AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1H   Unit 1 Biology

Mark Scheme

2008 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.

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.

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STATUS: Final

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question	answers		extra information	mark
1(a)	**1** mark for each adaptation and **1** mark for its correct linked advantage			max 4
	• long / thick hair / fur for insulation	(1) (1)	allow keeps warm	
	• small ears for reduced heat loss	(1) (1)		
	• small feet for reduced heat loss	(1) (1)	ignore wide feet ignore prevent sinking	
	• white fur / coat for camouflage / poor emitter	(1) (1)		
	• small SA/V ratio reduces heat loss	(1) (1)		
	• thick layer of fat insulates / keeps warm	(1) (1)		
1(b)	**1** mark for each adaptation and **1** mark for its correct linked advantage			max 4
	• horns for defence	(1) (1)		
	• long legs for speed / escape / vision	(1) (1)		
	• light colour for camouflage	(1) (1)	allow pattern	
	• eyes on side of head for wider field of vision	(1) (1)		
	• hooves for speed / escape	(1) (1)		
	• large ears to hear predators better	(1) (1)		
Total				**8**

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question	answers	extra information	mark
2(a)(i)	carbon dioxide absorbs / traps / re-radiates / insulates	allow reflects	1
	energy / heat / radiation	do **not** allow this mark if energy / heat / direct from sun ignore ozone	1
2(a)(ii)	global warming / melting icecaps / climate change / rise in sea levels / flooding	allow primary effects only allow temperature change	1
2(b)(i)	customers concerned with the environment / green issues (will be attracted) owtte	allow idea of helping the environment / world	1
2(b)(ii)	reduces transport of food		1
	less carbon dioxide / greenhouse gas / emissions / harmful gases / lower carbon footprint (from transport)	allow less fuel used ignore pollution unqualified	1
Total			**6**

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question	answers	extra information	mark
3(a)	diet **or** description		1
3(b)	exercise **or** group meetings **or** same number of kilocalories per day **or** time **or** group size		1
3(c)	any **two** from: eg • scientists didn't observe amount of exercise **or** volunteers cheated on exercise • scientists didn't observe the amount of food **or** volunteers cheated on food • mass of subjects not controlled • age of subjects not controlled • gender of subjects not controlled • occupation of subjects not controlled • different proportions of subjects completed course • low number of subjects	if no marks awarded for first 2 bullet points allow don't stick to plan **or** cheated for **1** mark allow not all completed course ignore not repeated	2
3(d)	any **two** from: (yes) • low carbohydrate / Group 1 / people / they lost more mass • low carbohydrate / Group 1 / people / they lost more body fat • low carbohydrate diet / Group 1 / people / they resulted in more HDL	ignore more people lost weight allow greater change in mass ignore more people lost body fat allow greater change in body fat allow better HDL to LDL balance allow greater change in HDL	2
Total			**6**

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question	answers	extra information	mark
4(a)	(bacteria) produce toxins / poisons		1
	(viruses) damage / kills cells **or** toxins released from cell		1
4(b)	any **two** from: • viruses live inside cells • viruses inaccessible to drug • drug would damage body cells / tissue		2
4(c)	any **four** from: • overuse of antibiotics • bacteria mutate • antibiotics kill non-resistant strains **or** idea of selection • reduced competition • resistant bacteria reproduce	do **not** allow antibiotic causes mutation	4
Total			**8**

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question	answers	extra information	mark
5	any **four** from: • mutation produced a bird whose bill was crossed • birds compete for <u>food</u> / <u>seeds</u> • mutant crossbill able to obtain food faster / easier / more successfully • selected for **or** more likely to survive • reproduce / mate / breed / produce offspring	max **two** marks for a Lamarck explanation do **not** allow birds decide to mutate	4
Total			**4**

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question	answers	extra information	mark
6(a)	any **four** from: • FSH stimulates eggs to <u>mature</u> • FSH stimulates oestrogen production • oestrogen stimulates LH production • oestrogen inhibits FSH production • allow oestrogen causes build-up of uterine / womb lining • LH stimulates egg <u>release</u>	maximum **3** marks if there is reference to only two hormones	4
6(b)	any **four** from: • cells used to treat diseases do not go on to produce a baby • produces identical cells for research • cells would not be rejected • allow cells can form different types of cells • (immature) egg contains only genetic information / DNA / genes / chromosomes from mother **or** there is only one parent • asexual / no mixing of genetic material / no sperm involved / no fertilisation **or** chemical causes development • baby is a clone • reference to ethical / moral / religious issues • risk of damage to the baby	 allow ethically wrong **NB** <u>cloning</u> is illegal gains **2** marks ignore unnatural in correct context	4
Total			**8**

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question	answers	extra information	mark
7	any **five** from:	maximum **4** marks if no conclusion	5
	pros eg	maximum **three** pros	
	• used 'teenage rats' as equivalent to human teenagers		
	• THC dose typical of human cannabis smoking habits		
	• used control group		
	• rats allowed to choose amount of heroin		
	cons eg		
	• sample size small / only used 12 rats	ignore cruelty	
	• heroin administration very different from human situation		
	conclusions		
	• rats given THC / cannabis took more heroin		
	• (this) is evidence for a link between THC / cannabis and heroin		
	• (but) rat behaviour / physiology not necessarily same as human behaviour / physiology		
	• does not prove link in humans	allow results not reliable for humans	
Total			**5**