



General Certificate of Secondary Education

Applied Science 4863

AASC/2F Science at Work

Report on the Examination

2008 examination – January series

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General comments

This was the first examination for this specification and it was pleasing to see that very few sections of questions were left totally blank. Of the three areas of the specification, the forensic questions were answered most successfully, with candidates having good knowledge of forensic procedures. It was pleasing to see that candidates' interest was held right to the end of the paper, with Question 7 being well answered.

Question 1

Most candidates could give good advice in their responses to 1(b): washing hands and work surfaces. 'Keeping the kitchen area clean' was too vague to merit a mark. Many candidates did not refer to the cross infection of other meat, instead giving general methods for preventing contamination (ie refrigeration and covering), and so gained no marks. Many incorrect answers referred to the birds before slaughter and their feed.

Most candidates answered 1(c) well, although there were a vast arrangement of letters for the spelling of diarrhoea.. It was encouraging to see a minimal use of colloquial terms.

Question 2

Responses to 2(a) demonstrated that the function of the food additives listed in the specification is not well known.

The appeal to children was a common answer to 2(b)(i): 'to colour the food' was not an acceptable answer. The link between colourings and hyperactivity in 2(b)(ii) was well known.

Question 3

The correct answer of 7 was given in most responses to 3(a)(i). However, the calculation of the percentage in 3(a)(ii) was poorly done considering the equation was given in the question. Too many candidates read the wrong information from the table. Common incorrect answers were 14/21, 21/14 and $7/14 = 2$. Candidates should be reminded that marks are awarded for correct working out even if the answer is wrong so they should always show their working. Most candidates could correctly identify two changes in 3(a)(iii) but some did not qualify an *increased* heart rate or *more* CO₂ or used features that were not listed in the table, so did not gain the marks. Candidates need to be reminded to look out for the word 'other' in the question; no marks were awarded for changes in breathing rate. Most candidates wrongly thought that the heart rate increases to transport oxygen to the lungs (3(a)(iv)). The name of the system required to correctly answer 3(a)(v) was not well known.

Question 3(b)(i) was generally well answered. Question 3(b)(ii) asked how the body can cool itself down not how a person can cool the body down. Drinking water and using a fan were not acceptable answers. In answering 3(b)(iii) some candidates realised that water was being lost as sweat but many were unable to express themselves clearly enough to gain both marks. Some candidates were incorrectly stating that the athlete was sweating out urine.

Question 4

A high proportion of candidates gained full marks for **4(a)**, although some candidates did not because they did not identify protective clothing.

In their responses to **4(b)** most candidates correctly suggested collecting the glass using tweezers and put it in a bag. Very few gained the marks for sealing and labelling the bag.

Answers to **4(c)(i)** demonstrated that, apart from the use of universal indicator, candidates were not familiar with these tests, and very few could name the white powder in **4(c)(ii)**. It was disappointing to see how few candidates could give the correct formula for carbon dioxide.

Question 5

Answers to **5(a)(i)** showed that many candidates wrongly thought that the young child required more energy than the office worker. Most knew that carbohydrates provide energy (**5(a)(ii)**). Many knew that salt was bad for the heart (**5(a)(iii)**) but could not be specific enough in their answer to gain the mark. In **5(a)(iv)** most candidates knew that the patient would put on weight but didn't explain why.

Snack list A was almost always selected in **5(b)(i)** but the reasons given in **5(b)(ii)** were not always creditworthy, many candidates mentioning only that list A contained calcium or vitamins but not comparing it with list B or list C. Candidates should be reminded that when comparing information the use of the word more is often vital for a mark. Vague statements about list A being healthier were not rewarded. Questions **5(b)(iii)** and **5(b)(iv)** were very well answered. The few candidates who could not name calcium often scored the mark in **5(b)(iv)** for realising that milk is good for teeth and bones.

Question 6

A large number of candidates did not gain the marks in **6(a)** by giving features that were already labelled on the diagrams. Again the word 'other' should be pointed out. Candidates should also be reminded to be more specific in their answers; 'shape' or 'toe' are too vague.

In responding to **6(b)** most candidates recognised that synthetic materials are lighter in weight and a few mentioned that they were more waterproof and flexible. Many simply referred to cost and comfort, answers that were not worthy of credit. Candidates needed to explain *why* synthetic materials would be more comfortable to gain a mark.

The mark for the feature in **6(c)** was not always gained, as candidates rarely clearly identified the change in the boot (ie thin bottom plate). Candidates were not expected to know where the metatarsal is, so an allowance was made for those who wrote about protecting the heel. Candidates who identified studs in their answer did not seem to realise that the more pointed shape would increase the pressure on the foot if they were stood on.

Most candidates correctly chose metal or polymer to answer **6(d)** but their reasons often related to the function of the studs for grip rather than to the properties of the material.

Question 7

Many candidates thought that the fingerprint in 7(a) is a whorl but it is very clearly a loop.

The main reason for candidates not gaining the mark in 7(b)(i) is that they did not state that it was identical to C. Surprisingly, 7(b)(ii) and 7(b)(iii) were not well answered. Many candidates could not measure the distance between X and Y correctly and in working out their answer to 7(b)(iii) multiplied by 5 rather than divided. Candidates need to think about the answer they give: could a finger pad really be 75 mm?

In responses to 7(c) many candidates demonstrated a sound knowledge of procedure but were not able to gain full marks because they omitted mounting the fingerprint or storing it on a database: most seemed to think it appropriate to store the fingerprint in a plastic bag.

The uniqueness of fingerprints (7(d)) was not well known by some candidates and many thought that identical twins have the same print. Quite a few were under the misconception that there are only three types of fingerprints in total. Other fanciful descriptions included suspects being set up or using other people's fingerprints.

Mark Ranges and Award of Grades

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