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General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1F Unit Biology 1

Mark Scheme

2010 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.

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Marking Guidance for Examiners

GCSE Science Papers

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)	proteins		1
1(b)	heart disease		1
1(c)	high blood pressure		1
1(d)	irregular periods		1
Total			**4**

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Question 2

question	answers	extra information	mark
2(a)	digging /getting to insects		1
2(b)	catching insects / food / insects stick to the tongue		1
2(c)	hear insects / predators		1
2(d)	stop soil / dust / insects getting in		1
Total			**4**

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Question 3

question	answers	extra information	mark
3(a)	any **two** from: • tar / carcinogen **or** causes cancer • other correctly named disease • blood carries less oxygen /contains carbon monoxide • low birth mass • allow references to effect on cilia / mucus build up	eg bronchitis / emphysema / heart disease / blood vessel disease allow harms unborn baby	2
3(b)	any **one** from: • addicted to tobacco / nicotine • withdrawal symptoms • body chemistry altered	ignore needs / relies on / dependent	1
Total			**3**

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Question 4

question	answers	extra information	mark
4(a)(i)	characteristic		1
4(a)(ii)	gene		1
4(a)(iii)	gamete		1
4(b)	sexual asexual clones		1 1 1
Total			**6**

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Question 5

question	answers	extra information	mark
5(a)(i)	40	accept –40 or +40	1
5(a)(ii)	**Step 1** 92 **Step 2** 18 **Step 3** 74	 correct subtraction of answer in **step 2** from answer in **step 1** gains **1** mark correct answer 74 with no working gains **3** marks ignore sign	1 1 1
5(b)(i)	both animals and plants		1
5(b)(ii)	microorganisms		1
5(b)(iii)	carbon dioxide		1
Total			**7**

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Question 6

question	answers	extra information	mark
6(a)	costs less no / less equipment needed		1 1
6(b)	any **two** from: • lower success rate / only 19.7% success rate • not all cases can be treated **or** only 50% of cases can be treated • embryo can't be seen until third day		2
Total			**4**

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Question 7

question	answers	extra information	mark
7(a)	predation / eaten	ignore competition	1
7(b)	could run faster / jump higher / climb better to escape / or escape describe		1 1
7(c)(i)	natural selection		1
7(c)(ii)	Darwin		1
Total			**5**

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Question 8

question	answers	extra information	mark
8(a)(i)	quadrat / grid	allow suitable description in a(i) or a(ii) allow quadrant	1
8(a)(ii)	any **two** from: • use a transect / description • sample every metre • count plants (in quadrat)	allow measure distance of the test or sample site from road ignore random placing of quadrat	2
8(a)(iii)	the nearer to the road, the more (plantain) plants	accept the more dead nettles the less plantains	1

Question 8 continues on the next page

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Question 8 continued

question	answers	extra information	mark
8(b)(i)	any **two** factors from: eg • grow better / survive away from road • sensitive to pollutant / named pollutant / dust / fumes • (roadside) weedkillers • trampling /damage / turbulence • grass cutting • competition • aspect eg hillier **or** give **one** mark for a factor and **one** mark for its effect eg dust (from road) (1) reduces photosynthesis (1) **or** 'loses' in competition (1) for light / water / nutrients / minerals / ions / space / soil (1)	ignore carbon dioxide as pollutant ignore food for plants	2

Question 8 continues on the next page

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Question 8 continued

question	answers	extra information	mark
8(b)(ii)	any **two** factors eg • can withstand pollution • competition • aspect eg flat **or** give **one** mark for a factor and **one** mark for its effect eg use carbon dioxide (from traffic) (1) enhances photosynthesis (1) **or** 'wins' in competition (1) for light / water / nutrients / minerals / ions / space (1)	ignore distribution allow grows better in polluted air ignore 'prefer' pollution ignore food for plants	2
Total			**8**

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Question 9

question	answers	extra information	mark
9(a)	worldwide **or** several countries (outbreak)	ignore affects large numbers of people	1
9(b)	any **three** from • new strain of flu / virus changes / virus different • vaccination not effective **or** new vaccine not yet developed • antiviral drugs not effective / not yet developed • *people* not immune to it • virus not recognised by white blood cells / antibodies **or** antibodies / antitoxins not effective • people / animals travel between countries / abroad spreading infection	 ignore mutation allow resistant / immune to vaccine allow drugs / treatment not effective do **not** allow antibiotics not effective allow people not resistant accept no antibodies / antitoxins ignore white blood cells / antibodies fighting off	*3*
Total			**4**