

New  
Specification

Centre Number

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Candidate Number

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General Certificate of Secondary Education  
2018–2019

# Double Award Science Biology

Unit B1  
Foundation Tier

<b>ML</b>
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[GDW11]

**WEDNESDAY 7 NOVEMBER 2018, MORNING**

### TIME

1 hour, plus your additional time allowance.

### INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.  
Answer **all nine** questions.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 60.

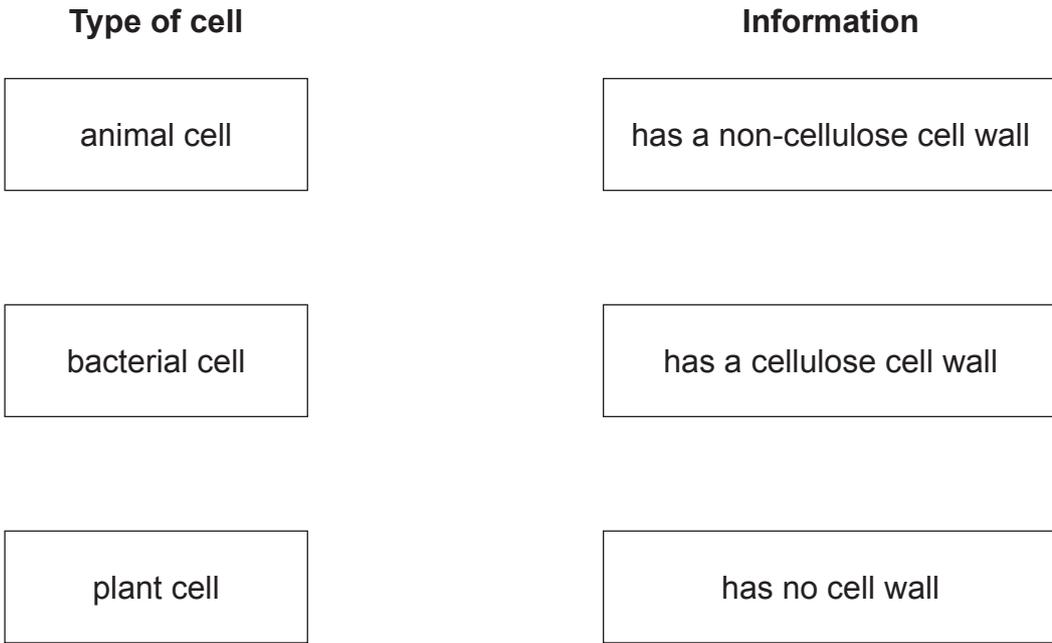
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.  
Quality of written communication will be assessed in Question **9**.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	

<b>Total Marks</b>	
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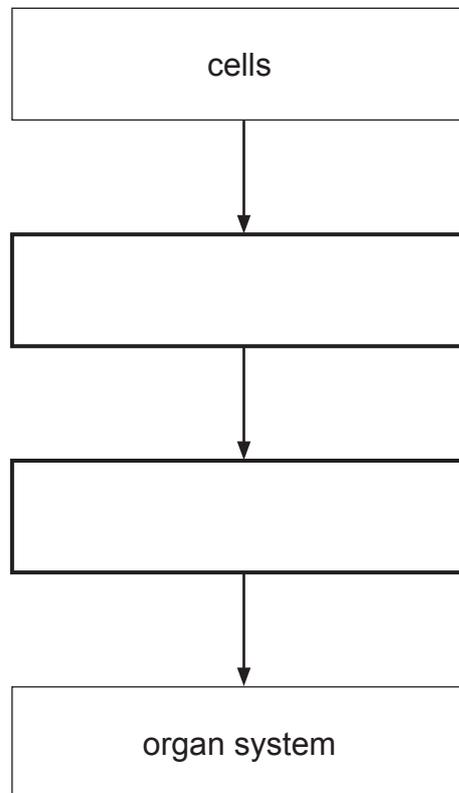
1 A cell wall is present in some types of cell.

(a) On the diagram, draw a line to link each **type of cell** to the **information**.



[2]

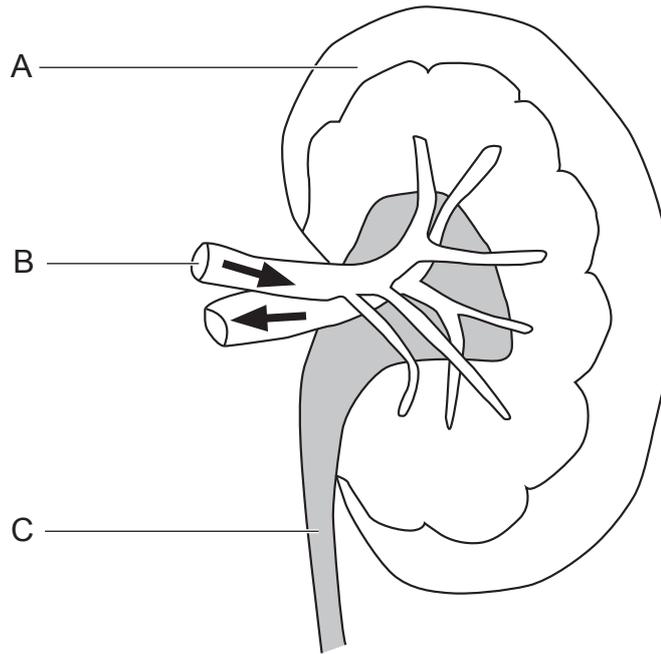
(b) Complete the diagram below to show how cells are organised in plants and animals. Write your answers in the empty boxes.



[2]

Examiner Only	
Marks	Remark

(c) Look at the diagram below. It shows an organ with its blood vessels.



Source: Principal Examiner

(i) Name this organ.

\_\_\_\_\_

[1]

(ii) Name A.

\_\_\_\_\_

[1]

(iii) Name C.

\_\_\_\_\_

[1]

Blood vessel B carries blood **to** the organ.

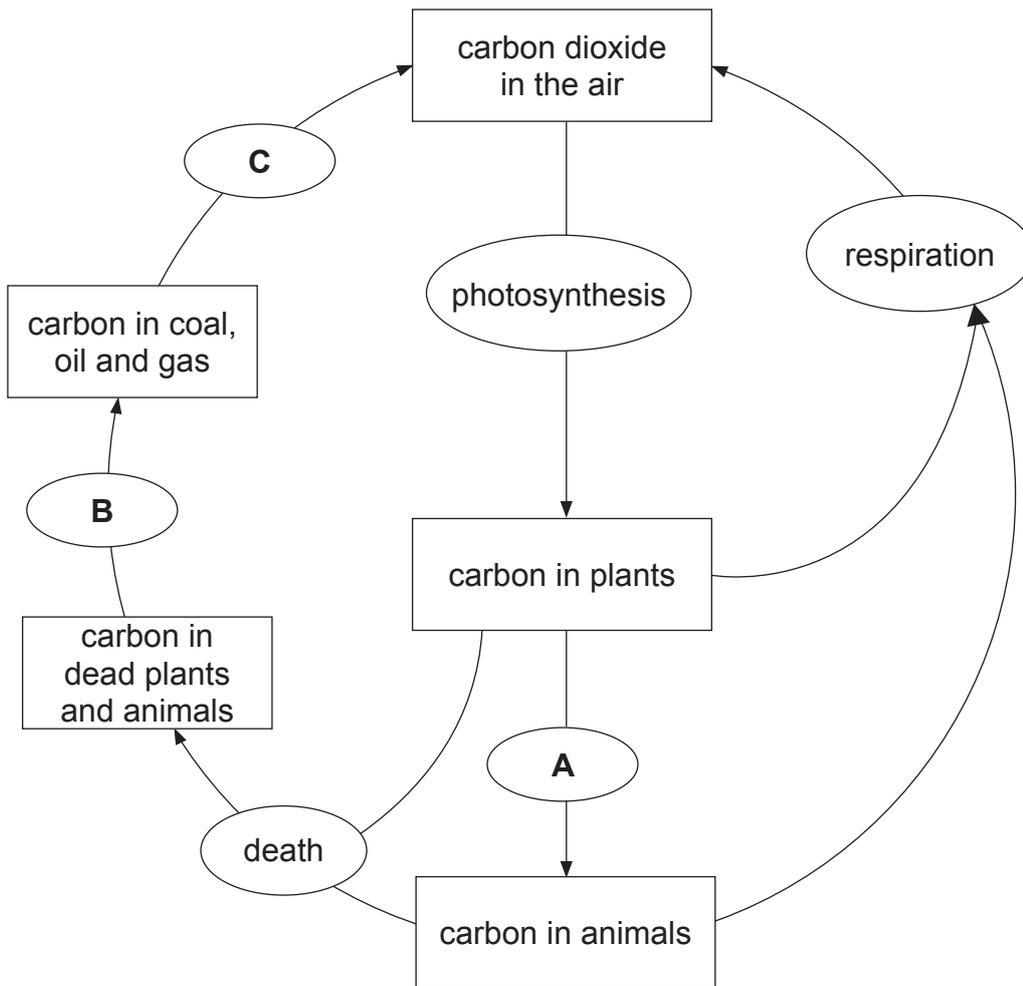
(iv) Name blood vessel B.

\_\_\_\_\_

[1]

Examiner Only	
Marks	Remark

2 Look at the diagram below. It shows the carbon cycle.



Name processes **A**, **B** and **C**.

**A** \_\_\_\_\_

**B** \_\_\_\_\_

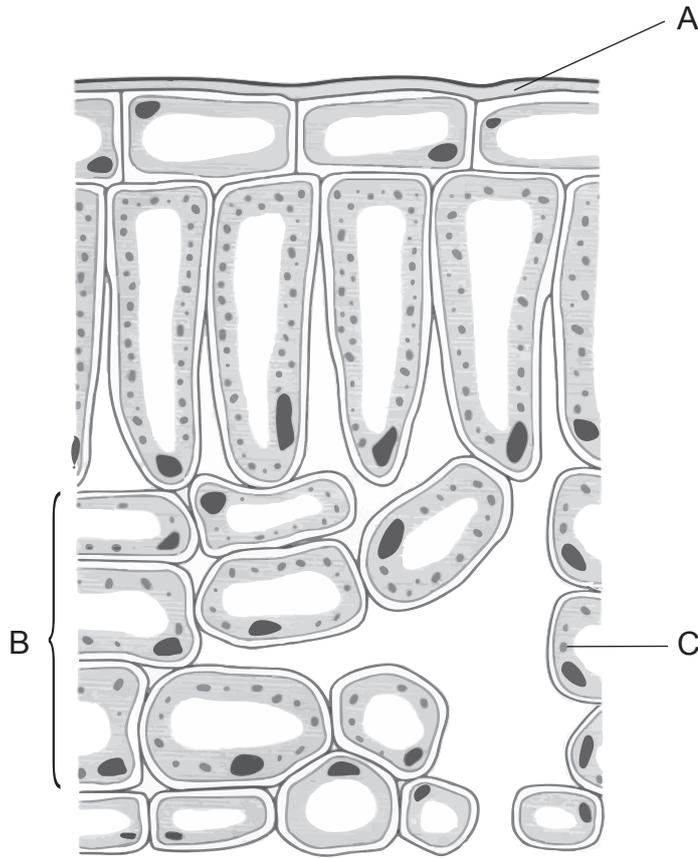
**C** \_\_\_\_\_

[3]

Examiner Only	
Marks	Remark

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**(Questions continue overleaf)**

3 Look at the diagram below. It shows a section of a leaf. The leaves of plants carry out photosynthesis.



© Barking Dog Art

(a) Write the names of parts A, B and C in the empty boxes in the table below. Choose the correct names from the list.

chloroplast	spongy mesophyll	vacuole
epidermis	palisade mesophyll	waxy cuticle

Part	Name of part
A	
B	
C	

[3]

Examiner Only	
Marks	Remark

(b) Most photosynthesis takes place in one layer of leaf cells.

(i) Draw a line on the diagram opposite to show one of the cells in this layer. Label the line **X**. [1]

(ii) Explain why most photosynthesis takes place in the cells in this layer.

\_\_\_\_\_ [1]  
\_\_\_\_\_

(c) Look at the table below. It shows the number of stomata found on the same area of lower leaf surface of four types of plant.

Type of plant	Number of stomata
geranium	180
sunflower	115
oak	360
horse chestnut	230

(i) Using the information in the table, name the type of plant that has 50% fewer stomata than an oak leaf.

**Show your working out.**

Type of plant \_\_\_\_\_ [2]

Examiner Only

Marks Remark

(ii) What is the advantage to a plant of having more stomata?  
Explain your answer.

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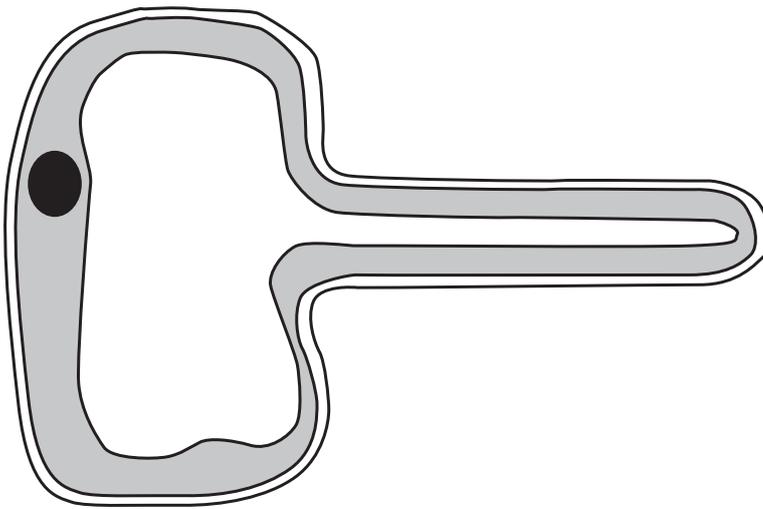
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 [2]

(d) Look at the diagram below. It shows a root hair cell.



(i) This cell is adapted to give a large surface area for absorption.  
Describe how.

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 [1]

(ii) Name **two** substances a root hair cell absorbs from the soil.

1 \_\_\_\_\_

2 \_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

4 Glucose is used in respiration.

(a) What type of carbohydrate is glucose?

\_\_\_\_\_ [1]

(b) Look at the box below.

It shows three word equations for respiration – **A**, **B** and **C**.

**A** glucose + oxygen  $\longrightarrow$  carbon dioxide + water + energy

**B** glucose  $\longrightarrow$  lactic acid + energy

**C** glucose  $\longrightarrow$  carbon dioxide + alcohol + energy

Two of the word equations show anaerobic respiration and one of the word equations shows aerobic respiration.

(i) Write the letter of the word equation showing aerobic respiration.

\_\_\_\_\_ [1]

(ii) Using information from the word equations, explain your answer.

\_\_\_\_\_  
 \_\_\_\_\_ [1]

(c) Write down **two** uses for the energy released during respiration.

1 \_\_\_\_\_

2 \_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

- 5 The hormonal system and the nervous system are two communication systems in the human body.

The table below gives information about these two communication systems.

Complete the table by writing in the empty boxes.

Communication system	Speed of response	Uses a chemical messenger	Message is carried in the blood
	Slow or Fast	Yes or No	Yes or No
Hormonal			
Nervous			

[3]

Examiner Only	
Marks	Remark

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- 6 Leatherback turtles live in the sea. Female leatherback turtles make short trips onto beaches at night time to lay eggs.

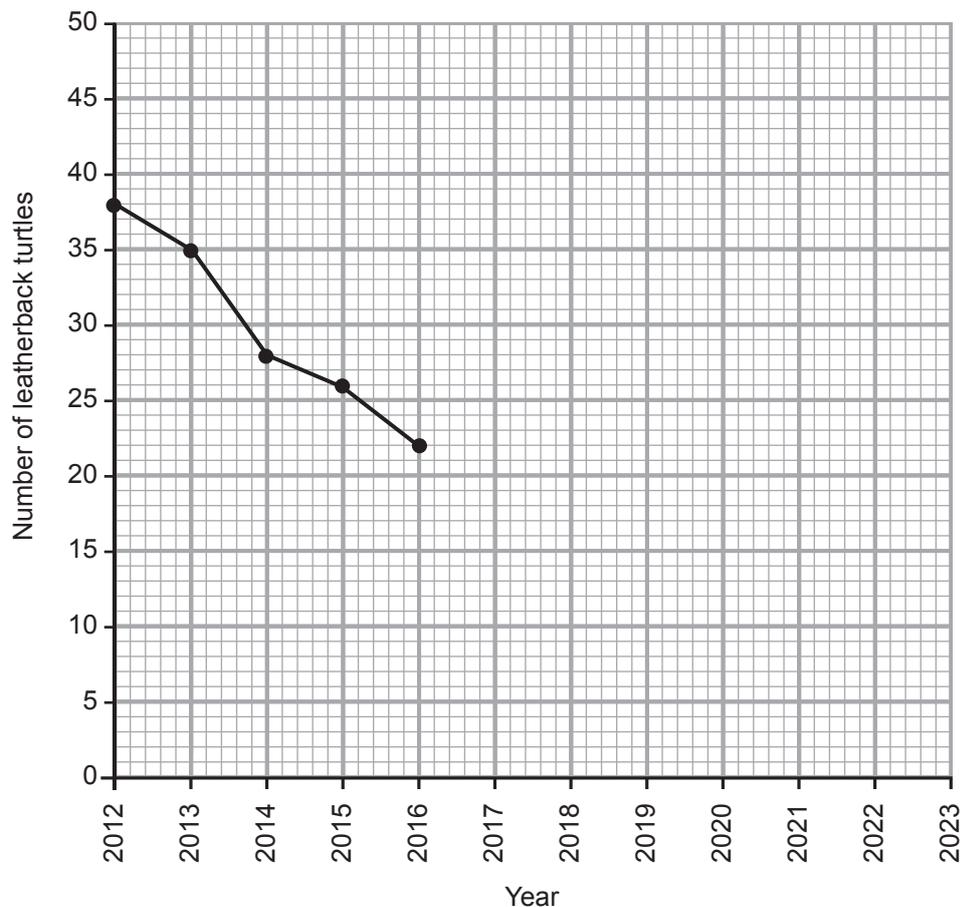
The photograph below shows a leatherback turtle.



© irin717 / iStock / Thinkstock

Scientists recorded the number of leatherback turtles they saw on a beach in Costa Rica during the breeding season each year from 2012 to 2016.

The graph below shows the scientists' results.



Source: leatherback.org

Examiner Only	
Marks	Remark

Using the information from the graph opposite, answer the following questions.

- (a) Describe the overall trend for the number of leatherback turtles from 2012 to 2016.

\_\_\_\_\_ [1]  
\_\_\_\_\_

- (b) Assume that the trend in the number of leatherback turtles continues at the same rate as **2015 to 2016**.

- (i) Draw a line on the graph to predict the first year when **no** leatherback turtles will visit this beach. [1]

- (ii) Write down this year.

Year \_\_\_\_\_ [1]

- (c) Suggest **one** human activity that could affect the number of leatherback turtles.

\_\_\_\_\_ [1]  
\_\_\_\_\_

- (d) Give **one abiotic** factor that could affect the number of leatherback turtles.

\_\_\_\_\_ [1]  
\_\_\_\_\_

- (e) Give **two** resources the leatherback turtles compete for.

1 \_\_\_\_\_ [2]  
2 \_\_\_\_\_

Examiner Only	
Marks	Remark

- 7 (a) A scientist investigated the effect of ripening on the starch and glucose content of bananas.

Look at the photographs below.  
They show bananas at four stages of ripeness.



**Stage 1**

Green, unripe  
and hard.



**Stage 2**

Yellow



**Stage 3**

Brown spots



**Stage 4**

Brown, overripe  
and soft

© Ted Kinsman / Science Photo Library

The scientist cut two 1cm thick slices from a banana at each stage of ripeness.

She tested one slice for starch and one slice for glucose.

- (i) Name the food test reagent the scientist used to test for **starch**.

Reagent \_\_\_\_\_

Write down the colour change expected for a positive result.

Colour change: yellow-brown to \_\_\_\_\_ [2]

- (ii) Name the food test reagent the scientist used to test for **glucose**.

Reagent \_\_\_\_\_

Write down the colour change expected for a positive result.

Colour change: blue to \_\_\_\_\_ [2]

Examiner Only

Marks Remark

- (b) Look at the table below. It shows the starch and glucose content in the bananas at each stage of ripeness.

Stage of ripeness	Starch content	Glucose content
1	high	none
2	medium	low
3	low	medium
4	none	high

Source: Principal Examiner

- (i) Using the results in the table above, describe the change in the glucose content from stage 1 to stage 4.

\_\_\_\_\_ [1]

- (ii) Suggest a reason for this change.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [2]

Bananas contain an enzyme that causes them to ripen.

- (c) Use your knowledge of enzymes to explain why bananas kept in a fridge at 4 °C will take longer to ripen than bananas kept at room temperature.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [3]

Examiner Only	
Marks	Remark

- 8 Look at the photograph below. It shows an Asian hornet and a honeybee.



© Scott Camazine / Science Photo Library

Asian hornet

honeybee

Read the passage below and answer the questions that follow.

Honeybees feed on nectar from plants.

Beekeepers, gardeners and the public in Northern Ireland are being asked to be on the lookout for invading Asian hornets that feed on honeybees.

Asian hornets have been seen in England but not yet in Northern Ireland.

In England, their nests have been destroyed by experts as soon as they are found.

One Asian hornet nest contains 6000 hornets.

One Asian hornet kills 50 honeybees in one day.

- (a) In the space below draw a food chain containing **three** organisms from the passage.

Examiner Only	
Marks	Remark

[2]

- (b) (i) Calculate how many honeybees can be killed by 6000 hornets in one day.

\_\_\_\_\_ honeybees [1]

- (ii) A beekeeper has 10 beehives each containing 60 000 honeybees.

Using your answer from part (b)(i), calculate how long it could take for 6000 hornets to kill all the honeybees owned by this beekeeper.

**Show your working out.**

\_\_\_\_\_ days [2]

- (c) Why are Asian hornets' nests destroyed as soon as they are found?

\_\_\_\_\_  
 \_\_\_\_\_ [1]

Examiner Only	
Marks	Remark



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**THIS IS THE END OF THE QUESTION PAPER**

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