

Infection and diseases – GCSE Biology Paper 1

1. No.2

0 2

Viruses cause disease.

0 2

1

What name is given to microorganisms that cause disease?

[1 mark]

Tick (✓) **one** box.

Pathogens

☐

Predators

☐

Producers

☐

0 2

2

The body has defences to stop viruses entering.

Draw **one** line from each defence to the part of the body that provides the defence.

[2 marks]

Defence

Part of the body that provides the defence

A physical barrier that stops viruses entering

Mucus that traps viruses

Brain

Heart

Nose

Skin

Some viruses can cause tumours to develop.

0 2 . 3

Complete the sentence.

Choose the answer from the box.

[1 mark]

digestion	division	metabolism
-----------	----------	------------

A tumour can form when changes to cells cause uncontrolled
cell _____.

0 2 . 4

Malignant tumours are cancers.

Which **two** sentences describe malignant tumours?

[2 marks]

Tick (✓) **two** boxes.

Malignant tumours are only found in the reproductive system.

☐

Malignant tumours contain digestive enzymes.

☐

Malignant tumours do not change in size.

☐

Malignant tumours have cells that can spread to other parts of the body.

☐

Malignant tumours may form secondary tumours.

☐

HPV is a virus that can cause one type of cancer in females.

In the UK since 2008, most 12 to 13-year-old females have been vaccinated against HPV.

Scientists investigated the percentage of 16 to 18-year-old females with HPV.

Table 2 shows the results.

Table 2

Year	Percentage (%) of 16 to 18-year-old females with HPV
2010	8.2
2012	3.2
2014	2.0
2016	1.6

02.5

What does **Table 2** show about the percentage of females with HPV from 2010 to 2016?

[1 mark]

02.6

Suggest the reason for the change you described in Question 02.5.

[1 mark]

The HPV vaccine contains an inactive form of the virus.

The inactive form of the virus is injected into the body.

0 2 . 7 Which part of the blood responds to the inactive virus?

[1 mark]

Tick (✓) **one** box.

Platelets

☐

Red blood cells

☐

White blood cells

☐

0 2 . 8 What is produced by the body in response to the inactive virus?

[1 mark]

Tick (✓) **one** box.

Antibiotics

☐

Antibodies

☐

Antiseptics

☐

0 2 . 9 Suggest **one** reason why some **parents** refuse to allow their children to have the HPV vaccine.

Do **not** refer to the pain of the injection in your answer.

[1 mark]

2. No.4

0 4

Malaria is caused by a protist.

The protist is passed from one person to another person by mosquitos.

0 4 . 1

Which term describes the mosquito?

[1 mark]

Tick (✓) **one** box.

Bacterium

☐

Gene

☐

Vector

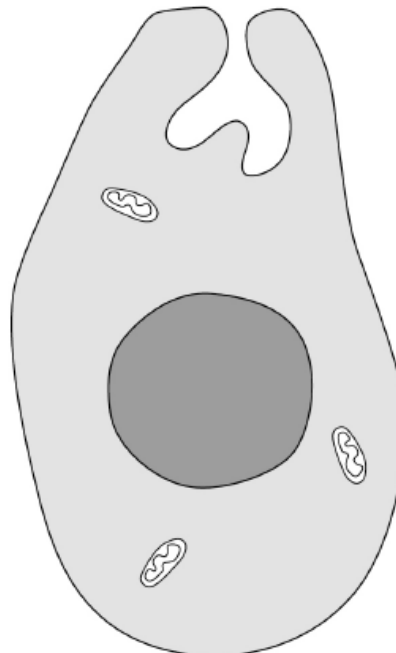
☐

0 4 . 2

The malarial protist is a eukaryotic cell.

Figure 2 shows a malarial protist.

Figure 2



Give **two** features of the malarial protist that show the cell is eukaryotic and **not** prokaryotic.

[2 marks]

1 _____

2 _____

0 4 . 3 Which organism is prokaryotic?

[1 mark]

Tick (✓) **one** box.

Cow	☐
Grass	☐
Salmonella	☐

0 4 . 4 The malarial protist reproduces asexually.

What is a feature of asexual reproduction?

[1 mark]

Tick (✓) **one** box.

Only one parent is involved.	☐
The offspring show genetic variation.	☐
Two gametes fuse.	☐

0 4 . 5

Mitosis occurs in the malarial protist during asexual reproduction.

The protist has 14 chromosomes.

How many chromosomes will each new protist cell have after mitosis?

[1 mark]

Tick (✓) **one** box.

7

☐

14

☐

21

☐

28

☐

0 4 . 6

When a person has malaria, the protists destroy red blood cells.

What change would happen in the blood of a person with malaria?

[1 mark]

Tick (✓) **one** box.

Decreased antibodies

☐

Decreased haemoglobin

☐

Increased plasma

☐

Increased platelets

☐

0 4 . 7

It is estimated that 210 million people are infected with malaria every year. Half of these infected people survive the disease.

Calculate how many people would survive the disease in 3 years if the estimate is correct.

Give your answer in standard form.

[4 marks]

Number of people (in standard form) = _____

0 4 . 8

The spread of malaria can be controlled by using mosquito nets to avoid being bitten.

Describe **two** other ways that people can reduce the chance of being bitten by mosquitos.

Do **not** refer to mosquito nets in your answer.

[2 marks]

1 _____

2 _____

0 4 . 9

Different types of disease may interact.

Scientists studied how having disorder **S** interacts with malaria.

The scientists calculated the chance of children with disorder **S** getting malaria.

Table 4 shows the results.

Table 4

Age in years	Percentage (%) chance of children with disorder S getting malaria
2	70
4	65
6	50
8	45

Describe the trend shown in **Table 4**.

Use data from **Table 4**.

[2 marks]

3. No.3

0 3

Salmonella bacteria cause outbreaks of food poisoning in humans.

To prevent food poisoning in humans, farmers vaccinate their animals against *Salmonella* bacteria.

0 3 . 1

How do *Salmonella* bacteria in food cause the symptoms of vomiting and diarrhoea?

[1 mark]

During a food poisoning outbreak, scientists identified the farm where the food came from.

The farmer had **not** vaccinated the farm animals against *Salmonella* bacteria.

0 3 . 2

The food poisoning outbreak could have been prevented if the farm animals had been vaccinated.

Explain how:

- the immune systems of animals respond to a vaccination
- the immune response in farm animals prevents an outbreak of food poisoning in humans.

[4 marks]

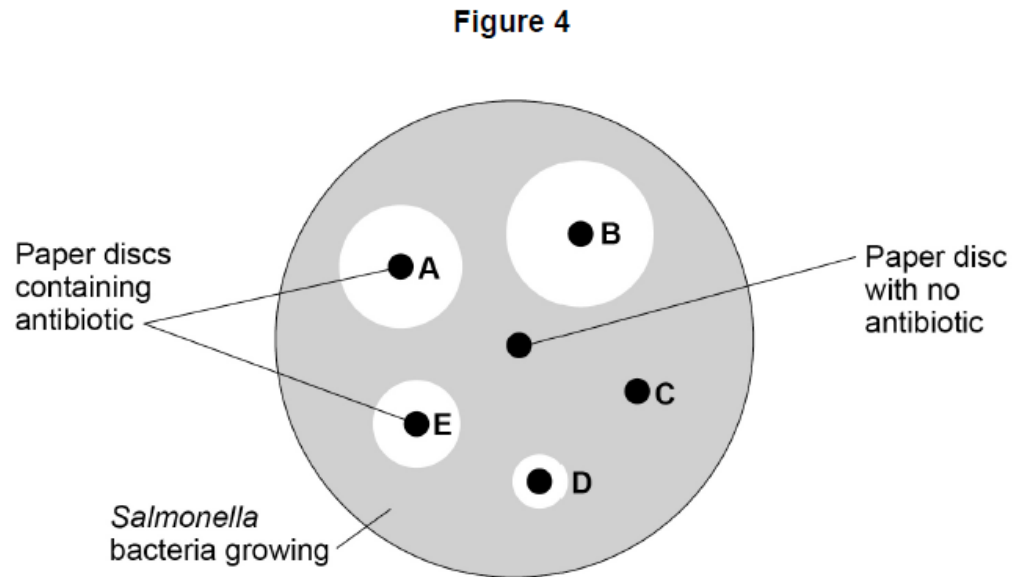
Most cases of food poisoning do **not** need to be treated with antibiotics.

However, some patients may need to take antibiotics to recover.

Scientists investigated the effectiveness of five different antibiotics on the *Salmonella* bacteria in the outbreak.

Antibiotics **A**, **B**, **C**, **D** and **E** were used in the investigation.

Figure 4 shows the results.



0 3 . 3

Describe **two** aseptic techniques the scientists should have used in the investigation.

[2 marks]

1 _____

2 _____

03.4

The scientists incubated the bacteria at 37 °C.
Students in school laboratories incubate bacteria at 25 °C.

Explain why scientists use 37 °C but students must use 25 °C to incubate bacteria.

[3 marks]

03.5

What is the purpose of the paper disc with no antibiotic in **Figure 4**?

[1 mark]

03.6

The scientists concluded that either antibiotic **A** or antibiotic **B** should be prescribed to patients with food poisoning.

Why should antibiotic **A** or antibiotic **B** be prescribed?

[1 mark]

03.7

The scientists wanted to be more certain about which antibiotic should be prescribed.

Describe how the results in **Figure 4** could be used to obtain a **quantitative** comparison of antibiotics **A** and **B**.

[1 mark]

- 0 3 . 8** One year later, there was another outbreak at the farm involving *Salmonella* bacteria. Antibiotic **B** did **not** have an effect.

Suggest why antibiotic **B** no longer had an effect.

[1 mark]

- 0 3 . 9** Antibiotics treat food poisoning because they kill *Salmonella* bacteria inside the human body.

Some antibiotics work because they damage the bacterial cell wall.

The bacteria die because the cells burst.

Explain why the cells burst.

[3 marks]
