AQA GCSE Biology | 8461

SPECIFICATION POINT 4.7.2.4

Impact of environmental change (biology only) (HT only)

Past-paper questions

Tier	**Higher**
Question groups	**8**
Available paper years	**2008–2023**

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.

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 01

March 2008 | BLY1BP | Original Q2 | Legacy

QUESTION TWO

Read the passage:

> Mount Rainier in America is home to some very rare plants. Many of them grow there even though the weather is so cold that trees cannot grow. As global warming continues, the mountain will become warmer. For every one degree Celsius rise in temperature, the trees can grow 75 metres higher up the mountain.

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

A competition

B environmental change

C survival

D extinction

1	allows trees to grow higher up the mountain
2	a possible consequence of global warming for the rare plants
3	a possible consequence of global warming for both the trees and the rare plants
4	a possible consequence of protecting the rare plants

4.7.2.4 Impact of environmental change (biology only) (HT only)

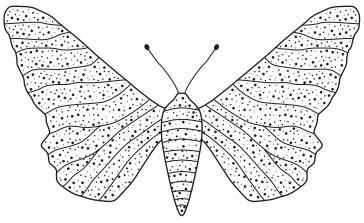
Question 02

June 2008 | BLY1BP | Original Q9 | Legacy

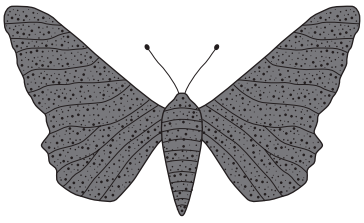
QUESTION NINE

Before the mid-nineteenth century, almost all peppered moths in England were light coloured and were not easy to spot as they rested on light-coloured tree bark and lichens.
The burning of coal during the Industrial Revolution produced gases that killed many of the lichens and blackened the environment with soot.
It was during this period that the first sighting of the dark-coloured peppered moths were reported in 1848.
By 1895, the percentage of dark-coloured moths in industrial cities such as Manchester had risen from about 2% to around 95%.
Birds are the main predators for both types of moth.

The picture below shows the two forms of peppered moth.



Pale form
(light-coloured)



Dark form
(dark-coloured)

9A The most likely reason for the increase in the proportion of dark moths compared with pale moths in cities was . . .

1 better resistance to poisonous gases produced by burning coal.

2 birds preferred to eat the paler form.

3 good camouflage when resting on a blackened surface.

4 pollutants caused a reduction in the number of birds that eat moths.

9B In the past, some scientists have suggested that moths become darker in colour as a result of exposure to certain pollutants.

This is an example of . . .

1 a prediction.

2 a hypothesis.

3 an investigation.

4 an observation.

4.7.2.4 Impact of environmental change (biology only) (HT only)

9C Scientists agree that the observed changes in the most common colour of the moths is an example of the process of natural selection.

This means that . . .

1 male moths in polluted areas select the colour of the female whose eggs they fertilise.

2 the darker moths have a better chance of survival in polluted areas and will be more common in the next generation.

3 the moths can select which colour to display in polluted areas to make themselves least visible.

4 the moths choose the colour of the trees that they rest on.

9D Some scientists suggested that the darker moths had migrated (moved) into cities from the countryside.

To find out if this is correct we would need to know the numbers of . . .

1 dark moths that lived in the cities and in the countryside at the start of the Industrial Revolution and later in the nineteenth century.

2 pale and dark moths that lived in the cities at the start of the Industrial Revolution and later in the nineteenth century.

3 pale moths that lived in the countryside at the start of the Industrial Revolution.

4 pale moths that lived in the cities at the start of the Industrial Revolution and later in the nineteenth century.

END OF TEST

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 03

June 2009 | BLY1H | Original Q1 | Legacy

1 Swallows and swifts migrate between Britain and South Africa every year.

1 (a) **Photograph 1** shows a swallow.

Photograph 1



Swallows can fly very quickly.

Use information from the photograph to give **one** way in which the swallow is adapted for flying very quickly.

.....

.....

(1 mark)

1 (b) **Photograph 2** shows swifts.

Photograph 2



Swallows and swifts both feed on flying insects.
They both spend the summer in Britain and then migrate to South Africa in the autumn.

Suggest **one** reason why swallows and swifts do not stay in Britain in the winter.

.....

.....

(1 mark)

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 03 · continued

for mark

1 (c) The table gives data about swallows and swifts.

	Swallows	Swifts
Arrival date in Britain	April	Early May
Leaving date from Britain	October	Early August
Food	Flying insects	Flying insects
Height at which the birds feed	Near ground level	Up to 350 m above ground level
Times at which birds feed	Mainly when it is light	Almost 24 hours per day

1 (c) (i) There is very little competition between swallows and swifts for food.

Use information from the table to suggest **two** reasons for this.

1 .....

.....

2 .....

.....

(2 marks)

(Extra space) .....

1 (c) (ii) Swallows and swifts do compete for some factors.

Suggest **one** of these factors.

.....

.....

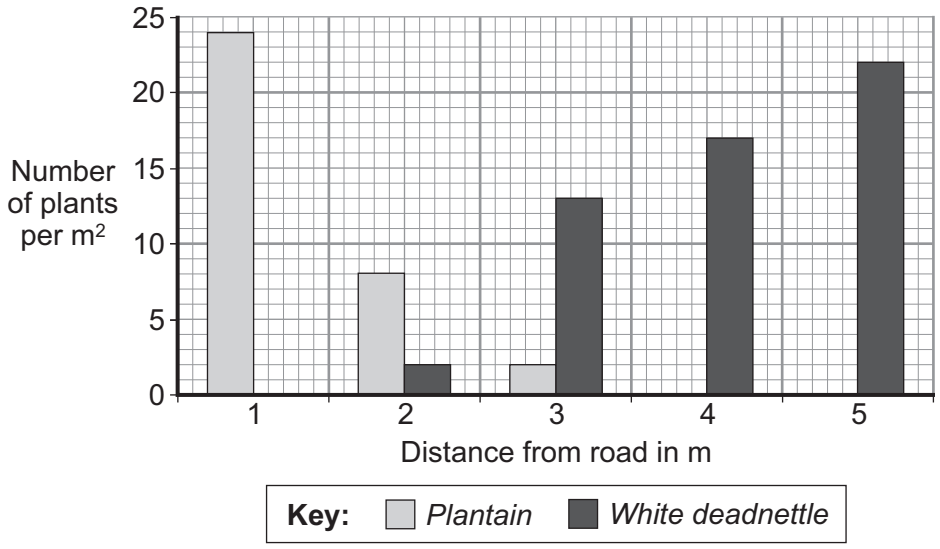
(1 mark)

5

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 04

2 Students investigated the distribution of two plant species near a busy road.
The bar chart shows their results.



2 (a) (i) Name the piece of apparatus used in sampling a 1 m^2 piece of land.

.....

(1 mark)

2 (a) (ii) Describe how this piece of apparatus could be used to obtain the data shown in the bar chart.

.....

.....

.....

.....

.....

(2 marks)

2 (a) (iii) Describe the pattern shown in the data for the *Plantain* plants.

.....

.....

.....

(1 mark)

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 04 · continued

2 (b) Suggest explanations for:

2 (b) (i) the distribution of the *White deadnettle* plants

.....

.....

.....

.....

.....

(2 marks)

2 (b) (ii) the distribution of the *Plantain* plants.

.....

.....

.....

.....

.....

(2 marks)

8

4.7.2.4 Impact of environmental change (biology only) (HT only)

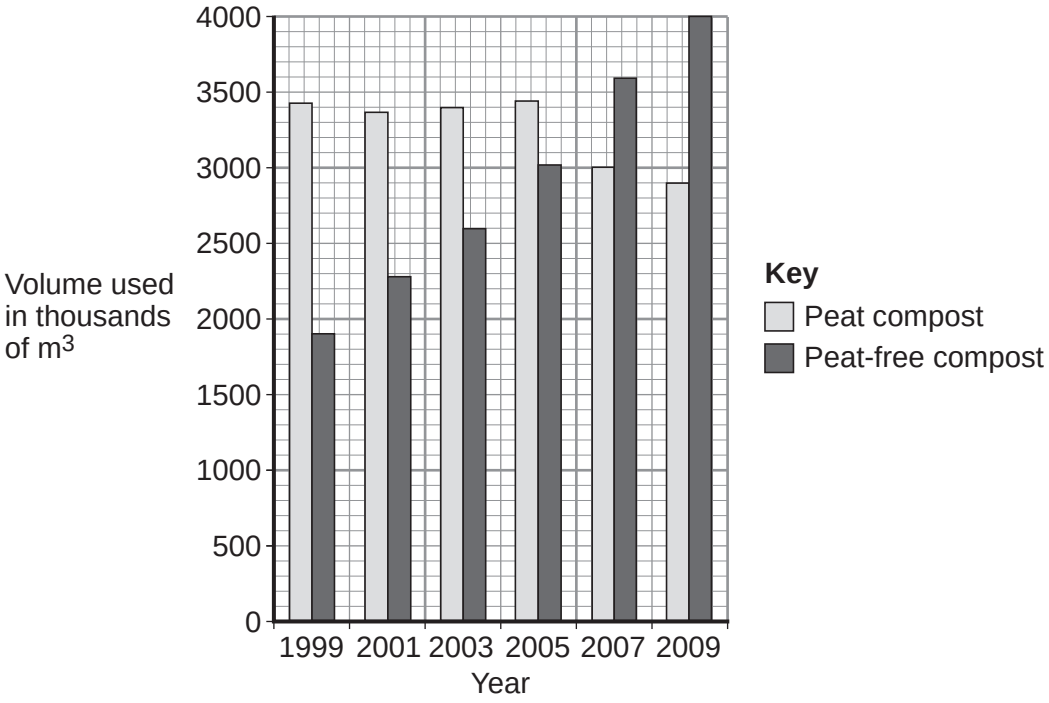
Question 05

June 2015 | BL3HP | Original Q3 | Legacy

3 Human activities have many effects on our ecosystem.

Figure 3 shows the volume of peat compost and peat-free compost used in gardening from 1999 to 2009.

Figure 3



3 (a) Describe the trends shown in **Figure 3**.

[2 marks]

.....

.....

.....

.....

.....

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 05 · continued

3 (b) What effect does the destruction of peat bogs have on the gases in the atmosphere?

[1 mark]

.....

.....

3 (c) Deforestation is also damaging ecosystems.

Describe **one** effect of deforestation on ecosystems.

[1 mark]

.....

.....

4

Turn over for the next question

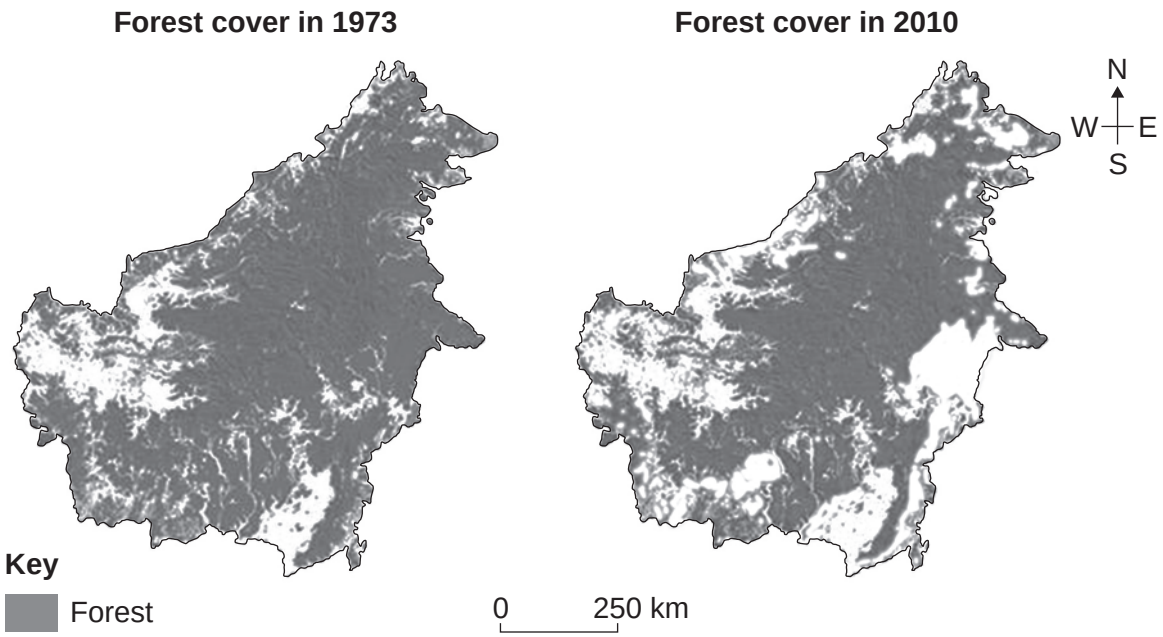
4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 06

June 2016 | BL3HP | Original Q4 | Legacy

4 **Figure 4** shows the amount of forest cover on an island in Asia, in 1973 and in 2010.

Figure 4



4 (a) (i) Deforestation has decreased the amount of forest cover on the island.

Describe the change in the pattern of forest cover on the island.

[2 marks]

_____

_____

_____

_____

4 (a) (ii) Give **two** possible reasons why the amount of forest has decreased between 1973 and 2010.

[2 marks]

1 _____

_____

2 _____

_____

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 06 · continued

4 (b) Scientists are concerned about the effects of a decrease in forest cover on ecosystems.

Give **two** possible negative effects of the decrease in forest cover on ecosystems.

[2 marks]

1 _____

_____

2 _____

_____

6

Turn over for the next question

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 07

June 2018 | 8461/2H | Original Q9

0 9 **Figure 12** shows a ring-tailed lemur.

Figure 12



Table 5 shows part of the classification of the ring-tailed lemur.

Table 5

Classification group	Name
Kingdom	*Animalia*
Phylum	*Chordata*
	Mammalia
	Primates
	Lemuroidea
Genus	*Lemur*
	catta

0 9 . 1 Complete **Table 5** to give the names of the missing classification groups.

[2 marks]

0 9 . 2 Give the binomial name of the ring-tailed lemur.

Use information from **Table 5**.

[1 mark]

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 07 · continued

Lemurs are only found on the island of Madagascar.

Madagascar is off the coast of Africa.

Scientists think that ancestors of modern lemurs evolved in Africa and reached Madagascar about 50-60 million years ago.

Today there are many species of lemur living on Madagascar.

Figure 13 shows information about water currents.

Figure 14 shows the distribution of three species of lemur on Madagascar.

Figure 13

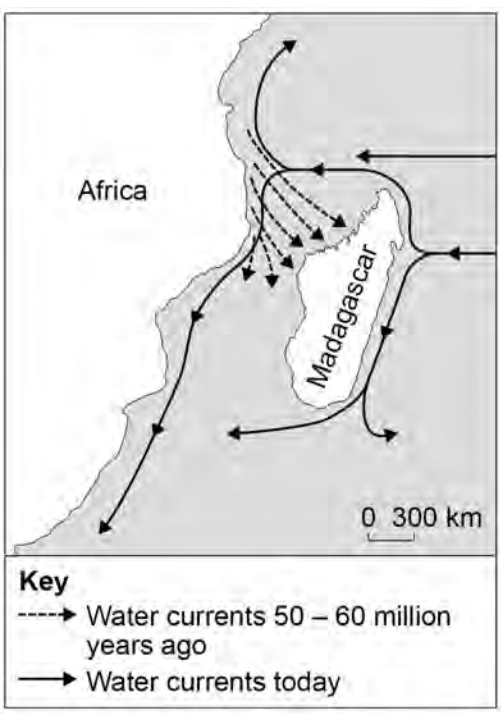
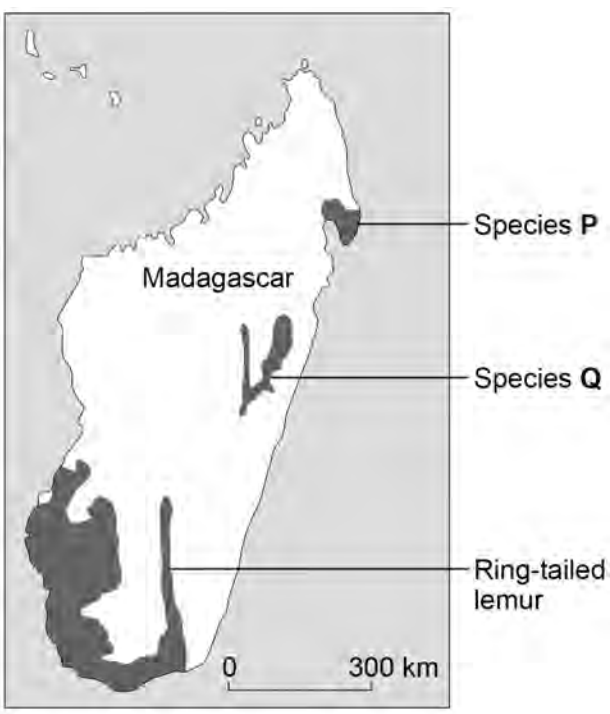


Figure 14



0 9 . 3 Suggest how ancestors of modern lemurs reached Madagascar.

[1 mark]

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 07 · continued

0 9 . 4 Describe how the ancestors of modern lemurs may have evolved into the species shown in **Figure 14**.

[5 marks]

9

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 08

June 2023 | 8461/2H | Original Q1

0 1 Many different species can live together in the same habitat.

0 1 . 1 What name is given to all of the organisms living in the same habitat?

[1 mark]

Tick (✓) **one** box.

- A community ☐
- A food chain ☐
- A population ☐
- An ecosystem ☐

Question 1 continues on the next page

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 08 · continued

Figure 1 shows four species of bird from the same habitat in the UK.

Figure 1



Brambling (*Fringilla montifringilla*)



Bullfinch (*Pyrrhula pyrrhula*)



Chaffinch (*Fringilla coelebs*)



Goldfinch (*Carduelis carduelis*)

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 08 · continued

0 1 . 2 Which species of bird in **Figure 1** do scientists think are most closely related?

[1 mark]

Tick (✓) **one** box.

- Brambling and chaffinch ☐
- Brambling and goldfinch ☐
- Bullfinch and chaffinch ☐
- Bullfinch and goldfinch ☐

0 1 . 3 Scientists think the brambling and the bullfinch belong to different species.

What evidence is used by scientists to classify the brambling and the bullfinch as different species?

[1 mark]

Tick (✓) **one** box.

- The brambling and the bullfinch are different sizes. ☐
- The brambling and the bullfinch cannot breed together to give fertile offspring. ☐
- The brambling and the bullfinch live in different parts of the habitat. ☐
- The brambling eats mainly seeds and the bullfinch eats mainly insects. ☐

Question 1 continues on the next page

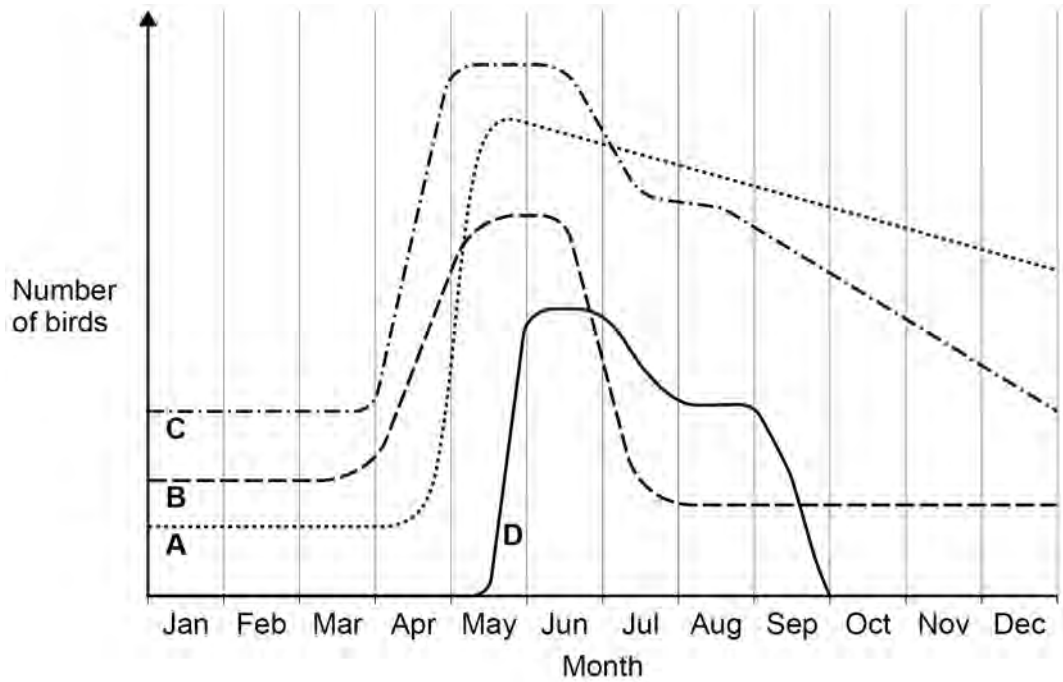
4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 08 · continued

Four other species of bird (**A**, **B**, **C** and **D**) live in a habitat in the UK.

Figure 2 shows how the numbers of each species of bird varied during one year.

Figure 2



Use information from **Figure 2** to answer Questions **01.4** to **01.6**

0 1 . 4 Describe what happens to the number of birds of species **A** during the year.

[3 marks]

4.7.2.4 Impact of environmental change (biology only) (HT only)

Question 08 · continued

0 1 . 5 In June and July, a disease affected the populations of some of the species.

Which species had the **lowest** resistance to the disease?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 1 . 6 One species migrates between the UK and other countries.

Which species migrates between the UK and other countries?

Give a reason for your answer.

[1 mark]

Species _____

Reason _____

_____

_____

8