

Please write clearly in block capitals.

F

Centre number

Candidate
number

Surname

Forename(s)

Candidate signature

I declare this is my own work.

GCSE

COMBINED SCIENCE: TRILOGY

Foundation Tier Biology Paper 2

Practice Paper Series – Set 1

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.
- Do not write outside the box around each page or on blank pages.
- 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 marks for questions are shown in brackets.
- The maximum mark for this paper is 70.
- You are expected to use a calculator where appropriate.
- You are reminded of the need for good English and clear presentation in your answers.
- When answering question 09.3 you need to make sure that your answer:
 - is clear, logical, sensibly structured
 - fully developed
 - shows how the points that you make are related or follow on from each other where appropriate.

For Examiner's Use

Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
TOTAL	

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sciencegcse.co.uk | Practice Paper Series – Set 1 | SGC/S1/B/2F

0 1 . 1

What is meant by **homeostasis**?

[1 mark]

Tick (✓) **one** box.

The regulation of conditions inside the body

☐

The breakdown of glucose to release energy

☐

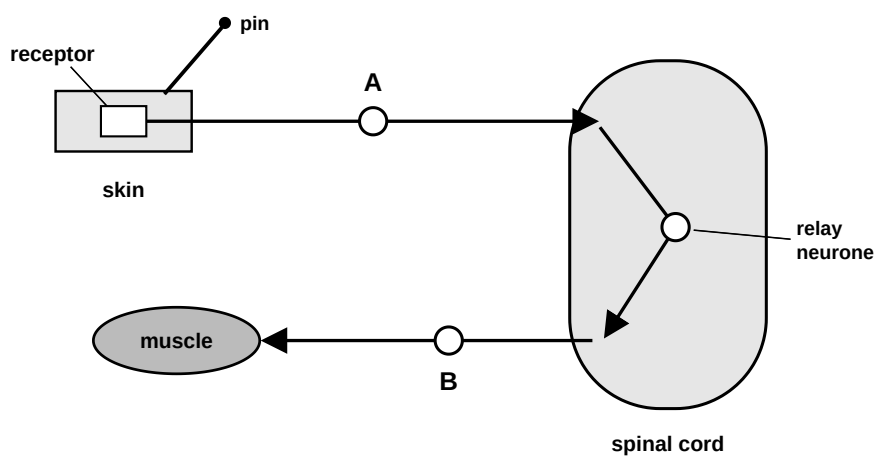
The response of a plant to light

☐

The removal of waste products from the body

☐

A person touches a sharp pin and pulls their hand away.

Figure 1 shows the reflex arc for this action.**Figure 1**

0 1 . 2

Name the neurones labelled **A** and **B**.

[2 marks]

A

B

0 1 . 3

Which structure in **Figure 1** is the effector?

[1 mark]

Tick (✓) **one** box.

Receptor

☐

Relay neurone

☐

Muscle

☐

Spinal cord

☐

0 1 . 4

There is a small gap where two neurones meet.

[1 mark]

What is this gap called?

.....

Question 1 continues on the next page

01.5

Reflex actions are automatic and rapid.

[2 marks]

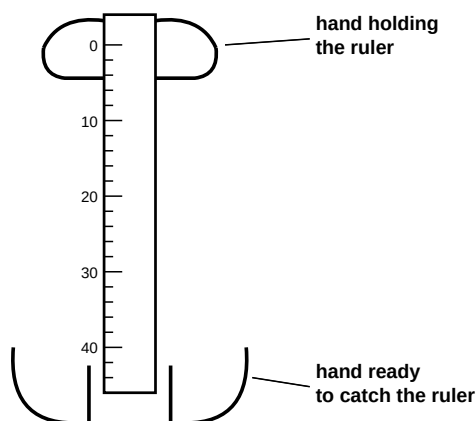
Explain why this is important.

02

A student investigated the effect of caffeine on reaction time using the ruler-drop test.

Figure 2 shows the test.

Figure 2



A friend dropped the ruler without warning and the student caught it. The distance the ruler fell before it was caught was measured.

The test was repeated three times before and three times after the student drank a caffeine drink.

Table 1 shows the results.

Table 1

	Distance the ruler fell in cm		
	Test 1	Test 2	Test 3
Before the caffeine drink	18.0	20.0	19.0
After the caffeine drink	15.0	14.0	25.0

Question 2 continues on the next page

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0 2 . 1 Which of these is the dependent variable in the investigation? [1 mark]

Tick (✓) **one** box.

The distance the ruler fell ☐

The amount of caffeine in the drink ☐

The type of ruler used ☐

The person who dropped the ruler ☐

0 2 . 2 Calculate the mean distance the ruler fell **before** the caffeine drink. [2 marks]

Mean distance = _____ cm

0 2 . 3 One of the results after the caffeine drink is anomalous. [1 mark]

Which result is anomalous?

Anomalous result = _____ cm

0 2 . 4 Give **two** variables the student should keep the same in each test. [2 marks]

1 _____

2 _____

0 2 . 5 The caffeine drink made the student's reaction time shorter. [1 mark]

Give **one** other factor that can affect a person's reaction time.

0 3 Hormones are produced by glands in the endocrine system.

0 3 . 1 Draw **one** line from each gland to the hormone it produces. [2 marks]

Gland

Pancreas

Adrenal glands

Ovaries

Hormone

Adrenaline

Insulin

Oestrogen

Testosterone

0 3 . 2 How are hormones carried from the glands to the organs they act on? [1 mark]

.....

0 3 . 3 Insulin is released when the concentration of glucose in the blood is too high. [2 marks]

Describe how insulin lowers the concentration of glucose in the blood.

.....

.....

.....

0 3 . 4 A person with Type 1 diabetes cannot produce enough insulin. [1 mark]
How is Type 1 diabetes treated?

.....

.....

0 3 . 5 Give **one** risk factor for Type 2 diabetes. [1 mark]

.....

0 4 At puberty, reproductive hormones cause changes in the body.

0 4 . 1 Name the main female reproductive hormone. [1 mark]

.....

0 4 . 2 Where is this hormone produced? [1 mark]

.....

0 4 . 3 Name the male reproductive hormone that stimulates the production of sperm. [1 mark]

.....

Question 4 continues on the next page

Table 2 gives information about some methods of contraception.

Table 2

Method	Hormonal or non-hormonal	How it prevents pregnancy
Condom	non-hormonal	
Oral contraceptive (the pill)		contains hormones that stop eggs maturing / being released
Contraceptive implant	hormonal	

0 4 . 4 Complete **Table 2**. [3 marks]

0 4 . 5 Give **one** advantage of using a condom rather than the pill. [1 mark]

0 5 Consider a hypothetical single-gene fur-colour trait in mice.

The allele for black fur, B, is dominant to the allele for white fur, b.

0 5 . 1 Which type of cell division produces gametes? [1 mark]

Tick (✓) **one** box.

- | | |
|-----------------|--------------------------|
| Meiosis | ☐ |
| Mitosis | ☐ |
| Fertilisation | ☐ |
| Differentiation | ☐ |

A male mouse with genotype Bb mates with a female mouse with genotype bb.

0 5 . 2 Complete the Punnett square to show the possible genotypes of the offspring. [2 marks]

The gametes of the male are shown along the top and those of the female down the side.

	B	b
b		
b		

Do not write outside the box

0 5 . 3 What is the probability that an offspring has white fur? [1 mark]

Probability = ...

0 5 . 4 The male mouse is heterozygous for fur colour. [1 mark]

What is meant by heterozygous?

.....
.....

0 5 . 5 The sex of a child is determined by the sex chromosomes. [2 marks]

Give the sex chromosomes of a male **and** the probability that a child is a boy.

Sex chromosomes of a male

Probability that a child is a boy

0 5 . 6 Cystic fibrosis is an inherited disorder caused by a recessive allele. [2 marks]

Explain how two parents who do **not** have cystic fibrosis can have a child with cystic fibrosis.

.....
.....
.....
.....

0 6 Variation between individuals of the same species can be caused by genes, by the environment, or by both.

0 6 . 1 Give **one** example of variation in humans that is caused **only** by genes, and **one** example that is caused **only** by the environment. [2 marks]

Caused only by genes

Caused only by the environment

0 6 . 2 New alleles are produced by mutations. [1 mark]

What is a mutation?

.....
.....

Question 6 continues on the next page

0 6 . 3 Some bacteria have become resistant to antibiotics. [3 marks]

Explain how a population of bacteria can become resistant to an antibiotic.

0 6 . 4 Give **two** ways of reducing the development of antibiotic-resistant bacteria. [2 marks]

1

2

0 7 Living organisms are classified into groups.

0 7 . 1 Complete the list of groups in the Linnaean classification system, from the largest group to the smallest. [2 marks]

Kingdom → → Class → Order → → Genus → Species

0 7 . 2 The scientific name of the wolf is *Canis lupus*. [1 mark]

Which part of this name is the genus?

0 7 . 3 Carl Woese proposed the three-domain system of classification. [1 mark]

What evidence led to this new system?

Tick (✓) **one** box.

Analysis of the chemicals (such as DNA) in cells

☐

The discovery of new fossils

☐

The results of selective breeding

☐

Observations made with the naked eye

☐

07.4 Fossils provide evidence for evolution. [2 marks]

Describe **two** ways in which fossils can be formed.

1

.....

2

.....

07.5 Give **one** factor that could cause a species to become extinct. [1 mark]

.....

.....

08 A student estimated the number of dandelion plants in a field.

The student placed a 1 m² quadrat at five random positions in the field and counted the dandelion plants in each quadrat.

Table 3 shows the results.

Table 3

Quadrat	1	2	3	4	5
Number of dandelion plants	3	5	4	2	6

08.1 Why did the student place the quadrats at random positions? [1 mark]

.....

.....

08.2 Calculate the mean number of dandelion plants per quadrat. [2 marks]

Mean number per quadrat = ...

Question 8 continues on the next page

- 08.3** The area of the field is 200 m^2 . [2 marks]
 Estimate the total number of dandelion plants in the field.
 Use your answer to **08.2**.

Estimated number of dandelion plants = ...

- 08.4** Give **one** abiotic factor that could affect where dandelion plants grow in the field. [1 mark]

- 08.5** Give **one** biotic factor that could affect the number of dandelion plants in the field. [1 mark]

Figure 3 shows a food chain in the field.

Figure 3



- 08.6** Name the producer in this food chain **and** state what the arrows in a food chain show. [2 marks]

Producer

The arrows show

- 09.1** What is meant by **biodiversity**? [1 mark]

Question 9 continues on the next page

[2 marks]

combustion decomposition photosynthesis respiration

Carbon dioxide is returned to the air when fossil fuels burn, which is called

09.3 Explain how deforestation affects the environment **and** describe ways in which biodiversity can be maintained. [6 marks]

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END OF QUESTIONS

Additional page, if required.

Write the question numbers in the left-hand margin.

Handwriting practice area with 20 horizontal dotted lines.

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Write the question numbers in the left-hand margin.

[illegible]

There are no more questions in this paper. Original practice paper © sciencegcse.co.uk – free to use for non-commercial education. Not an AQA paper.