AQA GCSE Biology | 8461

SPECIFICATION POINT 4.3.1.9

Discovery and development of drugs

Past-paper questions

Tier	**Foundation**
Question groups	**16**
Available paper years	**2007–2024**

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.

4.3.1.9 Discovery and development of drugs

Question 01

March 2007 | BLY1A | Original Q7 | Legacy

QUESTION SEVEN

The drug Bupropion has been used for many years as a treatment for depression. It was suggested that Bupropion could be used to help people to stop smoking.

Research was carried out to see if the drug did help smokers to give up smoking.

7A The suggestion that the drug could be used to help people stop smoking probably came from . . .

1 a drug company that decided to test the drug on people who smoked.

2 a scientist who thought that it might be a good idea.

3 patients who lost their craving for tobacco after being given Bupropion.

4 researchers, as a result of tests carried out on animals.

7B Trials were carried out to find out if the drug did help people to stop smoking.

Which of the following groups of volunteers would it be best to use in the trials?

1 a large group of adult smokers

2 a large group of male and female smokers suffering from depression

3 a large group of male teenage smokers

4 one large group of smokers and one large group of non-smokers suffering from depression

7C How would the drug have been used in the trial?

1 The drug would have been given to all the volunteers.

2 The drug would have been given to all the volunteers and half of them would have been told to stop smoking.

3 The drug would have been given to half the volunteers and a placebo given to the other half.

4 The drug would have been given to half the volunteers with nothing given to the other half.

4.3.1.9 Discovery and development of drugs

7D Which of the following would make the results of the trials **less** valid?

1 the volunteers all having different weights

2 some of the volunteers developing side-effects

3 some of the volunteers suffering from depression

4 some of the volunteers using nicotine patches in addition to taking Bupropion

Turn over for the next question

4.3.1.9 Discovery and development of drugs

Question 02

March 2008 | BLY1AP | Original Q8 | Legacy

QUESTION EIGHT

Thalidomide is a drug.

8A What was thalidomide originally used for?

1 to treat morning sickness

2 as a sleeping pill

3 to treat diabetes

4 to reduce high blood pressure

A new drug called prednisolone was trialled on leprosy patients. 12 500 patients were given prednisolone and 12 500 patients were given a placebo. 70 % of the patients given prednisolone reported an improvement in their health.

8B The patients given the placebo were used as a . . .

1 control group.

2 continuous group.

3 dependent group.

4 variable group.

8C How many of the patients given prednisolone reported an improvement in health?

1 700

2 875

3 7000

4 8750

8D In which group of people must prednisolone rather than thalidomide be used for treating leprosy?

1 men aged 21 – 45

2 boys aged 5 – 16

3 women aged 15 – 45

4 girls aged 5 – 12

4.3.1.9 Discovery and development of drugs

Question 03

January 2009 | BLY1F | Original Q8 | Legacy

8 Nicotine is the addictive substance in tobacco.
People can be helped to stop smoking by giving them nicotine replacement therapy (NRT).

The table gives the results of trials of different types of NRT.

Type of NRT	Smokers given NRT		Smokers given placebo	
	Number of smokers in trial	Percentage of smokers who gave up smoking	Number of smokers in trial	Percentage of smokers who gave up smoking
Gum	7387	20	9319	12
Patch	7708	14	5969	8
Nasal spray	448	24	439	12
Inhaler	490	14	486	8
Tablet	243	20	245	13

8 (a) (i) What is a placebo?

.....

.....

(1 mark)

8 (a) (ii) Why was a placebo used in these NRT trials?

.....

.....

(1 mark)

8 (b) (i) In which trial was the data most reliable?

.....

(1 mark)

8 (b) (ii) Give the reason for your answer.

.....

.....

.....

(1 mark)

4.3.1.9 Discovery and development of drugs

Question 03 · continued

for mark

8 (c) (i) Which type of NRT was most effective?

.....

(1 mark)

8 (c) (ii) Explain the reasons for your answer.

.....

.....

.....

.....

.....

(2 marks)

7

4.3.1.9 Discovery and development of drugs

Question 04

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)

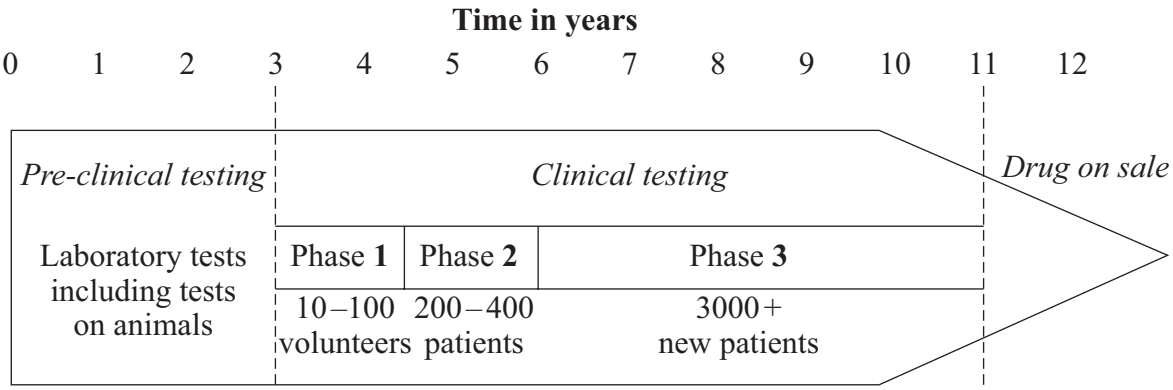
4.3.1.9 Discovery and development of drugs

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

4.3.1.9 Discovery and development of drugs

Question 05

March 2010 | BLY1AP | Original Q9 | Legacy

QUESTION NINE

Read the passage about the discovery of thalidomide.

> A small German drugs company first made thalidomide in 1953. The company scientists could not find any beneficial effects of thalidomide, including antibiotic activity, in mice and rats. However, the new chemical seemed to be harmless. Very high doses did not kill rodents, rabbits, cats or dogs. In addition, the animals showed no other side effects.
>
> In further testing, the animals did not appear to become sleepy or calmer when given thalidomide. However, the company thought that selling thalidomide as a sleeping drug would make them lots of money.
>
> Soon the drug was being sold in 46 countries without any additional independent testing. Thalidomide became the drug of choice for pregnant women with morning sickness.

9A Nowadays, all drugs are thoroughly tested before being marketed.

Which stage of drug testing was not done by the company scientists?

1 tests on animals

2 toxicity tests

3 tests on humans

4 antibiotic activity

9B The company marketed thalidomide quickly because . . .

1 they thought that they could make a big profit.

2 they wanted to cure morning sickness in women.

3 it was a good sleeping drug.

4 it was a good antibiotic.

4.3.1.9 Discovery and development of drugs

9C When clinical trials of a new drug are carried out, half the volunteers are given a placebo.

A placebo contains . . .

1 only inactive substances.

2 a small quantity of the drug.

3 an antibiotic.

4 a painkiller.

9D Thalidomide was banned when its side effects became known.

It has recently been approved for the treatment of . . .

1 morning sickness.

2 leprosy.

3 limb abnormalities.

4 mental illness.

END OF TEST

4.3.1.9 Discovery and development of drugs

Question 06

March 2011 | BLY1AP | Original Q4 | Legacy

QUESTION FOUR

The drug thalidomide was banned because it caused limb abnormalities in human embryos.
Now thalidomide is being tested to find out if it can be used to treat people with the disease AIDS.

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

A doctors

B pregnant women

C politicians

D volunteers

The tests will be designed by . . . **1** . . . .

In the tests, the drug will first be given to . . . **2** . . . .

The drug should not be tested on . . . **3** . . . .

The final decision on whether the drug is allowed to be prescribed for people with AIDS will be made by . . . **4** . . . .

4.3.1.9 Discovery and development of drugs

Question 07

June 2011 | BLY1AP | Original Q3 | Legacy

QUESTION THREE

Drugs must be safe for people to use.

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

A if the drugs have any side effects

B the best dose for the drug

C if the drug is toxic

D if the effect of the drug is only psychological

New drugs may be tested on animals in a laboratory to find out . . . **1** . . . .

The drugs are tested on a few humans to find out . . . **2** . . . .

Placebos are given to some patients to find out . . . **3** . . . .

The drugs are tested on large numbers of humans to find out . . . **4** . . . .

4.3.1.9 Discovery and development of drugs

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)

4.3.1.9 Discovery and development of drugs

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

4.3.1.9 Discovery and development of drugs

Question 09

November 2011 | BLY1AP | Original Q5 | Legacy

QUESTION FIVE

The flow chart shows how new drugs are tested.

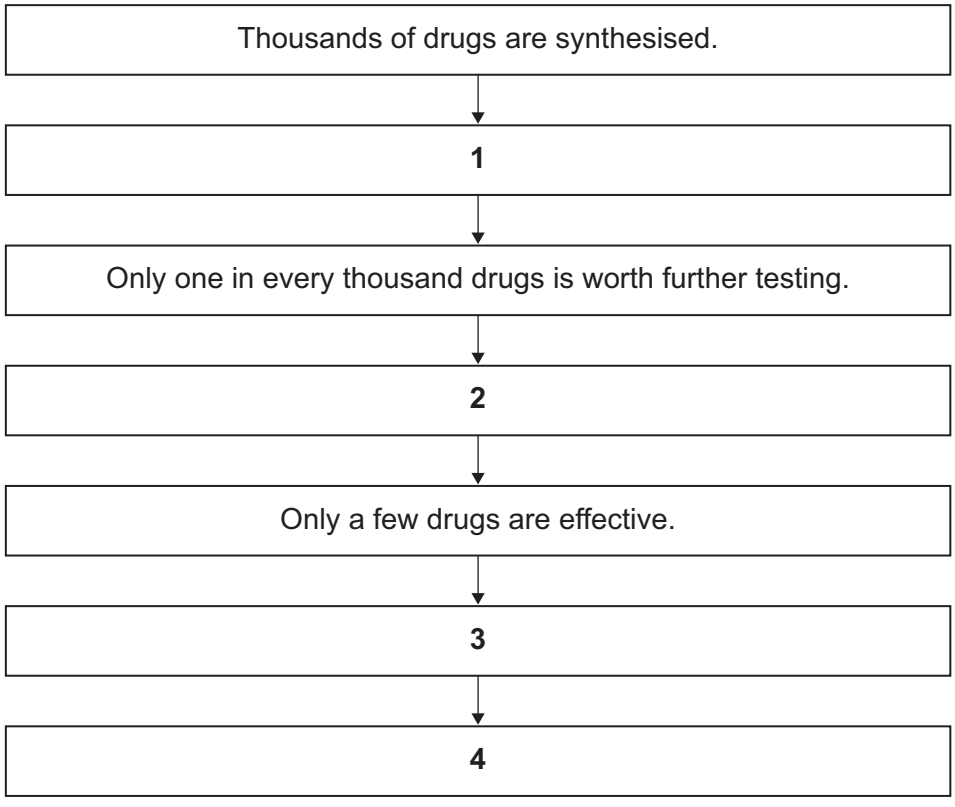
Match statements, **A**, **B**, **C** and **D**, with the stages **1**–**4** in the flow chart.

A Drugs are tested on animals to see if the drugs work.

B Low doses of drugs are tested on volunteers to detect any side effects.

C Drugs are tested on cells to see if the drugs are safe to test on organisms.

D Drugs are tested on patients to find the best dose.



4.3.1.9 Discovery and development of drugs

Question 10

January 2012 | BL1FP | Original Q6 | Legacy

6 Nicotine is a drug in tobacco smoke. Smoking tobacco is harmful.

6 (a) (i) Many smokers find it difficult to stop smoking.

Complete the sentence.

It is difficult to stop smoking because nicotine is very ..... .

(1 mark)

6 (a) (ii) Nicotine affects synapses in the brain.

What is a synapse?

.....

.....

(1 mark)

6 (b) A drug company has developed a new drug, Drug **A**, to help people stop smoking.

Doctors tested the drug in a double-blind trial with over 2000 volunteers who were smokers.

The volunteers wanted to stop smoking.

The volunteers were divided into three groups. Each volunteer took a tablet once a day for 12 weeks:

- group 1 took Drug **A**
- group 2 took Drug **B** (a drug already in use to stop people smoking)
- group 3 took a placebo.

The smoking habits of each group were recorded for a year.

6 (b) (i) What is a placebo?

.....

(1 mark)

6 (b) (ii) Why is a placebo group used in drug trials?

.....

.....

(1 mark)

4.3.1.9 Discovery and development of drugs

Question 10 · continued

6 (b) (iii) Which people knew what was in each tablet, in this trial?

Tick (✓) **one** box.

Both doctors and volunteers ☐

Doctors but not volunteers ☐

Neither doctors nor volunteers ☐

(1 mark)

6 (b) (iv) It is important that the three groups of volunteers should be similar.

Give **two** factors that should be similar in the groups of volunteers.

1 .....

2 .....

(2 marks)

6 (c) The table shows the results of the trials.

Tablet	Percentage of volunteers who had stopped smoking	
	After 12 weeks	After 1 year
Drug **A**	44	23
Drug **B**	30	15
Placebo	18	10

A doctor looked at the results of the tests.

The doctor suggested that a smoker who wanted to give up smoking should use Drug **A**.

Why?

.....

.....

(1 mark)

8

4.3.1.9 Discovery and development of drugs

Question 11

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]

.....

4.3.1.9 Discovery and development of drugs

Question 11 · 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

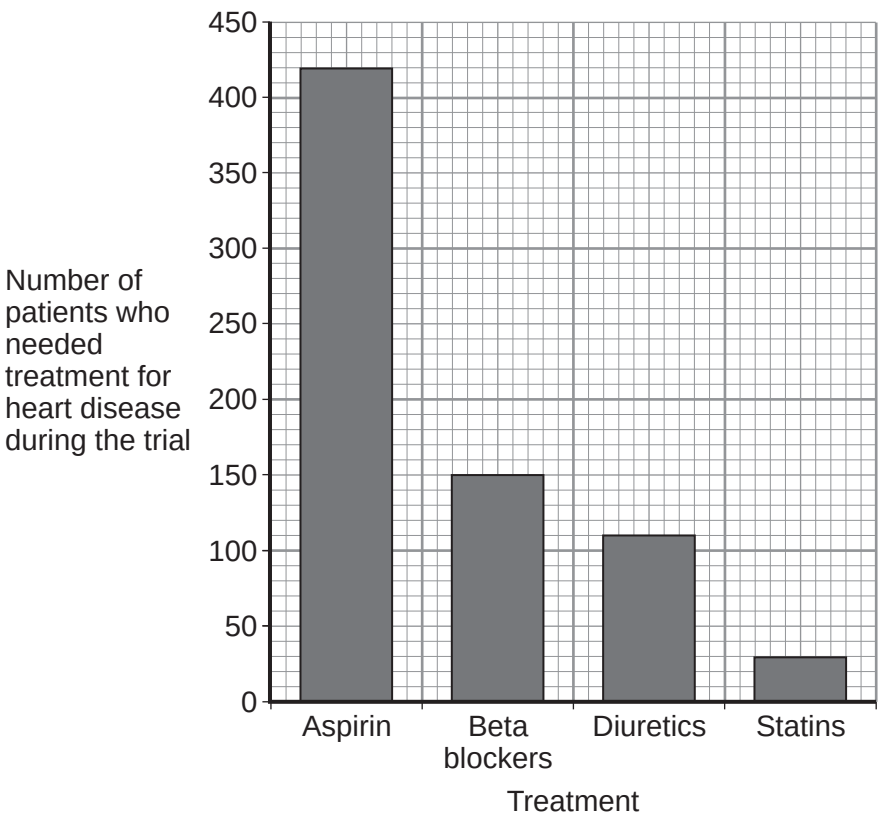
4.3.1.9 Discovery and development of drugs

Question 11 · 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

4.3.1.9 Discovery and development of drugs

Question 12

June 2015 | BL1FP | Original Q8 | Legacy

8 Many people in the UK take sleeping pills.

8 (a) The drug thalidomide was developed as a sleeping pill in the 1950s.
In the 1960s thalidomide was banned.
Recently thalidomide has been used to treat other diseases.

Name **one** disease thalidomide is used to treat now.

[1 mark]

.....

8 (b) **Table 4** shows information about the development of a new sleeping pill.

Table 4

Type of test or trial	Preclinical	Clinical phase 1	Clinical phase 2	Clinical phase 3
Tested or trialled on	Cells, tissues or animals	20–100 healthy volunteers	100–500 volunteer patients	1000–5000 volunteer patients
Number of compounds tested	>10 000	5–10	2–3	1 (new sleeping pill)
Time taken for test or trial in years	1–4	2–4	1–3	2–4

8 (b) (i) What is the shortest time taken to develop a new sleeping pill?

[1 mark]

..... years

8 (b) (ii) What is the **range** for the number of volunteers needed to complete all the clinical trials for the new sleeping pill?

[1 mark]

.....

8 (c) Drugs are trialled to check for side effects on people.

Give **one** other reason why drugs are trialled.

[1 mark]

.....

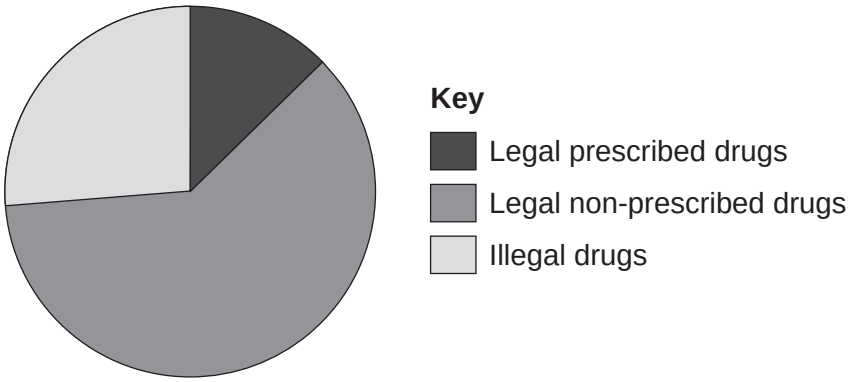
.....

4.3.1.9 Discovery and development of drugs

Question 12 · continued

8 (d) **Figure 10** shows the impact on the health of the population caused by drugs from different sources.

Figure 10



8 (d) (i) Legal non-prescribed drugs have a greater impact on the health of the population than illegal drugs.

Suggest **two** reasons why.

[2 marks]

.....

.....

.....

.....

.....

.....

8 (d) (ii) Drugs change chemical processes in a person's body.

Why is it difficult for a person to stop taking certain drugs?

[1 mark]

.....

.....

7

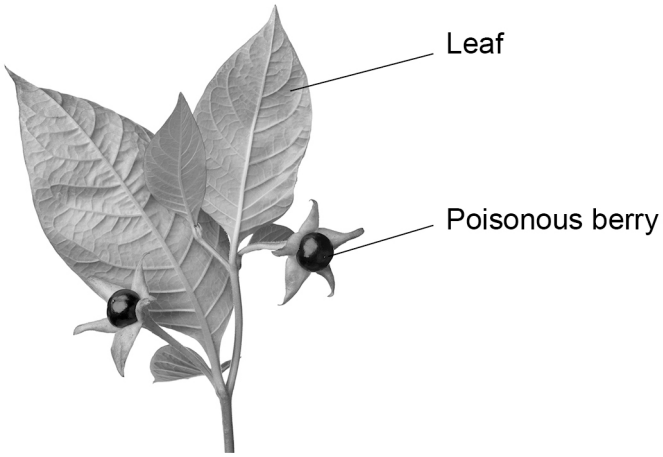
4.3.1.9 Discovery and development of drugs

Question 13

November 2020 | 8461/1F | Original Q5

0 5 **Figure 7** shows part of a deadly nightshade plant.

Figure 7



0 5 . 1 How will the poisonous berries help the deadly nightshade plant to survive?

[1 mark]

0 5 . 2 Which type of defence mechanism are the berries?

[1 mark]

Tick (✓) **one** box.

Chemical ☐

Mechanical ☐

Physical ☐

4.3.1.9 Discovery and development of drugs

Question 13 · continued

Figure 8 shows part of a gorse plant.

Figure 8



0 5 . 3 Suggest how the gorse plant is adapted to defend itself.

[1 mark]

0 5 . 4 The green leaves of the gorse plant make glucose for the plant to use.

What are **two** uses of glucose in the gorse plant?

[2 marks]

Tick (✓) **two** boxes.

- For defence ☐
- For respiration ☐
- To absorb water ☐
- To release minerals ☐
- To store as starch ☐

4.3.1.9 Discovery and development of drugs

Question 13 · continued

0 5 . 5 A student wanted to show that the leaves of a gorse plant contain glucose.

The student crushed the leaves to extract the liquid from the cells.

Describe the method the student could use to test the liquid from the cells for glucose.

Include the result if glucose is present.

[3 marks]

0 5 . 6 The roots of the gorse plant have bacteria that turn nitrogen gas into nitrate ions.

Explain why nitrate ions are needed by the gorse plant.

[2 marks]

0 5 . 7 The roots of gorse plants can be infected by honey fungus.

The honey fungus produces tiny spores underground.

Suggest how the honey fungus spores travel from the roots of an infected gorse plant to the roots of a healthy gorse plant.

[1 mark]

4.3.1.9 Discovery and development of drugs

Question 13 · continued

A drug can be extracted from gorse seeds.

Doctors want to trial the drug from gorse seeds to see if it can treat diarrhoea.

0 5 . 8 Which **two** factors must the doctors test the drug for in the trial?

[2 marks]

Tick (✓) **two** boxes.

- Appearance ☐
- Dosage ☐
- Solubility ☐
- Taste ☐
- Toxicity ☐

0 5 . 9 In the trial some patients will take tablets made from gorse seeds and some patients will take tablets made from sugar.

What are the tablets made from sugar called?

[1 mark]

Tick (✓) **one** box.

- Antibiotics ☐
- Antibodies ☐
- Painkillers ☐
- Placebos ☐

14

4.3.1.9 Discovery and development of drugs

Question 14

June 2022 | 8461/1F | Original Q1

0 1 HIV (Human Immunodeficiency Virus) is a pathogen.

0 1 . 1 How is HIV spread from one person to another person?

[1 mark]

Tick (✓) **one** box.

Coughing ☐

Sexual intercourse ☐

Touching door handles ☐

Table 1 shows information about new cases of HIV diagnosed in the UK.

Table 1

Year	Number of new HIV cases
2010	2642
2014	2767
2018	1530

0 1 . 2 Describe what happened to the number of new cases of HIV from 2010 to 2018.

[2 marks]

4.3.1.9 Discovery and development of drugs

Question 14 · continued

0 1 . 3 What could cause a **decrease** in the number of new HIV cases in the future?

[1 mark]

Tick (✓) **one** box.

A higher population of people in the UK ☐

A lower number of trained HIV nurses ☐

Better education on how to prevent the spread of HIV ☐

0 1 . 4 Scientists have been working to produce a vaccine for HIV for many years.

How could a vaccine work to prevent a person being infected with HIV?

Write the stages **A**, **B**, **C**, **D** and **E** in the correct order.

[3 marks]

The first stage has been completed for you.

A Antibodies attach to the inactive virus.

B Antibodies destroy the inactive virus.

C An inactive form of the virus is injected into the body.

D If the active virus enters the body, antibodies are produced quickly.

E White blood cells produce antibodies to the inactive virus.

C → _____ → _____ → _____ → _____

Question 1 continues on the next page

4.3.1.9 Discovery and development of drugs

Question 14 · continued

0 1 . 5 When scientists produce a vaccine for a disease the vaccine is tested on live animals.

What is the next stage in testing the vaccine?

[1 mark]

Tick (✓) **one** box.

- Testing on cells in a laboratory ☐
- Testing on healthy volunteers ☐
- Testing on the whole human population ☐

0 1 . 6 A vaccine for HIV is important because it is difficult to develop safe drugs to destroy viruses.

Why is it difficult to develop safe drugs to destroy viruses?

[1 mark]

Tick (✓) **one** box.

- Drugs that destroy viruses also damage body tissues. ☐
- There are too many viruses for the drugs to destroy. ☐
- Viruses are too big for the drugs to destroy. ☐

4.3.1.9 Discovery and development of drugs

Question 14 · continued

0 1 . 7 Some drugs originated from plants.

Draw **one** line from each drug to the plant the drug originated from.

[2 marks]

Drug	Plant the drug originated from
Aspirin	Foxglove
	Rose
Digitalis	Tobacco
	Willow

11

4.3.1.9 Discovery and development of drugs

Question 15

June 2023 | 8461/1F | Original Q6

0 6 A root is a plant organ.

Plant roots contain many different types of tissue.

0 6 . 1 What is a tissue?

[1 mark]

0 6 . 2 Tissue in the tip of a plant root contains stem cells.

Stem cells can differentiate into any type of cell.

Name the type of tissue in plants that contains stem cells.

[1 mark]

In the past many drugs were extracted from plants.

0 6 . 3 Aspirin is a painkiller.

Which plant does aspirin originate from?

[1 mark]

Question 6 continues on the next page

4.3.1.9 Discovery and development of drugs

Question 15 · continued

Scientists have extracted chemical **A** from the deadly nightshade plant.

Chemical **A** can be used as a painkiller.

Table 5 shows information about where chemical **A** is found.

Table 5

Part of deadly nightshade plant	Mass of chemical A in 100 g of plant tissue in grams
Roots	1.3
Leaves	1.2
Berries	0.7

0 6 . 4 The scientists usually extract chemical **A** from the berries of the deadly nightshade plant.

Suggest **one** reason why berries are used instead of leaves or roots.

[1 mark]

4.3.1.9 Discovery and development of drugs

Question 15 · continued

A deadly nightshade plant has chlorosis (yellow leaves).

The mass of chemical **A** found in the **leaves** of the plant is 60% of the mass shown in **Table 5**.

0 6 . 5 Calculate the mass of chemical **A** in 200 g of the **leaves** with chlorosis.

Give your answer in mg.

[4 marks]

Mass of chemical **A** = _____ mg

0 6 . 6 Suggest **one** reason why the leaves of the deadly nightshade plant have chlorosis.

[1 mark]

Question 6 continues on the next page

4.3.1.9 Discovery and development of drugs

Question 15 · continued

Chemical **A** has **not** been tested in large-scale clinical trials in the UK.

0 6 . 7 It is important for drugs to be tested in clinical trials before the drugs are approved for use by the public.

Give **two** reasons why.

[2 marks]

1 _____

_____

2 _____

_____

There are many online reports making claims about the effects of chemical **A**.

Some of these reports are biased.

0 6 . 8 Suggest **one** reason why a report making claims about the effects of chemical **A** may be biased.

[1 mark]

_____

_____

4.3.1.9 Discovery and development of drugs

Question 15 · continued

0 6 . 9 How can scientists be sure that claims about new drugs are valid?

[1 mark]

Tick (✓) **one** box.

- Advertise the claims on social media. ☐
- Ask an international company to produce the drug. ☐
- Have the claims peer reviewed. ☐
- Publish the claims in a newspaper. ☐

13

Turn over for the next question

4.3.1.9 Discovery and development of drugs

Question 16

June 2024 | 8461/1F | Original Q5

0 5 Cancer occurs when there is uncontrolled cell division.

0 5 . 1 Which **two** factors can cause cancer?

[2 marks]

Tick (✓) **two** boxes.

- Antibiotics ☐
- Ionising radiation ☐
- Monoclonal antibodies ☐
- Salmonella ☐
- Viruses ☐

0 5 . 2 What type of cell division occurs in cancerous cells?

[1 mark]

Tick (✓) **one** box.

- Binary fission ☐
- Fertilisation ☐
- Mitosis ☐

4.3.1.9 Discovery and development of drugs

Question 16 · continued

0 5 . 3 Complete the sentences.

Choose answers from the box.

[2 marks]

decrease	**fertilise**	**grow**	**replicate**

Before a cell divides, the cell needs to _____.

Before a cell divides, the DNA in the nucleus needs to _____.

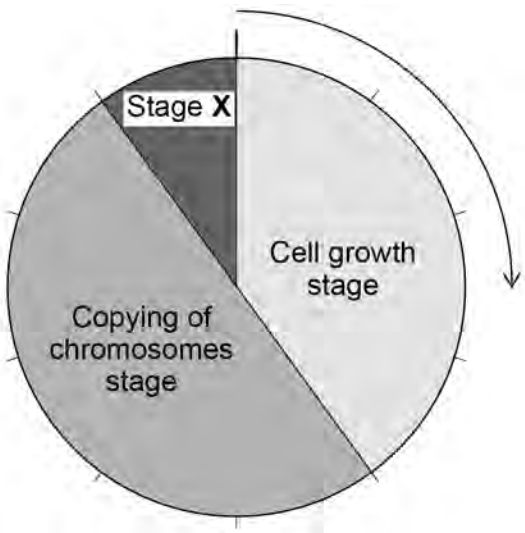
Question 5 continues on the next page

4.3.1.9 Discovery and development of drugs

Question 16 · continued

Figure 4 shows the cell cycle.

Figure 4



0 5 . 4 What percentage of the time taken for the cell cycle does the cell growth stage take?

Use **Figure 4**.

[1 mark]

Tick (✓) **one** box.

10% ☐ 20% ☐ 40% ☐ 90% ☐

0 5 . 5 What happens during stage **X** of the cell cycle in **Figure 4**?

[1 mark]

Tick (✓) **one** box.

Chromosomes are pulled to each end of the cell. ☐

The cell increases in size and mass. ☐

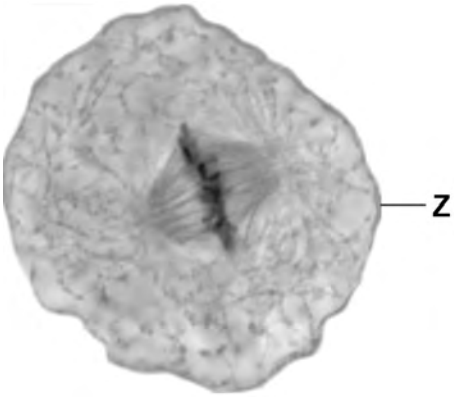
The number of mitochondria increases. ☐

4.3.1.9 Discovery and development of drugs

Question 16 · continued

Figure 5 shows an animal cell during cell division.

Figure 5



0 5 . 6 Name structure **Z** in **Figure 5**.

[1 mark]

Question 5 continues on the next page

4.3.1.9 Discovery and development of drugs

Question 16 · continued

0 5 . 7 The image of the cell in **Figure 5**:

- is magnified 800 times
- has a width of 50 mm.

Calculate the real width of the cell in **Figure 5**.

Give your answer in micrometres (µm).

Use the equation:

$$\text{real width of cell} = \frac{\text{width of image of cell}}{\text{magnification}}$$

1 mm = 1000 µm

[3 marks]

Real width of cell = _____ µm

4.3.1.9 Discovery and development of drugs

Question 16 · continued

Some drugs can treat cancer.

0 5 . 8 Complete the sentences.

Choose answers from the box.

[2 marks]

cells	**people**	**plants**	**viruses**

Preclinical testing of cancer drugs is done using _____.

To check if the drug is safe, the drug is tested on _____.

0 5 . 9 In drug trials some patients are given a tablet which does **not** contain the drug.

What name is given to the tablet that does **not** contain the drug?

[1 mark]

_____

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