Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2019

Biology

Unit 1
Foundation Tier

[GBL11]

GBL11

FRIDAY 24 MAY, AFTERNOON

TIME

1 hour 15 minutes.

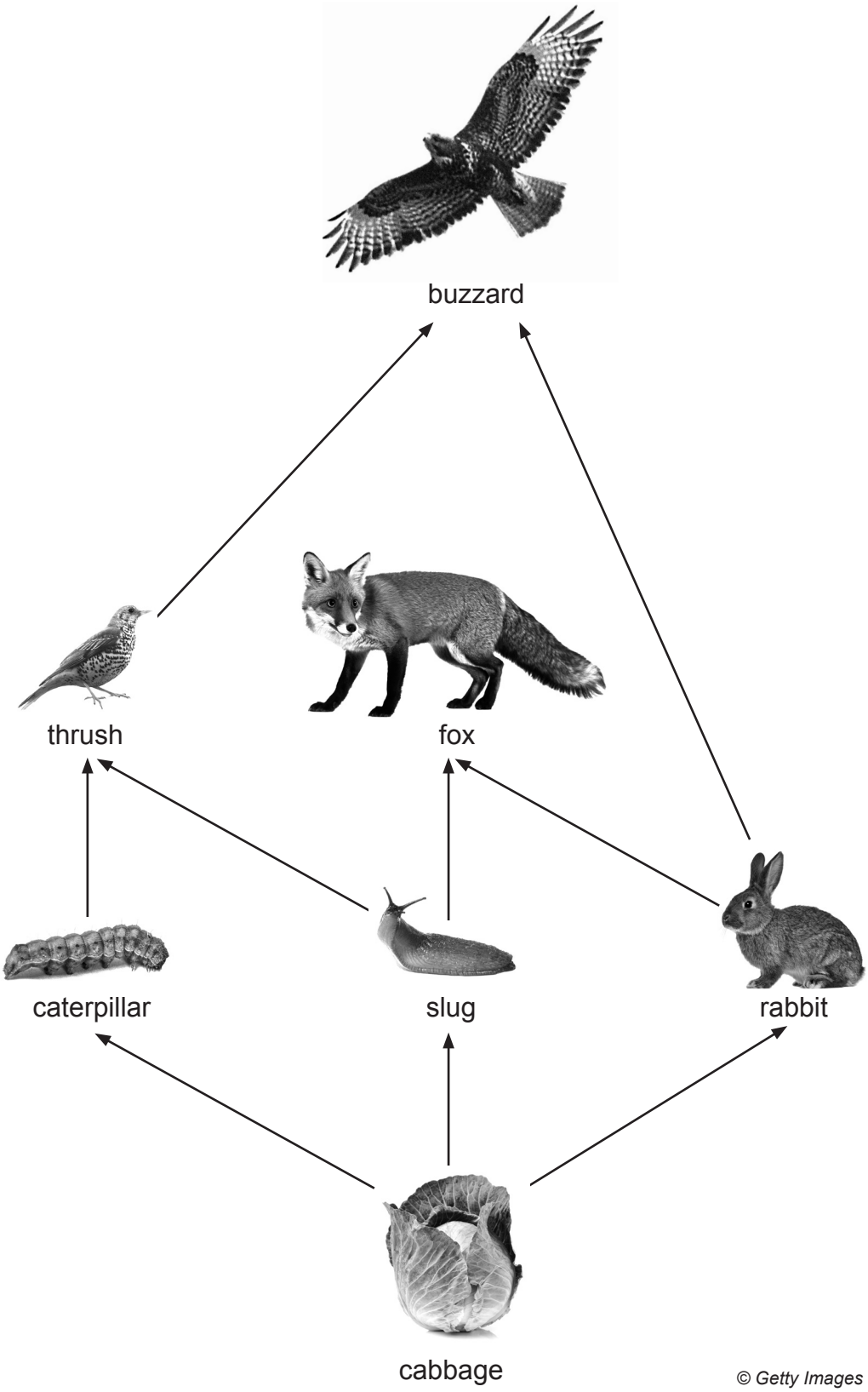
INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided.
Do not write outside the boxed area on each page or on blank pages.
Complete in black ink only. **Do not write with a gel pen.**
Answer **all eleven** 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 Question **9(b)**.

1 The diagram shows a food web.



Look at the diagram.

(a) Name the producer in this food web.

_____ [1]

(b) **On the diagram** draw a (circle) around a secondary consumer. [1]

(c) How many trophic levels are in this food web?

_____ [1]

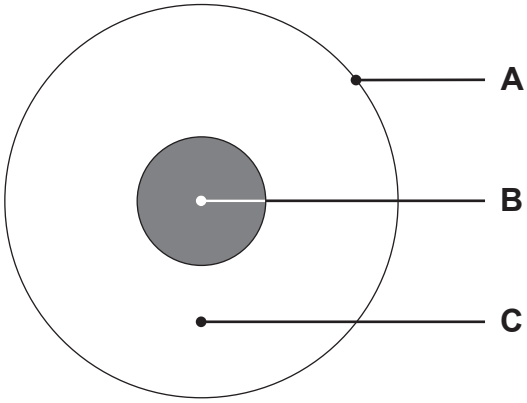
(d) Use information from the food web to **complete the food chain**.

	caterpillar		buzzard

[2]

[Turn over

2 The diagram shows an animal cell.



Look at the diagram.

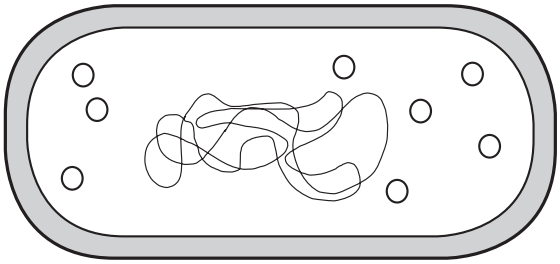
(a) Name parts **A**, **B** and **C**.

A _____ [1]

B _____ [1]

C _____ [1]

The diagram shows a bacterial cell.



© Barking Dog Art

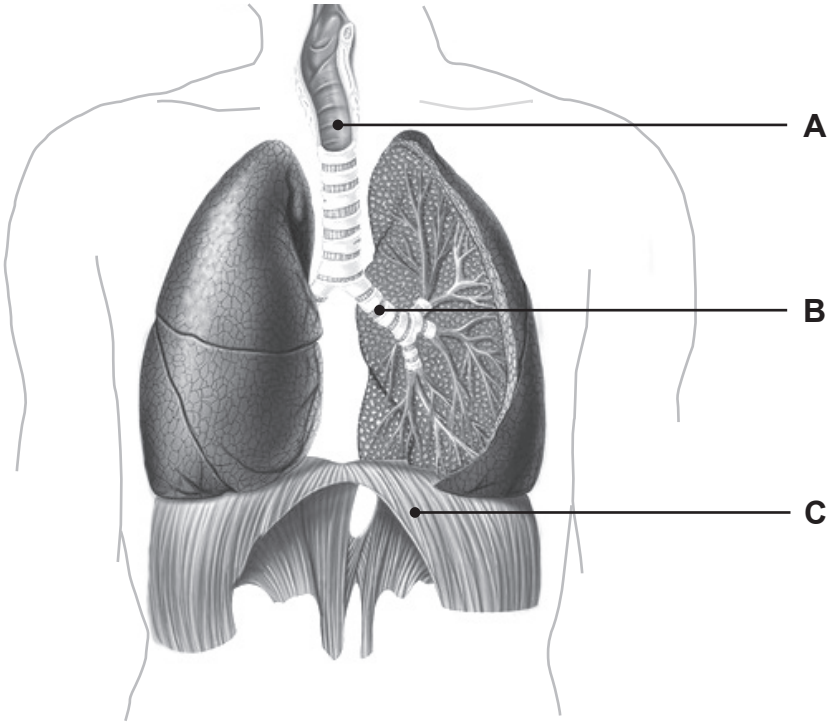
Look at the diagram.

(b) Name **two structures shown** in the bacterial cell that are not present in an animal cell.

1. _____ [1]

2. _____ [1]

3 The diagram shows the respiratory system.



Look at the diagram.

(a) Name airways **A** and **B**.

A _____ [1]

B _____ [1]

(b) **(i)** Name muscle **C** _____ [1]

(ii) Describe how muscle **C** changes during **breathing in**.

_____

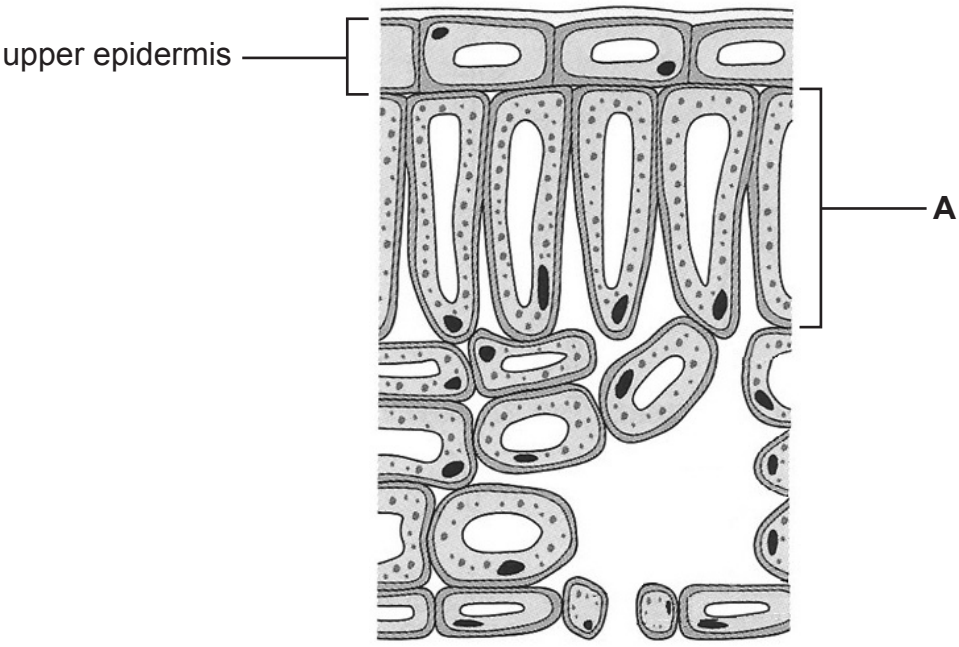
_____

_____

_____ [2]

[Turn over

4 The diagram shows a section through a leaf.



Look at the diagram.

(a) Name layer **A**.

_____ [1]

The contents of the cells in layer **A** differ from the contents of the cells in the upper epidermis.

(b) Give **two** differences shown on the diagram.

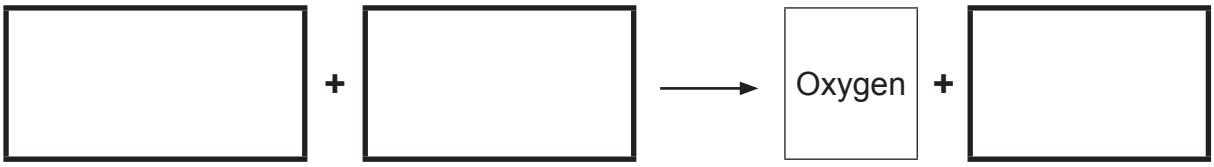
1. _____

_____ [1]

2. _____

_____ [1]

(c) Complete the word equation for photosynthesis by filling in the boxes.



[3]

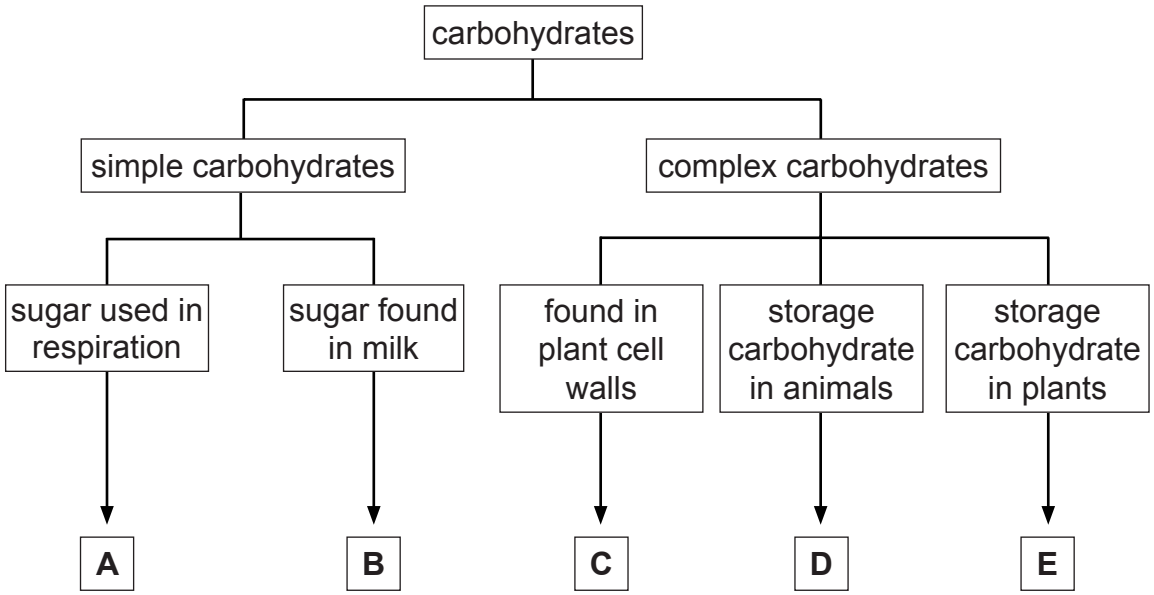
(d) Draw an arrow on the diagram opposite to show the movement of oxygen out of the leaf.

[1]

[Turn over

5 Carbohydrates, proteins and fats are important biological molecules.

(a) Identify **carbohydrates A–E** using the key below.



A _____

B _____

C _____

D _____

E _____ [5]

Proteins and fats are made of smaller molecules.

(b) Draw lines to link protein and fat to their smaller molecules.

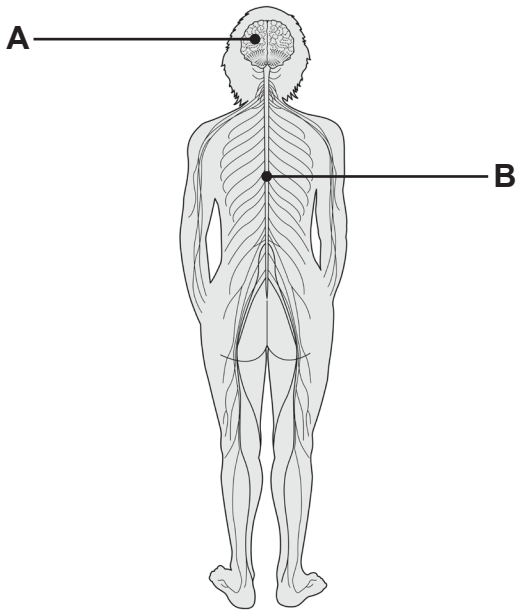
protein	glycerol
fat	amino acids
	sugar
	fatty acids
	calcium

[3]

[Turn over

6 The nervous system is one communication system in the body.

The diagram shows the central nervous system (CNS) and some other nerves.



© Paul Wootton / Science Photo Library

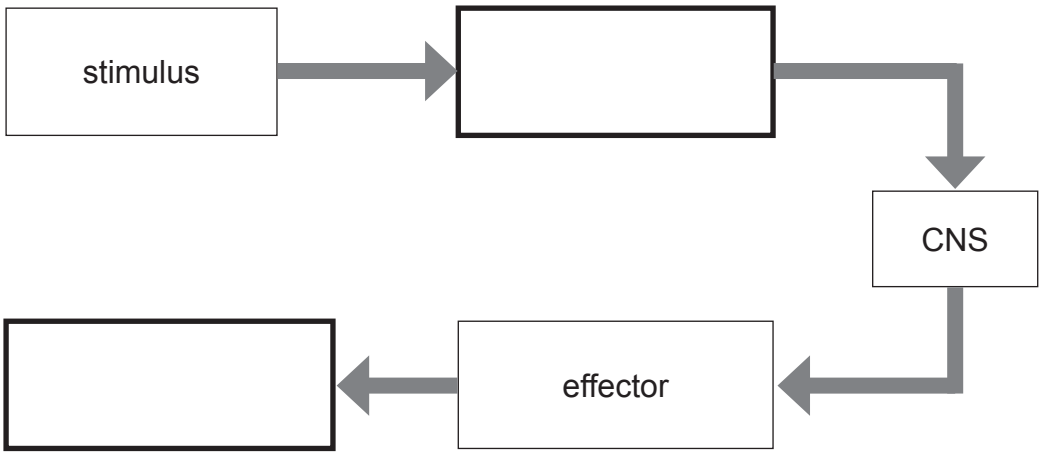
Look at the diagram.

(a) Name parts **A** and **B**.

A _____ [1]

B _____ [1]

The diagram shows the role of the central nervous system (CNS) in coordination.



Look at the diagram.

(b) Complete the diagram by filling in the boxes. [2]

The other communication system in the body is the hormonal system.

(c) Give **two** ways the nervous and hormonal systems differ.

1. _____

_____

2. _____

_____ [2]

[Turn over

7 When leaves fall from trees they decompose over a number of months due to the action of microorganisms.

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

1. _____ [1]

2. _____ [1]

(b) A student set up an experiment to investigate the decomposition of leaves.

He placed the same mass of leaves in net bags with different sized holes.

One set of bags had 0.5 mm holes which allowed only microorganisms to enter the bags.

The other set of bags had 7 mm holes which allowed earthworms and microorganisms to enter the bags.

He covered both sets of bags with soil and left the leaves to decompose.

He reweighed both sets of leaves every 2 months.

The table shows his results.

Date	Mass of leaves remaining in bags/g	
	0.5 mm holes	7 mm holes
1st July	100	100
1st September	85	55
1st November	72	22
1st January	64	10
1st March	60	7

Look at the table.

The leaves in the bags with 7 mm holes lost 22.5 g per month between 1st July and 1st September.

(i) Calculate **the mass lost per month** in the bags with 0.5 mm holes over the same period.

Show your working.

_____ g per month [2]

(ii) Suggest why the leaves in the bags with 7 mm holes lost more mass than the bags with 0.5 mm holes between 1st July and 1st September.

_____

_____

_____ [2]

The leaves in both sets of bags lost least mass between 1st January and 1st March due to a decrease in an environmental factor.

(iii) Name this environmental factor.

_____ [1]

[Turn over

8 **(a)** Explain why food needs to be digested.

_____

_____

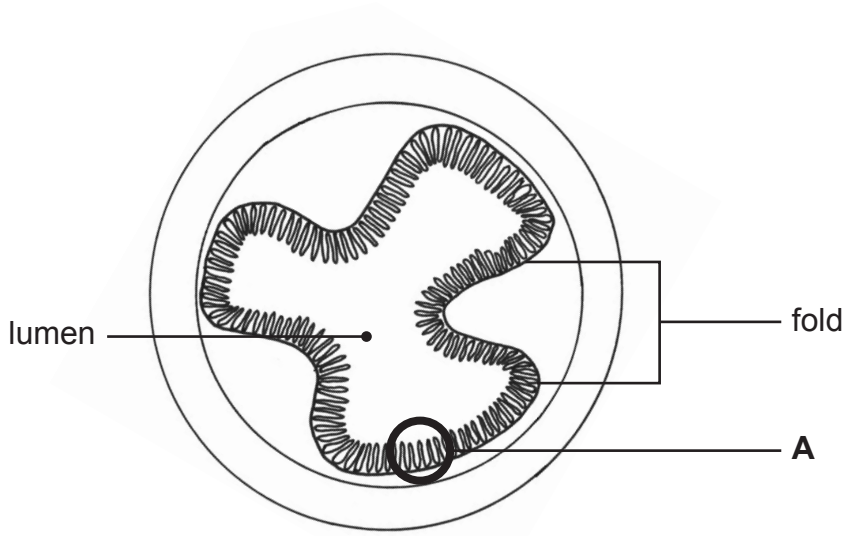
_____

_____

_____

_____ [3]

(b) The diagram shows a cross section of the ileum.



Source: Chief Examiner

Look at the diagram.

(i) Name the structures present in area **A**.

A _____ [1]

(ii) Explain how the folds help the ileum to absorb digested food molecules.

_____

_____ [1]

The membranes of the ileum are described as permeable.

(iii) Explain how this helps in absorption.

_____

_____

_____ [1]

(iv) Give **one other** feature, not shown in the diagram, which helps the absorption of digested food molecules.

_____

_____ [1]

[Turn over

9 Osmoregulation is the ability to maintain a constant internal environment by controlling the balance of water in the body.

(a) Name the process by which the body maintains a constant internal environment.

_____ [1]

(b) Describe how osmoregulation maintains the balance of water in the body.

Include in your answer:

- how the body gains water,
- how the body loses water,
- name the organ which carries out osmoregulation.

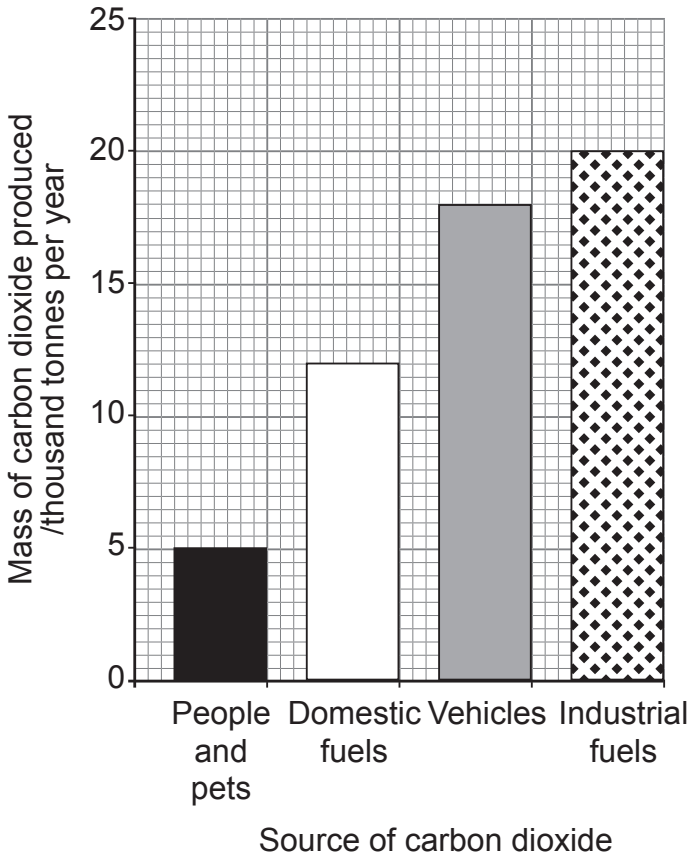
In this question, you will be assessed on your written communication skills and your use of specialist scientific terms.

[6]

[Turn over

10 **(a)** A local council monitored the mass of carbon dioxide produced by different sources over a year.

The graph shows the results.



Source: Principal Examiner

Look at the graph.

(i) Calculate the **total mass** of carbon dioxide from all sources.

Show your working.

_____ thousand tonnes per year [2]

(ii) Calculate the **percentage** of the total carbon dioxide produced by industrial fuels.

Give your answer to **one** decimal place.

Show your working.

_____ % [2]

After monitoring the carbon dioxide produced for a year, the council decided that planting more trees would help reduce the mass of carbon dioxide in the atmosphere.

(b) Explain how planting more trees reduces the mass of carbon dioxide in the atmosphere.

_____

_____

_____

_____

_____

_____

_____ [2]

(c) Describe and explain how planting trees could affect biodiversity.

_____

_____

_____

_____ [2]

[Turn over

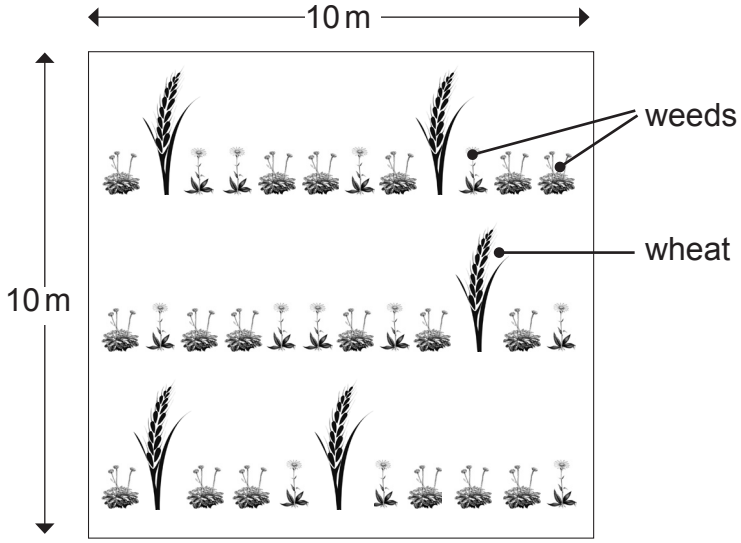
11 Scientists investigated the effect of weeds on the growth of wheat.

They cleared the weeds from five plots of land (**A**–**E**), each measuring 10 m × 10 m.

They planted wheat in each plot and, while the wheat was growing, kept each plot clear of weeds for different lengths of time.

After 20 weeks the scientists harvested and weighed the weeds and the wheat in each plot.

The diagram shows plot **A** after 20 weeks of growth.



© Getty Images

The scientists then calculated the mass of plants per square metre for each plot.

The table shows their results.

Plot	Time plot is kept clear of weeds/weeks	Mass of plants/kg per m^2	
		Wheat	Weeds
A	0	0.05	0.30
B	5	0.15	0.20
C	10	0.12	0.10
D	15	0.25	0.05
E	20		0

After keeping plot **E** clear of weeds for 20 weeks the scientists harvested a total of 29 kg of wheat.

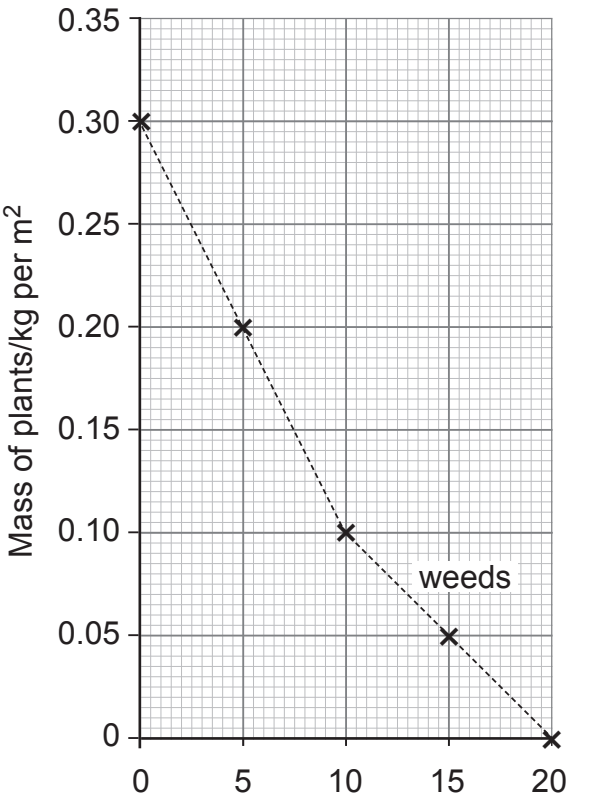
(a) Complete the table opposite by calculating **the mass of wheat per square metre** in plot **E** after 20 weeks.

Give your answer to **two** decimal places

Show your working.

Mass of wheat _____ kg per m^2 [2]

The graph shows the results for the mass of weeds per square metre over time.



(b) **Complete the graph** by:

- accurately plotting the results for the mass of the **wheat**
- drawing straight lines between the plotted points. [3]

[Turn over

(c) Describe the **overall** relationship between the mass of wheat and the mass of weeds.

_____

_____

_____ [1]

The scientists suggested the change in mass of the wheat crop was due to competition with the weeds for abiotic factors.

(d) Suggest **two** of these abiotic factors.

1. _____

2. _____ [2]

The scientists noticed that in one of the plots the leaves of the wheat were covered with leaf-eating insects.

(e) Suggest which plot contained the leaf-eating insects.

Use evidence from the graph to help explain your answer.

Plot _____ [1]

Explanation _____

_____

_____ [1]

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For Examiner's use only	
Question Number	Marks
1	
2	
3	
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11	
Total Marks	

Examiner Number