



General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1F Unit Biology 1

Mark Scheme

2007 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 / ; e.g. 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.

3.8 Unexpected Correct Answers not in the Mark Scheme

The Examiner should use professional judgement to award credit where a candidate has given an unexpected correct answer which is not covered by the mark scheme. The Examiner should consult with the Team Leader to confirm the judgement. The Team Leader should pass this answer on to the Principal Examiner with a view to informing all examiners.

Question 1

	answers	extra information	mark
(a)	any two from: <ul style="list-style-type: none"> • streamlined / shape reduces friction / long and thin / smooth surface OWTTE • fins / flippers / tail / paddle • structures that push against water 	do not accept 'arms' or 'legs'	2
(b)(i)	any two from: <p>fossil has hind limb / legs / feet</p> <p>fossil has more ribs / bones</p> <p>fossil has teeth</p> <p>fossil has curved spine</p>	it = minke accept any valid comparison	2
(b)(ii)	billion		1
	give evidence for		1
total			6

Question 2

	answers	extra information	mark
	alcohol - affects the nervous system by slowing down reactions		1
	cocaine - a very addictive drug		1
	nicotine - the addictive substance in tobacco smoke		1
	thalidomide - drug which caused many children to be born with abnormal limbs		1
total			4

Question 3

	answers	extra information	mark
	A – muscle		1
	B – receptor		1
	C – neurone		1
	D – spinal cord		1
total			4

Question 4

	answers	extra information	mark
(a)	antibodies		1
	antitoxins		1
	antibiotics		1
(b)	any two from: <ul style="list-style-type: none"> • measles • mumps • rubella / German measles 		2
(c)	less / low / no chance of getting named / all condition(s) if vaccinated		1
	quantitative figure(s) e.g. 5 times less likely to get convulsions	must be comparative	1
(d)	enzymes		1
	genes		1
total			9

Question 5

	answers	extra information	mark
	any two from: <ul style="list-style-type: none">• more or most ions / sodium / chloride or replaces ions / sodium / chloride• lost in sweat• to keep blood concentration constant• less sugar therefore less chance of 'sugar rush'	do not accept more ions / sodium / chloride for energy	2
total			2

Question 6

	answers	extra information	mark
(a)	being overweight	do not accept fat unqualified allow BMI over 25	1
(b)(i)	rose		1
	by 8% / from 16% to 24% / by 50% / rapidly then more slowly		1
(ii)	any two reasonable suggestions		
	e.g. less active	accept e.g.s like fewer jobs / more cars / less physically demanding employment OWTTE	1
	more food / take-aways / fast food		1
(c)(i)	<u>high</u> (blood) cholesterol	do not accept combination of 2 labels ignore references to LDL and HDL	1
(ii)	answer in range 8-17 inclusive		1
(iii)	some deaths related to more than one factor		1
total			8

Question 7

	answers	extra information	mark
(a)	any two from: <ul style="list-style-type: none"> • burning • activity of microbes / microbial respiration • <u>less</u> photosynthesis or trees take in CO₂ or <u>less</u> CO₂ locked up in wood • CO₂ given off by clearing machinery 	ignore CO ₂ release unqualified do not accept CO ₂ taken in for respiration	2
(b)(i)	range of different species	accept idea of variety of organisms or plants or animals	1
(ii)	any one from: <ul style="list-style-type: none"> • organisms may produce substances useful to humans • duty to preserve for future generations • effect on other organisms e.g. food chain effects • loss of environmental indicators 	do not accept if food is only example ignore effect on human food supply	1
total			4

Question 8

	answers	extra information	mark
(a)(i)	20		1
(ii)	12000		1
(b)	area of strips or length / width / size of transect or number of transects		1
(c)(i)	since squirrels mobile or squirrels could be counted twice or squirrels hide		1
(ii)	any two from: <ul style="list-style-type: none"> • numbers of larders observed likely to be lower than actual • since unlikely that all could be spotted if 5 m away • old larder • squirrels moved on / died • young squirrels • haven't made a larder 	do not accept squirrels share larders or squirrels have more than one larder	2

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	answers	extra information	mark
(d)(i)	0 to 6.8		1
(ii)	any one from: <ul style="list-style-type: none">• squirrels prefer blue spruce cones / seeds / nuts as food• <u>more</u> cones / food• <u>more</u> nesting sites• <u>fewer</u> predators / competitors	do not accept squirrels prefer blue spruce	1
total			8