



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

TUESDAY 14 MAY 2019, AFTERNOON

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

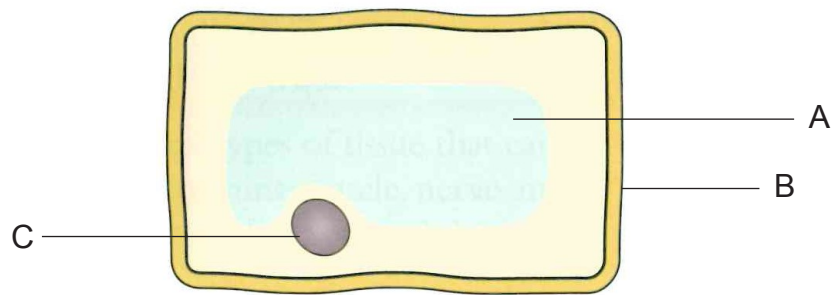
The total mark for this paper is 60.

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 8.



1 The diagram shows a plant cell.



© Barking Dog Art. Used with permission.

(a) Name parts A and B.

A _____

B _____

[2]

(b) Name the structures present in part C and give their function.

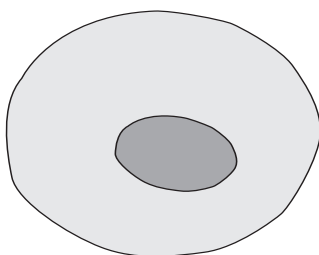
Structures _____

Function _____

_____ [2]



The diagram shows an animal cell.



© Barking Dog Art. Used with permission.

(c) Name **three** structures present in a plant cell that are also present in an animal cell.

1. _____

2. _____

3. _____

[3]

(d) Name **one** structure present in an animal cell that is not present in a bacterial cell.

_____ [1]

[Turn over



2 (a) Give **two** features of a reflex action.

1. _____

2. _____

[2]

(b) The list below gives examples of various actions.
Draw a circle around the **two** reflex actions.

writing your homework	putting on your shoes
moving your hand away when it touches a hot object	walking to a bus stop
eating your breakfast	sneezing when dust goes up your nose

[2]

(c) What part of the central nervous system is **not** involved in a reflex action?

[1]





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[Turn over



20GDW1105

- 3 (a) Complete the sentences below about photosynthesis by writing in the blank spaces.

Photosynthesis is an _____ process that **takes**
in light energy from the sun.

The light energy is absorbed by a green pigment
called _____.

The gas produced by photosynthesis is _____. [3]

- (b) A student investigated the rate of photosynthesis in pondweed. She investigated how changing the distance between a lamp and pondweed in a beaker affected the number of gas bubbles produced in one minute. The photograph shows her experimental set-up.



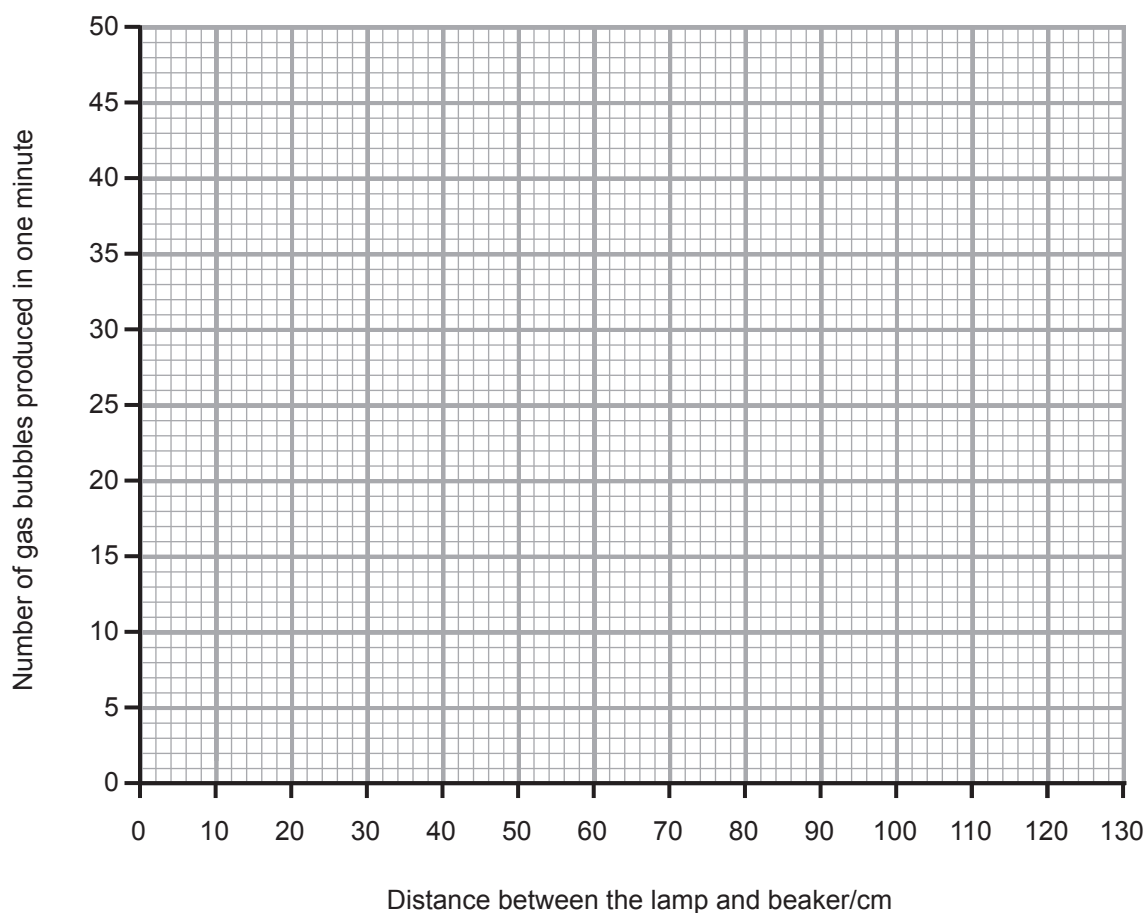
© Trevor Clifford Photography / Science Photo Library

The student counted the number of gas bubbles produced in one minute at different distances between the lamp and the beaker. The table shows her results.

Distance between the lamp and beaker/cm	Number of gas bubbles produced in one minute
20	48
40	46
60	30
80	10
100	5



- (i) Plot a **line** graph of these results on the grid below.
Use a ruler to join the points with straight lines.



[3]

- (ii) Use the graph to give the number of bubbles produced in one minute when the distance between the lamp and the beaker was 50 cm.

_____ [1]

[Turn over]



(iii) Describe and explain the overall trend shown in the graph.

Description _____ [1]

Explanation _____ [2]

Assume that the trend in the number of gas bubbles continues at the same rate as **80 cm to 100 cm**.

(iv) Draw a line on the graph in part (b)(i) to give the distance when **no** gas bubbles are produced. [1]

(v) Give the distance when no gas bubbles are produced.
_____ cm [1]



4 When leaves fall to the ground they are decomposed by saprophytic organisms.

(a) Name the **two** types of saprophytic organisms that decompose leaves in the soil.

1. _____

2. _____

[2]

(b) Complete the sentence below by writing in the blank space.
Choose the correct word from the list in the box.

straw

grass

humus

Saprophytic organisms form _____ when they
decompose leaves in the soil.

[1]

The waste products of animals are also decomposed by saprophytic organisms in the soil.

(c) Name **one process** in animals that adds waste products to the soil.

[1]

(d) Soil contains a mineral which is used by plants for growth.

(i) Name this mineral.

[1]

(ii) Name the plant cells that absorb minerals from the soil.

[1]

[Turn over



5 Four adaptations of a leaf and parts of a leaf are given below.

Draw a line to link each adaptation to the part of the leaf which has that adaptation.

Adaptation

Layer with **no cells** that is transparent to allow light through

Area that allows diffusion of gases throughout the leaf

Layer with tightly packed cells containing the most chloroplasts for **maximum** photosynthesis

Layer with cells that carry out some photosynthesis and have a large surface for gas exchange

Part of the leaf

Palisade mesophyll

Spongy mesophyll

Intercellular air space

Waxy cuticle

[3]





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[Turn over



20GDW1111

- 6 The photograph shows light-bellied brent geese in Strangford Lough in Northern Ireland.



© TwistedClassics / Getty Images

Read the passage below about these geese and answer the questions that follow.

Light-bellied brent geese migrate from their summer breeding ground in the Arctic to Strangford Lough each year to spend the winter.

In the Arctic, light-bellied brent geese feed on grasses. These grasses are also found in abundance in Strangford Lough.

In the Arctic snowy owls and Arctic foxes feed on the geese.
Arctic foxes also feed on small animals called lemmings.
Lemmings feed on the same grasses as these brent geese.

- (a) Complete the food web below by writing the names of the organisms in the empty boxes.

light-bellied brent geese

[4]



(b) Give **two** biotic factors that affect the population of the light-bellied brent geese in the Arctic.

1. _____

2. _____ [2]

The number of lemmings decreased in one year in the Arctic.

(c) Describe and explain how this would affect the light-bellied brent geese population.

_____ [2]

The population of light-bellied brent geese in Strangford Lough each winter makes up 75% of the world population of these geese.

In 2016 the number of light-bellied brent geese counted in Strangford Lough was 22 500.

(d) Calculate the world population of light-bellied brent geese in 2016.

Show your working

_____ [2]

[Turn over

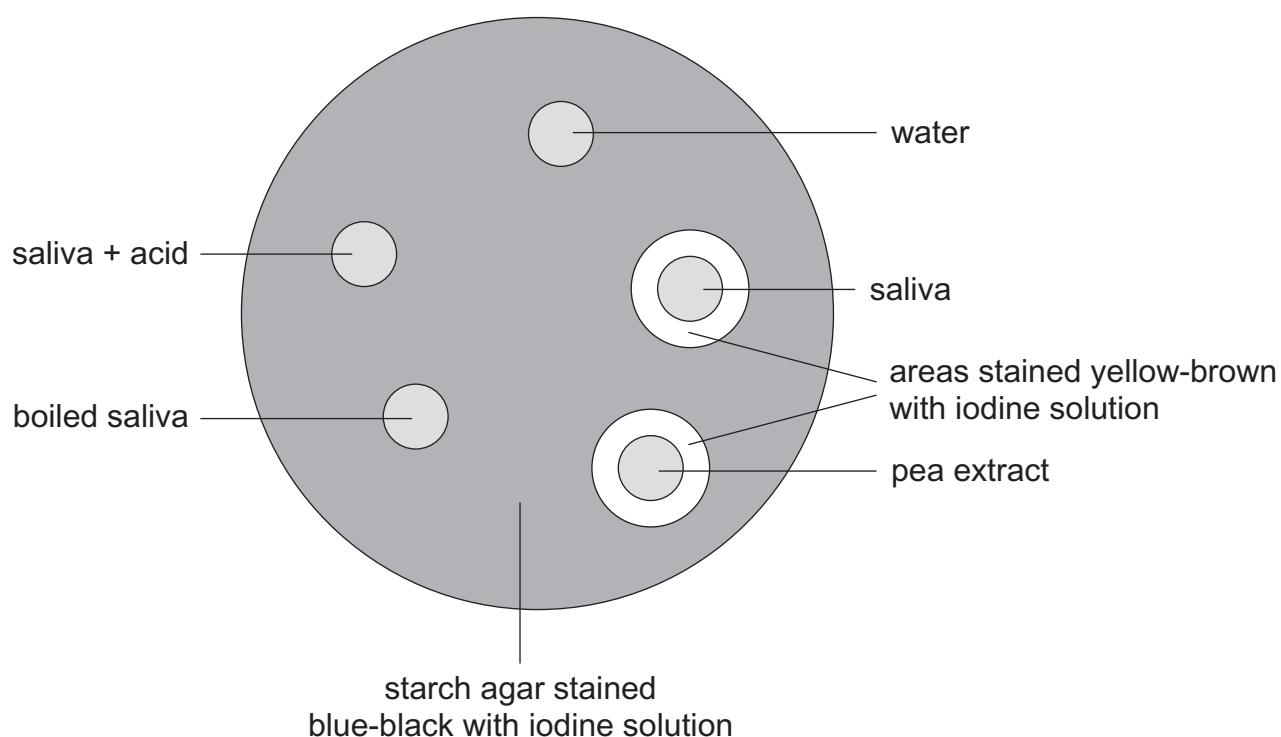


- 7 Students investigated the action of an enzyme that is found in saliva and parts of the digestive system.

They placed different solutions into holes in starch agar in a Petri dish. Starch agar is a jelly-like substance containing starch.

The students left the solutions in the holes for several hours. They then stained the starch agar blue-black with iodine solution.

The diagram below shows the results at the end of their experiment.



© CCEA

The starch agar surrounding the hole containing **saliva** was yellow-brown at the end of the experiment.

(a) Explain why.

[2]



The starch agar surrounding the hole containing **saliva and acid** was blue-black at the end of the experiment.

(b) Explain why.

[2]

The starch agar surrounding the hole containing **boiled saliva** was blue-black at the end of the experiment.

(c) Use your knowledge of enzyme theory to explain why.

[3]

[Turn over



(d) The starch agar surrounding the hole containing pea extract was yellow-brown at the end of the experiment.

(i) Suggest what was present in the pea extract to cause this.

_____ [1]

Peas contain starch.

A reaction takes place in peas within a few hours after they are picked.

This reaction causes the peas to taste sweeter.

(ii) Use the results from the pea extract to explain why.

_____ [2]



[illegible]

- the term used to describe the process of maintaining water balance in the body;
- how water is gained by the body;
- how water is lost from the body.

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

[illegible]

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For Examiner's
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Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	

Total Marks	
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Examiner Number

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