



**General Certificate of Education (A-level) Applied  
January 2011**

**Applied Science**

**SC14**

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

**Unit 14: The Healthy Body**

***Report on the Examination***

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## General Comments

In general, it was pleasing to see more portions attempted by candidates. A significant number of candidates, however, appear not to use the stem of the question in constructing answers. Others think that the stem provides information that will gain marks. Both of these approaches are misguided; the stem is written carefully in order to help candidates visualise the biology in a vocational context and to supply information that may be helpful. However, the mark scheme will not give credit for simple copying from the stem without any processing or application of information.

Questions that incorporated marks for quality of written communication and stretch and challenge were often answered poorly. Some candidates were clearly aware of the need for clear and accurate expression and made good use of scientific terminology, but many others failed to gain marks by giving unstructured, unpunctuated and misspelt answers that did not reach the higher marking level. This has been commented on in previous reports but has not been addressed by some centres.

Candidates need to remember that there are synoptic elements in this paper which will include knowledge of work covered in SC02.

### Question 1

- (a) (i)** More able candidates on the whole gained this mark. The first of the synoptic questions, it required the need for rapid as well as irregular peaks. A significant number of candidates did not attempt this question at all.
- (a) (ii)** This was also answered badly by a significant number of candidates for many reasons: while some described the breathing cycle, others focused on control by the SAN and AVN. There was confusion about which chambers were which, as well as wrongly named valves and vessels.
- (b) (i)** Most candidates gained at least one mark for this question and this was mainly from stating that there will be more oxygen supplied. There were lots of references to blood becoming thinner or that pressure would be reduced. These statements did not gain any marks.
- (b) (ii)**
- (iii)** These were linked questions and lots of candidates failed to gain marks because they stated that volunteers should not be used and instead testing should only be carried out on animals. The second mark could only be gained if it addressed the issue raised in the first mark and this led to some candidates not scoring at all for (iii).

### Question 2

- (a)** This was answered well by most candidates. This was pleasing as it was an AO2 application question.
- (b)** This was not answered well. Candidates still fail to correctly construct a balanced

chemical equation for chemical respiration, with some candidates only providing word equations in attempt to answer this question.

**(c)(i)**

**(ii)** These were linked portions and those correctly answering (i) also generally scored well on (ii). Some candidates failed to gain marks for (ii) because they failed to correctly identify that capillaries only have a large lumen in relation to their wall thickness. A statement about large lumen only was not enough to gain a mark.

**(d)** This required focus on quality of written communication. Apart from the problems discussed in the general section at the beginning of the report, candidates often failed to score full marks because they didn't read the question and address all areas of lifestyle. Many focused only on a healthy diet and didn't consider other lifestyle choices such as regular exercise, stopping smoking or reducing alcohol consumption. Most candidates did score at least one mark in this section, with A grade candidates gaining all five marks.

### **Question 3**

**(a)(i)** Most candidates gained some credit for this question although some incorrectly stated number of students or length of time for the investigation to be carried as controlled variables, for which they did not gain marks.

**(a)(ii)** This was answered well by some, which was pleasing to see. A significant number were confused by the stem, however, and stated that some volunteers ate extra oranges in addition to the experimental ones and some wrote that the diets were not exactly the same. Again this did not gain marks.

**(b)(i)** This was answered well by most, but marks were not awarded to some because there were no comparisons made between students eating oranges and those taking vitamin C tablets.

**(b)(ii)** The stem of this question did state to use calculations, which some candidates did not read or chose to ignore. By calculating simple means for all three test groups, two marks could be gained before any interpretation of data had been applied. Generally, candidates did score well for interpreting the information.

**(c)** Most candidates correctly identified that this was either carried out as a control or as a comparison.

### **Question 4**

**(a)(i)** While most candidates identified that cells were kept in a homeostatically-controlled environment, few mentioned that they are found in tissue fluid.

**(a)(ii)** This was answered well by most candidates.

- (b)(i)** Responses to this question in comparison were disappointing, with few candidates scoring full marks. Candidates need to be able to apply mathematical calculations for this unit but many failed to attempt this question at all.
- (b)(ii)** There were variable answers to this question. Most candidates gained the marks for stating the condition needed but the majority then failed to correctly explain why the condition was needed. A significant minority also suggested glucose as an appropriate answer when the stem clearly states ‘apart from nutrients’. Good candidates gained all four marks for this portion.
- (b)(iii)** This was answered well by the majority of candidates.

### Question 5

Most candidates found no problems answering **(a)(i)** but struggled with **(a)(ii)**.

- (b)** This was answered badly with candidates rewording the stem to try to gain marks. Generally, candidates failed to understand that without mitochondria present, only anaerobic respiration could take place, which generates much less ATP. This is a high level concept to understand and most candidates correctly identified that it is during the ETC that the majority of ATP is generated, gaining one mark.
- (c)(i)** This was answered well.
- (c)(ii)** This was poorly attempted. Most candidates who attempted this portion stated that it would lead to tiredness or weight loss. Both excess and lack of various nutrients are on the specification and should be addressed by candidates.
- (d)** This produced mixed results. There seemed to be some confusion as to what a dipstick is for, and most candidates failing to gain marks in this portion did so because their answer made comment to dipsticks only being suitable for glucose level testing.

### Question 6

- (a)(i)**
- (ii)** These questions were both answered well. One or two candidates misread the questions and need to recognise the difference between a food group and a food example.
- (b)(i)** This was also answered well. Candidates failing here did so because they only made the calculation for the day and not the week as the stem requests.
- (b)(ii)** Generally candidates understood this and answered it well.

- (c)** Candidates did not demonstrate such clear understanding on this question. There was a lot of confusion as to the testing methods which should be used, with the most common being a confusion between BMR and BMI.

### Question 7

Generally, candidates are knowledgeable about diabetes and this was demonstrated in this question. However there was some confusion which was particularly apparent in **(b)** where candidates assumed the child to have type II diabetes and therefore made dietary based comments. Other candidates focused on diabetes being inherited and therefore it could be that other siblings were also affected. **(c)** gave mixed results and some candidates failed to score marks due to comments based on insulin not getting into the blood quickly enough rather than it being digested and not getting there at all.

### Question 8

This was answered surprisingly badly. The majority of candidate's answers were too generalised and did not use A-Level facts which meant they failed to gain marks.

- (a)(i)** Most candidates correctly identified the appropriate teeth but could not correctly name them.
- (a)(ii)** Candidates concentrated on teeth not fitting together and being painful rather than on the role of molars.
- (b)(i)** Scaling was the major problem, with some candidates also choosing to put the timescale on the Y axis.
- (b)(ii)** Candidates who didn't gain full marks primarily did not refer to the data, as requested in the stem. Further information was far too general and did not refer to bacteria feeding on trapped food or acid decaying teeth.

### Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results statistics](#) page of the AQA Website.