



General Certificate of Secondary Education
2014–2015

Science: Single Award

Unit 1 (Biology)

Foundation Tier

[GSS11]

ML

WEDNESDAY 12 NOVEMBER 2014, 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**.

Centre Number

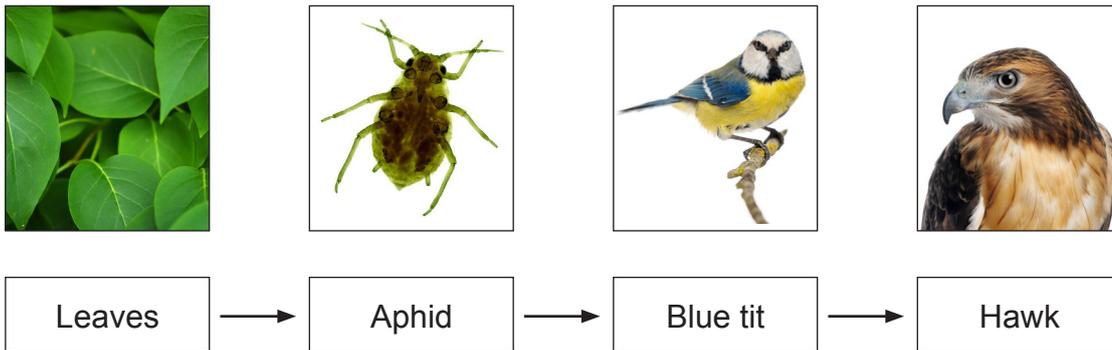
71

Candidate Number

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

Total
Marks

1 (a) Below there is a simple food chain.



(i) Look at the food chain and write down the name of:

the producer _____

the 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) What do you think 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**.

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) Write down **two** reasons why eating too much of food **B** might make a person to gain weight.

1. _____
2. _____ [2]

(ii) Write down the name of the food group that changes Biuret reagent from blue to lilac.

Put a circle round the correct answer.

fat

fibre

protein

[1]

(b) Fill in the missing answers in the table below.

Choose from:

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

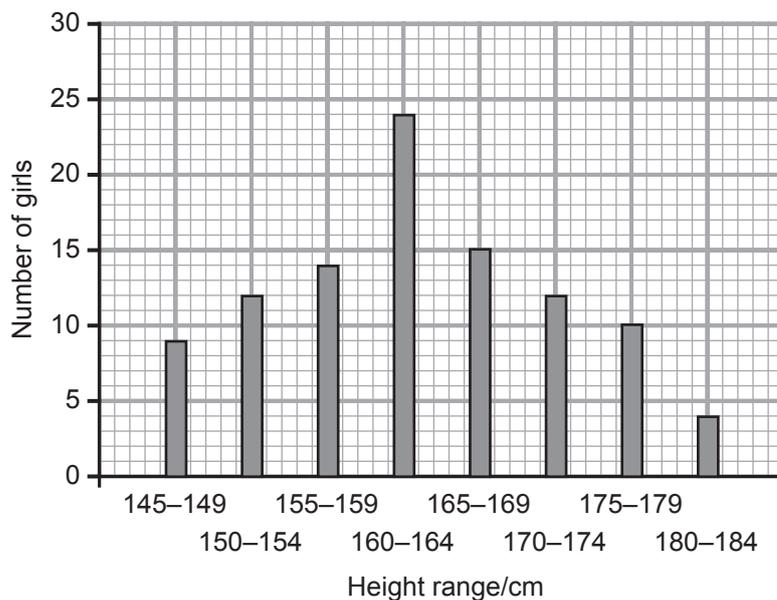
Food group	Function in the body
	to help the red blood cells carry oxygen
calcium	

[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 questions below.

- (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) Below are the names of main substances found in cigarette smoke.



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(i) Which of the substances above can cause cancer?

_____ [1]

(ii) Cancer is caused by a mutation. Fill in the spaces in 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.

Explain fully why many smokers are often short of energy when they are active.

Use the information above and your own knowledge to answer this question.

_____ [2]

Examiner Only

Marks Remark

(b) Stopping smoking is one lifestyle change that can help reduce the risk of heart disease.

(i) Write down one other **lifestyle** change that would help to reduce the risk of heart disease.

_____ [1]

Look at the table below. It shows information about deaths from heart disease and numbers of smokers in Northern Ireland between 2006 and 2010.

Year	Number of deaths from heart disease	Number of smokers
2006	2554	470 000
2007	2493	425 000
2008	2410	350 000
2009	2300	322 000
2010	2200	300 000

(ii) Doctors think that smoking can lead to heart disease. How does the table show this?

_____ [1]

(iii) Calculate how many more people died from heart disease in 2006 than in 2010.

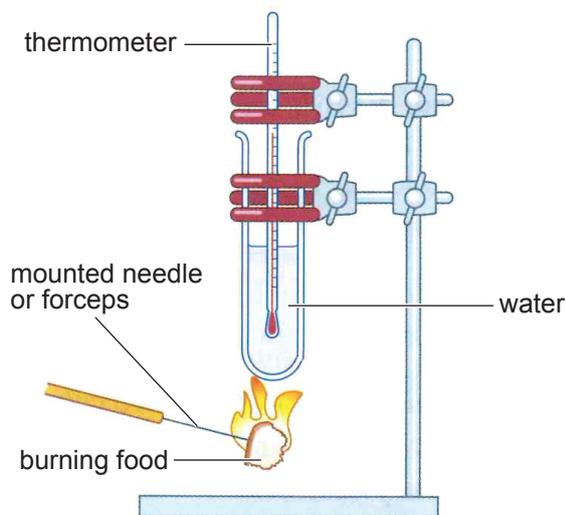
(Show your working out.)

_____ [2]

Examiner Only

Marks Remark

- 5 (a) Look at the diagram below. It shows how to investigate the energy content of foods.



Source: CCEA

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

- A Hold the food in a Bunsen burner flame until it catches fire
- B Measure out 20 cm^3 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) Write down **two** things that were done to make the investigation a fair test. Use the information above to help you.

1. _____

2. _____ [2]

Examiner Only	
Marks	Remark

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

_____ [1]

- (b) (i) Complete the word equation below to show the process of how energy is released from food (glucose).

Choose from:

nitrogen : carbon dioxide : starch

oxygen + glucose → + water + energy [1]

- (ii) Write down the name of the process of how energy is released from food.

_____ [1]

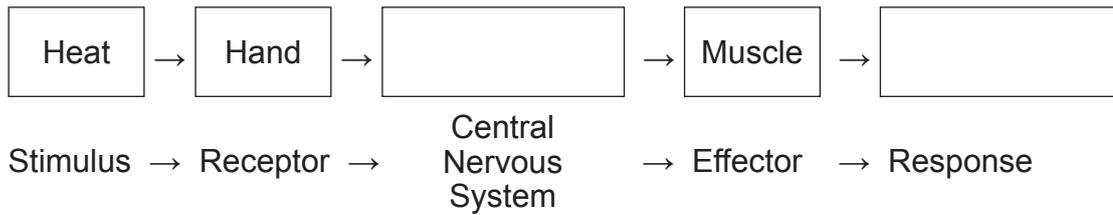
Examiner Only	
Marks	Remark

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) Write down **one** advantage of a reflex action.

_____ [1]

(ii) Complete the flow chart below. Use the information and your own knowledge to do this.



[2]

(b) Hormones also make responses happen in the body.

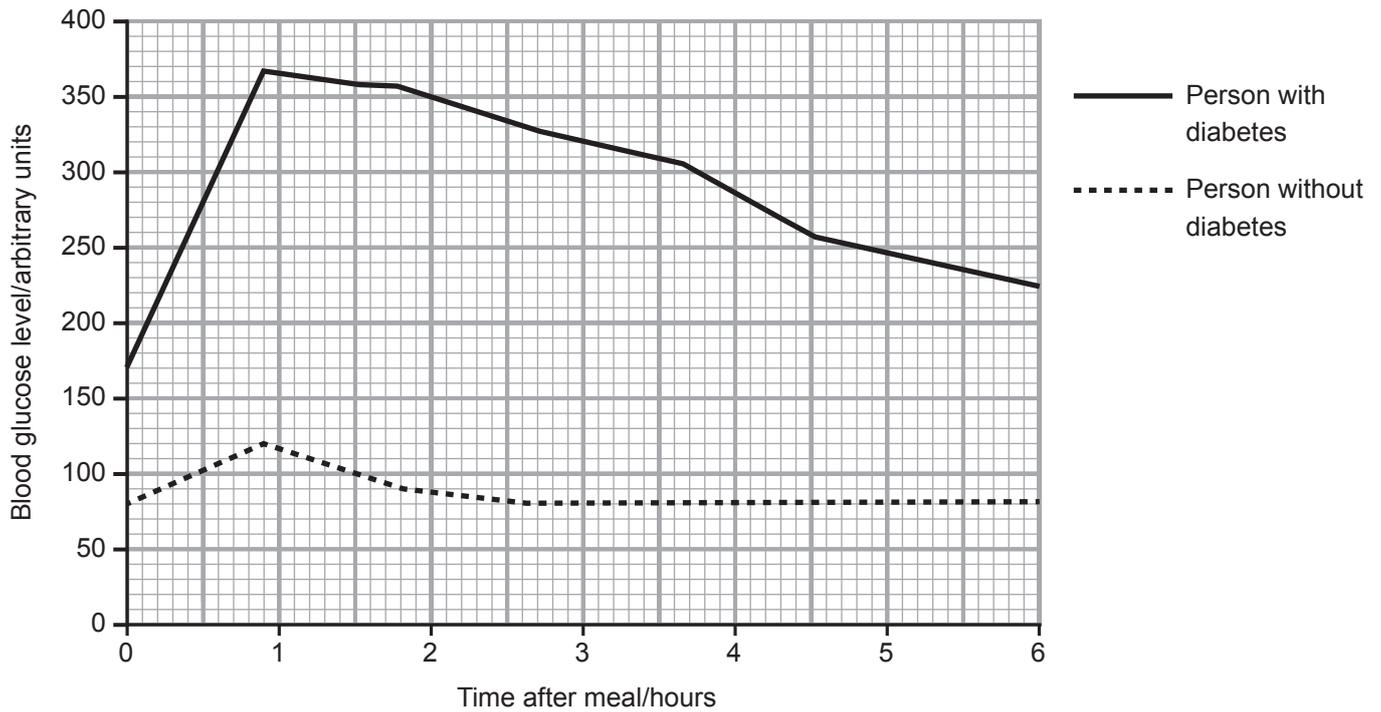
Write down **two** differences between hormones and the nervous system.

1. _____

2. _____ [2]

Examiner Only	
Marks	Remark

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



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

1. _____

2. _____

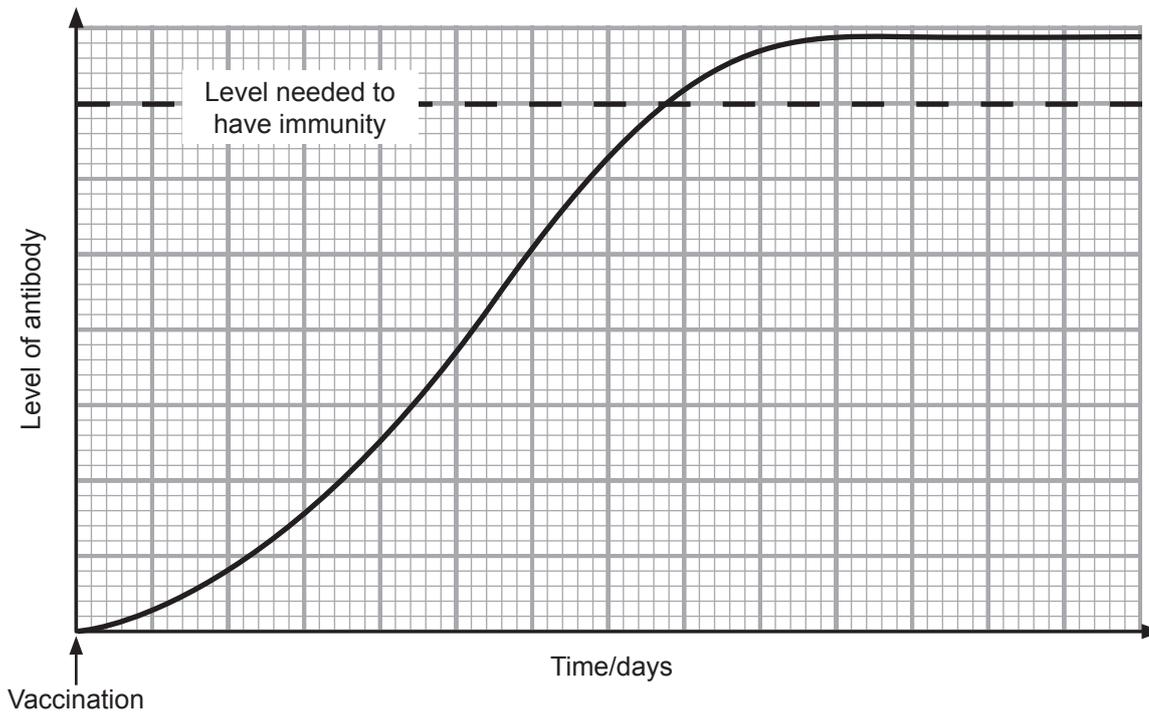
_____ [2]

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

_____ [1]

Examiner Only	
Marks	Remark

- 7 (a) Look at the graph below. It shows how antibody level changes after we have been given a vaccination.



- (i) Why do you think there is a time delay between being given the vaccination and having immunity to a disease?

_____ [1]

- (ii) Write down **two** pieces of evidence that show the immunity you have is active immunity. Use the graph above to help you answer this question.

1. _____

2. _____

_____ [2]

Examiner Only	
Marks	Remark

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

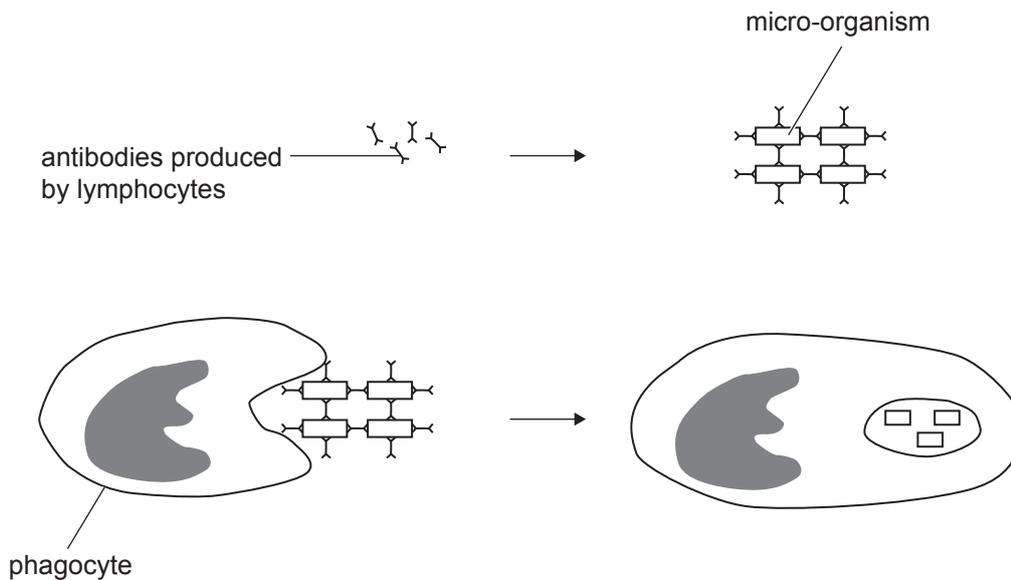
(i) Explain why the micro-organisms are weakened.

_____ [1]

(ii) The micro-organisms in the vaccine still have the structures on their surface that stimulate an immune response. What are these structures called?

_____ [1]

(iii) Explain fully how the different types of white blood cell (lymphocytes and phagocytes) deal with micro-organisms. Use the diagrams below and your own knowledge to help you answer this question.



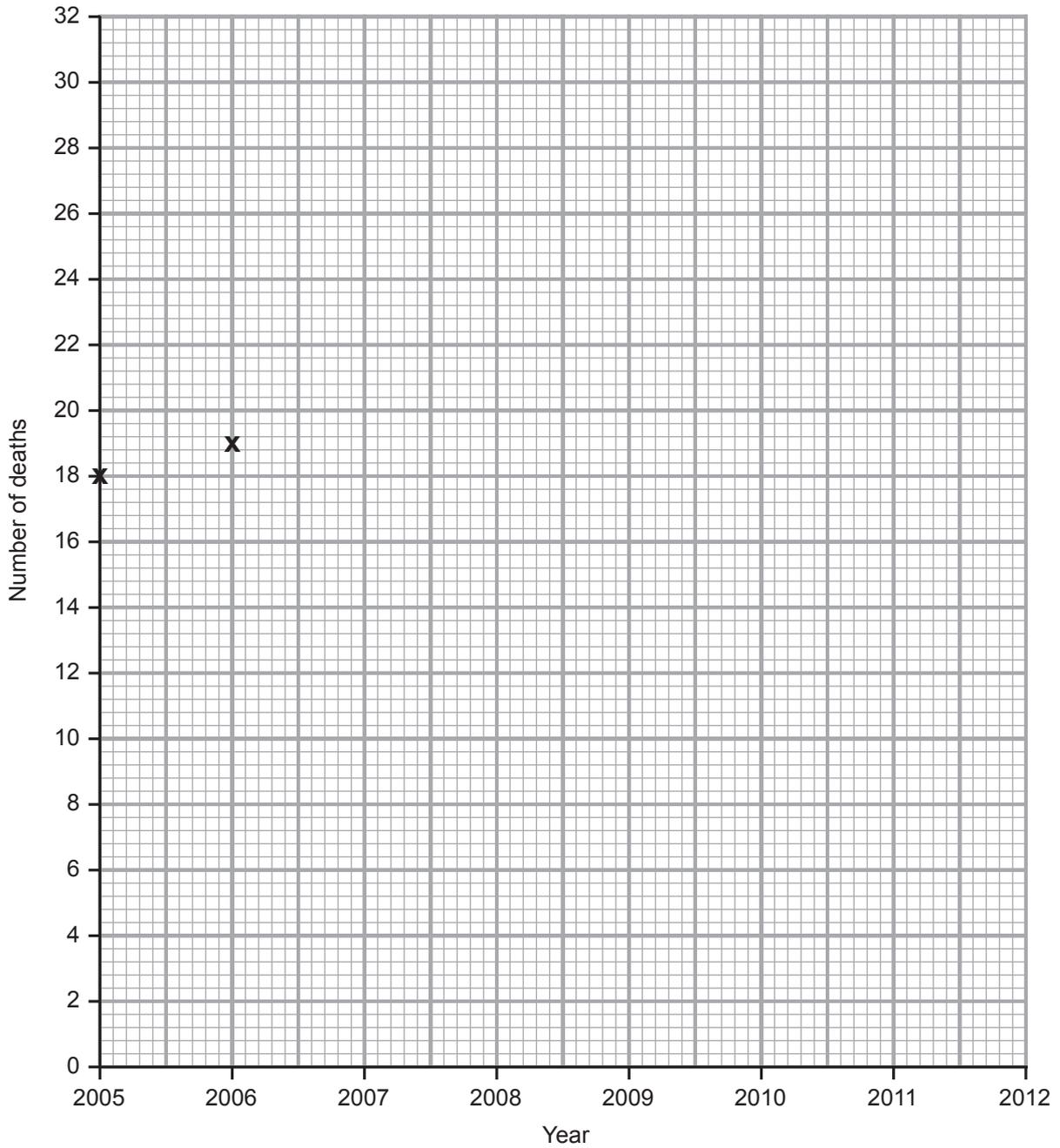
 _____ [3]

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.

Year	Number of deaths
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.

[2]

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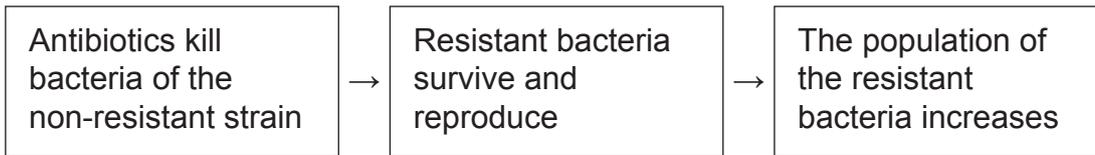
(b) Explain fully why antibiotics are not used to treat the cold or flu.

[2]

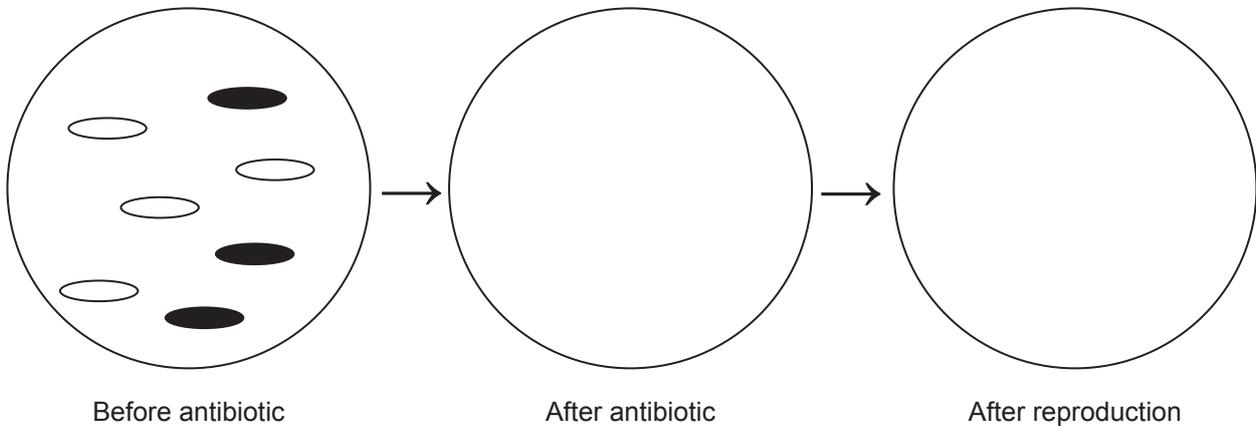
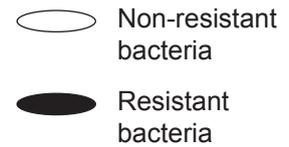
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Marks	Remark

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

The main steps in the development of resistance are:



Complete the diagram below showing the change in bacteria over time. Do this using the information above.



[1]

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Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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