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General Certificate of Education

Science for Public Understanding 5401

SPU1 Issues in the Life Sciences

Report on the Examination

2007 examination - June series

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Dr Michael Cresswell Director General.

General Comments

There were some excellent answers this year with a general improvement in the longer answers. Many candidates handled some quite complex data well.

Candidates' inability to see a question as a whole remains an issue. The comments made in last year's Report on the Examination apply as strongly as ever this year; "Questions are structured with the more straightforward points usually being asked first. However, candidates should be encouraged to see the question as a whole and to be prepared to integrate all the information given. Each question in the paper is on a single issue and at least one part of any question is likely to expect candidates to integrate information from more than one section".

Where a question asks 'is there evidence in the data?' or 'do the results support the hypothesis?', candidates are expected to actually describe the relevant data in support of their answer.

The two questions requiring a longer response are marked on the overall quality of the argument. This includes making a clear claim that is backed up by a suitable range of evidence. This evidence may include information in the question, but needs to go beyond this for the higher marks. Evidence must be relevant to the question and to the claim being made. General points, such 'the risk is too high', 'it is too expensive', or 'harms the environment' do not gain credit. A list of points not linked to an overall argument, will not attract high marks. In some questions a good answer will acknowledge the existence of counter-claims or contradictory evidence. However, some candidates attempted to do this and ended up contradicting themselves with no clear claim being made. Candidates should be advised to check that they are making a clear overall argument.

Some candidates have obviously prepared answers to past questions, such as the desirability of nuclear power or ante-natal testing and used the prepared answer that seems vaguely relevant to the issue, rather than thinking about the question that has actually been asked this year. There was no evidence to suggest that candidates ran out of time on the paper and they would be well advised to use more time to think about the questions before answering.

Question 1

In part (b) (i), most candidates understood the role of incomplete treatment in the development of antibiotic resistance; although few were able to explain the public health implications raised in the quote. A significant minority of candidates confused antibiotic resistance with the immune response, with answers such as; 'the bacteria become immune to the antibiotic'. These were penalised.

Some candidates gave excellent explanations to (b) (ii), but others did not go much beyond restating the information in the question in their own words. Others believed that the human body responds to the antibiotics; 'if you take one antibiotic there is more chance your body will become used to it'.

Answers to part (c) (ii) were interesting, varied and often well-argued. Many candidates, whilst recognising the need for a new vaccine, advised against participation, using the much publicised trial that went so badly wrong as their main evidence. Others made good cases for participating, using evidence that both pointed out how small the risk was and the great need for the vaccine. Some candidates lost marks because they contradicted themselves.

Question 2

This question required the translation between different ways of expressing risk, including a relative risk in (b) (ii). Many candidates found it difficult. Candidates should be advised that, after any calculation, they should check that their answer is reasonable. If they get an answer that shows more men who take statins dying than those who do not take statins, then this is unlikely to be reasonable.

In part (c) (i), it seems that many candidates had not learnt the very specific meaning of these terms in the design of drug trials and attempted to answer using more general meanings. The design of drug trials is an important part of the course.

The high cost of reducing an already low risk is often taught in connection with radiation risk but the idea applies to other risks, as in part (d). Candidates should be prepared to use Ideas about Science across a range of issues.

There were some misconceptions in part (e) that regular use of statins leads to resistance. Some candidates seem think that those over 40 are close to the end of their lives anyway, CVD or not.

Question 3

Most candidates were able to assimilate some complex graphical information in this question. In (b) (ii), where the question ask specifically about conclusions to be drawn from data, we expected candidates to refer directly to the data in their answer. In this question, good answers specified behaviour in particular weeks and explained the significance of the findings. General comments that did little more than repeat the question, saying there is evidence of bias, did not gain marks.

In parts (c) and (d), some candidates only responded to the information on the page and assumed that additives had been shown to affect behaviour, often contradicting the good answers they had given to part (b). It is important that they are encouraged to integrate all the information in the whole question.

Question 4

Almost all candidates answered part (b) well.

In addition to the general comments about responses to longer questions, the following issues were raised by part (d). Many candidates did not understand the science well. They confused PGD with ante-natal testing of a fetus, despite the information at the start of the question. Not all noted the information that the genes ‘increase the probability of cancer in later life’. Many candidates had obviously prepared for a discussion on the risk of a genetic disorder that results in handicap in children and used their prepared answer rather than thinking about this specific context.

Question 5

Many candidates made sensible use of the information in the question, but others fell back on the general ‘too expensive’ without explaining. This did not gain marks.

Mark Ranges and Award of Grades

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