



General Certificate of Secondary Education

Additional Science 4463 / Biology 4411

BLY2F Unit Biology 2

Report on the Examination

2008 Examination – June Series

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Set and published by the Assessment and Qualifications Alliance.

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Additional Science / Biology Foundation Tier BLY2F

General

The great majority of candidates, entered for the Foundation Tier examination appear to have been entered appropriately, as there were few papers which indicated that had the candidate taken the Higher Tier paper they would have achieved a grade B.

Candidates are requested to write in black ink or ball-point pen and to ensure their writing is clearly legible.

Well constructed responses, which answer the question, should in normal circumstances be completed within the space provided. It is acceptable to write a little below the printed lines but candidates should be advised to ensure that these extensions are kept inside the box or they may be removed during scanning. A number of candidates appear to be keen to extend their answers onto additional sheets of paper with many of these candidates then just writing only one or two words on them.

Question 1 (Low Demand)

This question was expected to be a fairly straightforward introductory question for the majority of candidates, as cell structure will undoubtedly have been studied at several stages in the school career. However, there were more than the expected number of omissions and errors.

In part (a), the most common error was to confuse cytoplasm with chloroplasts. Other candidates, having decided that they had mislabelled the diagram, chose to alter the label lines or use arrows to indicate that answers should be exchanged. Both of these strategies can make it difficult for examiners to decide exactly what the candidate intends and it would be better if candidates were to be advised to cross through errors and rewrite the answers in the correct place.

The commonest error in part (b)(i) was mitochondria, although the correct response was given by only a little over 40%, suggesting that guesswork played a major role in selecting the answer for many candidates.

Similarly in part (b)(ii) with only three answers to choose from, less than one-third of candidates selected the correct one, with respiration being by far the most common error.

Question 2 (Low Demand)

This question, as a whole, was answered well by the majority of candidates, almost all of whom scored the mark for part (a), with two-thirds or more achieving the marks for each of the other three parts.

Light was the inevitable most likely distracter in part (b).

Similarly, in part (c), where it appeared that poor reading of the question, perhaps identifying the term energy, was enough to lead candidates to select light.

The distinction between soluble glucose and insoluble starch also lead some candidates astray in part (d).

Question 3 (Low Demand)

With a wide range of possible ways of describing microorganisms, along with the examiners' willingness to ignore a range of other soil creatures, it might have been hoped that considerably more than 37% of candidates would have scored the mark in part (a). However insects and

worms offered as single answers were common incorrect responses. Clearly candidates have difficulty distinguishing between decay organisms and detritus feeders.

In part (b), those candidates who were aware that decay was influenced by increased temperature, went on to disqualify their answers by referring to leaves drying out. Light was a common error. Some candidates confused decay with leaves drying on the trees.

Almost two-thirds of candidates selected the correct gas in part (c), indicating that there was considerable understanding. Carbon dioxide was the commonest distracter, with candidates possibly still having thoughts from question 2 in their minds.

Question 4 (Low Demand)

The vast majority of candidates successfully completed the calculation in part (a)(i), with only a very small percentage showing correct methodology in their calculations but the wrong result, and being awarded one mark for their efforts.

A further calculation or appreciation of number was required in part (a)(ii), with fewer arriving at the correct answer, although almost three-quarters did get the mark.

In part (b), less than three percent were unable to add the correct labels to the pie chart, indicating again, a good appreciation of number.

However, in part (c), misconceptions as to the function of sweat were not uncommon. Some who gave the correct answer, then went on to lose the mark by adding further incorrect information such as getting rid of excess water, hydrating the body and making you lose weight. Other common errors were getting rid of toxins and getting rid of bacteria.

In part (d), almost all candidates gained at least one mark, with the majority securing both. A number of candidates, clearly misreading the question or perhaps not reading the instruction, only ticked one box, thus denying themselves the possibility of a second mark.

Question 5 (Low Demand)

The examiners chose to use a non-standard unit for the concentration of salt solution in the investigation. This was to reduce potential confusion for candidates who may not be familiar with a complex unit and to avoid the possibility of candidates who incorrectly rewrote it in parts (a) and (b) disqualifying their marks. Examiners reported that it did not appear that any candidates had been disadvantaged by this decision.

A high proportion of candidates identified the correct solution in part (a)(i) and went on to circle osmosis in part (a)(ii).

It was pleasing to note that in part (b), almost three-quarters of candidates achieved both marks, suggesting, along with good responses to (a) and (b) that candidates were familiar with investigations of this type and showed a better understanding of osmosis than in previous examinations. However, some made confused statements about not eating too much salt or that a gain in mass would make more profit.

Although relatively fewer candidates in part (c) could identify how reliability could be achieved, the number of correct responses was still encouraging. Some candidates confused reliability with accuracy, some even using the word accuracy in their answers. Responses about accuracy gained no credit and common errors were leave longer, use other concentrations or use more accurate scales. Start with the same mass of chips was another common answer which did not gain credit. Some candidates incorrectly believed that repeating makes a test fair.

Question 6 (Low Demand)

In part (a) the great majority of candidates arrived at the correct answer, however others simply failed to add the numbers up correctly, probably indicating they did not have a calculator, but

managed to deduct from 100 and score one mark. Some candidates are still not following the advice given about showing working, a strategy that can earn one mark even if the final answer is incorrect.

The calculation in part (b) was somewhat more demanding and unsurprisingly many did not arrive at the correct answer. Here an appreciation of numbers was not always shown as a sizeable minority gave answers greater than the original 6 megajoules taken in. Those candidates who arrived at the wrong answer and, indeed many who gave the correct answer, wrote down their working in a variety of unmathematical ways.

Part (c) was poorly done, with only a quarter correctly quoting respiration. Common errors included movement and digestion.

Suitable explanations were often given in part (d)(i), however vague ideas about better diets, more food or being well looked after did not gain credit here. Candidates should be encouraged to think through and explain their ideas.

Similarly in part (d)(ii), although many candidates gained the mark by reference to cruelty, there were many responses which only gave half an idea and gained no credit. For example poor quality of life, unethical, immoral and unfair were insufficient to gain a mark without further amplification; whereas, it is incorrect to suggest that calves kept in such a way would have no room to grow as this would rather defeat the purpose.

Question 7 (Standard Demand)

A wide variety of chemicals, only some of which were enzymes, was suggested in part (a). Precise spelling was not essential however the vital suffix *ase* was expected.

In part (b)(i), few candidates pointed out both the fall followed by the rise, of time, and conversely the increase followed by decrease of rate. Many answers, some creditworthy, slipped between time and rate explanations, indicating a confusion here. However as both components were required for the first mark many failed to gain it. Some candidates gave general statements about enzyme optimum temperatures of 37°C and did not refer to the 40°C on the graph, and so did not gain the second marking point. Others chose the wrong curve to quote the minimum time for. Attempts at explanations were often given, however they were not asked for here and so gained no credit. As a result performance in part (b)(i) was not as good as might have been hoped, for what was little more than describing the shape of a graph.

Achievement in part (b)(ii) was generally a little better, with more candidates gaining one of the two marks, however although many candidates pointed out the need for less heat most rarely went on to make the second point. Others thought less water would be used or just repeated the question, by suggesting lower temperature and so did not gain credit. Very few answers referred to less fossil fuel being used. In some answers carbon dioxide seemed to be given off by washing machines. Sulfur dioxide and acid rain references were very rarely seen. Some candidates identified that with the use of less heat washing clothes would be cheaper, unfortunately this was not the focus of the question and the second mark could not be awarded.

In part (c) some good explanations were given, the commonest error being the killing of enzymes. Others thought the fabric would be ruined or that the stain was already removed and did not gain marks. Those candidates who scored only the one mark almost always did so for identifying that enzymes were involved.

Question 8 (Standard Demand)

There was very little understanding either of genetics or of cystic fibrosis shown by the majority of responses to this question. With just a quarter of candidates identifying cell membranes in part (a), it appeared as if correct answers were achieved by guesswork alone, nervous system proved to be far too good a distracter, with most candidates circling this.

Only 3% of candidates gained both marks in part (b)(i), indicating poor understanding of this concept. Common errors were because Dad had it or convoluted ideas about sex-linkage. Some candidates only answered in terms of Bob or thought that the cystic fibrosis allele was dominant, despite information to the contrary in the question, and so gained no marks. Common errors were stating that she got more genes from Bob than Carol, the first born is more likely to get it or it is passed by blood. Understanding of the term carrier was often poor, suggesting that candidates believed that possessing one or both recessive alleles would allow such a description. Genes was commonly jeans.

Although responses in part (b)(ii) were a little better than those in part (b)(i), it was common for the same errors in understanding to be repeated. Many thought that Alice already had the gene so there wasn't one left for Ted. Statements such as because his mum hadn't got it, it skips a generation or he got Carol's genes were common errors, showing considerable misunderstanding of the mechanism of genetics. There was further confusion between carriers and sufferers.

Many candidates were confused between part (c)(i) and part (c)(ii) and this resulted in many scripts with reversing arrows, which examiners needed to look at carefully in order to sort out the confusion. A common answer was stating that parents would know what the child would be like but the implications of this were needed to gain a mark. Most answers which gained credit were in terms of possible abortions. There was some confusion between the effects of the actual screening and a possible resulting abortion, with many suggesting that screening could cure the problem.

In part (c)(ii) there were some good answers about harm to the embryo and the idea that screening encourages abortions. Candidates who only stated unnatural, against religion, playing God or unethical did not develop their ideas enough to gain credit. The expense of screening was rarely mentioned. Some candidates were confused about the process of screening and answered about radiation effects or screening the adults. Many gave answers about parents just wishing to know if the gene was there.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.