



GCSE Biology

Communicable Diseases

Question Paper

Time available: 50 minutes

Marks available: 42 marks

www.accesstuition.com

1.

Eating food containing *Salmonella* bacteria can cause illness.

- (a) Two symptoms of infection by *Salmonella* are vomiting and diarrhoea.

What causes these symptoms?

(1)

- (b) Give **two** ways a person with a mild infection of *Salmonella* can help prevent the spread of the bacteria to other people.

1. _____

2. _____

(2)

- (c) In very serious infections of *Salmonella*, a doctor can prescribe drugs to kill the bacteria.

What type of drug can the doctor prescribe to kill the bacteria?

(1)

- (d) A person with AIDS may take longer than a healthy person to recover from a *Salmonella* infection.

Explain why.

(2)

(e) *Salmonella* bacteria can be transmitted from chickens to humans. Chickens can be vaccinated to prevent the transmission of *Salmonella* bacteria to humans.

Suggest **one** other way farmers could prevent the transmission of *Salmonella* from chickens to humans.

(1)

A restaurant owner employed a scientist to test the effectiveness of two kitchen cleaning liquids.

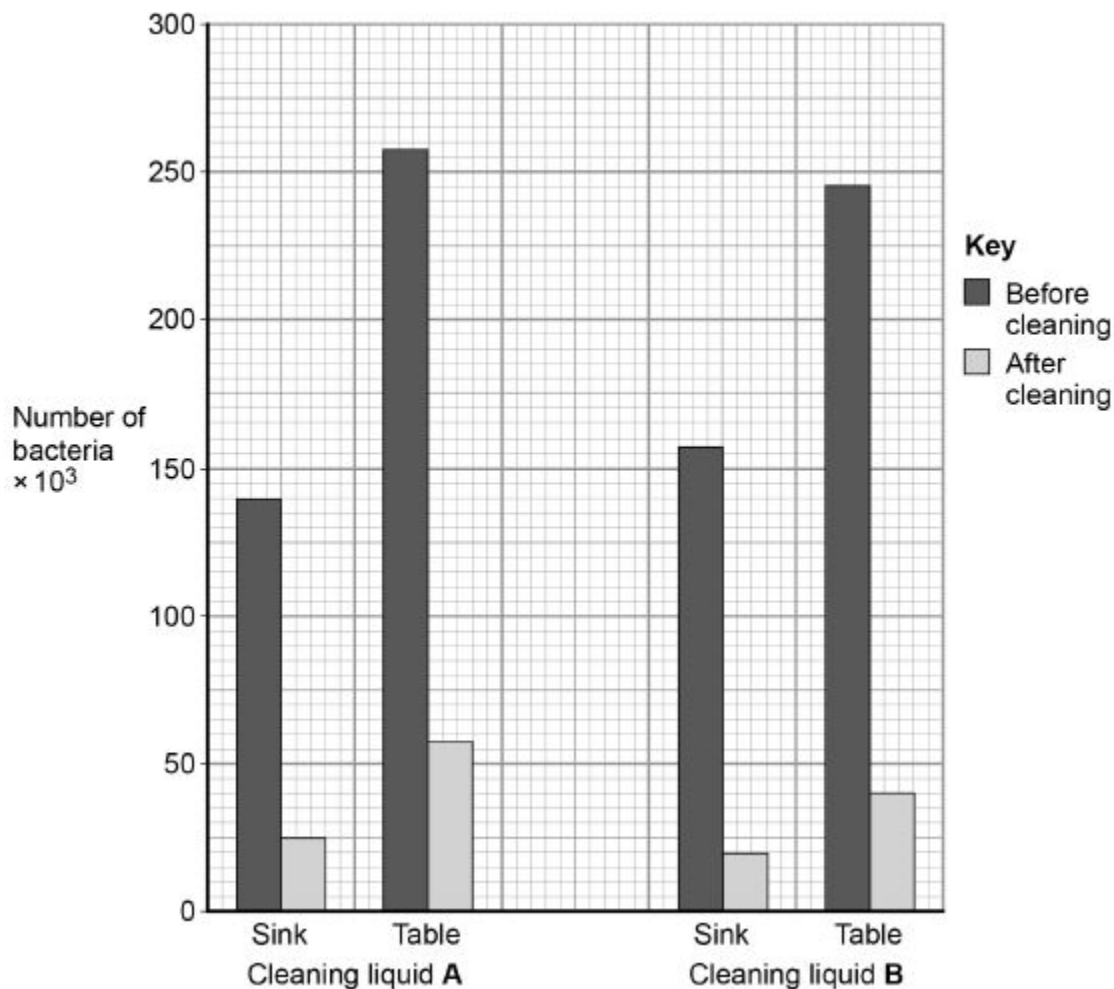
The scientist took samples from two work surfaces:

- before the surfaces had been cleaned with the cleaning liquids
- after the surfaces had been cleaned with the cleaning liquids.

The samples were then analysed for the number of bacteria they contained.

The results are shown in **Figure 1**.

Figure 1



(f) Which cleaning liquid is the more effective?

Give a reason for your answer.

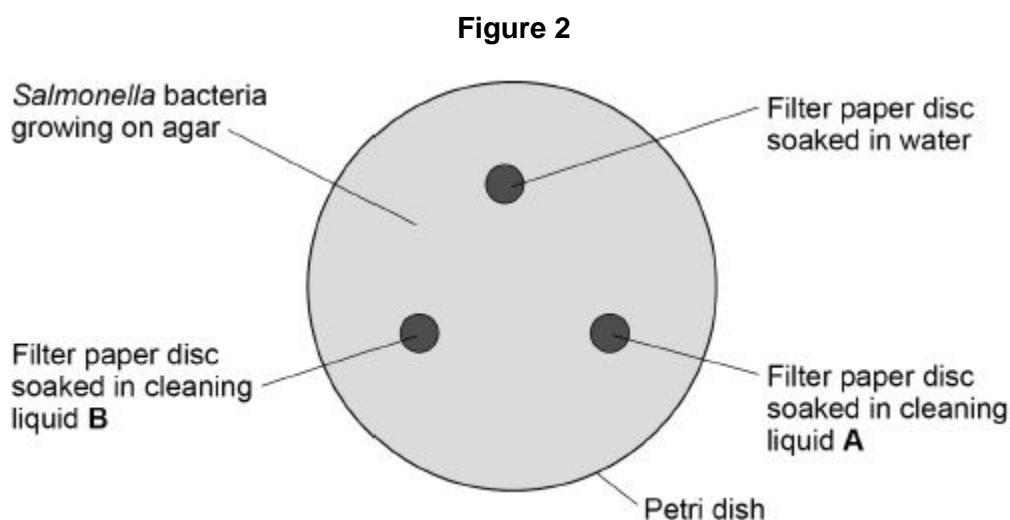
Cleaning liquid _____

Reason _____

(1)

The scientist investigated the effect of cleaning liquid **A** and cleaning liquid **B** on *Salmonella* bacteria grown in a laboratory.

Figure 2 shows the way the investigation was set up.



The Petri dish was placed in an incubator at 25 °C for 48 hours.

After 48 hours, the scientist calculated the area around each paper disc where no bacteria were growing.

The results are shown in the table below.

| Filter paper disc | Area around disc with no bacteria growing in cm ² |
|--------------------------|--|
| Water | 0 |
| Cleaning liquid A | 11 |
| Cleaning liquid B | 13 |

(g) What measurement would the scientist need to take to calculate the area where no bacteria were growing?

(1)

(h) Give **one** change to the investigation that would allow the scientist to check if the results are repeatable.

(1)

(i) The scientist showed the results to the restaurant owner.

Both cleaning liquids cost the same per dm^3 .

Suggest **one** other factor the restaurant owner should consider when choosing which cleaning liquid to use.

(1)

(Total 11 marks)

2.

Many diseases can be treated using drugs.

(a) Which type of pathogen can be killed by antibiotics?

Tick **one** box.

- Bacteria
- Fungi
- Protists
- Viruses

(1)

(b) Some drugs were originally extracted from living organisms.

Draw **one** line from each drug to the organism it was originally extracted from.

| Drug | Organism the drug was originally extracted from |
|-----------|---|
| Aspirin | A mould |
| Digitalis | A virus |
| | Foxglove |
| | Rose |
| | Willow Tree |

(2)

(c) New drugs must be tested before they can be used.

Give **one** reason why drugs should be tested.

(1)

- (d) Doctors have developed a new drug.
The new drug has been tested on live animals.

What is the next stage in testing the new drug?

Tick **one** box.

- | | |
|---|--------------------------|
| Testing on animal tissues in a laboratory | <input type="checkbox"/> |
| Testing on healthy volunteers | <input type="checkbox"/> |
| Testing on patients with the disease | <input type="checkbox"/> |
| Testing on the whole human population | <input type="checkbox"/> |

(1)

- (e) Vaccination can be used to prevent an illness in a person.

Explain how a vaccination can prevent an illness.

(4)

(Total 9 marks)

3. Rose black spot is a disease of roses.

(a) What type of microorganism causes rose black spot?

Tick **one** box.

A bacterium

A fungus

A protist

A virus

(1)

(b) Explain how different **types of organism** defend themselves against microorganisms.

(6)

(c) A student tried to grow some bacteria in the laboratory.

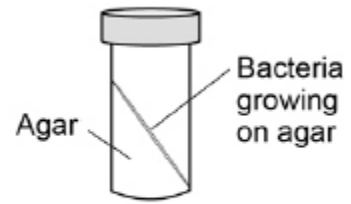
The diagram shows some of the apparatus used.



Inoculating loop



Petri dish
containing agar



Bottle containing
the bacteria

This is the method used.

1. Remove the lid of the Petri dish.
2. Remove the lid of the bottle containing the bacteria.
3. Use the inoculating loop to remove some of the bacteria from the bottle.
4. Spread the bacteria over the agar using the inoculating loop.
5. Put the lid back on the Petri dish.
6. Put the Petri dish into an incubator at 25 °C for 24 hours.

Steps 1–5 could cause the sample of the bacteria on the petri dish to be contaminated.

Give **three** improvements to the method to prevent contamination.

1. _____

2. _____

3. _____

(3)

(d) Why did the student grow the bacteria at 25 °C rather than at 40 °C?

Tick **one** box.

So the bacteria grew more quickly

So the bacteria grew more slowly

To prevent the growth of a harmful pathogen

To save money

(1)
(Total 11 marks)

4.

Microorganisms can cause disease.

(a) Draw **one** line from each disease to the correct description.

HIV

Can be spread by not washing hands thoroughly.

Can increase the chance of infection such as pneumonia.

Malaria

Part of the life cycle includes an insect.

spread by cough and sneezes.

Salmonella

Treated with stem cell.

Treated with fungicides.

(3)

(b) Gonorrhoea is a sexually transmitted disease.

A bacterium causes gonorrhoea.

What are the symptoms of gonorrhoea?

Tick **two** boxes.

Headache

Pain when urinating

Rash

Vomiting

Yellow discharge

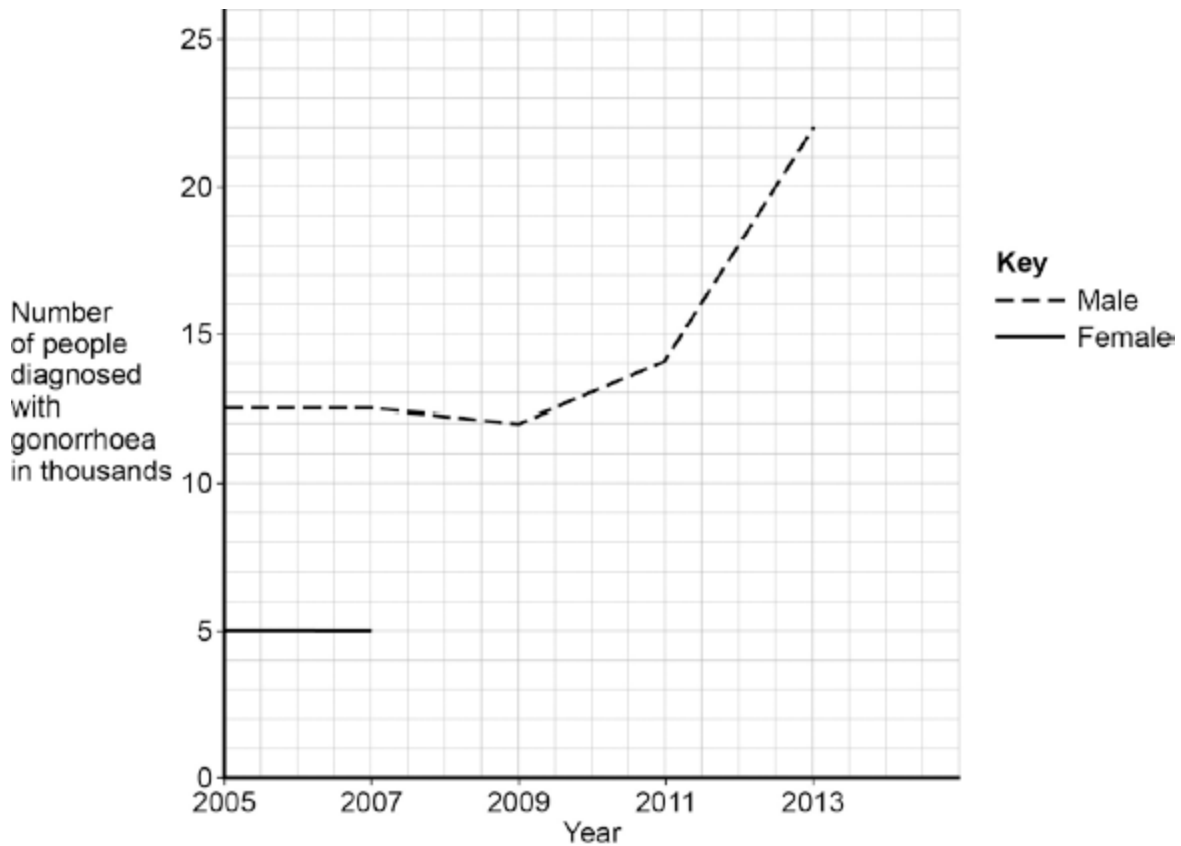
(2)

(c) The table below shows the number of people in the UK diagnosed with gonorrhoea in different years.

| Number of people diagnosed with gonorrhoea in thousands | | |
|---|--------|------|
| Year | Female | Male |
| 2005 | 5.0 | 12.5 |
| 2007 | 5.0 | 12.5 |
| 2009 | 5.5 | 12.0 |
| 2011 | 6.0 | 14.0 |
| 2013 | 7.5 | 22.0 |

Use the data in the table to complete the graph below.

- The numbers for males have already been plotted.
- Only some of the numbers for females have been plotted.



(3)

(d) Describe the patterns in the numbers of males and females with gonorrhoea from 2005 to 2013.

Use the data in the graph.

(3)

(e) Gonorrhoea is treated with an antibiotic.

HIV is another sexually transmitted disease.

Explain why prescribing an antibiotic will **not** cure HIV.

(2)

(Total 13 marks)

5.

Tobacco mosaic virus (TMV) is a disease affecting plants.

The diagram below shows a leaf infected with TMV.



Yellow patches where
TMV has destroyed
chloroplasts

© Nigel Cattlin/Visuals Unlimited/Getty Images

- (a) All tools should be washed in disinfectant after using them on plants infected with TMV.

Suggest why.

(1)

- (b) Scientists produced a single plant that contained a TMV-resistant gene.

Suggest how scientists can use this plant to produce **many** plants with the TMV-resistant gene.

(1)

(c) Some plants produce fruits which contain glucose.

Describe how you would test for the presence of glucose in fruit.

(2)

(d) TMV can cause plants to produce less chlorophyll.

This causes leaf discoloration.

Explain why plants with TMV have stunted growth.

(4)

(Total 8 marks)