Smart Edge!
More Than Knowledge

EDEXCEL · GCSE COMBINED SCIENCE 1SC0

Biology — Higher Tier, Paper 1

June 2025 exam series

QUESTION PAPER

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 ▶

Pearson

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 .....

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(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.

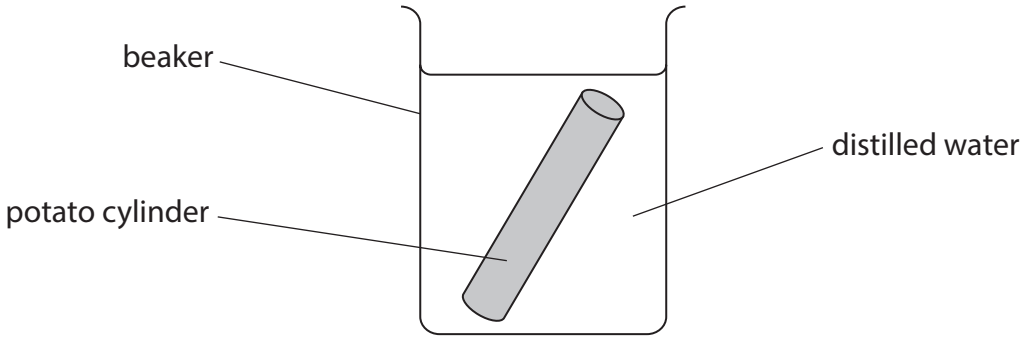

Figure 2

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)

..... cm^3

(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)

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(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.

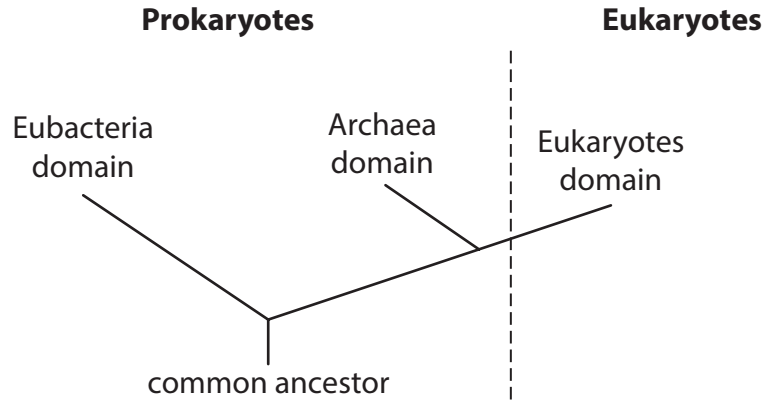


Figure 4

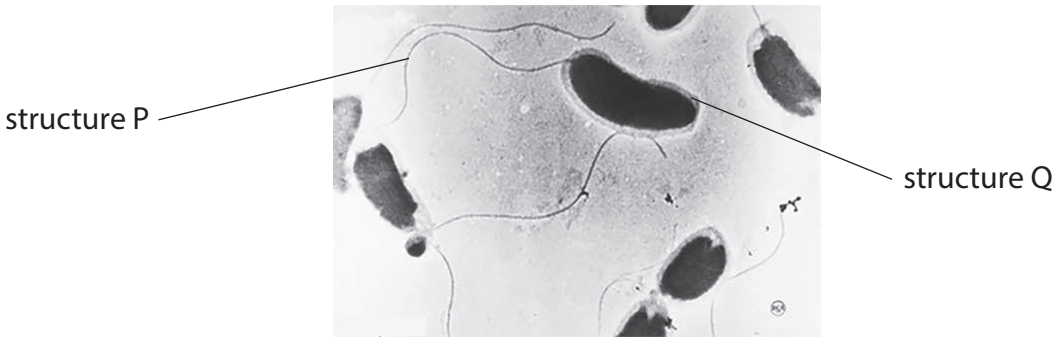
Describe the differences between prokaryotes and eukaryotes and why the three domain classification system was introduced.

(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)

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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.

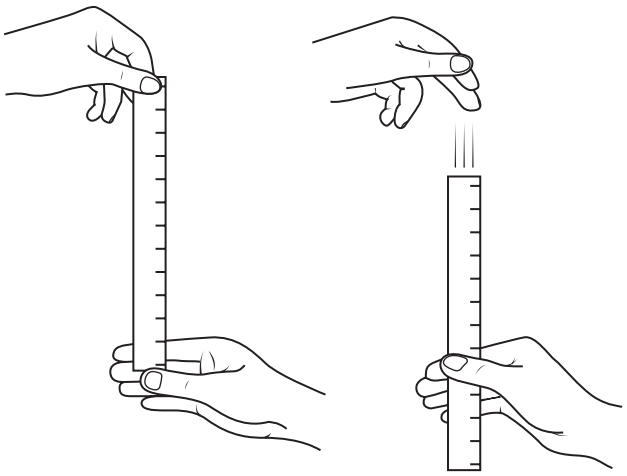

Figure 6

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)

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(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.

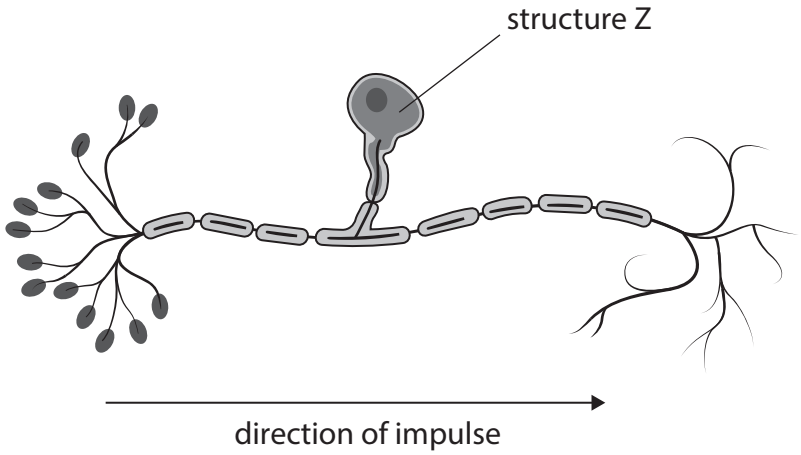

Figure 8

(i) Identify structure Z.

(1)

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

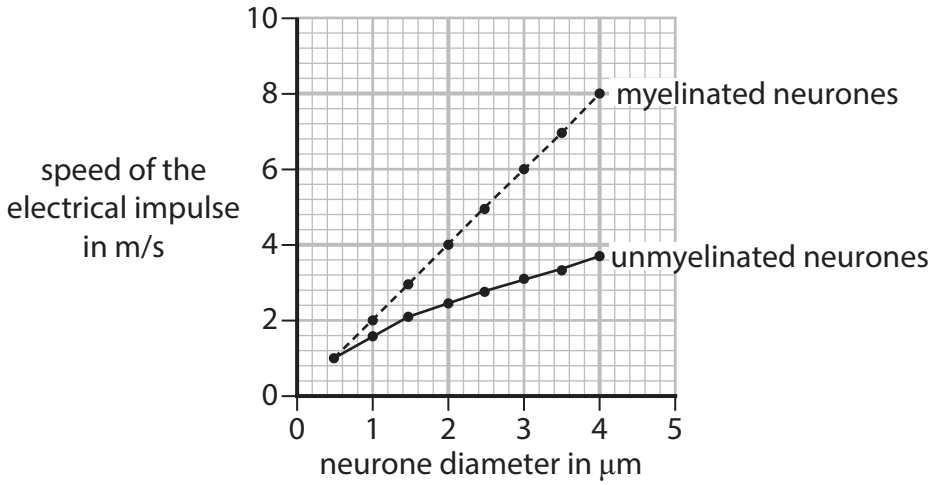

Figure 9

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.

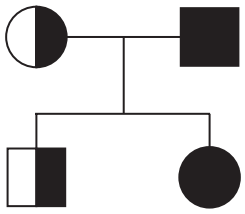

Figure 10

(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)

*(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)

(Total for Question 6 = 13 marks)

TOTAL FOR PAPER = 60 MARKS

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