

Please check the examination details below before entering your candidate information

Candidate surname					Other names				
Centre Number					Candidate Number				

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Tuesday 13 May 2025

Afternoon (Time: 1 hour 10 minutes) **Paper reference** **1SC0/1BH**

Combined Science

PAPER 1

Higher Tier

You must have:
Ruler, calculator

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **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.*

Information

- The total mark for this paper is 60.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- In questions marked with an **asterisk** (*), marks will be awarded for your ability to structure your answer logically, showing how the points that you make are related or follow on from each other where appropriate.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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Answer ALL questions. Write your answers in the spaces provided.

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) Tuberculosis is a disease that is spread through airborne droplets.

Give **two** ways of reducing or preventing the spread of tuberculosis.

(2)

1

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2

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- (b) Obesity is a risk factor for some non-communicable diseases.

(i) State why liver disease is a non-communicable disease.

(1)

.....

.....

- (ii) The waist-to-hip ratio can be used to show if excess weight is a health risk.

An adult has a waist measurement of 80 cm and a hip measurement of 90 cm.

Calculate the waist-to-hip ratio for this adult, using the equation:

$$\text{waist-to-hip ratio} = \frac{\text{waist measurement}}{\text{hip measurement}}$$

Give your answer to **two** decimal places.

(2)

waist-to-hip ratio



(iii) Figure 1 shows the health risk of some waist-to-hip ratios.

health risk	waist-to-hip ratios	
	males	females
low	0.95 or less	0.80 or less
medium	0.96 to 1.0	0.81 to 0.85
high	1.1 or more	0.86 or more

Figure 1

Explain the health risk for a female with a waist-to-hip ratio of 0.75.

(2)

(c) Cancer occurs when cell division by mitosis is uncontrolled.

Describe the properties of cells produced by mitosis.

(2)

(Total for Question 1 = 9 marks)

- 2 (a) Figure 2 shows a beaker containing a potato cylinder in distilled water.

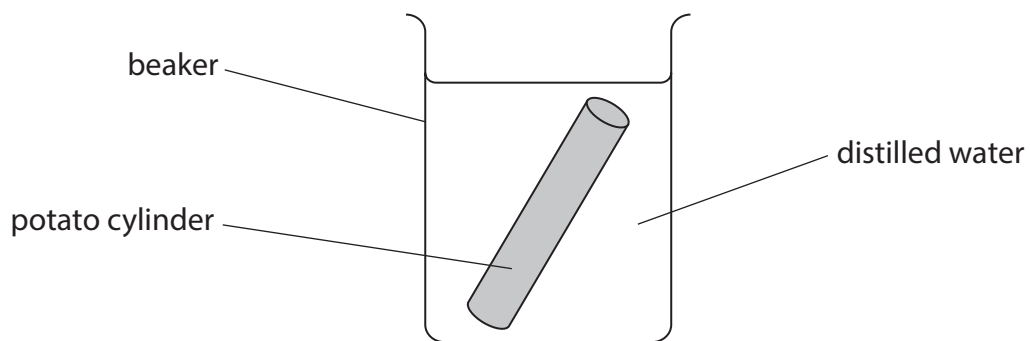


Figure 2

Explain why the mass of this potato cylinder will change when it is placed in distilled water.

(3)

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- (b) A scientist investigated the rate of diffusion using three agar cubes of different sizes.

Each cube contained a pH indicator that changed from pink to colourless when placed in acid.

The cubes were placed in a beaker containing an acid.

Figure 3 shows some information about each cube.

cube	length of each side of cube in cm	surface area in cm ²	volume in cm ³	surface area to volume ratio	time taken for the cube to become colourless in seconds
A	1.0	6	1	6:1	170
B	2.0	24	8	3:1	260
C	3.0	54	?	2:1	500

Figure 3

- (i) Calculate the volume of cube C.

(2)

.....cm³

- (ii) Explain the difference in the times taken for cubes A and B to become colourless.

(2)

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(Total for Question 2 = 7 marks)



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- 3 (a) A report stated that *Homo habilis* was a hominin species that lived on Earth between 2.4 million years ago and 1.5 million years ago.

(i) State the number of years that *Homo habilis* lived on Earth.

(1)

(ii) Fossil evidence suggests that *Homo habilis* used tools.

State **one** use of these tools.

(1)

(iii) Scientists use fossil discoveries to suggest the structure of the whole body.

Lucy is a fossil of the species *Australopithecus afarensis*.

Describe how the body structure suggested for *Australopithecus afarensis* is different from the body structure suggested for *Homo habilis*.

(2)



(iv) Explain what could have caused the extinction of *Australopithecus afarensis*.

(3)

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(b) Figure 4 shows how the three-domain classification system was developed.

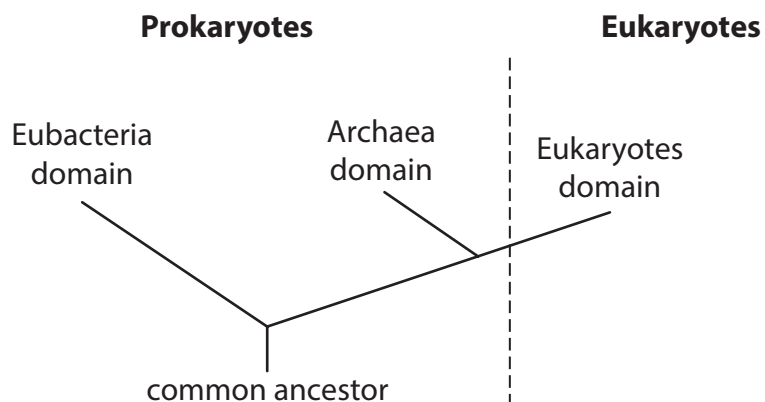


Figure 4

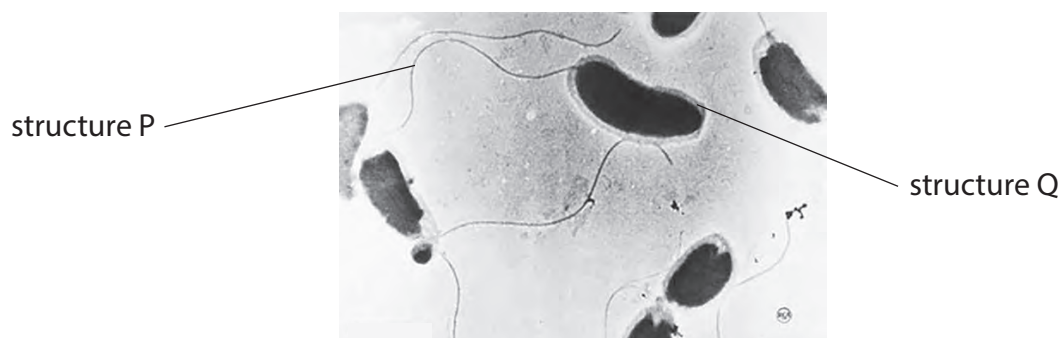
Describe the differences between prokaryotes and eukaryotes and why the three domain classification system was introduced.

(3)

(Total for Question 3 = 10 marks)

- 4 (a) The pathogen *Vibrio cholerae* causes the disease cholera.

Figure 5 shows *Vibrio cholerae* bacteria.



(Source: Corbis)

Figure 5

- (i) Complete the table to show the function of structure P and structure Q.

(2)

structure	function
P	
Q	

- (ii) On the original image, the length of one bacterial cell is 12 mm.

The actual length of this bacterial cell is 2.0 μm .

Calculate the magnification.

(2)

magnification =

- (iii) State **one** symptom of the disease caused by *Vibrio cholerae*.

(1)

.....

.....



(iv) State how the disease caused by *Vibrio cholerae* is transmitted.

(1)

(b) Describe the specific immune response when a pathogen infects the body.

(3)

(Total for Question 4 = 9 marks)



- 5 (a) Reaction time can be tested by dropping a ruler and measuring the distance it travels before it is caught.

Figure 6 shows how the test works.

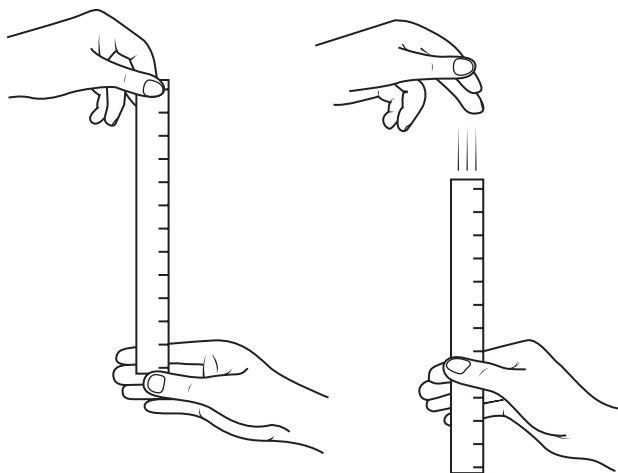


Figure 6

This method was used to test the reaction times of three students.

Each student completed the test five times and the distances were recorded.

- (i) State how the median distance for each student could be determined from the results.

(1)

- (ii) State and explain **one** variable that needs to be controlled in this investigation.

(2)

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(iii) Figure 7 shows the results recorded for the three students.

student	distance in mm				
A	70	69	67	64	62
B	71	70	69	67	65
C	72	70	69	66	62

Figure 7

Explain **one** conclusion that can be made from the results in Figure 7.

(2)

(iv) A student wanted to investigate the effect of two different drinks containing caffeine on reaction time using this method.

Devise a plan the student could use.

(3)



(b) Figure 8 shows a myelinated sensory neurone.

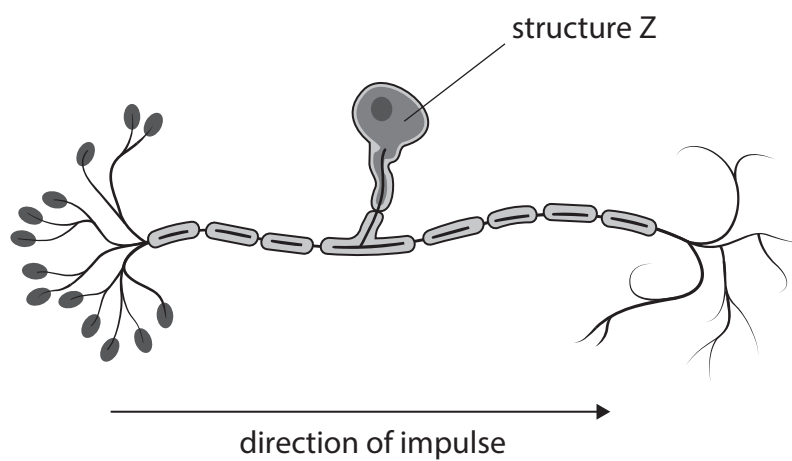


Figure 8

(i) Identify structure Z.

(1)

- (ii) Figure 9 shows how the diameter of neurones affects the speed of electrical impulses.

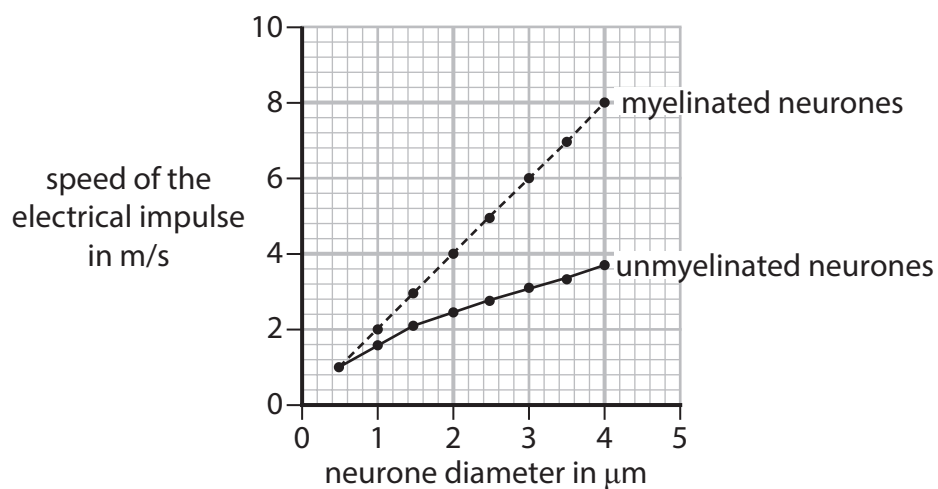


Figure 9

Comment on how the diameter of a neurone affects the speed of the electrical impulses.

(3)

(Total for Question 5 = 12 marks)

6 Genetic disorders can be caused by mutations in the DNA of genes.

(a) Cystic fibrosis is a recessive genetic disorder.

Figure 10 shows a family pedigree for the inheritance of cystic fibrosis.

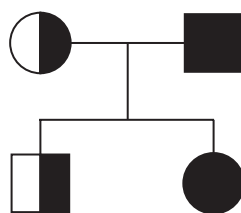


Figure 10

(i) Which row is correct for the mother, father and son?

(1)

	mother	father	son
☐ A	affected	unaffected	carrier
☐ B	carrier	affected	affected
☐ C	carrier	affected	carrier
☐ D	affected	affected	unaffected

(ii) Cystic fibrosis causes the build-up of thick, sticky mucus.

Describe how the build-up of thick, sticky mucus affects the airways of a person.

(2)

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(b) Huntington's disease is a condition caused by a dominant allele.

Explain the phenotypes of the offspring of a genetic cross between a person who is heterozygous for the Huntington's allele and a person who is not affected.

Use the Punnett square as part of your answer.

(4)

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*(c) Explain how DNA is extracted from strawberries.

Include in your answer:

- the reasons for each stage of the extraction process
- the structure of a DNA molecule.

(6)

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(Total for Question 6 = 13 marks)

TOTAL FOR PAPER = 60 MARKS



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