



Rewarding Learning

General Certificate of Secondary Education
2013

Centre Number

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Candidate Number

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Biology

Unit 1

Higher Tier



[GBY12]

GBY12

WEDNESDAY 5 JUNE, AFTERNOON

TIME

1 hour 30 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 box, around each page or on blank pages.

Complete in blue or black ink only. **Do not write with a gel pen.**

Answer **all twelve** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100.

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 **4**, **7(c)** and **11(b)**.



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32GBY1202



1 (a) Name **two** chemical elements found in all food molecules.

[1]

(b) Complete the table about components of the diet.

Component	Example	Source	Function
Carbohydrate	Lactose		Energy
	D	Milk	Growth of bones and teeth
Mineral		Red meat	Needed for haemoglobin in red blood cells

[1]

[1]

[1]

Examiner Only

Marks

Remark

Total Question 1

[Turn over



Use the diagram to answer the following questions.

- (b) (i) Compare the distribution of the chemical in the light and shaded side of the shoot below the tip.

_____ [1]

- (ii) How has the chemical affected the cells in the shaded side of the shoot?

_____ [1]

- (c) Explain the advantage to the plant of bending towards light.

 _____ [2]

Examiner Only

Marks Remark

Total Question 3

[Turn over



- 5 Food labelling helps people make healthy food choices.
The label shown below is from a pizza box.

SERVES 2 - HALF PIZZA PROVIDES				
ENERGY 480 kcal	SUGAR 9.0 g	FAT 18.3 g	SATURATED FAT 9.2 g	SALT 2.0 g
	10%	26%	46%	33%
OF YOUR RECOMMENDED DAILY AMOUNT (RDA)				

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The recommended daily amount (RDA) of energy required for a woman is 2000 kcal.

- (a) (i) **Complete the label for energy** by calculating the percentage of a woman's RDA provided by this half pizza.
Show your working.

[2]

Examiner Only	
Marks	Remark



The half pizza provides a man with 19% of his RDA for energy.

- (ii) Explain why the half pizza provides a man with a lower percentage of his RDA than it does for a woman.

 [2]

- (b) Give **two** factors, **other than** age and gender, which would affect the RDA of energy needed by a person.

 [1]

 [1]

- (c) Eating a whole pizza may be a risk to health.
Use the information in the label about the saturated fat content to suggest why.

 [2]

Examiner Only

Marks	Remark
Total Question 5	

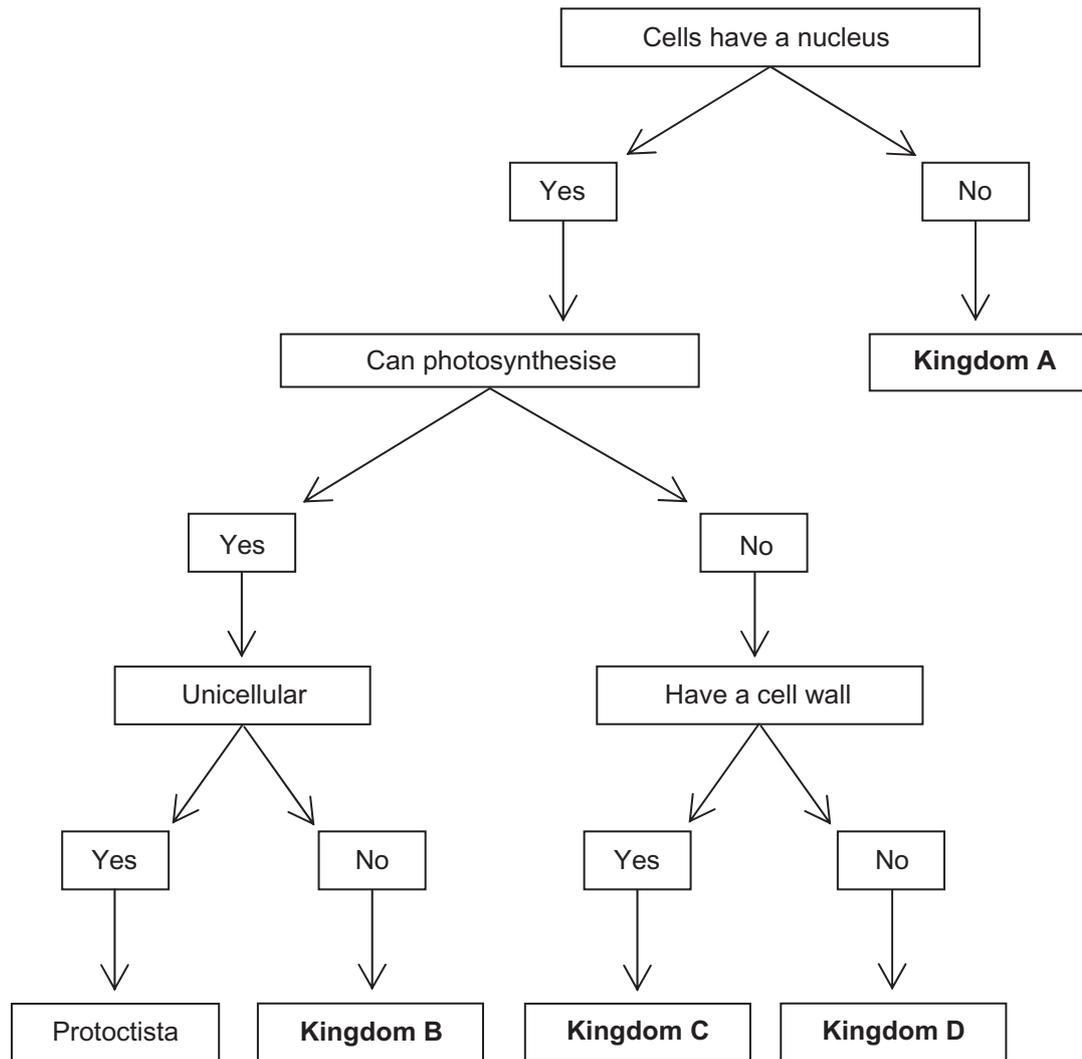
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The key shows the classification of organisms into five kingdoms.

Examiner Only

Marks Remark



(d) Use the key to identify kingdoms A, B, C and D.

Kingdom A _____ [1]

Kingdom B _____ [1]

Kingdom C _____ [1]

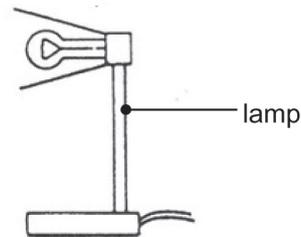
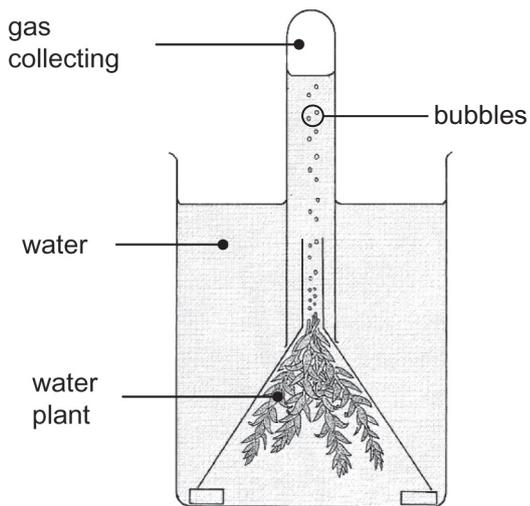
Kingdom D _____ [1]

Total Question 6

[Turn over



- 7 (a) The apparatus shown was used by a group of students to investigate how light intensity affects the rate of photosynthesis.



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- (i) Name the gas collecting in the test tube.

_____ [1]

- (ii) Describe how this apparatus can be used to measure the rate of photosynthesis.

 _____ [2]

- (iii) Describe **one** way the students could have increased the light intensity.

 _____ [1]

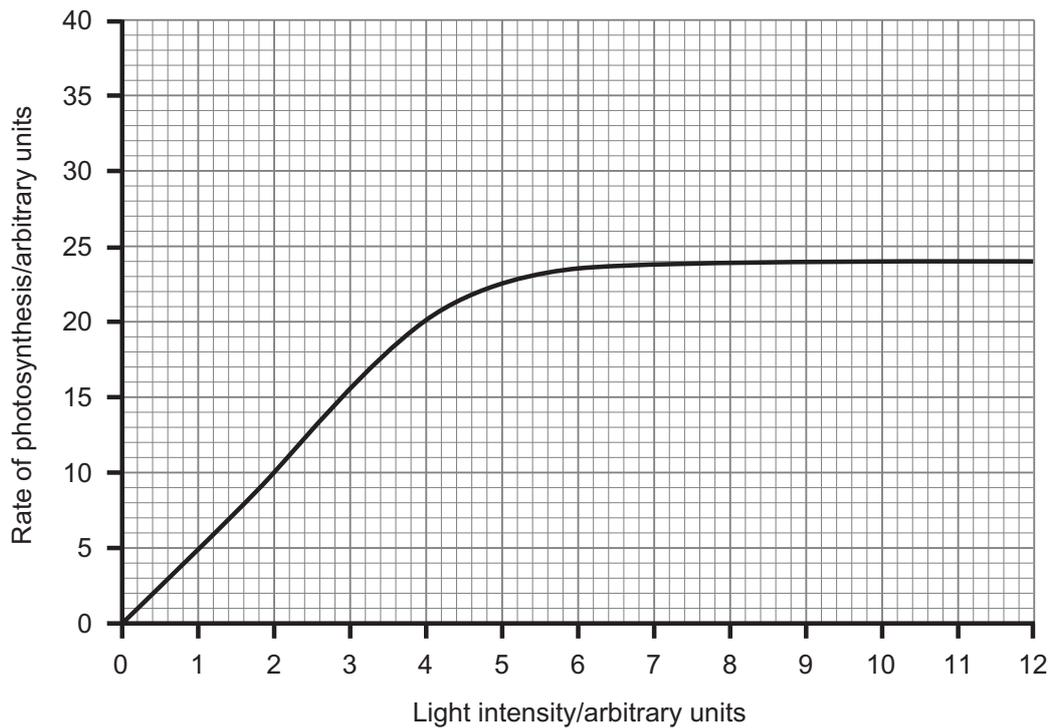
Examiner Only	
Marks	Remark



- (iv) Give **one** disadvantage of this way of changing the light intensity and describe how it can be overcome.

[2]

- (b) The line graph shows the results of this investigation.



The investigation was repeated with sodium hydrogencarbonate added to the water to provide additional carbon dioxide.

- (i) **On the graph** sketch a line to show the results of the investigation with additional carbon dioxide provided. [2]
- (ii) What is the limiting factor between 0 and 5 arbitrary units of light intensity?

[1]

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Marks Remark

[Turn over



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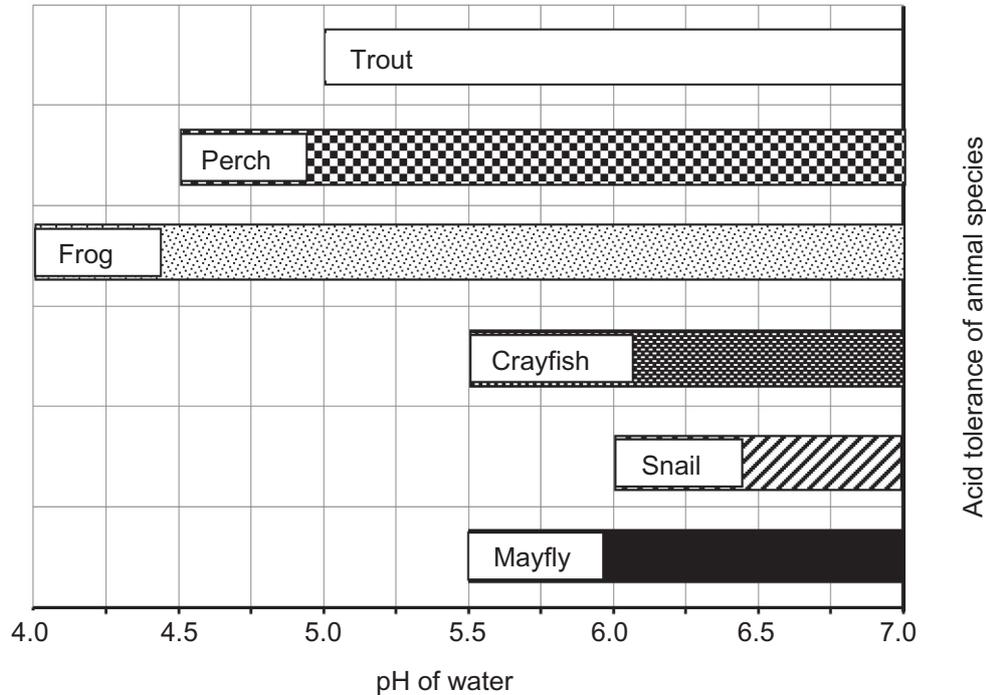


32GBY1219

Acid rain reduces the pH of water in lakes.

Only species tolerant to acid conditions can survive.

The graph shows the range of pH values different animal species can tolerate in a lake.



Source: US Environmental Agency http://www.epa.gov/acidrain/effects/surface_water.html

- (d) Name the animal species in the lake which is least tolerant of increasing acidity?

_____ [1]

- (e) Name the animal species which can tolerate pH 5.25 but not pH 4.75.

_____ [1]

- (f) Describe the effect of increasing acidity on the biodiversity of the lake.

 _____ [1]

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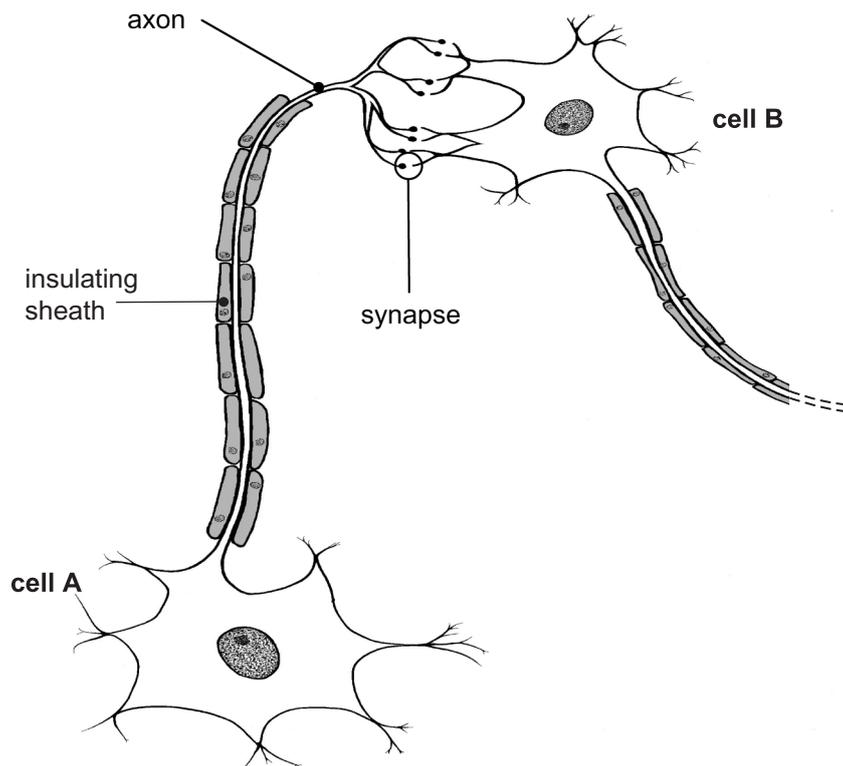
Marks Remark

Total Question 9

[Turn over



10 The diagram shows two specialised cells which carry impulses in the body.



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(a) Name this type of specialised cell.

_____ [1]

(b) Draw an arrow on the axon of cell A to show the direction of an impulse.

[1]

Cell A is adapted to its function by being long and having an insulating sheath.

(c) Explain how each of these features adapts cell A to its function.

Long _____ [1]

Insulating sheath _____ [1]

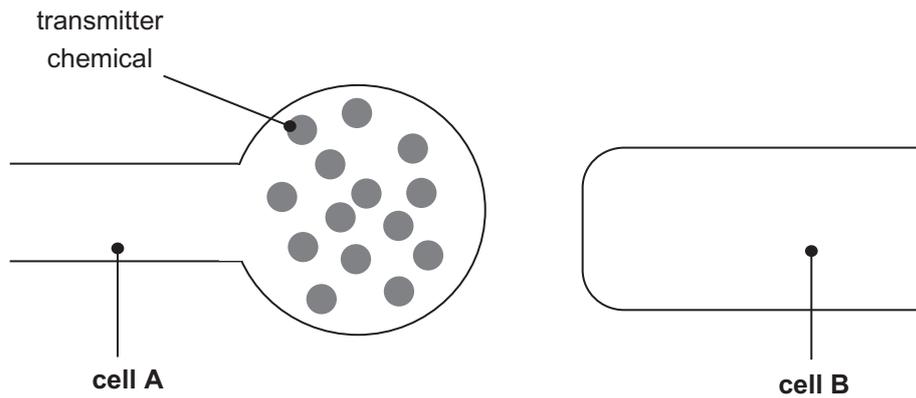


The cell body of each of these specialised cells has many branches.

(d) Suggest **one** advantage of having many branches.

_____ [1]

The diagram shows a magnified synapse.



(e) Use the diagram and your knowledge to describe how a nerve impulse passes from cell A to cell B.

_____ [5]

Examiner Only	
Marks	Remark
Total Question 10	

[Turn over



- 11 An investigation was carried out to find the effect rabbits have on the populations of three plant species growing in an area of grassland.

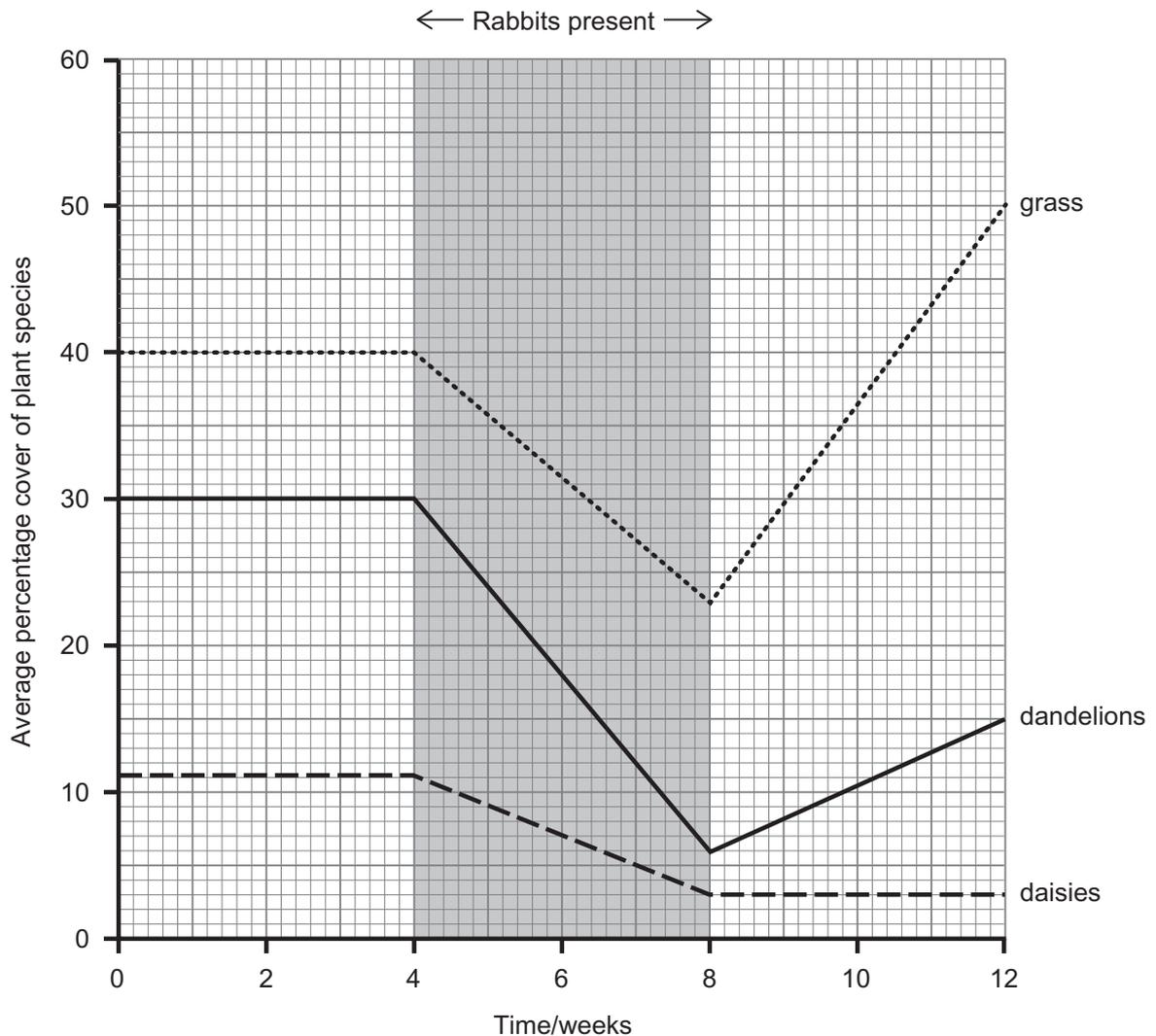
Twenty quadrats were used to measure the average percentage cover of each plant species at the end of each week over a 12 week period.

After 4 weeks a small population of rabbits was introduced. The rabbits were left in the area for 4 weeks before being recaptured and removed.

- (a) Describe what should have been done to ensure that the sampling method was valid.

[1]

The results of the investigation are shown in the graph.



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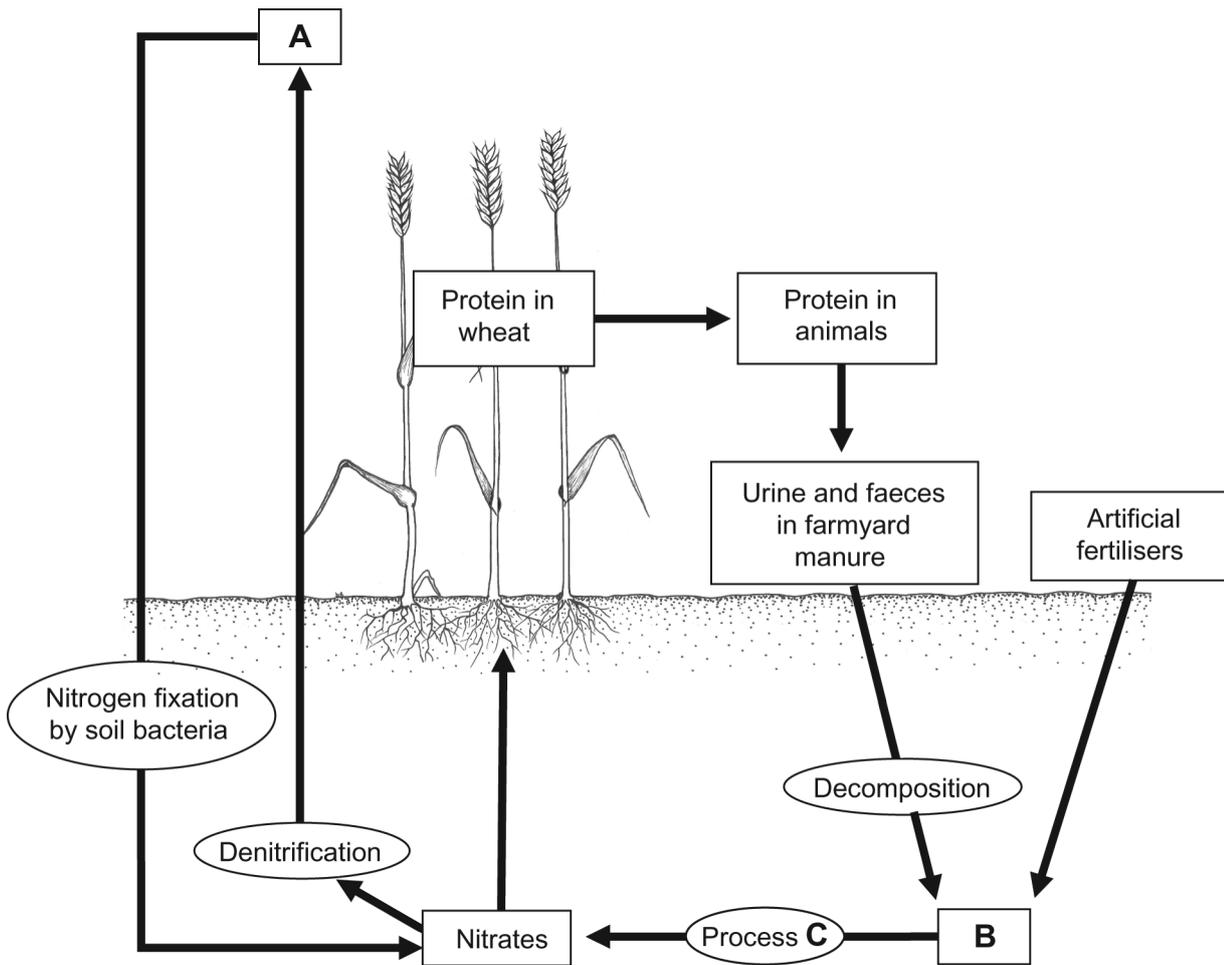
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32GBY1227

12 The diagram shows part of the nitrogen cycle.



(a) (i) Name substances A and B.

A _____ [1]

B _____ [1]

(ii) Name process C.

C _____ [1]

Examiner Only	
Marks	Remark



One conclusion suggested from these results was that when growing wheat, fertiliser should be placed just below the surface of the soil.

(i) Give evidence from the graph which

supports this conclusion.

[2]

suggests why this conclusion may not be justified.

[1]

(ii) Suggest **one** way of improving this investigation.

[1]

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Marks	Remark
Total Question 12	



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Question Number	Marks
1	
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10	
11	
12	

Total Marks	
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Examiner Number

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