AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.3.1.7

Vaccination

Past-paper questions

Tier	**Higher**
Question groups	**5**
Available paper years	**2018–2025**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

4.3.1.7 Vaccination

Question 01

June 2018 | 8464/B/1H | Original Q5

0 5 Measles is a serious disease. A person can die from measles.

Table 3 shows the number of medically confirmed cases of measles in England and Wales between 2012 and 2015

Table 3

Year	Number of medically confirmed cases of measles
2012	2030
2013	1843
2014	121
2015	91

0 5 . 1 Suggest **one** reason why the actual number of cases of measles in England and Wales might be higher than is shown in **Table 3**

[1 mark]

0 5 . 2 Calculate the percentage decrease in the number of medically confirmed cases of measles between 2012 and 2015

[2 marks]

Percentage decrease = _____ %

Question 5 continues on the next page

0 5 . 3 One reason for the decrease in the number of cases of measles is that more children were vaccinated against the disease.

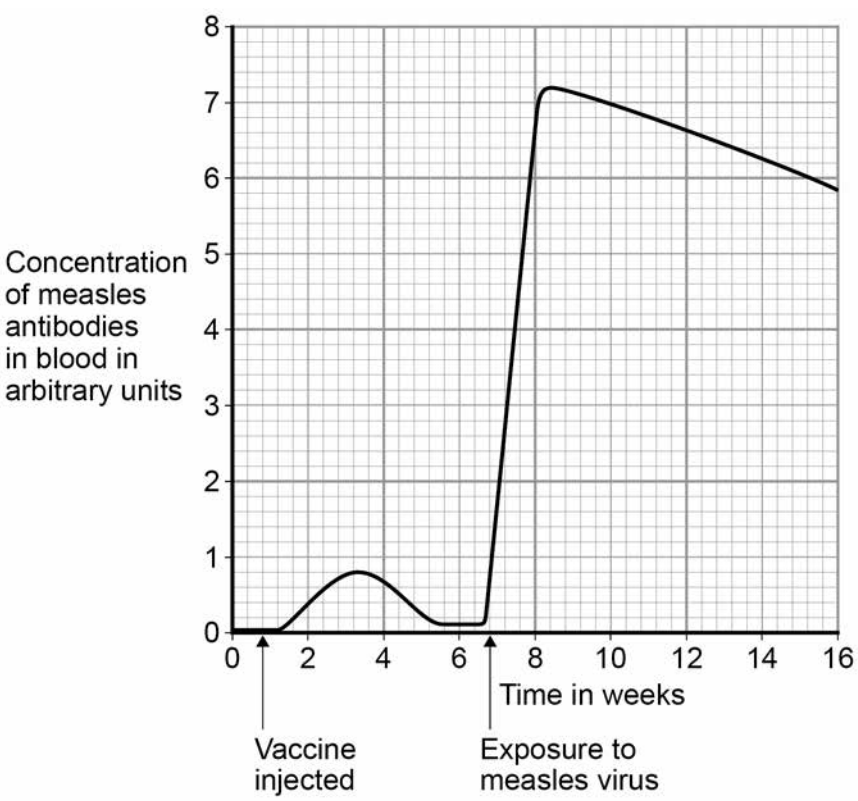
Vaccinating a large proportion of the population reduces the spread of the measles virus.

Explain why.

[2 marks]

0 5 . 4 **Figure 8** shows the concentration of measles antibodies in the blood of a boy.

Figure 8



4.3.1.7 Vaccination

Question 01 · continued

Explain the differences between antibody production after the vaccine injection and after exposure to the measles virus.

You should include data from **Figure 8**

[6 marks]

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Question 02

November 2020 | 8464/B/1H | Original Q4

0 4 Cells are the basic units of all forms of life.

0 4 . 1 Describe **four** differences between a bacterial cell and a plant cell.

[4 marks]

1 _____

_____

2 _____

_____

3 _____

_____

4 _____

_____

0 4 . 2 Gonorrhoea is a bacterial disease.

A new vaccine is being developed against gonorrhoea.

Describe how a vaccine would work to prevent gonorrhoea.

[4 marks]

_____

_____

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4.3.1.7 Vaccination

Question 02 · continued

Another disease caused by bacteria is salmonella food poisoning.

In the UK, chickens are vaccinated against *Salmonella* bacteria to reduce the number of cases of food poisoning in humans.

0 4 . 3 Explain how vaccinating chickens reduces the number of cases of salmonella food poisoning.

[2 marks]

0 4 . 4 Give **one** way that the spread of salmonella food poisoning from one human to another is controlled.

Do **not** refer to vaccination in your answer.

[1 mark]

0 4 . 5 The number of cases of salmonella food poisoning is usually higher in summer than in winter.

Suggest **one** reason why.

[1 mark]

12

4.3.1.7 Vaccination

Question 03

0 1 Bacteria can cause a variety of diseases in humans.

0 1 . 1 What are **two** similarities between a bacterial cell and an animal cell?

[2 marks]

Tick (✓) **two** boxes.

- Both have a cell membrane. ☐
- Both have a cell wall. ☐
- Both have a nucleus. ☐
- Both have cytoplasm. ☐
- Both have plasmids. ☐

0 1 . 2 Salmonella food poisoning is caused by bacteria in food.

Give **one** symptom of salmonella food poisoning.

Do **not** refer to vomiting or diarrhoea in your answer.

[1 mark]

_____

_____

Question 1 continues on the next page

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Question 03 · continued

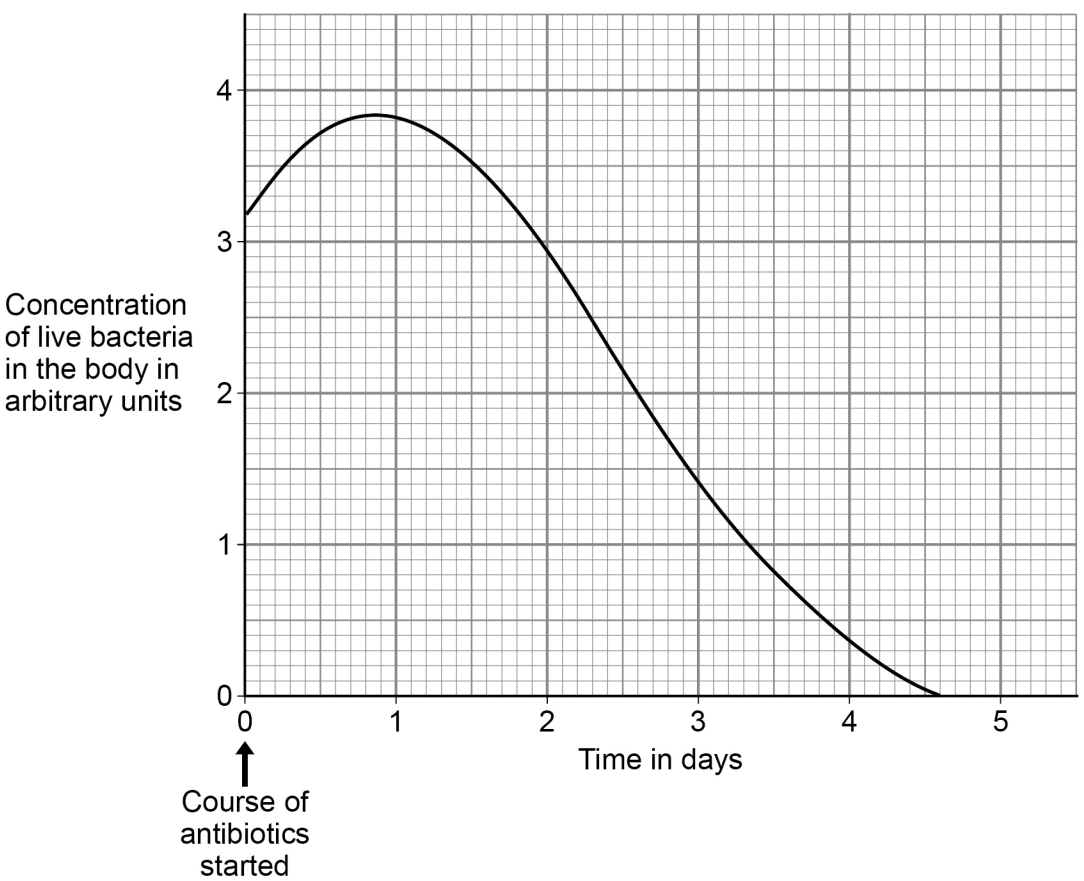
0 1 . 3 What is the name of the first antibiotic developed?

[1 mark]

A child with a severe bacterial infection was given a course of antibiotics.

Figure 1 shows how the concentration of live bacteria in the child's body changed when taking the course of antibiotics.

Figure 1



4.3.1.7 Vaccination

Question 03 · continued

0 1 . 4 The concentration of live bacteria in the body continued to increase after starting the course of antibiotics.

Suggest **one** reason why.

[1 mark]

0 1 . 5 After 3 days of taking the antibiotic:

- the child felt better
- there were still bacteria in the child's body.

Why did the child feel better?

[1 mark]

Tick (✓) **one** box.

Bacteria had become immune to the antibiotic. ☐

The child had become resistant to the bacteria. ☐

There were fewer toxins in the body than at day 0 ☐

0 1 . 6 Suggest why doctors do **not** give antibiotics to patients with minor infections.

[1 mark]

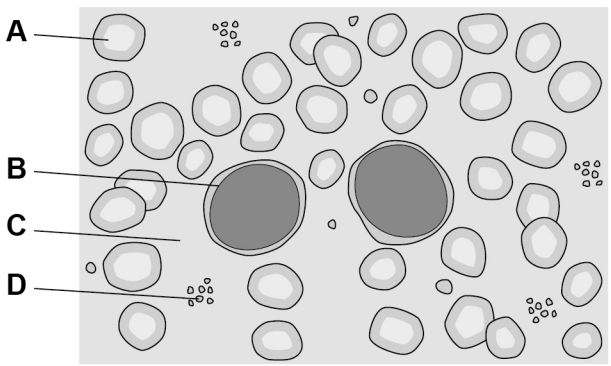
Question 1 continues on the next page

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Question 03 · continued

Figure 2 shows blood viewed using a microscope.

Figure 2



0 1 . 7 A vaccine will stimulate the production of antibodies.

Which part of the blood in **Figure 2** produces antibodies?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 1 . 8 Which part of the blood in **Figure 2** starts the clotting process?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

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Question 04

June 2024 | 8464/B/1H | Original Q3

0 3 This question is about communicable diseases.

Measles is a communicable disease caused by a pathogen.

0 3 . 1 What type of microorganism causes measles?

[1 mark]

Vaccinations help reduce the spread of measles.

0 3 . 2 Suggest **two** ways the spread of measles can be reduced.

Do **not** refer to vaccination in your answer.

[2 marks]

1

2

0 3 . 3 Describe how the measles vaccine helps a person to become immune to the measles pathogen.

[4 marks]

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Question 04 · continued

Norovirus is a type of virus.

0 3 . 4 Explain how viruses cause illness.

[2 marks]

0 3 . 5 Drugs can help to reduce the symptoms of the norovirus infection.

New drugs must go through clinical trials before being licensed for use.

Give **three** reasons why clinical trials are needed.

[3 marks]

1

2

3

12

4.3.1.7 Vaccination

Question 05

June 2025 | 8464/B/1H | Original Q2

0 2 Chickenpox is an infectious disease that affects young children.

0 2 . 1 One symptom of chickenpox is small blisters on the skin.

Suggest **one** way chickenpox spreads from an infected person to other people.

[1 mark]

0 2 . 2 Chickenpox is caused by a type of pathogen that **cannot** be treated with antibiotics.

Give the reason why chickenpox **cannot** be treated with antibiotics.

[1 mark]

A vaccine that could be used to protect against chickenpox has been produced.

0 2 . 3 What does a vaccine contain that causes a person to become immune to a disease?

[1 mark]

0 2 . 4 Give **three** reasons why a new vaccine must be tested.

[3 marks]

1

2

3

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Question 05 · continued

0 2 . 5 Explain how a vaccine for chickenpox gives immunity against the disease.

You should refer to how the body responds to:

- the vaccine
- chickenpox pathogens that enter the body after vaccination.

[6 marks]

Extra Space

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