AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.3.1.3

Bacterial diseases

Past-paper questions

Tier	**Foundation**
Question groups	**5**
Available paper years	**2018–2024**

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.

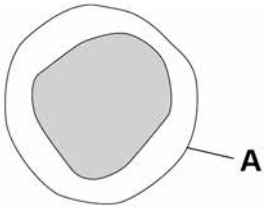
4.3.1.3 Bacterial diseases

Question 01

June 2018 | 8464/B/1F | Original Q1

0 1 **Figure 1** shows one type of white blood cell.

Figure 1



0 1 . 1 What is structure **A**?

[1 mark]

Tick **one** box.

- Cell membrane ☐
- Cell wall ☐
- Cytoplasm ☐
- Nucleus ☐

0 1 . 2 White blood cells help to defend the body against pathogens.

How do the white blood cells do this?

[3 marks]

Tick **three** boxes.

- Clone pathogens ☐
- Engulf pathogens ☐
- Produce antibiotics ☐
- Produce antibodies ☐
- Produce antitoxins ☐
- Produce toxins ☐

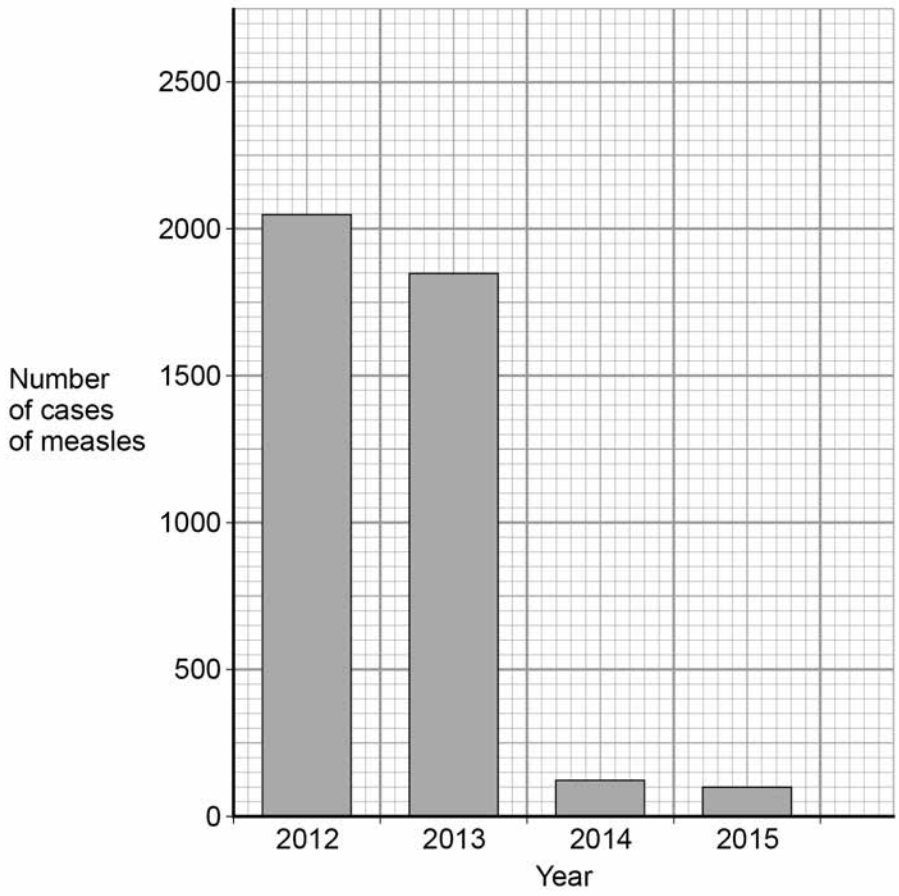
4.3.1.3 Bacterial diseases

Question 01 · continued

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

Figure 2 shows the number of cases of measles in England and Wales between 2012 and 2015

Figure 2



0 1 . 3 Use **Figure 2** to calculate the decrease in the number of cases of measles between 2012 and 2015

[2 marks]

Answer = _____ cases

0 1 . 4 Suggest **one** reason for the decrease in the number of cases of measles between 2012 and 2015

[1 mark]

4.3.1.3 Bacterial diseases

Question 01 · continued

0 1 . 5 Antibiotics **cannot** be used to treat measles.

Suggest why.

[1 mark]

0 1 . 6 Gonorrhoea is a disease caused by a bacterium.

Gonorrhoea **can** be treated with antibiotics.

Give **one** other way to control the spread of gonorrhoea.

[1 mark]

A scientist investigated how effective different antibiotics were at killing gonorrhoea bacteria.

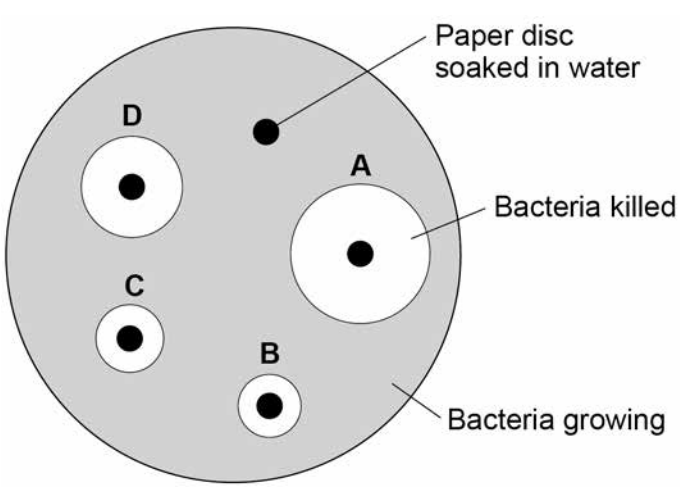
This is the method used.

1. Grow gonorrhoea bacteria on agar in a Petri dish.
2. Place one paper disc soaked in water onto the agar.
3. Place four other paper discs, each soaked in a different antibiotic, **A**, **B**, **C**, and **D**, onto the agar.
4. Use the same sized paper discs and the same concentration of each antibiotic.
5. Incubate the Petri dish for 3 days.

Figure 3 shows the scientist's results.

A clear area around the disc means the antibiotic has killed the bacteria.

Figure 3



4.3.1.3 Bacterial diseases

Question 01 · continued

0 1 . 7 Give **one** control variable the scientist used.

[1 mark]

0 1 . 8 Suggest why **one** disc was soaked in water.

[1 mark]

0 1 . 9 Which antibiotic in **Figure 3** would be the best to treat gonorrhoea?

Give a reason for your answer.

[2 marks]

Antibiotic

Reason

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4.3.1.3 Bacterial diseases

Question 02

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

0 4 Pathogens cause infectious diseases.

0 4 . 1 Draw **one** line from each disease to the type of pathogen that causes the disease.

[2 marks]

Disease	Type of pathogen
	Bacterium
Gonorrhoea	Fungus
Measles	Protist
	Virus

The body defends itself against pathogens in different ways.

0 4 . 2 Give **two** ways that the body prevents pathogens entering the body.

[2 marks]

1 _____

_____

2 _____

_____

4.3.1.3 Bacterial diseases

Question 02 · continued

0 4 . 3 If pathogens do enter the body the immune system tries to destroy the pathogens.

Describe how the immune system defends the body against disease.

[6 marks]

Question 4 continues on the next page

4.3.1.3 Bacterial diseases

Question 02 · continued

0 4 . 4 Give **one** reason why antibiotics cannot be used to treat HIV infections.

[1 mark]

0 4 . 5 Give **two** ways to prevent the spread of HIV.

[2 marks]

1

2

0 4 . 6 Some people with a HIV infection develop AIDS.

Some people with AIDS may die from a different type of infection, such as a chest infection.

Why do people with AIDS die from a different type of infection?

[1 mark]

Tick (✓) **one** box.

HIV damages the immune system. ☐

Pathogens enter the body more easily. ☐

People with AIDS are immune to HIV. ☐

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4.3.1.3 Bacterial diseases

Question 03

November 2021 | 8464/B/1F | Original Q2

0 2 Antibiotics are used to treat bacterial infections.

0 2 . 1 Which substance is used as an antibiotic?

[1 mark]

Tick (✓) **one** box.

Aspirin ☐

Digitalis ☐

Penicillin ☐

Gonorrhoea and chlamydia are two sexually transmitted infections.

Gonorrhoea and chlamydia infections can be treated with antibiotics.

0 2 . 2 Give **one** symptom of gonorrhoea.

[1 mark]

_____

_____

4.3.1.3 Bacterial diseases

Question 03 · continued

A scientist investigated which antibiotics were most effective at treating gonorrhoea and chlamydia.

This is the method used.

1. Grow gonorrhoea bacteria in a Petri dish.
2. Prepare four different antibiotic solutions, **A**, **B**, **C** and **D**, of the same concentration.
3. Cut four filter paper discs to the same size.
4. Soak each paper disc in a different antibiotic solution.
5. Put the four paper discs into the Petri dish.
6. Repeat steps 3 to 5 using a Petri dish with chlamydia bacteria growing in it.
7. Keep both Petri dishes at 25 °C for 3 days.

0 2 . 3 Give **two** control variables used in this investigation.

[2 marks]

1 _____

_____

2 _____

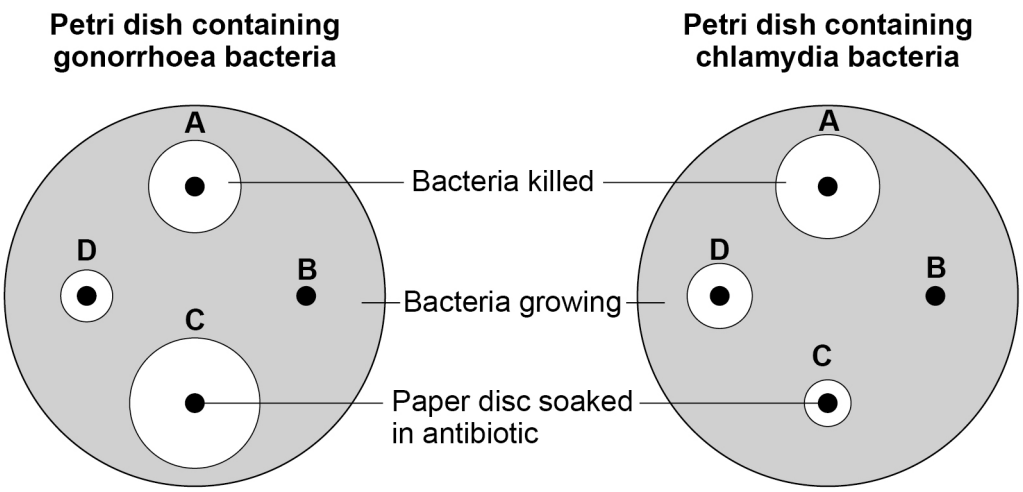
_____

Question 2 continues on the next page

Figure 2 shows the results.

A clear area around a paper disc is where the antibiotic has killed the bacteria.

Figure 2



0 2 . 4 Which antibiotic did **not** kill either type of bacterium?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 2 . 5 Which antibiotic would be the most effective to treat a person with a **gonorrhoea** infection?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

4.3.1.3 Bacterial diseases

Question 03 · continued

0 2 . 6 Which antibiotic would be the most effective to treat a person who had both gonorrhoea **and** chlamydia infections?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 2 . 7 Antibiotics **cannot** be used to treat HIV infections.

Suggest **one** reason why.

[1 mark]

Fungi can cause an infection of the fingernails and toenails.

Fungal nail infections can spread from one person to another person.

0 2 . 8 Some people go to nail salons to have their nails shaped and painted.

Suggest **one** way workers in nail salons can reduce the risk of infections being spread.

[1 mark]

0 2 . 9 Suggest **one** reason why fungal infection of toenails is more common than fungal infection of fingernails.

[1 mark]

10

4.3.1.3 Bacterial diseases

Question 04

June 2022 | 8464/B/1F | Original Q5

0 5 Bacteria can cause a variety of diseases in humans.

0 5 . 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 5 . 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 5 continues on the next page

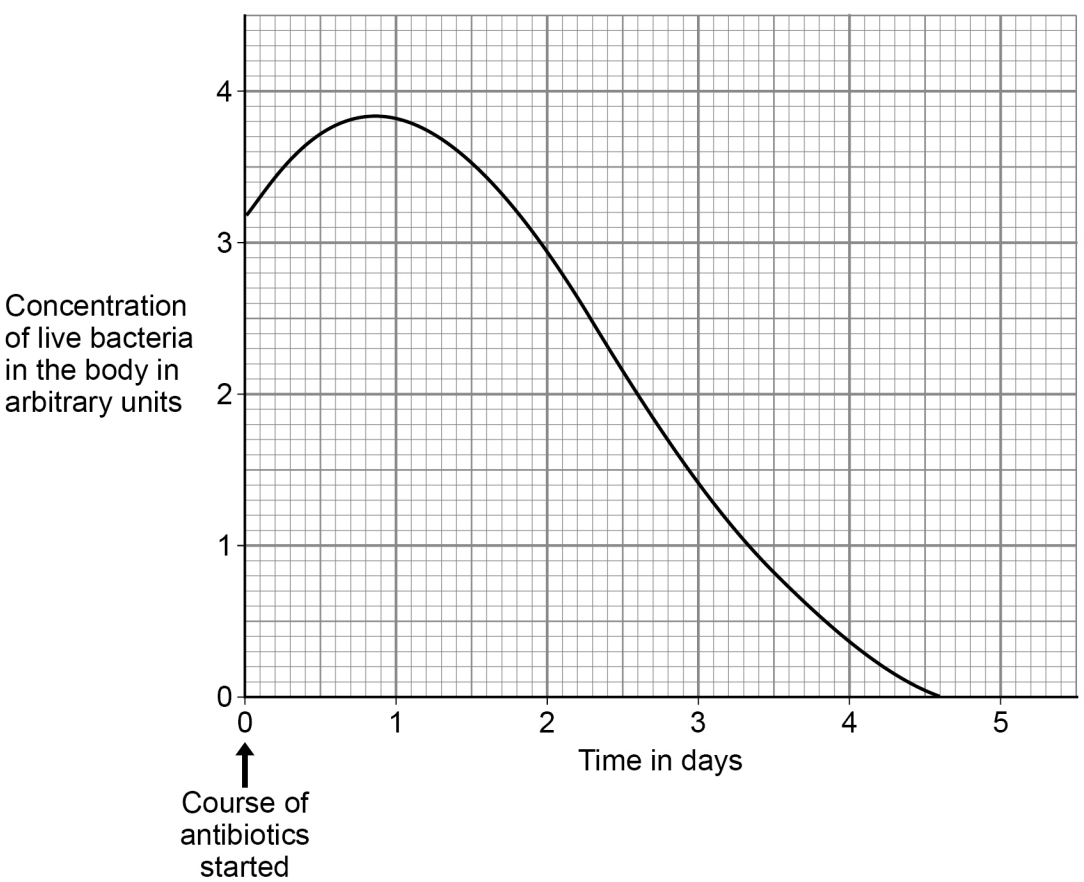
0 5 . 3 What is the name of the first antibiotic developed?

[1 mark]

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

Figure 7 shows how the concentration of live bacteria in the child's body changed when taking the course of antibiotics.

Figure 7



4.3.1.3 Bacterial diseases

Question 04 · continued

0 5 . 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 5 . 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 5 . 6 Suggest why doctors do **not** give antibiotics to patients with minor infections.

[1 mark]

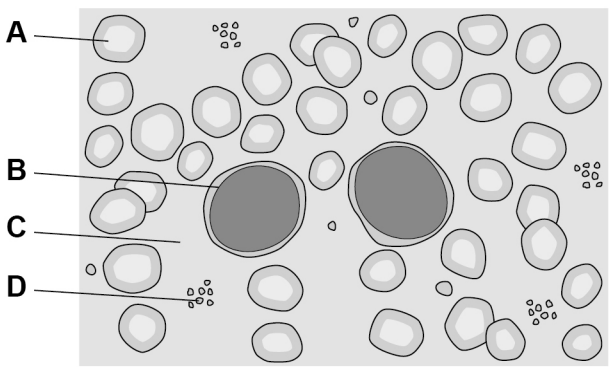
Question 5 continues on the next page

4.3.1.3 Bacterial diseases

Question 04 · continued

Figure 8 shows blood viewed using a microscope.

Figure 8



0 5 . 7 A vaccine will stimulate the production of antibodies.

Which part of the blood in **Figure 8** produces antibodies?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 5 . 8 Which part of the blood in **Figure 8** starts the clotting process?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

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4.3.1.3 Bacterial diseases

Question 05

0 4 This question is about disease.

Gonorrhoea is a sexually transmitted disease.

0 4 . 1 Which is a symptom of gonorrhoea?

[1 mark]

Tick (✓) **one** box.

Damaged immune system ☐

Pain when urinating ☐

Reduced body temperature ☐

Table 2 shows the number of reported cases of gonorrhoea for 5 cities.

Table 2

City	Number of reported cases of gonorrhoea per 100 000 of the population
A	124
B	118
C	40
D	130
E	40

4.3.1.3 Bacterial diseases

Question 05 · continued

0 4 . 2 The number of cases of gonorrhoea in each city might **not** be accurate.

Suggest **one** reason why.

[1 mark]

0 4 . 3 Which is the best way to present the data from **Table 2**?

[1 mark]

Tick (✓) **one** box.

Bar chart ☐

Line graph ☐

Scatter diagram ☐

0 4 . 4 The data is given as per 100 000 of the population and **not** as the total number of people with gonorrhoea.

Suggest why.

[1 mark]

Question 4 continues on the next page

4.3.1.3 Bacterial diseases

Question 05 · continued

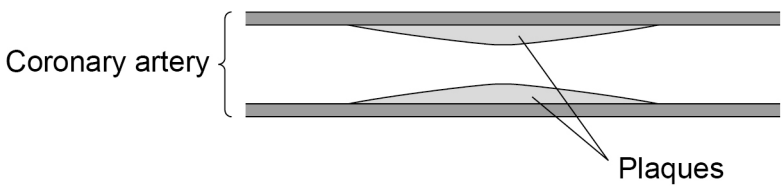
Deposits can form in coronary arteries.

The deposits are called plaques.

Plaques cause damage to the arteries.

Figure 6 shows plaques in a coronary artery.

Figure 6



0 4 . 5 Which **two** factors **increase** the risk of plaques forming in the coronary artery?

[2 marks]

Tick (✓) **two** boxes.

- High fat diet ☐
- Low blood glucose ☐
- Regular exercise ☐
- Smoking ☐
- Taking statins ☐

4.3.1.3 Bacterial diseases

Question 05 · continued

0 4 . 6 Which treatment can be used for the plaques in **Figure 6**?

[1 mark]

Tick (✓) **one** box.

A placebo ☐

A stent ☐

An antibiotic ☐

0 4 . 7 A heart attack can happen when plaques block a coronary artery.

During a heart attack muscle cells in the heart die.

Explain how the blockage can lead to the death of muscle cells in the heart.

[3 marks]

10