

Examiners' Report/ Principal Examiner Feedback

November 2010

GCSE

360Science

GCSE Science
Multiple Choice Paper B1b (5006)

GCSE Biology
Multiple Choice Paper B1b (5026)

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5006 Science/ 5026 Biology (Multiple Choice B1b) Examiners' Report

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General Overview

There was a varied response across both the Foundation and the Higher Tier papers with Foundation candidates generally performing better than the Higher tier candidates. There were several good discriminating questions across both tiers including in the overlap questions where higher tier students outperformed foundation candidates by almost double on all items.

Foundation Tier - Questions 1 to 16

Overall, the first section of the paper did not prove too much of a challenge for the majority of students and many were able to clearly identify lung cancer and heart disease as possible consequences of smoking. The response to question 3 was disappointing despite the question providing students with information that should have allowed easy access for most to the correct option. Only 39% of students opted for the correct response and it is evident that candidates are still confused with terminology used in relation to reaction time with 21% choosing option D as the correct response. Similarly, only 47% of students opted for the correct answer for question 4, this low statistic mirroring previous statistics for questions tested on this content. This implies that candidates are still failing to recognise the different methods of disease transmission - more students thought that the viruses that cause lung infection in smokers were carried in the blood. A general lack of understanding in this area is reinforced by the low statistics obtained for question 13 - only 22% of students identify the mode of disease transmission being vehicle-borne in this case.

Question 5 was answered well showing, yet again, that students at foundation level relate well to information presented in bar charts and are able to carry out analysis of them successfully. A fair number of students struggled with question 9 which showed much lower statistics than the other questions in this section - 45% of students were able to give the correct voluntary response with the majority of those who answered incorrectly opting for option A. This was surprising considering that the iris reflex is likely to be the involuntary response that students would most relate to and therefore be less likely to confuse with a voluntary response.

The response to the section titled 'Fighting disease' was very disappointing overall. Across nearly all questions no more than 26% of students answered correctly. Questions examining this area of the specification have historically given poor statistics and it should be emphasised that there are still huge misconceptions amongst students on the function of the blood components, particularly in relation to white cells. Only 10% of students were able to answer question 16 correctly with 45% deciding incorrectly that two of the statements were true for the body's defence against disease. It may be worth noting that students tend not to opt for 'none' in questions that involve 'true or false' statements. There is no set format for the number of correct statements for questions structured in this way - in some cases it may be true that none of the statements are correct. Candidates were also challenged in identifying the physical barriers to disease. Over double the number of

students thought that nasal hair and tears were a physical barrier perhaps as they can be seen on the 'outside' of the body. 20% of students made the correct judgement for this question.

Overlap Questions 17-24

Foundation tier candidates generally performed as expected for the overlap questions although some students on the higher paper found some of these questions challenging. Questions 18 and 19, both linked to blood sugar regulation gained a lower than expected number of correct responses from higher candidates with under half the students unable to identify the target the organ for insulin and glucagon and even less being able to recall that insulin lowers blood sugar concentration. Questions 23 and particularly 24 also gave low statistics for the correct number of responses by higher tier candidates at this stage in the paper. Only 39% of higher tier candidates recognised FSH as the hormone used in IVF to stimulate egg development.

Higher tier Questions 25-40

Only the more able candidates performed well across the questions in this tier of the paper - there were some very disappointing responses for many items and it appears that the same topic areas are still providing a challenge for many students.

The majority of candidates had problems with the questions in the first section on the higher tier, with the exception of question 28 which gave slightly better statistics. More students opted for the incorrect answer for question 25 than the correct answer and in this particular case it is clearly evident that candidates just did not look clearly at the graph given. Only 36% of students answered correctly for this question and likewise analysis of the graph for question 26 provided a challenge for 61% of students, the majority of these incorrectly choosing option B as the correct answer.

The content of questions 29 and 30 were presented in a very different context to how it has been tested in previous papers but this area of the specification has tended to be restricted to the foundation tier of the paper due to it being more lower demand. However, higher tier students had problems interpreting the data given to them to correctly answer questions 29 and 30. Statistics indicate that only the A and A* candidates were able to use the information given to determine that the response of the iris to bright light had decreased and only 19% were aware able to elucidate that the motor neurones were the cause of the problem in the patient with a brain injury. This was particularly disappointing as it was a more straightforward question than the previous, only requiring students to recall the neurones that transmit impulses from the brain to the effector. It is also evident that less able higher tier students find recalling brain structure difficult with only 34% correctly identifying the region affected by epilepsy as the cerebral cortex. A larger number of students, 35%, incorrectly opted for the cerebellum with the remainder of incorrect choices being spread fairly evenly across the remaining options.

The final section of the paper proved marginally more successful for a larger number of students. The questions presented in this section have been tested frequently and were in a very similar format to those of previous series. Students are very clearly aware of the more commonly mentioned hormones of the menstrual cycle, oestrogen and progesterone, although were challenged when asked a less direct question on the

role of progesterone in the contraceptive pill. Interestingly, nearly double the number of students chose the incorrect option B compared to the number who went for the correct option A. Option B gave the role of progesterone in the menstrual cycle and it may have been the case in this instance that some students failed to read the question correctly.

Grade Boundaries - November 2010

Multiple Choice Papers - GCSE Science

Raw Mark Grade Boundaries

5005/5025	Max mark	A*	A	B	C	D	E	F	G
H	24	19	17	15	13	9	7		
F	24				18	15	12	9	6

5006/5026	Max mark	A*	A	B	C	D	E	F	G
H	24	17	15	13	12	8	6		
F	24				15	13	11	9	7

5007/5035	Max mark	A*	A	B	C	D	E	F	G
H	24	18	15	12	10	7	5		
F	24				17	14	11	8	5

5008/5036	Max mark	A*	A	B	C	D	E	F	G
H	24	19	17	15	14	9	6		
F	24				18	15	12	10	8

5009/5045	Max mark	A*	A	B	C	D	E	F	G
H	24	16	14	12	11	8	6		
F	24				14	12	10	8	6

5010/5046	Max mark	A*	A	B	C	D	E	F	G
H	24	17	15	13	11	8	6		
F	24				17	14	12	10	8

Uniform Mark Grade Boundaries for these units

	Max UMS	A*	A	B	C	D	E	F	G
H	40	36	32	28	24	20	18		
F	27				24	20	16	12	8

Note: On higher tier papers, the "allowed" grade E is calculated as half a grade width

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