



**General Certificate of Secondary Education
June 2011**

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**

On the whole, the candidates appeared to have sound knowledge of some subject areas, but not others. As in the past, failure to gain marks often resulted from poor application of that knowledge in answering the questions, from not reading the question with sufficient attention and from offering only superficial answers when detail was required. Candidates should be guided to match the substance of their answers to the number of marks available to particular questions.

Question 1 (Standard Demand)

- (a) (i)/(ii) Were well answered by the majority of candidates, though spelling of associated terms did pose problems for most.
- (b) (i) Although linked to a standard laboratory procedure of ‘agar plate streaking’, this question produced many confused responses, often lacking in clear details of method and with unclear and unlabelled drawings. Rather than streaking a ‘sample’ of food onto an agar plate, a surprising number of candidates thought it appropriate to put pieces of food onto the agar, whilst others appeared to believe that it is possible to transfer just the bacteria. However, most candidates who attempted responses did gain marks and a significant number gained full marks. Candidates should be reminded of the purpose of the streak plate – to separate out the bacteria to aid identification. Some candidates were dipping the loop in the sample again.
- (b) (ii) This was generally well answered, but there were those who missed the point and fell back onto familiar responses referring to accuracy of results.
- (c) Another well answered question, though confusion between bacteria and microbes led some candidates to give yeast related products (bread / beer) for their answer.

Question 2 (Standard Demand)

- (a) Well answered overall. The most popular answers to the question were ‘cotton’ and ‘lycra’. Where ‘leather’ was named as a natural material, ‘plastic’ was often mistakenly given as a synthetic, but it is not suitable for clothing.
- (b) (i) Another question which generated many correct responses. The term ‘durable’ was often given as an answer together with a description of ‘durable’ as a further answer, indicating that the full meaning of ‘durable’ wasn’t known. Non-scoring responses include ‘comfortable’, ‘easily shaped’ and ‘cheap’.
- (b) (ii) Many attempts at this question failed to actually pinpoint the reason for the use of ‘foam blown polyurethane’, i.e. its compressible nature. Some responses were merely a repeat or a paraphrase of ‘absorbs shock’ from the stem of the question.

- (c) (i)/(ii) A majority of candidates were capable of calculating the 'average force' and of selecting an appropriate sports shoe and justifying the choice, but a smaller number gave sufficient explanation for their choice to gain both marks in part (ii) of the question, with a surprising number of responses that related the force required to move the shoes across artificial grass to the weight of the shoe.

Question 3 (Standard Demand)

This was the best answered question with candidates again showing good knowledge of forensic science.

- (a) (i) Apart from responses giving 'whirls' (accepted) and 'swirls' (not accepted), few candidates had any real problems identifying each type of fingerprint.
- (a) (ii) The danger of contaminating evidence (with new fingerprints) was understood and clearly described in the vast majority of answers. Unfortunately, there were responses that referred to contamination 'with bacteria'.
- (a) (iii) This question elicited many correct responses, but generally only one of the given responses gained credit. A proportion of candidates didn't focus on the 'forensic' aspect and gave responses such as 'easy to collect', 'good evidence/useful in court', and 'identifies who was at the crime scene'.
- (a) (iv) Another generally well answered question. Some answers given were not actually applicable to the crime described, and some ignored the term 'suspect' completely, e.g. 'could be the owner's fingerprints'.
- (b) (ii) A good example of candidates failing to read the question carefully and then rather than focussing on how to make a 'record of the mark', focussing instead on 'compare', and a good number of answers described how the suspect's screwdriver could be used to make another mark and the two marks compared.
- (c) (i)/(ii) Both were very well answered.

Question 4 (High Demand)

- (a) (i) This question did not cause any real problems, a few answers were given with the unit 'kg'.
- (b) (i) Many candidates struggled and did not get beyond the calculation of the difference in the number of pigs produced for the given dates. The few correct final answers were generally obtained via round about routes rather than by the established mathematical one.
- (b) (ii) The increase in number of pigs produced was mentioned somewhat more than the decrease in pig producers, the link between them not being established and therefore not gaining credit.

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- (c) (i) The answers expected by the mark scheme all appeared but very few candidates gained all 3 marks. Responses that didn't get marks included vague suggestions that intensive farming is 'cheaper' and that 'chemicals are used', and references to the meat being of 'poorer quality'.
- (c) (ii) Here again many responses were vague and often statements were similar to those given in 4(c)(i) concerning the quality and taste of the meat and the use of chemicals. There were many claims that in intensive farming the animals are treated 'cruelly' or that conditions are 'inhumane' without any attempt to substantiate those comments.

Question 5 (High Demand)

- (a) (i) This question asked for a description of a method but many responses were superficial, e.g. 'take blood and do a blood test', 'test blood before and after the race', 'use what diabetics use', and 'use a machine that measures it'. A significant number of wrong answers named or described tests involving Benedict's solution and /or urine, whilst others mentioned blood pressure and heart rate.
- (a) (ii) This was generally well answered, but 'digestion' was a suggestion by some.
- (a) (iii) Again, many answers were too general, even where candidates realised that the question was asking about 'transportation' of glucose they often failed to say where it was being transported to.
- (b) (i) Very well answered.
- (b) (ii) Many candidates correctly identified that Food C caused the least rise in insulin production, but too many failed to justify this, again because responses were insufficiently specific, e.g. 'it didn't rise as much', 'it only rose to 0.4', and 'Food C caused the least change'.
- (b) (iii) Answers here indicate that there is much confusion concerning insulin, including both the cause of its release and its effects. Quite a number of answers stated that insulin is released '..when blood glucose levels are low / when energy is needed', and that '..insulin breaks down glycogen to glucose'. Candidates also made unneeded and unrelated references to diabetics and insulin injections.

Question 6 (High Demand)

- (a) (i) It appears that most candidates assumed that this question demanded more than the simple obvious response. Thus there were the, possibly inevitable, references to 'fair tests', 'water could affect the results' and 'accurate / reliable results'. Too casual a reading of the question stem resulted in other candidates assuming that the sample was evaporated to dryness, whilst a possible misunderstanding of experimental procedures led to others believing that flame tests cannot be performed on a liquid.

- (a) (ii) When describing the 'flame test' procedure, too many candidates placed too much importance on the 'cleaning' or 'sterilising' of the wire. But not all, as 'tweezers', 'tongs', 'pliers', 'metal rod / ring', and 'spatula' were amongst the implements suggested to hold the 'metal' or 'ion'. Marks were lost for not clearly indicating that it is the colour of the *flame* that is recorded, but the most common reason for candidates' failure to gain full marks for their answers was the failure to mention that a 'blue / hot' Bunsen flame must be used.
- (a) (iii) Only 16% totally correct answers were given, copper was identified more often than sulphate.
- (b) (i) 'Electrolysis' was probably the most common wrong answer given, but there were numerous attempts to spell 'electrophoresis'.
- (b) (ii) Generally, candidates did not appear to be knowledgeable in this topic, with over half not getting any marks. Some responses focused on chromatography. Many did not grasp the concept of DNA being charged and that is what causes it to move.

Mark Ranges and Award of Grades

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