AQA GCSE Biology | 8461

SPECIFICATION POINT 4.2.2.4

Coronary heart disease: a non-communicable disease

Past-paper questions

Tier	**Foundation**
Question groups	**21**
Available paper years	**2007–2025**

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.

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 01

January 2007 | BLY1F | Original Q4 | Legacy

4 (a) Use words from the box to complete the sentences about curing disease.

antibiotics	**antibodies**	**antitoxins**	**painkillers**	**statins**

The substances made by white blood cells to kill pathogens are called ..... .

The substances made by white blood cells to counteract poisons produced by pathogens are called ..... .

Medicines which kill bacteria are called ..... .

(3 marks)

(b) The MMR vaccine protects people against three diseases.

Write down the names of **two** of these diseases.

1 .....

2 .....

(2 marks)

(c) All vaccinations involve some risk.

The table shows the risk of developing harmful effects:

- from the disease if a child is **not** given the MMR vaccine;
- if a child **is** given the MMR vaccine.

Harmful effect	**Risk of getting the harmful effect from the disease (if not vaccinated)**	**Risk of getting the harmful effect from MMR vaccine**
Convulsions	1 in 200	1 in 1000
Meningitis	1 in 3000	Less than 1 in 1 000 000
Brain damage	1 in 8000	0

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 01 · continued

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A mother is considering if she should have her child vaccinated with the MMR vaccine.

Use information from the table to persuade the mother that she should have her child vaccinated.

.....

.....

.....

.....

(2 marks)

(d) The vaccine used to protect us from the Hepatitis B virus is produced by genetic engineering.

Yeast cells are used to produce the vaccine.

Use words from the box to complete the sentence.

chromosomes	**drugs**	**enzymes**	**genes**	**hormones**

To produce the vaccine ..... are used to cut out .....

from the Hepatitis B virus which are then inserted into the yeast cells.

(2 marks)

9

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 02

January 2007 | BLY1F | Original Q6 | Legacy

6 *Obesity* is a factor that affects Coronary Heart Disease (CHD).

(a) What is meant by *obesity*?

.....

.....

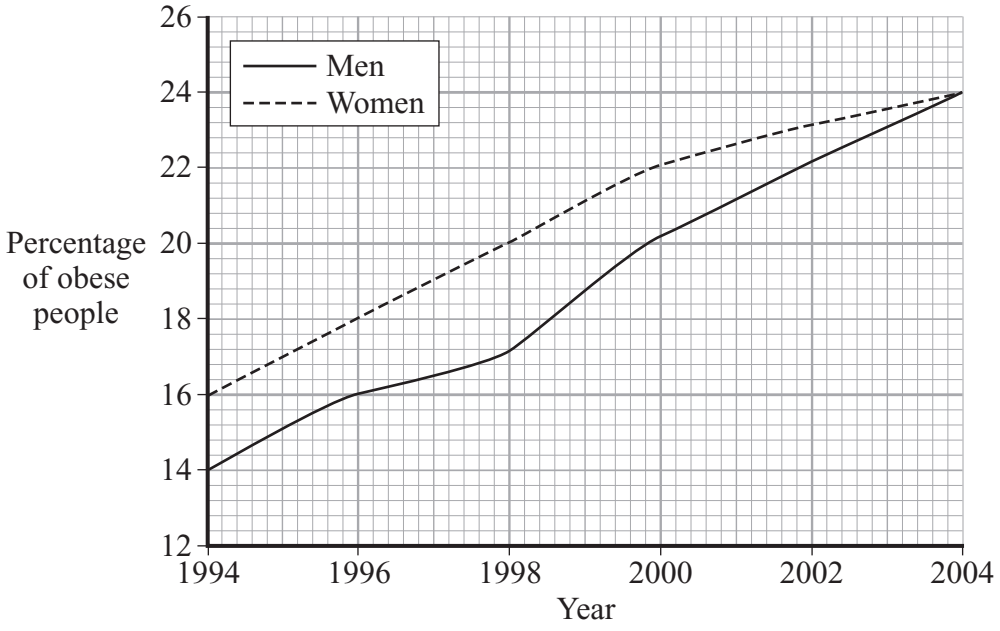
(1 mark)

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 02 · continued

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(b) The graph shows how the percentages of obese men and women in the UK changed between 1994 and 2004.



(i) Describe how the percentage of obese women changed between 1994 and 2004.

.....

.....

.....

.....

(2 marks)

(ii) The percentage of obese men changed between 1994 and 2004.

Suggest **two** reasons for this change.

1 .....

.....

2 .....

.....

(2 marks)

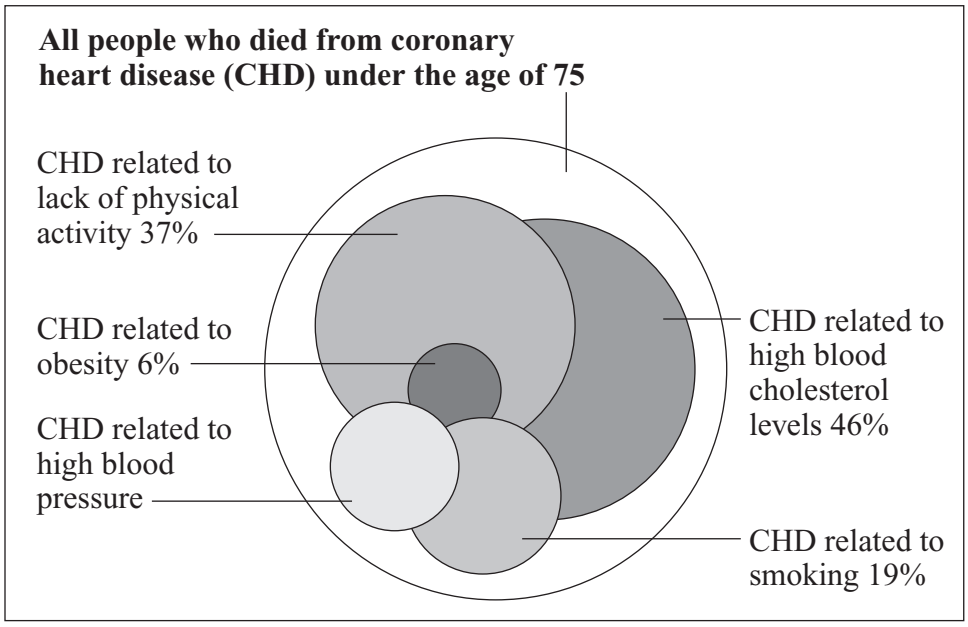
Question 6 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 02 · continued

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(c) The chart below is published by the British Heart Foundation. It shows how death from CHD is related to a number of different factors.



Each factor is represented by a circle.

The bigger the circle, the more people are affected by the factor.

(i) What is the main factor causing death from CHD?

.....

(1 mark)

(ii) Estimate the percentage of deaths from CHD related to high blood pressure.

..... %

(1 mark)

(iii) The data are shown as overlapping circles instead of a bar chart. The percentages of deaths related to the different factors add up to more than 100%.

What does this tell you about some of the people who died from CHD?

.....

.....

(1 mark)

8

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 03

March 2008 | BLY1AP | Original Q2 | Legacy

QUESTION TWO

This question is about drugs.

Match substances, **A**, **B**, **C** and **D**, with the numbers **1–4** in the table.

A cannabis

B painkiller

C antibiotic

D statin

	Information
1	kills bacteria in the body
2	may lead to addiction to hard drugs
3	lowers the level of cholesterol in the blood
4	relieves some of the symptoms of the disease

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 04

January 2010 | BLY1F | Original Q5 | Legacy

5 Medicinal drugs are used to treat diseases.

5 (a) Draw **one** line from each drug to its correct use.

Drug	Use
Painkiller	Used as a fertility drug
Statin	Used to relieve disease symptoms
Thalidomide	Used to treat leprosy
	Used to lower blood cholesterol

(3 marks)

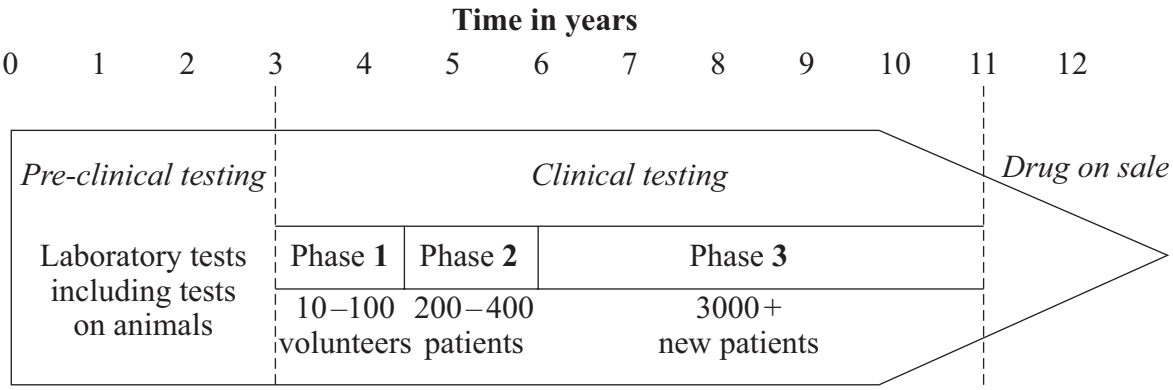
4.2.2.4 Coronary heart disease: a non-communicable disease

Question 04 · continued

for mark

5 (b) New drugs need to be tested before going on sale.

The diagram shows a time line for the testing of a new drug.



5 (b) (i) How long do trials on humans take? ..... years

(1 mark)

5 (b) (ii) What is the minimum number of humans the drug is tested on throughout *clinical testing*?

.....

(1 mark)

5 (c) Draw a ring around the correct answer to complete each sentence.

5 (c) (i) A new drug is first tested in the laboratory to find

- if it is toxic.
- if it is cost effective.
- the optimum dose.

(1 mark)

5 (c) (ii) The drug is then tested on a few volunteers to find

- if it is cost effective.
- if it has side effects.
- the optimum dose.

(1 mark)

7

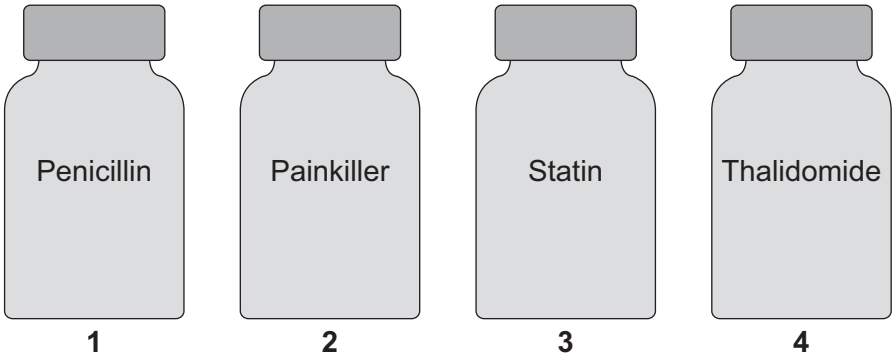
4.2.2.4 Coronary heart disease: a non-communicable disease

Question 05

June 2010 | BLY1AP | Original Q1 | Legacy

QUESTION ONE

Drugs are used to treat sick people.



Match treatments, **A**, **B**, **C** and **D**, with the drugs **1–4** in the diagram.

A used to treat a headache

B used to treat infections

C used to treat leprosy

D used to treat high cholesterol

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 06

March 2011 | BLY1AP | Original Q1 | Legacy

QUESTION ONE

Drugs have many different uses.

Match drugs, **A**, **B**, **C** and **D**, with the statements **1**–**4** in the table.

A cocaine

B nicotine

C statin

D thalidomide

1	a drug developed for use as a sleeping pill
2	the addictive drug in tobacco smoke
3	an illegal addictive drug
4	a drug used to lower the concentration of cholesterol in the blood

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 07

June 2011 | BLY1AP | Original Q1 | Legacy

QUESTION ONE

Drugs have different uses.

Match drugs, **A**, **B**, **C** and **D**, with the statements **1**–**4** in the table.

A statins

B painkillers

C heroin and cocaine

D tobacco and alcohol

1	legal and recreational drugs
2	very addictive drugs
3	used to lower blood cholesterol levels
4	used to relieve disease symptoms

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 08

June 2011 | BLY1F | Original Q8 | Legacy

8 Scientists have trialled a new statin called rosuvastatin.

- 17 802 people took part in the trial.
- All of these people had high levels of a protein called CRP in their blood.
- The higher the level of CRP in the blood, the higher the risk of a heart attack.
- None of these people had heart conditions at the beginning of the investigation.
- None of these people had high LDL (low density lipoprotein) levels.
- All of these people were aged 50 or above.
- Half the people were given a rosuvastatin tablet each day; the other half were given a placebo.
- The trial was stopped 7 months early when it was found that the people given rosuvastatin were 54% less likely to have a heart attack than people given the placebo.

8 (a) Give **two** control variables in this investigation.

1 .....

2 .....

(2 marks)

8 (b) What would the placebo be in this investigation?

.....

.....

(1 mark)

8 (c) The trial gave reliable results.

Give **one** reason why.

.....

.....

(1 mark)

8 (d) The trial was stopped 7 months early.

Give **one** reason why.

.....

.....

(1 mark)

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 08 · continued

8 (e) The manufacturers of rosuvastatin paid for the trial.

However, the manufacturers took no part in the trial.

Suggest **one** reason why the manufacturers did not take part in the trial.

.....

.....

(1 mark)

8 (f) The table shows some of the results of the trial.

Substance	**Concentration in blood in mg per 100 cm^3 after 3 years of trial**	
	People given rosuvastatin	People given placebo
LDL cholesterol	53	106
HDL cholesterol	50	49
Saturated fats	106	123

Rosuvastatin reduces the risk of heart attacks.

Use the data in the table to explain why.

.....

.....

.....

.....

(2 marks)

8

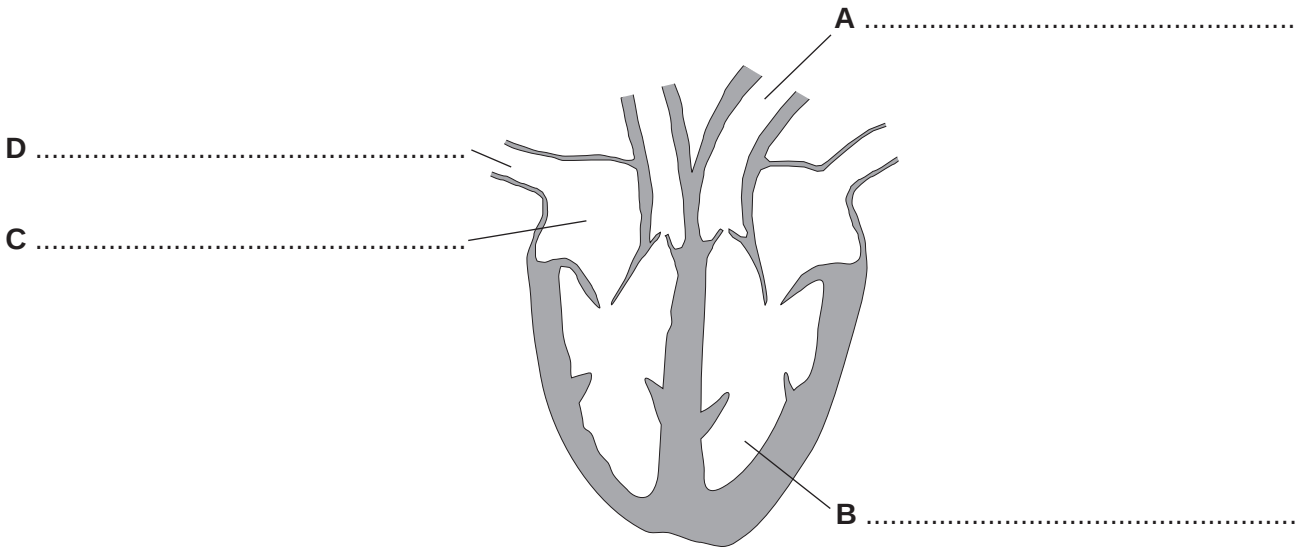
4.2.2.4 Coronary heart disease: a non-communicable disease

Question 09

June 2013 | BL3FP | Original Q5 | Legacy

5 **Diagram 1** shows a section through the heart.

Diagram 1



5 (a) Use words from the box to label parts **A**, **B**, **C** and **D**.

artery	**atrium**	**capillary**	**platelet**	**vein**	**ventricle**

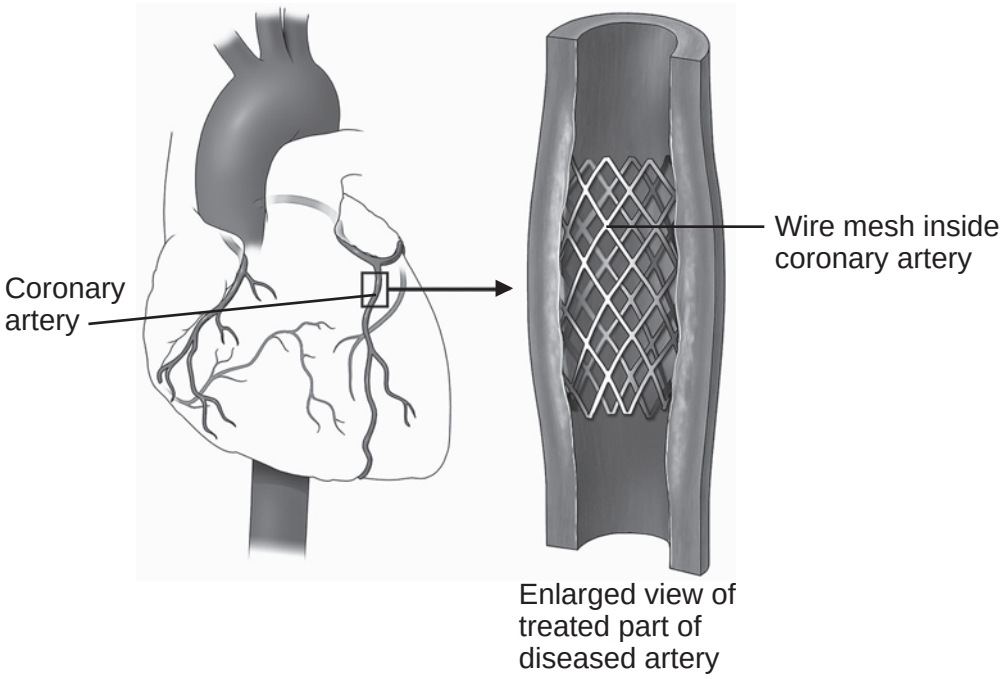
(4 marks)

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 09 · continued

5 (b) **Diagram 2** shows one treatment for a diseased coronary artery.

Diagram 2



5 (b) (i) Name the treatment shown in **Diagram 2**.

.....

(1 mark)

5 (b) (ii) Explain how the treatment works.

.....

.....

.....

.....

(2 marks)

7

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 10

June 2014 | BL1FP | Original Q4 | Legacy

4 Drugs affect the human body.

4 (a) Draw **one** line from each drug to the correct information about the drug.

[4 marks]

Drug	Information
Cannabis	Used to boost heart rate
Steroid	Used to treat leprosy
Stimulant	May cause mental illness in some people
Thalidomide	Used to increase muscle growth
	Used to treat measles

4 (b) New drugs must be tested and trialled before being used.

4 (b) (i) New drugs are tested in a laboratory before they are trialled on people.

What are new drugs tested on in a laboratory?

[1 mark]

.....

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 10 · continued

4 (b) (ii) Why is it important that drugs are trialled before doctors give them to patients?

Tick (✓) **two** boxes.

[2 marks]

- To check that the drug works ☐
- To check the cost of the drug ☐
- To find out if the drug is legal ☐
- To find the best dose to use ☐

4 (b) (iii) In a double blind drug trial, only some people know which patients have been given the drug.

Who knows which patients have been given the drug?

Tick (✓) **one** box.

[1 mark]

- The patient and the doctor ☐
- Only the doctor ☐
- Only scientists at the drug company ☐

Question 4 continues on the next page

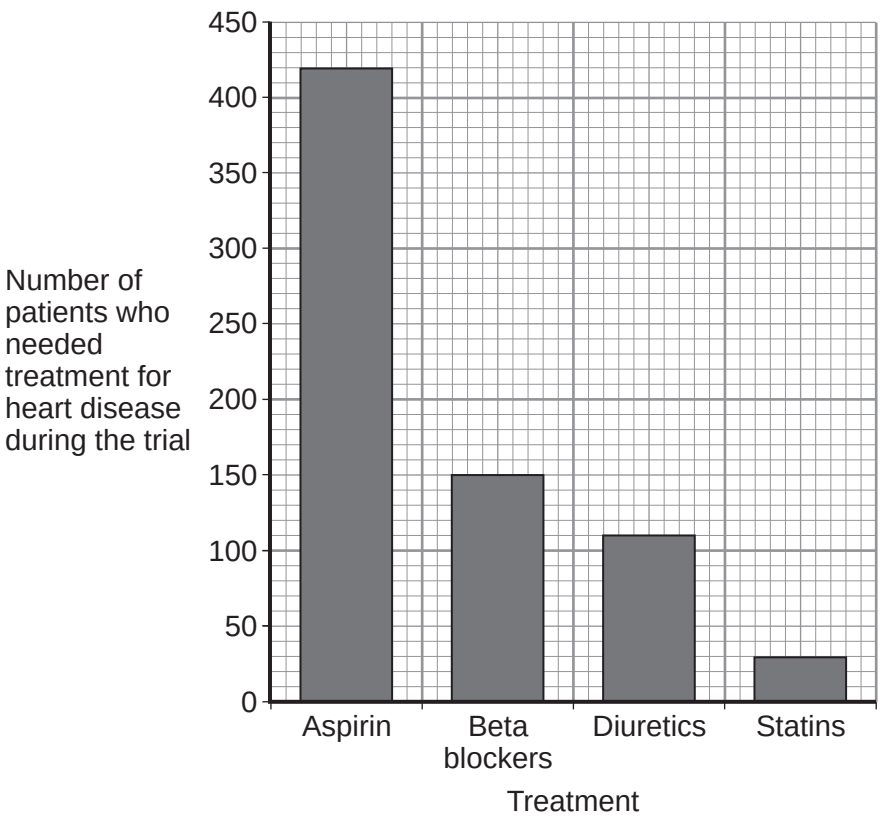
4.2.2.4 Coronary heart disease: a non-communicable disease

Question 10 · continued

4 (c) Doctors trialled four different treatments for reducing the risk of heart disease.
Each treatment was trialled on the same number of patients for 5 years.
The patients did **not** have heart disease at the start of the trial.

Figure 5 shows the results.

Figure 5



4 (c) (i) How many patients who took aspirin needed treatment for heart disease during the trial?

[1 mark]

Number of patients = ...

4 (c) (ii) Based **only** on the evidence in **Figure 5**, which would be the best treatment to reduce the risk of developing heart disease?

[1 mark]

.....

4 (c) (iii) Suggest **one** other factor that a doctor might consider before deciding which treatment to use for a patient.

[1 mark]

.....

11

4.2.2.4 Coronary heart disease: a non-communicable disease

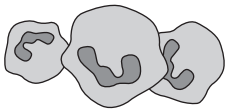
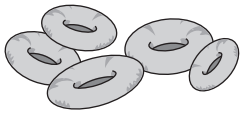
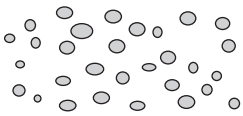
Question 11

June 2014 | BL3FP | Original Q1 | Legacy

1 (a) (i) Blood is part of the circulatory system.

Draw **one** line from each part of the blood to its correct function.

[3 marks]

Part of the blood	Function
 White blood cells	carry glucose around the body
 Red blood cells	carry oxygen around the body
 Platelets	help the blood to clot
	destroy microorganisms

1 (a) (ii) Name **one** waste product that is transported by the blood plasma.

[1 mark]

.....

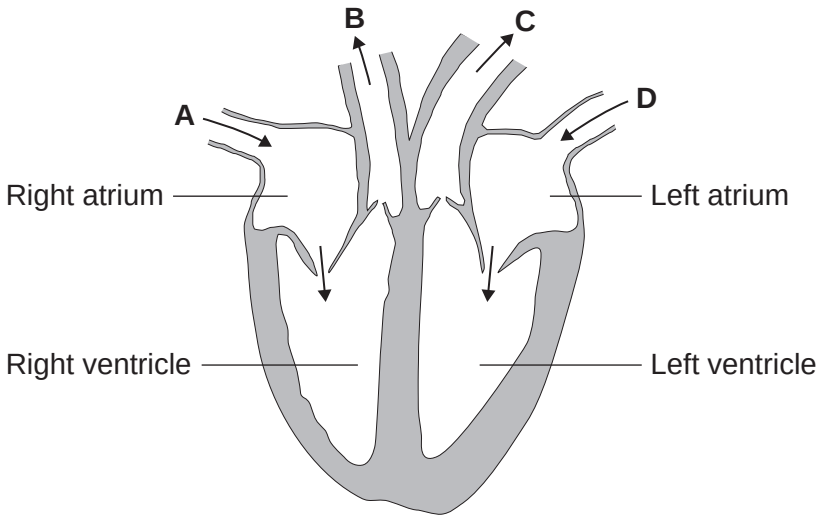
4.2.2.4 Coronary heart disease: a non-communicable disease

Question 11 · continued

1 (b) The heart is also part of the circulatory system.

Figure 1 shows a section through the human heart.

Figure 1



1 (b) (i) Which arrow, **A**, **B**, **C** or **D**, shows blood leaving the heart in the pulmonary artery to go to the lungs? ☐

[1 mark]

1 (b) (ii) Which arrow, **A**, **B**, **C** or **D**, shows blood from the lungs entering the heart in the pulmonary vein? ☐

[1 mark]

1 (b) (iii) Valves in the circulatory system make sure blood only travels in one direction.

Name the type of blood vessel that has valves.

[1 mark]

.....

Question 1 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 11 · continued

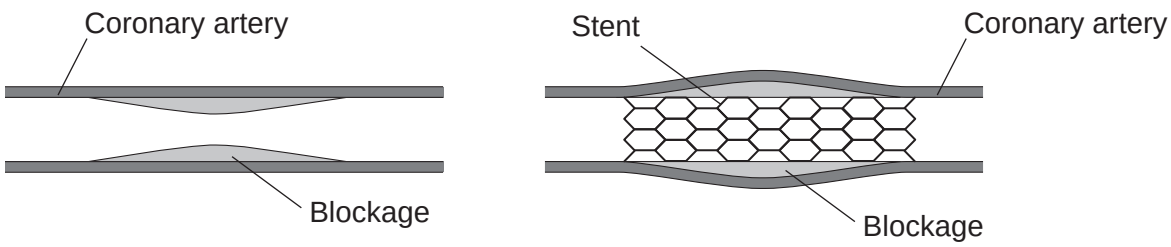
1 (c) A person's coronary artery has become narrower.

The person has a heart attack.

A doctor puts a stent into the person's coronary artery.

Figure 2 shows a stent inside a coronary artery.

Figure 2



1 (c) (i) How does the stent help to prevent another heart attack?

Give **one** way.

[1 mark]

.....

.....

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 11 · continued

1 (c) (ii) **Figure 3** shows a surgeon putting a stent into a patient.

Figure 3



The surgeon puts the stent into an artery in the leg. He moves the stent through the artery to the coronary artery.

Suggest **two** possible risks of this operation.

[2 marks]

1 .....

.....

2 .....

.....

10

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 12

June 2015 | BL3FP | Original Q8 | Legacy

8 The circulatory system transports substances such as glucose and oxygen around the body.

8 (a) Name **two** other substances that the circulatory system transports around the body.

[2 marks]

1 .....

2 .....

8 (b) (i) Blood is a tissue. Blood contains red blood cells and white blood cells.

Name **two** other components of blood.

[2 marks]

1 .....

2 .....

8 (b) (ii) The heart is part of the circulatory system.

What type of tissue is the wall of the heart made of?

[1 mark]

.....

Question 8 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 12 · continued

8 (c) **In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.**

Every year, many patients need to have heart valve replacements.

Figure 9 gives information about two types of heart valve.

Figure 9

Living human heart valve	Cow tissue heart valve
• It has been used for transplants for more than 12 years. • It can take many years to find a suitable human donor. • It is transplanted during an operation after a donor has been found. • During the operation, the patient's chest is opened and the old valve is removed before the new valve is transplanted.	• It has been used since 2011. • It is made from the artery tissue of a cow. • It is attached to a stent and inserted inside the existing faulty valve. • A doctor inserts the stent into a blood vessel in the leg and pushes it through the blood vessel to the heart.

A patient needs a heart valve replacement. A doctor recommends the use of a cow tissue heart valve.

Give the advantages and disadvantages of using a cow tissue heart valve compared with using a living human heart valve.

Use information from **Figure 9** and your own knowledge in your answer.

[6 marks]

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.....

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4.2.2.4 Coronary heart disease: a non-communicable disease

Question 13

June 2016 | BL1FP | Original Q4 | Legacy

4 Hormones are involved in controlling the menstrual cycle and fertility.

4 (a) (i) Use the correct answer from the box to complete the sentence.

[1 mark]

auxin	**follicle stimulating hormone (FSH)**	**thalidomide**

A hormone produced by the pituitary gland is _____ .

4 (a) (ii) Use the correct answer from the box to complete the sentence.

[1 mark]

luteinising hormone (LH)	**oestrogen**	**statin**

A hormone produced by the ovaries is _____ .

4 (b) (i) Why are fertility drugs given to some women?

[1 mark]

_____

_____

4 (b) (ii) A doctor injects fertility drugs into a woman. After the injection, the hormones travel to the woman's ovaries.

How do the hormones travel to the ovaries?

[1 mark]

Draw a ring around the correct answer.

through the bloodstream **through the neurones** **through the skin**

4 (c) Which **two** hormones are used in contraceptive pills?

[2 marks]

Tick (✓) **two** boxes.

FSH	☐	oestrogen	☐
LH	☐	progesterone	☐

6

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 14

June 2016 | BL3FP | Original Q3 | Legacy

3 The heart is part of the circulatory system.

3 (a) (i) Name **one** substance transported by the blood in the circulatory system.

[1 mark]

_____

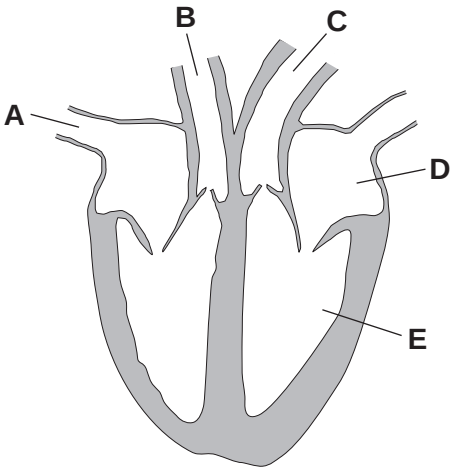
3 (a) (ii) What is the main type of tissue in the heart wall?

[1 mark]

_____

3 (b) **Figure 4** shows the human heart.

Figure 4



3 (b) (i) Which blood vessel, **A**, **B** or **C**, takes blood to the lungs?

[1 mark]

3 (b) (ii) Name parts **D** and **E** shown in **Figure 4**.

[2 marks]

D _____

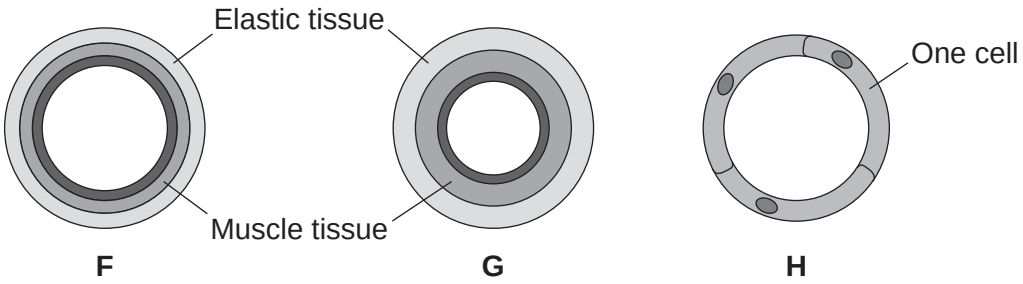
E _____

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 14 · continued

3 (c) **Figure 5** shows three types of blood vessel, **F**, **G** and **H**.

Figure 5



Not to scale

3 (c) (i) What type of blood vessel is **F**?

[1 mark]

Tick (✓) **one** box.

an artery ☐

a capillary ☐

a vein ☐

3 (c) (ii) A man needs to have a stent fitted to prevent a heart attack.

In which type of blood vessel would the stent be placed?

[1 mark]

Tick (✓) **one** box.

an artery ☐

a capillary ☐

a vein ☐

3 (c) (iii) Explain how a stent helps to prevent a heart attack.

[2 marks]

9

4.2.2.4 Coronary heart disease: a non-communicable disease

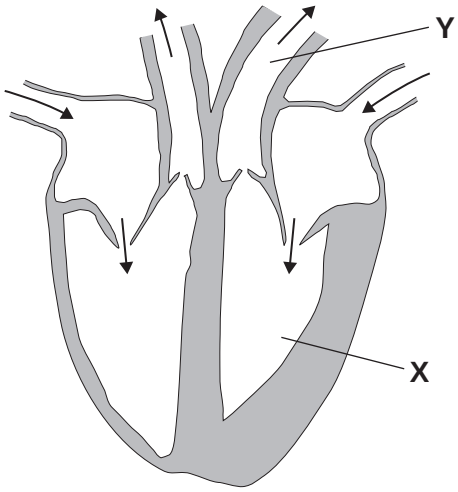
Question 15

June 2017 | BL3FP | Original Q6 | Legacy

6 Each year people need to have treatment for heart problems.

Figure 8 shows a human heart.

Figure 8



6 (a) (i) Name part **X** in **Figure 8**.

[1 mark]

_____

6 (a) (ii) Name part **Y** in **Figure 8**.

[1 mark]

_____

6 (a) (iii) There are valves inside the heart.

What is the function of these valves?

[1 mark]

_____

_____

Question 6 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 15 · continued

6 (b) Some patients need to have their heart valves replaced.

Table 3 shows the percentage of patients who died from different causes after having heart valve replacements.

Two types of heart valve were used:

- mechanical – made of metal and plastic
- pig tissue – made from pig heart tissue on a metal frame.

The data was collected over 15 years and 400 patients were involved.

Table 3

Cause of death	Percentage of patients who died	
	Mechanical valve	Pig tissue valve
Blood clots blocking coronary arteries	9	9
Bleeding	26	15
Second operation	5	15
Bacterial heart infection	4	8
Heart valves stopped working	0	12

Use information from **Table 3** and your own knowledge to answer the following question.

A patient decides to have a mechanical valve replacement rather than a pig tissue valve replacement.

Suggest reasons for **and** against choosing a mechanical valve.

[4 marks]

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 15 · continued

6 (c) Some people have narrowed arteries.

Describe how stents can be used to prevent a heart attack in a person with narrowed arteries.

[2 marks]

9

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 16

June 2018 | 8461/1F | Original Q4

0 4 This question is about the circulatory system.

0 4 . 1 Draw **one** line from each blood component to its function.

[3 marks]

Blood component	Function
Platelet	Helps the blood to clot
Red blood cell	Transports oxygen around the body
White blood cell	Destroys microorganisms
	Transports glucose around the body
	Transports urea

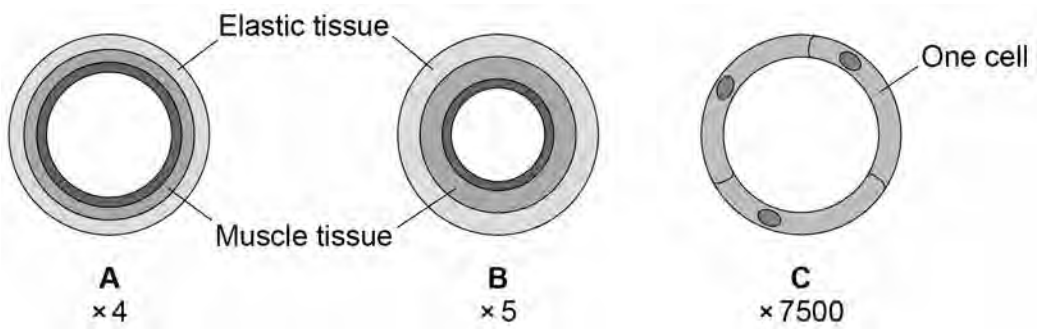
Question 4 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 16 · continued

0 4 . 2 **Figure 6** shows cross sections of the three main types of blood vessel found in the human body. Each blood vessel is drawn to the scale shown.

Figure 6



Which blood vessel has the smallest diameter?

[1 mark]

Tick **one** box.

A		B		C	

0 4 . 3 Which blood vessel in **Figure 6** is an artery?

Give **one** reason for your answer.

[2 marks]

Blood vessel: _____

Reason: _____

_____

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 16 · continued

Table 1 gives information about the blood flow in two people.

Table 1

Person	Blood flow through the coronary arteries in cm^3/minute
A - does **not** have coronary heart disease	250
B - has coronary heart disease	155

0 4 . 4 Calculate the difference in blood flow between person **A** and person **B**.

[1 mark]

Difference = _____ cm^3/minute

0 4 . 5 Suggest why blood flow through the coronary arteries is lower in people with coronary heart disease.

[1 mark]

0 4 . 6 Calculate the volume of blood flowing through the coronary arteries of person **A** in 1 hour.

Give your answer in dm^3.

[2 marks]

Volume of blood in 1 hour = _____ dm^3

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 16 · continued

Coronary heart disease can be treated by:

- inserting a stent
- using a Coronary Artery Bypass Graft (CABG).

Table 2 gives information about each method.

Table 2

	Stent	CABG
Procedure	The patient is awake during the procedure. A small cut is made in the skin. A wire mesh is inserted into the coronary artery via a blood vessel in the arm or leg.	The patient is not awake during the procedure. The chest is cut open. A section of blood vessel from the arm or leg is removed. It is used to create a new channel for blood to bypass the blockage in the coronary artery.
When procedure is recommended	When only one blockage is present	When multiple blockages are present
Time spent in hospital after procedure	2-3 hours	at least 7 days
Recovery time after procedure	7 days	12 weeks
Risk of heart attack during procedure	1%	2%
Chance of failure within one year	40%	5%

0 4 . 7 Give **two** advantages of using a stent instead of CABG.

[2 marks]

1 _____

_____

2 _____

_____

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 16 · continued

0 4 . 8 Give **two** advantages of using CABG instead of a stent.

[2 marks]

1 _____

_____

2 _____

_____

14

Turn over for the next question

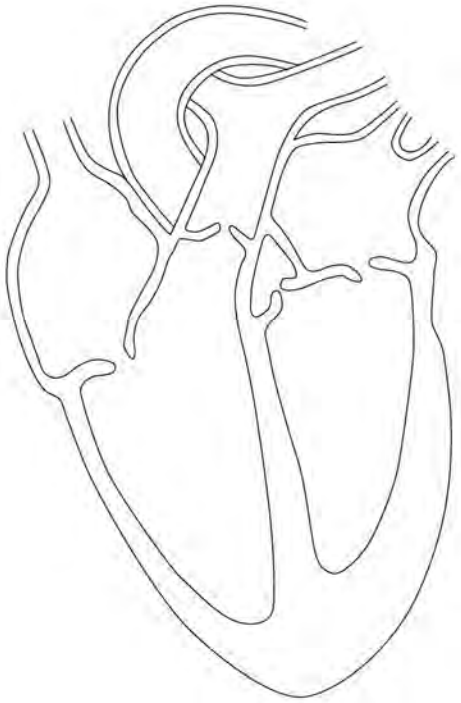
4.2.2.4 Coronary heart disease: a non-communicable disease

Question 17

June 2019 | 8461/1F | Original Q6

0 6 **Figure 11** shows the internal structure of the human heart.

Figure 11



0 6 . 1 Which organ system is the heart a part of?

[1 mark]

0 6 . 2 Draw a ring around **one** valve on **Figure 11**.

[1 mark]

0 6 . 3 What is the function of the valves in the heart?

[1 mark]

Question 6 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 17 · continued

0 6 . 4 Valves are also found inside some blood vessels.

Which type of blood vessel contains valves?

[1 mark]

Sometimes a valve in the heart can begin to leak.

A leaking heart valve may be replaced with either:

- a mechanical valve
- a biological valve from a pig.

Table 6 shows information about the replacement valves.

Table 6

Mechanical valve	Biological valve from a pig
Made of plastic or metal	Made from living tissue
Can cause the blood to clot around the valve	No risk of blood clotting around the valve
No need for another replacement valve after 5 years	Sometimes another replacement valve is needed after 5 years

0 6 . 5 Suggest **two** reasons why a patient may choose a mechanical valve and **not** a biological valve from a pig.

[2 marks]

1 _____

_____

2 _____

_____

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 17 · continued

June 2019 | 8461/1F | Original Q6

0 6 . 6 Suggest **one** reason why a patient may choose a biological valve from a pig and **not** a mechanical valve.

[1 mark]

0 6 . 7 A person may develop other medical conditions.

Draw **one** line from each medical condition to the correct treatment.

[2 marks]

Medical condition	Treatment
High blood cholesterol	Antibiotics
	Artificial pacemaker
Irregular heart rate	Insulin
	Statins

9

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 18

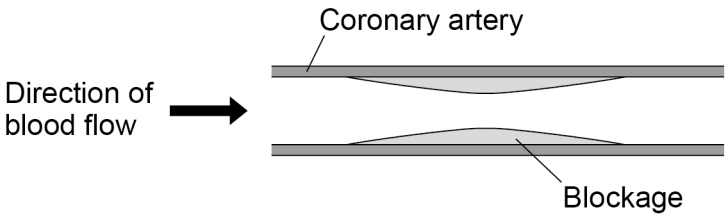
November 2021 | 8461/1F | Original Q5

0 5 A high cholesterol concentration in the blood can lead to blockages inside arteries.

The coronary arteries supply blood to the heart muscle.

Figure 9 shows a coronary artery with a blockage.

Figure 9



0 5 . 1 Why could the blockage in **Figure 9** cause cells in the heart to die?

[2 marks]

Question 5 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 18 · continued

Doctors can measure the concentration of cholesterol in the blood.

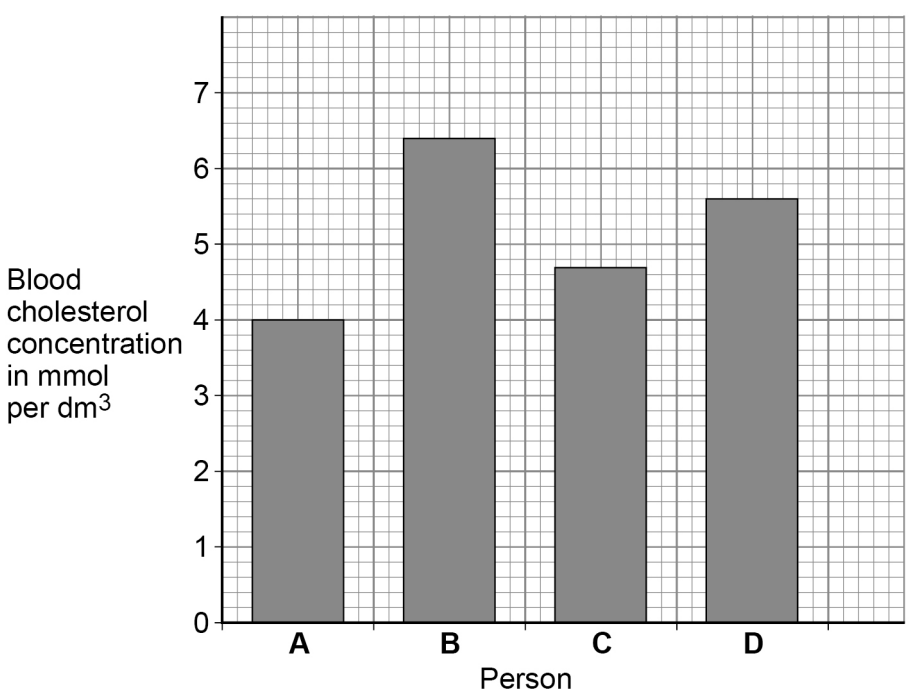
Table 3 shows four different blood cholesterol categories.

Table 3

Blood cholesterol concentration in mmol per dm^3	Cholesterol category
<4.6	Low
4.6–5.0	Normal
5.1–6.1	Medium
6.2 and above	High

Figure 10 shows the blood cholesterol concentration of four people.

Figure 10



4.2.2.4 Coronary heart disease: a non-communicable disease

Question 18 · continued

0 5 . 2 Which person is in the medium cholesterol category?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 5 . 3 Which person is most at risk of having a heart attack?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 5 . 4 Give a reason for your answer to Question **05.3**.

[1 mark]

_____

_____

0 5 . 5 The blood cholesterol concentration of person **D** is greater than the blood cholesterol concentration of person **A**.

Calculate how many times greater.

Use **Figure 10**.

[2 marks]

_____

_____

_____

_____

Number of times greater = _____

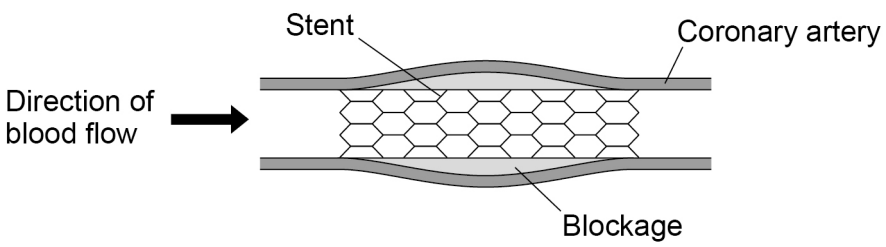
Question 5 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 18 · continued

Figure 11 shows how a stent can be used to treat a person with a blockage in a coronary artery.

Figure 11



0 5 . 6 Explain how a stent works as a treatment for a person with a blockage in a coronary artery.

[2 marks]

Patients are given anti-clotting drugs after they have a stent fitted.

The drugs help to prevent clots forming in the blood.

0 5 . 7 Which part of the blood starts the blood clotting process?

[1 mark]

Tick (✓) **one** box.

- Antibodies ☐
- Plasma ☐
- Platelets ☐
- Red blood cells ☐

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 18 · continued

0 5 . 8 When a stent is fitted the doctor gives the patient an injection of anti-clotting drugs.

The patient then takes one anti-clotting tablet every day.

Anti-clotting drugs:

- are very effective
- can take a week to begin working fully
- have been used for over 60 years
- cost very little to make
- do **not** work effectively if the patient eats certain types of food.

The patient must have their blood tested every few weeks to check that the anti-clotting drugs are working.

Evaluate the use of anti-clotting drugs in patients who have had a stent fitted.

[4 marks]

14

4.2.2.4 Coronary heart disease: a non-communicable disease

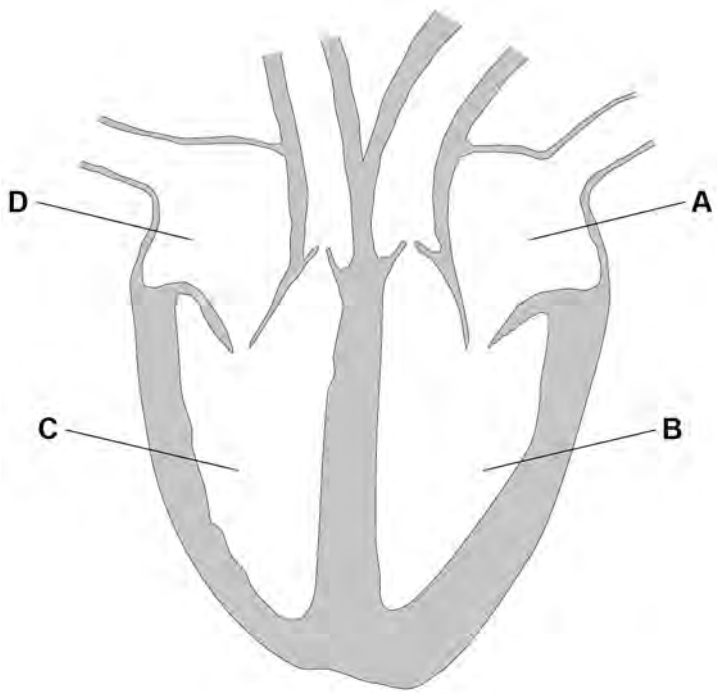
Question 19

June 2023 | 8461/1F | Original Q7

0 7 This question is about the circulatory system.

Figure 5 shows the human heart.

Figure 5



0 7 . 1 Which part of the heart receives oxygenated blood from the lungs?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 7 . 2 Which part of the heart pumps deoxygenated blood to the lungs?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 19 · continued

0 7 . 3 A group of cells called the pacemaker controls the resting heart rate.

Where in the heart is the pacemaker found?

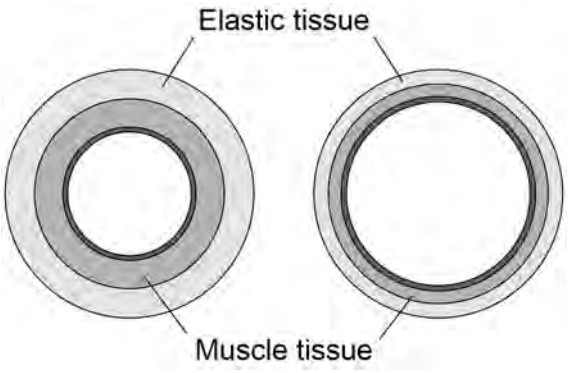
[1 mark]

Tick (✓) **one** box.

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

0 7 . 4 **Figure 6** shows a cross section of an artery and of a vein.

Figure 6



Describe **two** ways that the structure of an artery is different from the structure of a vein.

[2 marks]

1 _____

_____

2 _____

_____

Question 7 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 19 · continued

0 7 . 5 In coronary heart disease, the coronary arteries become narrower.

A build-up of fatty material can cause a blockage in a coronary artery.

Table 6 shows how a blockage in a coronary artery affects blood flow.

Table 6

Percentage (%) of coronary artery that is blocked	Blood flow in cm^3/minute
0	100
10	64
20	42
50	8
80	2

Describe the trend shown in **Table 6**.

[1 mark]

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 19 · continued

June 2023 | 8461/1F | Original Q7

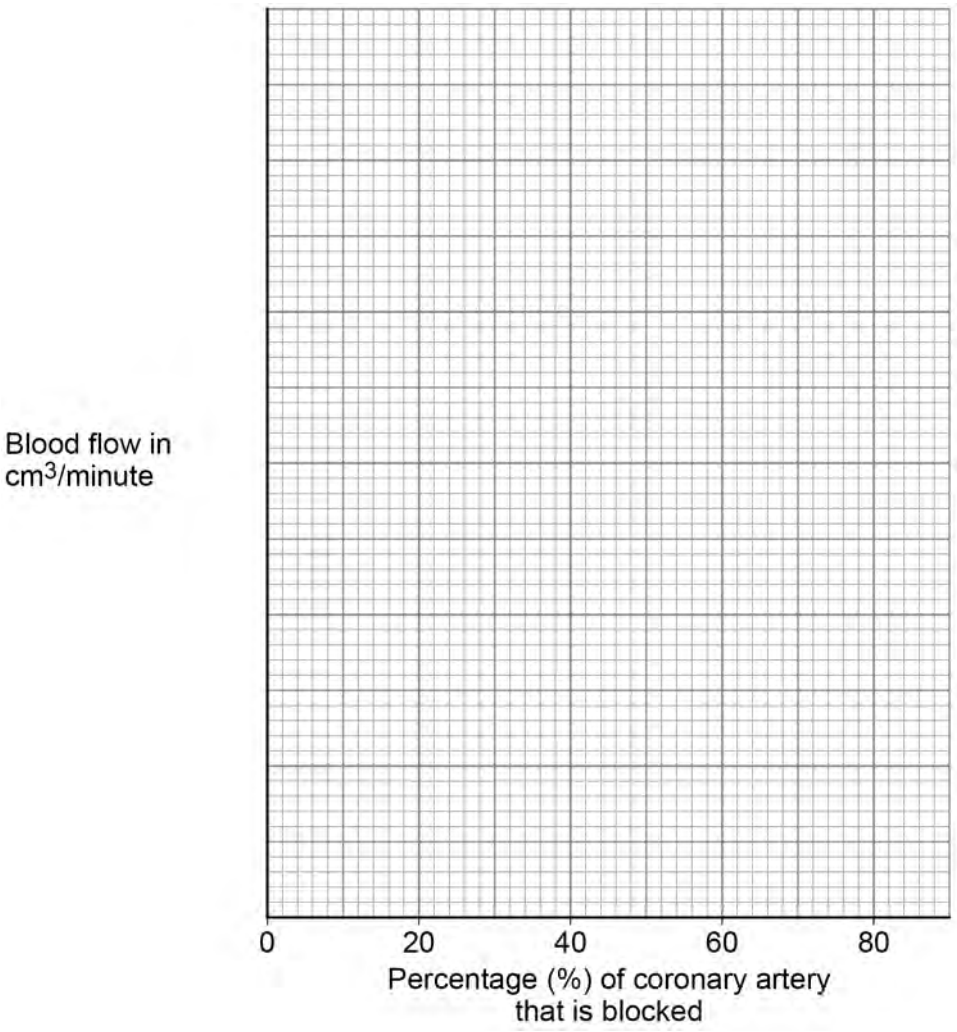
0 7 . 6 Complete **Figure 7**.

You should:

- use a suitable scale for the y-axis
- plot the data from **Table 6**
- draw a line of best fit.

[4 marks]

Figure 7



0 7 . 7 Predict the blood flow in a coronary artery with a 35% blockage.

Use **Figure 7**.

[1 mark]

Blood flow = _____ cm^3/minute

Question 7 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 19 · continued

0 7 . 8 Explain the effect of a partly blocked coronary artery on the human body.

[6 marks]

0 7 . 9 There are different treatments for a blockage in a coronary artery.

Explain how **one** treatment for a blockage in a coronary artery works.

[2 marks]

19

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 20

June 2024 | 8461/1F | Original Q7

0 7 A person has coronary heart disease.

0 7 . 1 Which blood vessels are affected by coronary heart disease?

[1 mark]

Tick (✓) **one** box.

- Arteries ☐
- Capillaries ☐
- Veins ☐

A person's heart stops beating.

The person stops breathing.

A first-aider pushes down on the person's chest.

Pushing down on the person's chest puts pressure on the heart.

0 7 . 2 Explain why putting pressure on the heart helps the person.

[2 marks]

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 20 · continued

0 7 . 3 The first-aider also forces air into the person's lungs by blowing into their mouth.

Describe how forcing air into the person's lungs helps the person.

[1 mark]

0 7 . 4 The person's heart starts to beat again and the person starts breathing.

The person has a high level of cholesterol in their blood.

Name **one** type of drug that would decrease the level of cholesterol in the person's blood.

[1 mark]

0 7 . 5 A doctor decides that the person needs to have a stent fitted.

Explain how a stent works to treat coronary heart disease.

[2 marks]

Question 7 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 20 · continued

Table 5 shows the effect of smoking on the risk of developing different cardiovascular diseases.

Table 5

Cardiovascular disease	Percentage (%) increase in risk compared to people who have never smoked
E	14
F	20
G	29
H	70

0 7 . 6 Give **two** conclusions that can be made from the data in **Table 5**.

[2 marks]

1 _____

_____

2 _____

_____

0 7 . 7 Complete **Figure 6**.

You should:

- label the y-axis
- add the correct scale to the y-axis
- plot the data from **Table 5**
- label each bar.

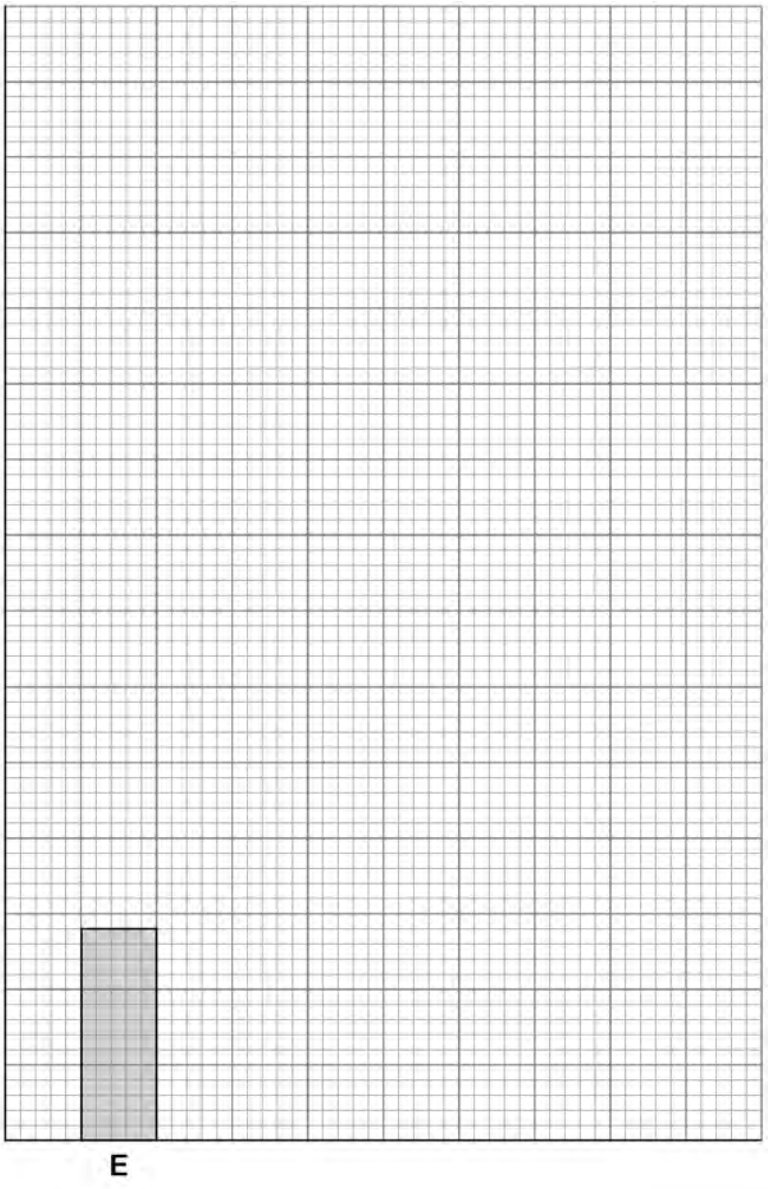
The bar for cardiovascular disease **E** has been plotted for you.

[4 marks]

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 20 · continued

Figure 6



0 7 . 8 Describe **one** lifestyle factor that can increase the risk of cardiovascular disease.

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

[1 mark]

14

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 21

June 2025 | 8461/1F | Original Q3

0 3 Blood contains different types of cell.

0 3 . 1 Complete the sentences.

Choose answers from the box.

[2 marks]

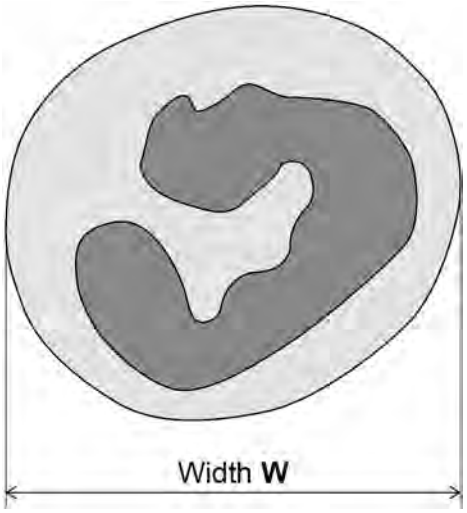
antibiotics	**antitoxins**	**painkillers**	**pathogens**

White blood cells defend the body against _____.

Some white blood cells release chemicals that neutralise toxins. These chemicals are called _____.

0 3 . 2 **Figure 3** shows a white blood cell.

Figure 3



The image of the white blood cell in **Figure 3** is magnified 4000 times.

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 21 · continued

Calculate the real width of the white blood cell.

[4 marks]

Complete the following steps.

Measure width **W** in millimetres (mm).

Width **W** = _____ mm

Convert your measurement to micrometres (µm).

1 millimetre (mm) = 1000 micrometres (µm).

_____

_____

Width **W** in micrometres = _____ µm

Calculate the real width of the white blood cell.

Use the equation:

$$\text{real width} = \frac{\text{width } \mathbf{W} \text{ (µm)}}{\text{magnification}}$$

_____

_____

_____

_____

Real width = _____ µm

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 21 · continued

Table 3 shows information about different types of blood vessel.

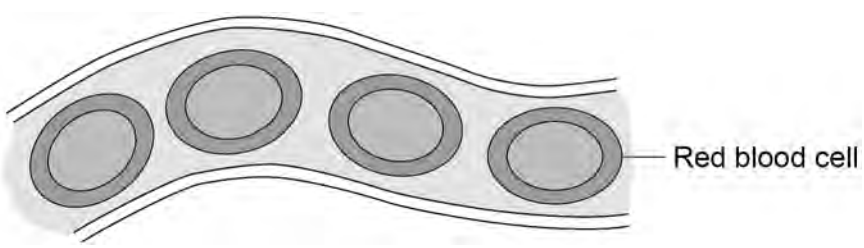
Table 3

Blood vessel	Width of blood vessel in micrometres (µm)	Pressure of blood travelling through the blood vessel
Artery	10 000	High
Capillary	10	Low
Vein	20 000	Very low

0 3 . 3 The width of a red blood cell is 8 µm.

Figure 4 shows red blood cells in one type of blood vessel.

Figure 4



Which type of blood vessel is shown in **Figure 4**?

Use **Table 3**.

[1 mark]

Tick (✓) **one** box.

Artery ☐

Capillary ☐

Vein ☐

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 21 · continued

0 3 . 4 Explain why arteries need to have thick walls.

Use **Table 3**.

[2 marks]

Coronary arteries in the heart can become narrowed.

0 3 . 5 What happens inside coronary arteries to cause them to become narrowed?

[1 mark]

0 3 . 6 Explain why narrowed coronary arteries can be dangerous.

[2 marks]

Question 3 continues on the next page

4.2.2.4 Coronary heart disease: a non-communicable disease

Question 21 · continued

0 3 . 7 Treatments are available for some cardiovascular diseases.

Draw **one** line from each cardiovascular disease to a treatment for the disease.

[3 marks]

Cardiovascular disease	Treatment
A blocked coronary artery	Antibiotics
Heart failure	Heart transplant
High blood cholesterol	Statins
	Stent

0 3 . 8 Why is coronary heart disease described as a 'non-communicable disease'?

[1 mark]

_____

_____

16