AQA GCSE Biology | 8461

SPECIFICATION POINT 4.6.3.1

Theory of evolution (biology only)

Mark schemes and examiner comments

Tier	**Foundation**
Question groups	**22**
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.

4.6.3.1 Theory of evolution (biology only)

Answer 01 · Mark scheme June 2007 | BLY1B | Original Q8 | Legacy

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

Answer 02 · Mark scheme March 2008 | BLY1BP | Original Q8 | Legacy

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

Answer 03 · Mark scheme June 2008 | BLY1BP | Original Q5 | Legacy

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

4.6.3.1 Theory of evolution (biology only)

Answer 04 · 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**

4.6.3.1 Theory of evolution (biology only)

Answer 04 · Mark scheme June 2008 | BLY1F | Original Q4 | Legacy

COMPONENT NUMBER: BLY1F

COMPONENT NAME: Science B / Biology

STATUS: Final

DATE: June 2008

Answer 05 · 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**

4.6.3.1 Theory of evolution (biology only)

Answer 06 · 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**

4.6.3.1 Theory of evolution (biology only)

Answer 06 · 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 07 · Mark scheme November 2009 | BLY1BP | Original Q4 | Legacy

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

Answer 08 · Mark scheme November 2009 | BLY1BP | Original Q6 | Legacy

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

4.6.3.1 Theory of evolution (biology only)

Answer 09 · Mark scheme

January 2010 | BLY1F | Original Q6 | Legacy

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

4.6.3.1 Theory of evolution (biology only)

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**

4.6.3.1 Theory of evolution (biology only)

Answer 09 · Mark scheme January 2010 | BLY1F | Original Q6 | Legacy

BLY1F

Answer 10 · Mark scheme June 2010 | BLY1BP | Original Q6 | Legacy

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

4.6.3.1 Theory of evolution (biology only)

Answer 11 · 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**

4.6.3.1 Theory of evolution (biology only)

Answer 11 · Mark scheme June 2010 | BLY1F | Original Q7 | Legacy

BLY 1F

Answer 12 · 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**

4.6.3.1 Theory of evolution (biology only)

Answer 13 · Mark scheme

June 2011 | BLY1F | Original Q7 | Legacy

Question 7

question	answers	extra information	mark
7(a)	warmer / dryer	allow greenhouse effect / global warming ignore wind	1
7(b)(i)	genes / alleles / chromosomes / DNA / genetic material / genetics	allow inheritance allow nutrition / food / metabolism / growth rate ignore environment	1
7(b)(ii)	natural selection / evolution	allow survival of the fittest	1
Total			3

4.6.3.1 Theory of evolution (biology only)

Answer 13 · Mark scheme

June 2011 | BLY1F | Original Q7 | Legacy

BLY1F

4.6.3.1 Theory of evolution (biology only)

Answer 14 · 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

4.6.3.1 Theory of evolution (biology only)

Answer 14 · Mark scheme

January 2012 | BL1FP | Original Q3 | Legacy

BL1FP

4.6.3.1 Theory of evolution (biology only)

Answer 15 · 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**

4.6.3.1 Theory of evolution (biology only)

Answer 15 · Mark scheme

January 2013 | BL1FP | Original Q7 | Legacy

BL1FP

4.6.3.1 Theory of evolution (biology only)

Answer 16 · Mark scheme

Question 5

question	answers	extra information	mark
5(a)	Mendel		1
5(b)(i)	**TT**		1
5(b)(ii)	a dominant allele		1
5(c)	1 : 1		1
5(d)	100 short plants		1
Total			**5**

4.6.3.1 Theory of evolution (biology only)

Answer 16 · Mark scheme

January 2013 | BL2FP | Original Q5 | Legacy

BL2FP

4.6.3.1 Theory of evolution (biology only)

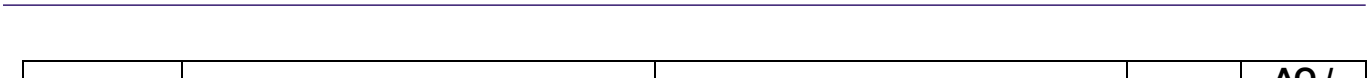
Answer 17 · Mark scheme June 2014 | BL1FP | Original Q6 | Legacy

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**	

4.6.3.1 Theory of evolution (biology only)

Answer 17 · Mark scheme

June 2014 | BL1FP | Original Q6 | Legacy



4.6.3.1 Theory of evolution (biology only)

Answer 18 · Mark scheme

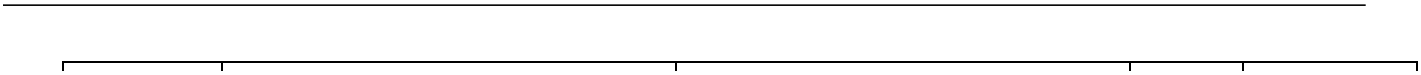
June 2015 | BL1FP | Original Q7 | Legacy

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**	

4.6.3.1 Theory of evolution (biology only)

Answer 18 · Mark scheme

June 2015 | BL1FP | Original Q7 | Legacy



4.6.3.1 Theory of evolution (biology only)

Answer 19 · 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	

4.6.3.1 Theory of evolution (biology only)

Answer 19 · Mark scheme

June 2016 | BL1FP | Original Q6 | Legacy

4.6.3.1 Theory of evolution (biology only)

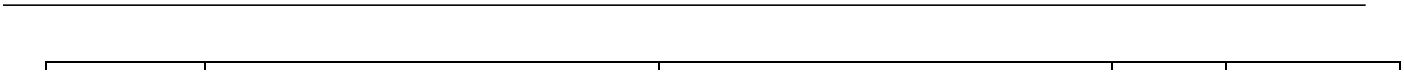
Answer 20 · Mark scheme June 2017 | BL1FP | Original Q8 | Legacy

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**	

4.6.3.1 Theory of evolution (biology only)

Answer 20 · Mark scheme

June 2017 | BL1FP | Original Q8 | Legacy



4.6.3.1 Theory of evolution (biology only)

Answer 21 · Mark scheme

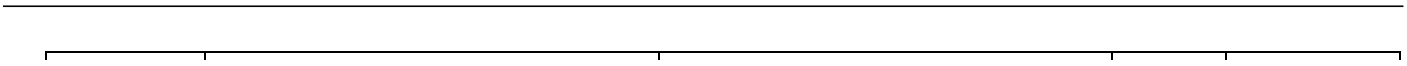
November 2021 | 8461/2F | Original Q1

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**	

4.6.3.1 Theory of evolution (biology only)

Answer 21 · Mark scheme

November 2021 | 8461/2F | Original Q1



4.6.3.1 Theory of evolution (biology only)

Answer 22 · 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

4.6.3.1 Theory of evolution (biology only)

Answer 22 · 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

4.6.3.1 Theory of evolution (biology only)

Answer 22 · 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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