



Rewarding Learning

General Certificate of Secondary Education
2019–2020

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 2020, 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.

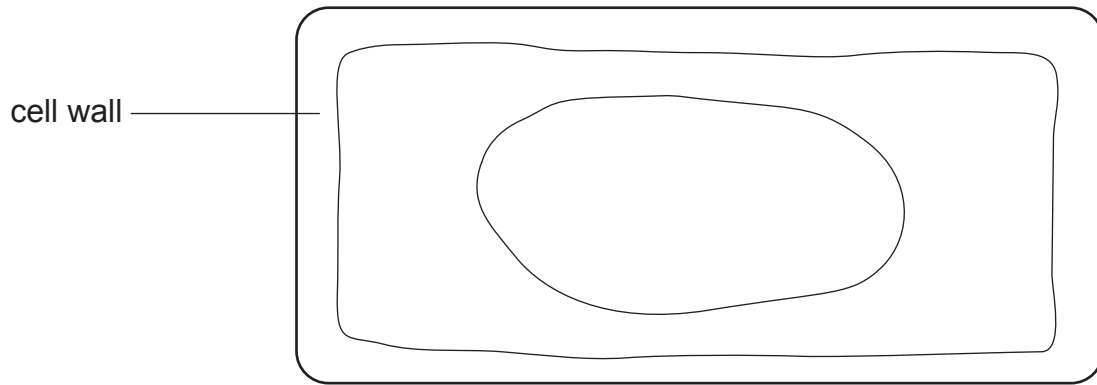
Quality of written communication will be assessed in Question 7.



1 The diagram below shows a plant cell.

(a) Complete the diagram by:

- drawing a nucleus
- labelling the vacuole
- labelling the cytoplasm

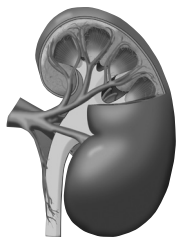
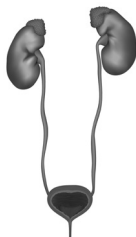


[3]

(b) Identify each diagram below by writing in the empty boxes.

Choose the correct words from the list.

cell	muscle	artery	organ
organism	organ system	heart	



[4]



2 Photosynthesis takes place in structures in a leaf cell of a plant.

(a) Name these structures.

[1]

The diagram below shows two plants, A and B, of the same species.



Plant A



Plant B

(b) Use the diagram to explain why plant B will grow faster than plant A if they are kept in identical environmental conditions.

[2]

(c) Give **two** environmental factors, other than **light**, that can affect the rate of photosynthesis.

1. _____
2. _____

[2]

[Turn over]



3 The table below gives the names and descriptions of processes that take place in living organisms.

(a) Complete the table by writing a tick (✓) in the empty box which gives the correct name of each described process.

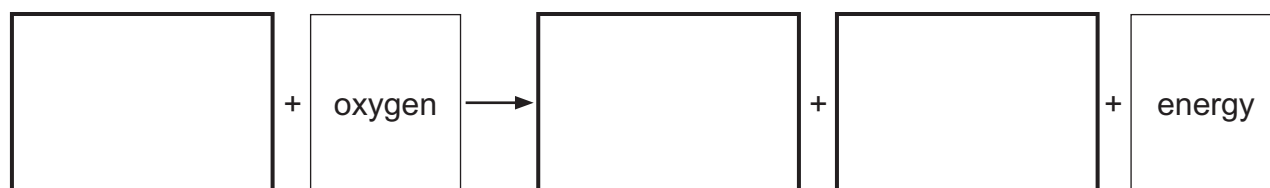
Description of process	Name of process		
	Osmoregulation	Phototropism	Diffusion
the growth response of plants to light			
the movement of gases through air spaces inside a leaf			
the control of the amount of water in the blood			

[3]

(b) (i) Name the process that releases energy in cells **when oxygen is available**.

_____ [2]

(ii) Complete the word equation below for this process by writing in the empty boxes.



[3]

(iii) Give **one** use for the energy released in this process.

_____ [1]



4 Small biological molecules can join together to form a large biological molecule.

- (a) On the diagram below, draw a line to link each small biological molecule to the large biological molecule it forms.

Each **large** biological molecule may be used **once, more than once or not at all**.

Small biological molecule	Large biological molecule formed
glucose	fat
fatty acid	protein
glycerol	carbohydrate

[3]

- (b) Give **two** examples of complex carbohydrates.

1. _____

2. _____

[2]

[Turn over



- 5 (a) The photograph below shows a white rhino with a crow on its back.

Read the passage below and answer the questions that follow.

White rhinos live in the grasslands of Africa.
Grass is the main food for a white rhino.
The crow on the rhino's back is feeding on ticks.
Ticks are tiny animals that feed on the rhino's blood and irritate its skin.

crow



Use the information and photograph above to help answer the following questions.

- (i) Give the habitat of the white rhino.

_____ [1]

- (ii) Draw a food chain containing the four organisms given in the passage.

[3]



(iii) What benefit do crows give the white rhino?

[1]

(iv) What benefit does the white rhino give the crow?

[1]

(b) In 2014 the number of white rhinos in the wild was 20 000.
During this year, 6% of the white rhino population was killed by illegal hunting.

(i) Use the information given above to calculate the number of white rhinos which were killed by illegal hunting in 2014.

Show your working.

[2]

(ii) Give **one biotic** factor, that could affect the white rhino population in the wild, apart from illegal hunting.

[1]

[Turn over



6 Enzymes have a number of commercial uses.

(a) What is an enzyme?

[3]

(b) Commercially prepared baby food often contains enzymes.
These enzymes start to digest the baby food before it goes into a baby's stomach.
This helps a baby to completely digest its food.

(i) Name the enzyme that would be added to commercially prepared baby food to help digest protein.

[1]

(ii) Use your knowledge of enzymes to explain why a different enzyme would **not** digest protein.

[2]

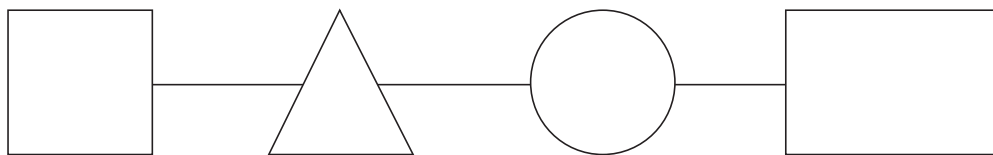
(iii) Adding enzymes to baby food is one commercial use of enzymes.

Give **one other** commercial use of enzymes.

[1]



(c) The diagram below represents part of a protein molecule.



- (i) Name the type of biological molecule, represented by the different shapes in the diagram, that make up a protein molecule.

[1]

- (ii) In the space below, draw the products formed when this part of a protein molecule is completely digested.

[2]

[Turn over



7 Describe how microorganisms carry out decomposition.

Include the following in your answer:

- the **two** types of microorganism that carry out decomposition.
- the process of decomposition.

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

Two types of microorganism _____

Process of decomposition _____

[6]





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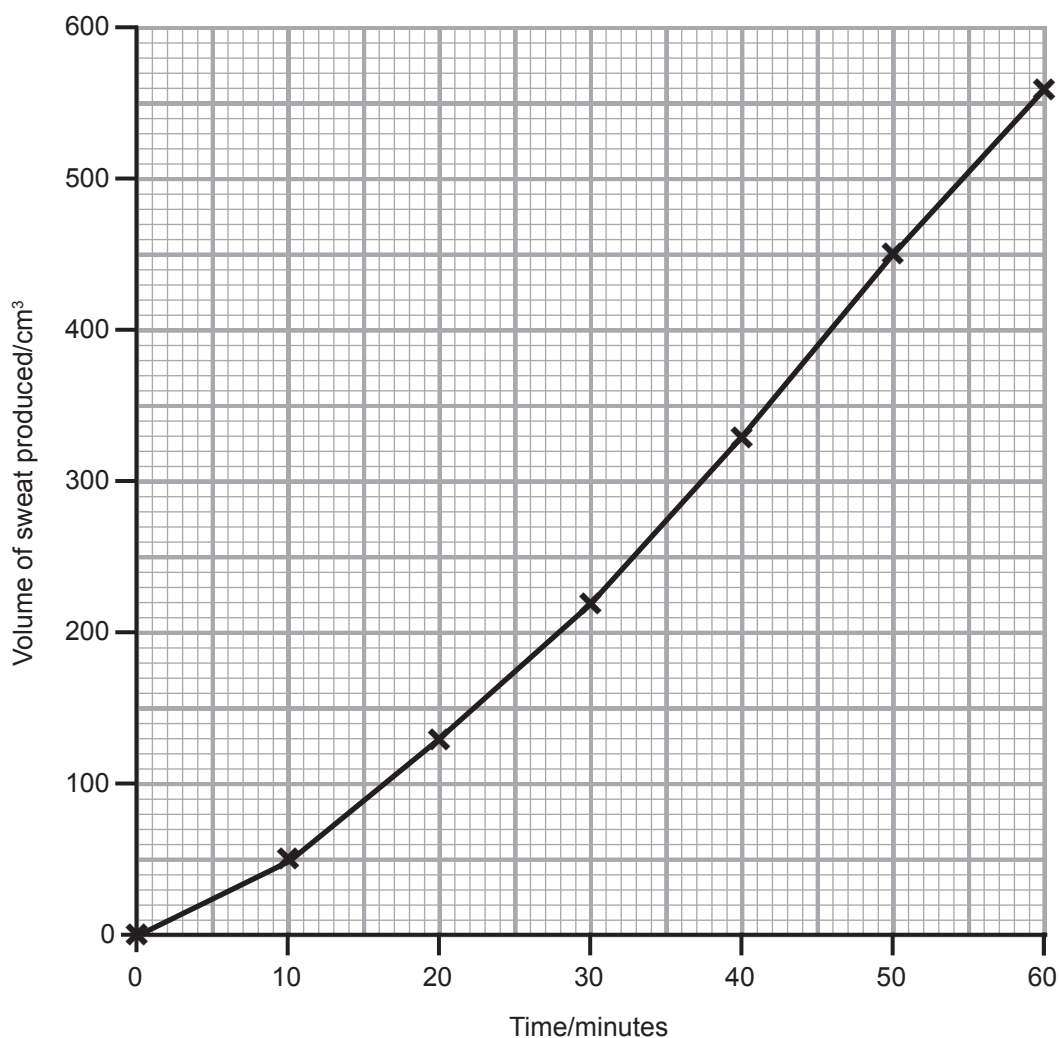
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- 8 (a) Scientists carried out an investigation into the amount of sweat lost by an athlete during 60 minutes of exercise. They recorded the volume of sweat he produced every 10 minutes during the exercise.

The graph below shows the results.



Use the graph to answer the following questions.

- (i) Give the volume of sweat produced by the athlete over the first 30 minutes.

_____ cm³ [1]



- (ii) Calculate the volume of sweat produced by the athlete over the second 30 minutes.

Show your working.

_____ cm³ [2]

- (iii) Using your answers to (i) and (ii), calculate the **difference** in the volume of sweat produced by the athlete over the second 30 minutes compared to the volume of sweat he produced over the first 30 minutes.

_____ cm³ [1]

- (iv) The volume of sweat produced by the athlete over the second 30 minutes is more than he produced over the first 30 minutes.
Suggest why.

_____ [1]

- (b) Describe the effect of the athlete's exercise on the volume and concentration of **urine** produced after exercise.

Volume _____

Concentration _____ [2]

- (c) (i) Name the organ in the body that carries out osmoregulation.

_____ [1]

- (ii) Draw a circle around the phrase below that describes what would happen to the **blood** of this athlete if this organ did **not** carry out osmoregulation during exercise.

Blood would become
less concentrated

Blood would stay the
same concentration

Blood would become
more concentrated

[1]



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Sources

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Q1(b)..... Urinary System: © Veronika Zakharova / Science Photo Library

Q1(b)..... Kitten: © Getty Images

Q2(a)..... Plant A: © Getty Images

Q2(a)..... Plant B: © Getty Images

Q5(a)..... Crow: © Colin Varndell / Science Photo Library

Q5(a)..... Rhino: © Tony Camacho / Science Photo Library

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Question Number	Marks
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Examiner Number

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