



ASSESSMENT and
QUALIFICATIONS
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General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1H Unit 1 Biology

Mark Scheme

2009 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.

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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) | streamlined / aerodynamic / swept-back / arrow-shaped / dart-shaped wings / tail or large / long wings | allow pointed / curved wings ignore pointed tail / beak ignore large tail | 1 |
| 1(b) | no / fewer insects / food (in winter) | allow too cold ignore not adapted to cold ignore day length | 1 |
| 1(c)(i) | any two from <ul style="list-style-type: none"> • feed / hunt at different heights or swifts feed <u>higher</u> up • feed / hunt at different times or swifts feed at night • arrive / depart at different times | | 2 |
| 1(c)(ii) | nesting sites / territory / habitat | allow homes / space ignore food unqualified allow well qualified food answers eg insects / food near the ground or insects / food when it's light or insects / food between early May and early August | 1 |
| Total | | | 5 |

BLY1H**Question 2**

| question | answers | extra information | mark |
|-----------------|---|--------------------------|-------------|
| 2(a) | any two from: <ul style="list-style-type: none"> • age • gender • mass • number in group • time | | 2 |
| 2(b) | any two from: <ul style="list-style-type: none"> • highest (mean) mass loss on Rosemary Conley or Rosemary Conley most effective • least (mean) mass loss in control group or <u>mean</u> gain in mass in control group • Slimfast least (mean) loss of programmes or Slimfast least effective • all diets resulted in mass loss • large range of mass loss • similar (mean) mass loss with all 4 diets • (mean) mass loss similar in Atkins and Weightwatchers • (only) in Rosemary Conley (did) all lose mass | | 2 |

Question 2 continues on the next page...

BLY1H**Question 2 Continued**

| question | answers | extra information | mark |
|-----------------|---|---|-------------|
| 2(c) | (Atkins) costs least mass loss very similar to other diets or second highest mass loss or as effective as other diets | | 1 1 |
| 2(d) | any two from: <ul style="list-style-type: none"> • (exercise) increases metabolic rate / respiration • (exercise) needs / uses energy / calories • (this) energy comes from food / fat • less food / energy/ calories converted to fat | ignore sweating allow burns fat / calories do not accept energy <u>for</u> respiration | 2 |
| Total | | | 8 |

BLY1H**Question 3**

| question | answers | extra information | mark |
|-----------------|--|---|-------------|
| 3(a)(i) | tobacco / nicotine / alcohol | accept solvent / glue / caffeine ignore cigarettes / coffee | 1 |
| 3(a)(ii) | cannabis / heroin / cocaine | allow eg crack / weed / ecstasy / LSD / amphetamine / speed / steroids / GHB | 1 |
| 3(b)(i) | heroin / cocaine / tobacco / nicotine | ignore alcohol / cigarettes / cannabis / caffeine / coffee | 1 |
| 3(b)(ii) | alters body chemistry | ignore withdrawal symptoms / craving ignore non-chemical effects on nervous system | 1 |
| 3(c) | any two from: <ul style="list-style-type: none"> • increase in cannabis smoking increases (%) depression • greater effect in women • depression linked with / not directly caused by cannabis • not all cannabis smokers get depression | allow women become more depressed ignore cannabis causes depression | 2 |
| Total | | | 6 |

BLY1H**Question 4**

| question | answers | extra information | mark |
|-----------------|--|--|-------------|
| 4(a) | any two from <ul style="list-style-type: none"> live inside / infect body cells difficult for drugs to enter (body) cells / drug would kill (body) cell antibiotics ineffective against viruses viruses mutate frequently | | 2 |
| 4(b)(i) | 420 | correct answer with or without working if answer incorrect evidence of 'number of deaths' $\times 7$ or 60 seen gains 1 mark ignore 6 000 000 | 2 |
| 4(b)(ii) | any three from: <ul style="list-style-type: none"> virus / flu mutates people no longer / not immune white blood cells / memory cells / immune system do not recognise virus relevant reference to antibodies / antigens current vaccine ineffective or no vaccine available then or takes time to develop new vaccine conditions less hygienic / lack of hygiene people in poor health (following world wars) | ignore resistance allow no tamiflu / <u>anti-viral</u> drugs allow people had 'weak' immune system | 3 |
| Total | | | 7 |

BLY1H**Question 5**

| question | answers | extra information | mark |
|-----------------|--|---|-------------|
| 5 | any four from <ul style="list-style-type: none"> • mutation • produces longer snake or there is variation in snake length • longer snake less susceptible to toxin or longer snake survives • survivors reproduce • gene passed to next generation | do not accept 'had to mutate / decided to mutate' do not accept 'had to adapt and became longer' allow characteristic passed to next generation | 4 |
| Total | | | 4 |

BLY1H**Question 6**

| question | answers | extra information | mark |
|-----------------|---|--|-------------|
| 6(a) | any three from: <ul style="list-style-type: none"> • greenhouse gas • causes global warming / changes weather patterns • absorbs energy / infrared light / heat (radiated) <u>from</u> Earth • re-radiates (some) of this energy | ignore references to ozone layer accept absorbs radiation <u>from</u> Earth do not accept absorbs energy from Sun / sunlight allow reflects energy back to Earth | 3 |
| 6(b)(i) | any three from: <ul style="list-style-type: none"> • remove gene • use of enzymes • from plant with high sugar production • insert gene into rye grass | ignore references to other methods eg tissue culture and embryo transplantation allow from bacteria | 3 |
| 6(b)(ii) | any two from eg <ul style="list-style-type: none"> • concern about effect on (health) of cow • concern about effects on human (health) • concern about food chain effects or effects on ecosystem • effect on gene pool | ignore not natural or cost ignore ethical / religious arguments if no other marks awarded 'we don't know the long term effects' = 1 mark | 2 |
| Total | | | 8 |

BLY1H**Question 7**

| question | answers | extra information | mark |
|-----------------|---|---|-------------|
| 7(a) | any three from <ul style="list-style-type: none"> • FSH <u>used / given / injected</u> • LH <u>used / given / injected</u> • FSH causes eggs to mature • LH stimulates egg release | if oestrogen or progesterone <u>used</u> = max 2 if both oestrogen and progesterone <u>used</u> = max 1 ignore <u>effects</u> of oestrogen and progesterone | 3 |

Question 7 continues on next page...

BLY1H

Question 7 Continued

| question | answers | extra information | mark |
|--------------|--|--|---------------------|
| 7(b) | max two pros for IVM / it from: <ul style="list-style-type: none"> • cheaper • less hormones used • ovarian hyperstimulation or the syndrome less likely • IVM treatment shorter con for IVM <ul style="list-style-type: none"> • small risk of abnormal sex chromosomes / birth defects / baby cancer evaluation <p>eg IVM better because less risk to mother outweighs small risk to baby</p> <p>or</p> <p>IVF better because no risk to baby and a small risk to mother</p> | allow max two cons for IVF allow ‘it’s safer for the mother’ ignore ‘more risks’ unqualified allow max one pro for IVF allow ‘more risk to baby’ ignore ‘more risks’ unqualified must include an appreciation that there are two sides to the argument | 2 1 1 |
| Total | | | 7 |