Version 1.0

General Certificate of Secondary Education January 2012

Additional Applied Science AASC/2H

Science at Work

Unit 2

Report on the Examination

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Set and published by the Assessment and Qualifications Alliance.

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Additional Applied Science
Higher Tier AASC/2H

General comments

As with previous years, there were many examples of students not reading the questions with sufficient care, failing to organise their thoughts, and offering superficial answers where detail was required. However, this paper seems to have highlighted some gaps in students' detailed knowledge of some areas of the specification.

Question 1 (Standard Demand)

(a) Whilst 1(a)(i) was reasonably attempted, students seemed uncertain in their responses to a question testing basic forensic techniques. Many answers simply said 'take a mould/cast', omitting details of what to use and how to use it. Often, the terms 'mould and cast' were wrongly employed as in 'put a mould into it', and 'put a plaster cast on it'. The most common response was 'take a photograph of the mark (with a ruler at the side of it)'.
With 1(a)(iii) students were able to give a variety of suitable reasons for the shoe print not being sufficient evidence to charge the suspect.

(b) 1(b) produced some better answers than expected, with suitably labelled diagrams and knowledge of the formula used. Common errors included the mis-labelling of the angles and the stating that angles should be calculated and/or sines of angles measured. Still one quarter of all students scored no marks on this question.

(c) 1(c) was well answered by a third of the students, though a surprising number of students either thought that the suspect had 2 types of glass on their clothing, or that a bottle and/or television was damaged as the crime was committed or used to aid the crime, as in 'the suspect used the television/bottle to break the window'.

Question 2 (Standard Demand)

(a) 2(a)(i)/(ii) Most responses gained at least 1 mark for identifying the additives, and another for knowing the possible effects of tartrazine. In the marking, ADHD was accepted for hyperactivity, as students were not expected to be aware of the differences.

(b) 2(b)(i) This was generally well answered, though it was a little unsettling to find a significant number of students stating that the manufacturer added something to make the drink addictive. 2(b)(ii) and 2(b)(iii) produced some good responses, though some indicated confusion about what the 'recall notice' actually stated.

Question 3 (Standard Demand)

(a) 3(a)(i) This calculation produced a good number of correct answers, addition probably causing more errors than the division.
3(a)(iii) Strangely, too many students failed to pick up on 'fair test' here, and the word 'same' did not appear often enough.
3(a)(iv)/(v)/(vi) These were well answered. There were, however, not too infrequent responses in part (vi) that referred to non–visible changes, such as 'increased pulse/heart rate'.

(b) 3(b)(i) This was poorly answered, with a minority of students being able to recognise that A is an artery and/or to give correct reasons for the thicker wall. Rather, the thickness of the wall was explained as being necessary 'for protection'/to prevent 'things' getting into the blood, or as a consequence of arteries getting 'clogged up'.
3(b)(ii) Also poorly answered, the most common explanation for the wall being thin being 'to let blood pass through'.

Question 4 (Standard Demand)

(a) 4(a)(i)/(ii) Both parts were well answered, part (i) particularly so.

Question 5 (High Demand)

(a) 5(a)(i) Most students incorrectly assumed that the reason for monitoring acid concentration in wine is to do with effects on the wine obtained from fermentation, such as taste, rather than on the fermentation itself.
5(a)(ii) Very few students appeared to have any real notion of what happens in a titration experiment. Most suggested that the indicator was used to find the acid concentration.

Question 6 (High Demand)

(b) 6(b) This calculation involves the division of a number by a larger number. Many students seemed to feel that there is something implicitly wrong in doing this, and so divided the bigger number by the smaller.

(c) 6(c)(i) Another familiar area for testing, and it produced many acceptable responses.
6(c)(ii) This question produced many much improved responses compared to those from a previous similar question. However, students still appear to be confused by ideas of electric charges, electric currents and electric fields. It was a topic area that did not seem to be covered by all schools/colleges as there was evidence that some students had no understanding at all.

Question 7 (High Demand)

(a) 7(a)(i) Many students ignored the first part of the question, as to why steel was tried, and concentrated on the reasons as to why steel was not a good choice. A common mistake was to confuse bend ability with flexibility.
7(a)(ii) Most students knew that a composite is made up from at least 2 materials, but did not explain, in terms of the materials' individual properties, why this is useful, and seemed to have little idea as to how the materials are 'joined'.
7(a)(iii) Here there was too much concentration on what properties a good 'pole' should possess, and too little on how these could be obtained by combining materials in a composite.

(b) 7(b) This question really did expose a lack of knowledge of correct scientific terminology, and an inability to adequately describe what measurements the terms refer to. Most marks were given for the answers 'breathing rate'/ 'number of breaths per minute.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the **Results statistics** page of the AQA Website.

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