General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1H   Unit Biology 1

Report on the Examination

2011 examination – January series

Science B / Biology
Higher Tier BLY1H

General

There were eight questions on the paper. Questions 2 and 3 (termed Standard Demand) were common to Foundation and Higher Tiers. These were targeted at grades C and D. Questions 1 and 4(a) were also Standard Demand. The remaining questions were High Demand, targeted at grades B, A and A*.
Candidates 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 candidates 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. Candidates 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, candidates 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 candidates 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)*

The lack of appreciation for the basic biology of plants gave cause for concern. Many candidates lost marks by failing to realise that the question was about survival in a hot desert and that they should concentrate on methods of obtaining water, storing water and reducing water loss, rather than concentrating on nutrients.

a) (i) The majority of candidates realised that these roots would increase water uptake but relatively few were able to relate this to "rain" in the desert. Many gave an answer referring to maintaining the stability of the tree

a) (ii) Less than half of the candidates gained the mark for this question. The most common correct answer was in terms of stability. Few could link the feature to 'roots 1m in diameter, shaped like bulbs' to water storage. The most common incorrect answer was a reference to increased water uptake.

b) Less than 5% of candidates gained three marks for this question. Most candidates gained one mark by referring to water loss. Many were able to relate the presence of wax to unpalatability in addition to reducing water loss, but many others answered in terms of the wax allowing water to run off down to the roots. The idea that the wax was sticky and would therefore absorb water was also prevalent.
There were very many answers in terms of the folded leaves absorbing water, some with confused reasoning based around the folding of leaves and resulting humidity increases, but most candidates showed poor biological understanding of this adaptation. Many candidates reverted to animal characteristics stating that the folded leaves would give camouflage

Question 2 *(Standard Demand)*

a)   It was apparent from their responses that only half of the candidates actually knew what a control variable was. Most candidates gave one correct response: that the same amount of food had been used at the start. However many candidates went on to give "type of seed" as their second response. For candidates who answered in terms of dishes, many seemed to think that size mattered, or the height they were placed at (even though the text did not mention this at all) or the fact that there were six dishes was vitally important. For candidates who answered in terms of location, many expected the examiners to assume that because it had been stated that the dishes were nailed to a piece of wood, when they stated that the piece of wood was placed in the garden, the dishes were, per se, also in the garden. Most candidates who responded in terms of time gave correct statements.

b)   The vast majority of candidates correctly identified the sunflower seed.

c)   (i)   This question was very well answered with candidates losing marks only where they were not specific enough with regard to name or data. Hardly any candidates circled the "Yes" category. Some candidates gave descriptions such as 'the birds' favourite foods did not contain much fat' but did not give names or data to reveal what these favourite foods/fat content were. Another common mistake was to omit the name of the seeds when quoting intermediate values e.g. "some lower fat seeds are more popular than those with high fat"
Some students do expect examiners to do too much work on their behalf e.g. "highest percentage of fat had 4 and the lowest 99"

c)   (ii)   Almost all the candidates gained at least one mark for this question, but only a third of them gained both marks. Most marks were lost by candidates who gave vague answers - the seeds were "fairly popular", or the seeds were "visited quite often" or "birds liked to eat these seeds" rather than making categorical statements like "most popular" etc
Many candidates ignored Table 1 and gave two responses relating to Table 2, meaning that answers relating to fat and % eaten were common.

Question 3 *(Standard Demand)*

a)   The vast majority of candidates gained one mark by stating FSH or LH, but over half of the candidates gave oestrogen as their second choice.

b)   Many 'clues' were given in the diagram of the process, so it is disappointing that less than one fifth of the candidates gained full marks. The majority of candidates lost marks by making vague generalised statements e.g. few stated that the eggs were taken from the ovary, just that they were taken from the woman. Very few candidates mentioned that the fertilised egg divided to form the embryo. For many candidates, the embryo just came into being as it was inserted into the woman. Candidates stated that the embryos were inserted into an interesting variety of organs - the chief one was the vagina, but ovaries, fallopian tubes and even the stomach featured. Better candidates often referred to the roles of FSH and LH, either individually or together, but only about a half of these got the roles correct.

Question 4 *(Part (a) Standard Demand, part (b) High Demand)*

a)   The vast majority of candidates correctly stated that the hand gel would kill bacteria. However,   only one third of the candidates gained the second mark which was preventing the spread of the bacteria. Many answers were very general e.g. 'so that people with low immunity would not catch the disease', or 'people in hospital are already ill. Many also stated that it 'would stop germs being taken out of the hospital'. The majority lost this mark through vague expressions.

b)   Less than one fifth of the candidates gained all three marks. Most candidates lost marks through being careless in their use of terminology. Many did not seem clear as to the difference between antibodies and antibiotics, several using both terms. Many stated that "mutations were due to natural selection". Others answered in terms of viruses being difficult to treat. Many confused viruses and bacteria. Many candidates answered in terms of resistance to vaccines. The term 'immune' was often used instead of 'resistant'. The ideas that over-prescription of antibiotics and patients failing to complete a course of antibiotics each caused mutation or caused resistance were far too common.

Question 5 *(High Demand)*

a)   The majority of candidates named two correct diseases. Since names were asked for descriptions of the diseases were ignored. Most candidates who failed to gain both marks gave 'high cholesterol' as one of their answers.

b)   Very few candidates gained both marks for the question, the majority of candidates stating that the data did prove that obesity *causes* cancer because 'the graphs more or less followed each other', failing to notice the differences in the two patterns. Most of the candidates who gained the second mark correctly stated that the data showed that other factors were also involved. Some candidates correctly stated that although the data did not prove cause and effect, it might show a link between the two

c)   The vast majority of candidates gained at least one mark, usually for stating that exercise 'burns fat'. This statement was accepted by examiners, but candidates should be encouraged to avoid such colloquiums. It was obvious that most of the candidates had an understanding of the link between exercise and weight loss but they were let down by poor expression. Most candidates seemed to think that the words 'energy', 'calories' and 'fat' were interchangeable. Weaker candidates often referred to exercise 'sweating the fat out'.

Question 6 *(High Demand)*

a)   Very few candidates gained both the marks for this question. About half of the candidates gained one mark by stating that a person suffers withdrawal symptoms without the drug. Many candidates described a variety of these symptoms, but this was not enough to gain the mark. The second mark proved to be more difficult to obtain. Acceptable answers included altering the body chemistry, chemical reactions or chemical processes. Many candidates explained why addicts need to take more and more of a drug to get the same effect, but this on its own was not worthy of a mark.

b)   The majority of candidates gained one mark for referring to the general trend in the data However, only a minority of them went on to gain the second marking point by describing the wide spread of data at each point on each axis or by stating that there was a positive correlation between the two factors. Some candidates incorrectly said

that the two variables were directly proportional, demonstrating a lack of understanding of the term. Many candidates stated that a greater dependence increased the risk of self harm or physical harm to others. Many other candidates did not understand the data and thought it was showing the number of dependent people.

c) (i) Almost half the candidates did not use the graph as asked to and therefore got side-tracked into the wrong response that as alcohol was legal / more readily available, it did more harm. Some candidates failed to score because they did not quote adequately from the graph e.g. 'heroin is 3' without qualifying either what the '3', stood for or by comparing it with what the figure for alcohol was.

c) (ii) The vast majority of candidates gained one mark for stating that more people use alcohol or that alcohol was legal / easier to obtain. Very few candidates gained the second mark by stating that although alcohol had a less harmful effect, this effect is multiplied by the large number of people who consume alcohol.

Question 7 *(High Demand)*

Answers to this question were generally disappointing with few candidates gaining three or more marks.
Many candidates demonstrated that they had been taught how to answer questions on evolution in terms of a mutation occurring, beneficial characteristic, survival of the fittest and passing on the useful gene to offspring. However this question demanded a higher level answer which required the candidate to relate to the characteristics mentioned in the question and to give a complete explanation for the evolution of the pelvis. Answers given only in general terms typically gained only one mark for a mutation occurring.
Candidates who gained the first marking point usually mentioned that a mutation occurred, rather than explaining or describing that there would be variation in the size or shape of the pelvis within a population.
For the second marking point candidates had to relate the size or shape of the pelvis to the size of the baby's skull or brain. Those who simply referred to 'larger babies' did not gain the mark. Many candidates lost this mark because their answers implied that the pelvis became larger to enable larger skulled babies to be born, i.e. that a decision to change the size of the pelvis was made, rather than it just allowing a larger skulled baby to be born.
The third marking point demanded some original thought on the part of the candidate – linking brain size to intelligence. Those who gained this mark often went on to explain that larger brained, more intelligent apes would be more likely to survive, so also gained the last marking point.
For the last marking point general statements such as 'survival of the fittest' or 'genes were passed on to the offspring' did not gain the mark. A clear statement of survival or reproduction linked to the named characteristic was required.

Question 8 *(High Demand)*

a) The vast majority of candidates did not recognise that there were two different species involved and instead commonly referred to the fact that the pet animal was still alive. Many few vague answers suggested the use of different goats rather than 'types' of goats which again was not clear enough. However, there were a good number of students who did recognise that the surrogate was a different species and those responses were generally very clear and well explained.

b) There was not as high a proportion of well-organised answers as in the June examination last year. Many candidates failed to give an evaluation, rather describing

adult cell cloning in detail. A majority of candidates concentrated on the ibex as a species that was already extinct rather than being endangered. A surprising number stated that it isn't worthwhile to bring a species back as it will only become extinct again, usually because of loss of habitat, or that it would just encourage more hunting. Many candidates gave 'difficult to breed' as a 'con' rather than stating that the technique is useful where it is difficult to breed the animal. The conclusions given were varied in quality but there still seems to be a lack of understanding that the conclusion needs to be argued, with a 'pro / con' and reference to both. Many answers discussed about ethical issues and cruelty as a way of summarising their answer. Too many candidates still continue to state as their only conclusion 'The pros outweigh the cons.'

Mark Ranges and Award of Grades
Grade boundaries and cumulative percentage grades are available on the **Results statistics** page of the AQA Website.