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International GCSE Human Biology
(4HB0) Paper 01

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The paper proved accessible to the majority of candidates and even the weakest could answer a significant number of questions. At the other end of the scale, there were some high-scoring papers where candidates demonstrated a clear understanding of the principles underpinning the specification.

Question 1
The only parts that caused problems were (e), (g) and (i).

Question 2
Candidates found the greatest difficulty with the last two sentences that had to be matched.

Question 3
Despite (a)(iii) asking for a function of bones **other** than protection, a number of candidates still quoted 'protection'. Others also stated that their role was to produce marrow rather than giving references to blood cells. Many candidates were able to correctly name four organs found in the abdomen but common incorrect answers included heart and lungs and, on the odd occasion, the brain was given as an example! The role of Z (the diaphragm) in inspiration was well known. However, many candidates stated that as a result of the diaphragm contracting and flattening the volume of the lungs was increased. This is a common misconception and should be challenged. Disappointingly few candidates explained that air rushes into the lungs as a result of the pressure difference between the atmosphere and the inside of the lungs.

Question 4
This question, overall, was well answered. Most candidates could describe how to carry out a Benedict's test though some gave the colour change associated with the iodine test. A sizeable number of candidates heated the solution containg the powder before adding the Benedict's solution - this is not the normal way in which the test is conducted. A point to note is that candidates should use a boiling tube rather than a test tube for heating test reagents. The table in (b) was usually well constructed, although some candidates insisted on putting in the terms 'positive' and 'negative' rather than the actual results as demanded by the question. The majority of the candidates were able to identify the powders correctly.

Question 5
The one description that caused the most problems was the second one where candidates often put 'urine' instead of 'urea'.

Question 6
In their answers to (a)(i), many candidates circled the two legs - which only counted for one mark. Others circled a large part of the body which scored no marks. Many candidates thought that malaria is a disease transmitted by houseflies. Although many candidates were able to describe the covering of food and the use of insecticides as ways of preventing the transfer of disease by houseflies, very few made any reference to thorough cooking of food and a significant number described methods that would more apply to the control of

mosquitoes. Many candidates were able to give at least two ways in which bacteria are useful but descriptions of recycling were often rather vague.

Question 7

Whilst many candidates made reference to a gene having something to do with the characteristics of an organism, there were few who gave a full definition and described a length of DNA coding for a protein. The term 'recessive' was not well understood with many candidates saying more about it not being dominant and a number of candidates stated that it was only expressed when in a 'double dose' which is an odd way of describing homozygous. Too many candidates stated that the effect of the sickle cell disorder was that the blood would carry 'no oxygen' rather than it being reduced. The genetic cross was generally well done but there was confusion amongst a number of candidates as to the proportion with anaemia. Many gave a ratio of 3:1 rather than 1:3. Candidates must read the question carefully if they are not to make avoidable mistakes. Part (c) was poorly answered. Many candidates referred to it being present in a heterozygous form amongst a large part of the population and would, therefore, be passed on. Few recognised that resistance to malaria meant that such individuals would survive and pass on the allele, though a number referred to a 'selective advantage' without stating what it was.

Question 8

This question caused problems for many candidates as they were not able to describe, in simple terms, how the solutions should be applied individually across the tongue with an appropriate means of application. The other part of this question that caused problems was (d), where few candidates understood that the sensitivity to chemicals would vary between individuals and therefore, to achieve greater reliability, 30 pupils would be used. Many candidates simply stated that it would improve the accuracy.

Question 9

In answering (b), candidates would have been better referring to the 'optimum temperature' rather than using the term 'works best'. The use of correct terminology makes for a much more concise and precise answer. Most candidates appreciated that the starch had been digested in answer to (c). However, it was again disappointing in (d) to see many candidates state that the starch had been broken down into glucose rather than maltose, although most appreciated that whichever molecule they selected, it was smaller than a starch molecule. Only a minority understood that a 10% starch solution would take far too long to digest and would therefore have adversely affected the results. Many answered in terms of a supposed osmotic effect if the 10% solution had been used. Part (f) asked for two places so, strictly speaking, an answer such as 'saliva' is not correct as the candidate should have referred to the mouth. Candidates must read the question carefully and answer the one that is set.

Question 10

Most candidates could correctly identify the two joints and the bone. The majority were able to draw the biceps muscle in its correct position, although some drew in the triceps as well and, since most did not label their diagram, penalised themselves. Too many candidates did not represent the tendons clearly and often failed to indicate the point of attachment of the tendons clearly. Candidates will not score a mark if they leave the Examiners to interpret their diagram rather than presenting an unambiguous picture. Although the question did not ask for labels, and marks were not awarded specifically for labels, those candidates whose drawings left something to be desired were still able to score marks because they labelled clearly their intention. Answers to (c)(iii) were often poor. In many cases candidates said that the 'body absorbs vitamin D from the sunlight', or similar such phrases. Many also went on to say that vitamin D 'helped the bones absorb calcium'. This sort of loose phraseology is not acceptable. Reference should have been made to vitamin D being synthesised in the skin as a result of exposure to sunlight and the vitamin D promoting absorption of calcium ions from the gut. Most candidates could describe at least one disadvantage of over-exposure to sunlight.

Question 11

Part (b)(ii) is another example of where candidates did not answer the question that was set. The question asks for **type** of blood vessel. Far too many stated that it was the renal vein rather than simply 'vein'. Part (c)(iii) caused considerable problems for candidates. Firstly, they failed to specify exactly which out of the **four** methods of treatment was least effective. Instead, in many cases, they simply stated 'kidney machine'. Candidates also failed to heed the comment 'using information in the bar chart'. Instead they gave a long and irrelevant account of how a patient attached to a machine would have to take lots of time off work etc. Far too few exemplified their answer by reference to the data supporting a relevant statement.

Question 12

The calculation proved demanding for many candidates. Whilst many answered (b)(ii) correctly by stating that the driver was legally unfit to drive, they only gave part of the story. Many found it difficult to calculate that 45mg of alcohol would have been broken down by the liver over the three hour period, still leaving 120mg per $100cm^3$ of alcohol in the blood which was greater than the permitted 80mg per $100cm^3$ in the blood. Whilst most candidates recognised that excess drinking of alcohol would damage the liver, few made any reference to brain damage.

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