



General Certificate of Secondary Education
2016–2017

Centre Number

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Candidate Number

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Science: Single Award

Unit 1 (Biology)
Foundation Tier

MV18

[GSS11]

WEDNESDAY 22 FEBRUARY 2017, 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 ten** questions.

Information for Candidates

The total mark for this paper is 60.

Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in Question **10**.

1 (a) Complete the table below about food tests. [2 marks]

Choose from:

Starch

Emulsion

Biuret

Sugar

Food type	Test solution
	Benedict's
Protein	

(b) The activity of people affects the amount of energy they need.

Complete the following sentences. [2 marks]

Choose from:

more

less

less active

very active

People who are _____ usually need more energy than _____ people.

Teenagers usually need _____ energy than older people.

(c) Name the food type that helps protect against constipation and bowel cancer.

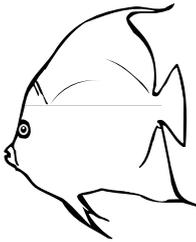
Circle the correct answer. [1 mark]

minerals

fat

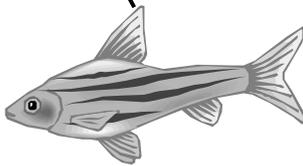
fibre

2 (a) The diagram below represents four different species of fish.



1

top fin

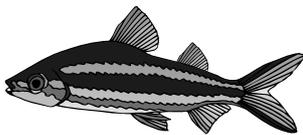


2

tail

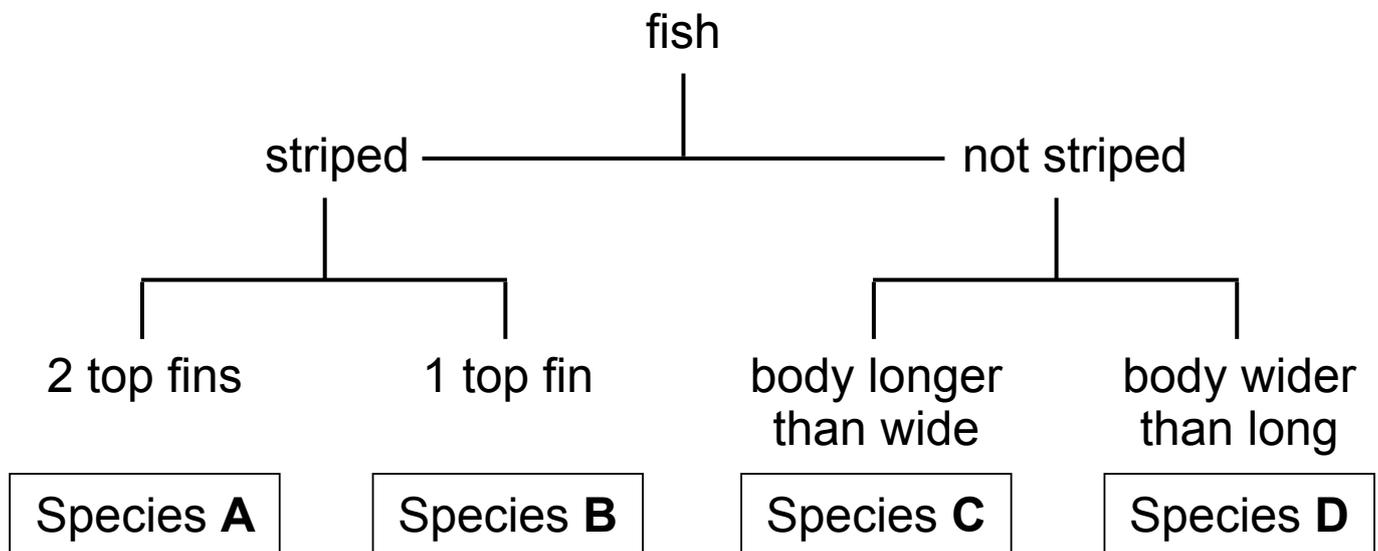


3



4

- (i) Match each of the fish to its species type (**A**, **B**, **C** or **D**) using the key below. [2 marks]



- 1 _____
- 2 _____
- 3 _____
- 4 _____

- (ii) Suggest **one** reason why it is important to be able to classify living organisms. [1 mark]
-

(b) Some types of fish are endangered due to overfishing.

(i) What is meant by the term 'endangered'? [1 mark]

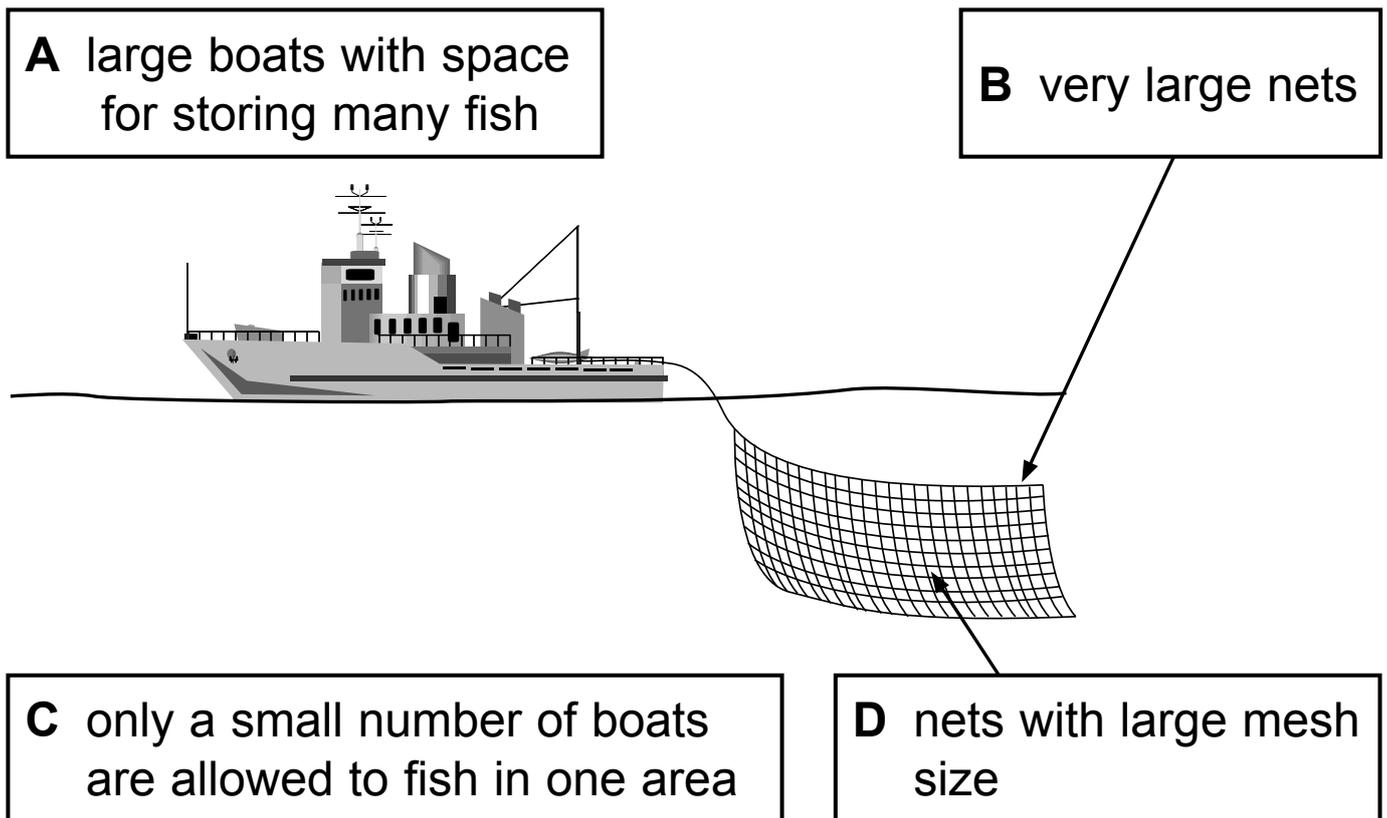
Circle the correct answer.

there are none left

there are very few left

their numbers are increasing

Shown below are some statements about modern fishing.



(ii) Which **two** statements shown above (**A**, **B**, **C** or **D**) will help protect fish numbers? [2 marks]

_____ and _____

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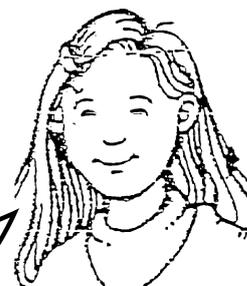
(Questions continue overleaf)

3 (a) Three students (**Bert**, **Emma** and **Zac**) were discussing global warming.



Bert

The sea levels are rising and Belfast could flood in the future!



Emma

Yes, I know!
We should use more solar power or wind turbines.



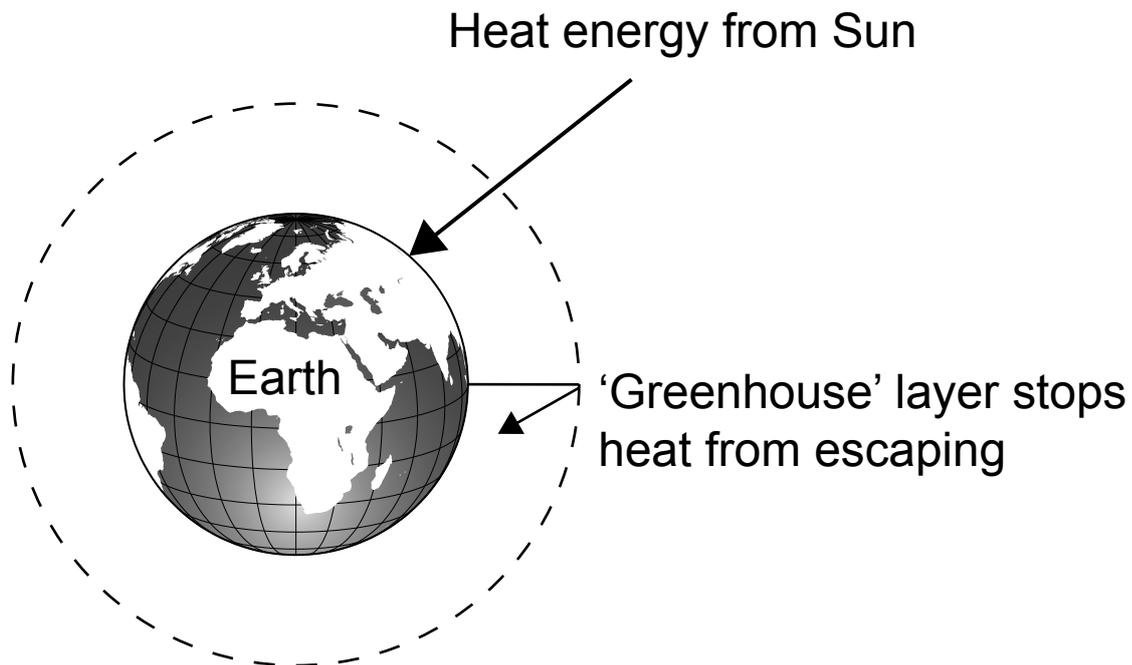
Zac

I agree. The TV says we are burning too many fossil fuels.

(i) Name the student who describes a **cause** of global warming. [1 mark]

(ii) Name the student who describes an **effect** of global warming. [1 mark]

The diagram below shows how the 'greenhouse' effect is causing global warming.



(b) Name a gas in the atmosphere that is causing the 'greenhouse' effect. [1 mark]

- 4 (a) The photograph below shows caterpillars feeding on a ragwort plant.



Leaves
eaten by
caterpillars

- (i) What term is used to describe the ragwort plant in the food chain? [1 mark]

Choose from:

primary consumer

producer

secondary consumer

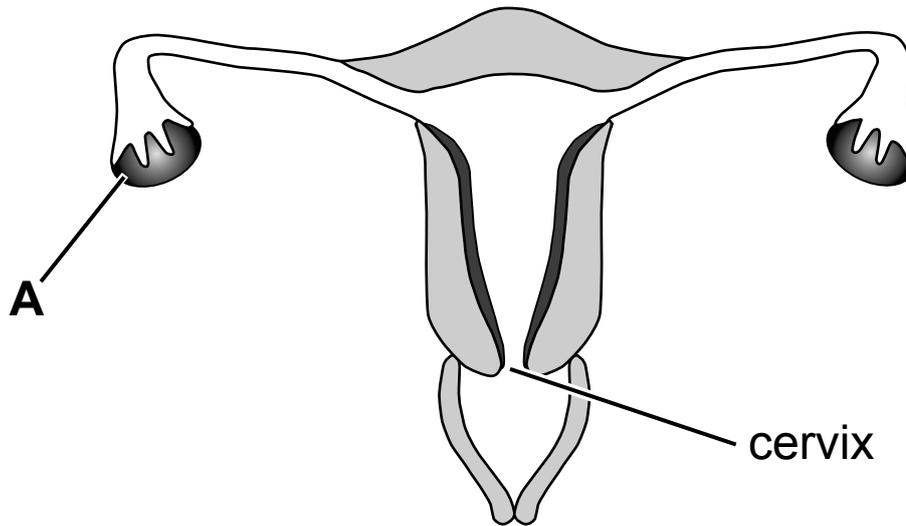
- (ii) State the source of energy of all food chains. [1 mark]
-

(b) What effect, if any, will the caterpillars have on the **growth** of the ragwort plant? Explain your answer.
[2 marks]

Effect _____

Explanation _____

- 5 (a) The diagram below represents the female reproductive system.



- (i) Name the organ labelled **A** in the diagram above.
[1 mark]

- (ii) Using the diagram and your knowledge, describe the path taken by a sperm from where it enters the vagina until it reaches and fertilises an egg.
[3 marks]

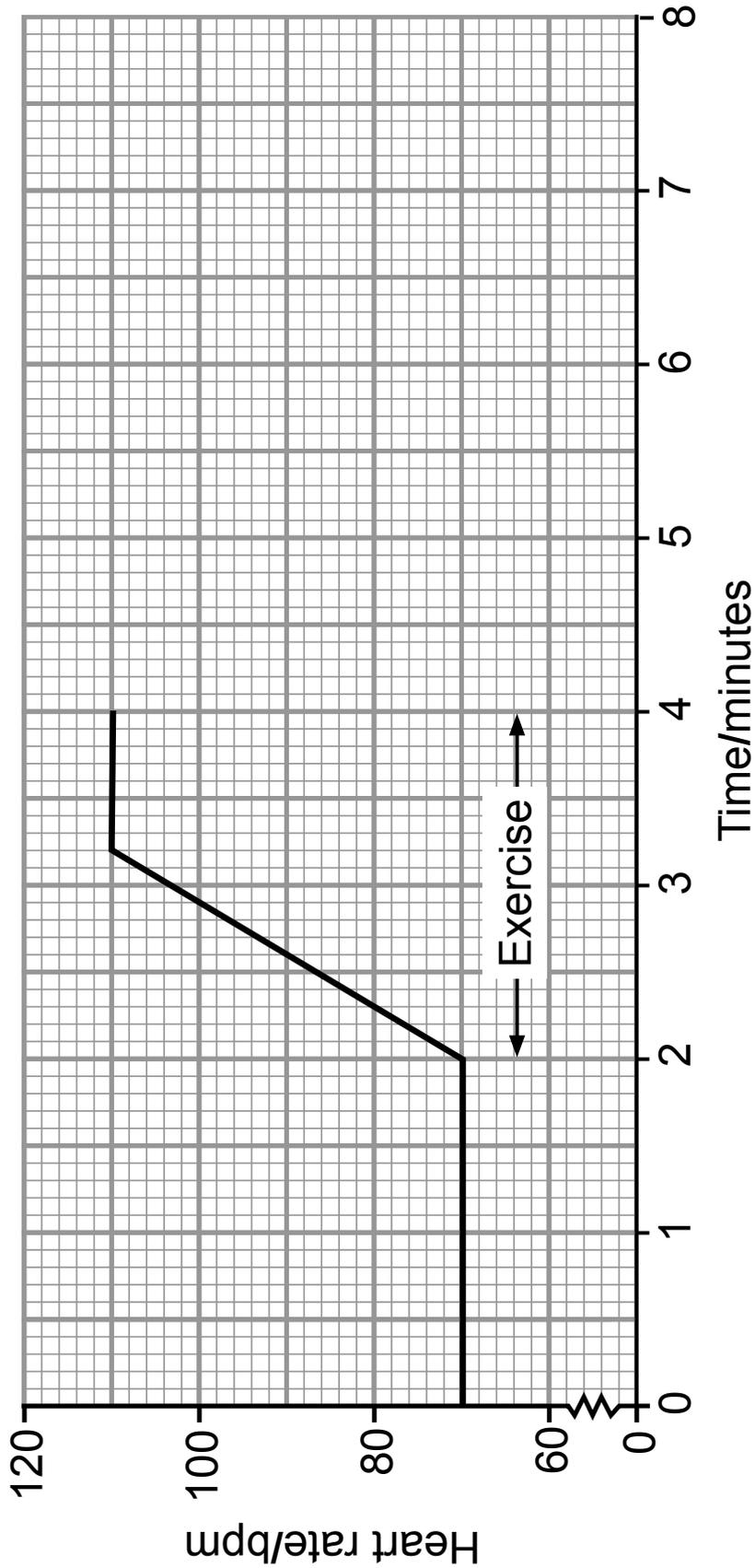
(b) (i) Pregnancy can be prevented by using contraception. Give **two** advantages of using condoms as contraceptives. [2 marks]

1. _____

2. _____

(ii) Give **one** disadvantage of using condoms as a contraceptive. [1 mark]

- 6 (a) The graph below shows Gail's heart rate before and during exercise.



(i) Describe fully the change in Gail's heart rate **during** exercise. [2 marks]

When Gail finished exercising at 4 minutes her heart rate stayed the same for 1 minute.

It then fell steadily until it reached 70 bpm in another 2 minutes.

After that it stayed at 70 bpm.

(ii) Using the information provided, complete the line graph opposite. [3 marks]

(iii) What is Gail's recovery time? [1 mark]

_____ minutes

(b) Name **one** disease that exercise can help protect against. [1 mark]

7 (a) Type 1 diabetes occurs when an organ in the body stops producing insulin.

(i) Name the organ that produces insulin. [1 mark]

(ii) Describe and explain the effect insulin has on blood glucose levels. [2 marks]

(b) Niamh has Type 1 diabetes. She takes the same amount of carbohydrate for breakfast each morning and injects herself with the same amount of insulin at the same time. Normally, she walks a kilometre to school.

One morning, Niamh slept in and she had to run to school.

Two hours later Niamh started to feel faint and unwell.

(i) Using the information provided, suggest why she felt faint and unwell. [2 marks]

(ii) When Niamh started to feel faint, what would she have needed to eat to make her feel well again?
[1 mark]

(c) Give **two** differences between Type 2 diabetes and Type 1 diabetes. [2 marks]

1. _____
2. _____

(d) Insulin is a hormone. Regulation of many body processes involves hormone or nervous control.

Give **two** differences between hormone and nervous control. [2 marks]

1. _____

2. _____

8 (a) Polydactyly is an inherited condition where affected individuals have extra fingers or toes.

(i) Explain the term 'inherited condition'. [1 mark]

(ii) Unusually, the allele that causes polydactyly is **dominant** to the normal allele.

Complete the genetic diagram below to show the offspring produced by two parents who are **heterozygous** for polydactyly. [2 marks]

Use the symbols: D = polydactyly allele; d = normal allele

		d
	DD	
d		

(iii) In the Punnett square, circle any offspring that have polydactyly. [1 mark]

(iv) From the genetic diagram, what is the probability of these parents having a child with polydactyly?
[1 mark]

(b) Polydactyly in humans is an example of discontinuous variation.

Define the term 'discontinuous variation'. [1 mark]

- 9 (a) A group of students investigated the effect of planting density on seedling growth. Their results are shown in the table below.

Number of seedlings in pot	Average mass of seedlings/g	Total mass of all seedlings/g
5	2.2	11
10	2.2	22
15	2.2	33
20	1.9	38
25	1.8	45
30		42

- (i) Calculate the **average mass** of the seedlings when there are 30 seedlings in the pot. [2 marks]
(Show your working out.)

_____ 9

(ii) Suggest why the **average mass** of the seedlings did not change when there were 15 or fewer seedlings in the pot. [1 mark]

(b) Using information from the table, describe fully the relationship between the number of seedlings and the **total mass** of all the seedlings. Suggest reasons for this relationship. [3 marks]

THIS IS THE END OF THE QUESTION PAPER

SOURCES

Q2(a) - - - Source: CCEA

Q2(b) - - - Source: CCEA

Q3(a)(i) - - Source: CCEA

Q3(a)(ii) - - Source: CCEA

Q4(a) - - - Source: Chief Examiner

Q5(a) - - - Source: CCEA

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Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total Marks	

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