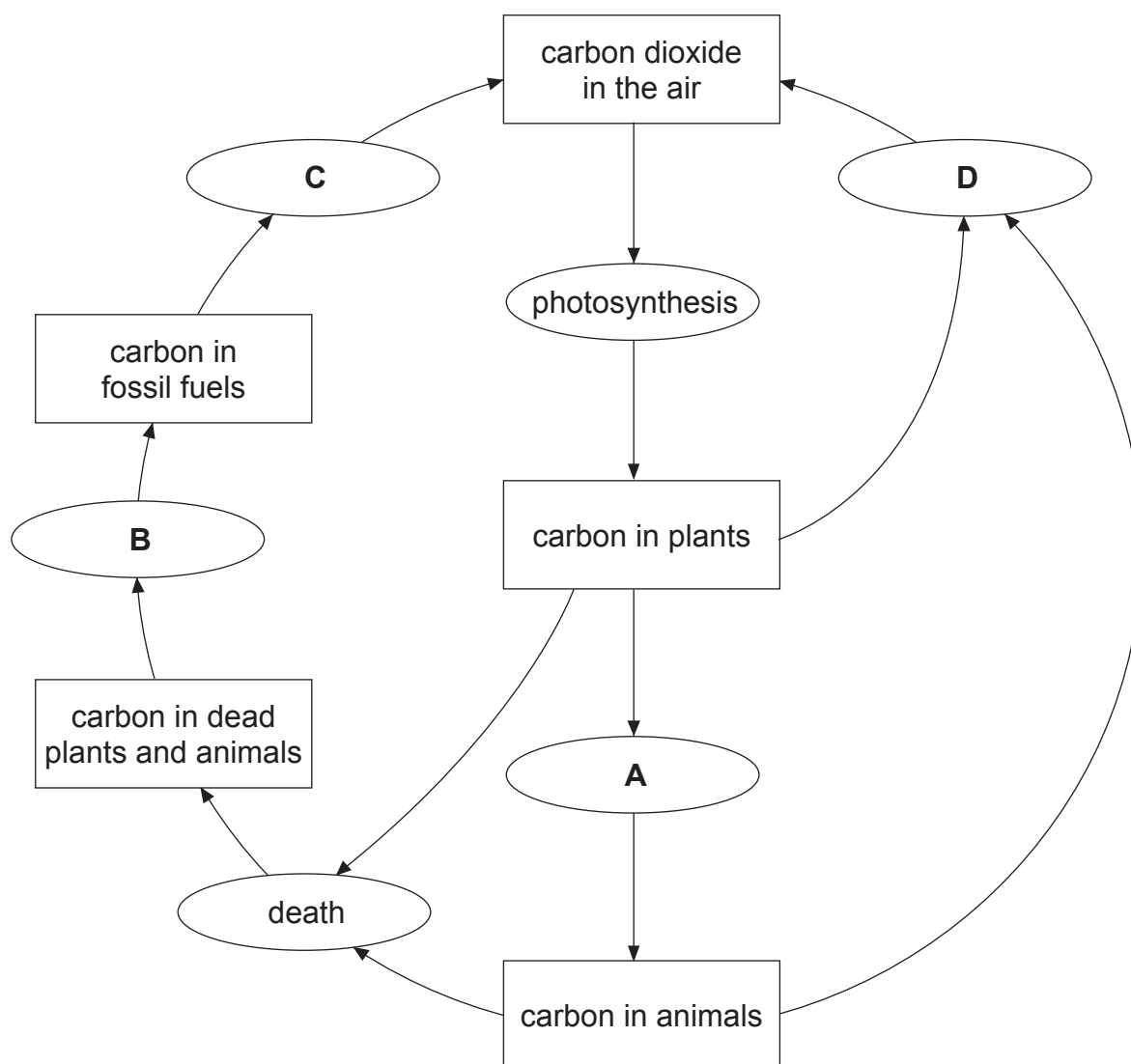
1. _____

2. _____

[2]



2 The diagram shows part of the carbon cycle.



Some of the processes in the carbon cycle are listed below.

Use the diagram to choose the **letter** that represents each process.

Respiration _____

Feeding _____

Combustion _____

Fossilisation _____

[4]

[Turn over



3 The body needs to control blood glucose levels.

(a) Name the hormone that controls blood glucose levels.

[1]

Diabetes is a condition in which the blood glucose control mechanism fails.

(b) Circle **two symptoms** of diabetes from the list.

increased body temperature	thirst	
eye damage	lethargy	heart disease

[2]

There are two types of diabetes, Type 1 and Type 2.

The table gives statements about both types of diabetes.

Letter	Statement
A	usually occurs early in life
B	usually controlled by diet and exercise
C	linked to obesity
D	insulin is not produced

(c) Complete the table below by writing the letters of the statements which correctly describe each type of diabetes.

Type of diabetes	Letters	
Type 1		
Type 2		

[2]



- (d) The table below shows the number of people (per 1000 of the population) with diabetes in Northern Ireland in 2012, 2017 and 2022.

Year	Number of people with diabetes (per 1000 of the population)
2012	46.75
2017	59.70
2022	67.60

- (i) Use the data from the table above to calculate the **increase** in the **number** of people with diabetes (per 1000 of the population) in Northern Ireland from **2017** to **2022**.

Show your working out.

_____ per 1000 of the population [2]

The increase in the number of people with diabetes (per 1000 of the population) in Northern Ireland from 2012 to 2017 was **12.95**.

- (ii) Draw a circle around the correct statement in the list to complete the sentence below.

The increase in the number of people with diabetes (per 1000 of the population) in Northern Ireland from **2017** to **2022** compared to the increase from 2012 to 2017 was

the same

greater

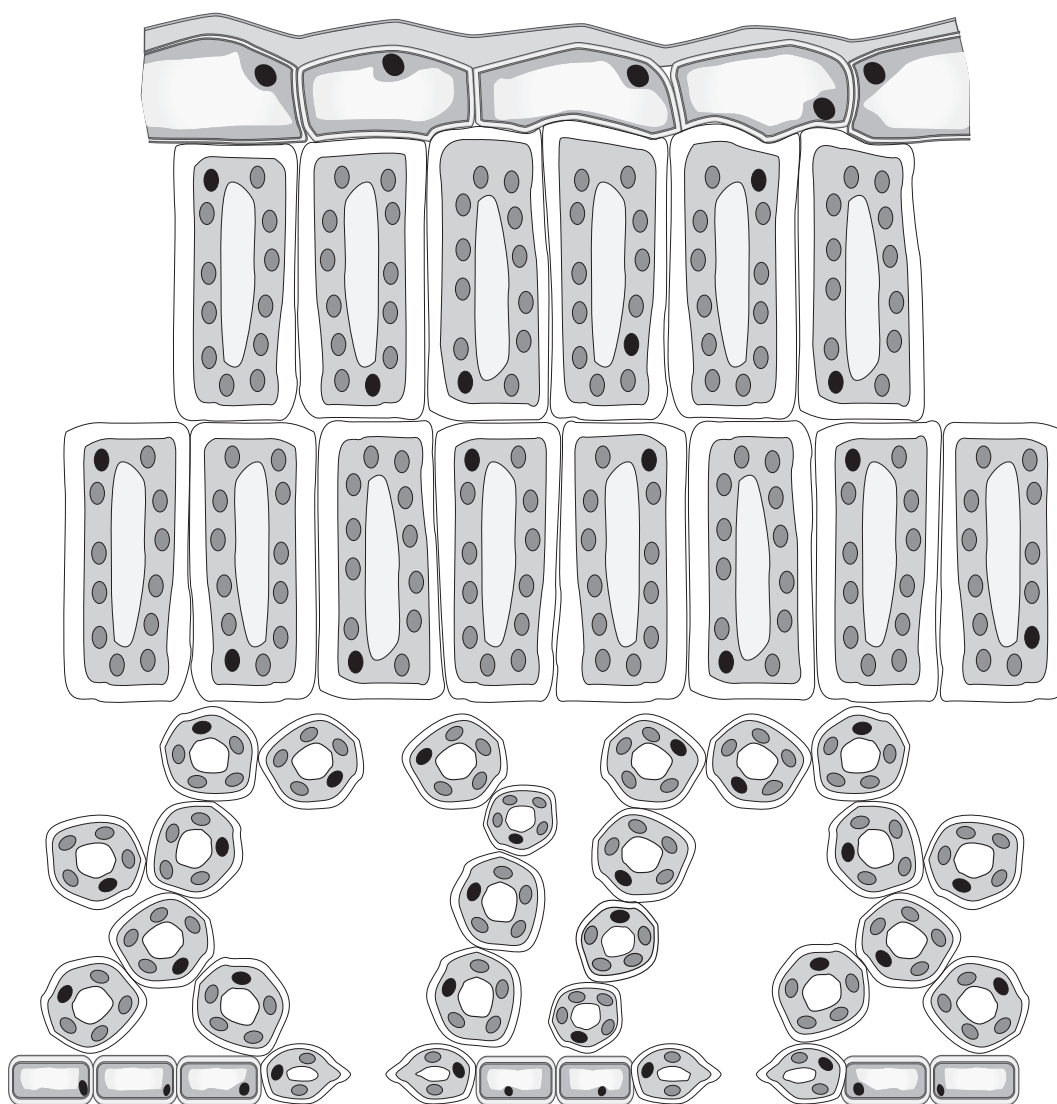
less

[1]

[Turn over



4 The diagram shows a cross section of a leaf.



(a) Name the waterproof layer on the upper surface of a leaf.

[1]



(b) Use a ruler to draw a straight line from each structure to its function.

Structure	Function
intercellular (air) spaces	layer of transparent cells that allows light through
epidermis	absorbs water
spongy mesophyll cells	allow diffusion of gases inside the leaf
guard cells	allow gases to diffuse into and out of the leaf
	have a large surface area for gas exchange

[4]

Palisade mesophyll cells are adapted to allow maximum photosynthesis in a leaf.

(c) Give **two** adaptations of palisade mesophyll cells which allow them to carry out maximum photosynthesis.

1. _____

2. _____

[2]

[Turn over

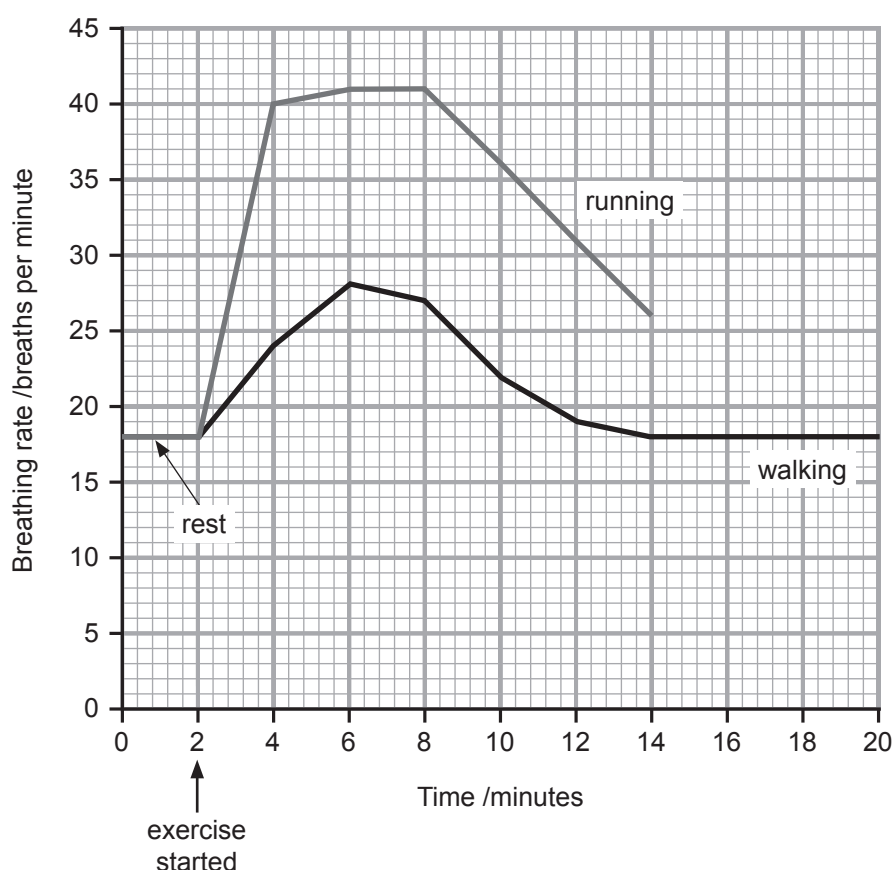


- 5 (a) A student carried out an investigation into the effect of exercise on breathing.

She measured her breathing rate at rest, when she was walking and after she stopped walking.

She rested, and then repeated the experiment but changed the exercise to running.

The graph shows some of the results of her investigation.



- (i) On the graph, use a ruler to continue the line for **running** to show the student's breathing rate returning to her resting rate. [1]
- (ii) Use the line you have drawn to give the time when the student's breathing rate returned to her resting rate.

_____ minutes [1]



- (b) Explain why the student's breathing rate increased **more** when she was running compared to walking.

[2]

- (c) Give **one other** change that would have occurred in the student's breathing during the exercises.

[1]

A second student, who was fitter, repeated the investigation.

- (d) Write a tick (✓) to show if each of the expected results in the table is true or false.

Expected result	True	False
the fitter student had a higher breathing rate when resting		
the fitter student had a lower maximum breathing rate		
the fitter student's breathing rate would return to resting rate faster		

[2]

[Turn over

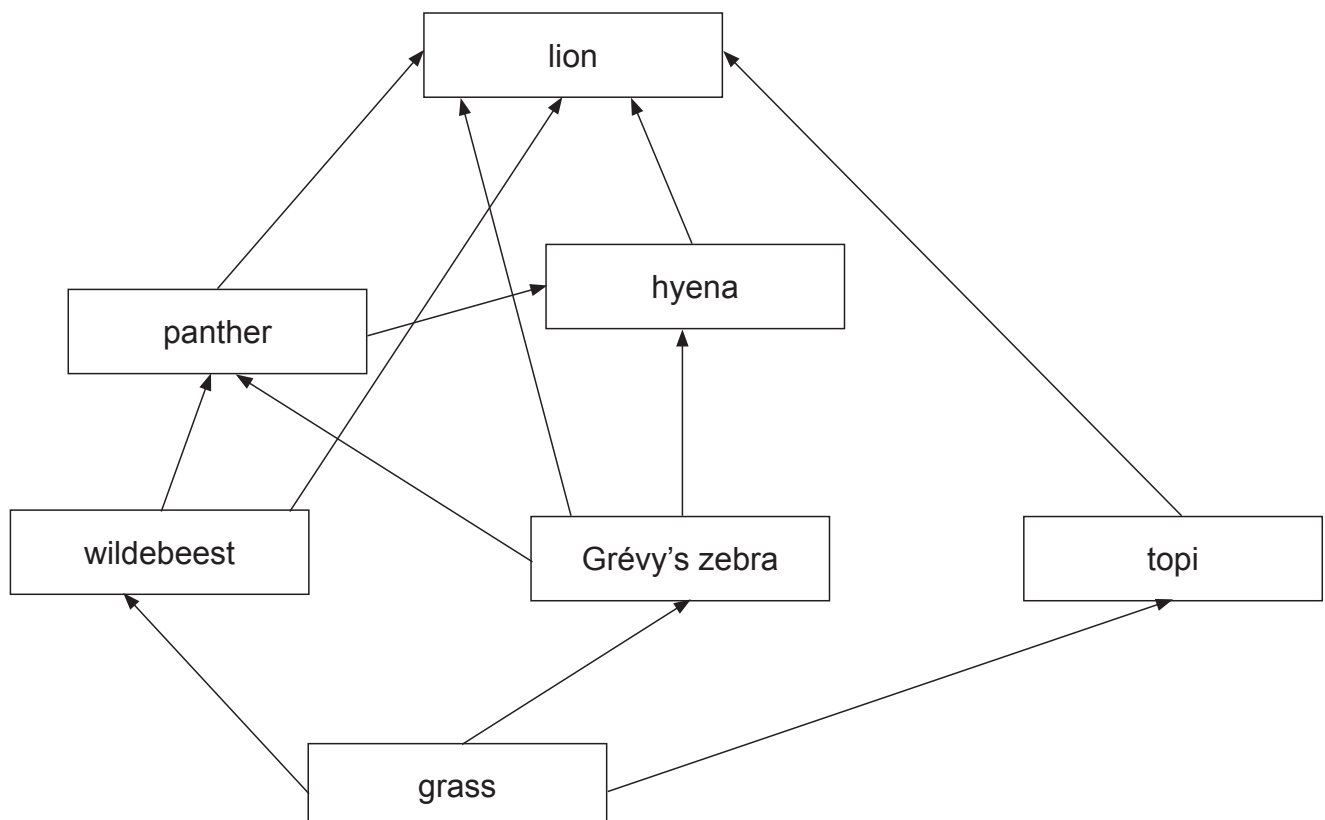


6 There are three species of zebra found in Africa.

The photograph shows one of these species, the Grévy's zebra.



The diagram shows a food web for Grévy's zebra.



- (a) Use the food web to complete the table to give the position(s) of the organisms in this food web.

Write a tick (✓) in the correct empty boxes.

Organisms may be in one, or more than one, position.

Organism	Producer	Primary consumer	Secondary consumer	Tertiary consumer
Grévy's zebra				
panther				
hyena				
grass				

[5]

- (b) A drought occurs when there is no rainfall for several months.

Drought causes a decrease in the grass population.

This can result in a decrease in the panther population.

Explain why the **panther** population could decrease.

[3]

[Turn over



(c) Scientists have been monitoring the Grévy's zebra population in Africa.

In the 1970s there were 15 156 Grévy's zebras.

Since then, their population has declined by 80%.

Calculate the current population of Grévy's zebra.

Show your working out.

Give your answer to the nearest whole number.

_____ [4]





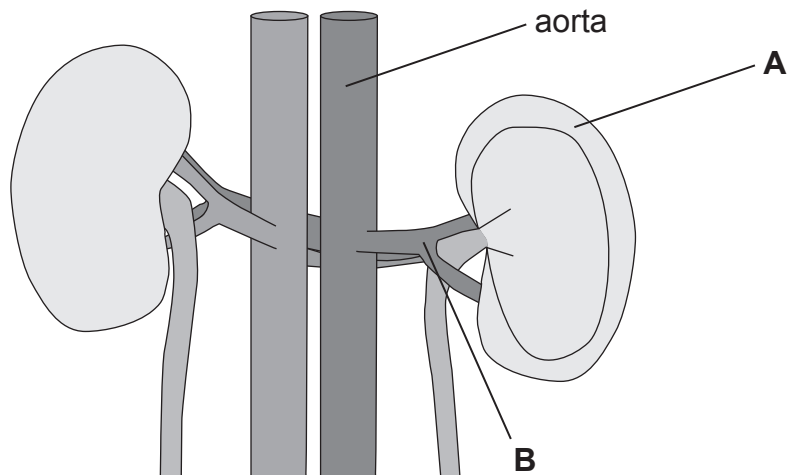
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(Questions continue overleaf)



7 The diagram shows part of the excretory system.



(a) (i) Name the outer region of the kidney labelled **A**.

[1]

(ii) Name blood vessel **B** that carries blood **into** the kidney.

[1]



The body maintains water balance in the process of osmoregulation.

(b) Describe how water is gained and lost by the body.

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

How water is gained by the body _____

How water is lost by the body _____

[6]

[Turn over



8 A student carried out an investigation into the decomposition of leaves.

(a) Name **two** types of microorganisms that cause decomposition.

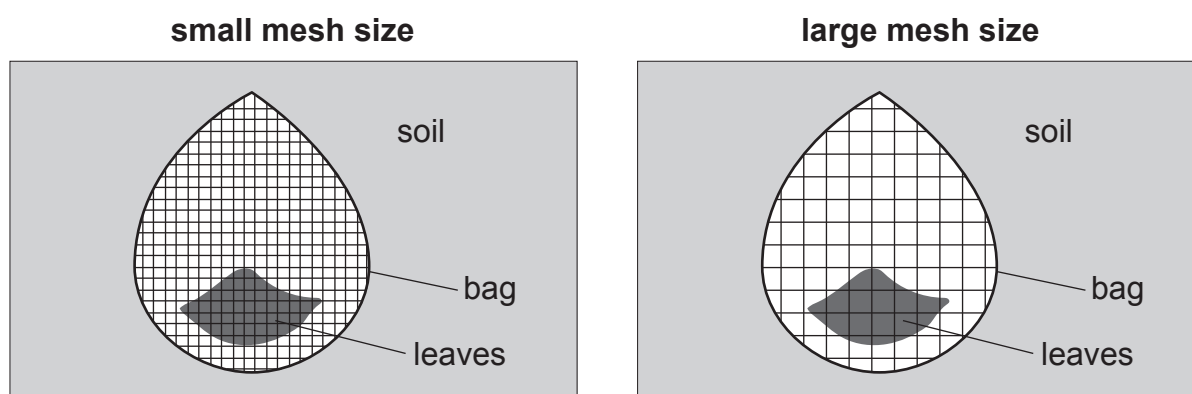
_____ and _____ [2]

(b) The student used three bags, with the same mass of leaves in each bag.

The leaves were all the same type.

The three bags, **A**, **B** and **C**, had different mesh sizes.

The diagram shows the different mesh sizes in two of the bags.



The student buried the bags in the same depth of soil in June.

The percentage (%) mass of leaves **remaining** in each bag was measured in August, October and December.

Table 1 shows his results.

Table 1

Month	Percentage (%) mass of leaves remaining		
	bag A	bag B	bag C
June	100	100	100
August	50	90	97
October	5	84	96
December	4	80	95



(i) Use the results in Table 1 to complete Table 2 below.

Write a tick (✓) in the box that applies to each statement.

Table 2

Statement	True	False	Cannot tell
bag B had the greatest mass of leaves decomposed			
bag A had the fastest rate of decomposition			
the same rate of decomposition would occur in a different soil			
the rate of decomposition would have been faster if a different type of leaf had been used			

[4]

(ii) Use the results in Table 1 to suggest which bag, **A**, **B** or **C**, had the **smallest** mesh size.

Explain your answer.

Bag _____

Explanation _____

_____ [2]

(c) (i) Between which two months was the rate of decomposition the **slowest** for all bags?

_____ and _____ [1]

(ii) Suggest **one** reason why the rate of decomposition was slowest at this time of year.

_____ [1]



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Sources:

Question 1: Principal Examiner

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Question 7: Principal Examiner

Question 8(b): Principal Examiner

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For Examiner's use only	
Question Number	Marks
1	
2	
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Examiner Number

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