



General Certificate of Secondary Education

Science B 4462 / Biology 4411

BLY1F Unit Biology 1

Report on the Examination

2009 Examination – January Series

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Set and published by the Assessment and Qualifications Alliance.

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Science B / Biology Foundation Tier BLY1F

General

There were eight questions on the paper. The first six questions appeared only on the Foundation Tier and were targeted at grades E, F and G. The final two questions (termed Standard Demand) were common to Foundation and Higher Tiers. These were targeted at grades C and D.

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.

Some examiners expressed concern about illegible handwriting this year. Although it is a 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 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 (*Low Demand*)

The majority of the candidates gained both marks in part (a) and two thirds of the others gained one mark. The most common error was simply to refer to light and or sound without any mention of sense organs.

In part (b) less than half of the candidates gave the correct answer which was ear. Feet, muscles and skin were the most common incorrect answers.

In part (c)(i) even fewer candidates could name the action as reflex. Many merely repeated the question, giving automatic or answered reflect or reflection.

Two thirds of candidates recognised neurones in part (c)(ii), with the more common incorrect alternative being synapses.

Question 2 (*Low Demand*)

It was pleasing to note that over half of candidates scored the maximum of four marks in part (a) with a further third gaining at least three marks. The only common error was to give carbon monoxide or methane as the gas is increasing in the atmosphere as a result of deforestation.

In part (b)(i) the majority of the candidates could explain the meaning of extinct, those who did not gain the mark usually merely said that an animal died.

Half of the candidates in part (b)(ii), managed to give a satisfactory reason why we should not allow species to become extinct; this is a significant improvement on previous examinations. Answers not given credit were usually far too vague.

Question 3 (*Low Demand*)

A quarter of candidates gained full marks, and two thirds gained at least two marks. A majority of candidates recognised the correct information for salt and for carbon monoxide, but there was much confusion between saturated fat and HDL.

Question 4 (Low Demand)

Three quarters of candidates gained both marks in part (a) and a further sixth gained one mark. The concepts of protection and defense were usually understood although the actual terms were not often used. Generally the term predator was used correctly, but there was some confusion with prey.

In part (b) the vast majority of candidates gave explanations in terms of camouflage and using the term correctly. However, only half gained both marks by going on to explain the advantage of being camouflaged. Only a minority of candidates gave explanations in terms of snakelike. Again there was some confusion between predator and prey.

Half of the candidates answered natural selection in part (c)(i), with the more common error being to select mutation.

Most candidates recognised Darwin in part (c)(ii) and two thirds selected simple life forms in part (c)(iii).

In part (d) over half of the candidates connected God with creation, however there was a great variety of suggestions as to what had been created. Suggestions included man, Adam and Eve, living things, the universe to the world and everything in it. Others merely stated a belief in God. Many candidates ignored religious in the question stem and gave answers such as an incomplete fossil record or no proof.

Question 5 (Low Demand)

In part (a), half of the candidates recognised sexual reproduction. The remaining candidates were almost evenly split between the choice of asexual reproduction and cloning.

It was a pleasure in part (b), to see many good answers showing a clear understanding of the role of genes and gametes in inheritance. A fifth of candidates scored the maximum three marks and nearly half of the rest gained two of the marking points. Most candidates know that genes come from each parent. The term gamete was not as well understood, in particular the relationship between genes and gametes was sometimes confused eg genes combined to form gametes and gametes come from the male and genes from female. Very few candidates gave the idea of characteristics controlled by genes. Weaker candidates had problems going beyond a description of what they could see in the diagram, though this did gain them a mark

Question 6 (Low Demand)

Most candidates managed to read the data accurately with two thirds of candidates answering part (a) correctly.

Few candidates understood how to express the data as a proportion in part (b).

A large majority correctly answered part (c).

In part (d) a quarter of the candidates gained both marks and a further half gained one mark. The most common correct answers were low success rate, expensive and multiple births. A common misconception was the idea that the child might be damaged or deformed as a result of IVF. Another common misconception was that the child was not the genetic offspring of the parents. Sometimes this appeared to be the idea of a surrogate mother and artificial insemination. A significant number of candidates gave advantages, having misread the question. Many candidates gave answers about age related effects that were not relevant to this question. This may have been a consequence of similar data being used in a previous paper. Candidates should be made aware that, although similar contexts may be used, the questions will be different.

Question 7 (Standard Demand)

In part (a) a third of candidates gained both marks and a further third gained one mark. Common misconceptions included giving antibiotic or antigen rather than antibody, and repeating the question by giving protection rather than immune.

Most candidates were able to interpret the graph in part (b)(i), with a third gaining both marks and over a third gaining one mark. A number of candidates described the data for autism rather than vaccination.

In part (b)(ii) candidates tended to gain either both marks, over half, or no marks, a third. The majority of candidates who gained both marks noticed that the autism numbers increased after vaccination had ceased. Other candidates were given credit for suggesting a time-lag between vaccination and the onset of autism.

Question 8 (Standard Demand)

In part (a)(i) only a few candidates knew what a placebo is. It is worrying that a sixth of candidates did not attempt an answer. The most common incorrect answers to this question took the route that this was an alternative form of therapy, ie doing it on your own, replacing the nicotine, giving an alternative NRT or group discussions.

Candidates performed rather better in part (a)(ii), with a third giving the idea of a control. Many answers failed to gain credit here because of poor expressions.

In part (b)(i) most students gave NRT with tablet coming a close second. Only a quarter gave the acceptable answer of gum, gum placebo or placebo.

In part (b)(ii) the most common misconception was that the most reliable result was where the greatest number had given up smoking. The second most common misconception was the need for equal numbers of participants in each type of trial. Only a fifth realised that the trial with most participants would provide the most reliable results.

Candidates performed rather better in part (c). Nearly half recognised that the nasal spray was the most effective, but again many opted for the tablet. A majority of candidates answered the question without understanding why the results were expressed as percentages, converting the 24% to 24 people. Alternatively the percentage was used to calculate the actual number who gave up smoking. Candidates then suggested that the NRT which had the highest number of smokers giving up was the most effective.

Mark ranges and award of grades

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