PEARSON EDEXCEL GCSE BIOLOGY (HIGHER) · 1BI0

BIOLOGY



EXAM QUESTION PACK

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

SCORE	PERCENTAGE
/56	%

STEMUP

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Q1.

Name the organisation which defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

(1)

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(Total for question = 1 mark)

Q2.

Figure 9 shows the number of organ transplants needed and the number of donors available in the USA from 1991 to 2018.

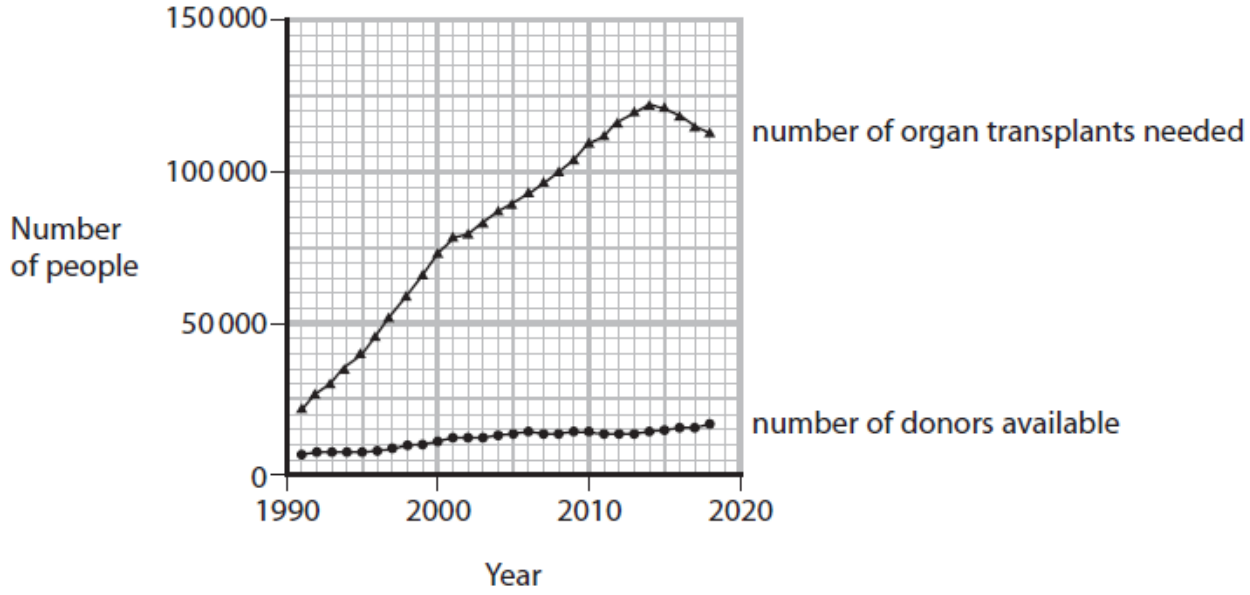


Figure 9

(i) Compare the number of donors available with the number of organ transplants needed from 1991 to 2018.

Use information from the graph to support your answer.

(3)

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(ii) State why scientists are genetically engineering animals for organ transplants.

(1)

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(Total for question = 4 marks)

Q3.

Dieting can reduce the effects of cardiovascular disease.

(i) Which statement gives a reason why dieting can be used to reduce weight in obese people?

(1)

☒ **A** Dieting increases metabolism and growth rate

☒ **B** Dieting reduces energy consumption

☒ **C** Dieting decreases metabolism

☒ **D** Dieting increases energy consumption

(ii) A scientist is planning to test a new diet for weight loss.

She selects 40 obese people to take part in the test.

All the obese people are between 20 and 30 years of age.

State **two** other factors the scientist should control when selecting the people.

(2)

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(iii) Devise a plan the scientist could use to test the effectiveness of the new diet using the 40 obese people.

(3)

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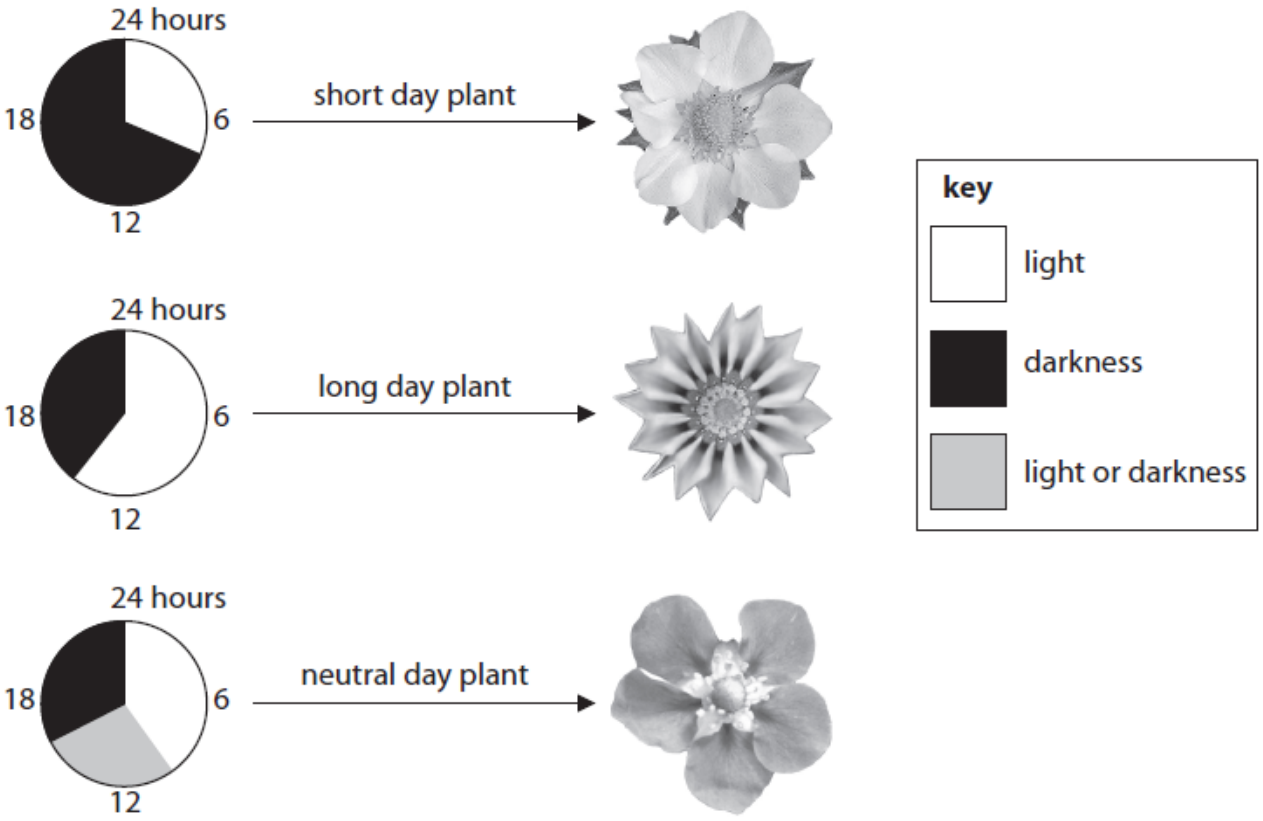
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(Total for question = 6 marks)

Q4.

Plants and animals

The diagram shows the number of hours of darkness and light needed for flowering in three different plant groups.



(a) (i) State the number of hours of darkness needed for a long day plant to flower.

(1)

..... hours

(ii) A gardener has 500 short day plants.

85% of these plants flowered in March.

Calculate the number of plants flowering in March.

(2)

..... plants

(iii) Suggest a benefit to a plant of being day neutral.

(1)

.....

.....

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

Plants flowering in response to the number of hours of darkness and light is an example of

(1)

☒ **A** circadian rhythms

☒ **B** germination

☒ **C** photoperiodism lymphocytes

☒ **D** phototropism

(b) (i) The leaves of some species of bamboo plants contain the poison cyanide.

Suggest how these bamboo plants benefit from having poisonous leaves.

(1)

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(ii) The photograph shows a greater bamboo lemur.



The greater bamboo lemur is adapted to tolerate cyanide.

This means that it can eat bamboo leaves containing cyanide.

Explain how the co-evolution of bamboo plants and the greater bamboo lemur could have occurred.

(2)

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(c) Two ethologists, Bergey and Patel, studied the call types used in communication between

greater bamboo lemurs.

The table is a summary of their findings.

call types	behaviour
agitated calls	aggression
bahh calls	submission
breath out calls	aggression
contact calls	submission and aggression
purr calls	friendship and resting
squeal calls	submission
woof calls	aggression

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

The behaviour associated with most call types is

(1)

☒ **A** aggression

☒ **B** friendship

☒ **C** resting

☒ **D** submission

(ii) Explain the benefit of communicating using sound rather than facial expressions.

(2)

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(Total for question = 11 marks)

Q5.

(ii) Monoclonal antibodies can be produced in large quantities.

Describe the steps in producing monoclonal antibodies.

(3)

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(ii) Explain the advantage of using monoclonal antibodies to treat cancer.

(2)

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Q6.

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

(i) State the sexually transmitted infection that has the median number of people diagnosed.

(1)

.....

(ii) The population of the UK in 2017 was 66 million people.

Calculate the total number of people diagnosed with chlamydia in the UK in 2017.

(2)

..... people

(iii) State why chlamydia can be described as a communicable disease.

(1)

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(iv) Give **one** way the transmission of chlamydia can be prevented.

(1)

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(v) Explain why chlamydia can be treated with antibiotics.

(2)

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(Total for question = 7 marks)

Q7.

(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

Q8.

(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

Q9.

Measles is a disease caused by a virus.

Measles is prevented by immunisation.

(i) State **two** reasons why people might not be immunised against measles.

(2)

1 .....

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2 .....

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(ii) The spread of measles is prevented by herd immunity.

Describe herd immunity.

(2)

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(Total for question = 4 marks)

Q10.

The lytic pathway is part of the lifecycle of the Ebola virus.

After infection of the host cell, components of the virus are produced.

The genetic material of a virus can also be inserted into the genome of the host.

(i) Name this type of pathway.

(1)

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(ii) State what is meant by the term genome.

(1)

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(Total for question = 2 marks)

Q11.

A chemical in tobacco acts as a stimulant.

Explain how stimulants affect neurotransmission.

(3)

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Q12.

A chemical in tobacco acts as a stimulant.

Explain how stimulants affect neurotransmission.

(3)

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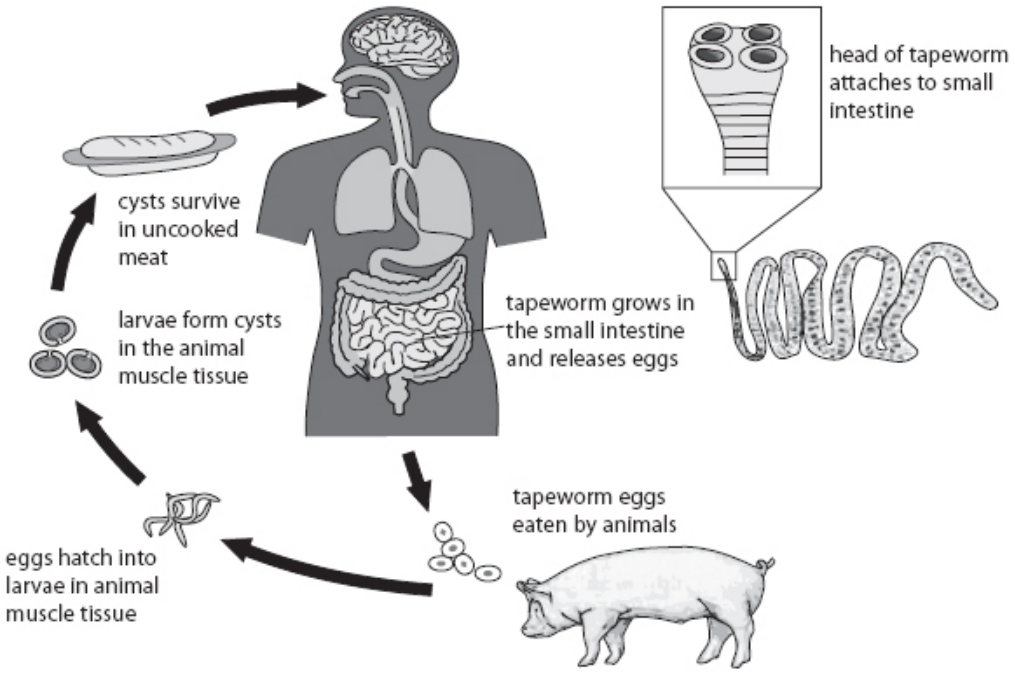
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Q13.

The diagram shows the life cycle of the human tapeworm.



(i) The tapeworm absorbs food in the human intestine.

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

A tapeworm is an example of a

(1)

☒ **A** living indicator

☒ **B** mutualist

☒ **C** parasite

☒ **D** producer

(ii) Use information in the diagram to describe how an adaptation of the tapeworm enables it to live in the human intestine.

(2)

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(iii) Using information in the diagram, suggest how humans could avoid becoming infected with tapeworms.

(2)

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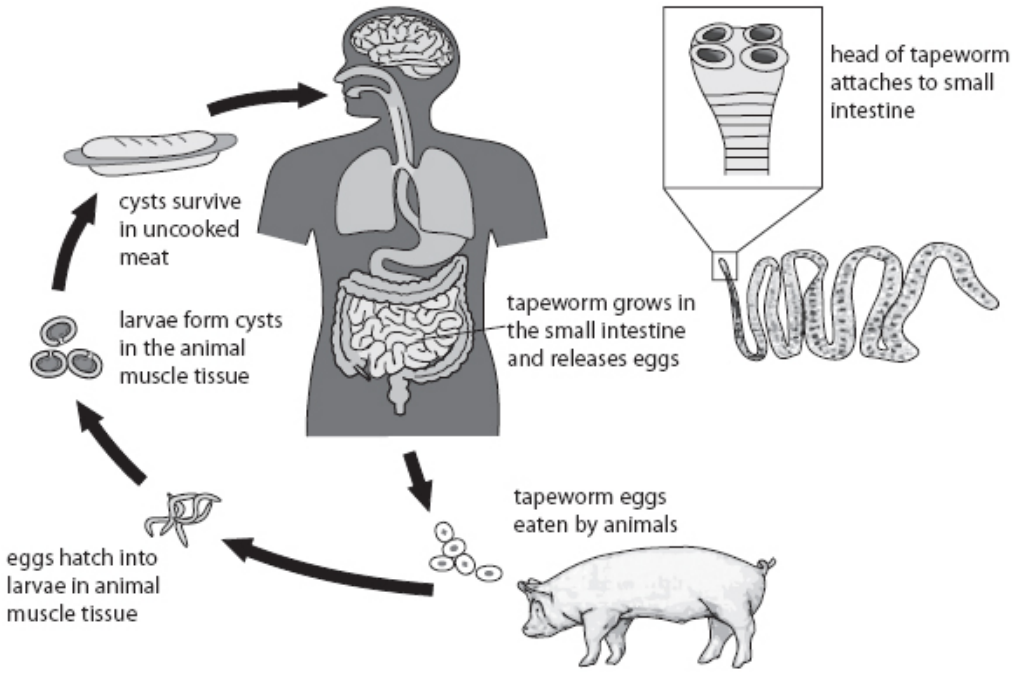
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Q14.

The diagram shows the life cycle of the human tapeworm.



(i) The tapeworm absorbs food in the human intestine.

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

A tapeworm is an example of a

(1)

☒ **A** living indicator

☒ **B** mutualist

☒ **C** parasite

☒ **D** producer

(ii) Use information in the diagram to describe how an adaptation of the tapeworm enables it to live in the human intestine.

(2)

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(iii) Using information in the diagram, suggest how humans could avoid becoming infected with tapeworms.

(2)

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Q15.

A student was provided with one Petri dish containing sterile agar jelly.

She transferred a culture of bacterium **A** onto the Petri dish.

(i) Describe how the student would distribute the bacteria over the surface of the agar jelly.

(3)

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(ii) The student then placed three paper discs, each with a 5 mm diameter, onto the agar jelly.

Disc C contained sterile water.

Disc 1 contained the antibiotic tetracycline.

Disc 2 contained the antibiotic penicillin.

The Petri dishes were incubated for 48 hours.

Figure 13 shows the Petri dishes before and after incubation.

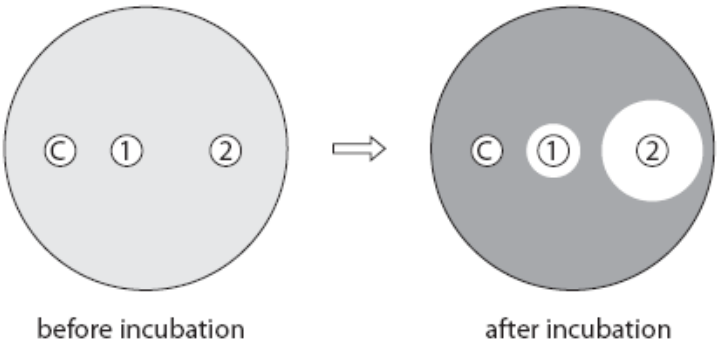


Figure 13

Describe the effect of the two antibiotics on bacterium **A**.

(2)

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(iii) Disc 1 has a zone of inhibition with a diameter of 7 mm.

Disc 2 has a zone of inhibition with a diameter of 18 mm.

Calculate the area of the zone of inhibition for disc 2.

(2)

..... mm^2

(Total for question = 7 marks)

Q16.

* Antibiotics have no effect on the lifecycle of viruses.

Describe the lifecycle of a lytic virus.

(6)

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(Total for question = 6 marks)

Q17.

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

The molecules on pathogens which cause an immune response are called

(1)

☒ **A** antigens

☒ **B** bacteria

☒ **C** hybridomas

☒ **D** lymphocytes

Q18.

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

The molecules on pathogens which cause an immune response are called

(1)

☒ **A** antigens

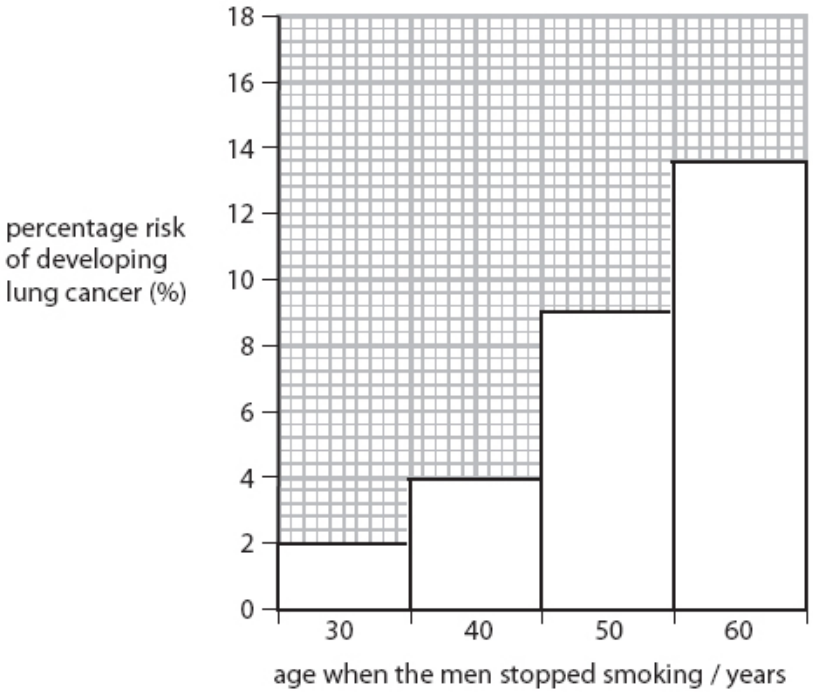
☒ **B** bacteria

☒ **C** hybridomas

☒ **D** lymphocytes

Q19.

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)

.....%

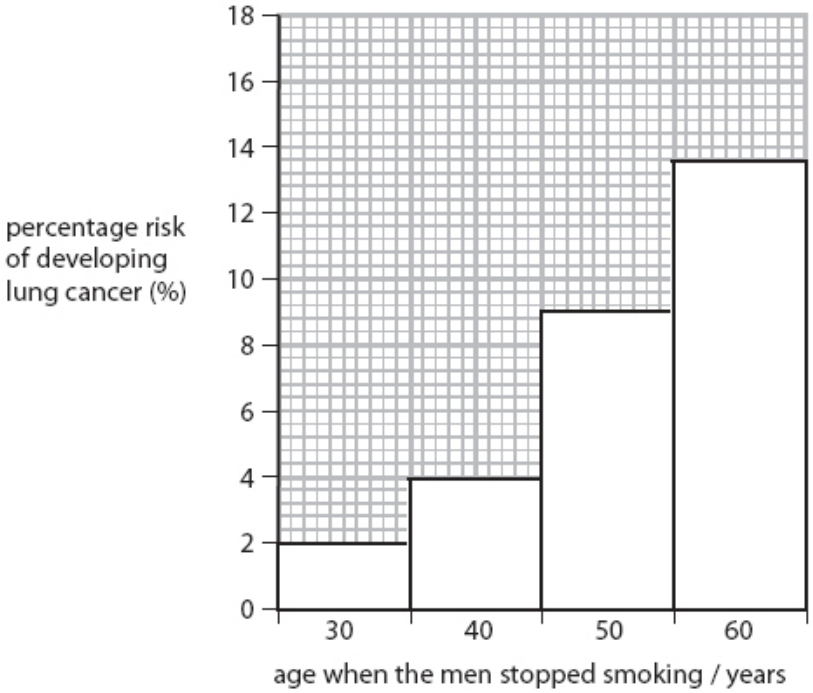
(iii) For a population of 500 000 men, how many would be likely to develop lung cancer if they stopped smoking at the age of 50?

(2)

.....men

Q20.

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)

.....

.....

(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

Q21.

The enzyme proteinase K is used to extract DNA from skin cells.

(i) Explain why proteinase K is used to extract DNA from skin cells.

(2)

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(ii) Describe the safety precautions that should be used when handling human tissue in a laboratory.

(3)

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(iii) Proteinase K is usually stored at 4 °C.

Figure 10 shows the effect of storage temperature on the activity of proteinase K.

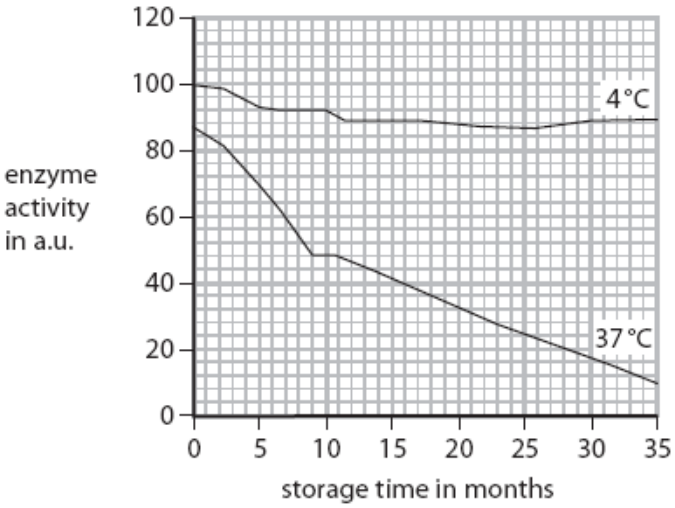


Figure 10

Explain how the activity of proteinase K changes when stored at 37 °C.

(2)

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(Total for question = 7 marks)

Q22.

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)

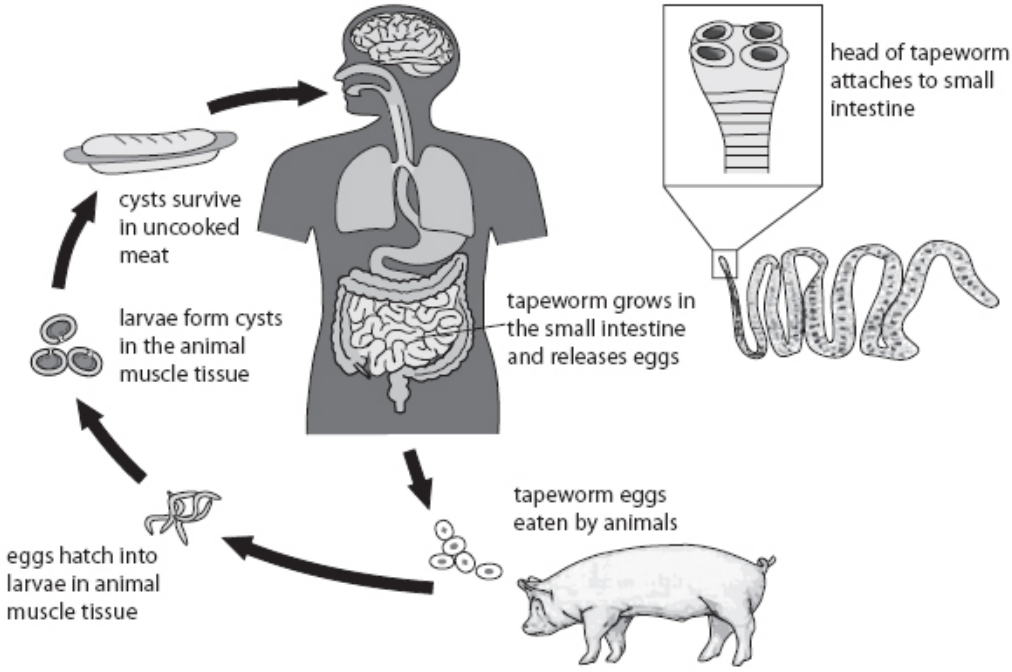
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(Total for question = 1 mark)

Q23.

(a) The diagram shows the life cycle of the human tapeworm.



(i) The tapeworm absorbs food in the human intestine.

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

A tapeworm is an example of a

(1)

- ☒ **A** living indicator
- ☒ **B** mutualist
- ☒ **C** parasite
- ☒ **D** producer

(ii) Use information in the diagram to describe how an adaptation of the tapeworm enables it to live in the human intestine.

(2)

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(iii) Using information in the diagram, suggest how humans could avoid becoming infected with tapeworms.

(2)

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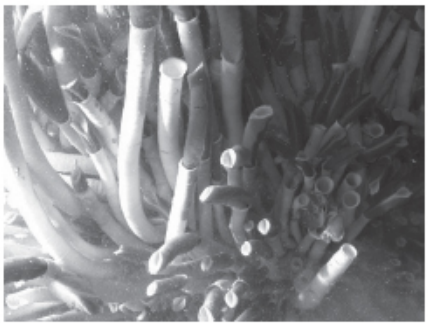
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(b) The photograph shows another type of worm.

These are tube worms that live near hydrothermal vents.



Explain the relationship between these tube worms and chemosynthetic bacteria.

(3)

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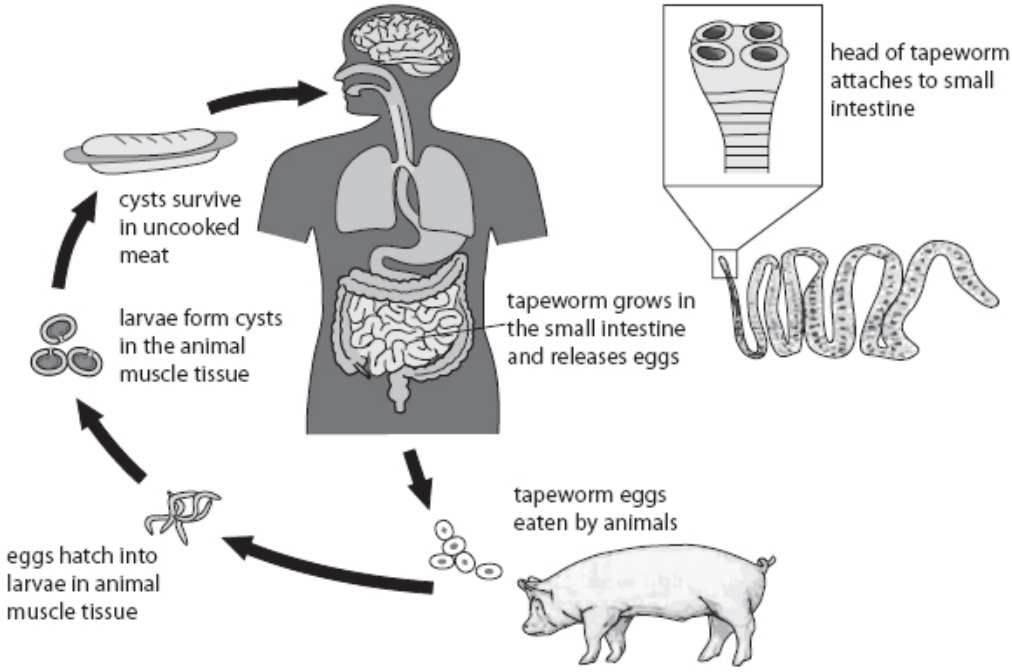
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(Total for Question = 8 marks)

Q24.

(a) The diagram shows the life cycle of the human tapeworm.



(i) The tapeworm absorbs food in the human intestine.

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

A tapeworm is an example of a

(1)

- ☒ **A** living indicator
- ☒ **B** mutualist
- ☒ **C** parasite
- ☒ **D** producer

(ii) Use information in the diagram to describe how an adaptation of the tapeworm enables it to live in the human intestine.

(2)

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(iii) Using information in the diagram, suggest how humans could avoid becoming infected with tapeworms.

(2)

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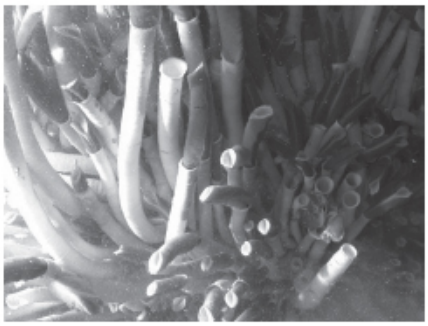
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(b) The photograph shows another type of worm.

These are tube worms that live near hydrothermal vents.



Explain the relationship between these tube worms and chemosynthetic bacteria.

(3)

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(Total for Question = 8 marks)