AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.2.2.3

Blood

Past-paper questions

Tier	**Foundation**
Question groups	**4**
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.

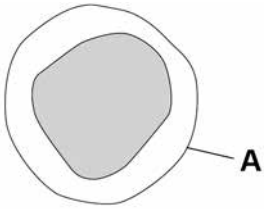
4.2.2.3 Blood

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 ☐

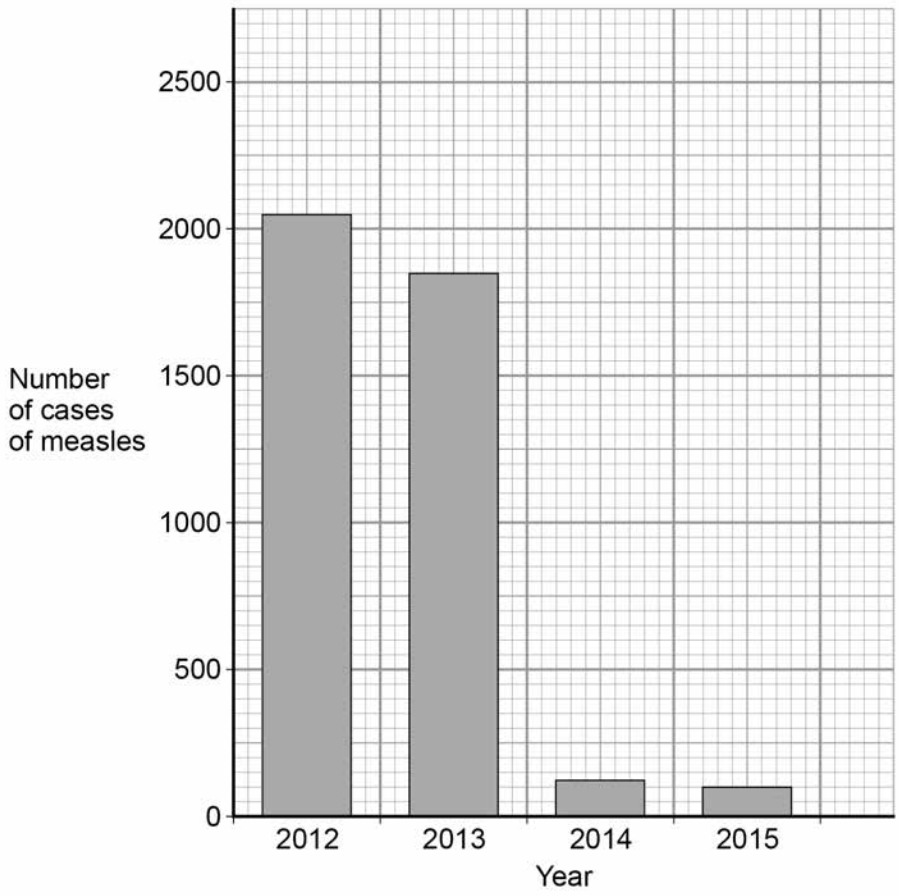
4.2.2.3 Blood

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]

4.2.2.3 Blood

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.

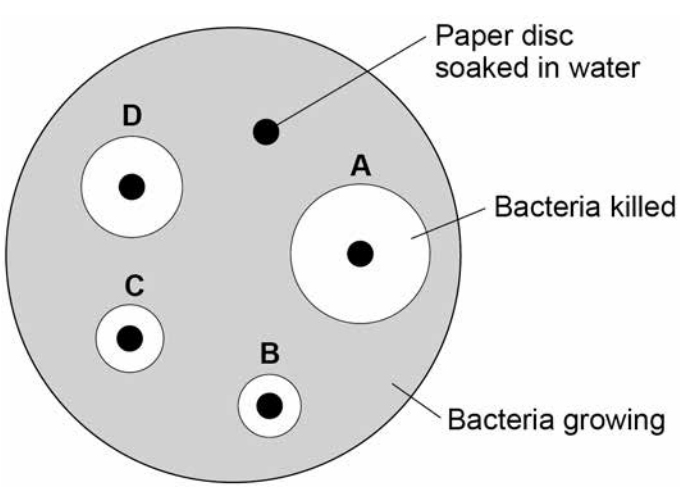
This is the method used.

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



4.2.2.3 Blood

Question 01 · continued

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

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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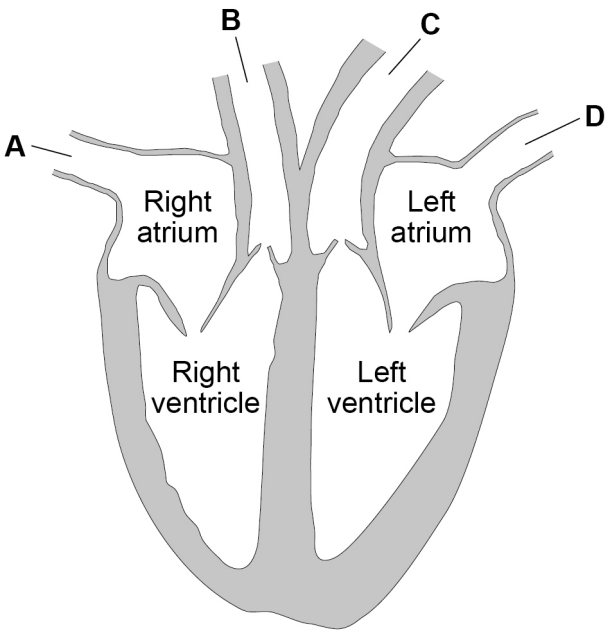
4.2.2.3 Blood

Question 02

June 2023 | 8464/B/1F | Original Q4

0 4 **Figure 6** shows a human heart.

Figure 6



0 4 . 1 The vena cava carries blood into the heart from the body.

Which blood vessel in **Figure 6** is the vena cava?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

4.2.2.3 Blood

Question 02 · continued

0 4 . 2 Which chamber of the heart pumps blood to the body?

[1 mark]

Tick (✓) **one** box.

- Left atrium ☐
- Left ventricle ☐
- Right atrium ☐
- Right ventricle ☐

0 4 . 3 What is the name of the blood vessel that carries blood to the heart muscle?

[1 mark]

Tick (✓) **one** box.

- Aorta ☐
- Coronary artery ☐
- Pulmonary artery ☐

Question 4 continues on the next page

4.2.2.3 Blood

Question 02 · continued

The heart and some blood vessels contain valves.

0 4 . 4 Which type of blood vessel has valves?

[1 mark]

Tick (✓) **one** box.

- Artery ☐
- Capillary ☐
- Vein ☐

0 4 . 5 What is the function of valves?

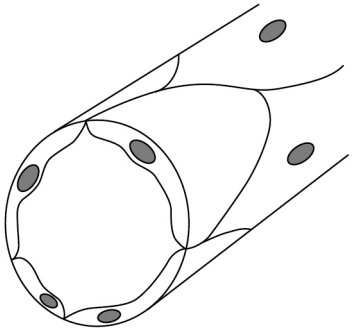
[1 mark]

4.2.2.3 Blood

Question 02 · continued

Figure 7 shows a blood capillary.

Figure 7



0 4 . 6 Explain **one** way the capillary is adapted for its function.

[2 marks]

Question 4 continues on the next page

4.2.2.3 Blood

Question 02 · continued

Table 2 shows information about the blood of four people.

Table 2

Person	Concentration of blood component in number/mm^3		
	Red blood cells	White blood cells	Platelets
W	5 000 000	15 000	200 000
X	4 700 000	5 500	20 000
Y	8 000 000	7 200	250 000
Z	4 900 000	6 400	225 000

0 4 . 7 Person **W** has 5 000 000 red blood cells in 1 mm^3 of blood.

What is 5 000 000 written in standard form?

[1 mark]

Tick (✓) **one** box.

5 × 1 000 000 ☐

5 × 10^6 ☐

5 × 10^7 ☐

50 × 10^5 ☐

4.2.2.3 Blood

Question 02 · continued

0 4 . 8 Draw **one** line from each description to the person in **Table 2** it describes.

[2 marks]

Description	Person in Table 2
	Person **W**
Person most likely to have an infection	Person **X**
Person whose blood will **not** clot properly	Person **Y**
	Person **Z**

Question 4 continues on the next page

4.2.2.3 Blood

Question 02 · continued

0 4 . 9 The greater the height above sea level, the less oxygen there is in the air.

People who live high above sea level have more red blood cells than people who live at sea level.

Some athletes train in mountains high above sea level.

Explain why having more red blood cells will improve an athlete's performance.

[3 marks]

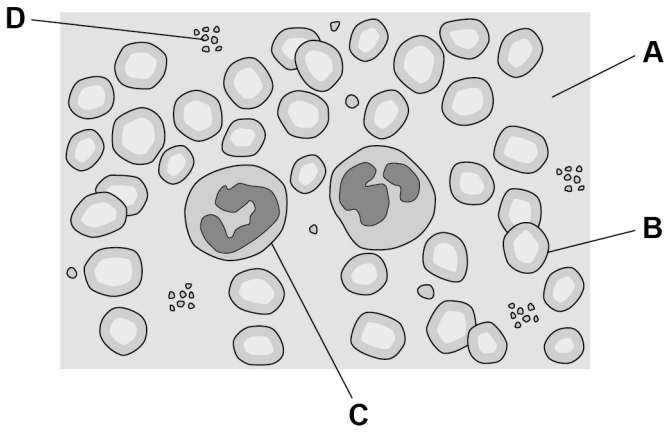
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4.2.2.3 Blood

Question 03

0 3 **Figure 5** shows different parts of blood.

Figure 5



0 3 . 1 Which letter shows a white blood cell?

[1 mark]

Tick (✓) **one** box.

A ☐ B ☐ C ☐ D ☐

0 3 . 2 Which part of the blood causes the blood to clot?

[1 mark]

Tick (✓) **one** box.

Plasma ☐

Platelets ☐

Red blood cells ☐

0 3 . 3 Name **two** substances transported in the blood.

[2 marks]

1 _____

2 _____

4.2.2.3 Blood

Question 03 · continued

Healthy people can volunteer to donate blood.

The donated blood is then given to patients who need the blood.

When a volunteer donates blood:

- the volunteer's health is checked
- a needle is used to remove blood from a vein in the arm
- the volunteer rests for 15 minutes after the donation.

0 3 . 4 Suggest **one** reason why blood is removed from a vein and **not** from an artery.

[1 mark]

Patients may receive blood during a medical emergency.

Donating blood and receiving blood has risks.

0 3 . 5 Suggest **one** advantage and **one** disadvantage to a patient who **receives** blood.

[2 marks]

Advantage

Disadvantage

0 3 . 6 Suggest **one** advantage and **one** disadvantage to the volunteer who **donates** blood.

[2 marks]

Advantage

Disadvantage

9

4.2.2.3 Blood

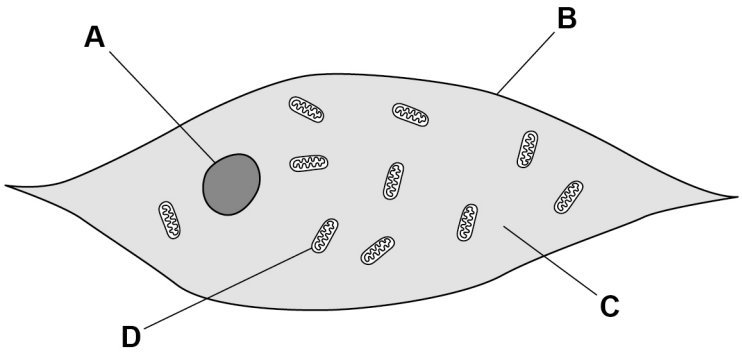
Question 04

June 2025 | 8464/B/1F | Original Q1

0 1 This question is about cells.

Figure 1 shows a muscle cell.

Figure 1



0 1 . 1 The nucleus and cytoplasm are parts of a muscle cell.

Draw **one** line from each part of the muscle cell to the correct label from **Figure 1**.

[2 marks]

Part of the muscle cell	Label from Figure 1
	A
Cytoplasm	B
Nucleus	C
	D

4.2.2.3 Blood

Question 04 · continued

0 1 . 2 What is the function of the nucleus?

[1 mark]

0 1 . 3 What part of a cell controls the movement of substances into the cell?

[1 mark]

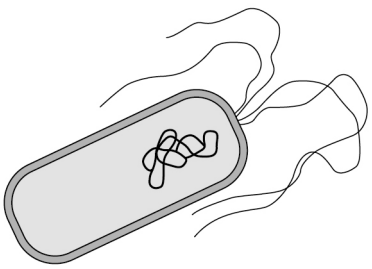
Question 1 continues on the next page

4.2.2.3 Blood

Question 04 · continued

Figure 2 shows a bacterial cell.

Figure 2



0 1 . 4 What type of cell is the bacterial cell in **Figure 2**?

[1 mark]

Tick (✓) **one** box.

A fungal cell ☐

A prokaryotic cell ☐

A sperm cell ☐

0 1 . 5 Which are **two** features of bacterial cells?

[2 marks]

Tick (✓) **two** boxes.

Bacterial cells are larger than animal cells. ☐

Bacterial cells contain a loop of DNA. ☐

Bacterial cells contain a nucleus. ☐

Bacterial cells contain chloroplasts. ☐

Bacterial cells have a cell wall. ☐

4.2.2.3 Blood

Question 04 · continued

Stem cells are cells that are **not** specialised.

Stem cells can be collected from human bone marrow.

0 1 . 6 What type of stem cells are found in bone marrow?

[1 mark]

Tick (✓) **one** box.

- Adult stem cells ☐
- Embryonic stem cells ☐
- Meristem cells ☐

0 1 . 7 Which process produces stem cells in humans?

[1 mark]

Tick (✓) **one** box.

- Digestion ☐
- Mitosis ☐
- Respiration ☐

Question 1 continues on the next page

Question 04 · continued

0 1 . 8 Stem cells can be used to produce blood cells.

A blood transfusion is when a patient is given blood cells.

Table 1 compares two different methods of providing blood cells that can be given to a patient.

Table 1

Blood cells produced from stem cells in a laboratory	Blood cells from a blood donation
• A small sample of blood is taken from a person. • All of the new blood cells can function for 120 days. • The stem cells from the blood sample can produce unlimited quantities of blood cells.	• 470 cm^3 of blood is collected from a person. • The cells can function for between 1 and 120 days.

A scientist stated:

'Blood cells produced from stem cells are better to use for a blood transfusion than blood cells from a donation.'

Suggest **two** reasons that support the scientist's statement.

[2 marks]

1 _____

_____

2 _____

_____

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