



**General Certificate of Education (A-level) Applied
June 2012**

Applied Science

SC14

**(Specification
8771/8773/8776/8777/8779)**

Unit 14: The Healthy Body

Report on the Examination

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General Comments

There was a pleasing trend of candidates' thorough responses with regards to the cardiac cycle in this series. There was some confusion regarding the left and right sides of the heart by some but on the whole, candidates made good use of scientific terminology. QWC questions still pose a problem for a significant number of candidates who continue to make inaccurate statements that lack A-level depth. Questions on haemoglobin were poorly answered this series with many candidates unable to interpret oxygen dissociation curves in any detail. Answers to questions based on dental hygiene were also disappointing.

Question 1

In 1a, candidates demonstrated a level of confusion in their interpretation of the question. Candidates focused on the aorta being responsible for transport around the body and the pulmonary artery being responsible for transport only as far as the lungs. The question actually required a response based on the differences in ventricle wall structure on each side of the heart.

Responses to 1b were pleasing, although some candidates incorrectly referred to the artery contracting and relaxing when the question clearly was referring to elastic tissue.

In 1c the majority of candidates gained a mark by stating backflow, but fewer gained a second mark for stating where the blood was prevented from flowing back from and to.

1d was answered variably but on the whole candidates knew the anatomy of the heart particularly well. It was clear that for some centres, this area of the specification was poorly understood. Some candidates, however, had an excellent grasp of the cardiac cycle and were rewarded with full marks. Most candidates were able to gain some marks for 1e with a significant number gaining full marks. This was pleasing to see.

Question 2

2ai and 2aii were both answered really well by most candidates, with most knowing correct levels for cholesterol and the effects of obesity on the body very well.

In 2b, candidates demonstrated a thorough knowledge of testing for diabetes although some described a glucose tolerance test rather than correctly opting for urine testing as a simple diagnosis method.

In 2c, calculations were poorly attempted and many did not include calculations which may have gained credit.

2d was one of the QWC questions, and of the two, candidates demonstrated a better understanding on this one. Most had clear ideas on a healthy diet during pregnancy, with many referring to both calcium and vitamin D as well as extra protein, carbohydrates and iron. The use of good written English with correct use of terminology was also encouraging.

Question 3

Generally this question posed the most problems for candidates. Most candidates scored poorly for 3a, with a lack of ability in executing calculations being responsible for low scores in the majority of cases.

3b answers were largely disappointing, with very few displaying knowledge of oxygen dissociation curves. This was borne out by poor responses to 3ci where again a significant number of candidates had, at best, a superficial knowledge of haemoglobin behaviour.

3cii continued the trend of poor answers, with a significant number of candidates referring to haemoglobin taking up oxygen and not releasing it to actively respiring tissues. Candidates should also be able to use the terms 'loading' and 'unloading' when describing haemoglobin behaviour with oxygen, rather than 'picking it up' and 'letting it go'.

Question 4

Both 4ai and 4aii supplied a mix of answers. Some candidates had a very thorough grasp of this area of the specification and gave solid full mark answers over and above the requirements of the unit. Other candidates, however, gave poor answers which illustrate a lack of knowledge in this area.

4bi on the whole was answered very well, but 4bii was poorly tackled by a significant majority. Many candidates still cannot correctly draw a line of best fit and a number of candidates were unable to draw a correctly scaled axis. Most correctly plotted points but there were many scaling errors. In part iii, candidates failed to correctly interpret the graph. Ignoring the fact that the question asked to describe and explain, most opted to only describe the shape of the graph without linking it to biological knowledge.

In 4ci and ii candidate responses on the whole were good, with the majority of candidates clearly understanding the major variables to control in a clinical trial.

Question 5

In 5a the majority of candidates correctly completed the table, although some incorrectly stated that pepsin was active in the small intestine rather than in the stomach.

Similarly in 5b, the majority of candidates correctly stated that bile was present to emulsify fats. Few gained two marks, however, and some got confused with its role, stating that bile was acidic and found in the stomach.

5c required the correct identification of the role of teeth, tongue and saliva and on the whole the answers given were a little disappointing. Candidates lacked biological understanding generally in particular with regard to saliva.

5d produced an even more disappointing set of answers, with many candidates believing that sugar on the teeth caused tooth decay. Few linked tooth decay to bacteria and even fewer to plaque. There was some confusion as to what plaque was and responses to descriptions of gingivitis in particular demonstrated a real lack of understanding.

5e provoked a mixed response, with many correctly calculating the answer but many answering wrongly with no working out included, and some choosing not to answer this question at all. Candidates should always include any calculations carried out as these may be worthy of marks in their own right.

Question 6

As with all calculation questions, 6a was a problem for many candidates sitting the paper. The same issues arose with this question as with other similar ones in that many did not include any calculations and some failed to attempt the question at all.

6bi and ii proved to be of little challenge to many candidates and it was pleasing to see that the majority of the cohort were knowledgeable in the area of ethics.

The final QWC question, 6c, was very poorly answered. Many candidates did not attempt it and those that did on the whole gave very superficial answers. A-level biological fact was absent and often confused, and this coupled with poor structure and spelling meant that the majority didn't access the higher mark levels for this question. It was clear that for some centres, this area of the specification was poorly understood. Nonetheless, some candidates had clearly learnt lung disease thoroughly and were rewarded with full marks. 6d was answered to a much higher standard and this was encouraging to see.

Question 7

Generally this question was the most successfully answered and the level of understanding demonstrated by the majority of candidates was very encouraging. Equations for cellular respiration in 7a were known to most, with the majority correctly completing the table for 7b to show some of the features of various stages of respiration.

For 7c, candidates demonstrated variable responses and generally there was less of an understanding of various respiratory substrates compared to the rest of this topic.

Similarly for 7cii, some candidates easily applied their knowledge to the problem while others failed to grasp the link between heart muscle being made of protein and this protein then being used in respiration.

Mark Ranges and Award of Grades

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