General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1F   Unit Biology 1

Mark Scheme

2011 examination – June series

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

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' 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 to download from the AQA Website: www.aqa.org.uk

MARK SCHEME

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 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

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 lines 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.)

3.   Marking points

3.1   Marking of lists

This applies to questions requiring a set number of responses, but for which candidates 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)

Candidate	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

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

Candidate	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2   Use of chemical symbols / formulae

If a candidate 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, as shown in the column 'answers', 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;

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 are 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.

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Question 1

question	answers	extra information	mark
1(a)(i)	carbon dioxide		1
1(a)(ii)	sulfur dioxide		1
1(b)(i)	reduces land available for animals and plants		1
1(b)(ii)	metals		1
1(c)(i)	pesticide		1
1(c)(ii)	kill other animals		1
Total			**6**

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Question 2

question	answers	extra information	mark
2	Duck — Swimming Eagle — Catching and holding prey Elephant — Supporting a very heavy body Horse — Running very fast (boxes: Running very fast, Swimming, Flying, Catching and holding prey, Supporting a very heavy body)	all four correct = **4** marks three correct = **3** marks two correct = **2** marks one correct = **1** mark extra line from a statement cancels the mark	4
Total			**4**

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Question 3

question	answers	extra information	mark
3(a)	**1** egg		1
	2 embryo		1
	3 nucleus		1
	4 skin cell		1
3(b)	the child created by cloning would not have been able to give permission	extra boxes ticked cancels the mark	1
Total			**5**

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Question 4

question	answers	extra information	mark
4(a)		all four correct = **4** marks three correct = **3** marks two correct = **2** marks one correct = **1** mark extra line from a statement cancels the mark	4
4(b)	glands muscles	 **1** mark for each correct tick each extra box ticked cancels **1** mark	1 1
Total			**6**

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Question 5

question	answers	extra information	mark
5(a)	a drug taken for pleasure / fun	allow not taken as medicine ignore recreational / legal / harmless / specific effects on body	1
5(b)(i)	45		1
5(b)(ii)	a cup of takeaway coffee		1
5(c)	There is a link between drinking caffeine and hallucinations.	extra boxes ticked cancels the mark	1
Total			**4**

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Question 6

question	answers	extra information	mark
6(a)	any **two** from: • FSH • LH • oestrogen	 do **not** accept FHS do **not** accept LSH allow progesterone as alternative to any hormone	2
6(b)	egg(s) / egg cell(s) / ova	do **not** accept ovaries do **not** accept fertilised eggs	1
6(c)(i)	any **one** from: • don't have to take (pill) every day • can't forget to take • more reliable • lasts 3 years / lasts longer • hormone level in blood more constant	ignore faster ignore side effects ignore cost	1
6(c)(ii)	any **one** from: • eg painful (to insert) / uncomfortable / causes rash • woman can't take it out • more difficult to stop treatment • needs to be removed if woman decides to become pregnant	ignore cost ignore side effects unqualified allow have to wait three years to become pregnant	1
Total			**5**

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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 <u>rate</u> ignore environment	1
7(b)(ii)	natural selection / evolution	allow survival of the fittest	1
Total			**3**

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Question 8

question	answers	extra information	mark
8(a)	any **two** from: • (high) CRP / protein • (no) heart condition • (not high) LDL • over 50 / age • number of tablets (each day)	 allow health ignore time ignore placebo / rosuvastatin ignore number of people	2
8(b)	any **one** from: • tablet with no drug • tablet that has no effect • tablet without chemicals • tablet that people thought contained statin **or** reference to psychological effect	 allow fake (pill) / dummy (pill) / sugar / chalk (pill) allow drug that has no effect ignore vitamin / mineral pill ignore control / different statin	1
8(c)	17802 / large number of people **or** enough people	ignore control group / fair test / control variables ignore time / repeats	1

Question 8 continues on the next page

Question 8 continued . . .

question	answers	extra information	mark
8(d)	any **one** from: • placebo group at risk of heart attack **or** to allow statin to be given to everyone • statin group 54% less likely to get heart attack **or** showed that statin worked **or** showed trial (very) successful • sufficient information gained / results conclusive • unethical / unfair to carry on trial	ignore cost ignore reliable ignore got results early	1
8(e)	to avoid bias **or** show impartiality **or** show results independent	allow manufacturers could cheat ignore reliability ignore could be sued / blamed if trial went wrong ignore manufacturer would know which group got statin / placebo	1
8(f)	any **two** from: • reduction in LDL • reduction in (saturated) fats • reduces deposition of fat / cholesterol / LDL in walls of blood vessels **or** blood vessels less likely to be blocked with fat / cholesterol / LDL	allow improves LDL:HDL balance **or** LDL and HDL concentrations equal ignore less cholesterol ignore more HDL do **not** accept less HDL	2
Total			**8**

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Question 9

question	answers	extra information	mark
9	(wbc) ingest / digest pathogens / bacteria / viruses	allow eat germs ignore swallow germs ignore ingest the disease ignore attack / kill the disease	1
	(wbc) produce antibodies		1
	(wbc) produce antitoxins		1
	any **one** from:		1
	• (antibodies) destroy or kill pathogens / bacteria / viruses / germs	ignore destroy / kill disease ignore attack / fight pathogens ignore attack / killing toxins	
	• (antitoxins) counteract / destroy / neutralise toxins / poisons		
	• reasonable reference to memory cells **or** rapid production of antibodies upon re-infection		
Total			**4**

The AQA UMS Conversion Calculator is available on the **Results statistics** page of the AQA Website.