AQA GCSE Biology | 8461

SPECIFICATION POINT 4.6.3.2

Speciation (biology only)

Past-paper questions

Tier	**Higher**
Question groups	**5**
Available paper years	**2009–2024**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

4.6.3.2 Speciation (biology only)

Question 01

June 2009 | BLY1BP | Original Q2 | Legacy

QUESTION TWO

There are several theories of how new species of plants and animals have developed.

The statements below outline four of these theories.

- Creationism: Each organism is made independently.
  Evolution does not occur.
  Gaps in the fossil record support this idea.
- Intelligent Design: Living things work in too complex a way for them to have evolved by chance.
  A higher being has designed all living things.
- Lamarckism: Changes occur during the lifetime of an individual.
  These changes can be passed on to offspring.
- Darwinism: Variation exists between members of a population.
  Only the organisms best suited to a habitat survive.
  Survivors pass on their advantages to their offspring.

Use the above information and your own knowledge and understanding to answer this question.

Match the theories, **A**, **B**, **C** and **D**, with the numbers **1–4** in the sentences.

A Creationism

B Intelligent Design

C Lamarckism

D Darwinism

The idea that Manx cats, which have no tails, are the offspring of a cat which originally lost its tail in an accident could be used to support . . . **1** . . . .

Unsuccessful competitors die and so do not reproduce, is part of the theory of . . . **2** . . . .

The complicated way in which cells work can be used to support . . . **3** . . . .

The observation that fossils of all the different kinds of animals appear suddenly in the rocks, with no evidence of ancestors, supports . . . **4** . . . .

4.6.3.2 Speciation (biology only)

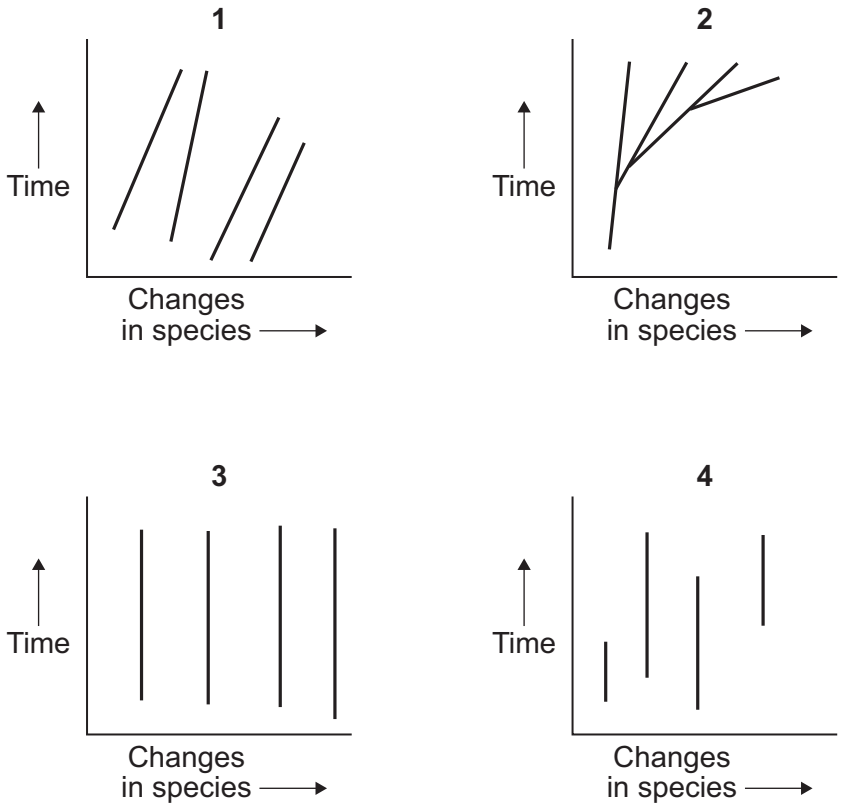
Question 02

June 2011 | BLY1BP | Original Q2 | Legacy

QUESTION TWO

Evolution takes place when species change over time.

In each of the diagrams below, the four lines show the changes in four different species.



Match statements, **A**, **B**, **C** and **D**, with diagrams **1**–**4**.

A each of the four species changes slowly over time

B none of the four species changes over time and some species die out

C none of the four species changes over time

D new species evolve over time

4.6.3.2 Speciation (biology only)

Question 03

June 2011 | BLY1BP | Original Q3 | Legacy

QUESTION THREE

There are only a few unmapped and unexplored places on Earth. Scientists looking at satellite images on the internet have discovered a new giant forest area in Mozambique.

The scientists have made the first expedition to this giant forest area in Mozambique.

The scientists discovered several new species.

3A Only in the past 20 years have scientists been able to investigate the distribution of animals and plants by . . .

1 looking for fossil evidence.

2 going on an expedition.

3 searching the internet.

4 doing laboratory experiments.

3B The scientists say that the newly discovered giant forest has 'a very large biodiversity'.

Biodiversity is . . .

1 the total number of plant and animal species in an area.

2 the number of undiscovered plants and animals in the giant forest.

3 the number of plants and animals already known to scientists.

4 the number of plants and animals known to local villagers.

3C Why is it important to maintain a high level of biodiversity?

1 so that the forest is not cut down

2 so that many plant and animal specimens can be collected and stored

3 so that scientists may discover new plants to use as drugs and to use in different ways in the future

4 so that the locations of plants and animals can be recorded

4.6.3.2 Speciation (biology only)

3D Some people think that it was not ethical for scientists to go on the expedition to the giant forest because . . .

1 scientists may discover new species.

2 scientists may help to map the area.

3 scientists may put information about the area's food chains on the internet.

4 scientists may carry new diseases to the people in the area.

Turn over for the next question

4.6.3.2 Speciation (biology only)

Question 04

January 2013 | BL1HP | Original Q7 | Legacy

7 Darwin suggested the theory of natural selection.

7 (a) Explain how natural selection occurs.

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(3 marks)

7 (b) Latitude is a measure of distance from the Earth's equator.

Scientists investigated the effect of latitude on:

- the time taken for new species to evolve
- the number of living species.

The table shows the scientists' results.

Latitude in degrees North of equator	Time taken for new species to evolve in millions of years	Relative number of living species
0 (at the equator)	3–4	100
25	2	80
50	1	30
75 (in the Arctic)	0.5	20

As latitude increases environmental conditions become more severe.

4.6.3.2 Speciation (biology only)

Question 04 · continued

7 (b) (i) Describe the patterns shown by the data.

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(2 marks)

7 (b) (ii) Suggest explanations for the patterns you have described in part **(b)(i)**.

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(2 marks)

7

4.6.3.2 Speciation (biology only)

Question 05

June 2024 | 8461/2H | Original Q1

0 1 Evolution of new species occurs by mutation and natural selection.

0 1 . 1 What is a mutation?

[1 mark]

0 1 . 2 Describe the process of natural selection.

[3 marks]

0 1 . 3 Which scientists suggested the theory of evolution by natural selection?

[1 mark]

Tick (✓) **one** box.

- Alexander Fleming and Carl Woese ☐
- Alfred Wallace and Alexander Fleming ☐
- Alfred Wallace and Charles Darwin ☐
- Charles Darwin and Carl Woese ☐

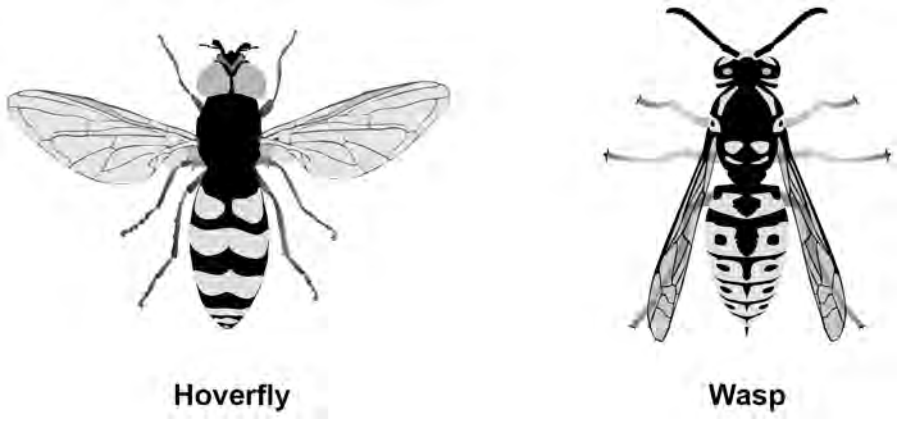
4.6.3.2 Speciation (biology only)

Question 05 · continued

0 1 . 4 The hoverfly and the wasp are insects with bright yellow and black markings.

Figure 1 shows a hoverfly and a wasp.

Figure 1



The wasp has a sting to defend itself against predators.

The hoverfly does **not** have a sting.

Hoverflies and wasps live in the same habitat.

Explain how having yellow and black markings helps the **hoverfly** survive.

[3 marks]

8