



**General Certificate of Secondary Education**

**Science B 4462 / Biology 4411**

**BLY 1F                  Unit Biology 1**

**Mark Scheme**

*2011 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.

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## 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.

**BLY 1F****Question 1**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>1(a)</b>	large area	allow thin / large / big / flat / light allow adaptations that cannot be seen eg internal air spaces	1
<b>1(b)</b>	(shape means that) snow falls off		1
<b>1(c)</b>	protect / stop it being eaten		1
<b>1(d)</b>	stores/ absorbs water (from other parts of the plant)	ignore absorbs water from soil / air ignore nutrients	1
<b>Total</b>			<b>4</b>

**BLY1F****Question 2**

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

**BLY1F**

**Question 3**

question	answers	extra information	mark				
<p><b>3(a)</b></p>	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center; vertical-align: top; width: 50%;"><b>A</b></td> <td style="text-align: center; vertical-align: top; width: 50%;"><b>B</b></td> </tr> <tr> <td style="vertical-align: top;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Alcohol</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Antibiotic</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Heroin</div> <div style="border: 1px solid black; padding: 2px;">Cigarette smoke</div> </td> <td style="vertical-align: top;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Used to treat bacteria diseases</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">A very addictive drug</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">May cause lung cancer</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">May cause babies to be born with abnormal limbs</div> <div style="border: 1px solid black; padding: 2px;">May cause liver disease</div> </td> </tr> </table>	<b>A</b>	<b>B</b>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Alcohol</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Antibiotic</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Heroin</div> <div style="border: 1px solid black; padding: 2px;">Cigarette smoke</div>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Used to treat bacteria diseases</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">A very addictive drug</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">May cause lung cancer</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">May cause babies to be born with abnormal limbs</div> <div style="border: 1px solid black; padding: 2px;">May cause liver disease</div>	<p><b>1</b> mark for each correct line</p> <p>mark each line from left hand box</p> <p>two lines from left hand box cancels mark for that box</p>	<p><b>4</b></p>
<b>A</b>	<b>B</b>						
<div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Alcohol</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Antibiotic</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Heroin</div> <div style="border: 1px solid black; padding: 2px;">Cigarette smoke</div>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">Used to treat bacteria diseases</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">A very addictive drug</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">May cause lung cancer</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">May cause babies to be born with abnormal limbs</div> <div style="border: 1px solid black; padding: 2px;">May cause liver disease</div>						
<p><b>3(b)(i)</b></p>	<p>ecstasy</p>		<p><b>1</b></p>				
<p><b>3(b)(ii)</b></p>	<p>(no)</p> <p>any <b>one</b> correct difference</p> <p>eg Ecstasy in Class A but least harmful according to scientists</p>	<p>accept reference to figures</p>	<p><b>1</b></p>				
<p><b>3(c)</b></p>	<p>for pleasure</p>		<p><b>1</b></p>				
<p><b>Total</b></p>			<p><b>7</b></p>				

**BLY1F**

**Question 4**

question	answers	extra information	mark
<p><b>4</b></p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><b>A</b></p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Embryo trans.</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Genetic eng.</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Taking cuttings</div> <div style="border: 1px solid black; padding: 2px;">Tissue culture</div> </div> <div style="text-align: center;"> <p><b>B</b></p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Taking part...</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Growing groups...</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Transferring genes...</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Growing plants...</div> <div style="border: 1px solid black; padding: 2px;">Separating groups...</div> </div> </div>	<p><b>1</b> mark for each correct line</p> <p>mark each line from left hand box</p> <p>two lines from left hand box cancels mark for that box</p>	<p><b>4</b></p>
<p><b>Total</b></p>			<p><b>4</b></p>

**BLY1F****Question 5**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>5(a)</b>	diabetes	deduct <b>1</b> mark for each box over 3 ticked	1
	heart disease		1
	arthritis		1
<b>5(b)(i)</b>	B		1
<b>5(b)(ii)</b>	D		1
<b>5(c)</b>	1/2 <b>or</b> equivalent fraction <b>or</b> half <b>or</b> 50%		1
<b>5(d)(i)</b>	C		1
<b>5(d)(ii)</b>	any <b>two</b> from: <ul style="list-style-type: none"> <li>• least / low (saturated) fat</li> <li>• low / least salt</li> <li>• least energy / least kilojoules</li> </ul>	ignore unqualified references to figures  ignore references to sugar	2
<b>Total</b>			<b>9</b>

**BLY1F****Question 6**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>6(a)</b>	methane		1
<b>6(b)</b>	fertiliser		1
<b>6(c)</b>	fuel		1
<b>6(d)</b>	the greenhouse effect		1
<b>Total</b>			<b>4</b>



**BLY1F****Question 7**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>7(a)</b>	FSH / follicle stimulating hormone	allow FHS either order	1
	LH / luteinizing hormone		1
<b>7(b)</b>	<p>any <b>four</b> from:</p> <ul style="list-style-type: none"> <li>• egg(s) collected from ovary</li> <li>• (eggs) mixed with sperm <b>or</b> fertilisation occurs</li> <li>• fertilised egg divides</li> <li>• embryo formed</li> <li>• (embryos) inserted into womb / uterus</li> <li>• FSH matures egg <b>and</b> LH releases eggs</li> </ul>	<p>allow eggs and sperm put into tube</p> <p>ignore references to vagina</p>	4
<b>Total</b>			<b>6</b>

**BLY1F****Question 8**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>8(a)</b>	any <b>two</b> from: <ul style="list-style-type: none"> <li>• colour of dish <b>or</b> all dishes black</li> <li>• (same) amount of each seed</li> <li>• position of dishes <b>or</b> all dishes in same place / garden</li> <li>• time observed / visited / left</li> </ul>	ignore size of dish  ignore wood	2
<b>8(b)</b>	sunflower		1
<b>8(c)(i)</b>	(No) named seed does not fit pattern <b>or</b> millet / safflower / corn eaten a lot but have little fat <b>or</b> the seed with the highest percentage eaten has least fat	accept converse	1
<b>8(c)(ii)</b>	table 1 mark <ul style="list-style-type: none"> <li>• highest number of visitors <b>or</b> large range of visitors</li> </ul> table 2 mark <ul style="list-style-type: none"> <li>• high percentage eaten</li> </ul> <b>or</b> <ul style="list-style-type: none"> <li>contain high fat for energy / insulation</li> </ul>	allow separate references to sunflower and niger  allow most popular  allow most eaten	1  1
<b>Total</b>			<b>6</b>