

Examiners' Report/  
Principal Examiner Feedback

January 2012

International GCSE Human Biology  
(4HB0) Paper 02

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## **International GCSE Human Biology 4HB0 02 Report - January 2012**

This was the second paper of the new International GCSE qualification in Human Biology. It was felt to be of a similar standard to the first paper for Human Biology sat in June 2011. The candidates' performance seemed to be a little higher than that of the June 2011 paper. The paper discriminated well and the full range of marks was seen for each part of each question. Centres are to be congratulated for preparing their candidates well for this paper, taking on board comments from the report of the June 2011 paper.

### **Question 1**

This question was about using apparatus and was based on the heat energy released from a food sample. All parts of the question were generally answered well. In (a), almost all candidates could name the thermometer and most knew beaker. Although the majority could name the tripod, a significant minority were unable to do so, indicating that perhaps they had not carried out the experiment or used a tripod. In (b), most candidates gained at least one mark for a relevant safety precaution. However, some gave rather general answers and did not relate their answer well enough to the situation of something being heated. Most candidates gained the mark for 27 in the first part of (c) and also two marks for 23 in the second part. Where the thermometer had been read incorrectly in the first part, then it was possible to gain the two marks for the second part if the calculation based on the answer to the first part was carried out correctly.

### **Question 2**

This question tested the candidates' knowledge and understanding of energy requirements, protein malnutrition as well as their ability to describe conclusions for data. Most candidates gained at least one mark in (a) for saying that energy requirements for males rise with age. Some also gained the second mark, but some just quoted the data instead of drawing conclusions. In (b), most candidates gained at least the two marks, usually by referring to poorer growth or to kwashiorkor or a description of the symptoms, such as a swollen stomach.

### **Question 3**

This question was based around transport and tested the candidates' knowledge of diffusion and osmosis. Almost all candidates correctly gained the mark in (a) for higher, showing a good understanding of diffusion. Not all gained the two marks for explaining how the blood ensured that oxygen kept entering the blood from the lungs. Most gained a mark for recognising that the oxygen concentration in the blood was lower than that in the lungs. However, only the better candidates were able to explain that this was because the blood was moving or flowing. The large majority of candidates gained two marks in (b) for correctly having the right hand side of the U tube higher than previously and the left hand side of the tube lower than previously. Some candidates, unfortunately got the sides mixed up and therefore did not gain any marks. Most candidates knew that water moved during osmosis.

#### **Question 4**

This question tested the candidates' knowledge and understanding of the nervous and endocrine systems. It was generally answered well. In (a), almost all candidates were able to label the nucleus of the neurone and many were also able to label the myelin sheath. Similarly, most got the direction of the impulse correct, away from the cell body. Most candidates gained at least three marks in (b), some losing the mark for glucagon if it was incorrectly spelt. In (c), many candidates gained full marks, but some lost a mark as they did not mention that blood was the mode of transport for hormones.

#### **Question 5**

This question was about the respiratory system and the effects of exercise. It also tested the candidates' ability to manipulate and interpret data. In (a), most candidates correctly identified reliability. Most candidates were able to gain full marks in (b) by a correct calculation of the average. Similarly, most candidates correctly identified 18 (attempt 2 at 8 mins) as the anomalous result. Most gained at least one mark for describing that breathing rate increased with increased time of exercise. It should be noted, however, that with the answer having two marks assigned to it, more detail was required in order to gain the second mark. Many candidates were able to explain why the breathing rate increased and gained at least two of the three marks available here. Some did not make it clear, however, that it was more oxygen that was required because more energy was needed. Part (c) discriminated well, with only the better candidates able to identify heart muscle being strengthened. Some just referred to the heart without mentioning muscle and therefore just gained one mark.

#### **Question 6**

This question was about respiration and also tested the candidates' knowledge and understanding of how to improve accuracy. In (a), almost all candidates gained the three marks for the balanced equation for respiration. Some, however, missed out the 6 before water and carbon dioxide and others had water or carbon dioxide on the wrong side of the equation. In (b), most candidates gained two marks for limewater and turning cloudy. Some correctly gave the alternative of hydrogencarbonate indicator and turning yellow. However, some did not get the colour change for the hydrogencarbonate indicator correct. In the second part, candidates tended to gain two marks or no marks. Most who gained the two marks mentioned using a gas syringe. Some lost marks by referring to amount of gas rather than to volume. Others did not appear to understand the question.

### **Question 7**

This question tested the candidates' knowledge and understanding of sewage treatment and eutrophication; and of bacterial resistance to antibiotics and fair testing. In (a), most candidates showed a good knowledge of eutrophication, gaining their four marks fairly easily. However, it was clear that a few candidates did not understand the problem of untreated sewage getting into a river, other than to say that it would poison it. In (b), many candidates found the first part challenging and gained either one or no marks. Some were not precise enough in their use of biological language. Others just described the process in outline without emphasis on the role of bacteria, the main focus of the question. In the second part few candidates gained full marks. Most gained one or two marks, usually for indicating that bacteria would mutate to a resistant form that they would reproduce. Not many made it clear that only the resistant bacteria would survive or that the resistant gene would increase over time or several generations.

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