



**General Certificate of Education (A-level)
January 2012**

General Studies A

GENA4

(Specification 2760)

Unit 4: Science and Society (A2)

Report on the Examination

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GENA4 A2 Science and Society

General Comments

The Case Study theme in this session was *genetic development* and this sometimes controversial topic seemed to be well received by most candidates although, overall, it was a theme that sometimes proved more demanding than some previous themes and the mean mark for the paper was lower. Most students were quite well-informed about the main issues and showed awareness of key areas of discussion. Generally speaking, the sources were used quite effectively by those who had prepared adequately and, with centres now able to teach to the material, a generally good standard in Case Study work has become established.

Essay performance was, as is so often the case, variable. Some candidates write with considerable fluency. They are well informed, demonstrate analytical skills, argue logically, use examples, have a keen sense of critical awareness and score very high marks. Other candidates, despite the choice of essay themes available, continue to struggle. A few seem to find it difficult to fill a single page of A4 – either because of poor time management or, more usually, lack of both technique and, crucially, knowledge.

Sometimes, potentially good candidates either fail to develop points fully or answer unevenly, focusing mainly – or even only – on one part of the two-part questions that are asked. (This was often the case in answers to Question 6.) Unfortunately, the lack of appropriate examples to support arguments remains a perennial issue although this was less evident in Question 8 (which asked for specific examples to cover the area of overseas trade and aid) and, to a lesser extent, in Question 5 on race relations and community cohesion.

Individual Questions Section A (Case Study)

Question 1

There is no doubt that more candidates are learning how to score higher marks on what is effectively the data based question, especially since it was made even more explicit that all the Figures in Source A needed to be taken into account. However, very few candidates showed evidence of following up the source references to get a full understanding of the context of the data used.

Crucially, the data must be used to answer the question set (in this case the continuing development of genetically modified crops and the extent of public and international concern). The strongest candidates did this, often dividing the data into two sections so that both elements of the question were addressed. These candidates moved towards a brief conclusion – necessary to reach the Level 3 mark band – using clearly referenced figures which were confined to data that appeared in Source A.

However, a larger number of candidates either wrote about the data descriptively, tended to use it in rather generalised terms or concentrated mainly, or even exclusively, on the figures relating to the importance of the cultivation of genetically modified crops in certain parts of the world. Often, references to the actual figures were mostly implicit and this was an important weakness. It should also be noted that, to gain higher marks, candidates need to cover most of the figures that feature in this question.

Only a small number of candidates strayed beyond data within Source A and for which no credit was available.

Question 2

Candidates were allowed to draw from both Sources B and C, and their own knowledge, to answer this question on whether genetic engineering should play a bigger role in our lives “sooner or later”. (Overwhelmingly, candidates went for the former.)

As was often the case, weaker candidates tended to write descriptively or generally and a few candidates seemed to have little familiarity with the pre-released material. Sometimes there was undue concentration on one of the two sources and only a relatively small proportion of candidates used their own knowledge. Other candidates used evidence from both sources but didn't always use it to focus on the crucial “sooner or later” element.

However, there were Level 3 answers which offered a more sophisticated approach, not just quoting from the sources but using the quotes as evidence to support their own arguments. The real test for such candidates was the extent to which they were able to show, in the final analysis, why they supported the use of genetic engineering “sooner or later” and to move towards a logical conclusion one way or the other.

Question 3

In Question 3, candidates were asked to “compare and contrast” the views of two writers on animal cloning and genetic modification with Johnjoe McFadden being broadly in favour and Graham Harvey expressing some reservations. For most, this proved to be the most demanding of the Case Study questions and one in which candidates tended to score their lowest Case Study mark.

Most candidates were able to reach the top of Level 1 or the lower range of Level 2 if they managed to summarise some of the views of the two writers accurately, although most found it more difficult to offer sufficiently explicit comparisons. In some cases it also seemed that not all candidates really understood the use of the word “negligible” in the context of how far McFadden and Harvey disagreed over milk from GM cows.

The best answers tended to be quite succinct and very analytical, identifying areas where the writers showed a measure of agreement and making clear where there were differences. The most sophisticated pointed out that McFadden and Harvey were not always comparing like with like and even sought to take into consideration issues such as possible bias and subjectivity from a professor of molecular genetics (McFadden) and the author of a scientific book (Harvey).

Question 4

Now that candidates have an additional 30 minutes for their answers, time is less of a factor for this last Case Study question and most candidates did not produce a much shorter answer or omit it altogether.

Question 4 looked into the future in asking candidates to use evidence from Sources E and F to consider the implications of recent advances in genetic testing and the interpretation of an individual's DNA as DNA sequencing becomes both more advanced and cheaper.

Weaker candidates either took very little from the two sources or quoted more extensively but with little evidence of their own interpretation and understanding. Here, as with all the Case Study questions, it is important to stress instructions in the paper's rubric which tell candidates to “use (their) own words, rather than simply repeating those used in the sources”.

The best candidates used the evidence to analyse key areas such as the cost of DNA sequencing, implications for the NHS, possibilities of personalised medicine, the handling of confidential medical information by bodies such as insurance companies and employers, inaccuracy of techniques, the reaction of individuals to ‘future life predictions’ and potential moral and ethical considerations. Not all had to be covered to reach Level 3.

Individual Questions Section B (Essays)

Question 5

It is pleasing to report that this question on race relations and community cohesion attracted some thoughtful responses. Most candidates were aware that, for the most part, multiculturalism had made a positive contribution to the development of British society and that, at least overtly, there was less discrimination based on ethnicity.

Having said that, many candidates were aware that fear, ignorance, religious differences, prejudice, distorted media reporting and issues over employment opportunities did cause some friction and that, under the surface, tensions might still exist.

A number of candidates mentioned the activities of groups such as the British National Party and the English Defence League, some from personal experience when disorder had taken place in their own area. Since the paper was set, candidates were able to gain credit for bringing issues surrounding the murder of Stephen Lawrence up-to-date and referring to high profile allegations of racial tensions in professional football (and the tarnishing of role models).

Conclusions were often a mixture of optimism and pessimism, perhaps reflecting the wider debate on multiculturalism. Most candidates wanted to believe that tensions between races would continue to diminish but not all were convinced fully that this would happen given the enduring nature of some of the obstacles to greater harmony.

Question 6

Some candidates had a good technical understanding of advances that were taking place in the development of road vehicles which used only petrol. Surprisingly, however, diesel-powered vehicles were not commonly mentioned.

Of the other alternatives, hybrids and electric cars (and their potential weaknesses) were seen as the most likely to be commercially successful on a large scale. Also mentioned were sustainable fuels such as ethanol and the use of hydrogen although those who really knew acknowledged that successful development of the latter was likely to be some way off. (Some candidates even brought both solar and nuclear power into the debate.)

Unfortunately, those who had good knowledge of the technology tended to confine their answer to the second part of the question to technical limitations, failing to look at wider aspects of demand and supply such as consumer inertia and the reluctance of many manufacturers to make a commitment to large scale capital investment.

This was also the only essay question that tended to produce excessively short answers. There is merit in being selective and writing sparingly but it is important at A2 level that candidates must be prepared to develop some of their ideas in a way that opens up discussion.

Question 7

This was the most popular essay question and was often well done. Some candidates had a detailed scientific knowledge of the links between smoking and ill-health and were often able to widen the debate to incorporate ideas about how smoking can have an adverse impact – not least financially – on an individual's quality of life.

There was often interesting discussion on whether or not more drastic action was necessary to deter smokers. Whilst acknowledging that education had had only limited effects, economists used their graphs to show that increased duties would not necessarily have a major impact on demand.

Similarly, there were very few who were prepared to accept that doctors should refuse to treat smokers. Indeed, some candidates provided clear arguments indicating that they were aware that complex problems like how to reduce smoking, often involving moral and ethical considerations, did not have simple answers.

Eschewing more drastic suggestions, future strategies for reducing smoking tended to include higher age limits for the purchase of cigarettes, fewer vending machines, restrictions on retail displays, more graphic warnings on cigarette packets and more education about the likely effects of cigarette smoking.

Question 8

Most candidates who answered this question had at least adequate knowledge of international trade and aid but did not always succeed in maintaining a focus on the question.

Consequently, a lot was written about international trade in general but not necessarily in the context of expanding trade with LEDCs. Examples were often limited and only the best candidates had sufficient knowledge to query whether major trading countries such as China and India could really be regarded as LEDCs. Too often, Africa was presented as a single country.

Answers to the second part of the question tended to be better although there were sometimes unnecessarily lengthy and rather descriptive accounts of natural disasters rather than analysis of circumstances in which direct aid to LEDCs was likely to be the only effective strategy in the short term.

Mark Ranges and Award of Grades

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