AQA GCSE Biology | 8461

SPECIFICATION POINT 4.7.2.4

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

## Mark schemes and examiner comments

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

## Using this booklet

1. Booklet answer numbers match the question booklet.
2. Use the original question number within marking tables.
3. Examiner comments are included where available.

**Name:** _____ **Date:** _____

Where a precise marking extract is unavailable, the full source document is included in an appendix. Any missing mark scheme is explicitly identified.

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

**Answer 01 · Mark scheme**

March 2008 | BLY1BP | Original Q2 | Legacy

| | | | | |
|---|---|---|---|---|
| Two | **A** | competition | **3** | |
| | **B** | environmental change | **1** | |
| | **C** | survival | **4** | |
| | **D** | extinction | **2** | |

| | **A** | **B** | **C** | **D** |
|---|---|---|---|---|

**Answer 02 · Mark scheme**

June 2008 | BLY1BP | Original Q9 | Legacy

| | | | | |
|---|---|---|---|---|
| Nine | **3** | **2** | **2** | **1** |

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

**Answer 03 · Mark scheme** June 2009 | BLY1H | Original Q1 | Legacy

## Question 1

| question | answers | extra information | mark |
|---|---|---|---|
| **1**(a) | streamlined / aerodynamic / swept-back / arrow-shaped / dart-shaped wings / tail<br><br>**or**<br><br>large / long wings | allow pointed / curved wings<br>ignore pointed tail / beak<br><br>ignore large tail | 1 |
| **1**(b) | no / fewer insects / food (in winter) | allow **too** cold<br><br>ignore not adapted to cold<br><br>ignore day length | 1 |
| **1**(c)(i) | any **two** from<br>• feed / hunt at different heights **or** swifts feed higher up<br>• feed / hunt at different times **or** swifts feed at night<br>• arrive / depart at different times | | 2 |
| **1**(c)(ii) | nesting sites / territory / habitat | allow homes / space<br><br>ignore food unqualified<br>allow well qualified food answers eg insects / food near the ground<br><br>**or**<br><br>insects / food when it's light<br><br>**or**<br><br>insects / food between early May and early August | 1 |
| **Total** | | | **5** |

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

**Answer 03 · Mark scheme**

June 2009 | BLY1H | Original Q1 | Legacy

**BLY1H**

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

Answer 04 · Mark scheme

June 2010 | BLY1H | Original Q2 | Legacy

**Question 2**

| question | answers | extra information | mark |
|---|---|---|---|
| **2**(a)(i) | quadrat / grid | allow suitable description in a(i) or a(ii)<br><br>allow quadrant | 1 |
| **2**(a)(ii) | any **two** from:<br>• use a transect / description<br>• sample every metre<br>• count plants (in quadrat) | allow measure distance of the test or sample site from road<br>ignore random placing of quadrat | 2 |
| **2**(a)(iii) | the nearer to the road, the more (plantain) plants | accept the more dead nettles the less plantains | 1 |

**Question 2 continues on the next page**

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



**BLY1H**

**Question 2 continued**

| question | answers | extra information | mark |
|---|---|---|---|
| **2**(b)(i) | any **two** factors from: eg<br>• grow better / survive away from road<br>• sensitive to pollutant / named pollutant / dust / fumes<br>• (roadside) weedkillers<br>• trampling /damage / turbulence<br>• grass cutting<br>• competition<br>• aspect eg hillier<br>**or**<br>give **one** mark for a factor and **one** mark for its effect eg<br>dust (from road) (1)<br>reduces photosynthesis (1)<br>**or**<br>'loses' in competition (1)<br>for light / water / nutrients / minerals / ions / space / soil (1) | ignore carbon dioxide as pollutant<br>ignore food for plants | 2 |

**Question 2 continues on the next page**

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



**BLY1H**

**Question 2 continued**

| question | answers | extra information | mark |
|---|---|---|---|
| **2**(b)(ii) | any **two** factors eg<br>• can withstand pollution<br>• competition<br>• aspect eg flat<br>**or**<br>give **one** mark for a factor and **one** mark for its effect eg<br>use carbon dioxide (from traffic) (1)<br>enhances photosynthesis (1)<br>**or**<br>'wins' in competition (1)<br>for light / water / nutrients / minerals / ions / space (1) | ignore distribution<br>allow grows better in polluted air<br>ignore 'prefer' pollution<br>ignore food for plants | 2 |
| **Total** | | | **8** |

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

**Answer 04 · Mark scheme**

June 2010 | BLY1H | Original Q2 | Legacy

**BLY1H**

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

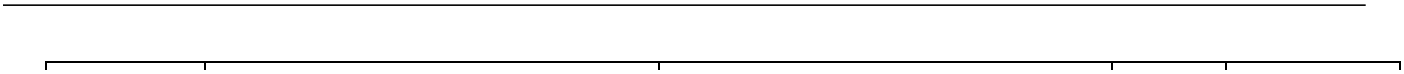
**Answer 05 · Mark scheme** June 2015 | BL3HP | Original Q3 | Legacy

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **3(a)** | any **two** from:<br>• (volume of) peat compost has been steady and then declined **or** volume of peat compost has declined since 2005<br>• (volume of) peat-free compost has increased (since 1999)<br>• (volume of) peat is higher than peat-free until 2005, then peat-free compost is higher (than peat)<br>• total volume of peat and peat-free compost has increased | allow 2007 instead of 2005<br>allow 2007 | 2 | AO2<br>342d |
| **3(b)** | increases carbon dioxide (in the atmosphere) | ignore methane | 1 | AO1<br>342 |
| **3(c)** | any **one** from:<br>• reduces biodiversity<br>• destruction of habitats<br>• disruption of food chains | | 1 | AO1<br>342b |
| **Total** | | | **4** | |

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

**Answer 05 · Mark scheme**

June 2015 | BL3HP | Original Q3 | Legacy



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

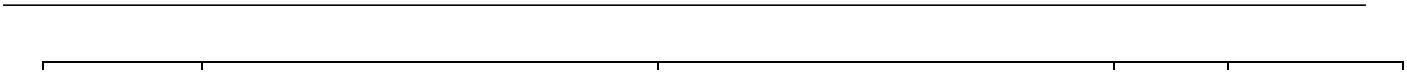
**Answer 06 · Mark scheme** June 2016 | BL3HP | Original Q4 | Legacy

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| **4(a)(i)** | forest at the edges (of the island) has been removed<br><br>an appropriate area on the island is identified eg south east **or** bottom right | allow centrally the forest remains | 1<br><br>1 | AO3<br>3.4.2 |
| **4(a)(ii)** | any **two** from:<br>• (to provide land) for farming / agriculture<br>• (to provide land) for quarrying<br>• (to provide land / wood) for building<br>• to provide fuel<br>• to produce paper | allow to provide timber<br><br>allow forest fires | 2 | AO2<br>3.4.1c<br>3.4.2c |
| **4(b)** | any **two** from:<br>• decreased biodiversity<br>• loss of habitats<br>• increased carbon dioxide (concentration)<br>• global warming | allow effects of global warming eg flooding / rise in sea level<br>allow soil erosion | 2 | AO3<br>3.4.1c<br>3.4.2a/b/c |
| **Total** | | | **6** | |

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

**Answer 06 · Mark scheme**

June 2016 | BL3HP | Original Q4 | Legacy



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

Answer 07 · Mark scheme

June 2018 | 8461/2H | Original Q9

<table>
<tr><th>Question</th><th>Answers</th><th>Extra information</th><th>Mark</th><th>AO / Spec. Ref.</th></tr>
<tr><td>09.1</td><td><table><tr><th>Classification group</th><th>Name</th></tr><tr><td>Class</td><td>Mammalia</td></tr><tr><td>Order</td><td>Primates</td></tr><tr><td>Family</td><td>Lemuroidea</td></tr><tr><td>Species</td><td>catta</td></tr></table></td><td>all 4 correct = 2 marks<br>2 or 3 correct = 1 mark<br>0 or 1 correct = 0 marks</td><td>2</td><td>AO1<br>4.6.4</td></tr>
<tr><td>09.2</td><td>Lemur catta</td><td>ignore capitalisation / non-capitalisation of initial letters<br><br>ignore italics / non-italics<br>ignore underlining / non-underlining</td><td>1</td><td>AO2<br>4.6.4</td></tr>
<tr><td>09.3</td><td>carried by (favourable) currents on masses of vegetation</td><td>allow description of currents from Figure 13<br>ignore swimming</td><td>1</td><td>AO2<br>4.6.3.2</td></tr>
</table>

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

Answer 07 · Mark scheme

June 2018 | 8461/2H | Original Q9

| Question | Answers | Extra information | Mark | AO / Spec. Ref. |
|---|---|---|---|---|
| 09.4 | isolation of different populations | | 1 | AO2<br>4.6.3.2 |
| | habitat variation between lemur populations | allow examples – biotic (eg food / predators) or abiotic (eg temperature) | 1 | AO1<br>4.6.2.2<br>4.7.1.4 |
| | genetic variation or mutation (in each population) | | 1 | AO1<br>4.6.2.1<br>4.6.2.2<br>4.6.3.1<br>4.7.1.4 |
| | better adapted survive (reproduce) **and** pass on (favourable) allele(s) to offspring | allow natural selection **or** survival of the fittest **and** pass on (favourable) allele(s) to offspring<br>allow gene(s) / mutation as an alternative to allele(s) | 1 | AO1<br>4.6.2.2<br>4.6.3.1<br>4.7.1.1 |
| | (eventually) cannot produce fertile offspring with other populations | allow cannot reproduce 'successfully' with other populations<br><br>ignore cannot reproduce unqualified | 1 | AO1<br>4.6.3.1<br>4.6.2.2 |
| **Total** | | | **9** | |

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

Answer 08 · Mark scheme

June 2023 | 8461/2H | Original Q1

## Question 1

| Question | Answers | Extra information | Mark | AO / Spec Ref. |
|---|---|---|---|---|
| 01.1 | a community | | 1 | AO1 4.7.1.1 |

| Question | Answers | Extra information | Mark | AO / Spec Ref. |
|---|---|---|---|---|
| 01.2 | brambling and chaffinch | | 1 | AO2 4.6.4 |

| Question | Answers | Extra information | Mark | AO / Spec Ref. |
|---|---|---|---|---|
| 01.3 | the brambling and the bullfinch cannot breed together to give fertile offspring | | 1 | AO1 4.6.2.2 |

| Question | Answers | Extra information | Mark | AO / Spec Ref. |
|---|---|---|---|---|
| 01.4 | | allow answers in terms of month numbers<br>ignore seasons | | AO3 4.7.1.1 |
| | constant (from Jan) to Mar / (mid-)Apr | ignore straight | 1 | |
| | increases (from mid-)Apr to / and May | | 1 | |
| | decreases from May / Jun to Dec | | 1 | |
| | | if no other marks awarded allow for **1** mark constant, **then** increase **then** decrease | | |

| Question | Answers | Extra information | Mark | AO / Spec Ref. |
|---|---|---|---|---|
| 01.5 | B | | 1 | AO3 4.7.1.1 4.7.1.4 |

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

Answer 08 · Mark scheme



| Question | Answers | Extra information | Mark | AO / Spec Ref. |
|---|---|---|---|---|
| 01.6 | D (because) present only May to Sep | allow D (because) present only May to Oct<br>allow D (because) **not** present Oct to Apr / May<br>allow D (because) present only in summer<br>allow D (because) **not** present in winter<br>allow D (because) not present for all the year<br>allow D (because) only present for some of the year | 1 | AO3<br>4.7.1.1<br>4.7.1.4 |

| Total Question 1 | 8 |
|---|---|

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

**Answer 08 · Examiner comments** June 2023 | 8461/2H | Original Q1

**Question 1**

This was the first of three questions common to both the Foundation and Higher Tier papers. It was about different species of bird living in the same habitat

01.1 Just under half of the students selected the term community for describing all of the organisms living in the same habitat. Ecosystem was a strong distracter.

01.2 Nearly all students selected the pair of birds with a common generic name, the brambling and the chaffinch, as those being most closely related.

01.3 Similarly, the fact that the two species named in the question could not breed together to give fertile offspring was recognised by the vast majority as the criterion for them being different species.

01.4 In this question, students had to describe one of the patterns from the graph showing how the number of birds of four species varied throughout one year. Students were expected to make reference to the months given on the horizontal axis. A suitable answer included the number being constant from January to April, then increasing during April and May and finally decreasing over the remainder of the year. Many answers were less precise and fewer than half gained all 3 marks, although three-quarters of the students gave at least two valid points.

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**Answer 08 · Examiner comments** June 2023 | 8461/2H | Original Q1

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01.5 A high proportion of students were able to select species B as the one with the lowest resistance to the disease as its numbers fell the most during the given months of June and July.

01.6 In this question, students had to decide which species migrated between the UK and other countries, giving the reason for their choice. Around three-quarters correctly selected species D, giving its presence on the graph only between May and September (or being present only in the summer, or absent the rest of theyear) as their reason.