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General Certificate of Secondary Education June 2012

Additional Applied Science AASC/2H

Science at Work

Unit 2

Report on the Examination

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Additional Applied Science
Higher Tier AASC/2H

General comments
As in the past, failure to gain marks often resulted from poor application of knowledge in answering the questions, from not reading the question with sufficient attention and from offering only superficial answers when detail was required. Students should be guided to match the substance of their answers to the number of marks available to particular questions.

Question 1 (Standard Demand)

(a) The question was well answered by the great majority of students, the most common combination being 'obesity' and 'heart disease'.

(b) This question elicited a wide variation in responses, these clearly indicating that students were well aware of the practices of the fast food industry.

(c) Most students were able to provide two reasons but struggled to produce a third. There was a tendency to give answers that were essentially the same in terms of one sixteen year old 'playing more sport' and also having a job that 'requires more energy'. A common response that gained no mark was 'one is taller'.

(d) (i) Many students lost marks by not specifying lots of vitamins, or for giving the use of the vitamin.

(ii) Only half the students were able to compute this very easy sum correctly.

Question 2 (Standard Demand)

(a) Many responses omitted the step of 'framing the print' and a significant number failed to name Plaster of Paris, or a suitable substitute. The best answers tended to be in the form of a list of points rather than in a continuous description.

(b) This was well answered by half the students, the others struggled to explain what they meant as they were unable to find the word 'unique'. The answers were often vague, e.g. ‘match it to the criminal more easily’.

(c) (ii) Unfortunately a majority of students were unable to extract the required data successfully, failing to organise their ideas into logical mathematical steps and expressing them on paper. Many produced a mishmash of subtractions and divisions, appearing to choose numbers from the data at random. Correct answers using the mass of the dry soil were given two marks.

Question 3 (Standard Demand)

(a) (ii) The majority of students were able to identify cotton as the 'natural' material and many correctly selected polyester as being the most suitable for a waterproof jacket. Some chose to add their own materials rather than choosing from the ones named. The main faults in answers were in a general lack of precision when providing reasons for the choices and not fully utilising the given data. Some did not appreciate the difference between describing a material as *'absorbing*' water and *'letting water through'*.

(b) Unfortunately many students failed to appreciate what the question was asking and demonstrated a lack of real understanding. A great many students seem to believe that if a runner maintains a steady pace his/her body temperature will not change. 'Vasodilation' was generally poorly described and 'sweating' was the most common answer but without any explanation of why this helped to bring down body temperature.

(c) The reasons for a marathon runner drinking sports drinks throughout the race were quite well explained with ‘rehydration’ and 'replacing electrolytes' being the most common answers. Marks were lost by students not replacing the glucose used.

Question 4 (High Demand)

(b) Very few students were able to describe the chemical test for alcohol. 'See if it sets alight' and 'flame test' were common responses. Guesses included adding 'biuret, benedict’s, sodium hydroxide'. There were a significant number of non-attempts.

(c) It was very disappointing that many students did not know the results for these very standard tests. Over half the students scored no marks.

(d) Although a few good answers were seen, just under half the students scored no marks for this question. One notable common error was the use of the term 'intermolecular forces' when referring to the electrostatic attraction between ions.

Question 5 (High Demand)

(a) Only a third of the students were able to gain a mark on this question. The formula for glucose was often given correctly, but students generally failed to balance the equation. Too often though, students used overly large 'subscripts' and some placed them on the same level as the chemical symbols. Disappointingly only 23% of the students knew that yeast was a fungus.

(b) Most students were able to give a satisfactory answer though some suggestions were a little bizarre.

(c) Despite similar questions appearing in recent examinations there was a minority of responses that satisfactorily covered all the relevant steps in the 'streak method'. Students should be reminded that the plates need to be streaked in opposite directions to spread the bacteria out. They should also be reminded about using aseptic techniques.

(d) Many lost marks here by referring to 'cooking, refrigerating or using air-tight packaging’.

Question 6 (High Demand)

(c) Most students displayed sufficient knowledge to score some marks. Students again lost marks because they failed to link their ideas and tended to make stand-alone points, e.g. 'muscles need more energy' was a common theme but was seldom linked to 'more oxygen is needed' or 'oxygen is needed for respiration'. Some students again ignored the data or confused' breathing rate' with 'heart rate' and just 'missed the point' with statements such as ' the breathing rate increases because blood is being pumped around faster' and 'more oxygen needs to reach the lungs so that the heart can pump the blood around quicker'.

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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