



**General Certificate of Secondary
Education**

Science B 4462 / Biology 4411

BLY1H

Unit Biology

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.

BLY1H**Question 1**

question	answers	extra information	mark
1(a)(i)	increased water uptake	ignore nutrients / food allow quicker water uptake allow collects water over larger area	1
	(after) rain	accept ideas in terms of more successful competitor	1
1(a)(ii)	water storage or stability or safety from predators	ignore absorption of water from soil	1
1(b)	reduces water loss / evaporation	accept reduces transpiration allow stops water loss	1
	wax protects plant or reflects heat or keeps plant cool or unpalatable	ignore reflects light	1
	folding reduces surface area or folding reduces warming	accept enclosed stomata or less exposure of stomata or increased humidity or less water concentration gradient allow prevents burning ignore less likely to be damaged	1
Total			6

BLY1H**Question 2**

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

BLY1H**Question 3**

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

BLY1H**Question 4**

question	answers	extra information	mark
4(a)	<u>kills</u> / destroys bacteria / MRSA	do not allow germs	1
	prevents / reduces transfer	allow stops MRSA entering ward	1
4(b)	mutation	do not accept antibiotics causes mutation	1
	(causes) resistance	allow not effective ignore immunity	1
	to <u>antibiotics</u>		1
Total			5

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Question 5

question	answers	extra information	mark
5(a)	any two from: <ul style="list-style-type: none"> • arthritis • diabetes • high blood pressure • heart / blood vessel disease 	ignore descriptions ignore cholesterol	2
5(b)	(No) any two from: <ul style="list-style-type: none"> • patterns for cancer and obesity not identical • data only shows a link • some other factor(s) involved 	allow descriptions of differences from graph	2
5(c)	any two from: <ul style="list-style-type: none"> • increases metabolic rate • exercise needs energy or exercise increases energy used by body • fat (stores) used / broken down or less food / energy converted into body mass / fat	accept increase <u>BMR</u> ignore increased respiration allow fat burned ignore burns energy / calories	2
Total			6

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Question 6

question	answers	extra information	mark
6(a)	drugs alter chemical processes in body		1
	person suffers <u>withdrawal symptoms</u> without drug		1
6(b)	(overall trend is) higher harm – greater dependence or greater dependency – higher harm or data show a correlation	<u>positive</u> correlation gains two marks	1
	(but) wide spread of dependence at each harm 'level' or wide spread of harm at each dependence level	allow data do not give a straight line graph because wide spread	1
6(c)(i)	(no) heroin much more harmful / dependent	it or not mentioned = alcohol may use figures eg alcohol only has harm 1.5 heroin 2.75	1
6(c)(ii)	many more people use alcohol	allow since alcohol legal drug / easier to obtain	1
	less harmful effect multiplied		1
Total			7

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Question 7

question	answers	extra information	mark
7	a mutation occurs or variation in size / shape of pelvis	allow idea that walking upright needs larger pelvis to bear weight	1
	large / wide birth canal / pelvis allowed passage of wide skull / brain	do not allow pelvis became larger to enable birth of larger-skulled babies	1
	link between brain size and intelligence		1
	those with larger pelvis / brain more likely to survive / reproduce		1
Total			4

BLY1H**Question 8**

question	answers	extra information	mark
8(a)	two species / types involved		1
8(b)	<p>any three from:</p> <p>pros (max two pros)</p> <ul style="list-style-type: none"> • useful if species difficult to breed • prevents extinction / continues genetic line <p>cons (max two cons)</p> <ul style="list-style-type: none"> • low success rate or figures given • development problems • diverts attention from habitat conservation / poaching / pollution / climate change • cloning reduces gene pool <p>conclusion</p> <p>argued conclusion</p>	<p>full marks only if at least one pro, one con and an attempt at a conclusion</p> <p>ignore reference to ethical issues / cruelty</p> <p>must include references to both pros and cons and must be at end of answer</p>	<p>3</p> <p>1</p>
Total			5