



**General Certificate of Secondary Education
March 2012**

**Science B
(Specification 4500)**

SCB3FP

Unit 3: Making My World a Better Place

Report on the Examination

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GCSE Science B

SCB3FP

General Comments

This report is based on the very small cohort that sat this paper in the March 2012 series. A significant number of candidates displayed poor writing skills. Imprecise use of language often meant that the meaning of the response was ambiguous and so could not be awarded the available marks. The importance of practicing writing continuous prose responses to scientific questions cannot be overemphasised.

Question 1 (Low demand)

- (a) (i) Surprisingly few candidates gained full marks on this question, with over a third of candidates attaining no marks. Many incorrectly stated that thick aluminium would stop gamma radiation. Many candidates often put the charge for alpha and beta the wrong way around.
- (a) (ii) Disappointingly, fewer than half of the candidates gained a mark for this question, with a fifth of candidates not attempting an answer. However, a significant minority mentioned the use of gamma knives for the treatment of cancerous tumours.
- (b) (i) More than half of the candidates gained full marks for this question.
- (b) (ii) A significant number of candidates could label the film badge in 1(b)(i), but struggled to express a coherent explanation as to why these badges are monitored. Only a very small minority achieved full marks on this question.

Question 2 (Low demand / (b)(ii) Standard Demand)

- (a) (i) Just under half of the candidates achieved full marks on this question and, worryingly, many candidates wrongly linked penicillin to killing viruses.
- (a) (ii) More than three-quarters of candidates gained marks for this question. Many candidates mistakenly thought that one of the problems arising from over-prescription of antibiotics would be that it can cause overdoses.
- (b) (i) Only a small number of candidates failed to gain this mark.
- (b) (ii) A significant number of candidates gained full marks for this question. Some candidates didn't appreciate that this table gives information regarding the percentage of male and female cannabis smokers and this led them to think that more females smoke.
- (b) (iii) More than half of the candidates gained the mark for this question. However, a significant number of candidates stated tobacco and failed to appreciate that it is the nicotine that is the drug.

Question 3 (Low demand)

- (a) (i) Most candidates gained the mark for this question.
- (a) (ii) There was little evidence that candidates had experienced a range of products relating to smart materials. This was clearly evident in this question, with over three-quarters of candidates gaining no marks. Incorrect answers often referred to the driver not being able to see the car.
- (b) Surprisingly, over half of the candidates did not gain any marks on this question. Many candidates listed glasses as a use of memory wire and failed to appreciate that the memory wire is used for the frames not the glasses.
- (c) Approximately half of the candidates gained the mark for this question.

Question 4 ((a) Low demand / (c)(ii) Standard demand)

- (a) Surprisingly few candidates gained full marks here. A number of candidates did not seem to understand energy transfer by radiation.
- (b) Very few candidates gained full marks for this question. The most commonly correct response was for identifying the general trend, but very few candidates appreciated the mathematical relationship that triple glazing is twice as good.
- (c) (i) Many candidates gained full marks for this calculation, although a significant number did not gain any credit. Candidates should be encouraged to show their working. A correct answer without working shown was awarded full marks. An incorrect answer without working shown gains no marks but, often, if the candidate shows their working they could gain one mark.
- (c) (ii) A number of candidates could correctly identify that the loft insulation is significantly cheaper than double glazing and that the payback time was less than the five years the man planned to live in the house. Very few candidates identified that the cost of double glazing would not be recovered at the end of five years.

Question 5 (Low demand)

- (a) (i) A significant minority of candidates were vague in their answers here, stating 'gas' as a pollutant, which gained no credit.
- (a) (ii) Surprisingly, a quarter of candidates did not attempt to answer this question. A small number of candidates incorrectly listed 'death' as a common symptom of indoor pollution.
- (b) (i) Over half of all candidates gained the mark for the hazard symbol. Teachers need to ensure that their students have studied standard hazard symbols, as a significant number of candidates incorrectly stated 'poisonous' for this hazard symbol.
- (b) (ii) Candidates need to be encouraged to read the question carefully. A surprising number of candidates incorrectly thought that 'keeping them locked away' would minimise the risk of using the product.

Question 6 (Standard demand)

- (a) (i) Most candidates could correctly plot the points on the graph. However, only a small number of candidates could correctly draw a line of best fit. Many candidates did not add a line of best fit or incorrectly drew a straight line instead of a curve.
- (a) (ii) Well over half of the candidates gained a mark on this question for identifying the general trend. No candidates correctly identified the change in the rate of decrease for the second marking point.
- (b) Over half of candidates gained credit on this question. Most incorrect answers referred to the 'global summit' being the agreement to reduce greenhouse gas emissions.

Question 7 ((a) Low demand / (b), (c) (Standard demand)

- (a) Most candidates who gained partial credit for this question could correctly identify the role of white blood cells. Most incorrect responses confused the viral and bacterial diseases.
- (b) The majority of candidates gained one mark here. However, imprecise use of language often meant the meaning of the response was ambiguous and could not be awarded full credit.
- (c) (i) A small minority of candidates gained full credit for this question. There was evidence that candidates need further practice at describing graphs that include comparisons, as few failed to identify the rise in antibodies after the second injection was more rapid and to a higher level than the first.
- (c) (ii) Approximately half of all candidates gained no marks on this question. Some responses made it clear that candidates had little or no understanding of vaccination programmes.

Question 8 (Standard demand)

Very few candidates at Foundation tier gave a Level 2 or 3 response, most achieving Level 1. Most commonly correct responses referred to the ring becoming coated in a thin layer of silver. Many candidates explained why we would electroplate nickel jewellery, identifying the need to reduce 'allergic reactions'. However, this was not the question that was asked. A small minority of candidates incorrectly stated that the silver would travel through the electrical wires.

Mark Ranges and Award of Grades

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