PEARSON EDEXCEL GCSE BIOLOGY (HIGHER) · 1BI0

BIOLOGY



EXAM QUESTION PACK

TOPIC 5: HEALTH, DISEASE AND THE DEVELOPMENT OF MEDICINES (PACK 3)

SCORE	PERCENTAGE
/90	%

STEMUP

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Q1.

A scientist was planning to compare the effectiveness of the antibiotic myxopyronin on two different species of bacteria.

Figure 18 shows the equipment the scientist can use.

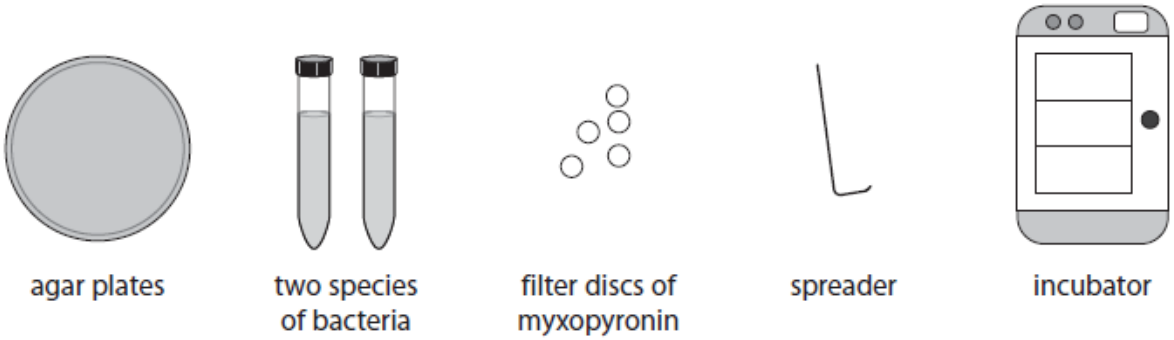


Figure 18

* Infections can also be caused by viruses.

Describe the lytic pathway of a virus and how this causes the spread of infection through a population.

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(Total for question = 6 marks)

Q2.

In 2017, a new strain of *Klebsiella pneumoniae* bacteria was discovered that was resistant to 26 different antibiotics.

New antibiotics are being developed to treat the disease caused by *Klebsiella pneumoniae*.

Describe the stages of antibiotic development that would occur after the discovery of a new antibiotic.

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(Total for question = 3 marks)

Q3.

New antibiotics are being developed to treat the disease caused by *Klebsiella pneumoniae*.

Describe the stages of antibiotic development that would occur after the discovery of a new antibiotic.

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(Total for question = 3 marks)

Q4.

In 2014, nearly 155 000 people died from cardiovascular disease in the UK.

Drugs have been developed to treat people with cardiovascular disease.

Developing drugs involves many stages.
One stage involves testing the drugs on other mammals before testing them on humans.

Give **one** disadvantage of using other mammals for drug testing.

(1)

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(Total for question = 1 mark)

Q5.

Disease

(a) The photograph shows a housefly.



(i) Houseflies can be the animal vector for the disease dysentery.

Complete the sentence by putting a cross (☒) in the box next to your answer.

The disease dysentery is caused by a

(1)

☒ **A** bacterium

☒ **B** fungus

☒ **C** protozoan

☒ **D** virus

(ii) Describe how a housefly can cause a person to become infected with dysentery.

(2)

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(iii) Explain how a chemical defence mechanism of the human body can reduce the chance of dysentery.

(3)

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(b) Explain how the *Anopheles* mosquito can spread the disease malaria.

(2)

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(Total for question = 8 marks)

Q6.

Disease

(a) The photograph shows a housefly.



(i) Houseflies can be the animal vector for the disease dysentery.

Complete the sentence by putting a cross (☒) in the box next to your answer.

The disease dysentery is caused by a

(1)

☒ **A** bacterium

☒ **B** fungus

☒ **C** protozoan

☒ **D** virus

(ii) Describe how a housefly can cause a person to become infected with dysentery.

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(iii) Explain how a chemical defence mechanism of the human body can reduce the chance of dysentery.

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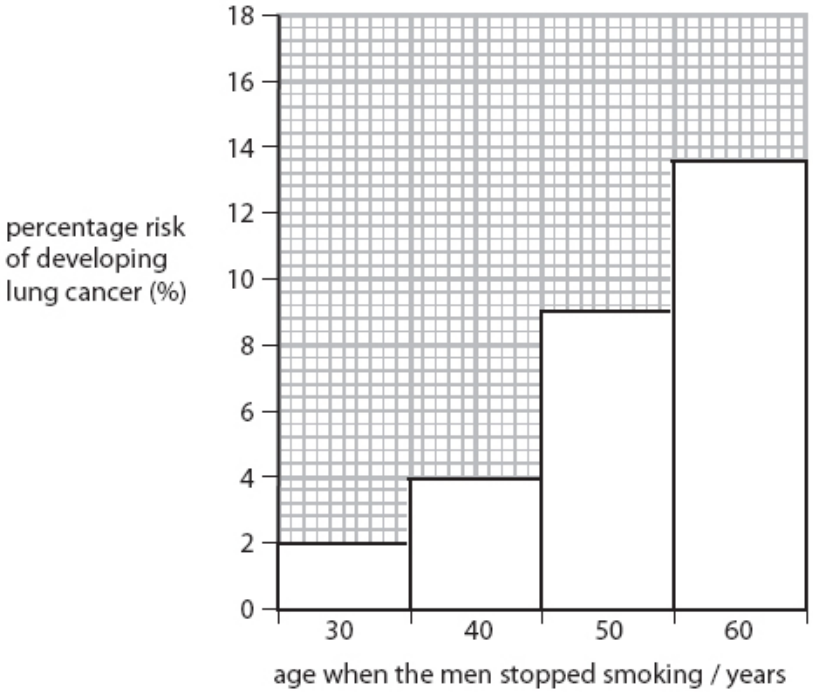
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(Total for question = 8 marks)

Q7.

(a) The graph shows the percentage risk of developing lung cancer for 75-year-old men who gave up smoking tobacco at an earlier age.



(i) Describe the trend shown in the graph.

(1)

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(ii) State the percentage risk of lung cancer for a man who gave up smoking at 50 years of age.

(1)

.....%

(iii) For a population of 500 000 men, how many would be likely to develop lung cancer if they stopped smoking at the age of 50?

(2)

.....men

(b) (i) Explain why smoking tobacco increases the risk of developing lung cancer.

(2)

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(ii) Complete the sentence by putting a cross (☒) in the box next to your answer.

Smoking tobacco reduces the oxygen carrying ability of the blood because it contains

(1)

☒ **A** carbon monoxide

☒ **B** carbon particles

☒ **C** nicotine

☒ **D** tar

(c) A chemical in tobacco acts as a stimulant.

Explain how stimulants affect neurotransmission.

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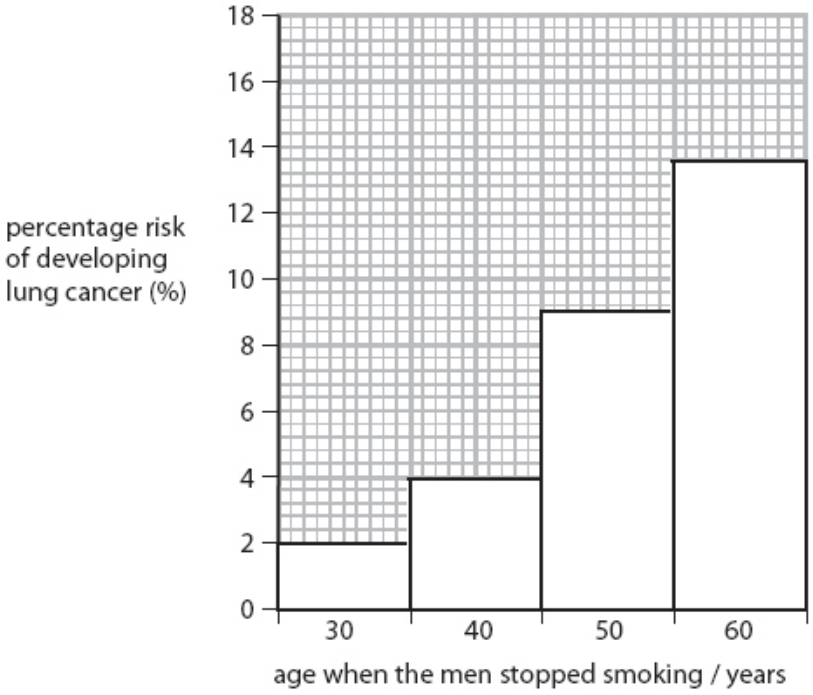
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(Total for Question = 10 marks)

Q8.

(a) The graph shows the percentage risk of developing lung cancer for 75-year-old men who gave up smoking tobacco at an earlier age.



(i) Describe the trend shown in the graph.

(1)

.....

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(ii) State the percentage risk of lung cancer for a man who gave up smoking at 50 years of age.

(1)

.....%

(iii) For a population of 500 000 men, how many would be likely to develop lung cancer if they stopped smoking at the age of 50?

(2)

.....men

(b) (i) Explain why smoking tobacco increases the risk of developing lung cancer.

(2)

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(ii) Complete the sentence by putting a cross (☒) in the box next to your answer.

Smoking tobacco reduces the oxygen carrying ability of the blood because it contains

(1)

☒ **A** carbon monoxide

☒ **B** carbon particles

☒ **C** nicotine

☒ **D** tar

(c) A chemical in tobacco acts as a stimulant.

Explain how stimulants affect neurotransmission.

(3)

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(Total for Question = 10 marks)

Q9.

(i) Smoking tobacco is addictive.

Complete the sentence by putting a cross (☒) in the box next to your answer.

The main addictive substance in tobacco is

(1)

☒ **A** caffeine

☒ **B** carbon monoxide

☒ **C** morphine

☒ **D** nicotine

(ii) Research shows that there is a link between smoking tobacco and the development of lung cancer.

Explain why smoking tobacco can cause lung cancer.

(2)

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(iii) Explain why people who smoke tobacco may find it difficult to exercise.

(2)

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Q10.

Figure 2 shows a gastric band fitted to a stomach.

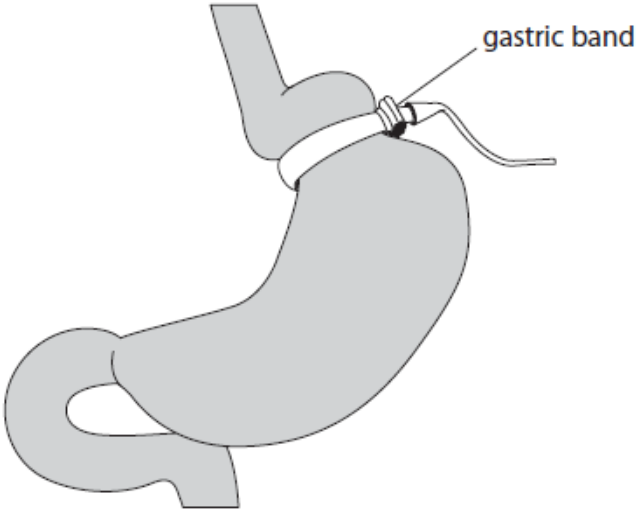


Figure 2

Explain how a gastric band helps a person to lose weight.

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(Total for question = 2 marks)

Q11.

Figure 2 shows a gastric band fitted to a stomach.

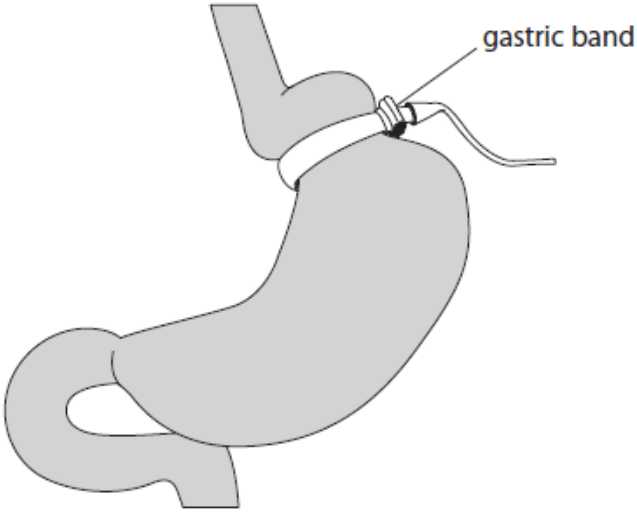


Figure 2

Explain how a gastric band helps a person to lose weight.

(2)

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(Total for question = 2 marks)

Q12.

In 2014, nearly 155 000 people died from cardiovascular disease in the UK.

Figure 2 shows the use of a stent to treat cardiovascular disease.

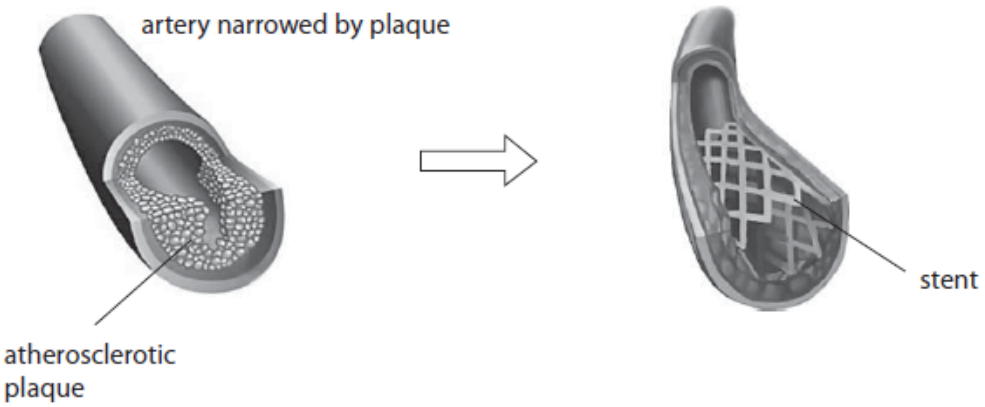


Figure 2

Explain how a stent works to treat cardiovascular disease.

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(Total for question = 3 marks)

Q13.

Most cases of scarlet fever occur in children.

Adults have usually developed immunity to a toxin that the Streptococcus bacteria produce during infection.

Explain how an adult develops immunity to the toxin.

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(Total for question = 3 marks)

Q14.

Most cases of scarlet fever occur in children.

Adults have usually developed immunity to a toxin that the *Streptococcus* bacteria produce during infection.

Explain how an adult develops immunity to the toxin.

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(Total for question = 3 marks)

Q15.

* Bacteria have been genetically engineered to produce human insulin since 1978.

Explain how bacteria can be genetically engineered to produce human insulin.

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(Total for question = 6 marks)

Q16.

Gonorrhoea is a sexually transmitted bacterial infection.

Figure 13 shows the number of people diagnosed with gonorrhoea in the UK.

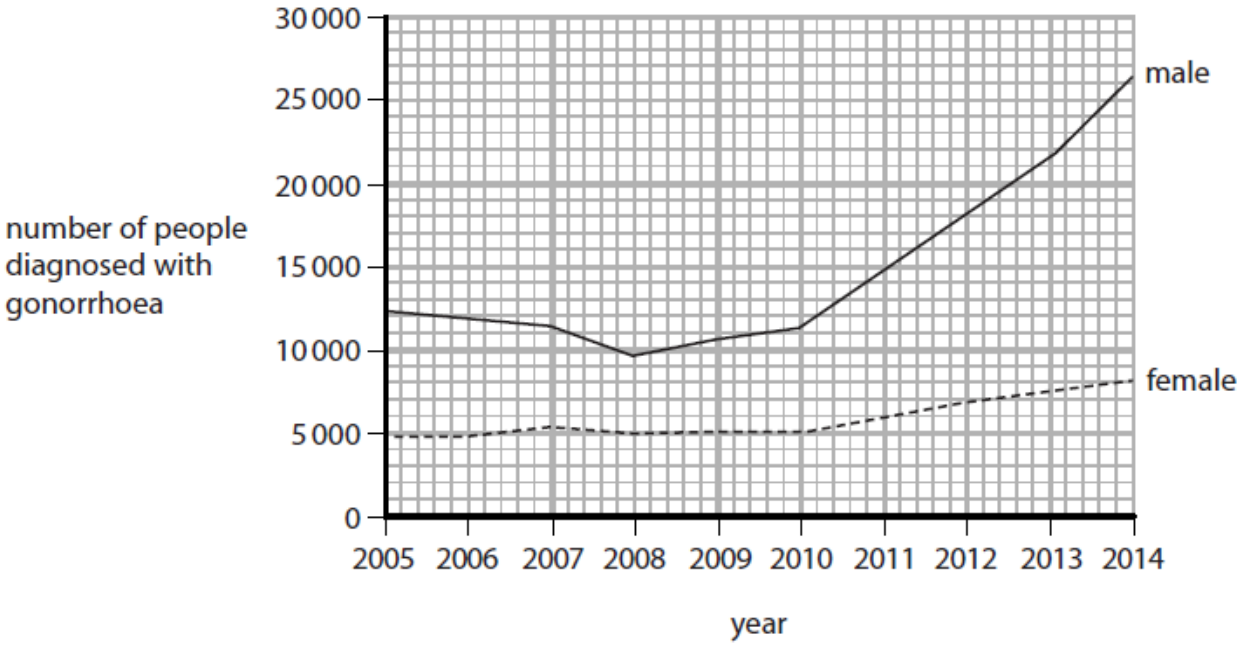


Figure 13

Explain how gonorrhoea is transmitted and how the number of people infected can be reduced.

Use data from the graph to justify why it is necessary to reduce the number of people infected.

(Total for question = 6 marks)

Q17.

Gonorrhoea is a sexually transmitted bacterial infection.

Figure 7 shows the number of people diagnosed with gonorrhoea in the UK.

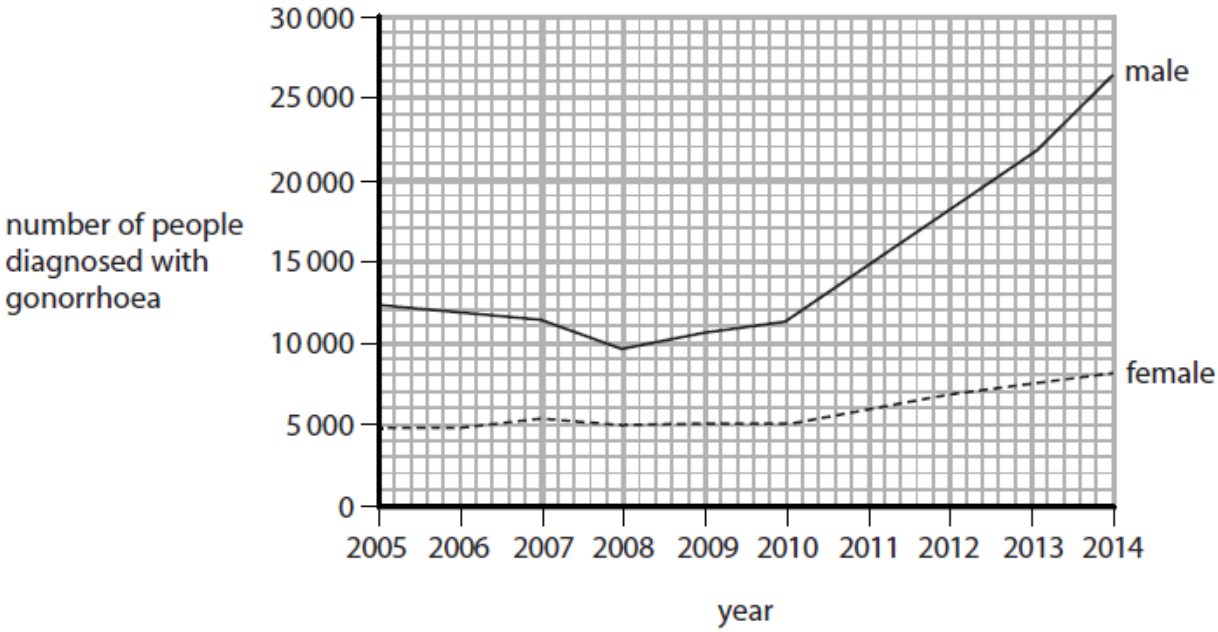


Figure 7

Explain how gonorrhoea is transmitted and how the number of people infected can be reduced.

Use data from the graph to justify why it is necessary to reduce the number of people infected.

(Total for question = 6 marks)

Q18.

Figure 2 shows the number of people diagnosed with sexually transmitted infections (STIs) in the UK during 2017.

sexually transmitted infection (STI)	number of people diagnosed per 1000 of the population
chlamydia	3.7
gonorrhoea	0.8
genital herpes	0.6
genital warts	1.1
syphilis	0.1

Figure 2

HIV is another sexually transmitted infection.

Explain how HIV can lead to the onset of AIDS.

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(Total for question = 2 marks)

Q19.

HIV is another sexually transmitted infection.

Explain how HIV can lead to the onset of AIDS.

(2)

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(Total for question = 2 marks)

Q20.

Colistin is an antibiotic used to treat infections in the bloodstream.

Some bacteria are resistant to Colistin.

Explain how these bacteria have become resistant to Colistin.

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(Total for question = 4 marks)

Q21.

Colistin is an antibiotic used to treat infections in the bloodstream.

Some bacteria are resistant to Colistin.

Explain how these bacteria have become resistant to Colistin.

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(Total for question = 4 marks)

Q22.

The wire loop used to spread bacteria on an agar plate was heated in a Bunsen burner flame before being used.

Explain why this aseptic precaution was used.

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(Total for question = 2 marks)

Q23.

Before a new toothpaste can be sold, the toothpaste has to be tested on cultured human cells.

Cultured human cells were placed into four identical flasks.

Saliva was added to each flask and a different brand of toothpaste was added to each of three flasks.

The human cells were left for two hours and the percentage of cells that were healthy was recorded.

Figure 6 shows the results.

substance added to the human cells	percentage of healthy cells after 2 hours (%)
saliva only	85
toothpaste brand 1	84
toothpaste brand 2	86
toothpaste brand 3	85

Figure 6

Explain the conclusion that can be made from this data.

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(Total for question = 2 marks)

Q24.

When bacteria divide they replicate their genome and synthesise their cell wall.

Figure 12 outlines the stages of bacterial replication.

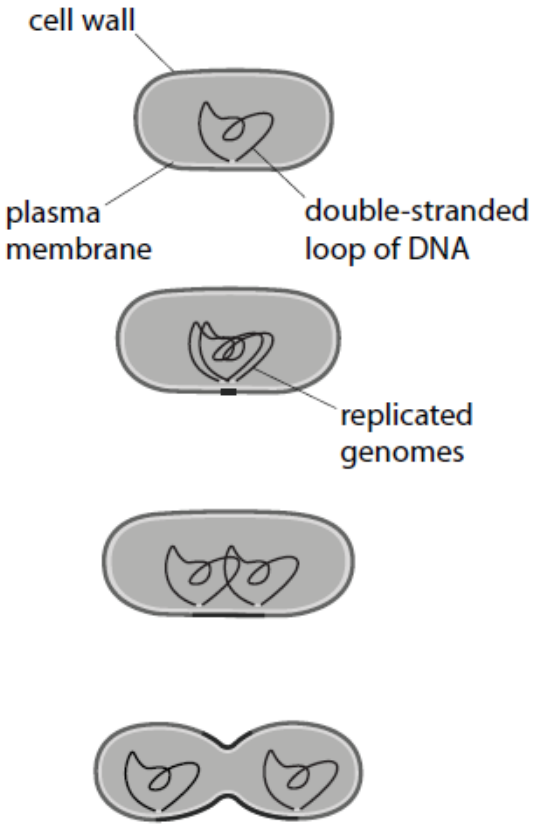


Figure 12

Penicillin inhibits the synthesis of the cell wall in bacteria.

Explain the effect of penicillin on bacterial and human cells.

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(Total for question = 3 marks)

Q25.

There are different types of white blood cell in the body. One type is called CD4+ T-Helper cells.

The normal range of these cells in the blood is between 5×10^8 and 1.2×10^9 cells/dm^3

An AIDS patient has a CD4+ T-Helper cell count of 1.5×10^8 cells/dm^3

Explain why the CD4+ count of 1.5×10^8 cells/dm^3 has led to the diagnosis of AIDS.

(2)

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(Total for question = 2 marks)

Q26.

In 2014, nearly 155 000 people died from cardiovascular disease in the UK.

Give the reason why cardiovascular disease is a non-communicable disease.

(1)

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(Total for question = 1 mark)

Q27.

Obesity increases the risk of a person developing cardiovascular disease.

Losing weight can reduce the risk of this disease occurring.

Explain why exercise can cause weight loss.

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(Total for question = 2 marks)

Q28.

Obesity increases the risk of a person developing cardiovascular disease.

Losing weight can reduce the risk of this disease occurring.

Explain why exercise can cause weight loss.

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(Total for question = 2 marks)

Q29.

Explain why people with AIDS are more susceptible to TB.

(2)

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(Total for question = 2 marks)

Q30.

Explain why people with AIDS are more susceptible to TB.

(2)

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(Total for question = 2 marks)