

Examiners' Report/  
Principal Examiner Feedback

January 2015

Pearson Edexcel International GCSE  
In Human Biology (4HB0) Paper 1

## **Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at [www.edexcel.com](http://www.edexcel.com) or [www.btec.co.uk](http://www.btec.co.uk). Alternatively, you can get in touch with us using the details on our contact us page at [www.edexcel.com/contactus](http://www.edexcel.com/contactus).

## **Pearson: helping people progress, everywhere**

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: [www.pearson.com/uk](http://www.pearson.com/uk)

January 2015

Publications Code UG040566

All the material in this publication is copyright

© Pearson Education Ltd 2015

A number of candidates failed to read the questions carefully enough and instead of answering the question set, chose instead to simply repeat, parrot fashion facts learnt about the topic under question. This was particularly true for 4(c) (ii), 8(f) and 10(b). In addition, many candidates had insufficient grasp of the correct scientific terminology and as a result, were unable to express themselves in a concise, clear and relevant manner.

### **Question 1**

There were no particular issues with the multiple choice questions. All proved to be accessible and no one question caused particular problems for many candidates.

### **Question 2**

This proved to be a challenging question. Many candidates failed to draw any of the bones of the middle ear. Where they were drawn they were often indistinguishable as separate ossicles. Two particular problems were, that candidates did not draw the ossicles to connect with the oval window and often, the malleus was not in contact with the tympanum.

The role of the ossicles was well known particularly with reference to amplification. However, the role of transference of the vibrations to the oval window/cochlea was often not creditworthy because the answer referred to transference to the inner ear rather than a more specific answer. Part (b) (ii) was poorly answered. Few candidates grasped the point that tube X allows the passage of air. Further, whilst many said that its role was to 'equalise pressure' few went on to give the full and required answer of 'either side of the tympanum'.

The role of tube Y was better known insofar as references to transmission of impulses to the brain via the auditory nerve is concerned. However, few candidates made any reference to the conversion of vibrations into impulses.

### **Question 3**

Few candidates realised that it is protein that contains nitrogen and often gave lipid or fatty acids as an incorrect answer to the first description. Another common error was to think that lipid or fatty acids could lead to high blood pressure instead of salt.

### **Question 4**

Most candidates were able to correctly identify the structures in part (a). However, a sizeable number confused artery and vein and there were many and varied spellings of ureter. This latter word because it can be confused with other words is one that must be spelt correctly.

The majority of candidates correctly identified the solution and the structure in part (b). Many candidates drew the line to an incorrect point in the kidney in answer to part (c) (i). A sizeable minority chose to draw the line

to the boundary between the cortex and the medulla, thus hedging their bets. These candidates did not receive any credit. The biggest problem with the answers to part (c) (ii) was that most candidates failed to take any notice of the word 'more' in the question. Instead, they gave accounts of ultrafiltration and reabsorption whilst being correct, did not answer the question fully.

### **Question 5**

The determination of the percentages in parts (a) (i) and (ii) caused few problems. However, the rest of the question proved to be much more challenging. In part (a) (iii) few candidates recognised that the growth of the brain and head occurred much sooner than the rest of the body because of the role of the brain in controlling the activities of the body and therefore, needed to be well developed early in order that this control was facilitated. The answers to part (b) (i) were often vague with a lack of detail with reference to age ranges. The graph is a measure of growth yet far too many candidates answered in terms of development and maturation rather than refer specifically to growth. Although many candidates in their explanations for part (ii) made reference to puberty, far fewer made any reference to the role of hormones and hardly anyone made reference to the point that the reproductive organs were not needed as functional units until the individual had grown because they would be incapable of looking after a new child.

### **Question 6**

Parts (a) (i) and (ii) surprisingly caused problems for many candidates. What should have been a simple exercise in counting proved to be too taxing for many candidates who clearly did not adopt an appropriate technique of crossing through each figure when they recorded it. Some candidates put down tally marks in the boxes but failed to give a numeric value and some could just not count. Particularly disappointing was the large number of candidates who could not produce a simple bar chart. Many omitted units on the X axis and large numbers were unable to produce a suitable scale. Many bar charts were drawn freehand rather than using a ruler and many appeared not to possess a pencil sharpener. There were some good descriptions of a suitable method to measure pulse rate. However, many chose to use a stethoscope and listen to the heart. A significant number used a spirometer. Many thought that the pulse could be felt in a vein and a sizeable number used their thumb rather than their fingers. The standard technique is to count for 15 seconds and then wait for 15 seconds and then count again for 15 seconds. The pulse rate would then be calculated as beats per minute from these results. Few adopted this technique. The answers to part (c), in many cases suffered from the problem that it was a comparison question i.e. compare at rest with after exercise. Many candidates simply described the fact that respiration takes place releasing energy. The whole thrust of the answer should have been based on more energy being required thus necessitating more respiration leading to the

requirement for more oxygen which would be carried to the muscles in greater quantities in the blood because there would be a greater flow of blood. Few candidates referred to the need to pay off the oxygen debt though a number did refer to the oxidation or breaking down of lactic acid necessitating more oxygen.

### **Question 7**

Part (a) was well answered with many scoring full marks. The commonest errors were to link the fallopian tube to the 'ova are released' box and ovary linked to the 'fertilisation takes place' box.

Part (b) was usually well answered though relatively few candidates made any reference to colostrums. Many recognised that breast milk contains antibodies though far fewer then went on to describe how this helped to confer immunity to diseases. Many candidates referred to the development of an emotional bond between mother and baby.

### **Question 8**

Some candidates caused problems for themselves by not reading the question thoroughly. It says quite clearly 'use the food web shown to answer parts (a) to (f)'.

In many cases candidates used food webs/chains that they had come across before rather than the one in the paper. This was particularly true for parts (a) to (d). Candidates struggled with part (e). At this level the Examiners want a reference to the transfer of energy and not a reference to what eats what. Many candidates omitted to give an overall effect on the food web rather than just one part of it and so, many candidates failed to score more than one or two marks because they did not consider every aspect.

### **Question 9**

The majority of candidates were able to name the muscles and the joints and were able to name the synovial fluid and give the correct function of lubrication. A significant number of candidates however, did state erroneously that the fluid is for cushioning which is the role of the cartilage. Despite question (b)(iv) having been asked on previous papers many candidates still have difficulty in expressing movement of the two joints in terms of  $180^\circ$  vs.  $360^\circ$ . It should be particularly noted that a hinge joint does not move in one direction only.

Part (c) was particularly challenging and candidates were unable to express the point that a fixed unmovable anchor is required if co-ordinated movement is to take place.

### **Question 10**

The parts of the breathing system were largely identified by most candidates. However, it was clear that many candidates had not seen or used this piece of apparatus as they commented that the way it was used was to blow into tube A. Whilst this would have the effect of inflating the balloons this is not the correct method and the handle on the rubber sheet should have keyed them into the correct way to operate the equipment. In answer to part (c) many candidates noted that there was no movement representing the movement of the ribs and the fact that there was no contraction of intercostal muscles.

### **Question 11**

Part (a) was well answered but despite the question quite clearly indicating that the response on the first line should be in terms of 'yes/no', a significant number of candidates used ticks or crosses.

Part (b) was well answered with most candidates referring to increased kinetic energy with increasing temperature causing an increased rate of diffusion. One area of concern was the large number of candidates who simply stated 'temperature' rather than specifying high/low or increase/decrease and then the effect. It is not good enough to say 'temperature increases the rate of diffusion.'

### **Question 12**

There was a wide spread of marks scored on this question. As usual, a particular difficulty was in the spelling of glucagon and, like the term ureter, in a previous question must be spelt correctly. Insulin and glucagon were often given the wrong way around and many thought that it was the pituitary gland that controls blood glucose levels.

### **Grade Boundaries**

Grade boundaries for this, and all other papers, can be found on the website on this link:

<http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx>

