

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
Higher Tier

[GDW12]



WEDNESDAY 7 NOVEMBER 2018, MORNING

TIME

1 hour.

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 70.

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 4.

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

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

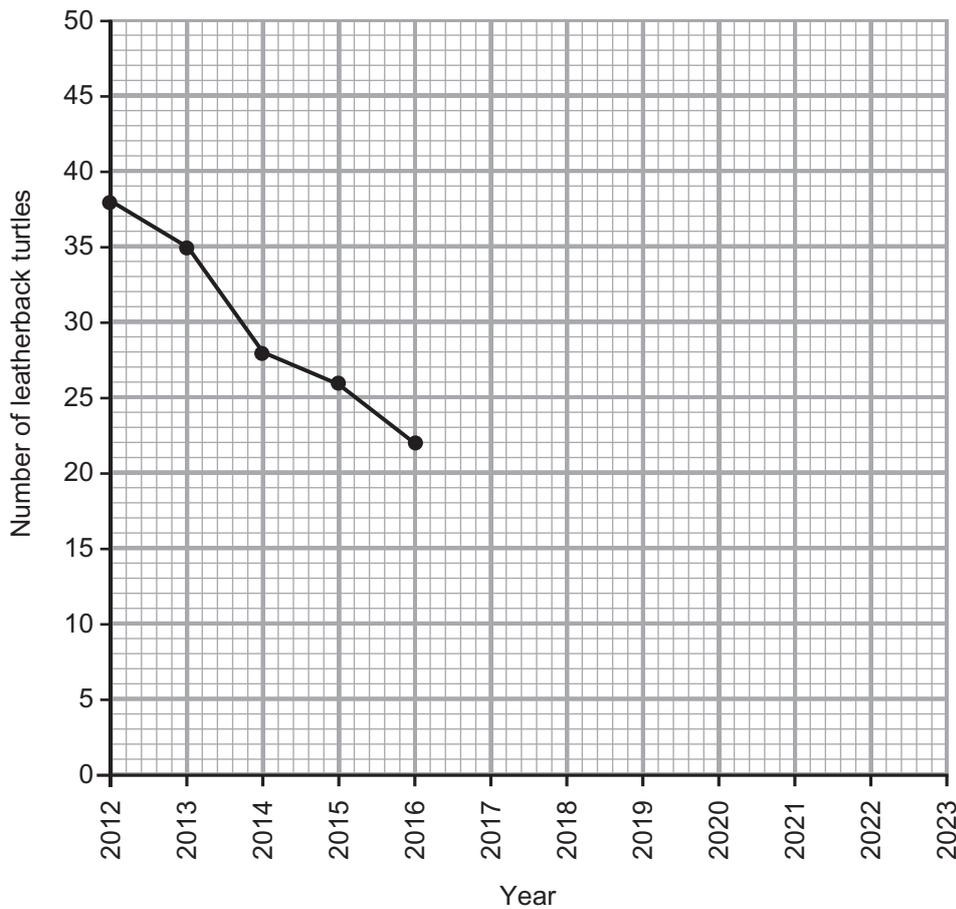
The photograph below shows a leatherback turtle.



© 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

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

The photographs 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** and give the colour change expected for a positive result.

Reagent _____

Colour change: yellow-brown to _____ [2]

- (ii) Name the food test reagent the scientist used to test for **glucose** and give the colour change expected for a positive result.

Reagent _____

Colour change: blue to _____ [2]

Examiner Only

Marks Remark

- (b) The table below 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) Use the results in the table above to 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

3 The photograph 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.

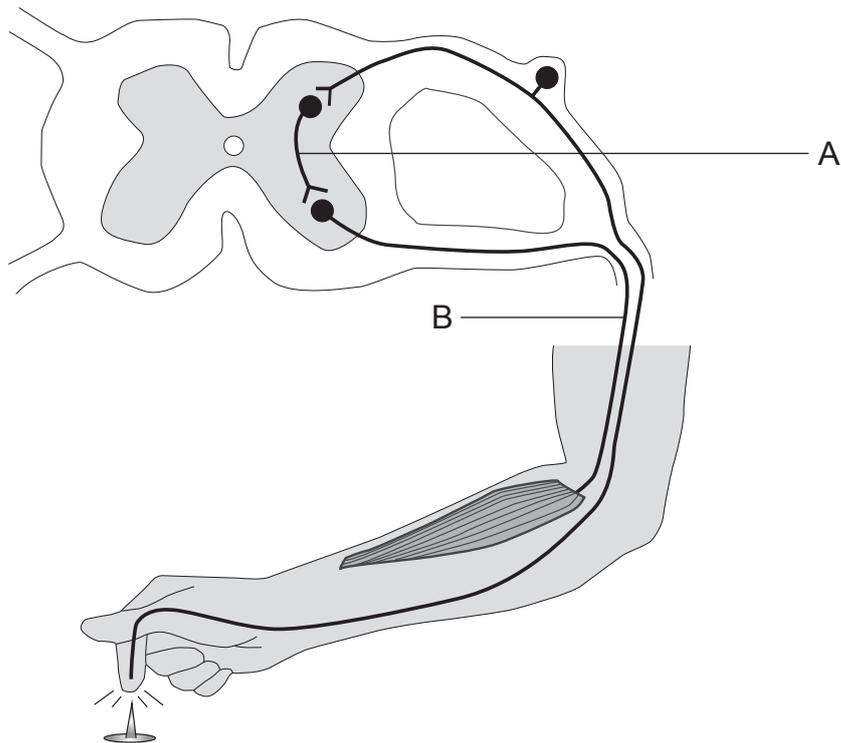
Examiner Only

Marks

Remark

[2]

5 The diagram below shows a spinal reflex arc.



Source: CCEA

(a) What is the stimulus shown in the diagram?

_____ [1]

(b) Name neurones A and B.

A _____

B _____ [2]

(c) Draw an arrow on neurone A to show the direction of the nerve impulse.

[1]

(d) Name the effector in this spinal reflex arc.

_____ [1]

(e) One part of the central nervous system is **not** involved in a reflex arc. Name this part.

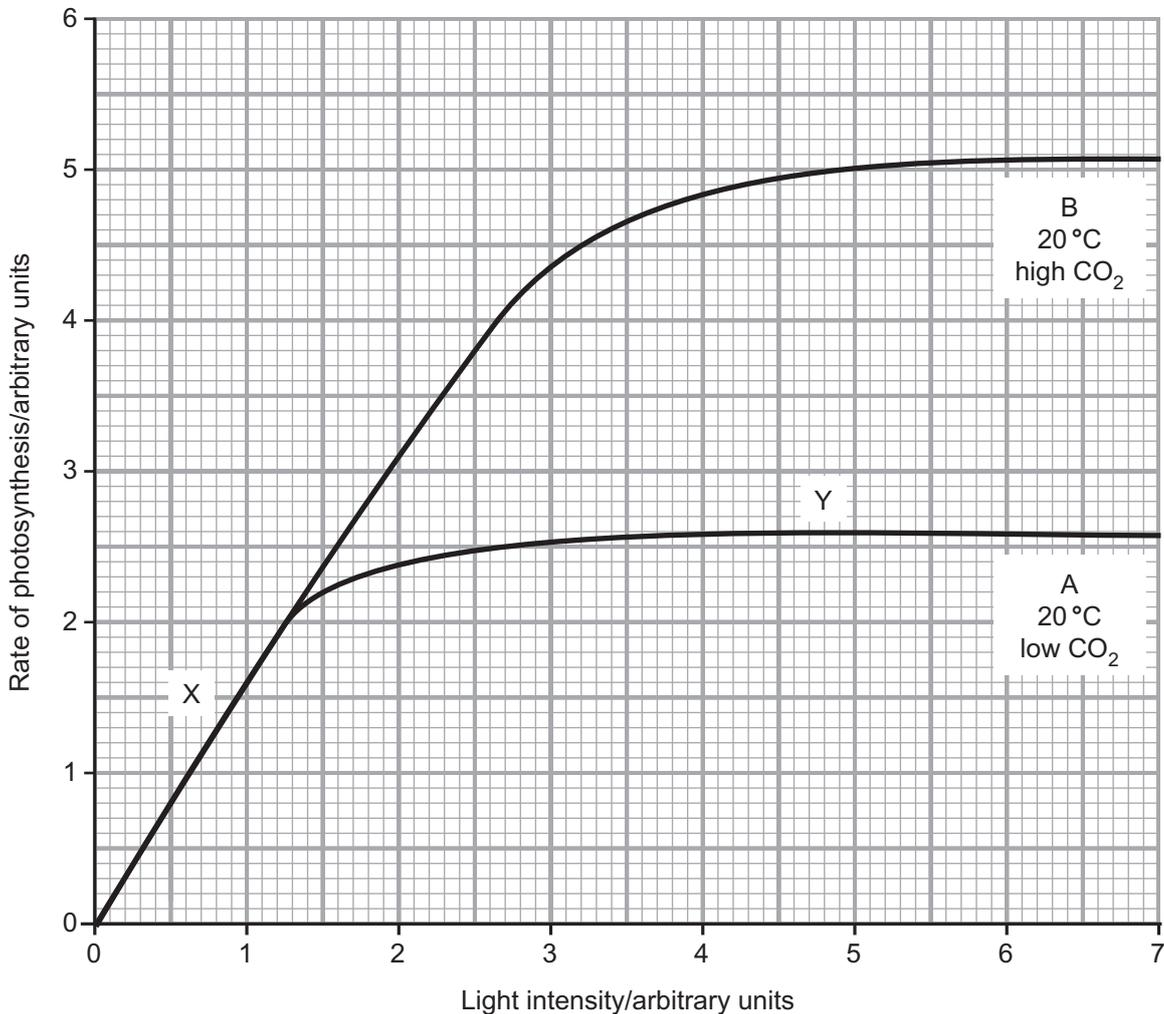
_____ [1]

Examiner Only

Marks Remark

- 6 The graph shows the effect of different light intensities on the rate of photosynthesis at:

- A: 20 °C with low carbon dioxide (CO₂) levels
 B: 20 °C with high carbon dioxide (CO₂) levels



- (a) Give **one** factor that limits the rate of photosynthesis at point X.

[1]

- (b) Give **one** factor that limits the rate of photosynthesis at point Y.

[1]

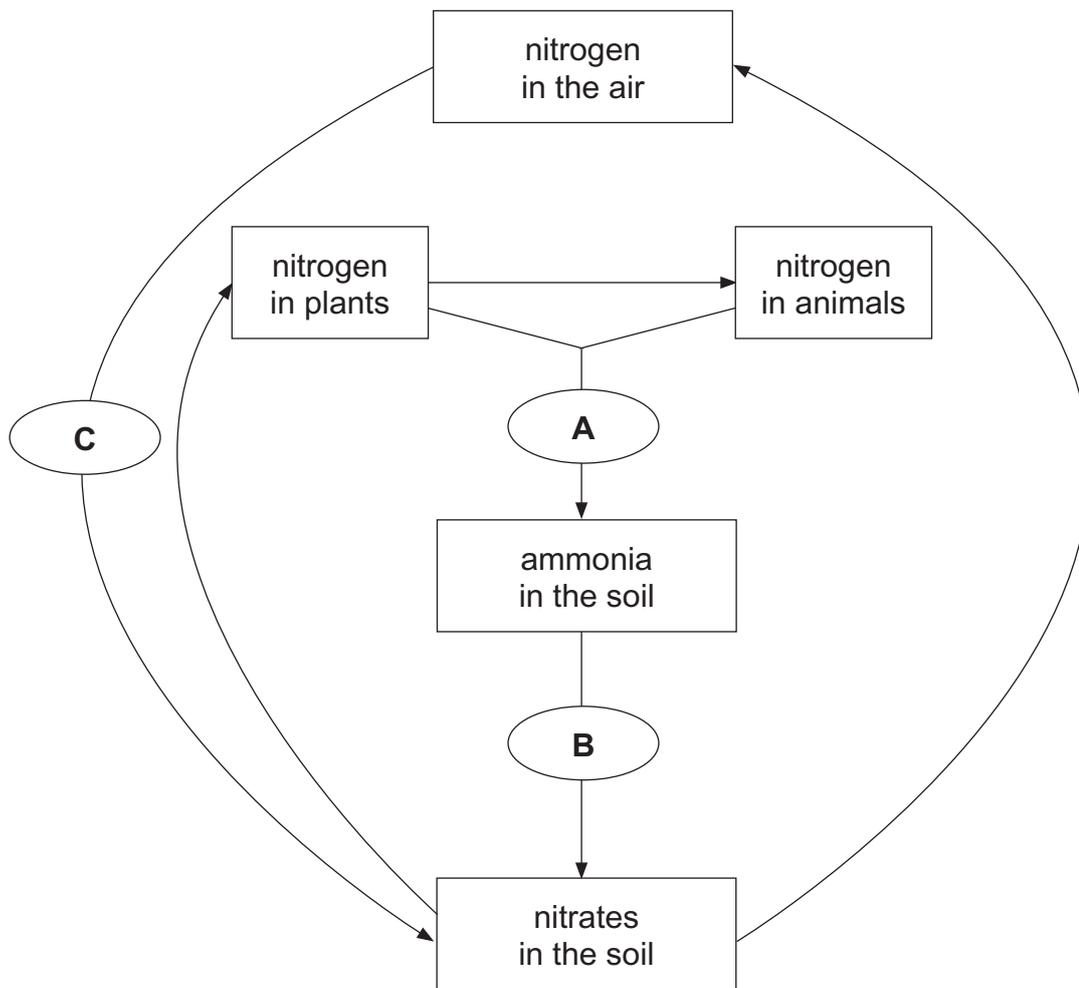
- (c) Draw a **line** on the graph to show the effect of increasing light intensity on the rate of photosynthesis when the temperature is **10 °C** and the carbon dioxide level is **low**.

[2]

Examiner Only	
Marks	Remark

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7 The diagram shows part of the nitrogen cycle.



(a) Name processes **A**, **B** and **C**.

A _____

B _____

C _____

[3]

Examiner Only	
Marks	Remark

- (c) Describe and explain how waterlogging affects the amount of nitrates **absorbed by the roots** of plants growing in this field.

Description _____ [1]

Explanation _____

_____ [2]

- (d) Excess nitrates entering a river cause eutrophication.
This results in initial algal growth followed by algae dying.

- (i) Name **one** type of organism that decomposes the dead algae.

_____ [1]

- (ii) Describe and explain how biodiversity in the river is affected by eutrophication.

Description _____ [1]

Explanation _____

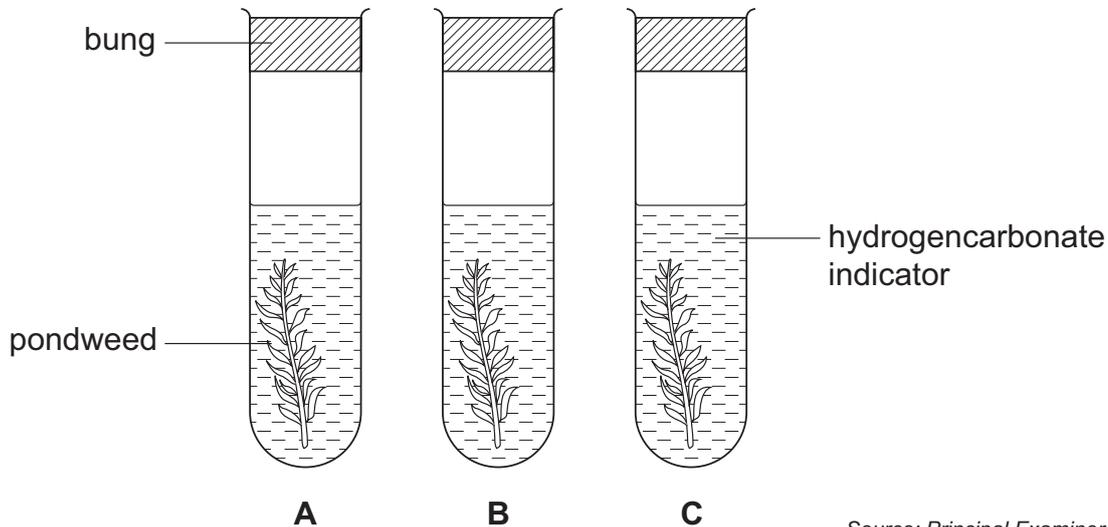
_____ [2]

Examiner Only	
Marks	Remark

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- 9 Students investigated the effect of light intensity on respiration and photosynthesis in pondweed.

They placed three boiling tubes containing pondweed and red hydrogencarbonate indicator in different light conditions for three hours. The diagram below shows their experimental set-up.



The table below shows their results.

- (a) Complete the table to give the light conditions for boiling tubes A and C.

Boiling tube	Light conditions	Colour of the hydrogencarbonate indicator after three hours
A		Yellow
B	Dim light	Red
C		Purple

[2]

Examiner Only	
Marks	Remark

- (b) Explain the result for the hydrogencarbonate indicator in boiling tube C.

[2]

- (c) (i) Which boiling tube, A, B or C, is at compensation point?

Boiling tube _____ [1]

- (ii) Explain why this boiling tube is at compensation point.

[2]

THIS IS THE END OF THE QUESTION PAPER

Examiner Only	
Marks	Remark

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