

Examiners' Report/  
Principal Examiner Feedback

Summer 2014

Pearson Edexcel International GCSE  
in Human Biology (4HB0) Paper 02

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Biology – 4HB0 02

The paper enabled candidates to demonstrate their knowledge and understanding of the subject matter. All questions proved to be accessible to at least some of the candidates and those questions which were intended to discriminate, do so effectively.

One area for candidate development is in the use of scientific language. Far too many candidates could not express themselves in a clear and concise manner because they had an insufficient command of the scientific terms.

Question 1

Part (a) proved to be an easy introduction for most candidates and collar bone was accepted as an alternative answer to F.

Part (b)(i) most answered all questions correctly. A small minority confused tendons with ligaments.

Part (b)(ii) many students did not get that the movement was in one plane. Most gained a mark for stating that movement was up and down, but many described the movement as 90 degrees or 'in one direction'. Some explained how the muscles worked as antagonistic pairs to move the limb, rather than describe the movement.

Question 2

Part (a)(i) the trachea was correctly identified by the majority of candidates.

Part (a)(ii) again, some missed the point of the question and discussed how the C shape rings aided swallowing along with the epiglottis, rather than discuss the trachea itself and many confused the role of cilia with that of mucus.

Part (b)(i) most gained both marks here. Many gave full descriptions including the intercostal muscles and stated here the thorax volume increases.

Part (b)(ii) a few brought in the physics element by stating the pressure, volume equation. However, a significant number incorrectly referred to the lungs increasing their volume.

Part (c) a tiny number gained the last marking point. Most stated the limewater would turn milky with atmospheric air. A few had not read the question carefully and explained how, because of gas exchange/respiration, exhaled air had more carbon dioxide.

### Question 3

Part (a)(i) many candidates understood the need to convert harmful waste into something that was harmless, but fewer referred to the conversion of organic into inorganic waste. A number of candidates stated that bacteria converts and oxidises rather than breakdown.

Part (a)(ii) most candidates correctly stated that the use was as fertiliser though a number thought that it went to landfill, or both.

Part (b) was usually high scoring but it was disappointing to see that many candidates still do not understand the process of eutrophication. It is the vast increase in aerobic bacteria breaking down dead algae that causes the depletion of oxygen, rather than the death of underwater plants as a result of the lack of light caused by the algal bloom, resulting in a reduction in photosynthesis.

### Question 4

Part (a) was often a problem because of insufficient detail provided by candidates for the role of the lens. The answer required was to focus light on the retina rather than just focus light. The function of the iris is to control the amount/intensity of the light entering the eye, not simply to control pupil size.

Part (b) was often a problem because candidates were unable to correctly spell cerebrum.

Part (c) candidates stated the image was not formed rather than light rays not focused, though many recognised that the image would be blurred.

In part (d) most students understand the idea of CORMS, although very few gained a mark for the S control mark. They know to state "repeat" the investigation.

### Question 5

Part (a) was well answered with the majority of candidates correctly identifying the neurone as a motor neurone, the direction of the impulse and the synapse as the gap.

Part (b)(i) the majority scored the first mark, but many stated the relationship was directly proportional. A few thought that the time taken was getting longer, hence the impulses were slower.

Part (b)(ii) many candidates were very unwilling to come straight out and say it was or was not reliable. Others confused reliable with accurate. Many said that the experiment was 'repeated six times'.

Part (c) most said insulated, but meant heat insulation and went on to discuss more kinetic energy. Many talked about the signal 'short circuiting'. Very few were able to describe the role of the nodes of Ranvier.

## Question 6

Part (a) most candidates recognised that the kidneys are responsible for removing toxic waste and if they do not function there will be an accumulation of urea. Many also included the control of water levels.

Part (b) this was answered well. Many made reference to medical fees. Some stated the 'machine could get infected'. However, most candidates recognised that a kidney transplant offered many advantages over continued dialysis despite issues arising over rejection and the shortage of donors.

Part (c) candidates confused antigens and antibodies. More stated that O was the universal donor than stated AB was the universal receiver. Some talked about the blood group being on two alleles and phenotypes rather than antigens. Few candidates were able to correctly use the term 'agglutination' instead many referred to the clotting of the blood.

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