AQA GCSE Biology | 8461

SPECIFICATION POINT 4.7.1.1

Communities

Mark schemes and examiner comments

Tier	**Foundation**
Question groups	**10**
Available paper years	**2008–2025**

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.

4.7.1.1 Communities

Answer 01 · Mark scheme

November 2008 | BLY1BP | Original Q6 | Legacy

Six	**3**	**1**	**4**	**1**

4.7.1.1 Communities

Answer 02 · Mark scheme

June 2009 | BLY1F | Original Q6 | Legacy

Question 6

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

4.7.1.1 Communities

Answer 02 · Mark scheme June 2009 | BLY1F | Original Q6 | Legacy

BLY1F

Answer 03 · Mark scheme March 2011 | BLY1AP | Original Q7 | Legacy

Seven	**2**	**1**	**3**	**3**

Answer 04 · Mark scheme March 2011 | BLY1BP | Original Q4 | Legacy

Four	**A**	the organism is now a better competitor	**2**
	B	the mutated gene is passed on to offspring	**3**
	C	a gene mutates	**1**
	D	a new species is produced	**4**

4.7.1.1 Communities

Answer 05 · Mark scheme

Question 2

question	answers	extra information	mark
2(a)	diagram to show root growing down	allow single lines **or** not attached **or** open ends for both marks all branches must go down	1
	diagram to show shoot growing up	all branches must go up	1
2(b)	gravity		1
2(c)	Auxin		1
2(d)(i)	rooting / cuttings	accept other suggestions, eg fruit set / ripening do **not** accept weed killers	1
2(d)(ii)	any **three** from: • light • water / moisture • nutrients / ions / minerals • space / area	 ignore sun / energy accept one named mineral ignore nutrition / food ignore soil / land / territory / volume ignore reference to gases	3
Total			**8**

4.7.1.1 Communities

Answer 05 · Mark scheme

January 2012 | BL1FP | Original Q2 | Legacy

BL1FP

Answer 06 · Mark scheme

June 2014 | BL1FP | Original Q9 | Legacy

The full source mark scheme begins on page 16. Follow original question 9 in that document.

4.7.1.1 Communities

Answer 07 · Mark scheme

June 2022 | 8461/2F | Original Q7

Question 7

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.1 *view with Table 3*	kingdom genus	in this order only	1 1	AO1 4.6.3.5 4.6.4

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.2	Linnaeus		1	AO1 4.6.4

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.3	*Elrathia kingii*		1	AO2 4.6.4

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.4	trilobite **A** was found in older rocks than trilobite **B** trilobite **B** is more complex than trilobite **A**		1 1	AO3 4.6.3.4 4.6.3.5

4.7.1.1 Communities

Answer 07 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.5	sediments soft parts minerals	in this order only	1 1 1	AO2 4.6.3.5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.6	any **three** from: • drought • ice age • global warming • volcanic activity • asteroid collision • (new) predators • (new) disease / pathogen • competition for food • competition for mates • lack of habitat or habitat change	if none of these, allow climate change for **1** mark ignore weather if neither of these, allow catastrophic event **or** natural disaster for **1** mark allow named example allow hunters allow named example allow lack of food allow lack of mates ignore competition unqualified ignore isolation ignore pollution	3	AO1 4.6.3.6

4.7.1.1 Communities

Answer 07 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.7	no / insufficient evidence **or** cannot perform experiment to find out	allow lack of evidence allow no-one was there to observe	1	AO3 4.6.3.5 4.6.3.6

Total Question 7		**13**

4.7.1.1 Communities

Answer 08 · Mark scheme

June 2023 | 8461/2F | Original Q7

Question 7

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.1	a community		1	AO1 4.7.1.1

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

Question	Answers	Extra information	Mark	AO / Spec Ref.
07.3	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.
07.4		allow answers in terms of month numbers 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.
07.5	B		1	AO3 4.7.1.1 4.7.1.4

4.7.1.1 Communities

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

Total Question 7	**8**

4.7.1.1 Communities

Answer 09 · Mark scheme

June 2024 | 8461/2F | Original Q10

Question 10

Question	Answers	Extra information	Mark	AO / Spec Ref.
10.1	lack of oxygen for (aerobic) respiration	do **not** accept ref to respiration in dead plants	1	AO3
	(so) less / no energy (released)	do **not** accept energy produced / made / created	1	AO2
	(for) microorganisms / bacteria / fungi / microbes / decomposers **OR** low pH denatures enzymes (1)	allow low pH / acidity reduces enzyme activity	1	AO2 4.2.2.1 4.4.2.1 4.7.1.2 4.7.2.3
	(so) less / no (chemical) reactions / metabolism / respiration **or** less **/** no energy released (1) in microorganisms / bacteria / fungi / microbes / decomposers (1)	do **not** accept energy produced / made / created		

Question	Answers	Extra information	Mark	AO / Spec Ref.
10.2	34 g/m^2/year		1	AO2 4.7.4.3

Question	Answers	Extra information	Mark	AO / Spec Ref.
10.3	DNA		1	AO1 4.6.1.5 4.7.1.2 4.7.1.4

Question	Answers	Extra information	Mark	AO / Spec Ref.
10.4	protein		1	AO1 4.4.1.1 4.4.2.1 4.4.2.3 4.7.1.2 4.7.1.4

4.7.1.1 Communities

Answer 09 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec Ref.
10.5	increase in temperature	allow global warming allow heat (energy) is trapped ignore reference to greenhouse gases	1	AO3
	(because) carbon dioxide is released (from the peat bog)		1	AO2
	(because) carbon dioxide is produced by burning / decay of peat	ignore methane is released from burning / decay of peat allow fewer plants to take in carbon dioxide (for photosynthesis)	1	AO2
	(because) methane is released (from the peat bog)		1	AO2 4.4.2.1 4.7.2.3 4.7.3.3 4.7.3.5

Total Question 10	10

4.7.1.1 Communities

Answer 10 · Mark scheme

June 2025 | 8461/2F | Original Q8

Question 8

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.1	any **two** from: • (ichthyosaur died and) is buried in sediment / sand / mud / silt • (only) soft parts decayed / eaten **or** bones were not decayed / eaten • bone(s) / remains replaced by minerals	allow skeleton **or** hard parts for bones throughout ignore compression ignore reference to oxygen do **not** accept (icthyosaur died and) is buried in rock(s) allow mineralisation of bones allow bone(s) left imprint in mud / sand / sediment (that then hardened to rock) ignore bones turned to stone / rock	2	AO2 4.6.3.5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.2	120 × 17 2040 (mm) 2.04 (metres)	allow conversion to metres at any stage allow correct conversion of incorrectly calculated length	1 1 1	AO2 4.6.3.5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.3	phylum family	in this order only	1 1	AO1 4.6.3.5 4.6.4

4.7.1.1 Communities

Answer 10 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.4	any **two** from: • ice age • global warming • volcanic activity • asteroid collision • new predators • (new) disease / pathogen • competition for mates • lack of habitat **or** habitat change	if neither of these, allow climate change for **1** mark ignore weather if neither of these, allow catastrophic event **or** natural disaster for **1** mark allow named example allow hunters allow named example allow lack of mates ignore competition unqualified ignore environment change allow competition between **ichthyosaurs** for food ignore isolation ignore pollution ignore lack of food	2	AO1 4.6.3.6

Total Question 8	9

4.7.1.1 Communities

AQA Qualifications

GCSE
SCIENCE A / BIOLOGY

BL1FP
Mark scheme

4405 / 4401
June 2014

Version: 1.0 Final

4.7.1.1 Communities

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available from aqa.org.uk

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Information to Examiners

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded
- the Assessment Objectives and specification content that each question is intended to cover.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example: where consequential marking needs to be considered in a calculation; or the answer may be on the diagram or at a different place on the script.

In general the right-hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening and underlining

2.1 In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following bullet points is a potential mark.

2.2 A bold **and** is used to indicate that both parts of the answer are required to award the mark.

2.3 Alternative answers acceptable for a mark are indicated by the use of **or**. Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.

2.4 Any wording that is underlined is essential for the marking point to be awarded.

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which students have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error / contradiction negates each correct response. So, if the number of error / contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

Example 1: What is the pH of an acidic solution? (1 mark)

Student	Response	Marks awarded
1	green, 5	0
2	red*, 5	1
3	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Student	Response	Marks awarded
1	Neptune, Mars, Moon	1
2	Neptune, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a student writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, without any working shown.

However, if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column or by each stage of a longer calculation.

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward is kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(.....) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

3.8 Ignore / Insufficient / Do <u>not</u> allow

Ignore or insufficient are used when the information given is irrelevant to the question or not enough to gain the marking point. Any further correct amplification could gain the marking point.

Do **not** allow means that this is a wrong answer which, even if the correct answer is given, will still mean that the mark is not awarded.

Quality of Written Communication and levels marking

In Question 9 students are required to produce extended written material in English, and will be assessed on the quality of their written communication as well as the standard of the scientific response.

Students will be required to:

- use good English
- organise information clearly
- use specialist vocabulary where appropriate.

The following general criteria should be used to assign marks to a level:

Level 1: basic

- Knowledge of basic information
- Simple understanding
- The answer is poorly organised, with almost no specialist terms and their use demonstrating a general lack of understanding of their meaning, little or no detail
- The spelling, punctuation and grammar are very weak.

Level 2: clear

- Knowledge of accurate information
- Clear understanding
- The answer has some structure and organisation, use of specialist terms has been attempted but not always accurately, some detail is given
- There is reasonable accuracy in spelling, punctuation and grammar, although there may still be some errors.

Level 3: detailed

- Knowledge of accurate information appropriately contextualised
- Detailed understanding, supported by relevant evidence and examples
- Answer is coherent and in an organised, logical sequence, containing a wide range of appropriate or relevant specialist terms used accurately.
- The answer shows almost faultless spelling, punctuation and grammar.

4.7.1.1 Communities

MARK SCHEME – GCSE Science A / Biology – BL1FP – JUNE 2014

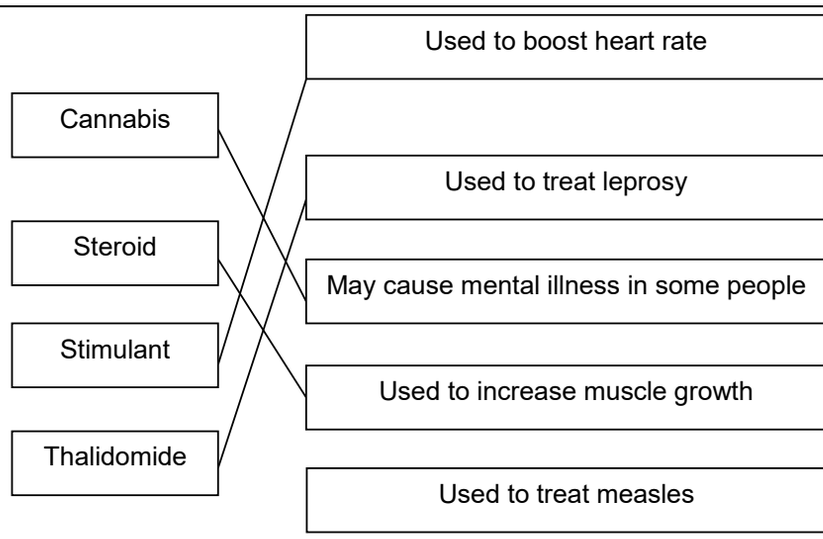
Question	Answers	Extra information	Mark	AO / spec ref.
1(a)(i)	Chromosomes		1	AO1 1.7.1b
1(a)(ii)	Characteristics		1	AO1 1.7.1b
1(a)(iii)	Classify		1	AO1 1.8.1d
1(b)	Plants	ignore algae	1	AO1 1.8.1d
Total			4	

4.7.1.1 Communities

Question	Answers	Extra information	Mark	AO / spec ref.
2(a)(i)	in the direction of the force of gravity		1	AO2 1.2.3a
2(a)(ii)	against the force of gravity		1	AO2 1.2.3a
2(b)(i)	diagram completed to show stem bending / leaning towards the window	the bend / lean can be at / from any point above pot level ignore any leaves	1	AO2 1.2.3a
2(b)(ii)	more light (for leaves) more photosynthesis / biomass / glucose	ignore heat ref to 'more' needed once only, eg 'more light for photosynthesis' = 2 marks if no other marks given allow 1 mark for 'to get light for photosynthesis'	1 1	AO1/ AO2 1.4.1a, b
Total			5	

4.7.1.1 Communities

Question	Answers	Extra information	Mark	AO / spec. ref
3(a)	(Type 2) diabetes / heart disease / deficiency disease / named	allow a relevant health problem ignore obesity **or** over / under weight / anorexia	1	AO1 1.1.1a
3(b)(i)	provides more (energy / sugar) than is used	idea of sugar being high in / having a lot of energy eg contains a lot of calories allow it is turned to fat **or** stored (as fat)	1	AO2 1.1.1a, b
3(b)(ii)	fat		1	AO1 1.1.1a
3(c)(i)	C		1	AO3 1.1.1
3(c)(ii)	no health problems	allow as others (may) have (possible) health problems ignore reference to sweetness	1	AO3 1.1.1
3(c)(iii)	idea of informed choice	eg in case you have health problems / allergies allow legal requirement ignore diabetes	1	AO3 1.1.1
Total			**6**	

Question	Answers	Extra information	Mark	AO / spec ref.
4(a)	 extra line from any drug cancels that mark		4	AO1 1.3.1d,f,i
4(b)(i)	any **one** from: • (live) animals • cells • tissues	accept named examples, eg mice ignore people / volunteers do **not** allow plants	1	AO1 1.3.1b
4(b)(ii)	to check that the drug works to find the best dose to use		1 1	AO1 1.3.1b
4(b)(iii)	only scientists at the drug company		1	AO2 1.3.1b
4(c)(i)	420		1	AO2 1.3.1
4(c)(ii)	statin(s)		1	AO3 1.3.1
4(c)(iii)	any **one** from: • side effects • other medication • other (medical) conditions	allow cost allow patient choice allow family history **or** age	1	AO3 1.3.1
Total			**11**	

Question	Answers	Extra information	Mark	AO / spec ref.
5(a)(i)	gamete(s)	ignore reproductive cells	1	AO1 1.7.2a
5(a)(ii)	womb / uterus	allow phonetic spellings	1	AO1 1.7.2c
5(b)(i)	are formed from the same original embryo		1	AO2 1.7.2c
5(b)(ii)	embryo transplantation		1	AO1 1.7.2c
5(b)(iii)	any **one** from: • (calves will have some) genes / DNA from bull / sperm • idea that sexual reproduction produces variation	allow not all genes from the cow allow may be male allow idea that gene for low fat milk may not be passed on	1	AO2 1.7.2a
Total			**5**	

Question	Answers	Extra information	Mark	AO / spec ref.
6(a)(i)	(volume) increases (with time)	ignore numbers	1	AO2 1.8.1
6(a)(ii)	there is more evidence / specimens / results (for Homo sapiens)	allow examples of this, eg more / better fossils allow converse if clearly referring to Australopithecus ignore reference to being 'more recent'	1	AO3 1.8.1
6(b)	2.5 – 3.15 (million years ago)	accept any number in range	1	AO3 1.8.1
6(c)(i)	Darwin		1	AO1 1.8.1a
6(c)(ii)	any **one** from: • they believed in other theories • insufficient evidence • no proof • genes / mechanism of inheritance not known / discovered	 allow they believe that God made all life ignore 'no evidence' allow not enough proof	1	AO1 1.8.1b
Total			**5**	

4.7.1.1 Communities

Question	Answers	Extra information	Mark	AO / spec ref.
7(a)	sensory neurone		1	AO1 1.2.1e
7(b)(i)	synapse		1	AO1 1.2.1e
7(b)(ii)	a chemical		1	AO1 1.2.1e
7(c)	(What happens to the muscle) any **one** from: • contraction / contracts • gets shorter (How this helps the body) idea of protection for body (from damage / pain)	mark both parts of the question together ignore relaxation / relaxes / tenses eg moves finger / arm away (from pin / stimulus / source of pain)	 1 1	AO1 / AO2 1.2.1e
Total			**5**	

Question	Answers	Extra information	Mark	AO / spec ref.
8(a)	3-layered triangular pyramid	as blocks or layered triangle, ignore (small) gaps between layers	1	AO2 1.5.1b
	(pyramid) labelled in food chain order	all three labels are required for **2** marks the pyramid must be fully correct	1	
8(b)(i)	C		1	AO3 1.5.1c
8(b)(ii)	shortest **or** fewest stages / transfers / (trophic) levels	allow only if (b)(i) is C or blank	1	AO1 / AO2 1.5.1c
	less losses in waste / faeces / urine / CO_2 / excretion	allow smaller amount uneaten	1	
	less loss in respiration / heat / movement	allow less lost keeping warm do **not** allow energy for respiration do **not** allow respiration makes energy	1	
		allow less loss (of biomass / energy) **or** less transfer (of biomass / energy) to surroundings if neither 2nd nor 3rd point given, for **1** mark		
Total			**6**	

Question	Answers	Extra information	Mark	AO / spec ref.
9	Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should also refer to the information on page 5 and apply a 'best-fit' approach to the marking.		6	AO1 1.4.1d,f

0 marks	**Level 1 (1-2 marks)**	**Level 2 (3-4 marks)**	**Level 3 (5-6 marks)**
No relevant content.	At least **one** way in which animals **and / or** plants are adapted to survive.	A description of ways in which animals **and / or** plants are adapted **and** an attempt to link at least **one** adaptation to how it increases the chance of survival.	A description of ways in which animals **and** plants are adapted **and** a description of how at least **one** adaptation increases the chance of survival.

examples of biology points made in the response:

(animals)
- (A) change / decrease in surface area / example
  - (decrease in surface area which) reduces area from which sweat / water may be lost
- (A) hump with fat / fat stores
  - (fat in hump) to convert to water (via respiration)
- (A) long eyelashes
  - (long eyelashes) to keep (wind-blown) dust out of eyes
- (A) nocturnal / 'keep out of the sun'
  - reduce sweat loss (in heat of the day)

(plants)
- (A) decrease in surface area
- (A) leaves are spikes
  - (reduced area / leaves are spikes) reduces water loss / transpiration / evaporation
- (A) long / wide spread / extensive roots
  - (long / wide spread /extensive roots) to absorb (more) water
- (A) fleshy / thick stem
  - (fleshy / thick stem) to store water

extra information

allow adaptations of specific animals to living in specified dry conditions, eg a desert
- (A) change / increase in surface area / example
  - (increase in surface area which) increases area heat may be lost from (by radiation)
- (A) changes to thickness of insulating coat
  - (thicker coat on upper surface) increases insulation from sun's heat
- (A) thin (layer) / reduced amount of body fat
  - (reduced amount of body fat which) reduces insulating layer
- (A) wide feet
  - (wide feet) to reduce pressure / spread weight / prevent sinking

allow adaptations of specific plants to living in specified dry conditions, eg a desert
- (A) thick wax
  - (thick wax) to reduce evaporation / water loss / transpiration
- (A) few(er) stomata
  - (few stomata) to reduce evaporation / water loss / transpiration

Total			**6**	

Question	Answers	Extra information	Mark	AO / spec ref.
10(a)	microorganisms	allow microbes / bacteria / fungi / decomposers	1	AO1 / AO2 1.6.1b
	(microorganisms) respire	do **not** allow dead plants respire	1	
	(respiration / decay / microorganisms) releases (thermal) energy / 'heat'	ignore produce 'heat' do **not** allow produce energy do **not** allow dead plants release 'heat'	1	
10(b)(i)	any **three** from: • (opening) allows oxygen in		3	AO1 / AO2 / AO3 1.6.1b, c, 1.6.2
	• microorganisms / eggs need oxygen	allow air for oxygen		
	• oxygen needed for respiration			
	• (opening) allows release of carbon dioxide (from microorganisms / respiration / eggs)	allow gaseous exchange (1 mark) of / for microorganisms / eggs (1 mark) if none of first four points given		
	• (opening) allows energy / 'heat' to escape • (closing) retains energy / 'heat' if too cool / at night	if no mark awarded for either of these points allow 1 mark for vents open in the day to prevent overheating **and** close at night to prevent it getting too cold		
	• (closing) retains moisture	allow (opening) releases moisture		
10(b)(ii)	any **one** from: • maintains sex balance	e.g. equal / best / correct numbers of male and female	1	AO3 1.6.1
	• (survival of species depends on there being) males and females in population	allow so the offspring are not all the same sex		
Total			**7**	

4.7.1.1 Communities

Answer 07 · Examiner comments — June 2022 | 8461/2F | Original Q7

Question 7

This question was about classification, evolution and extinction.

07.1 **Table 3** gave the classification of two species of trilobite with two of the classification groups left blank. Students had to choose the missing groups, *kingdom* and *genus*, from a list of five alternatives. Only a quarter of students chose correctly. 'Community' and 'mammal' proved to be good distractors.

07.2 A similarly small proportion knew that the given classification system was invented by Linnaeus. In fact, 'Darwin' was a more common choice.

07.3 The binomial name of trilobite **A** should have been relatively easy to deduce from **Table 3** but *Elrathia kingii* was the *least* common option selected from the three given alternatives.

Answer 07 · Examiner comments — June 2022 | 8461/2F | Original Q7

07.4 The correct two pieces of evidence in support of the scientist's hypothesis that trilobite **B** may have evolved from trilobite **A** were that **A** was found in older rocks and that **B** was the more complex of the two. Almost 40 percent of students ticked both these options, but the idea that both were found in the same type of rock, although incorrect, was commonly selected.

07.5 Completion of the three sentences to describe fossilisation, using words from the box, proved challenging for many with only one in eight getting all three correct.

07.6 Considering the number of times that causes of extinction have been asked for in previous examination years, performance here was not as strong as might have been expected. However those who gained marks often referred to climate change or global warming, predators and the lack of food. Common insufficient answers included 'changes' in temperature (which happen by the hour) and unsuitable 'weather' or 'environmental change', each of which is too vague. Fewer than one quarter were able to give three suitable suggestions.

07.7 A lack of evidence or that nobody was there at the time were each given frequently as a suggestion for why scientists cannot be sure of the cause of extinction of the trilobites. Weaker students got no further than saying that it was a 'long time ago' or that there are 'many ways to become extinct'. Only just over one third gained credit.

4.7.1.1 Communities

Answer 08 · Examiner comments

June 2023 | 8461/2F | Original Q7

Question 7

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

07.1 Just over a quarter of students selected the term community for describing all of the organisms living in the same habitat. Ecosystem was a very strong distracter and was selected by twice as many as those who chose the correct answer.

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

07.3 The fact that the two species named in the question could not breed together to give fertile offspring was recognised by just over half as the criterion for them being different species.

07.4 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 one-fifth gained all 3 marks, although a similar proportion of the students gave at least two valid points.

07.5 Half of the 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.

07.6 In this question, students had to decide which species migrated between the UK and other countries, giving the reason for their choice. Around one-third 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 the year) as their reason.

4.7.1.1 Communities

Answer 09 · Examiner comments

Question 10 (standard demand)

10.1 Some students appeared to be confused as to how decay happens, believing that the dead plant matter would decay itself. However, around 10% of students did indicate that some sort of microorganism is involved in the decay process, gaining the third mark in the mark scheme. Some students spent time unnecessarily describing the factors needed for decay and often needed to extend their answers onto the additional pages.

There were two routes students could use to gain marks. Many students' answers included elements of both routes, so examiners awarded marks for the described route which gave the higher mark. In most cases this was the first route given in the mark scheme.

The information in the question told students that layer B contains 'very little oxygen' and 'has a low pH'; thus, simply repeating either of these was insufficient to gain credit. To gain the first mark, students needed to link one of these pieces of information to their own knowledge: either in terms of respiration or in terms of enzymes being denatured or reducing in activity. Many students also gained this first marking point, although some who took the second route demonstrated confusion about what a 'low pH' constitutes, describing it as 'low acidity' or 'being 'alkaline'.

Achieving marking point 2 proved to be more problematic for many students. Most simply by omitting any reference to energy or metabolism. Students should be advised that when referring to respiration in their answers (as many did), they should then go on to describe the role of respiration: 'releasing energy'. For those who did refer to energy, it was noted that very few described energy being 'produced', which is never acceptable as this would contradict the principle of conservation of energy.

10.2 40% of students identified the correct answer regarding the approximate biomass of moss that becomes biomass in primary consumers.

10.3 Fewer than a tenth of students identified DNA as a substance that can be made using phosphates.

10.4 Around 20% of students could identify protein as the substance that can be made using nitrogen.

10.5 Almost 65% of students gained at least one mark in this question, and a quarter of those gained three of the four available marks. A number of students described a rise in temperature of the Earth's atmosphere, gaining marking point 1.

It should be noted that the 'greenhouse effect' and 'climate change' are not equivalent to 'global warming'. A significant number of students attempted to describe the mechanism of global warming. This was often confused, including references to the 'ozone layer' and incorrect descriptions of long and short-wave radiation. However, such descriptions are beyond the requirements of the specification, so were ignored.

Students who merely repeated the information that the peat bog 'contains' carbon dioxide and methane could not be awarded marking points 2 or 4. Instead further added value was required, in that these gases would be 'released' from the peat when the bog was destroyed. A significant number of students omitted any reference to methane, so were unable to gain marking point 4.

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4.7.1.1 Communities

Answer 09 · Examiner comments June 2024 | 8461/2F | Original Q10

Again, students should be advised that repeating the information in the question will not gain credit, thus those that described 'the use of peat as a fuel' releasing carbon dioxide. To gain credit here, students needed to indicate that the peat would have to be 'burned' to produce carbon dioxide. In this case, examiners ignored the idea that burning would also release (trapped) methane, as this would inevitably also be burned, releasing more carbon dioxide.

Answer 10 · Examiner comments June 2025 | 8461/2F | Original Q8

Question 8 (Standard demand)

08.1

This question required students to apply their knowledge of fossil formation to the specific example of an ichthyosaur fossil.

Only two steps in the fossilisation process were required to score full marks, so misunderstanding or omission of one step, was not critical. Only 7% of students achieved the full 2 marks, with 60% scoring no marks or not attempting the question.

Students that gained credit often did so for showing an understanding of the first step in fossil formation, by referring to sediment, or an appropriate synonym. However, several also referred to the dead animal being buried in 'rock' or in 'rocks' which disqualified this idea. Whether this burying occurred before or after decay was not important in the award of the mark.

Although some students were aware that the dead ichthyosaur had decayed, they were often imprecise in terms of what had decayed. Some described the whole 'body' or the 'tissues' decaying, which implied that both soft and hard material decays. Very few students referred to the soft tissues being eaten (by detritivores).

4.7.1.1 Communities

Answer 10 · Examiner comments

June 2025 | 8461/2F | Original Q8

08.2

Students were provided with the length of the fossil image and the relevant magnification factor and were required to calculate the real length of the fossil.

Many students completed this calculation well with 40% gaining all 3 available marks. The most common error was in converting millimetres to metres, where a conversion factor of 100 was not uncommon. Some students completed the conversion in two steps, first converting to centimetres, then to millimetres, perhaps showing a lack of confidence.

A not uncommon error was for students to use the magnification equation, with the two values as numerator and denominator. It was rare then, for students to attempt to convert their answer to metres.

08.3

Students were required to recall the classification hierarchy, completing a partial classification using given terms.

This was very well attempted with over half of students gaining at least 1 mark. It was clear that many students had remembered the sequence by using a mnemonic. However, many students confused population for phylum, presumably due to the same initial letter.

08.4

Students were required to suggest causes for the extinction of ichthyosaurs, and over 50% of students gained at least one of the available 2 marks.

Although this should not be an unfamiliar question to students who have practised from previous examination papers, the context of the information provided meant that some general answers were insufficient. The information in the question was that ichthyosaurs lived in the sea, consequently 'drought' was not credited. Similarly, the information provided stated that ichthyosaurs were in competition with other predators for food, thus a 'lack of food' was ignored, as was the presence of 'predators'. For this last idea, a mark could only be awarded if any predators were described as being 'new'.

Common correct responses included reference to 'disease' and 'habitat loss', although all of the possible answers were seen.