



Rewarding Learning

General Certificate of Secondary Education  
2014–2015

**Science: Single Award**

Unit 1 (Biology)

Foundation Tier

[GSS11]



WEDNESDAY 12 NOVEMBER 2014, MORNING

Centre Number

71	
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Candidate Number

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**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 60.

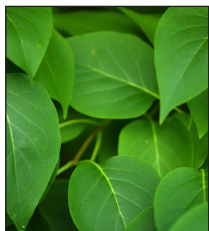
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

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) Shown below is a simple food chain.



(i) From the food chain name the:

producer \_\_\_\_\_

secondary consumer \_\_\_\_\_ [2]

(ii) What is the original source of energy in all food chains?

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

(iii) What do the arrows in a food chain tell us?

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

(b) Suggest what could happen to the number of aphids if the blue tit numbers **increased**.

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

Examiner Only	
Marks	Remark

2 (a) The labels below are from two different foods, **A** and **B**.

Examiner Only	
Marks	Remark

Food A/100 g	
Energy	215 kJ
Protein	1.6 g
Carbohydrates (of which sugars)	6.4 g 1.0 g
Fat (of which saturates)	1.9 g 0.8 g
Fibre	1.2 g

Food B/100 g	
Energy	2073 kJ
Protein	2.2 g
Carbohydrates (of which sugars)	47.3 g 37.7 g
Fat (of which saturates)	30.1 g 9.0 g
Fibre	4.4 g

(i) Give **two** reasons why eating too much of food **B** may cause a person to gain weight.

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

(ii) Name the food group which changes Biuret reagent from blue to lilac.

Circle the correct answer.

**fat**
**fibre**
**protein**

[1]

(b) Complete the table below.

Choose from:

**for strong teeth and bones : iron : prevents scurvy : fat**

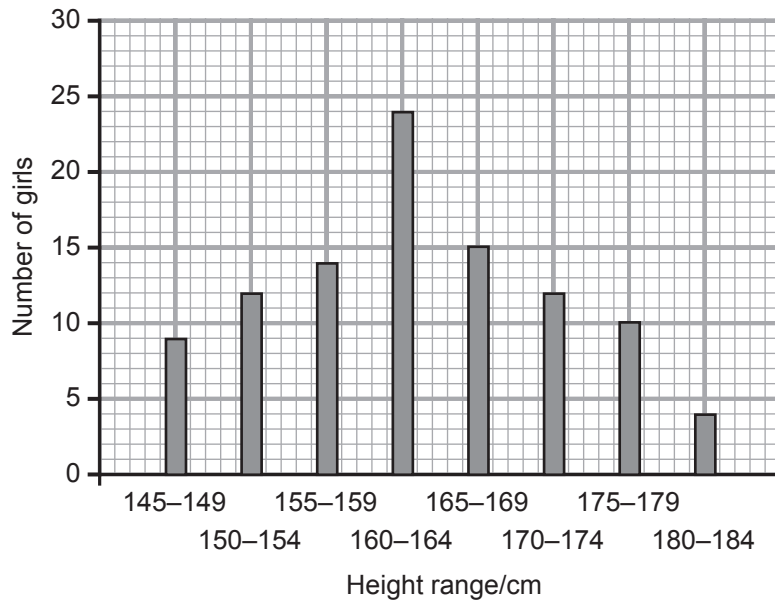
Food group	Function in the body
	to help the red blood cells carry oxygen
calcium	

[2]

3 (a) Some pupils investigated the variation in height of 16-year-old girls in their school.

The results are shown in the table and bar chart below.

Height range/cm	Number of girls
145–149	9
150–154	12
155–159	14
160–164	24
165–169	15
170–174	12
175–179	
180–184	4



Use this information to answer the following questions.

(i) How many girls were in the height range 175–179 cm?

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

(ii) What was the total number of girls measured in the investigation?

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

(iii) What is the most common height range of 16-year-old girls in the school?

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

(b) What type of variation does height show?

Choose from:

**continuous**

**discrete**

**discontinuous**

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

Examiner Only	
Marks	Remark

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**(Questions continue overleaf)**

4 (a) Shown below are the main substances found in cigarette smoke.



© iStock / Thinkstock

(i) Which substance named above can cause cancer?

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

(ii) Cancer is caused by a mutation. Complete the sentence below to describe what a mutation is.

Choose from:

**different**      **random**      **cells**      **chromosomes**

A mutation is a \_\_\_\_\_ change in the structure or number of \_\_\_\_\_.

[2]

(iii) Carbon monoxide is a gas that takes the place of oxygen in red blood cells.

Using this information and your knowledge, explain fully why many smokers are often short of energy when active.

\_\_\_\_\_

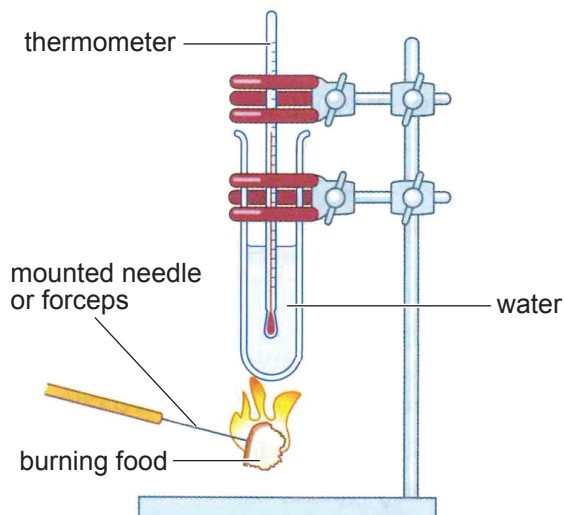
\_\_\_\_\_

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

Examiner Only	
Marks	Remark



5 (a) The diagram shows how to investigate the energy content of foods.



Source: CCEA

Below are the main steps in the investigation but **not** in the correct order.

- A Hold the food in a Bunsen burner flame until it catches fire
- B Measure out 20 cm<sup>3</sup> of water into a boiling tube and record the temperature
- C As soon as the food has burnt away completely, record the final temperature
- D Weigh out 1.5 g of the first food
- E Once the food is burning hold it 2 cm from the bottom of the boiling tube

(i) Using the letters, **A**, **B**, **C**, **D** and **E** put the steps in the correct order. The first one has been done for you.

**D** → \_\_\_\_\_ → \_\_\_\_\_ → \_\_\_\_\_ → \_\_\_\_\_ [2]

(ii) Using the information above, give **two** things that were done to make the investigation a fair test.

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

Examiner Only	
Marks	Remark



(iii) Some of the energy in the food does not heat the water. Suggest **one** reason for this.

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

(b) (i) Complete the word equation below to show the process by which energy is released from food (glucose).

Choose from:

**nitrogen** : **carbon dioxide** : **starch**

oxygen + glucose →  + water + energy [1]

(ii) Name the process by which energy is released from food.

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

Examiner Only

Marks Remark

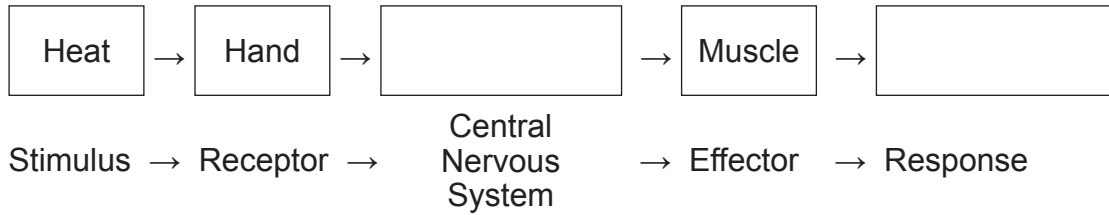
Examiner Only	
Marks	Remark

6 (a) Mark put his hand on a hot iron. His nervous system responded and the muscle in his arm contracted to pull his hand away. This is an example of a reflex action.

(i) State **one** advantage of a reflex action.

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

(ii) Using the information above and your knowledge, complete the following flow chart.



[2]

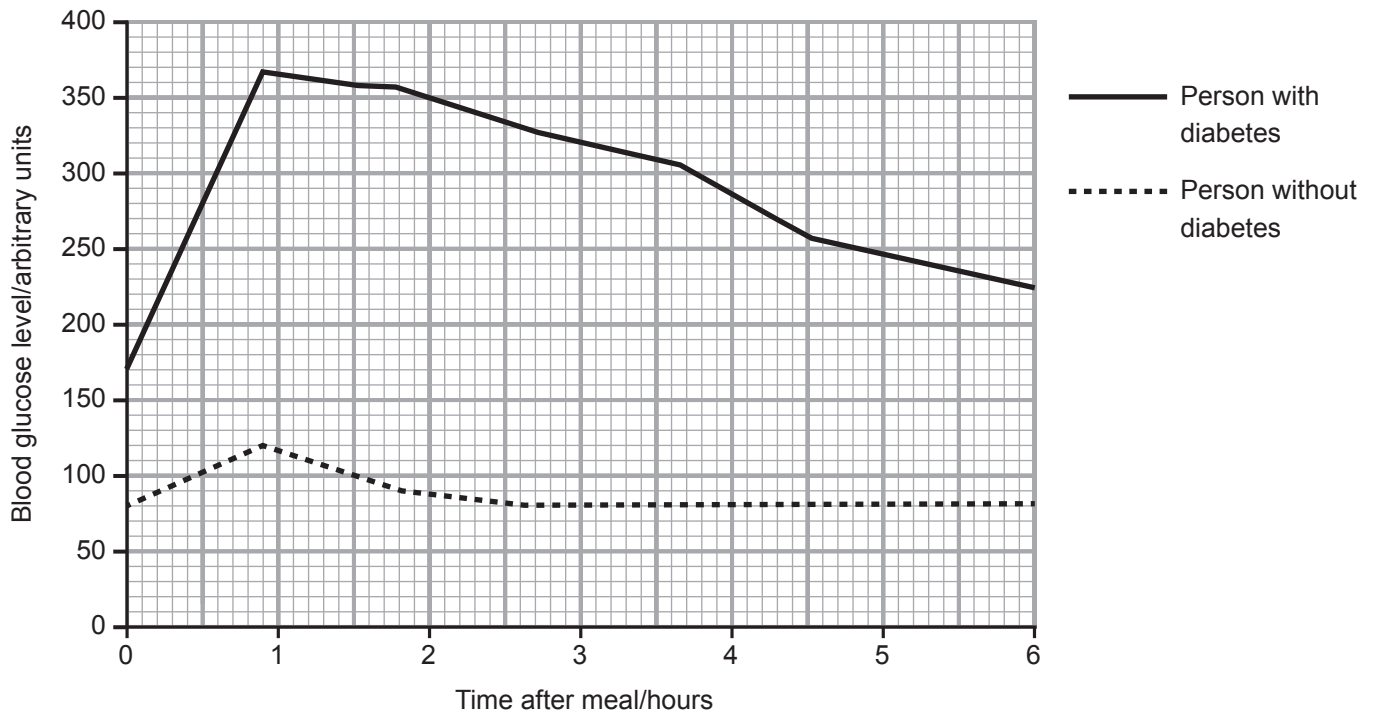
(b) Hormones also bring about responses in the body.

State **two** differences between hormones and the nervous system.

1. \_\_\_\_\_

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

(c) The graph below shows the blood glucose levels of two people after a meal – one with diabetes and one without diabetes.



(i) Give **two** differences between the graph for the person with diabetes and the graph for the person without diabetes.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

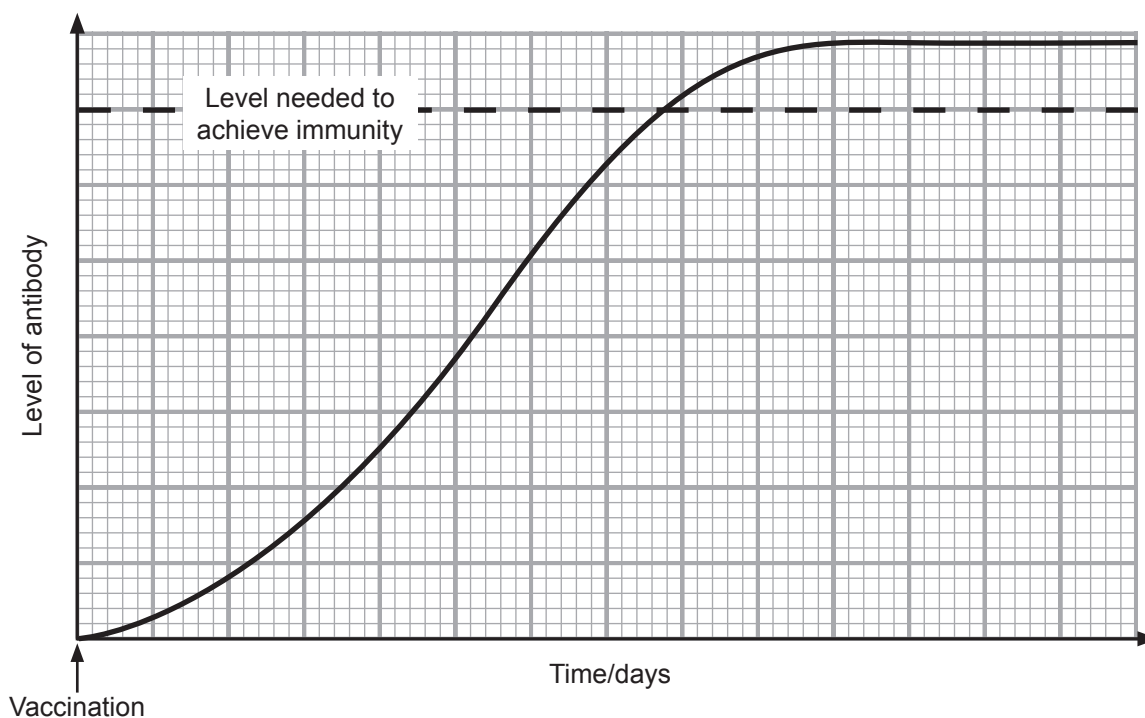
\_\_\_\_\_ [2]

(ii) Insulin is the hormone that controls blood glucose levels. Name the part of the body that produces insulin.

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

Examiner Only	
Marks	Remark

- 7 (a) The graph below shows how antibody level changes after we have been given a vaccination.



- (i) Suggest why there is a time delay between being given the vaccination and achieving immunity.

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

- (ii) Using the graph above, give **two** pieces of evidence that show the immunity achieved is active immunity.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

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

Examiner Only

Marks Remark

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(b) All 2- and 3-year-old children in Northern Ireland are now offered a flu vaccination. The vaccine contains weakened live microorganisms.

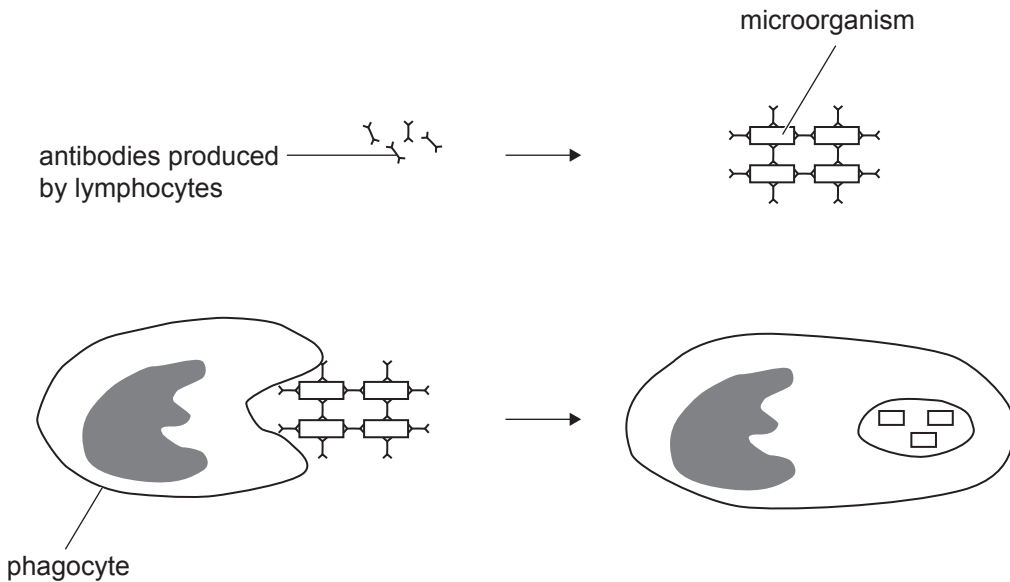
(i) Explain why the microorganisms are weakened.

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

(ii) The microorganisms in the vaccine still have the structures on their surface which stimulate an immune response. What are these structures called?

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

(iii) Using the diagrams below and your knowledge, explain fully how the different types of white blood cell (lymphocytes and phagocytes) deal with microorganisms.



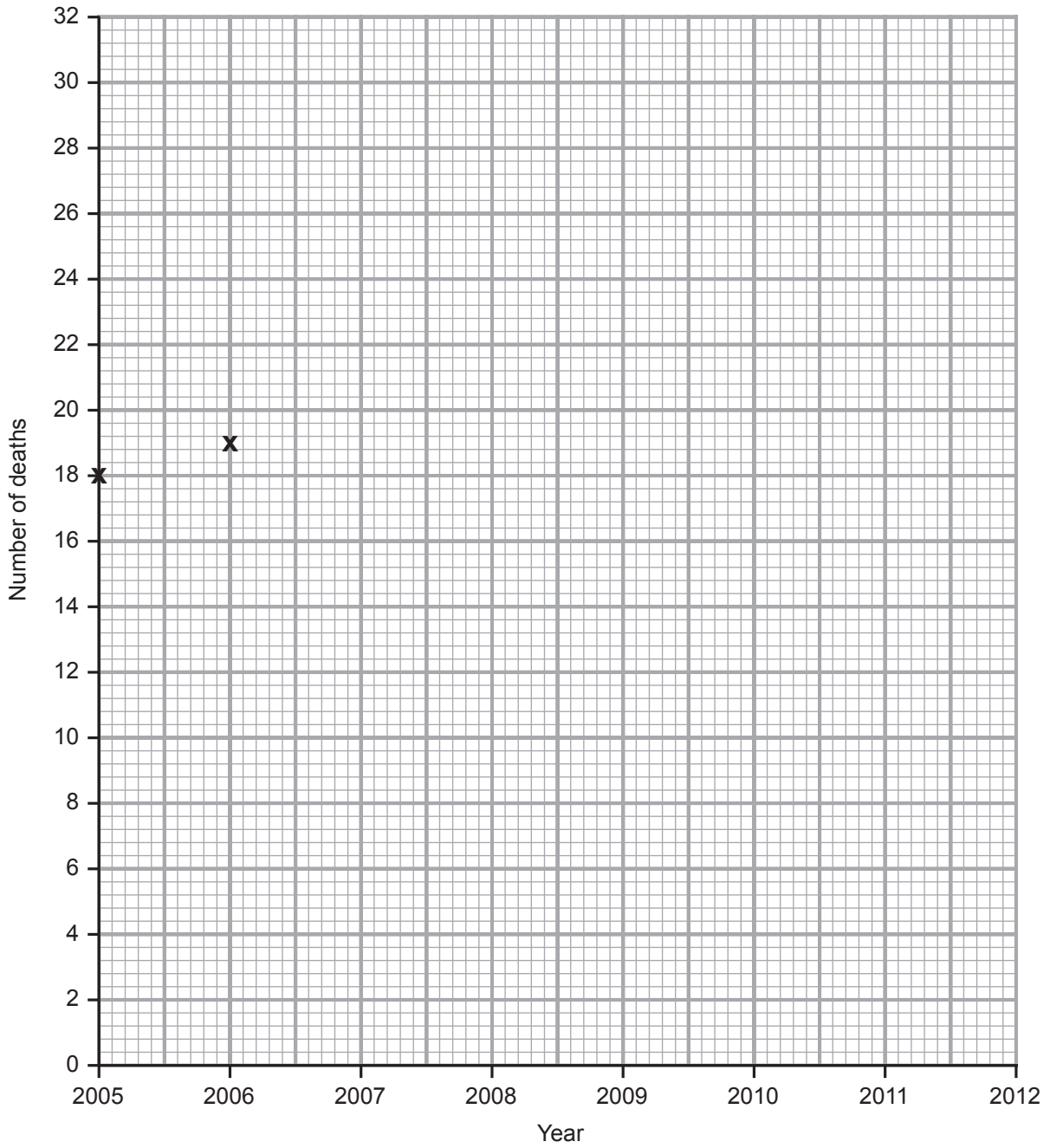
\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [3]

Examiner Only	
Marks	Remark

- 8 (a) MRSA is known as a superbug because it is resistant to many antibiotics. The table below shows the number of deaths from MRSA in a hospital in Northern Ireland between 2005 and 2012.

<b>Year</b>	<b>Number of deaths</b>
2005	18
2006	19
2007	20
2008	31
2009	15
2010	8
2011	6
2012	4

(i) Complete a line graph of these results on the grid below.



[3]

(ii) Describe fully the trend shown by these results.

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[2]

Examiner Only	
Marks	Remark

[Turn over

(b) Explain fully why antibiotics are not used to treat the cold or flu.

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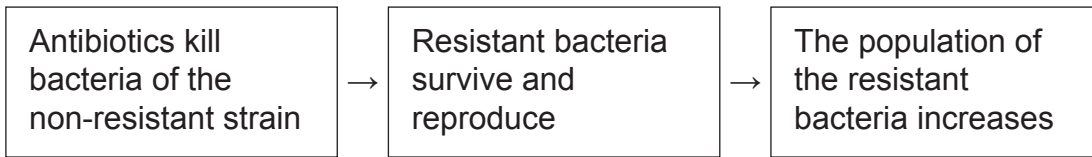


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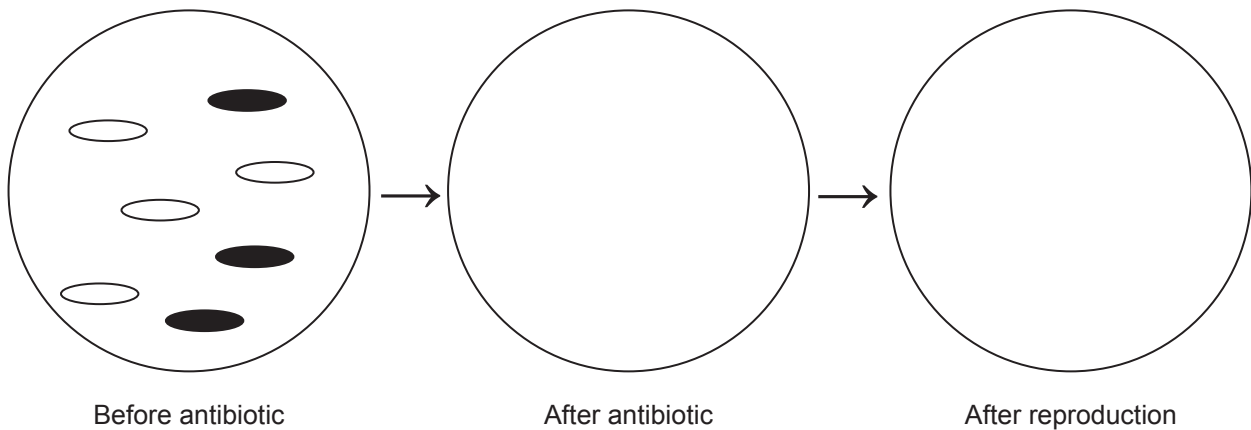
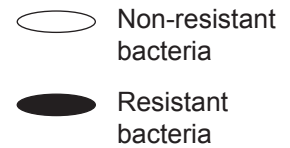
[2]

(c) Antibiotic resistance is brought about by mutations in bacteria.

The main steps in the development of resistance are:



Using this information, complete the diagram below showing the change in bacteria over time.



[1]

Examiner Only	
Marks	Remark





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

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