



**General Certificate of Secondary Education**

**Science B 4462 / Biology 4411**

**BLY1F      Unit Biology 1**

**Report on the Examination**

*2010 Examination – June 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 nine questions on the paper. The first seven 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. Candidates should also 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)**

- (a) (i) Just under half of the candidates chose proteins. Unsuccessful candidates probably missed the word large in the sentence and opted in equal numbers for vitamins or mineral ions.
- (b) Nearly all of the candidates knew the link between fat in the diet and heart disease.
- (c) Most candidates correctly chose high blood pressure. The other candidates mainly chose diabetes, perhaps mistaking salt for sugar.
- (d) Half of candidates chose irregular periods. The rest were equally divided between diabetes and leprosy.

**Question 2 (Low Demand)**

- (a) The majority of candidates correctly gave answers in terms of digging. The most common unacceptable answers were for fighting or for gripping prey. Some candidates thought that the powerful claws were to help the animal run fast or to grip the ground. A few thought that the armadillo could pick up the insects with them.
- (b) Two third of candidates realised that the long sticky tongue was used to catch insects. Many had the idea that the tongue was used like a straw to suck up insects, probably visualising the use of a long tongue.
- (c) Just under three quarters of the candidates realised that the large ears would enable the armadillo to hear predators. Many were not clear enough about what could be heard. A significant number of candidates thought that the large ears would help it to cool down, ignoring the fact that the animal hunts at night.

- (d) More than half of candidates realised that the flap would prevent soil or insects entering the nostril. Significant numbers thought that flap of skin was to make the animal quieter when breathing so that insects would not be scared away.

**Question 3 (Low Demand)**

- (a) A fifth of the candidates offered two correct responses, a further three quarters gaining one mark. Almost all gained one mark for mentioning cancer. Whilst the examiners accepted tar as an alternative to cancer, many candidates gave tar and cancer as their two responses. There were frequent references to the dangers of passive smoking.
- (b) Half of the candidates gave answers in terms of addiction, but many merely repeated parts of the stem stating that smokers needed a fix.

**Question 4 (Low Demand)**

- (a) (i) Three quarters of candidates correctly chose characteristic, while unsuccessful candidates mainly chose gene.
- (a) (ii) Two thirds of candidates correctly chose gen. The rest mainly chose chromosome.
- (a) (iii) Half of candidates correctly chose gamete. The other candidates usually opted for either gene or chromosome.
- (b) Two fifths of candidates gained three marks; a further third gained two marks and a further fifth gained one mark. Almost all candidates gave clones in the last part of the answer. The most common mistake was to confuse asexual reproduction with sexual reproduction.

**Question 5 (Low Demand)**

- (a) (i) Most candidates managed to read the graph correctly.
- (a) (ii) Over a third of candidates managed to get all three steps in the calculation correct. A further third managed to get steps 1 and 2 correct, but either failed to subtract the numbers correctly, or added the numbers rather than subtracting them. A tenth of candidates managed only one of steps 1 and 2.
- (b) (i) A large majority of candidates correctly chose both plants and animals. Unsuccessful candidates were equally divided between the other two alternatives.
- (b) (ii) Three quarters of candidates correctly chose microorganisms. Unsuccessful candidates mainly chose lichens.
- (b) (iii) Three quarters of candidates correctly chose carbon dioxide. Unsuccessful candidates mainly opted for methane.

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**Question 6 (Low Demand)**

Significant numbers of candidates gave disadvantages in part (a) and advantages in part (b) then indicated a change of mind by using arrows.

- (a) Most of candidates chose two correct advantages and a further tenth chose one correct advantage. There were no common errors beyond the few candidates who obviously did not know what an advantage was.
- (b) Three quarters of candidates chose two correct disadvantages and a further fifth chose one correct disadvantage. The most common errors were not making a comparison, or misinterpreting the data on time.

**Question 7 (Low Demand)**

- (a) Three quarters of candidates gave correct answers in terms of predation. Common misconceptions included competition between predator and prey, lack of environmental resources, short legs being a breeding handicap, and the two lizard populations interbreeding to produce a new species.
- (b) A third of candidates gained two marks and a further third gained one mark. Many candidates assumed that the Curly-tail lizard and the Anolis lizard mated and leg length increased because of this. Some assumed that only the older, therefore larger, lizards escaped so increasing the average leg length. A number stated that the longer legs made it difficult for the Curly-tail lizard to swallow the Anolis so they only ate short tailed ones. A common misconception was that the short time scale prevented evolution or adaption from occurring. Lamarckist answers of running and therefore increasing the leg length and passing this on were often found.
- (c) (i) Many candidates correctly chose natural selection. The other candidates mainly opted for sustainability.
- (c) (ii) Just under three quarters of candidates correctly chose Darwin. The other candidates mainly opted for Lamarck, but many opted for Semmelweiss

**Question 8 (Standard Demand)**

It was obvious that many candidates had not conducted an ecological survey, or even done a theoretical ecological exercise. Many candidates did not understand the unit  $m^2$ . Some candidates did not seem to know what the word distribution meant.

- (a) (i) Just over a tenth of candidates gained the mark for this question. Very few candidates could name a quadrat or even give a description of one. Examiners accepted alternatives such as grid, square and frame. Many candidates gave a metre rule as the named apparatus. These candidates were given credit in part (a)(i) if they gave a correct description of the use of a rule to mark out a square metre in part (a)(ii).
- (a) (ii) Hardly any of the candidates gained two marks and a further fifth gained one mark. The one mark was usually gained for counting plants. However a majority of candidates described random sampling rather than doing a transect. Many candidates just counted the plants without noting that a specific area was required.

- (a) (iii) Two thirds of candidates recognised that the number of Plantains decreased with distance from the road. Some correctly noted that Plantains decreased as Deadnettles increased. Unsuccessful candidates merely stated that the Plantain grew near the road.
- (b) (i) A tenth of candidates gained two marks and just under half gained one mark. Most successful candidates were rewarded for recognising that Deadnettles increased in numbers with increased distance from the road. Few candidates were able to offer an explanation for the increase in numbers. Acceptable responses included reference to turbulence (from passing vehicles), soil quality or depth, moisture levels or pollution from vehicles. It was disappointing to see that some candidates thought that carbon dioxide from cars was bad for plants.
- (b) (ii) Hardly any of candidates gained two marks and just over a tenth gained one mark. Candidates did not gain any credit for describing plantain distribution as this mark was available in part (a)(iii). Marks were mainly obtained for references to environmental effects on distribution eg moisture, aspect, soil and pollution. Other candidates gained two marks for reference to competition for space, light, water or nutrients. Some candidates noted that the carbon dioxide from cars was used but did not go on to link this with photosynthesis.

**Question 9 (Standard Demand)**

- (a) A quarter of candidates gave a correct definition of pandemic. Many candidates had not learned the definition of this word and actually wrote don't know on their scripts. Incorrect answers indicated that pandemics were to do with panic around the world rather than the effects of the virus around the world, or were defined in terms of spread from place to place and between lots of people without a clear idea that more than one country is affected in a pandemic.
- (b) Hardly any of candidates gained three marks, a further tenth gained two marks and a quarter of candidates gained one mark.

The idea of the new virus strain was expressed by most candidates as the virus changes and has new characteristics, with some candidates expressing what those new characteristics might be. Very few candidates referred to a new strain of flu.

Many correctly stated an effective vaccine might not be available, although some candidates stated incorrectly there was not enough available vaccine. Very few candidates mentioned lack of antiviral drugs but did state that the drugs to treat the virus might not have been developed. Many candidates correctly referred to lack of immunity to the new strain. Very few gained credit for reference to white blood cells or to antibodies. The majority of those who did mention antibodies stated that the antibodies were immune to the virus.

Many candidates discussed the idea that the virus would spread more but failed to extend the idea to the spread between countries. Many candidates referred incorrectly to the use of antibiotics. A number of candidates referred incorrectly to the pathogen being a bacterium rather than a virus and therefore incorrectly followed a line of thought connected to antibiotics and the development of resistance. Colloquial language was used by many, such as fighting off the disease by the whole body and to jabs rather than vaccination or immunisation.

**Mark Ranges and Award of Grades**

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