

New
Specification

Rewarding Learning

General Certificate of Secondary Education
2018–2019

Centre Number

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Candidate Number

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Double Award Science: Biology

Unit B1

Foundation Tier



[GDW11]

GDW11

WEDNESDAY 27 FEBRUARY 2019, 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 in black ink only. **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.

Quality of written communication will be assessed in Question 7.

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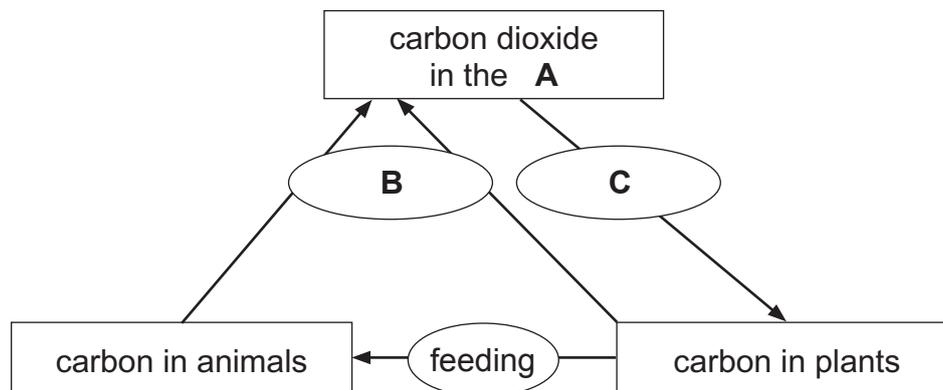
1 Three ecology terms and their definitions are given below.

(a) Draw a line to link each term to its definition.

Ecology term	Definition
environment	number of organisms of a single species living in an area
biodiversity	the range of different species living in an area
population	the conditions which surround and affect organisms in their habitat

[2]

(b) The diagram below shows part of the carbon cycle.



(i) Name **A**, **B** and **C**.

A _____

B _____

C _____

[3]



Combustion of fossil fuels is a process in the carbon cycle.
It is not shown in the diagram opposite.

(ii) Name the gas produced by the combustion of fossil fuels.

_____ [1]

[Turn over



2 Insulin is a hormone.

(a) Give the function of insulin in the body.

[1]

(b) (i) Give **one** way the **early** stages of Type 2 diabetes can be controlled.

[1]

(ii) Give **one** way the **late** stages of Type 2 diabetes can be controlled.

[1]

Insulin is a protein.

Insulin cannot be taken by mouth as a tablet.

(c) Explain why.

[2]





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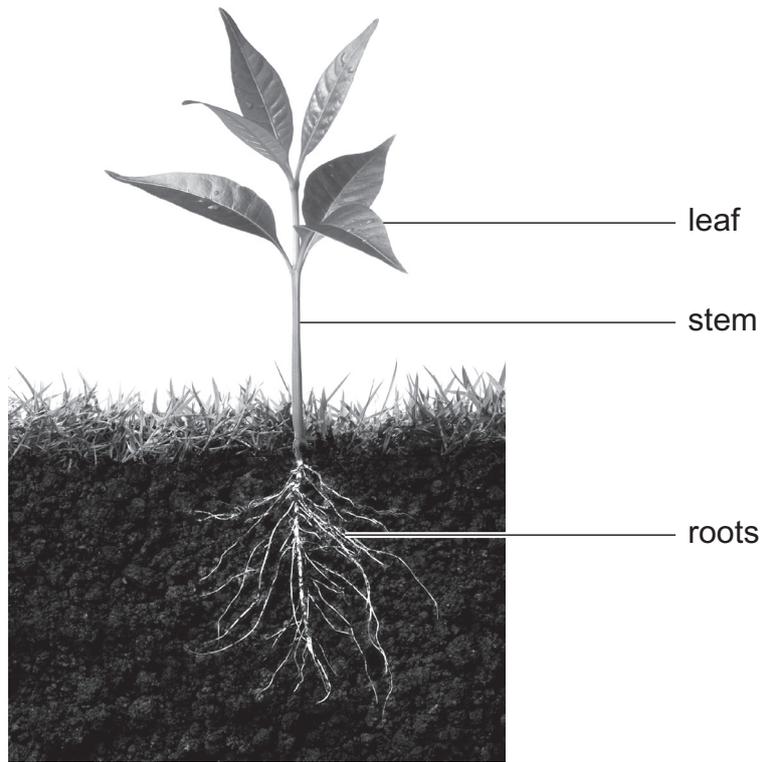
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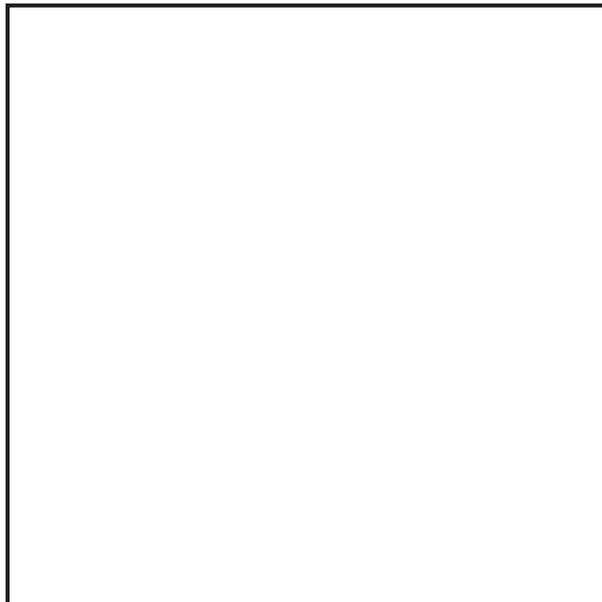
3 (a) The photograph shows a young plant growing in the soil.



© Okea / iStock / Thinkstock

The roots of the plant contain root hair cells.

(i) Draw an outline of a root hair cell in the box below.



[1]



- (ii) Draw a circle around each of the **two** substances in the list below which are **not absorbed** by root hair cells.

protein water nitrate minerals glucose

[2]

- (b) Complete the passage below about photosynthesis by writing the correct words in the blank spaces.

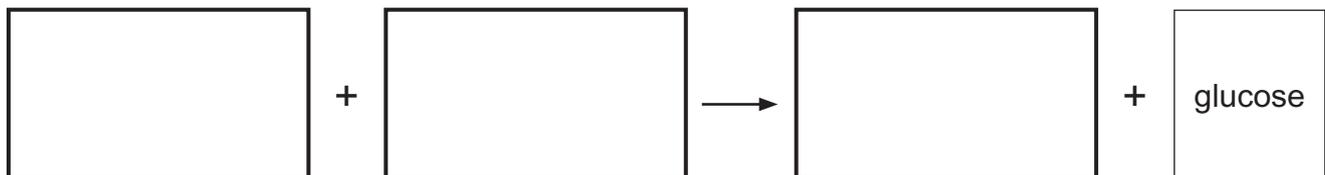
Choose the words from the list in the box.

chloroplasts exothermic heat
 endothermic light vacuoles

Photosynthesis is an _____ process
 that takes place in _____ in plant cells.
 Chlorophyll traps _____ energy from
 the sun.

[3]

- (c) Complete the word equation below for photosynthesis by writing in the empty boxes.



[3]

[Turn over



- 4 (a) (i) Give the term used to describe the maintenance of water balance in the body.

[1]

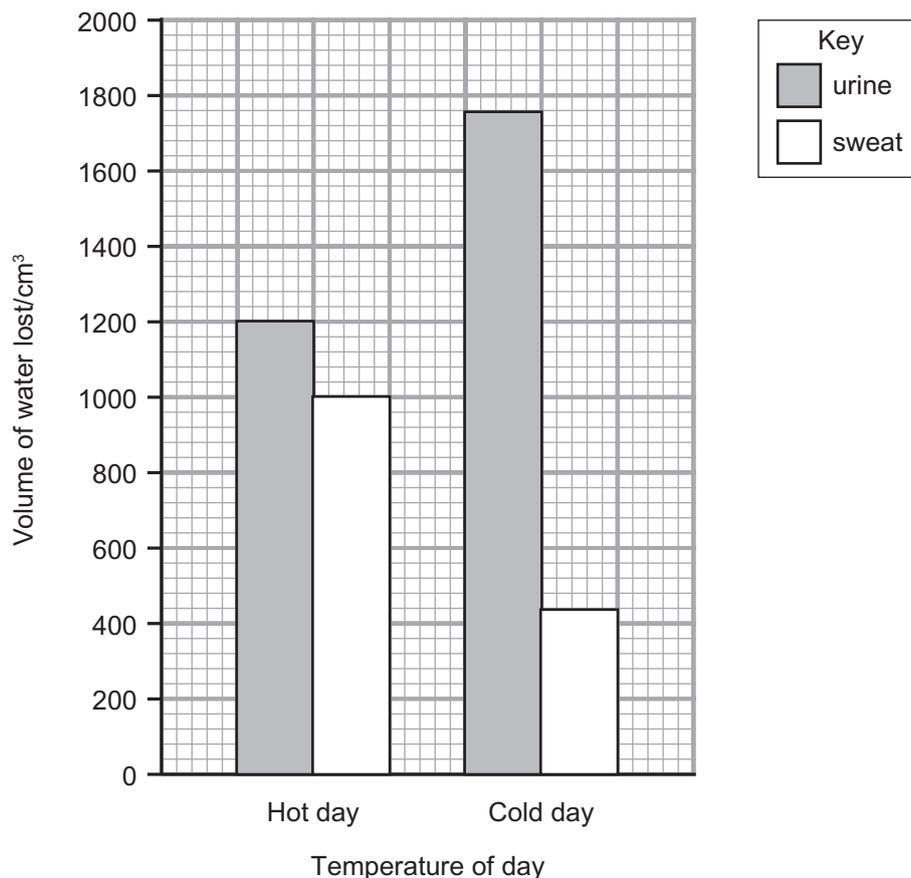
- (ii) Name the organ responsible for maintaining water balance in the body.

[1]

- (b) A scientist investigated the effect of the surrounding temperature on the water lost from the body of a person.

He measured the volume of water **lost** as urine and sweat from the same person on a hot day and on a cold day.

The bar chart shows the volume of water lost as urine and sweat on each day.



- (i) Use the bar chart opposite to calculate the difference in the volume of water lost as **sweat** on the hot day and on the cold day.

Show your working.

_____ cm³ [3]

- (ii) Complete the sentence below by writing in the blank space.

Sweat is removed from the body by the process of

_____ [1]

- (c) On the hot day the **total** volume of water the person lost was 2600 cm³.
The bar chart opposite **only** shows the volume of water lost as sweat and urine.

- (i) Use this information and the bar chart to calculate how much water this person had lost by another method on the hot day.

Show your working.

_____ cm³ [3]

- (ii) Give the **other** method by which the body loses water.

_____ [1]

[Turn over



5 The photograph shows an orange that is decomposing.



© nito100 / iStock / Thinkstock

Some types of bacteria and fungi are decomposers that secrete enzymes for extracellular digestion.

(a) Give the term used to describe these types of bacteria and fungi.

[1]



- (b) The rate of decomposition of the orange by decomposers is affected by the level of oxygen and the temperature.

Increasing the **level of oxygen** increases the rate of decomposition of the orange.

- (i) Explain why.

[2]

Increasing the **temperature** from 10 °C to 20 °C increases the rate of decomposition of the orange.

- (ii) Use your knowledge of enzymes to explain why.

[2]

- (c) Give **one** other environmental factor that would affect the rate of decomposition.

[1]

[Turn over



- 6 (a) Read the passage below and answer the questions that follow.

In Tanzania, many farmers grow maize plants.

At harvest time the farmers often stay in their fields at night to chase away bush pigs that come to eat the maize plants.

Lions come to the fields to hunt the bush pigs.

Source: National Geographic Vol. 224 No. 2 Aug 2013

The photographs below show maize plants and a bush pig.



© Ingram Publishing / Thinkstock



© Tom Brakefield / Stockbyte / Thinkstock

- (i) In the space below, draw a food chain for three organisms given in the passage above.

[2]

- (ii) Name the secondary consumer in this food chain.

[1]



A study recorded 421 attacks by lions on farmers in Tanzania.
The lions killed 282 farmers.
The rest of the attacked farmers escaped with injuries and survived.

- (b) Use the information given above to calculate the percentage (%) of lion attacks where the attacked farmers escaped with injuries and survived.
Give your answer to **two** decimal places.

Show your working.

_____ % [3]

[Turn over





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8 (a) A student investigated the effect of temperature on the enzyme amylase.

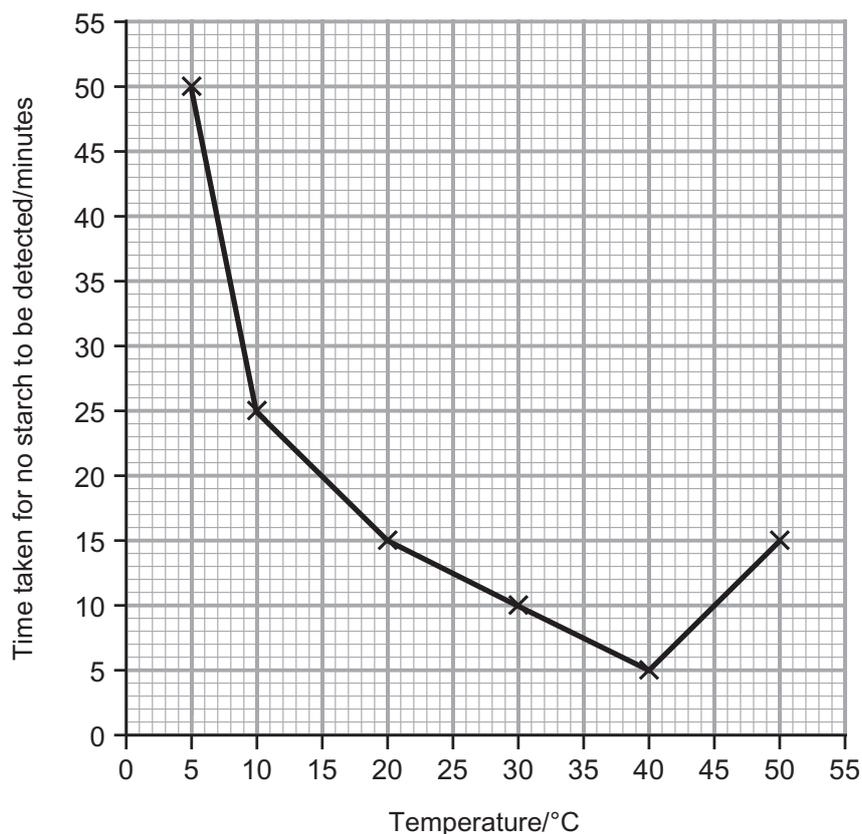
She set up six test tubes containing the same volumes of amylase and starch. She incubated each test tube at a different temperature.

Every five minutes she took a sample of the contents of each test tube and tested it for the presence of starch using iodine solution.

The reaction between amylase and starch was complete when **no starch** was detected in the sample.

She recorded the time taken for no starch to be detected at each temperature.

The graph shows her results.



Use the graph to help answer the following questions.

(i) Give the optimum temperature for this enzyme.

_____ °C

[1]

(ii) Explain why you chose this temperature using information from the graph.

[1]



(iii) Describe and explain the student's result at 5 °C.

[3]

- (b) Use the results shown in the graph opposite at 20 °C to complete the table below by writing in the empty boxes.
For each time, 10 and 20 minutes, write a tick (✓) if starch was present or a cross (X) if starch was absent if samples were tested at these times.
Give the colour of iodine solution at each of these times.

Time/mins	Starch present (✓) or absent (X)	Colour of iodine solution
10		
20		

[3]

At high temperatures amylase is denatured.

(c) What does the term denatured mean?

[2]

In another investigation, the student left a sample of starch and **denatured** amylase for one hour at 30 °C.

(d) Give the colour of iodine solution in this sample and explain the result.

Colour _____

Explanation _____

[2]



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For Examiner's use only	
Question Number	Marks
1	
2	
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8	

Total Marks	
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Examiner Number

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