



General Certificate of Secondary Education
2017–2018

Centre Number

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Candidate Number

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Science: Single Award

Unit 1 (Biology)

Foundation Tier

ML

[GSS11]

TUESDAY 15 MAY 2018, AFTERNOON

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.

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 nine** questions.

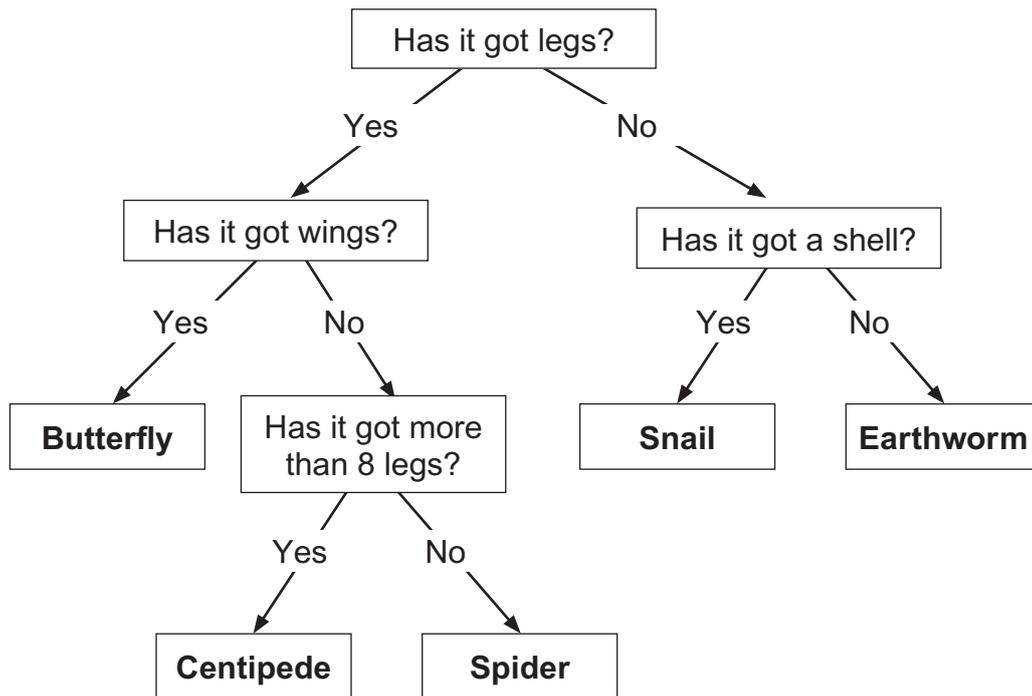
INFORMATION FOR CANDIDATES

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**.

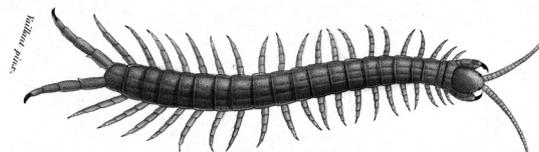
1 (a) Look at the key below. It can be used to identify some animals.



(i) How many animals can this key be used to identify?

[1]

(ii) Use the key to identify the animal shown below.



© Collection Abecasis / Science Photo Library

[1]

(iii) Use information from the key to write down **two** features of a snail.

1. _____

2. _____ [2]

(b) Write down **one** reason why scientists classify animals.

_____ [1]

[Turn over

2 The statements in the table below describe either the nervous or hormone system.

(a) Place a tick (✓) beside each statement to show if it describes the nervous system or the hormone system.

The first one has been done for you.

Statements	Nervous system	Hormone system
message is slow		✓
message travels along neurones		
message travels in the blood		
message is electrical		
message is chemical		

[2]

(b) Insulin is a hormone that controls blood glucose levels. Type 1 diabetes occurs when an organ in the body stops producing insulin.

(i) What is the organ in the body that produces insulin?

Circle the correct answer.

liver

pancreas

kidney

[1]

(ii) Write down **two** possible long-term effects of diabetes.

1. _____

2. _____

[2]

3 (a) Vitamins are needed to keep us healthy. Different vitamins are found in different foods.

Draw a line from each vitamin to **one** food that is a good source of that vitamin.

Vitamin

Food Source

vitamin C

oily fish

oranges

vitamin D

rice

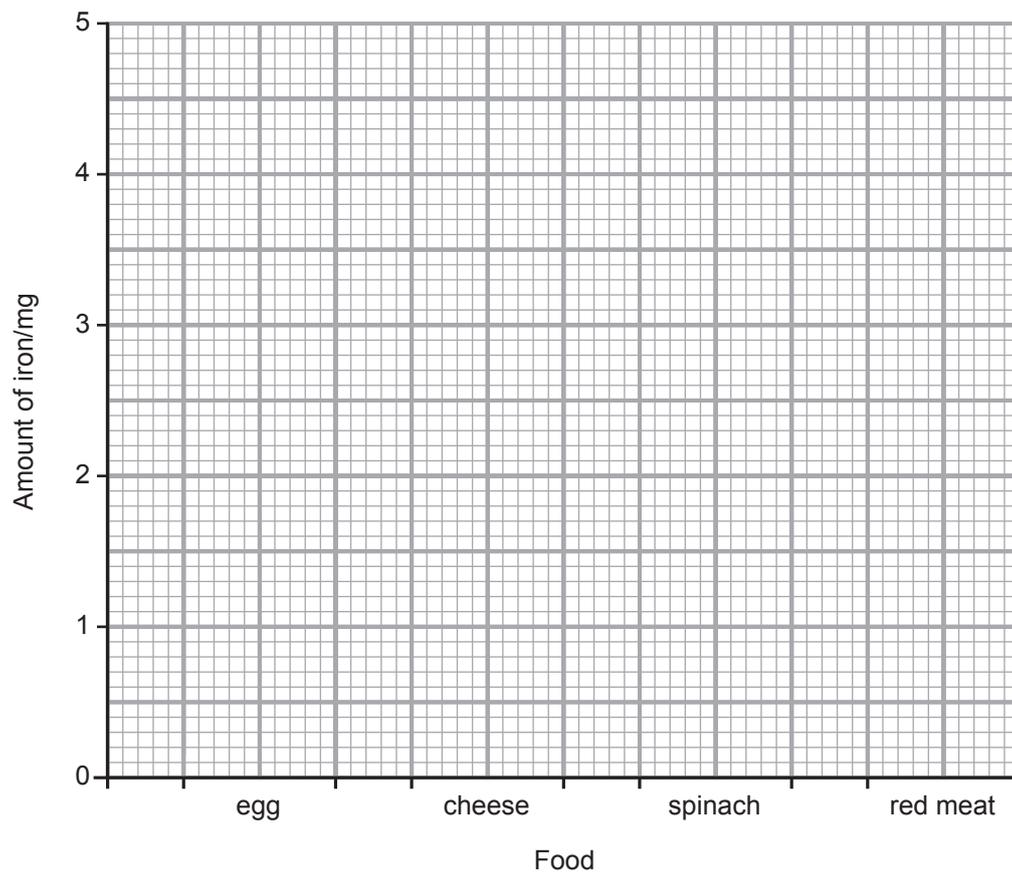
[2]

[Turn over

A healthy diet should also contain minerals. The table below shows the amount of iron and calcium in 100 g of four different foods.

Food	Iron/mg	Calcium/mg
egg	2.0	50
cheese	0.4	200
spinach	4.0	240
red meat	4.3	15

- (b) Draw a **bar graph** for the iron content in these foods.
Do this on the grid below.



[2]

(c) A doctor has told James that his iron level is low. From the table, write the name of the food that would be best for increasing his iron level.

_____ [1]

(d) The recommended daily allowance (RDA) of **calcium** is 1000 mg.

(i) Using information from the table, calculate the percentage (%) of the RDA of calcium that is provided by 100 g of cheese.

(Show your working out.)

Answer _____ % [2]

(ii) Write down **one** function of calcium in the body.

_____ [1]

[Turn over

- 4 (a) A simple food chain is shown below.



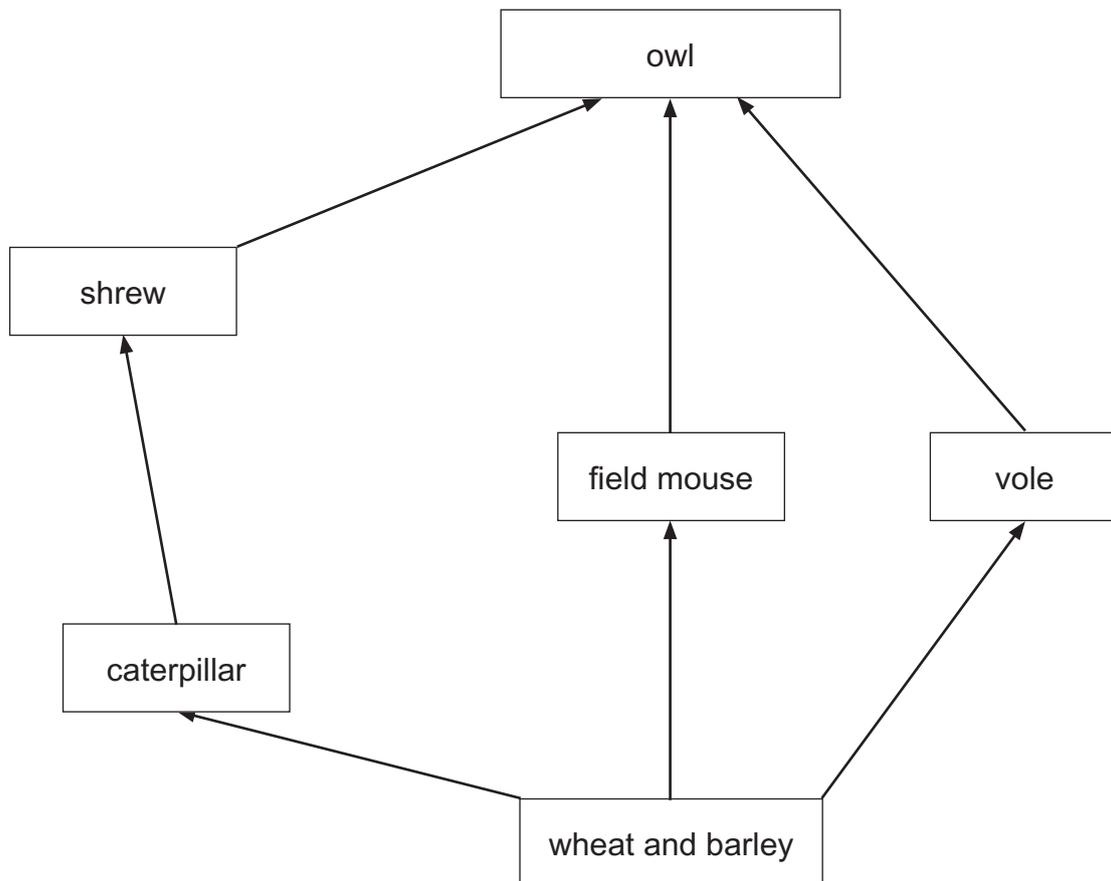
- (i) What do the arrows mean?

_____ [1]

- (ii) Write down the name of the primary consumer in this food chain.

_____ [1]

- (b) This food chain forms part of a food web as shown below.



(i) Write down **one** advantage to the owl of being part of this larger food web.

[1]

(ii) The number of shrews has decreased because of disease. What effect, if any, would this have on the number of caterpillars? Write about and explain your answer.

[2]

(c) Farmers who grow wheat and barley like to have owls nesting on their farms. Why do you think nesting owls could help farmers to make more money? Use information in the food web, and your own knowledge to help you answer this question.

[3]

[Turn over

- 5 Shown below is a Manx cat. Some Manx cats have no tail.



© Aletakae / iStock / Thinkstock

The allele for no tail (T) is dominant to the allele for having a tail (t).
Manx cats with no tail have the genotype Tt.
Kittens with the genotype TT die in the uterus so there cannot be an adult cat with the genotype TT.

- (a) (i) What does **dominant** mean?

_____ [1]

- (ii) What word describes the genotype Tt, where each allele is different?

_____ [1]

- (b) (i) Finish the Punnett square below to show the cross between a cat with no tail (Tt) and a cat with a tail.

	T	
	Tt	
t		

[2]

- (ii) What is the chance of the kittens also having no tail?
Use the Punnett square to help you.

Circle the correct answer.

100%

75%

50%

25%

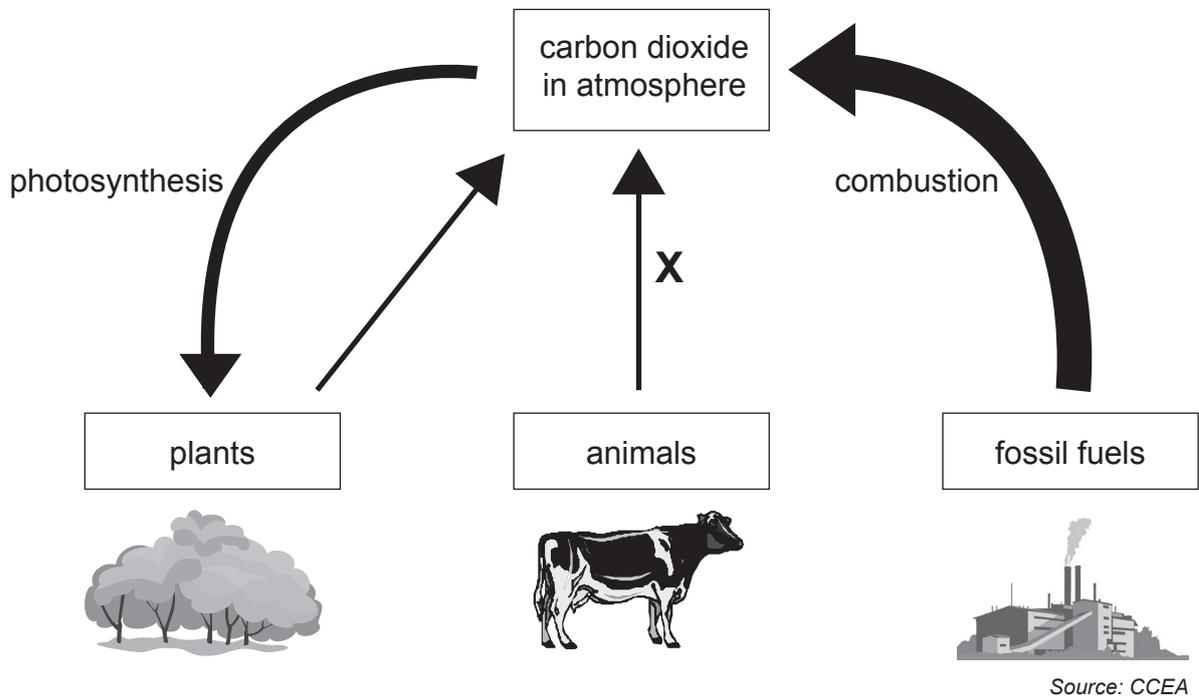
[1]

- (c) Write about and explain why breeders do **not** usually cross two Manx cats with no tail (Tt).
Use the information you have been given to help you.

[2]

[Turn over

- 6 Look at the diagram below. It shows how carbon dioxide enters and leaves the atmosphere. The arrows show the movement of carbon dioxide. The thicker the arrow the more carbon dioxide.



- (a) Write down the name of the process labelled X on the diagram.

[1]

- (b) Write about and explain why the amount of carbon dioxide in the atmosphere is increasing. Use the diagram to help you.

[2]

(c) The increasing amount of carbon dioxide in the atmosphere is leading to global warming.

(i) Write about and explain what **global warming** means.

_____ [1]

(ii) Write down **one** effect of global warming.

_____ [1]

(d) When the Earth was first formed approximately 4.5 billion years ago, its atmosphere contained more carbon dioxide and less oxygen than today.

However, when green plants evolved the composition of the atmosphere began to change.

(i) What process takes place in green plants that helped change the amount of carbon dioxide and oxygen in the atmosphere and promoted the evolution of animals?

_____ [1]

(ii) How have the levels of carbon dioxide and oxygen in the atmosphere changed from the time green plants first evolved?

_____ [2]

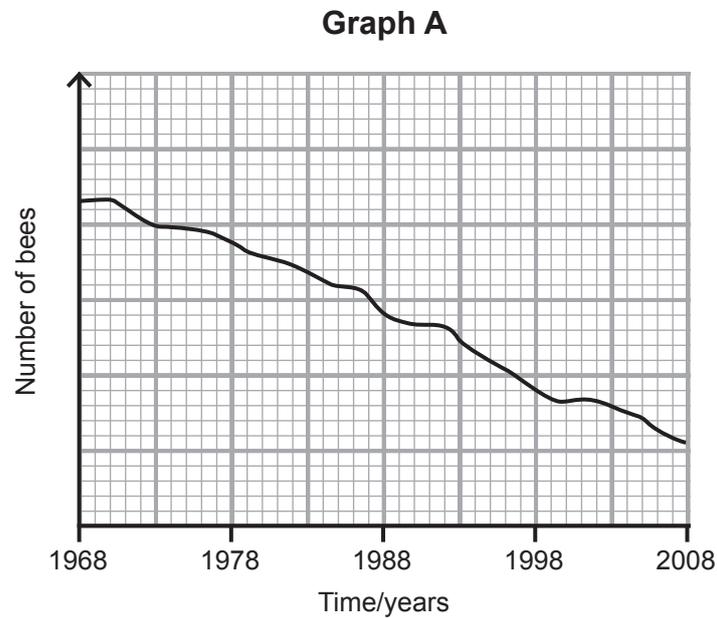
[Turn over

- 7 Bees are important in the life cycle of plants. When a bee lands on a flower to feed on nectar, the pollen will stick to its body and the bee can carry the pollen to another flower. The pollen helps plants to produce seeds which will grow into new plants. This ensures good biodiversity.

(a) What does **biodiversity** mean?

[1]

Graph A shows how the number of bees in Ireland has changed over a 40-year period.

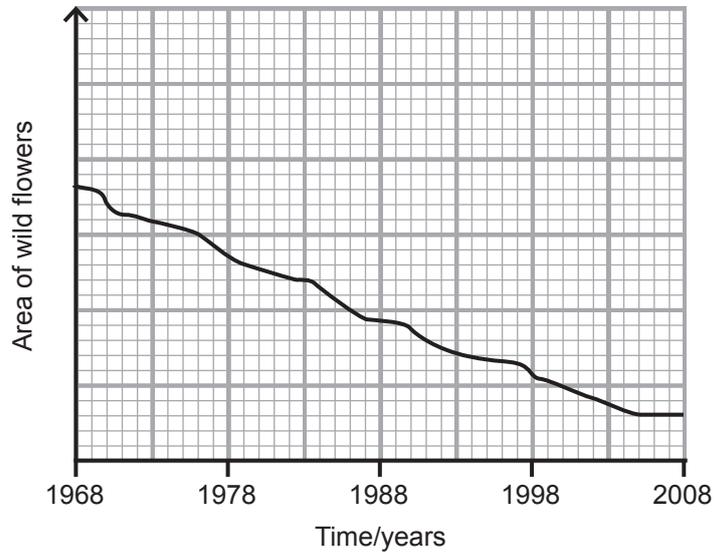


(b) Write about and describe the trend shown in this graph.

[1]

Graph **B** shows the area of wild flowers in Ireland over the same 40 year period.

Graph B



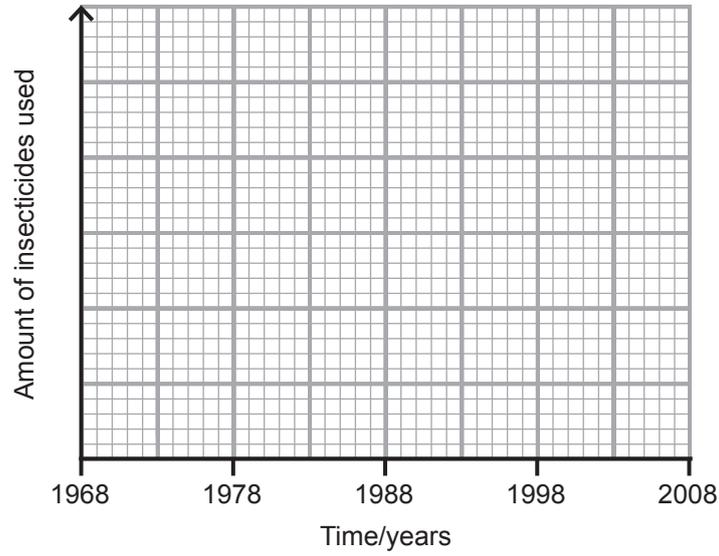
(c) Write about and explain the trend in the number of bees in Ireland. Use information from the graphs (**A** and **B**) to help you.

[2]

[Turn over

(d) Another reason for the trend shown in Graph A is the use of insecticides on plants. Insecticides will kill bees.

Use this information to draw a line on the grid below to show how the amount of insecticide used may have changed during the same 40-year period. [1]



(e) Write down **two** actions that could help increase the number of bees.

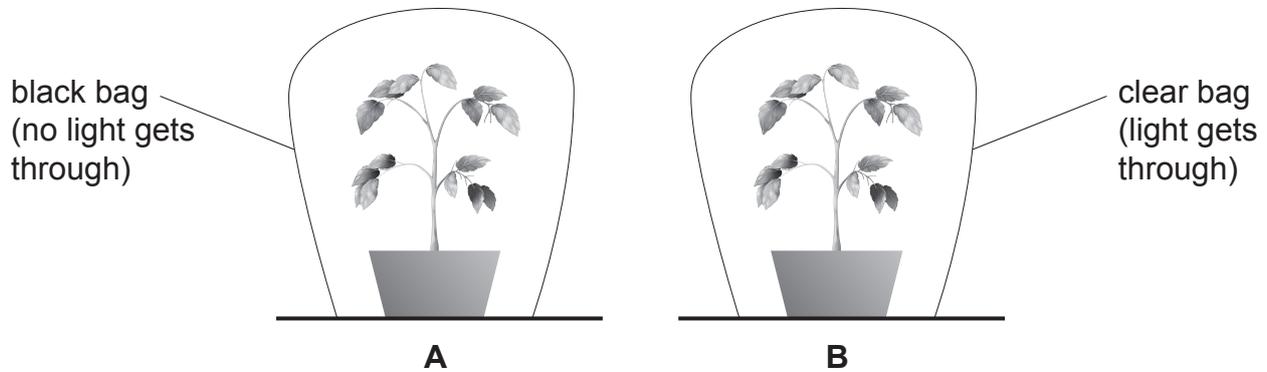
- 1. _____

- 2. _____

[2]

8 Photosynthesis is the process by which green plants use sunlight to make food which is stored as starch.

(a) The diagram below shows how an experiment to investigate if light is needed for photosynthesis could be set up.



Source: CCEA

Before the investigation was set up, both plant **A** and plant **B** were de-starched.

(i) Write about and describe how the plants could have been de-starched.

_____ [1]

(ii) What does de-starching do to the plants in this experiment?

_____ [1]

(iii) Write down **two** things needed to make the investigation a fair test.

1. _____ [2]
2. _____

[Turn over

(b) One leaf was taken from plant **A** and one leaf from plant **B**. Both leaves were tested for starch using iodine.

Describe and explain the results you would expect for leaf **B**.

[2]



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[6]

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

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