AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.3.1.2

Viral diseases

Past-paper questions

Tier	**Higher**
Question groups	**4**
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.

4.3.1.2 Viral diseases

Question 01

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

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

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

Table 3

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

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

[1 mark]

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

[2 marks]

Percentage decrease = _____ %

Question 5 continues on the next page

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

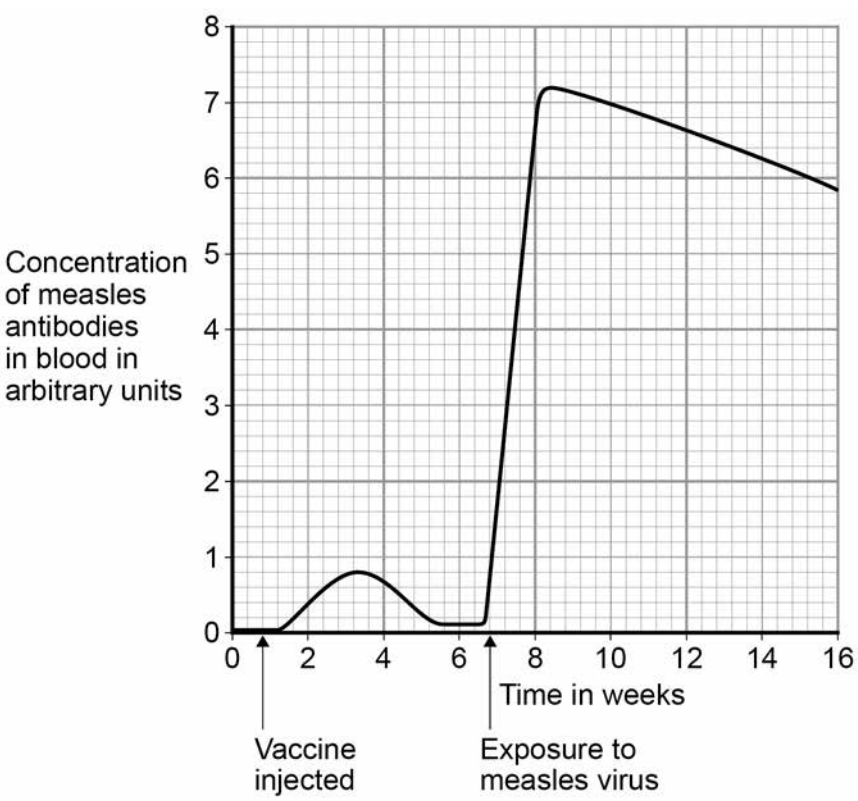
Vaccinating a large proportion of the population reduces the spread of the measles virus.

Explain why.

[2 marks]

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

Figure 8



4.3.1.2 Viral diseases

Question 01 · continued

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

You should include data from **Figure 8**

[6 marks]

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4.3.1.2 Viral diseases

Question 02

November 2021 | 8464/B/1H | Original Q4

0 4 Pathogens are microorganisms that cause diseases.

Gonorrhoea, malaria and measles are three diseases in humans.

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

[3 marks]

Disease	Pathogen
	Bacterium
Gonorrhoea	
	Fungus
Malaria	
	Protist
Measles	
	Virus

Question 4 continues on the next page

Question 02 · continued

0 4 . 2 Malaria is transmitted by mosquitos.

Male mosquitos can be sterilised so they are infertile.

The spread of malaria is reduced by releasing sterile mosquitos into the environment.

Explain how releasing sterile mosquitos reduces the spread of malaria.

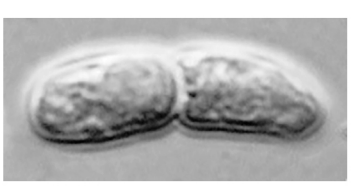
[2 marks]

Pathogens also cause diseases in plants.

Figure 4 shows a rose black spot fungal spore and a tobacco mosaic virus.

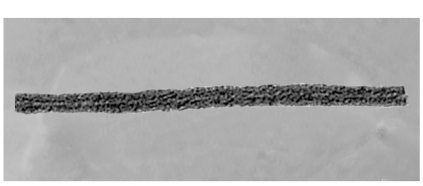
Figure 4

Rose black spot fungal spore



16 µm

Tobacco mosaic virus



2.5×10^{-7} m

Images are **not** to the same scale

0 4 . 3 Name the piece of equipment used to view the virus.

[1 mark]

4.3.1.2 Viral diseases

Question 02 · continued

0 4 . 4 How many times longer is the fungal spore than the virus?

Use **Figure 4**.

[3 marks]

Number of times longer = _____

0 4 . 5 Explain why plants infected with tobacco mosaic virus grow slowly.

[3 marks]

12

4.3.1.2 Viral diseases

Question 03

June 2023 | 8464/B/1H | Original Q1

0 1 Communicable and non-communicable diseases are major causes of ill health.

0 1 . 1 Which disease is a **non-communicable** disease?

[1 mark]

Tick (✓) **one** box.

AIDS ☐

Cancer ☐

Gonorrhoea ☐

Malaria ☐

Obesity is a risk factor for many non-communicable diseases.

0 1 . 2 Give **one** non-communicable disease that obesity is a risk factor for.

Do **not** refer to the diseases given in Question **01.1** in your answer.

[1 mark]

0 1 . 3 National policies are used to help people who are obese to lose weight.

One national policy is to reduce the amount of sugar added to food and drinks.

Suggest **one other** national policy that could help people to lose weight.

[1 mark]

0 1 . 4 Body mass index (BMI) is one measure of obesity.

BMI is calculated using the equation:

$$\text{BMI} = \frac{\text{body mass in kg}}{(\text{height in m})^2}$$

Table 1 shows how BMI is used to describe an adult's BMI category.

Table 1

BMI	BMI category
<18.5	Underweight
18.5 to 24.9	Healthy weight
25.0 to 29.9	Overweight
>29.9	Obese

A person is 1.64 m tall and has a mass of 69 kg.

Determine the **BMI category** for this person.

Use the BMI equation and **Table 1**.

[3 marks]

The person's BMI category is _____

Question 1 continues on the next page

4.3.1.2 Viral diseases

Question 03 · continued

Scientists investigated the effect of smoking and of BMI on the birth mass of babies.

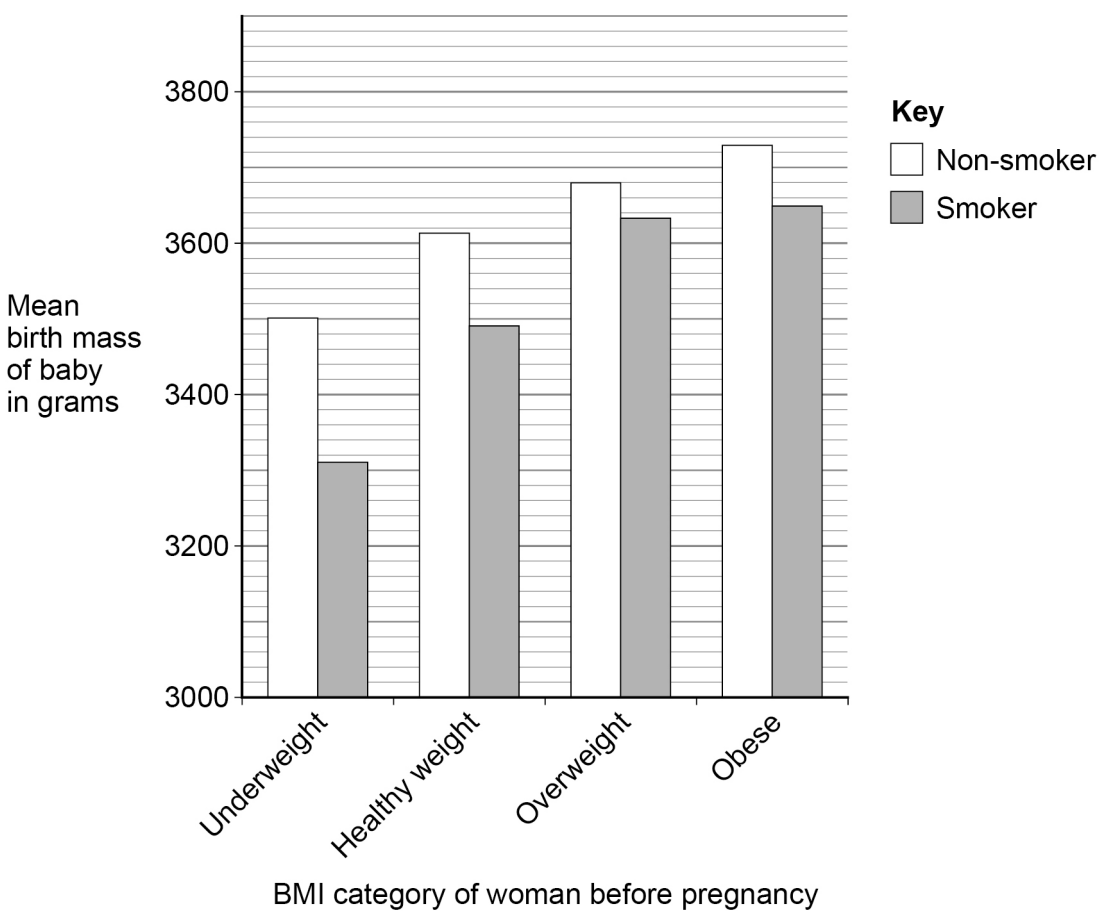
Women's BMI categories were determined before the women became pregnant.

0 1 . 5 Suggest why BMI categories were determined **before** the women became pregnant.

[1 mark]

Figure 1 shows the results.

Figure 1



4.3.1.2 Viral diseases

Question 03 · continued

0 1 . 6 Give **two** conclusions that can be made from **Figure 1**.

[2 marks]

1 _____

_____

2 _____

_____

0 1 . 7 Measles is a communicable disease.

A virus causes measles.

Describe how the measles virus is transferred from person to person.

[2 marks]

_____

_____

_____

_____

Question 1 continues on the next page

4.3.1.2 Viral diseases

Question 03 · continued

Athlete's foot is a communicable disease.

A fungus causes athlete's foot.

The athlete's foot fungus infects the skin on feet.

0 1 . 8 Scientists estimate that 17% of the UK population have athlete's foot.

The estimated UK population is 67 961 900

Calculate how many people are estimated to have athlete's foot.

[2 marks]

Estimated number of people with athlete's foot = _____

0 1 . 9 Athlete's foot fungus grows in moist conditions.

Suggest **one** way a person could reduce their chance of catching athlete's foot.

[1 mark]

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4.3.1.2 Viral diseases

Question 04

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

0 3 This question is about communicable diseases.

Measles is a communicable disease caused by a pathogen.

0 3 . 1 What type of microorganism causes measles?

[1 mark]

Vaccinations help reduce the spread of measles.

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

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

[2 marks]

1

2

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

[4 marks]

4.3.1.2 Viral diseases

Question 04 · continued

Norovirus is a type of virus.

0 3 . 4 Explain how viruses cause illness.

[2 marks]

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

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

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

[3 marks]

1

2

3

12