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General Certificate of Secondary Education January 2011

Additional Applied Science AASC/2F

Science at Work

Unit 2

Report on the Examination

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Additional Applied Science
Foundation Tier AASC/2F

General comments

All parts of the questions were attempted by the majority of candidates. Materials question 2 was answered well. Questions that required detailed application of knowledge were not answered so well, for example vasodilation in question 5 and bonding in question 6. Interpretation of data in question 4 proved difficult for many of the weaker candidates.

Question 1 (Low Demand)

(a) Just under half of candidates picked out the correct foods containing protein and four fifths knew its function in the diet.

(b) These standard food tests were not so well known and many variations of answers given.

(c) Just over half knew that this was intensive farming but were unsure of the environmental factors that the farmer is able to control. Most answers referred to controlling their food which is not strictly an environmental factor and should not be taught as such but it was allowed in this case. Candidates should be reminded of the physical environmental factors such as light, temperature and humidity. Many candidates realised that the farmer would be able to produce more eggs by intensive farming but marks were not awarded unless they referred to more eggs in a smaller space. Some free range units can produce as many eggs as smaller farms using intensive methods.

Question 2 (Low Demand)

(a) The majority of candidates were able to match correctly at least one material to its property.

(b) For the lower ability there was some confusion as to what was a property and some answered with types of materials or the uses of the fibreglass. Some picked out information from the table in the previous question and referred to melting point which was not accepted.

Question 3 (Low Demand)

(a) The main reasons that a crime scene is cordoned off, is to restrict access and to prevent contamination. Most understood this, although the word contamination was not widely used. Marks were not awarded for answers referring to health and safety.

(b) Most collected the glass with tweezers and stored it in a plastic bag but quite a few forgot to seal and label their bag. Most candidates scored one mark for knowing the last stage in finding the refractive index of a piece of glass but were often confused about when to record the temperature of the oil.

(c) Features needed to identify a seed were well known and most candidates were able to give a reasonable argument about why the suspect may not have committed the crime. Most responses said they could have been at the crime scene at a different time.

Question 4 (Low Demand)

(a) Although candidates realised that the kebab was not a healthy choice they were unable to give reasons why, using the data from the table. Marks were lost for not identifying there was too much salt/fat/saturated fat/energy. Candidates misread the table and thought that the second column was also a measure in grams and so gave the wrong use of the figures, for example, the energy was 100 times more than was needed. Candidates need to have more practice in reading food labels and using figures from a table. In (aii) only a tenth of candidates correctly worked out that 9970kj of energy is needed.

(b) To prevent diabetes was the most common correct answer. Some looked at the more long term effects of gaining weight ie heart disease/strokes/high blood pressure and these points were not credited.

(c) This very simple investigation proved far too difficult for many candidates. The poor use of language continues to lose candidates marks. Marks were not awarded for measuring the meat or for cooking the meat or for putting it in the oven. Many were trying to weigh the water they had collected. Too many did not realise that to dry the meat out a warm oven (60^{o}C) is needed. 160^{o}C would cook the meat which is what a lot of the candidates were incorrectly doing.

Question 5 (Standard Demand)

(a) The majority of candidates could read the figures off the graph and about three fifths could work out how much the temperature rose. The advantages of using a data logger were not well understood. Many candidates gave answers that would equally be true for the use of a thermometer, eg 'see how much your temperature rises during the experiment'. Candidates should be reminded not to use the word easier without clarifying what they mean.

(b) Most candidates recognised that diagram B showed the blood vessel after exercise but were too vague in their reasons to get full marks. Many confused the answer with sweating to lose heat and many lost marks by not referring to more heat being lost. Very few mentioned vasodilation and many wrote about the blood vessels rising to the surface of the skin which is inaccurate.

(c) Most candidates appreciated that more water would be lost through breath and sweat on race day but not that sweating would be a significant increase. Many did not realise that to accommodate this increase in water lost they have to excrete less through the kidneys in the form of urine.

Question 6 (Standard Demand)

Candidates generally scored well on this question and had a good knowledge of healthy eating.

(a) Although the words were given to facilitate the answer to this question it was still very poorly answered. Only just over three fifths gained one mark or more and that was usually for the test for carbon dioxide.

(b) The formula for one of the most common compounds was known by only a handful of candidates. Sodium chloride should be used to describe the structure of an ionic compound with the positive and negative ions indicated. Candidates are expected to

know the formula for an ionic compound. Ionic bonding was not well known and despite a generous mark scheme only just under a quarter mentioned bonds. The idea of the bonds being very strong which is why ionic compounds have a high melting point was not understood. Many thought it was because the compound contained a metal which was very strong.

Mark Ranges and Award of Grades

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