

Please check the examination details below before entering your candidate information

Candidate surname					Other names				
Centre Number					Candidate Number				

Pearson Edexcel International GCSE (9–1)

Friday 8 May 2026

Morning (Time: 1 hour 45 minutes)

Paper reference **4HB1/01**

Human Biology

UNIT: 4HB1

Paper: 01

You must have:

Ruler

Calculator

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Show all the steps in the calculations and state the units.

Information

- The total mark for this paper is 90.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- Candidates may use a calculator.

Advice

- Read each question carefully before you start to answer it.
- Write your answers neatly and in good English.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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Answer ALL questions.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

- 1** (a) (i) The words in the box are some of the components of the diet.

calcium	iron	fibre	vitamin A
vitamin C	vitamin D	water	

The table lists the functions of some of these components.

Complete the table by writing the correct component for each function.

(5)

Function	Component
prevents scurvy	
needed in haemoglobin production	
helps absorption of calcium	
needed in the production of eye pigment	
helps form bones	

- (ii) Name three other components of the diet that are not given in the box.

(3)

1

2

3

- (b) Describe what is meant by the term **balanced diet**.

(2)

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(Total for Question 1 = 10 marks)

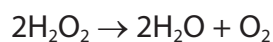


2 The liver breaks down toxic substances in the body.

One toxic substance is hydrogen peroxide, which is a waste product of some metabolic reactions.

The enzyme catalase, which is present in the liver, breaks down any hydrogen peroxide formed.

This is the equation for the breakdown of hydrogen peroxide by catalase.



- (a) (i) State one other toxic substance broken down in the liver.

(1)

- (ii) Describe how urea is formed in the liver.

(3)

- (iii) State two other functions of the liver apart from urea formation and detoxification.

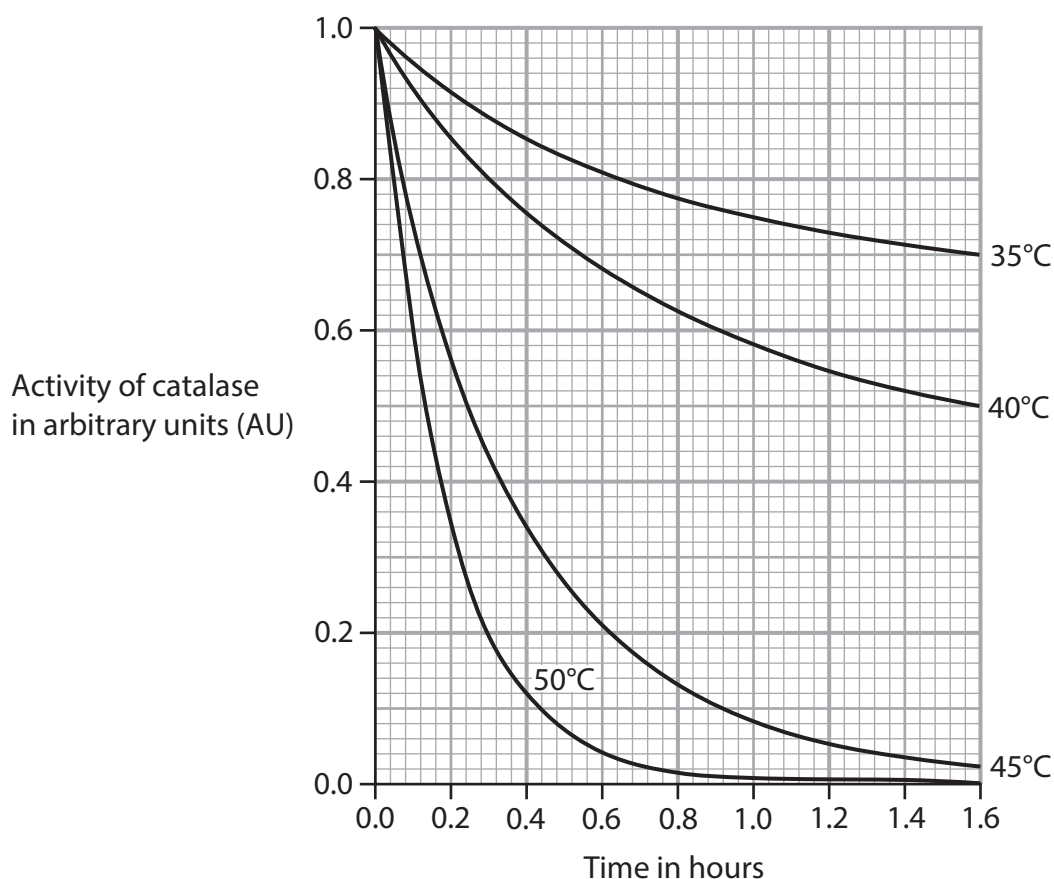
(2)

1

2



(b) The graph shows the effect of temperature on the activity of the enzyme catalase.



- (i) Determine the mean rate of decrease of activity of catalase at 40°C over the period of 1.6 hours.

Give your answer in AU per minute.

(3)

mean rate = AU per minute



- (ii) Describe a method for an investigation that could be used to obtain the results shown in the graph.

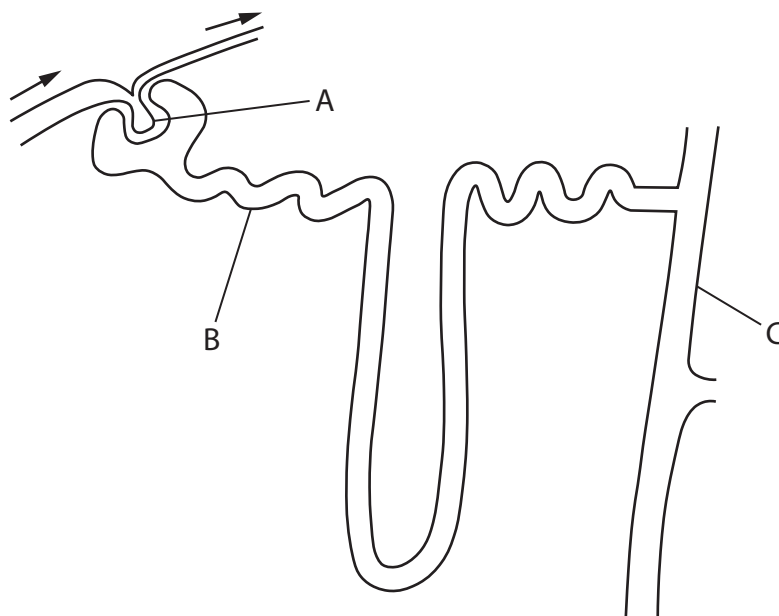
Include experimental details in your answer and write in full sentences.

(6)

(Total for Question 2 = 15 marks)



3 (a) The diagram shows a kidney tubule (nephron).



(i) Describe the process that occurs at point A.

(2)

(ii) Describe the process that occurs at point B.

(2)

(iii) State the process that occurs at point C.

(1)



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(b) Explain the effect of a hot climate on urine production.

(5)

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(c) Protein is not usually found in urine.

(i) Suggest a reason why protein is sometimes found in urine.

(1)

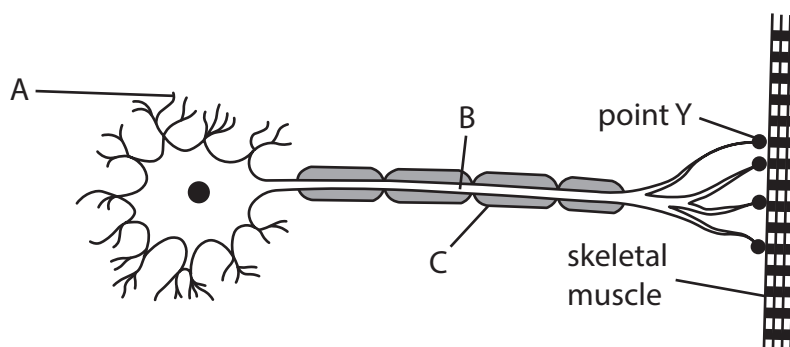
(ii) Describe a method to test for protein in urine.

(4)

(Total for Question 3 = 15 marks)



4 The diagram shows a motor neurone.



(a) (i) Name parts A, B and C.

(3)

A

B

C

(ii) Describe the function of a motor neurone.

(3)

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(iii) Give the effect on the skeletal muscle when the nerve impulse reaches point Y.

(1)

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- (b) Complete the table by giving three differences between a motor neurone and a sensory neurone.

(3)

Motor neurone	Sensory neurone

- (c) A doctor investigates the rate of transmission of a nerve impulse in the arm.

This is the doctor's method.

- stimulate a nerve at the elbow to cause the hand to move
- stimulate the same nerve at the shoulder to also cause the hand to move
- measure the distance between the elbow and the shoulder
- measure the time between hand movements

The distance between the elbow and the shoulder is 0.25 m.

The time taken for the hand to move when the stimulus is at the shoulder is 0.0045 s greater than the time taken when the stimulus is at the elbow.

Calculate the speed of transmission of the nerve impulse, in metres per second, along the nerve in the arm.

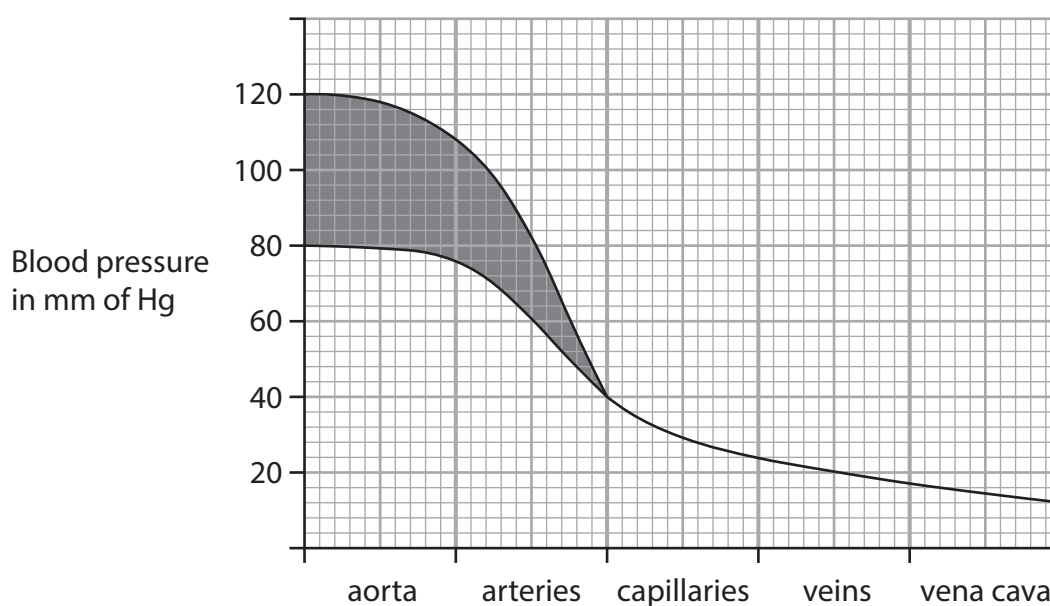
(3)

speed = m/s

(Total for Question 4 = 13 marks)



- 5 (a) The graph shows the changes in blood pressure as blood passes through the circulatory system.



- (i) What is the highest blood pressure, in mm of Hg, shown on the graph?

(1)

- ☐ A 12
- ☐ B 40
- ☐ C 80
- ☐ D 120

(ii) Explain the results shown by the graph for blood pressure in the aorta and the arteries.

(5)

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(iii) Explain the differences in the trends shown by the graph as blood flows through the arteries and through the capillaries.

(4)

(b) Describe a method to investigate the effect of exercise on the rate of heartbeat.

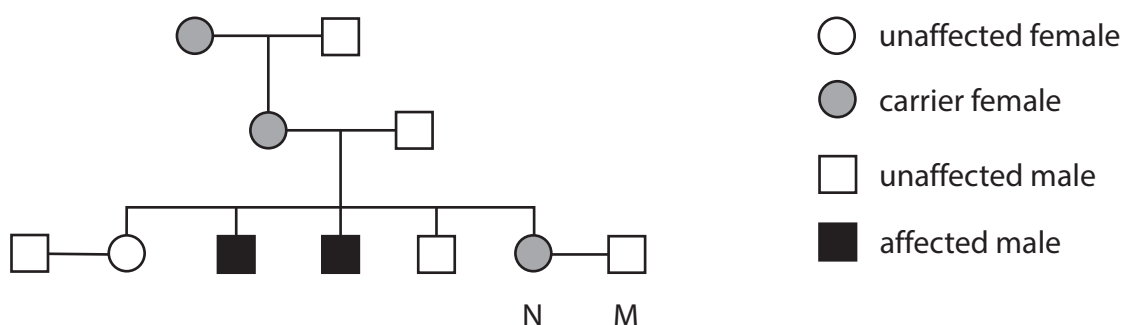
(4)

(Total for Question 5 = 14 marks)



6 Duchenne muscular dystrophy is a sex-linked inherited condition.

The family pedigree shows the inheritance of the condition.



(a) (i) Explain how the family pedigree shows that the condition is sex-linked.

(3)

(ii) Explain how the family pedigree shows that the condition is recessive.

(2)

(iii) Female N and male M have a child.

Calculate the probability that the child has the Duchenne condition.

Include a genetic diagram in your answer.

(5)

probability =

(b) In a country, 1 in 5000 people have the Duchenne condition.

The country has a population of 70 million.

Calculate the number of people who have the Duchenne condition.

Give your answer in standard form.

(3)

number =

(Total for Question 6 = 13 marks)

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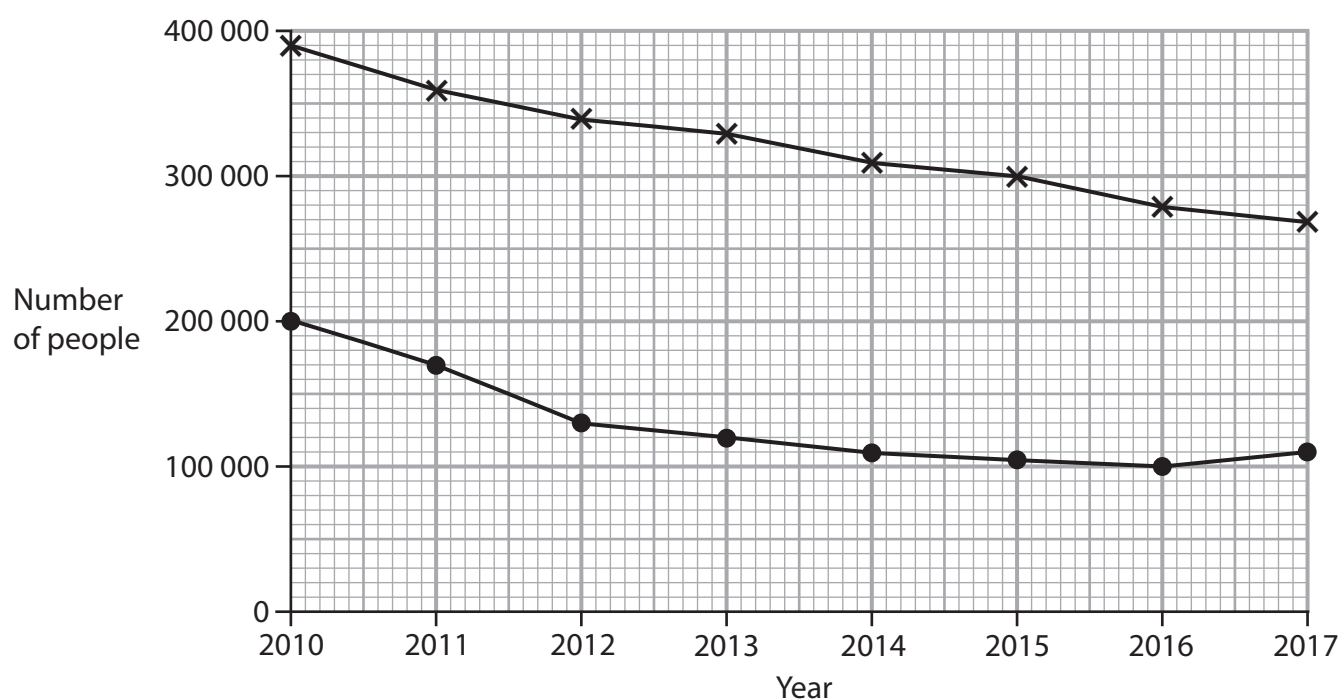
7 (a) State one way HIV is transmitted.

(1)

(b) Explain the difference between HIV and AIDS.

(2)

(c) The graph shows the number of people infected with HIV and the number of deaths due to AIDS from 2010 to 2017 in a part of the world.



Key

x = number of people infected with HIV

● = number of deaths due to AIDS



(i) Describe the trends shown in the graph.

(3)

(ii) Give two possible reasons for the trends shown in the graph.

(2)

1

2

(d) Explain why it is not possible to treat HIV infection using antibiotics.

(2)

(Total for Question 7 = 10 marks)

TOTAL FOR PAPER = 90 MARKS

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