

AQA • GCSE COMBINED SCIENCE: TRILOGY 8464

Biology — Foundation Tier, Paper 2

June 2025 exam series

QUESTION PAPER

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Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

I declare this is my own work.

GCSE COMBINED SCIENCE: TRILOGY

F

Foundation Tier
Biology Paper 2F

Monday 9 June 2025

Morning

Time allowed: 1 hour 15 minutes

Materials

For this paper you must have:

- a ruler
- a scientific calculator.

Instructions

- Use black ink or black ball-point pen.
- Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.
- In all calculations, show clearly how you work out your answer.

Information

- The maximum mark for this paper is 70.
- The marks for questions are shown in brackets.
- You are expected to use a calculator where appropriate.
- You are reminded of the need for good English and clear presentation in your answers.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
TOTAL	



J U N 2 5 8 4 6 4 B 2 F 0 1

1B/M/Jun25/G4006/E9

8464/B/2F

0 1

The concentration of glucose in the blood can be controlled.

0 1 . 1

A person drinks a glucose solution.

What happens to the person's blood glucose concentration soon after drinking the glucose solution?

[1 mark]

Tick (✓) **one** box.

Blood glucose concentration decreases.

☐

Blood glucose concentration stays the same.

☐

Blood glucose concentration increases.

☐**0 1 . 2**

Insulin controls blood glucose concentration.

Which organ produces insulin?

[1 mark]

Tick (✓) **one** box.

Pancreas

☐

Pituitary

☐

Stomach

☐

0 1 . 3 Organs affected by insulin are called target organs.

Which **two** organs are target organs for insulin?

[2 marks]

Tick (✓) **two** boxes.

Liver

☐

Lung

☐

Muscle

☐

Ovary

☐

Spinal cord

☐

0 1 . 4 Complete the sentences.

Choose answers from the box.

[2 marks]

DNA

glucose

glycogen

urea

Insulin causes cells to take in _____.

The storage molecule made inside the cells is _____.

Question 1 continues on the next page

Turn over ►



0 1 . 5 Complete the sentence.

Choose the answer from the box.

[1 mark]

increase

stay the same

decrease

Insulin causes blood glucose concentration to _____.

0 1 . 6 Type 2 diabetes is caused when the body cells no longer respond to insulin.

Give **two** ways to reduce the risk of developing Type 2 diabetes.

Do **not** refer to insulin in your answer.

[2 marks]

1 _____

2 _____

9



0 2

Farmers can increase crop yield by controlling the conditions that plants grow in.

0 2

. 1

Draw **one** line from each substance to how the substance increases crop yield.**[2 marks]****Substance****How the substance increases
crop yield**

Fertiliser

Adds mineral ions
to the soilDecreases carbon dioxide
concentration in the soil

Herbicide

Increases oxygen
concentration in the airKills weeds that compete
with crops

0 2

. 2

Figure 1 shows a food chain for a farmer's field.**Figure 1**

Seeds → Mice → Owls

Which is the secondary consumer in the food chain?

[1 mark]Tick (✓) **one** box.

Seeds

☐

Mice

☐

Owls

☐**Turn over ►**

0 2 . 3

Bees are insects that live in hives.

The bees fly in and out of the hives.

Figure 2 shows a crop growing in a field.

The farmer has added bee hives to increase the number of bees in the field.

Figure 2



Increasing the number of bees and other insects increases crop yield.

Which are **two** ways that increasing the number of insects in an area will increase crop yield?

[2 marks]

Tick (✓) **two** boxes.

Insects change the soil pH around the crop.

☐

Insects eat leaves from the crop.

☐

Insects eat pests on the crop.

☐

Insects pollinate the crop.

☐

Insects shelter in the crop.

☐


0 2 . 4

Some farmers increase the size of hedgerows between fields where crops grow.

Suggest **one** reason why.

[1 mark]

Peat comes from peat bogs.

0 2 . 5

Peat can be used to produce garden compost.

Table 1 compares peat compost with a sample of soil.

Table 1

	Mineral ion concentration	Speed at which water drains through
Peat compost	Low	Slow
Soil	High	Fast

Young plants have short roots.

Explain **one** advantage of growing young plants in peat compost instead of in soil.

[2 marks]

Question 2 continues on the next page

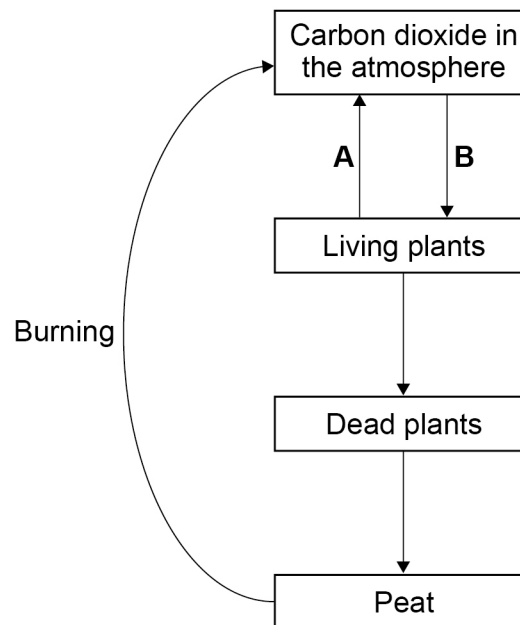
Turn over ►



Peat can also be burnt as fuel.

Figure 3 shows part of the carbon cycle.

Figure 3



0 2 . 6 Name process **A** and process **B**.

Choose answers from the box.

[2 marks]

condensation

photosynthesis

respiration

transpiration

Process **A** _____

Process **B** _____



0 2 . 7 Peat contains carbon compounds.

Explain why burning peat contributes to climate change.

[2 marks]

0 2 . 8 Decay is an important process in the carbon cycle.

Which **two** types of organism cause decay?

[2 marks]

Tick (✓) **two** boxes.

Algae

☐

Animals

☐

Bacteria

☐

Fungi

☐

Plants

☐

0 2 . 9 Deforestation affects the carbon cycle.

Give **one** use of the land after the land has been cleared by deforestation.

[1 mark]

15

Turn over ►



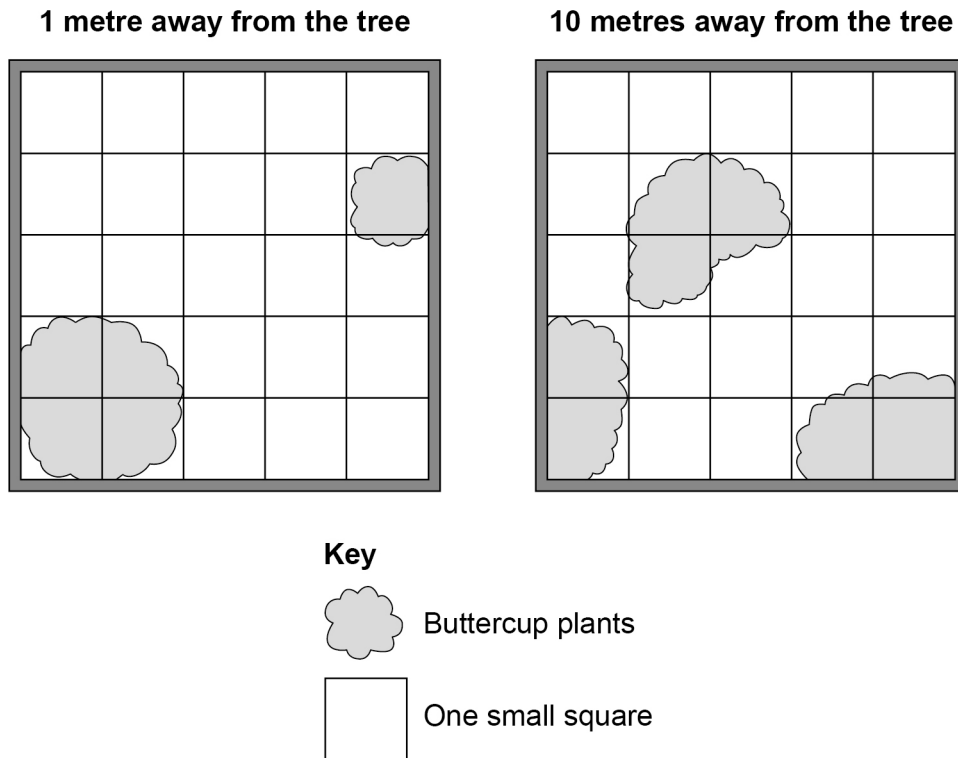
0 3

Buttercups are small plants.

A student investigated the distribution of buttercup plants at different distances from a tree.

Figure 4 shows a piece of equipment being used to sample two areas.

Figure 4



0 3

1

What is the scientific name of the equipment shown in **Figure 4**?

[1 mark]

Tick (✓) **one** box.

Grid

☐

Quadrat

☐

Transect

☐


0 3 . 2

Each small square on **Figure 4** represents a percentage cover of 4%.

The student counted every small square that was **at least half** covered by buttercup plants.

At 1 metre away from the tree, buttercup plants had a percentage cover of 20%.

Determine the percentage cover of buttercup plants at **10 metres** away from the tree.

Use **Figure 4**.

[2 marks]

Percentage cover = _____ %

0 3 . 3

What is the independent variable in the investigation?

[1 mark]

Tick (✓) **one** box.

Distance from the tree

☐

Number of species

☐

Time of year

☐

0 3 . 4

What is an advantage of calculating percentage cover instead of counting the number of buttercup plants in an area?

[1 mark]

Tick (✓) **one** box.

Percentage cover is affected by the number and size of individual plants.

☐

Percentage cover is always the same for individual plants of any species.

☐

Percentage cover is larger than the number of individual plants.

☐

Turn over ►



The student investigated the percentage cover of buttercup plants around a different tree.

Table 2 shows the results.

Table 2

Distance from the tree in metres	Percentage (%) cover					
	Result 1	Result 2	Result 3	Result 4	Result 5	Mean
1	12	8	4	12	4	X
10	24	12	8	28	8	16

0 3 . 5 Calculate mean value **X** in **Table 2**.

[2 marks]

X = _____ %

0 3 . 6 Give **one** conclusion about the effect of distance from the tree on the percentage cover of buttercup plants.

Use **Table 2**.

[1 mark]



0 3 . 7

Give **two** other factors that affect the percentage cover of buttercup plants around the tree.

Do **not** refer to distance from the tree.

[2 marks]

1 _____

2 _____

0 3 . 8

Table 2 shows the results of the investigation.

Suggest **two** improvements to the investigation.

[2 marks]

1 _____

2 _____

12

Turn over for the next question

Turn over ►

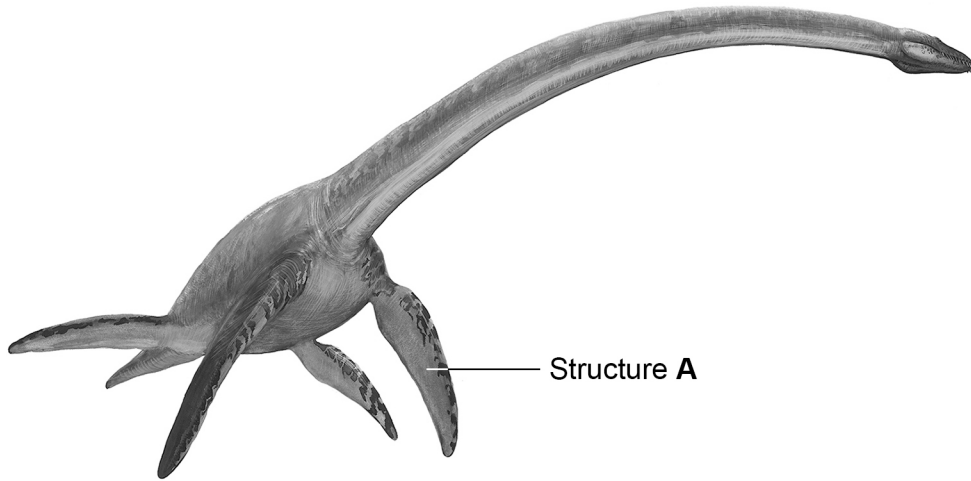


0 4

Plesiosaurs are extinct animals that lived in the ocean.

Figure 5 shows what scientists think a living plesiosaur may have looked like.

Figure 5



0 4

1

Scientists think that the plesiosaur had smooth skin.

Suggest why the scientists **cannot** be certain what the skin of the plesiosaur was like.

[1 mark]

0 4

2

Explain how structure **A** in **Figure 5** helped the plesiosaur survive in the ocean.

[2 marks]



0 4 . 3

Plesiosaurs may have moved rapidly upwards to hold their heads above the water surface to search for prey.

What type of adaptation was the rapid upwards movement?

[1 mark]

Tick (✓) **one** box.

Behavioural

☐

Chemical

☐

Structural

☐

Question 4 continues on the next page

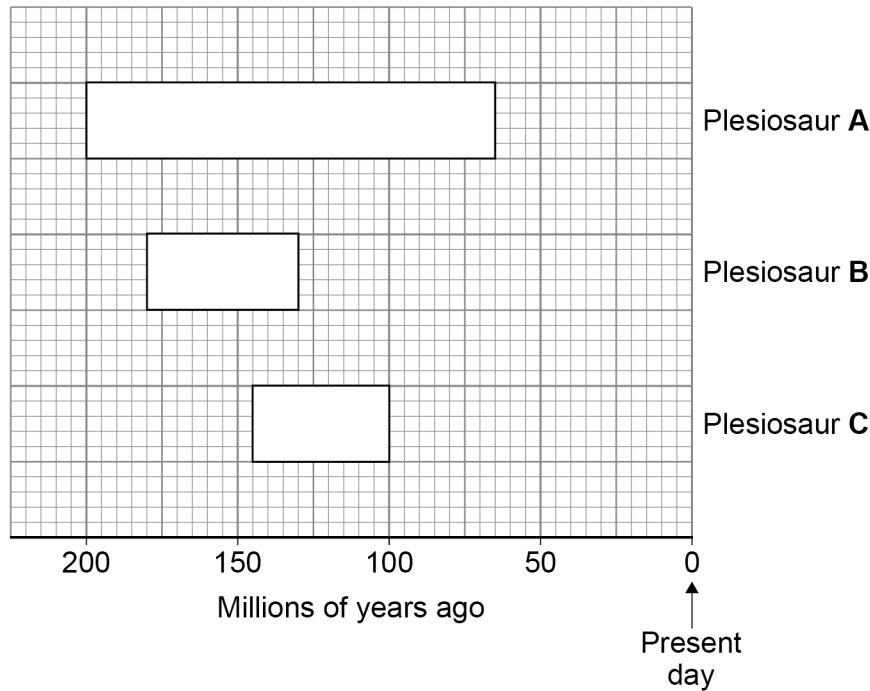
Turn over ►



Scientists use fossils to estimate when different types of plesiosaur existed.

Figure 6 shows when three types of plesiosaur existed.

Figure 6



0 4 . 4 When did plesiosaur **A** first evolve?

Use **Figure 6**.

[1 mark]

_____ million years ago

0 4 . 5 Determine how many million years plesiosaur **B** existed for.

Use **Figure 6**.

[2 marks]

Time = _____ million years



0 4 . 6 The exact year of extinction of all plesiosaur species can only be estimated.

Which are **two** reasons why?

[2 marks]

Tick (✓) **two** boxes.

All plesiosaurs will have formed fossils.

☐

Not all plesiosaur fossils have been discovered.

☐

Plesiosaur bones do not decay.

☐

Plesiosaurs had many predators.

☐

Some plesiosaur fossils will have been destroyed.

☐

0 4 . 7 What evidence from **Figure 6** shows that plesiosaur **C** might have evolved from plesiosaur **B**?

[1 mark]

Tick (✓) **one** box.

Plesiosaur **B** and plesiosaur **C** did not exist at the same time.

☐

Plesiosaur **B** existed before plesiosaur **C**.

☐

Plesiosaur **B** became extinct more recently than plesiosaur **C**.

☐

Question 4 continues on the next page

Turn over ►



0 4 . 8

Evolution can be studied using evidence from:

- fossils
- antibiotic-resistant bacteria.

Suggest **two** reasons why it is easier to study evolution in bacteria than to study evolution using fossils.

[2 marks]

1 _____

2 _____

0 4 . 9

Give **one** reason why doctors are concerned about antibiotic-resistant bacteria.**[1 mark]**

13



0 5

This question is about genetics.

The fur colour of rabbits is controlled by two alleles.

0 5

1

Draw **one** line from each term to the meaning of the term relating to genetics in rabbits.

[3 marks]

Term	Meaning of the term
Chromosome	A fur colour that is seen
Gene	A whole strand of DNA found in the nucleus of a rabbit cell
Genome	Codes for a protein that affects fur colour
	The complete genetic composition of a rabbit

Question 5 continues on the next page

Turn over ►



0 5 . 2

In rabbits:

- the allele for brown fur (**B**) is dominant
- the allele for white fur (**b**) is recessive.

A rabbit with the alleles **Bb** and a rabbit with the alleles **bb** breed together.

Determine the probability that one of the offspring will have white fur.

You should:

- complete the Punnett square diagram
- identify any offspring that will have white fur.

[5 marks]

Probability = _____



0	5	.	3
---	---	---	---

A male rabbit is heterozygous for fur colour.

The rabbit's body cells have the genotype **Bb**.

One of the sperm cells from the rabbit has the allele **b**.

Explain why the alleles in the rabbit's body cells and the allele in the sperm cell are different.

[2 marks]

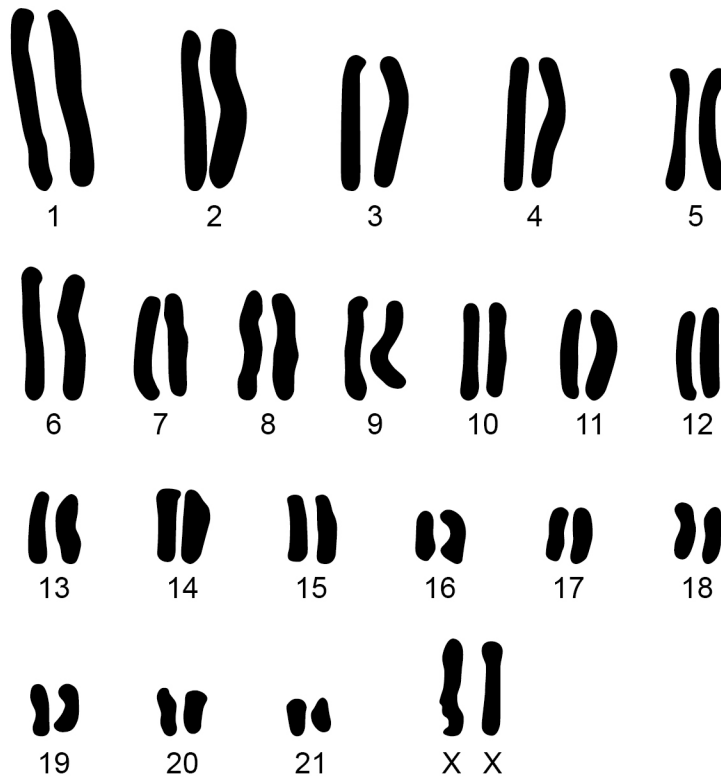
Question 5 continues on the next page

Turn over ►



Figure 7 shows the chromosomes of a rabbit.

Figure 7



0 5 . 4

How many chromosomes would be found in a skin cell of a rabbit?

Use **Figure 7**.

[1 mark]

Number of chromosomes = _____

0 5 . 5

The sex of a rabbit is controlled in the same way as the sex of a human.

Give the evidence from **Figure 7** that the rabbit is female.

[1 mark]

12



0 6

This question is about the hormones involved in reproduction.

0 6 . 1

Name **one** hormone produced in the **ovaries**.

[1 mark]

0 6 . 2

Give **one** function of the hormone that is produced in the **testes**.

[1 mark]

Different methods of contraception can involve:

- barriers
- hormones.

0 6 . 3

Condoms are a barrier method of contraception.

Give **one** advantage of condoms as a method of contraception compared with hormonal methods of contraception.

Do **not** refer to cost in your answer.

[1 mark]

Question 6 continues on the next page

Turn over ►



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box

0	6	.	4
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Describe how **hormones** are used in different methods of contraception.

[6 marks]

[illegible]

Extra space _____

9

END OF QUESTIONS



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ANSWER IN THE SPACES PROVIDED**



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