



Percentage	
Grade	

Health and Disease

Duration: 45 min

Total Marks: 47

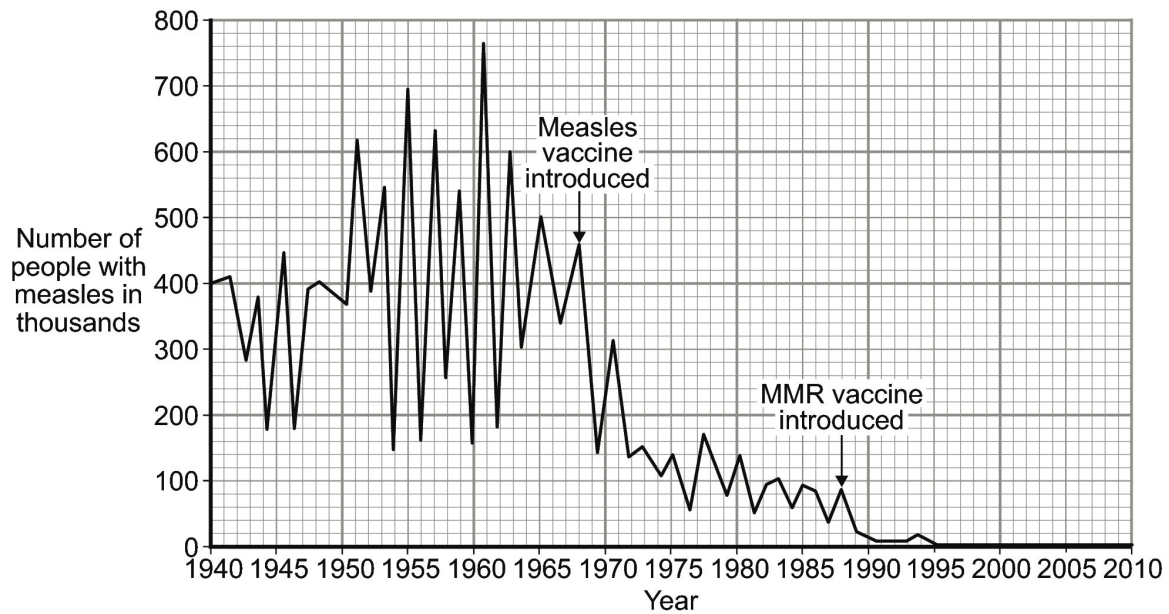
Information for Candidates:

- Use black or blue ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. If additional paper is used, the question number(s) must be clearly shown
- The number of marks is given in brackets [] at the end of each question or part question.
- You may use an electronic calculator.
- You are advised to show all the steps in any calculations.

[illegible]

2

The graph shows the number of people with measles in the UK between 1940 and 2010.



2 (a)

Compare how effective introducing the measles vaccine was with introducing the MMR vaccine.

Use data from the graph.

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(3 marks)



2 (b) The MMR vaccine was introduced in 1988.

Other than measles, which **two** diseases does the MMR vaccine protect against?

1 2
(2 marks)

2 (c) To immunise someone against measles, a small quantity of the inactive measles pathogen is injected into the body.

Describe what happens in the body after immunisation to stop a person catching measles in the future.

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(3 marks)

8

Turn over for the next question

Turn over ►



5 People may be immunised against diseases using vaccines.

5 (a) (i) Which part of the vaccine stimulates the body's defence system?

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(2 marks)

5 (a) (ii) A person has been vaccinated against measles. The person comes in contact with the measles pathogen. The person does **not** catch measles.

Explain why.

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(3 marks)

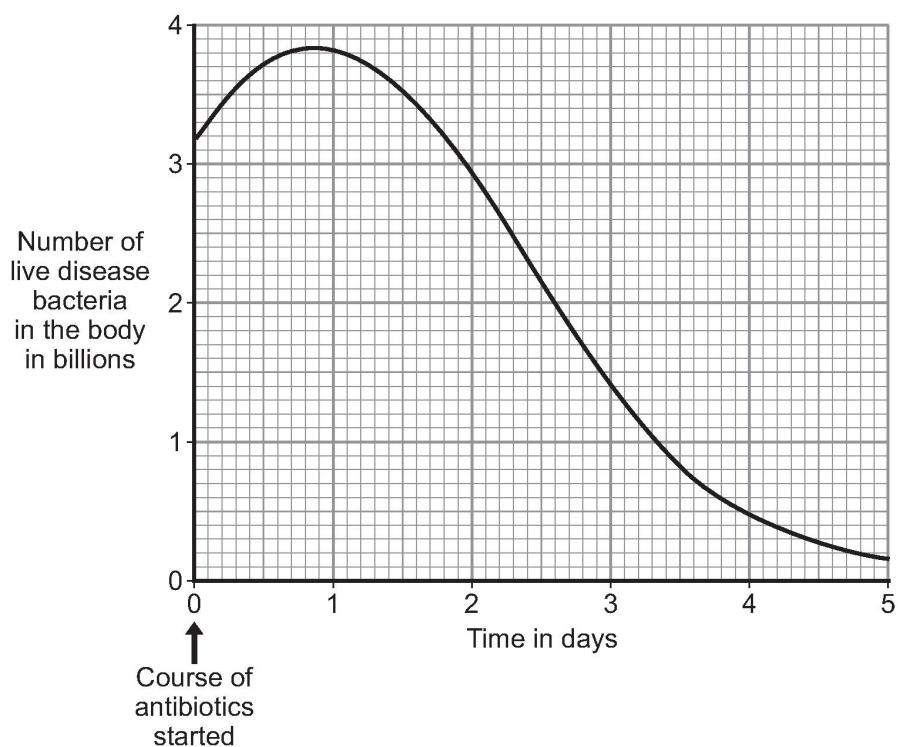
Question 5 continues on the next page

Turn over ►



- 5 (b) A man catches a disease. The man has **not** been immunised against this disease. A doctor gives the man a course of antibiotics.

The graph shows how the number of live disease bacteria in the body changes when the man is taking the antibiotics.



- 5 (b) (i)** Four days after starting the course of antibiotics the man feels well again.
It is important that the man does **not** stop taking the antibiotics.

Explain why.

Use information from the graph.

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(2 marks)

- 5 (b) (ii)** Occasionally a new, resistant strain of a pathogen appears.

The new strain may spread rapidly.

Explain why.

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(3 marks)

10

Turn over for the next question

Turn over ►



4 Antibiotics can be used to protect our bodies from pathogens.

4 (a) What is a pathogen?

[1 mark]

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4 (b) Bacteria may become resistant to antibiotics.

How can doctors reduce the number of bacteria that become resistant to antibiotics?

[2 marks]

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4 (c) Scientists grow microorganisms in industrial conditions at a higher temperature than is used in school laboratories.

4 (c) (i) Which temperature would be most suitable for growing bacteria in industrial conditions?

Draw a ring around the correct answer.

[1 mark]

25 °C

40 °C

100 °C

4 (c) (ii) What is the advantage of using the temperature you gave in part (c)(i)?

[1 mark]

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Turn over ►



10 Vaccines may be used to immunise people against diseases.

10 (a) What is in a vaccine?

[2 marks]

10 (b) The MMR vaccine is used to protect children against measles and two other diseases.

10 (b) (i) What are these **two** other diseases?

[1 mark]

Tick (✓) **one** box.

Meningitis and rabies

☐

Meningitis and rubella

☐

Mumps and rabies

☐

Mumps and rubella

☐

10 (b) (ii) A child has been vaccinated against measles.
Two years later, the child comes in contact with the measles virus.

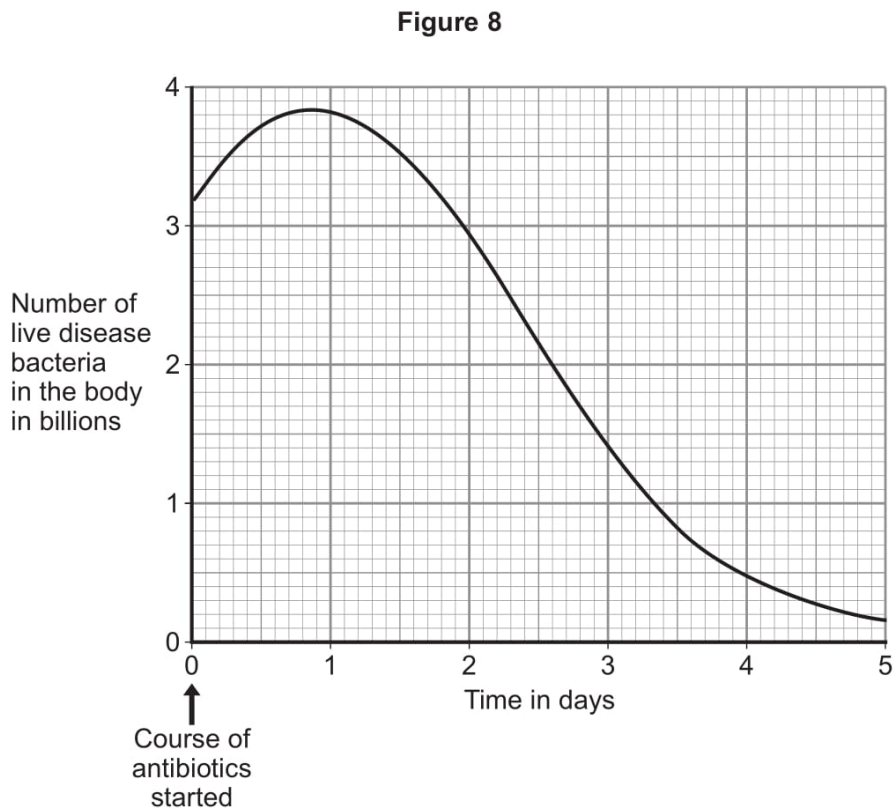
Explain why the child does **not** catch measles.

[3 marks]



- 10 (c)** A man catches a disease caused by a bacterium.
A doctor gives the man a course of antibiotics.

Figure 8 shows how the number of live disease bacteria in the man's body changes when the man is taking the antibiotics.



- 10 (c) (i)** Four days after starting the course of antibiotics the man feels well again.

It is important that the man does **not** stop taking the antibiotics.

Explain why.

Use information from **Figure 8**.

[2 marks]

Question 10 continues on the next page

Turn over ►



*Do not write
outside the
box*

10 (c) (ii) Why is it important that scientists should continue to develop new antibiotics?

[2 marks]

10

END OF QUESTIONS



2 2

0 3

Microorganisms cause infections.

The human body has many ways of defending itself against microorganisms.

0 3

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Describe **two** ways the body prevents the entry of microorganisms.

[2 marks]

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2 _____

0 8

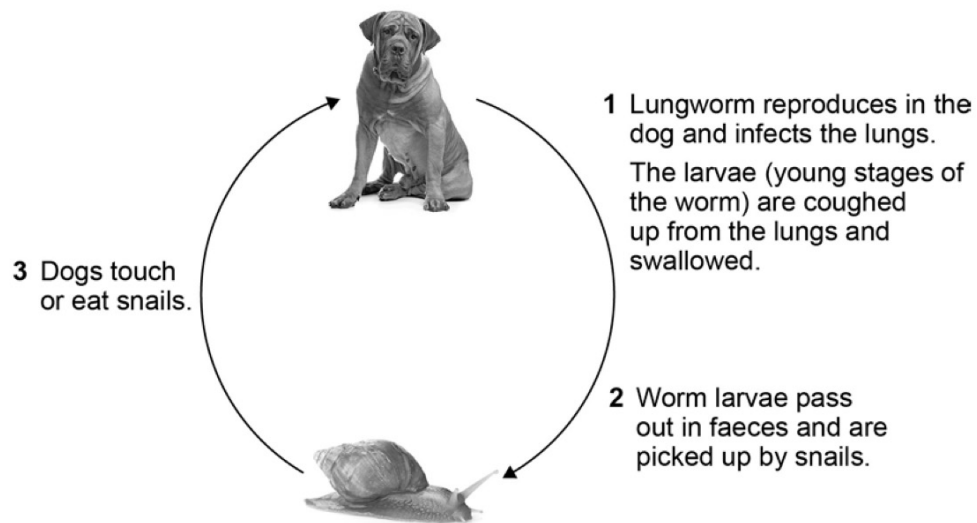
Lungworm is an infection.

Lungworm can kill dogs.

It is caused by a small worm.

Figure 5 shows the lifecycle of the lungworm.

Figure 5



0 8 . 1

What type of organism is represented by the snail in the lifecycle of the lungworm?

[1 mark]

Tick **one** box.

Fungus ☐

Parasite ☐

Protist ☐

Vector ☐

0 8 . **2** Suggest how the spread of the lungworm disease can be prevented.

[3 marks]

0 8 . **3** Malaria is a disease spread by mosquitoes.

Describe **two** ways to control the spread of malaria.

[2 marks]

1

2

Turn over for the next question