



General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1H Unit Biology 1

Report on the Examination

2012 examination – June series

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Science B / Biology
Higher Tier BLY1H**General**

There were eight questions on the paper. Questions 1 and 2 (termed Standard Demand) were common to Foundation and Higher Tiers. These were targeted at grades C and D. Questions 3 and 4 were also Standard Demand. The remaining questions were High Demand, targeted at grades B, A and A*. Students should be advised to write in black ink or black ball point pen only as the scanning process involved in on-line marking does not pick up pale colours well. Furthermore students should be advised to ensure that if their answers extend beyond the printed lines or space then they should keep these extensions away from the edges of the page as they may be removed during scanning. Students who wrote far too much irrelevant material in the earlier questions often left insufficient time to complete the last question.

Some examiners expressed concern about illegible handwriting. Although a very small percentage, students should be aware that if the examiner cannot read the script they will not be awarded any marks for that part.

Fundamental knowledge and understanding of How Science Works in the world at large, as well as in the laboratory, were tested throughout this paper. This means that students should be reminded that it is essential to read all of the question carefully, analyse the information provided and think about their response before writing their answer.

Question 1 (Standard Demand)

- (a) The stages in drug testing were not well known. More able students often knew the function of the placebo and of testing on animals, but very few knew the function of tests on humans using very small quantities of drugs.
- (b) Many students were able to get the mark for the 'reliability of the trial' – referring to the small number of mice used. Most students correctly explained that the trial had only been carried out on mice and not on humans. There were also many correct responses in terms of 'six cups is more than one dose', 'caffeine being used, not coffee'. In order to get all three marks, students had to read the text carefully, and the best responses were logically laid out and written on three or four lines. Lengthy responses often regurgitated text and tended to waffle – jeopardising hopes of attaining the maximum score.

Question 2 (Standard Demand)

Some students obviously could not follow this evolutionary tree especially where there were broken / discontinuous branches.

- (a) Most students lost marks by not attempting to give accurate answers, being content with 3 or 4 million years ago.
- (b) Here and in part (c) most students were able to interpret the evolutionary tree correctly, but a significant number appeared not to have noticed the key.
- (d) Most students correctly referred to the fact that only fifty of the fossils had been found in China. Many then went on to interpret the tree correctly by stating that 'there was no link shown between H. Erectus to H. Sapiens' or that 'H. Sapiens evolved from H. heidelbergensis'. However, some students were side-tracked into referring to H. floriensis.
- (e) Most students correctly referred to 'religious reasons'. Many also referred to there being insufficient evidence, but others lost this mark by referring to no evidence being found or by stating that there was no proof. There were comparatively few references to the status of Darwin or to lack of knowledge of the mechanism of heredity.

Question 3 (Standard Demand)

- (a) (i) More able students correctly referred to lack of balance in the diet. Weaker students usually gave vague responses such as 'eating the wrong kind of food', 'an unhealthy diet' or 'lack of food / nutrients'.
- (a) (ii) Students who gave 'lack of food' in (a)(i) frequently gave the correct answers in this part of the question. References to obesity, stunted growth or deficiency disease were expected. Many students however answered in terms of diabetes, anorexia, arthritis and heart disease.
- (b) (i) Most students correctly gave Zambia, but a surprisingly high number opted for Mozambique.
- (b) (ii) Students were expected to refer to the two points given in the specification: irregular periods and reduced resistance to infection. A majority of students referred to deficiency diseases in their responses and anorexia was again a common response.

Question 4 (Standard Demand)

Large numbers of students had prepared an answer in terms of natural selection during their revision and decided to use the prepared answer in this question, usually resulting in no marks. Answers were expected in terms of predator / prey relationships. Successful students usually referred to the abundance of prey for the lionfish and some went on to suggest the lack of predators. Very few suggested that predators and prey of the lionfish might not recognise it.

Question 5 (High Demand)

- (a) Interpretation of the graph was generally done well and a large percentage of students achieved at least one mark on this question. A few referred to figures correctly but did not give the comparison necessary to gain marks. Several only referred to one of the lines – either infertility or pregnancy and perhaps believed that they were covering both as the two conditions are often linked.
- (b) (i) Most students correctly referred to maturation of the egg, but many referred to egg production or egg release.
- (b) (ii) Most students correctly referred to egg release, but many seemed more concerned with effects on the uterus.
- (c) Most students correctly referred to the insertion of the embryo into the uterus / womb, but many missed out the embryo stage and had the fertilised egg inserted directly into the uterus. The part of the mother was often not specified, or simply wrong e.g. 'stomach'.

Question 6 (High Demand)

- (a) Most students realised that sexual reproduction was involved, but relatively few expanded their explanations to include a reference to the mixing of genes / genetic information. Weaker students referred to environmental effects.
- (b) (i) Reference to cuttings or tissue culture was required, but many students gave genetic engineering. Weaker students often simply responded 'asexual reproduction'.
- (b) (ii) Was better answered than part (a). Most students realised that asexual reproduction was involved and that the offspring would have genetic information identical to that of the parents.
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Question 7 (High Demand)

- (a) A significant number of students did not seem to know how to calculate a percentage increase. Of those who did, many penalised themselves by dividing by 4131 rather than 3499. Others derived 118.06% and then failed to subtract 100.
- (b) Many students gained two marks, comparatively few gained all three marks. The most common way of gaining two marks was in terms of the survival and reproduction of the resistant bacteria. Some students failed to 'add' to the stem of the question and simply restated the fact that 'bacteria had become resistant' and therefore did not gain the 'survival' mark. Another issue causing students to lose this first mark was by giving the idea of 'intentional adaptation.' The third marking point, that the proportion of resistant bacteria in the population would increase, proved to be beyond the majority of students. Most simply repeated the stem of the question and stated that the number of people infected was increasing. Weaker students often stated that that 'humans passed the resistant bacteria on to their children'.

Question 8 (High Demand)

- (a) The most common error was to add up palm oil production for all 5 years and divide by 5, giving a value for mean production rather than mean increase. Other errors included totalling for 4 years or 6 years rather than 5. Some students subtracted the value for 2000 from that for 2005 but then did not divide by 5. A substantial number of students could not read the graph accurately.
- (b) The majority of students showed a very good understanding on the effects of deforestation and carbon dioxide concentration in the atmosphere. Some failed to link the increase in carbon dioxide with deforestation clearly enough to obtain credit. The second area about growing palm for fuel did not seem so easy for students although, where this was attempted, it was generally recognised the carbon dioxide would be released when the palm oil was used as fuel. More able students went on to discuss the idea of the palm oil fuel being carbon neutral or gave a well expressed idea of carbon dioxide intake and output balancing out. It was also recognised in quite a few responses the idea that there was less carbon dioxide released than burning fossil fuels. Weaker students described at length global warming with the usual references to the ozone layer and acid rain.

Grade boundaries and cumulative percentage grades are available on the [Results statistics](#) page of the AQA website

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