



**General Certificate of Secondary Education**

**Science B 4462/ Biology 4411**

**BLY1F Unit Biology 1**

**Mark Scheme**

*2009 examination – January 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](http://www.aqa.org.uk)

Copyright © 2009. AQA and its licensors. All rights reserved.

#### COPYRIGHT

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

## 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.

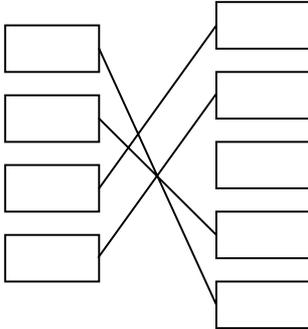
**COMPONENT NUMBER: BLY1F****COMPONENT NAME: Science B / Biology****STATUS: Final****DATE: January 2009**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>1(a)</b>	eye / sight / eyesight	either order	1
	ear / hearing	ignore light	1
<b>1(b)</b>	ear		1
<b>1(c)(i)</b>	reflex		1
<b>1(c)(ii)</b>	neurones		1
<b>Total</b>			<b>5</b>

**COMPONENT NUMBER: BLY1F****COMPONENT NAME: Science B / Biology****STATUS: Final****DATE: January 2009**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>2(a)</b>	fuel / houses / paper	allow any object made from wood	1
	farming / agriculture / replanting	allow roads / homes / factories	1
	carbon dioxide / greenhouse gas / pollution <b>or</b> relative named pollutant		1
	warming / temperature increase		1
<b>2(b)(i)</b>	none of species left / died out		1
<b>2(b)(ii)</b>	may have products useful to humans / examples	allow preserve for future generations <b>or</b> 'still there to look at' allow affect food chains / cycles <b>or</b> extinction of other species allow non human reasons eg loss of habitat ignore environmental effects	1
<b>Total</b>			<b>6</b>

**COMPONENT NUMBER: BLY1F****COMPONENT NAME: Science B / Biology****STATUS: Final****DATE: January 2009**

question	answers	extra information	mark
3	<p>leads to increased blood pressure in 30 % of the population</p> <p>reduces the amount of oxygen carried by the blood</p> <p>'good' cholesterol</p> <p>increases blood cholesterol levels</p>	<p>mark from the left hand box</p> <p>two lines from left hand box disqualifies</p> 	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
<b>Total</b>		<b>4</b>	

**COMPONENT NUMBER: BLY1F****COMPONENT NAME: Science B / Biology****STATUS: Final****DATE: January 2009**

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

**COMPONENT NUMBER: BLY1F**

**COMPONENT NAME: Science B / Biology**

**STATUS: Final**

**DATE: January 2009**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>5(a)</b>	sexual reproduction		<b>1</b>
<b>5(b)</b>	any <b>three</b> from: <ul style="list-style-type: none"><li>• coat colour inherited / controlled by genes</li><li>• it has horse and zebra features</li><li>• gets gametes from both parents</li><li>• genes / DNA / chromosomes / genetic information in gametes</li><li>• zorse receives genes / DNA / chromosomes / genetic information from parents</li></ul>		<b>3</b>
<b>Total</b>			<b>4</b>

**COMPONENT NUMBER: BLY1F****COMPONENT NAME: Science B / Biology****STATUS: Final****DATE: January 2009**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>6(a)</b>	21		1
<b>6(b)</b>	1/26 or 8/208 or 4/104 or 2/52 <b>or</b> 3.8%	allow 'out of' in each case	1
<b>6(c)</b>	under 35		1
<b>6(d)</b>	any <b>two</b> from: <ul style="list-style-type: none"><li>• low success rate <b>or</b> not always successful</li><li>• high number of multiple births</li><li>• expensive</li><li>• stressful / emotional</li><li>• side effects</li></ul>		2
<b>Total</b>			<b>5</b>

**COMPONENT NUMBER: BLY1F****COMPONENT NAME: Science B / Biology****STATUS: Final****DATE: January 2009**

question	answers	extra information	mark
7(a)	antibodies	allow antitoxins / memory cells do <b>not</b> allow antigens	1
	immune	ignore protection allow resistant	1
7(b)(i)	fell	allow stopped in 1995	1
	numerical qualification to zero / nothing / by 100%		1
7(b)(ii)	(no) % vaccination fell <b>or</b> when no vaccination	ignore circle	1
	but autism numbers did not fall / stayed high / increased <b>or</b> '(yes) might support it if time lag between vaccination and autism symptoms' / 'time lag for diagnosis' (1) 6 year time lag quantified (1)		1
<b>Total</b>			<b>6</b>

**COMPONENT NUMBER: BLY1F****COMPONENT NAME: Science B / Biology****STATUS: Final****DATE: January 2009**

question	answers	extra information	mark
8(a)(i)	does not contain drug / chemical	allow eg fake / sugar pill / dummy drug ignore control	1
8(a)(ii)	as control <b>or</b> to see if the effects are psychological <b>or</b> allows blind testing	allow 'to compare (with NRT)' ignore fair test	1
8(b)(i)	gum	allow gum placebo allow placebo	1
8(b)(ii)	high / highest number of participants / people <b>or</b> correct number given ie gum 16706, gum placebo 9319, placebo 16458		1
8(c)(i)	nasal spray		1
8(c)(ii)	highest <u>percentage</u> of people stopped / 24% stopped  biggest difference between treatment and placebo	   allow 'highest by 4%' for <b>2</b> marks	1  1
<b>Total</b>			<b>7</b>