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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Biology 4411

BLY3F Unit Biology 3

Report on the Examination

2008 Examination – January Series

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Biology
Foundation Tier BLY3F

General

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.

There were particular problems which occurred quite frequently. There was a lack of understanding of certain topics – e.g. kidney function, biogenesis, energy release (rather than its 'production'). There was an inability to express ideas clearly and unambiguously, such as patterns shown in data.

Excessive verbosity rather than making specific points succinctly and precisely – this merely wastes time as no marks are available for re-stating the question nor for making the same point more than once.

Candidates paid insufficient attention to information provided in the stem of a question in order to guide a reasoned response. Candidates needed to read the questions carefully to ensure this was the question actually answered – e.g. when asked just for a *description* of patterns in data, an explanation was *not* required.

The mathematical ability of candidates was often weak.

Question 1 *(Low Demand)*

This question was well answered by most candidates. In part (a), identification of the diaphragm was problematic for some.

In part (b), slightly more difficulty was experienced with recognising that carbon dioxide was the gas which had a higher concentration in exhaled air.

Question 2 *(Low Demand)*

Candidates found it a little harder to identify arteries and veins correctly from the diagram of the circulation system in part (a) than they did obtaining correct data from the graph in part (b). A common error in part (b) was to read the time as 5 minutes rather than 4.

In part (c), most knew that oxygen was transported by the red blood cells.

Question 3 *(Low Demand)*

This question, on aseptic technique, proved to be more difficult. Many candidates mistakenly thought that lifting the Petri dish lid only a little would prevent air entering. Most knew that heating the inoculating loop in a flame would kill bacteria and that incubation of the dish at only 25^{o}C would decrease the risk of pathogen growth.

Question 4 *(Low Demand)*

In part (a) just over half the candidates were successful in showing the pathway by which water vapour would exit the leaf and in identifying transpiration as the process involved.

In part (b) while nearly all could identify the period 13 – 15 hours as the 2-hour period where water was lost most rapidly by the plant, some gave *two* such time periods in their answer and suffered the inevitable penalty. Explanations of the process generally identified this time of day as the warmest or the brightest but some answers implied that *no* evaporation took place at other times. Very few candidates mentioned opening of the stomata in the light.

Question 5 *(Low Demand)*

In part (a) some candidates did not answer the actual question which was about the effect of emphysema on the thickness and on the area of the gas exchange surface; instead, they wrote about the consequences in terms of the rate of gas exchange being reduced. No marks were available for such responses.

In part (b) nearly 1/3 of candidates scored no marks for the calculation which, once the correct pair of numbers had been selected from the table, merely involved their subtraction: 2.1 – 1.1 = 1. An answer of '1.1' was a common error.

Question 6 *(Low Demand)*

In part (a) nearly all candidates knew that urine was stored in the bladder, but less than half could correctly select from the list two substances which were *not* found in the urine of a healthy person (i.e. glucose and protein); although nearly all chose at least one of these.

In part (b) the two most common correct responses in favour of a kidney transplant over dialysis were those of cost and convenience, the points about the latter often being expressed in very general terms about freedom of activity and / or choice of food, and no need for hospital visits. Not one candidate pointed out that a real kidney functions all the time whereas dialysis is an intermittent remedy. The most often cited disadvantage of a kidney transplant related to the phenomenon of rejection, followed by increased likelihood of infection due to suppression of the immune system.

In part (c) while over 90% of candidates correctly selected urea as the substance in the table whose concentration was lowered most by dialysis, slightly less than this were able to subtract correctly the two figures given.

Question 7 *(Standard Demand)*

In part (a) errors included misreading the scale on the vertical axis of the graph (e.g. reading 2.2 as '2.1') and failure to divide by 10 to obtain an average rate of increase per hour over this 10-hour period. Two thirds of Foundation Tier candidates scored no marks in this section.

In part (b) many candidates failed to point out that the presence of oxygen permitted *aerobic* respiration (rather than just 'respiration') and very few explained that *more* energy was available in the presence of oxygen, evidently forgetting that yeast could respire anaerobically and still obtain *some* energy by this means.

Question 8 *(Standard Demand)*

In parts (a)(i) and (a)(ii), there were many answers relating to 'fair testing' rather than to the purpose of each procedure – it appeared that the phrase 'each flask…' in the question triggered this unthinking response. Thus, less than 60% realised that heating the flasks over a Bunsen burner would kill bacteria and only around one quarter appreciated that cooling to room temperature was to get to a temperature at which bacteria would then be able to grow. In part (a)(iii), the purpose of the flask's 'swan' neck was generally thought to be to keep oxygen out, only about a third of candidates understanding that it was to prevent the entry of microorganisms.

In part (b) most candidates appeared to be unfamiliar with the term 'biogenesis'. For many, it related to growth of organisms with or without oxygen. More than 80% of candidates scored zero in this section.

Question 9 *(Standard Demand)*

In part (a) well over half the candidates did not know that the fuel gas in biogas was methane. A similar proportion did not know that biogas was produced by anaerobic respiration, or by fermentation.

In part (b) however, candidates were more successful at extracting appropriate information from the passage in order to describe the benefits to a farmer in Sri Lanka of making biogas in a back-yard fermenter. Although, even here, many answers lacked precision, for example, stating that the farmer obtained free biogas but not explaining for what purpose this might have been used, or describing crops grown in soil to which spent organic matter from the biogas generator had been applied as 'organic' but not pointing out that, as such, they commanded a higher selling price. In part (b)(ii), although about half the candidates correctly pointed out that temperatures were cooler in the UK than in Sri Lanka, very few explained that this would slow down gas production in a simple biogas generator; many included anecdotal answers relating to a lack of sufficient cattle to supply enough biogas to provide for the energy demands of the UK population or the possibility of unpleasant odours near human dwellings.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the **Results Statistics** page of the AQA Website.