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# Examiners' Report Principal Examiner Feedback

January 2018

Pearson Edexcel International GCSE  
In Human Biology (4HB0) Paper 01

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## **Principal Examiner Report – iGCSE Human Biology 1801 Paper 01**

### **General Comments**

This was the largest cohort to sit the paper at this series and the overall standard remains high, with few exceptions. The use of scientific language is improving and this is aiding candidates in answering questions. It is pleasing to note that Centres are making positive use of the feedback provided in these reports. It would be helpful if candidates could confine their answers to the spaces provided but, if it is necessary for them to extend beyond the space provided they should clearly indicate this and write on a continuation sheet which ensures that the Examiner sees and marks all of the points associated with a particular question.

### **Question 1**

All of the multiple choice questions proved to be very accessible with approximately 90% of answers proving to be correct for many questions. Only 1(a) and 1(b) caused any real difficulties for candidates.

### **Question 2**

2(a) - Many students performed well on this questions. A small number of students suggested that inhaled air had less oxygen. Several students talked about carbon dioxide not supporting combustion and so the flame burnt for less time in the exhaled air. Rather fewer candidates made reference to the fact that oxygen is used in respiration.

2b(i) – Approximately one third of the students gained full marks on this question. Some students had identified the differences, however they failed to make the comparison explicit. Several responses repeated the same difference using the reverse argument e.g. inhaled air contains less carbon dioxide, exhaled air contains more carbon dioxide. A few responses also referred to inhaled air containing more dust/pathogens and a number mentioned the difference in oxygen concentration which was not acceptable.

2b(ii) – There were some very muddled responses here in terms of where the tubes go, however, most of the responses seen identified that the tube containing exhaled air went cloudy quicker. Some responses referred to a 'double bubbler' test. There were some variations in how the test was described. Some students talked about leaving one tube exposed to atmospheric air (inhaled air) and blowing through the other tube using a straw. This approach is not appropriate as the inhaled air needs to be treated in the same way as the exhaled air. There were very few responses referring to temperature/moisture content.

2(c)(i)(iii) The name and the location of 'cilia' was well known by the majority of candidates.

2(c)(ii) Most candidates could effectively label three structures in the cell, though a surprising number labelled the cell membrane as the cell wall.

2c(iv) Many students drew an acceptable diagram of the cell with reduced or absent cilia. Approximately 50% of the responses had reference to mucus damaging or impairing the action of the cilia.

### **Question 3**

This was well answered by most candidate. The only blank causing any problems was the one where the term 'erector' should have been inserted.

### **Question 4**

4(a) A large number of responses seen, correctly identified the small intestine. There were a few references to other parts of the digestive system e.g. the mouth, oesophagus and stomach although these were rarely seen. A few responses suggested that the Visking tubing represented the kidney. Where the small intestine was correctly identified, most students went on to comment about the pH and the presence of maltose but only the best candidates made any reference to permeability.

4(b)(i) Most students scored well. Several students lost a mark as they did not refer to adding the distilled water/solution to a test tube/boiling tube/vessel of some kind. In addition, a number of students described a standard glucose test as though they had been given a sample of glucose rather than using the distilled water. It was pleasing to note that many candidates gave a correct colour change rather than just the end point for a positive test. There were a small number of incorrect references to the iodine test for starch.

4(b)(ii) Most students gained full marks for maltase breaking down maltose to glucose. A surprising number of responses wrongly talked about maltase and maltose moving through the Visking tubing.

4(c) Points referring to the presence of villi, surface area were the most commonly awarded in this question. Far fewer mentioned temperature or presence of blood supply. The presence of more enzymes was seen more often with some responses naming the extra enzymes present in the alimentary canal.

### **Question 5**

5(a) The main error with this question was that the students failed to correctly label the y axis. They either failed to label it at all, missed out the units or just labelled it 'arbitrary units'. A small number of responses had the axes the wrong way around. Some responses also failed to identify which hormone was which either through a key or labelling the line.

5(b) Approximately two thirds of candidates could correctly identify these two stages.

5(c)(i) Few of responses showed an initial decrease between days 1 and 8. Most responses had drawn an arched curve with little regard for where the increase and decrease were drawn. Since the X axis had the days of the cycle numbered, candidates should have expected to draw the curve with greater attention to detail.

5(c)(ii) Most students identified an initial loss of the lining if fertilisation didn't occur. Fewer responses discussed a build-up/thickening of the lining, however, where they did, they usually gained the second point for implantation as well. Some responses incorrectly referred to the uterus thickening or being shed rather than the uterine lining.

5(d) A majority of students linked ovulation with an increase in maternal temperature. Some students talked about the increase in temperature facilitating cellular reactions.

### **Question 6**

This question elicited the full range of responses with even the weakest candidate being able to score one mark. However, only the best candidates and those who had clearly performed the practical scored full marks. Many candidates failed to score marks because of an inability to accurately name/describe an appropriate piece of equipment. For example, the method of igniting the food would be a Bunsen burner, not a fire nor is a flame a piece of equipment. A clamp and stand would be needed to hold the test tube of water. A top pan balance or just balance would be used to measure the mass of food and a burette or measuring cylinder would be used to measure the volume of water.

### **Question 7**

7(a) The majority of candidates were able to place these vessels in the correct order.

7(b)(ii) Very few responses marked gained any marking points for this question. Lots of responses talking about pressure changes having to happen to avoid bursting of capillaries and the distance of the vessels from the heart

7(b)(iv) – The majority of students gained at least 2-3 marks on this question. A lot of students talked about easier diffusion rather than faster/quicker diffusion. Some students wrongly referred to large cross-sectional area rather than just large surface area.

7(b)(v) The majority of candidates were able to give two correct substances.

### **Question 8**

8(a)(i) Whilst many candidates referred to agglutination, few mentioned that this would lead to a blockage of the blood vessels.

8(a)(ii) This question produced a range of marks. Only the better candidates were able to correctly complete the first two boxes in the 'can donate' column and with other boxes there were often omissions of the odd blood group, whether through ignorance or carelessness.

8(b)(i) Less than half the candidates scored both marks. There was often a correct response regarding the expression of both alleles in the phenotype but, many candidates struggled with the terminology to describe codominant.

8(b)(ii) Although many candidates found this quite easy, the commonest error was to give only one genotype for blood group B.

8(b)(iii) – Again, well answered but where errors were seen it was usually in the layout of the answers. Some students used Punnett squares and approximately a quarter of responses failed to identify the resultant blood groups.

8(b)(iv) The majority were able to give the correct probability. Very few students talked about identical twins being genetically identical and

appeared to have overlooked this. A misconception seemed to be that out of 4 children, only 1 could have this blood group, therefore if there were twins it would be impossible for both to have it as that would be 50% probability.

### **Question 9**

9(a) The majority of candidates were able to correctly identify the two parts. Cartilage was better known than bone marrow with a significant number identifying the latter as the 'shaft' or 'compact bone'

9(b) Several responses referred to the bone being tall rather than long. A lot of responses referred to the ball and socket joint with fewer referencing the presence of a hinge joint. Many responses talked about bone marrow and cartilage.

### **Question 10**

10(a) There was a wide spread of marks though the two boxes causing the most difficulty were the type of message for hormonal co-ordination and the route of transfer being neurones for nervous co-ordination.

10(b)(i) Both structures were correctly identified by the majority of candidates.

10(b)(ii) Another well answered question with most students gaining both marks. Some students are still referring to nerve impulses as messages/information.

10(b)(iii) Well answered with most responses referring the release of neurotransmitter/chemical. Some responses referred to the impulse jumping across the synapse or the electrical impulse being 'carried' by the neurotransmitter.

