

Please write clearly in block capitals.

School _____

Class _____

Name _____

Teacher _____

GCSE BIOLOGY

BIOLOGY

Paper 2 (Topics B5-B7) · Higher tier · 2020 series · mapped to the AQA 8461 specification

Time allowed: 1 hour 45 minutes

Materials

For this paper you must have:

- a ruler
- a scientific calculator.

Instructions

- Answer all questions in the spaces provided.
- Use black ink or black ball-point pen.
- In all calculations, show clearly how you work out your answer.
- Do all rough work in this book.

Information

- The maximum mark for this paper is 100.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
TOTAL	

Answer all questions in the spaces provided.

1 This question is about the nervous system.

1.1 Name the part of the brain that controls heart rate and breathing.

[1 mark]

1.2 Explain the advantage of a reflex action.

[2 marks]

1.3 Explain how an impulse crosses a synapse.

[3 marks]

1.4 Explain how the eye accommodates to focus on a distant object.

[3 marks]

1.5 Describe how you would investigate the effect of practice on reaction time.

[3 marks]

1.6 Explain how the structure of a motor neurone suits its function.

[3 marks]

2 This question is about hormonal coordination.

2.1 Explain what is meant by negative feedback.

[2 marks]

2.2

Explain how the body controls blood glucose when it rises and when it falls.

[4 marks]

2.3

Explain how ADH controls the water content of the blood.

[3 marks]

2.4

Explain how the contraceptive pill prevents pregnancy.

[2 marks]

2.5

Explain how fertility treatment can help a couple to have a child.

[3 marks]

3**This question is about inheritance.****3.1**

Define the term 'allele'.

[1 mark]

3.2

Explain the difference between homozygous and heterozygous.

[2 marks]

3.3

Use a Punnett square for a cross between a carrier (Hh) and an affected (hh) person.

[3 marks]

3.4

Explain why offspring from sexual reproduction are not identical to their parents.

[3 marks]

3.5

Explain how a recessive disorder can appear in a child of two unaffected parents.

[3 marks]

3.6

Describe how knowledge of the human genome can be useful in medicine.

[3 marks]

4

This question is about evolution and classification.

4.1

State what is meant by evolution.

[2 marks]

4.2

Explain how fossils provide evidence for evolution.

[3 marks]

4.3

Explain how a new species can form (speciation).

[3 marks]

4.4

Explain why antibiotic resistance supports the theory of evolution.

[3 marks]

4.5

Explain how organisms are placed into groups in classification.

[3 marks]

5

This question is about ecology.

5.1

Explain what is meant by interdependence.

[2 marks]

5.2

Explain how organisms in a community compete for resources.

[3 marks]

5.3

Explain how the capture-recapture method estimates a population.

[3 marks]

5.4

Explain the causes of falling biodiversity and how it can be maintained.

[6 marks]

6 This question is about material cycles.

6.1 Explain the role of decomposers in recycling materials.

[2 marks]

6.2 Explain how carbon moves between the atmosphere and living things.

[3 marks]

6.3 Explain how conditions affect the rate of decay.

[3 marks]

6.4 Explain how nitrogen is recycled through an ecosystem.

[3 marks]

6.5 Explain why recycling materials is important for ecosystems.

[3 marks]

7 This question is about biological data.

7.1 A field of 7000 m² has a mean of 3 mice per 100 m². Estimate the mouse population.

[2 marks]

7.2 In a capture-recapture study, 45 animals were marked; later 40 were caught and 9 were marked. Estimate the population.

[3 marks]

7.3

Explain two assumptions made in the capture-recapture method.

[3 marks]

7.4

A pyramid of biomass shows 30 000 g of producers and 300 g of secondary consumers. Calculate the percentage passed on overall.

[3 marks]

7.5

Explain three reasons why so little energy reaches the top of a food chain.

[3 marks]

END OF QUESTIONS

Do not
write
outside the
box