



General Certificate of Secondary Education

Biology 4411

BLY3F Unit Biology 3

Report on the Examination

2008 Examination – June Series

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Biology

Foundation Tier BLY3F

General

There were a number of particular problems which occurred quite frequently. These included paying insufficient attention to information provided in the stem of a question in order to guide a reasoned response and careless reading of the question resulting in an inappropriate or insufficient answer, for example when asked for a *description* of patterns in data *and* an *explanation*, full marks can only be achieved if *both* are addressed.

The inability to express ideas clearly and unambiguously, such as patterns shown in data was frequently apparent. Excessive verbosity rather than making specific points succinctly and precisely was also common. This merely wastes time as no marks are available for re-stating the question or for making the same point more than once.

Candidates' inability to read data accurately from a graph as well as mathematical weakness in calculations also occurred quite frequently.

Question 1 (Low Demand)

This question was well answered by most candidates.

In part (a), the most common error was confusion between the cell wall and the cell membrane, but over half scored full marks.

In part (b), nearly all selected carbon dioxide as the gas produced by yeast but only 75% knew it was produced by respiration.

In the investigation described in part (c), about 60% of candidates knew that the amount of one or other of the ingredients should be kept constant; the most common incorrect answers were temperature, time or the amount of water in the water bath. It was rather disappointing that only 85% were able to select the best temperature from the table of 8 values.

Question 2 (Low Demand)

Just over half the candidates were able to choose all three correct answers from the diagrammatic information given about filtration in the kidney in part (a).

In part (b)(i), despite the diagram showing clearly that protein molecules were too big to pass through the filter, only 56% of candidates were able to use this information to explain why protein was not present in the urine. To some extent this was a communication problem in that it was not clear whether by filter out, the candidate intended that protein did or did not pass through the filter.

Again only 56% of candidates, in part (b)(ii) correctly selected that glucose was *reabsorbed* after filtration.

Much greater success was attained in part (c) with the vast majority understanding what happened to the amounts of urine and sweat on a hot day.

Question 3 (Low Demand)

In this question about biogas production, although it was widely known in part (a) that methane was the useful component of biogas, over 30% chose one of the other options.

In part (b), only a third of candidates appreciated that insulation of the generator would speed up biogas production due to maintenance of a higher temperature. A significant number thought the insulation was to prevent leakage of the biogas.

In part (c)(i), there were many arithmetical errors in the calculation, with less than half the candidates getting it completely correct.

Allowance was made in part (c)(ii) for the use of incorrect answers from part (c)(i). The success rate here was a little higher than in part (c)(i).

Question 4 (Low Demand)

Part (a) saw the vast majority of candidates recognising that cell X was a red blood cell, but only two thirds correctly selected *diffusion* as the method by which oxygen moved from the air in the alveolus into this cell. A few more knew that it combined with haemoglobin inside the red blood cell, and approximately the same number knew that the red cell lacked a nucleus.

Since the process illustrated in the diagram was part of *gas exchange*, and with an arrow already drawn to show oxygen movement, it was disappointing that only 40% of candidates were able to draw correctly a parallel arrow showing the movement of carbon dioxide in part (b). 5% of candidates failed to attempt this section.

Question 5 (Low Demand)

In part (a), only 40% of candidates recognised that heating at 120 °C for 30 minutes was the correct method of sterilising a Petri dish of nutrient agar.

In part (b), only 60% recognised from the photograph that the zone around the *Penicillium* colony devoid of bacteria provided evidence that the mould had produced an antibiotic.

In the investigation described in part (c), less than half the candidates suggested in part (c)(i) that taking the average of 5 readings would make the results more *valid, reliable* or *representative*; terms such as accurate and fair cropped up far too often.

However, in part (c)(ii), nearly all were able to select from the graph the pH at which the mould grew best and were also able to read the correct value, of 2 mm, from the graph in part (c)(iii).

Almost two thirds of candidates correctly derived the time period of fastest growth from the graph in part (c)(iv), but some did not restrict themselves to a *12-hour* period as required by the question.

In part (d), very few candidates were able to suggest *two* other factors that would need to be controlled when growing *Penicillium* in an industrial fermenter, although 75% could suggest at least one. Temperature was the most common correct answer and time the most common incorrect one.

Question 6 (Standard Demand)

In part (a) only 18% of candidates were able to describe *two* features they could see in the diagram of the villi that helped in the functioning of the small intestine. A good blood supply and a large surface area were the two most common correct answers.

About two thirds of candidates were able to describe, in part (b)(i), one difference they could see between diagrams 1 and 2. The terminology used by candidates was often less than precise.

In part (b)(ii), it was clear that most candidates did not understand the normal functioning of the villi, with just over a fifth of candidates being able to make a valid point. Answers were frequently phrased in such a way that it was not possible to tell if the candidate thought the villi helped food move along the intestine or into the blood.

Question 7 (Standard Demand)

In part (a) it became evident from their answers that some candidates clearly did not know what stomata were. Others thought stomata were used for taking in water from the atmosphere. Although 10% of candidates scored full marks, being able to link stomata with water loss and

hence argue that a low number of stomata was an adaptation to dry conditions, about a fifth of candidates scored no marks at all in this section.

Part (b) proved to be very demanding at Foundation Tier, with only a quarter of candidates able to make any sensible points at all. Some candidates misread the question and thought it referred to leaves which were higher up or lower down the plant stem. Successful candidates realised that having stomata mainly on the lower surface of the leaf might help to reduce water loss as the lower side might be more shaded or cooler. Many were concerned, however, that stomata on the upper surface might let *in* too much water when it rained or become blocked by dust in dry conditions.

Question 8 (Standard Demand)

Only half of Foundation Tier candidates were able to detect two trends in the data in the table in part (a), these were that heavier people required more energy during exercise and that more energy was also needed for faster movement. A common error was to repeat the same point twice, but in a converse manner, for example to state that heavier people used more energy while lighter people used less.

Nearly three quarters of candidates could make at least one sensible point in part (b). The most common was that a higher breathing rate would supply more oxygen. This was perhaps then related to respiration or to an increased requirement for energy, as shown in the table. Fewer remembered to comment on carbon dioxide removal.

Mark Ranges and Award of Grades

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