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General Certificate of Secondary Education

Additional lApplied Science 4863

AASC/2F Science at Work

Report on the Examination

2008 examination – June series

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General comments

The paper tested the whole of the ability range and gave ample opportunity for candidates to show what they could do. Very few questions were left blank or wholly misinterpreted. The areas least well known were testing muscle strength and the components of blood.

Question 1

In 1(a) the functions of nutrients were mostly well known.

In 1(b) most candidates were able to interpret the traffic lights and identified C as the healthier choice gaining both marks. Some, however, lost marks for stating that C was lower in nutrients and not picking out anything specific.

A significant number of candidates were not familiar with the test for glucose in 1(c), confusing it with the test for starch.

Question 2

Many candidates answered 2(a)(i) about the working of muscles to lift and lower the body well, but the spelling of biceps was not very consistent. Fewer students gained a mark for 2(a)(iv). Those that did tended to answer 'muscles that work in pairs' rather than 'muscles which work in opposite directions'. Many students answered 'muscles which work together', which was not acceptable.

The majority answered 2(b) well.

In 2(c)(i) the use of a dynamometer was not well known and many lost marks by vague use of language, referring to pulling down on the equipment rather than the handle. Most students gained a mark for 'pulling the handle' or similar, but only one or two knew that the equipment should be held by the side. Those that mentioned the scale simply said that the scale would show their strength. Very few candidates suggested reading the scale, recording the reading or doing repeats.

2(c)(ii) was generally answered correctly.

Question 3

The majority of students gained 2 or 3 marks on 3(a). Most marks were lost when candidates gave descriptions of what they could see e.g. round or big, without making a comparison between the pollen grains.

Most candidates correctly identified the carpet fibre (3(b)(i)), but many thought that this did prove that the suspect was at the crime scene because the fibres matched (3(b)(ii)). Some gave the answer NO, because he could have been there before the crime. This answer was not accepted, because the question did not ask if he committed the crime, only if he was at the crime scene. Most knew that a comparison microscope would help to identify the carpet fibres in 3(b)(iii).

Many students got the order wrong for question 3(c), as they started off by putting sand in the box and then stepping into it, rather than recognising that the print was already made at the crime scene. Most were able to score at least one mark for pouring the mixture in to the mould, but fewer recognised the plaster and water being mixed.

Question 3(d) was well answered, with most students achieving a mark.

Question 4

Most candidates had a grasp of organic farming methods and scored 2 or 3 marks in 4(a).

Question 4(b) was poorly answered with many candidates ticking the nutrients needed by humans, rather than plants.

The calculation in 4(c)(i) was generally correct, but the mark was lost when units were not included. In contrast 4(c)(ii) was poorly answered with most candidates thinking that organic food is more nutritious, this did not score a mark. Other vague answers that were not creditworthy were healthier (why are they healthier?), more natural, better quality or better for you.

Question 5

The BMI in 5(a)(i) was generally well known, but working it out for 5(a)(ii) was not so easy. The majority of students gained the 2 marks for just writing the correct answer, without showing the working. Many candidates lost marks by not being able to square the height or choosing the mass for athlete 1 rather than athlete 2.

In 5(b) most candidates recognised that athlete 1 was overweight, but the advice was often vague. Eat more healthily, go on a diet or eat a balanced diet does not give enough information. In addition, they did not recognise that the athlete would already be exercising and that he would need to increase the amount. Question 5(b)(ii) was less well answered, with few students mentioning that 'muscles weigh more than fat'. There were many vague answers referring to age or bone structure, which were not accepted.

Most candidates were able to gain at least one mark for recording what the athlete ate and many gained a second mark for recording it everyday in 5 (c). Very few, however, recorded how much of it he ate, which lost them the third mark. Too many also recorded his exercise programme.

Question 6

Most candidates were able to collect the blood with a swab and put it in a bag gaining one or two marks for 6(a). Fewer remembered that the bag needs to be sealed and labelled. A proportion of candidates were collecting the blood with pipettes.

Less than 50% of candidates gained even one mark for 6(b)(i), suggesting that most were unfamiliar with a blood smear. Platelets were very rarely seen. In 6(b)(ii) many thought that a red blood cell was needed for DNA profiling and did not realise the significance of the need for a nucleus.

Most students could correctly name blood group A and B, gaining at least one mark for 6(b)(iii), but quite a few answered A,B,C,D. There were also lots of references to +ve and –ve, which were ignored.

Mark Ranges and Award of Grades

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