AQA GCSE Biology | 8461

SPECIFICATION POINT 4.6.2.2

Evolution

Mark schemes and examiner comments

Tier	**Foundation**
Question groups	**48**
Available paper years	**2007–2024**

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.

4.6.2.2 Evolution

Answer 01 · Mark scheme

Question 1

	answers	extra information	mark
(a)	any **two** from: • streamlined / shape reduces friction / long and thin / smooth surface OWTTE • fins / flippers / tail / paddle • structures that push against water	do **not** accept 'arms' or 'legs'	2
(b)(i)	any **two** from: fossil has hind limb / legs / feet fossil has more ribs / bones fossil has teeth fossil has curved spine	it = minke accept any valid comparison	2
(b)(ii)	billion give evidence for		1 1
total			6

4.6.2.2 Evolution

Answer 02 · Mark scheme March 2007 | BLY1A | Original Q6 | Legacy

Six	**A**	antibiotics	**1**
	B	natural selection	**3**
	C	pandemic	**4**
	D	resistance	**2**

	A	**B**	**C**	**D**

Answer 03 · Mark scheme March 2007 | BLY1B | Original Q4 | Legacy

Four	**A**	evolved	**1**
	B	genes	**3**
	C	natural selection	**2**
	D	survived	**4**

Answer 04 · Mark scheme June 2007 | BLY1B | Original Q8 | Legacy

Eight	**2**	**2**	**4**	**4**

Answer 05 · Mark scheme November 2007 | BLY1B | Original Q8 | Legacy

Eight	**4**	**2**	**3**	**2**

Answer 06 · Mark scheme March 2008 | BLY1BP | Original Q4 | Legacy

Four	**A**	sheep	**1**
	B	insects	**2**
	C	sea urchins	**3**
	D	crocodiles	**4**

Answer 07 · Mark scheme June 2008 | BLY1BP | Original Q4 | Legacy

Four	**A**	Homo sapiens	**3**
	B	Australopithecus robustus	**4**
	C	Australopithecus afarensis	**1**
	D	Homo habilis	**2**

Answer 08 · Mark scheme June 2008 | BLY1BP | Original Q5 | Legacy

Five	**A**	extinction	**4**
	B	natural selection	**1**
	C	mutation	**3**
	D	variation	**2**

4.6.2.2 Evolution

Answer 09 · Mark scheme

June 2008 | BLY1F | Original Q4 | Legacy

question	answers	extra information	mark
4(a)(i)	40 – 42		1
4(a)(ii)	Palaeocene		1
4(a)(iii)	bush babies		1
4(b)	any **two** from: • religious objections • insufficient evidence • mechanism of heredity not known	allow 'could not prove' ignore 'no evidence'	2
Total			**5**

4.6.2.2 Evolution

Answer 09 · Mark scheme June 2008 | BLY1F | Original Q4 | Legacy

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: June 2008

Answer 10 · Mark scheme November 2008 | BLY1BP | Original Q5 | Legacy

Five	**A**	observed that all species change over time **3**
	B	had sufficient evidence to prove evolution **4**
	C	thought that evolution was by natural selection **1**
	D	changes that happen during an organism's lifetime are inherited by offspring **2**

	A	**B**	**C**	**D**

Answer 11 · Mark scheme November 2008 | BLY1BP | Original Q8 | Legacy

Eight	**1**	**2**	**1**	**2**

4.6.2.2 Evolution

Answer 12 · Mark scheme

January 2009 | BLY1F | Original Q4 | Legacy

question	answers	extra information	mark
4(a)	protection / defence from predators / from being attacked / from being eaten	ignore insulation **or** rolls into a ball ignore camouflage	1 1
4(b)	looks like snake / looks scary deters predators **or** has large eyes to spot predator **or** camouflage **or** warning colouration from predator or prey	allow **two** separate adaptations for **2** marks	1 1
4(c)(i)	natural selection		1
4(c)(ii)	Darwin		1
4(c)(iii)	simple life forms		1
4(d)	believe that God created all organisms **or** humans there from the beginning		1
Total			**8**

4.6.2.2 Evolution

Answer 12 · Mark scheme January 2009 | BLY1F | Original Q4 | Legacy

Biology BLY1F - AQA GCSE Mark Scheme 2009 January Series

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: January 2009

Answer 13 · Mark scheme March 2009 | BLY1BP | Original Q6 | Legacy

Six	**2**	**1**	**4**	**1**

Answer 14 · Mark scheme June 2009 | BLY1BP | Original Q3 | Legacy

Three	**A** evolution	**4**
	B mutation	**2**
	C selection	**3**
	D variation	**1**

Answer 15 · Mark scheme November 2009 | BLY1BP | Original Q4 | Legacy

Four	**A**	evolution	**1**
	B	extinction	**3**
	C	natural selection	**4**
	D	reproduction	**2**

Answer 16 · Mark scheme November 2009 | BLY1BP | Original Q6 | Legacy

Six	**1**	**2**	**1**	**3**

4.6.2.2 Evolution

Answer 17 · Mark scheme

Question 6

question	answers	extra information	mark
6(a)	any **two** from • survival of fittest • amplification of fittest ie has adaptations to survive • go on to breed **or** genes / characteristics passed on to next generation	 allow examples allow examples NB best adapted organisms survive gains **2** marks	2
6(b)	any **two** from eg: • increased height • increased erectness • shorter arms • legs straighter • larger skull • larger pelvis **or** changing shape described • humans walk on two legs / feet	ignore unqualified change eg 'the skull changes shape' allow description of modern human characteristic eg 'modern humans stand up straight' allow description of ape-like characteristics eg ape-like ancestor walked on four legs	2
6(c)	any **two** from: • religious objections • insufficient evidence • mechanism of heredity not known did not know about genes / chromosomes / DNA / mutations • did not like the thought of being descended from apes	 ignore **no** evidence accept could not prove	2

Question 6 continues on next page

4.6.2.2 Evolution

Answer 17 · Mark scheme

BLY1F

Question 6 continued

question	answers	extra information	mark
6(d)	Darwin's theory depends on differences in genes at birth / inborn variation / mutation	allow Darwin's theory depends on genetics ignore reference to time	1
Total			**7**

4.6.2.2 Evolution

Answer 17 · Mark scheme

January 2010 | BLY1F | Original Q6 | Legacy

BLY1F

Answer 18 · Mark scheme

March 2010 | BLY1BP | Original Q6 | Legacy

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

Answer 19 · Mark scheme

June 2010 | BLY1BP | Original Q2 | Legacy

No matching mark scheme was available in the supplied archive for this question.

Answer 20 · Mark scheme

June 2010 | BLY1BP | Original Q6 | Legacy

No matching mark scheme was available in the supplied archive for this question.

4.6.2.2 Evolution

Answer 21 · Mark scheme

June 2010 | BLY1F | Original Q7 | Legacy

Question 7

question	answers	extra information	mark
7(a)	predation / eaten	ignore competition	1
7(b)	could run faster / jump higher / climb better to escape / or escape describe		1 1
7(c)(i)	natural selection		1
7(c)(ii)	Darwin		1
Total			**5**

4.6.2.2 Evolution

Answer 21 · Mark scheme June 2010 | BLY1F | Original Q7 | Legacy

BLY 1F

Answer 22 · Mark scheme November 2010 | BLY1BP | Original Q3 | Legacy

Three	**A**	extinction	**4**
	B	mutation	**1**
	C	natural selection	**3**
	D	variation	**2**

Answer 23 · Mark scheme November 2010 | BLY1BP | Original Q6 | Legacy

Six	**4**	**4**	**3**	**2**

Answer 24 · Mark scheme January 2011 | BLY1F | Original Q2 | Legacy

Question 2

question	answers	extra information	mark
2(a)(i)	3		1
2(a)(ii)	Q		1
2(a)(iii)	1		1
2(b)	from fossils / bones	allow artefacts / named artefacts / drawings / evidence of fires	1
2(c)	Darwin		1
Total			**5**

4.6.2.2 Evolution

Answer 24 · Mark scheme January 2011 | BLY1F | Original Q2 | Legacy

BLY1F

Answer 25 · 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**

Answer 26 · Mark scheme June 2011 | BLY1BP | Original Q3 | Legacy

Three	**A**	Alamosaurus	4
	B	Lagosuchus	1
	C	Saturnalia	3
	D	Triceratops	2

Answer 27 · Mark scheme June 2011 | BLY1BP | Original Q5 | Legacy

Five	**A**	extinction			4
	B	mutation			2
	C	reproduction			3
	D	variation			1
	A		**B**	**C**	**D**

Answer 28 · Mark scheme June 2011 | BLY1BP | Original Q7 | Legacy

Seven	**3**	**1**	**4**	**3**

Answer 29 · Mark scheme November 2011 | BLY1BP | Original Q4 | Legacy

Four	**A**	birds	**1**
	B	chimpanzees	**3**
	C	fish	**4**
	D	sharks	**2**

Answer 30 · Mark scheme November 2011 | BLY1BP | Original Q8 | Legacy

Eight	**4**	**1**	**2**	**2**

4.6.2.2 Evolution

Answer 31 · Mark scheme

Question 3

question	answers	extra information	mark
3(a)	lemur(s)		1
3(b)	gorilla(s)	in either order	1
	chimpanzee(s)	accept chimps	1
3(c)(i)	(Charles) Darwin	accept (Alfred) Wallace if first name given it must be correct	1
3(c)(ii)	variation	in this order	1
	environment	allow phonetic spellings	1
	survive		1
	generation		1
Total			8

4.6.2.2 Evolution

Answer 31 · Mark scheme January 2012 | BL1FP | Original Q3 | Legacy

BL1FP

4.6.2.2 Evolution

Answer 32 · Mark scheme

June 2012 | BL2FP | Original Q3 | Legacy

Question 3

question	answers	extra information	mark
3(a)	remains of an organism **or** bone / shell / hard part of an organism / impression further detail – eg in rock / from a long time ago	 if numbers, greater or equal to hundreds of years allow made of minerals ignore over time ignore fossil are rocks	1 1
3(b)(i)	D		1
3(b)(ii)	B		1
3(b)(iii)	predation / disease / lack of food / competition / loss of habitat / climate change / catastrophic event – or volcanic eruption / flood / drought / temperature change / weather change / ice age / change in atmosphere	ignore human effects ignore pollution effects / acid rain ignore human effects allow natural disaster	1
3(c)	C = 'widest' thickest / wider thicker column **or** more fossils (of type C found)	allow biggest / er	1
3(d)	members of the groups have similar physical structures	extra box ticked – cancel	1
Total			**7**

4.6.2.2 Evolution

Answer 32 · Mark scheme

June 2012 | BL2FP | Original Q3 | Legacy

BL2FP

4.6.2.2 Evolution

Answer 33 · Mark scheme

January 2013 | BL1FP | Original Q7 | Legacy

Question 7

question	answers	extra information	mark
7(a)(i)	natural		1
7(a)(ii)	simple		1
7(a)(iii)	three billion		1
7(b)	any **two** from: • reference to religion • insufficient evidence / couldn't prove it / no proof • mechanism of inheritance / variation not known • reference to other theories • reference to Darwin's status	ignore no evidence allow genes / DNA not known about	2
7(c)(i)	tree		1
7(c)(ii)	hippopotamus **and** pig	both required, either order allow hippo	1
7(c)(iii)	new evidence from fossils		1
Total			**8**

4.6.2.2 Evolution

Answer 33 · Mark scheme

January 2013 | BL1FP | Original Q7 | Legacy

BL1FP

4.6.2.2 Evolution

Answer 34 · Mark scheme

Question 3

question	answers	extra information	mark
3(a)(i)	animal walking on soft material **or** suitably named material **or** further detail – eg dries out / buried / hardens / turns to rock	 do **not** allow general descriptions of how fossils are formed **or** reference to bones not decaying	1
3(a)(ii)	any **one** from: • (from) bones / shells / hard parts **or** from parts that do not decay / rot or are preserved • animal trapped in resin / amber / ice / peat • infiltration with minerals / named	 ignore imprint / impression allow frozen	1
3(b)	any **two** from: examples of physical factors such as flooding, volcanic activity (allow volcanoes) asteroid collision, drought, ice age / temperature change examples of biological factors such as predators (allow hunters), disease / named pathogen, competition lack of food / mates, cyclical nature of speciation / isolation / lack of habitat or habitat change	 accept 2 physical factors or 2 biological factors or one of each for full marks ignore pollution If no other answers given allow natural disaster / climate change / weather change / catastrophic event / environmental change for **1** mark	2

Question 3 continues on the next page . . .

4.6.2.2 Evolution

Question 3 continued . . .

question	answers	extra information	mark
3(c)	older fossils simpler **or** change (with time)	to gain the mark there must be implication of change ignore evolve ignore extinction	1
3(d)	insufficient / no evidence / no remains **or** fossils survive	ignore no people were there allow no proof	1
Total			**6**

4.6.2.2 Evolution

Answer 34 · Mark scheme January 2013 | BL2FP | Original Q3 | Legacy

BL2FP

4.6.2.2 Evolution

Answer 35 · Mark scheme

June 2013 | BL2FP | Original Q2 | Legacy

Question 2

question	answers	extra information	mark
2(a)(i)	(remains of) an organism / a bone / a shell / hard part of an organism / part of organism that does not decay / impression of an organism / footprint / burrow / rootlet trace further detail – eg in rock / ice/ amber / mineralisation **or** from a long time ago / many years ago	 if number, > 1000 years ignore hundreds	1 1
2(a)(ii)	older fossils are simple(r) **or** fossils show change / adaptation with time	must make ref to change and time allow deeper fossils are simple(r)	1
2(b)(i)	18 to 30	allow 30 to 18 allow 12 ignore units	1
2(b)(ii)	small sample	allow only 49 shells / not representative / not enough evidence allow not all fossils found	1
2(c)	example of a physical factor such as flooding, volcanic activity (allow volcanoes) asteroid collisions, drought, ice age / temperature change **or** example of a biological factor such as predators / disease / competition / lack of food or mates / cyclical nature of speciation / isolation / lack of habitat or habitat change	allow natural disaster / climate change / weather change / catastrophic event / environmental change ignore human factors eg hunting / pollution	1
Total			**6**

4.6.2.2 Evolution

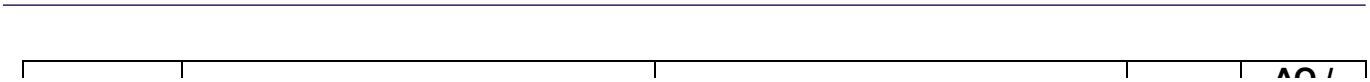
Answer 36 · Mark scheme June 2014 | BL1FP | Original Q6 | Legacy

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**	

4.6.2.2 Evolution

Answer 36 · Mark scheme

June 2014 | BL1FP | Original Q6 | Legacy



4.6.2.2 Evolution

Answer 37 · Mark scheme June 2014 | BL2FP | Original Q4 | Legacy

4(a)	fossils show change over time.		1	AO1 2.8
4(b)	covered in sediment / mud or sinks into the mud soft parts decay / are eaten **or** bones / hard parts / shell do not decay minerals enter bones / parts are replaced by minerals / mineralisation	 accept turns to rock allow 'is an impression' / 'imprint' / 'cast'	1 1 1	AO1 / AO2 2.8.1a, b
4(c)	skin is soft / skin not preserved / not fossilised / skin decays	accept not enough / no evidence / no-one has seen one allow 'this fossil is only bones'	1	AO3 2.8, 2.8.1c
4(d)	any **two** examples of: physical factors such as volcanic activity (allow volcanoes) / earthquakes / asteroid (collision) / ice age / temperature change **and / or** biological factors such as predators / disease / named pathogen / competition/ lack of food / mates / cyclical nature of speciation / isolation / lack of habitat or habitat change	accept 2 physical factors or 2 biological factors or one of each for full marks ignore pollution if no other answers given allow natural disaster / climate change / weather change / catastrophic event / environmental change for 1 mark	2	AO1 2.8.1e
Total			**7**	

4.6.2.2 Evolution

Answer 37 · Mark scheme

June 2014 | BL2FP | Original Q4 | Legacy

Question	Answers	Extra information	Mark	AO / spec ref.

4.6.2.2 Evolution

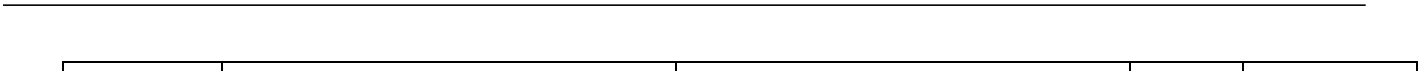
Answer 38 · Mark scheme June 2015 | BL1FP | Original Q7 | Legacy

Question	Answers	Extra information	Mark	AO / Spec. Ref.
7(a)	selection		1	AO1 1.8.1a
7(b)(i)	4		1	AO2 1.8
7(b)(ii)	ground finch / lives on the ground (only) eats seeds	allow eg eats seeds on / from the ground for **2** marks	1 1	AO2 1.8
7(c)	Lamarck		1	AO1 1.8.1c
Total			**5**	

4.6.2.2 Evolution

Answer 38 · Mark scheme

June 2015 | BL1FP | Original Q7 | Legacy



4.6.2.2 Evolution

Answer 39 · Mark scheme June 2016 | BL1FP | Original Q6 | Legacy

Question	Answers	Extra information	Mark	AO / Spec. Ref.
6(a)	three billion		1	AO1 1.8.1a
6(b)	mutation(s) breed / reproduce	in this order only allow pass on their genes	1 1	AO1 1.8.1e/f
Total			3	

4.6.2.2 Evolution

Answer 39 · Mark scheme

June 2016 | BL1FP | Original Q6 | Legacy

4.6.2.2 Evolution

Answer 40 · Mark scheme

June 2016 | BL2FP | Original Q5 | Legacy

Question	Answers	Extra information	Mark	AO / Spec. Ref.
5(a)(i)	reduced photosynthesis	ignore growth do **not** allow need light for respiration	1	AO2 2.3.1a/b 2.8.1e
5(a)(ii)	less food (for animals) **or** less oxygen (for animals)	allow loss of habitat	1	AO2 2.3.1a/b 2.8.1e
5(a)(iii)	any **two** from: examples of physical factors, eg • flooding • drought • ice age / temperature change • volcanic activity examples of biological factors, eg • (new) predators (allow hunters / poachers) • (new) disease / named pathogen • competition for food • competition for mates • cyclical nature of speciation • isolation • lack of habitat or habitat change	accept 2 physical factors or 2 biological factors or one of each for full marks ignore pollution If no other answers given allow natural disaster / climate change / weather change / catastrophic event / environmental change for **1** mark	2	AO1 2.8.1e
5(b)(i)	3		1	AO2 2.8.1e
5(b)(ii)	fossils	ignore bones, remains, fossil fuels	1	AO1 2.8.1a/e

4.6.2.2 Evolution

Answer 40 · Mark scheme

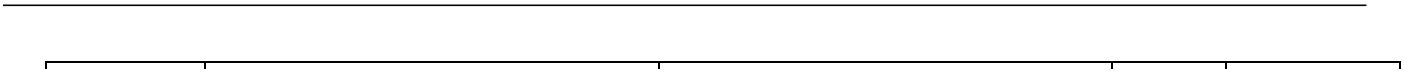
June 2016 | BL2FP | Original Q5 | Legacy

Question	Answers	Extra information	Mark	AO / Spec. Ref.
5(c)(i)	65 million years ago		1	AO2 2.8.1e
5(c)(ii)	17	allow ecf	1	AO2 2.8.1e
5(c)(iii)	fossil record incomplete **or** some fossils destroyed	accept not enough evidence **or** cannot perform experiment to test	1	AO3 2.8 2.8.1a/e
Total			**9**	

4.6.2.2 Evolution

Answer 40 · Mark scheme

June 2016 | BL2FP | Original Q5 | Legacy



4.6.2.2 Evolution

Answer 41 · Mark scheme

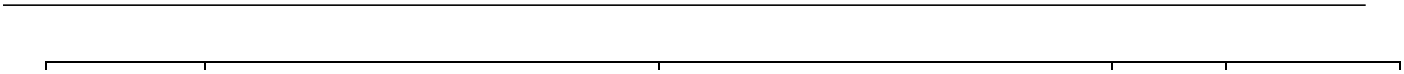
June 2017 | BL1FP | Original Q8 | Legacy

Question	Answers	Extra information	Mark	AO / Spec. Ref.
8(a)	any three from: • mutation **or** variation • better adapted survive **or** survival of the fittest • (survivors / better adapted) reproduce • genes passed on	allow points if given in example allow genetic changes allow differences in appearance allow ref to offspring	3	AO1 1.8.1e/f
8(b)(i)	wanted to discredit theory / Darwin	allow wanted to make Darwin / theory look stupid allow idea that (cartoon shows) humans evolved from monkeys	1	AO3 1.8.1b/c
8(b)(ii)	any **two** from: • Darwin's theory challenged idea that God created life • little / insufficient evidence • there were other (scientific) theories (at the time) • mechanism of inheritance not known	allow Darwin's theory challenged / against religious ideas/teaching. ignore against religion ignore no evidence allow examples, eg Lamarckism, allow genes / DNA not discovered ignore did not know about inheritance	2	AO1 1.8.1b/c
Total			**6**	

4.6.2.2 Evolution

Answer 41 · Mark scheme

June 2017 | BL1FP | Original Q8 | Legacy



4.6.2.2 Evolution

Answer 42 · Mark scheme

June 2017 | BL2FP | Original Q2 | Legacy

Question	Answers	Extra information	Mark	AO / Spec. Ref.
2(a)(i)	remains of an organism (which was alive) a long time ago	allow skeleton / shell / impression if years given, must be >1000	1 1	AO1 2.8.1b
2(a)(ii)	(**Y** was) found in deeper / older rock layer		1	AO3 2.8 2.8.1a/d
2(a)(iii)	The fossils of animals **Y** and **Z** have many features in common The fossil of animal **Y** is more complex than the fossil of animal **Z**		1 1	AO3 2.8 2.8.1a/d

4.6.2.2 Evolution

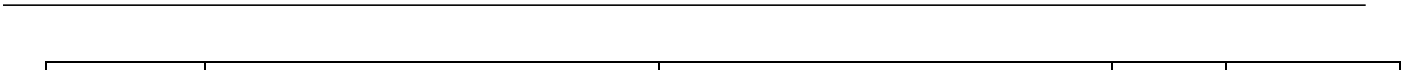
Answer 42 · Mark scheme

2(b)(i)	any **two** from: examples of physical factors, e.g. • flooding • volcanic activity (allow volcanoes) • asteroid collision • drought • ice age / temperature change / global warming • tsunami / earthquake / tornado examples of biological factors e.g. • predators / hunters / poachers • disease / named pathogen • competition for **or** lack of food / water • competition for mates **or** lack of mates • cyclical nature of speciation • lack of habitat **or** habitat change **or** deforestation	allow 2 physical factors or 2 biological factors or one of each for full marks ignore pollution ignore nuclear explosions ignore natural selection if no other answers given allow natural disaster / climate change / weather change / catastrophic event / environmental change for **1** mark	2	AO1 2.8 2.8.1e
2(b)(ii)	lack of evidence **or** no-one was there to observe it happening **or** cannot perform experiment to test		1	AO3 2.8 2.8.1e
Total			**8**	

4.6.2.2 Evolution

Answer 42 · Mark scheme

June 2017 | BL2FP | Original Q2 | Legacy



4.6.2.2 Evolution

Answer 43 · Mark scheme

June 2018 | 8461/2F | Original Q3

Question	Answers	Extra information	Mark	AO / Spec. Ref.
03.1	(organism) soft-bodied **or** (fossil) destroyed	allow lack hard parts / skeleton / shell allow (organism) eaten / decayed allow buried (very) deep allow they are (very) small	1	AO1 4.6.3.5
03.2	any **two** from: • the fish (dies) buried in sediment / sand / mud • (only) the soft parts decayed / eaten **or** the hard parts / bones did not decay or were not eaten • mineralisation occurred	allow other examples of sediments do **not** accept rock(s) allow description of mineralisation eg bones turned to stone allow imprinted (in the sediment)	2	AO2 4.6.3.5
03.3	any **two** from: • drought • ice age / global warming • volcanic activity • asteroid / meteor collision • (new) predators • (new) disease / named pathogen • competition for food • competition for mates • lack of habitat or habitat change	ignore pollution allow earthquakes / tsunami allow hunters / poachers allow eaten allow lack of food allow isolation or lack of mates if no other marks awarded allow natural disaster / climate change / weather change / catastrophic event / environmental change for **1** mark	2	AO1 4.6.3.6

4.6.2.2 Evolution

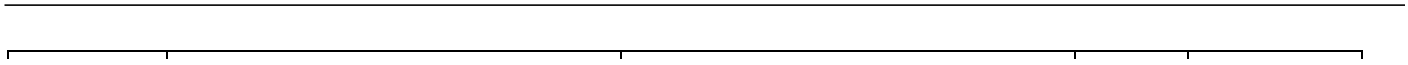
Answer 43 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec. Ref.
03.4	a change in a gene		1	AO1 4.6.2.1
03.5		allow in terms of an example		AO1 4.6
	there is variation (between members of a species)	allow mutation	1	4.6.2.2 4.6.3.1
	better adapted survive	allow 'survival of the fittest'	1	
	(reproduce and) pass on (favourable) allele(s) / gene(s) / mutation(s) / DNA / genetic material	ignore pass on characteristic(s)	1	
Total			9	

4.6.2.2 Evolution

Answer 43 · Mark scheme

June 2018 | 8461/2F | Original Q3



4.6.2.2 Evolution

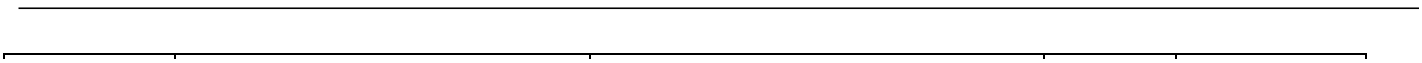
Answer 44 · Mark scheme June 2019 | 8461/1F | Original Q2

02.1	the movement of particles from a high concentration to a low concentration		1	4.1.3.1 AO1
02.2	(gills) have (many) projections (for) large(r) surface / area **or** (gills) are on the outside of the body (1) for good access to water (1)	allow description of projections allow have lots of / five gills	1 1	4.1.3.1 AO2
02.3	differentiation		1	4.1.2.3 AO1
02.4	mitosis	do **not** accept meiosis	1	4.1.2.2 AO1
02.5	hair		1	4.1.2.2 4.1.2.3 AO1
02.6	axolotls are cheap to feed axolotls are easy to breed		1 1	4.1.2.3 AO3
02.7	D		1	4.2.2.2 AO1
02.8	trachea	allow windpipe allow cartilage (ring)	1	4.2.2.2 AO1
02.9	pulmonary artery		1	4.2.2.2 AO1
Total			**11**	

4.6.2.2 Evolution

Answer 44 · Mark scheme

June 2019 | 8461/1F | Original Q2



4.6.2.2 Evolution

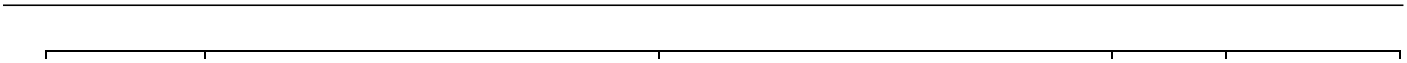
Answer 45 · Mark scheme November 2021 | 8461/2F | Original Q1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
01.1	Alfred Russel Wallace Charles Darwin		1 1	AO1 4.6.3.1 4.6.3.2
01.2	remains of an organism from a long time ago	allow remains of an animal / plant allow from thousands / millions of years ago	1 1	AO1 4.6.3.5
01.3	the animal walked on mud		1	AO2 4.6.3.5
01.4	any **two** from: • flooding • 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 hunters / poachers allow named example allow lack of food allow lack of mates ignore competition unqualified ignore environment change ignore isolation ignore pollution	2	AO1 4.6.3.6
01.5	bacteria can become resistant to an antibiotic older fossils are simpler than more recent ones		1 1	AO1 4.6.2.2 4.6.3.4
Total			**9**	

4.6.2.2 Evolution

Answer 45 · Mark scheme

November 2021 | 8461/2F | Original Q1



4.6.2.2 Evolution

Answer 46 · 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

4.6.2.2 Evolution

Answer 46 · 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

4.6.2.2 Evolution

Answer 46 · Mark scheme

June 2022 | 8461/2F | Original Q7

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**

4.6.2.2 Evolution

Answer 47 · Mark scheme

June 2024 | 8461/2F | Original Q2

Question 2

Question	Answers	Extra information	Mark	AO / Spec Ref.
02.1	kingdom		1	AO1 4.6.4

Question	Answers	Extra information	Mark	AO / Spec Ref.
02.2	genus species		1 1	AO1 4.6.4

Question	Answers	Extra information	Mark	AO / Spec Ref.
02.3	3 million years ago		1	AO3 4.6.4

Question	Answers	Extra information	Mark	AO / Spec Ref.
02.4	black-backed jackal	ignore jackal do **not** accept golden jackal	1	AO3 4.6.4

4.6.2.2 Evolution

Answer 47 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec Ref.
02.5	any **two** 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 awarded, allow **1** mark for climate change 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 environment change ignore isolation ignore pollution	2	AO1 4.6.3.6

Question	Answers	Extra information	Mark	AO / Spec Ref.
02.6	any **one** from: • wolves ate humans • wolves get left-over food from humans • humans gave food to wolves		1	AO3 4.6.2.3 4.7.1.1

4.6.2.2 Evolution

Answer 47 · Mark scheme

Question	Answers	Extra information	Mark	AO / Spec Ref.
02.7	breed the least / less aggressive wolves breed (least / less aggressive) offspring	 ignore repeat breeding of the original pair(s)	1 1	AO2 AO1 4.6.2.3

Total Question 2	10

4.6.2.2 Evolution

Answer 48 · Mark scheme

June 2024 | 8461/2F | Original Q9

Question 9

Question	Answers	Extra information	Mark	AO / Spec Ref.
09.1	a change in: • DNA • base code **or** nucleotide sequence • base (in DNA) • gene / allele • part of a chromosome • number of chromosomes • genetic code / material	ignore genetic information / variation ignore reference to amino acids or proteins	1	AO1 4.6.2.1

Question	Answers	Extra information	Mark	AO / Spec Ref.
09.2	any **three** from: • variation (between members of a species) • better adapted survive • (better adapted or survivors) reproduce • pass on (favourable) allele(s) / gene(s) / mutation(s)	allow in terms of an example ignore mutation allow survival of the fittest allow converse ignore passing on genetic material **or** chromosomes **or** characteristic	3	AO1 4.6.2.1 4.6.2.2 4.6.3.1

Question	Answers	Extra information	Mark	AO / Spec Ref.
09.3	Alfred Wallace and Charles Darwin		1	AO1 4.6.2.2 4.6.3.1 4.6.3.2

4.6.2.2 Evolution

Answer 48 · Mark scheme

June 2024 | 8461/2F | Original Q9

Question	Answers	Extra information	Mark	AO / Spec Ref.
09.4	hoverfly looks like a wasp	allow pattern of the markings is similar (on the hoverfly and wasp) ignore predator / animal thinks the hoverfly is a wasp	1	AO3 4.6.3.2 4.7.1.1 4.7.1.4
	predator / animal avoids **wasps** so it does not get stung		1	
	(so) predator / animal does not attack / eat hoverfly	allow correctly named predator ignore bite / harm	1	

Total Question 9	8

4.6.2.2 Evolution

Answer 46 · 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 46 · 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.

4.6.2.2 Evolution

Answer 47 · Examiner comments

June 2024 | 8461/2F | Original Q2

Question 2 (low demand)

02.1 Almost 65% of students knew that balance is the function of the cerebellum.

02.2 A third of students were able to identify both classification groups that form the binomial name. However, a further 50% of students could identify at least one. It was common to see only one box ticked in this question; students are reminded to read the instructions given in the question carefully.

02.3 Almost 80% of students identified the correct time as 3 million years ago.

02.4 Just under two thirds of students gained this mark.

02.5 Almost half of students could give two possible causes of extinction, with a further one third of students able to give at least one. The most common causes given were predators and lack of food. A noticeable number of students failed to gain credit by only giving a vague statement about environment change.

02.6 25% of students could suggest a correct reason as to why wolves began to follow humans, with lots of vague statements about the similarities between wolves and humans in terms of what they ate and how they hunted.

02.7 Over half of students did not gain any credit on this question. Most commonly a student that gained one mark did so by describing the breeding of two less aggressive wolves but did not go further to describe breeding the offspring to achieve the second mark.

4.6.2.2 Evolution

Answer 48 · Examiner comments

June 2024 | 8461/2F | Original Q9

Question 9 (standard demand)

09.1 Students struggled to articulate their answer to this question with 20% of students defining a mutation correctly. Many students knew that it was something to do with 'a change', but this was anything from a cell or a particular characteristic of a phenotype to a whole species changing.

09.2 Fewer than 5% of students were able to give a full description of natural selection to gain full marks. 20% of students did not attempt the question at all, and a further 50% of students failed to gain any marks. Very few students talked about variation for the first mark. Survival of the fittest was not well described but some picked up the mark by using the phrase. The third bullet point was most often awarded for the implication that those that survived went on to breed, and this may have been by mentioning 'offspring' in marking point 4. Vague references to 'traits' or 'characteristics' being passed on were not creditworthy in bullet point four. Students who were able to give an example of natural selection had better structures to their answers, with giraffe necks being the most common example given.

09.3 Just over 50% of students were able to identify Alfred Wallace and Alexander Fleming as the scientists that suggested the theory of evolution by natural selection.

09.4 Over 50% of students managed to gain a mark in this question, most commonly for stating 'the hoverfly looks like the wasp'. Marking point 2 was rarely awarded as students failed to explicitly refer to the wasp. Some incorrect answers referred to the hoverfly's colours enabling it to camouflage which did not gain credit. Overall, the main reason marks were not awarded was because of vagueness, or poor articulation of ideas.

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