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General Certificate of Secondary Education
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Science B SCB1HP

(Specification 4500)

Unit 1: My World

Report on the Examination

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GCSE Science B

SCB1HP

General Comments

Illegible writing continues to be a concern, as is lack of working shown in calculations. There is some evidence of 'text speak' creeping in to responses. Students should appreciate that most examiners are unfamiliar with this language. Numerals in responses were often poorly formed, and changes to numerals must be clear and not overwritten.

Question 1 (Standard demand)

(a) This question was well done by nearly all the students.

(b) (i) Again, this question was well done provided that poor spelling was ignored. 'Techtonic' plates was accepted, but not 'techno' plates.

(b) (ii) Most of the students were able to gain at least one mark for this question. The majority of students failed to give the origin of the heat causing the convection currents in the mantle so failed to gain the first mark.

(b) (iii) To gain full marks the students have to provide a complete explanation. A significant number failed to suggest a date as requested and so failed to gain a relatively straightforward mark. Some students implied that the water came from below the crust. Few students mentioned an earthquake and the resultant force on the water - however expressed - which caused the wave.

Question 2 (Standard demand)

(a) About one quarter of students were unable to give 'auxin'. It was evident that some candidates had not encountered this term, for whatever reason. A variety of random responses were seen including tropism, argon and photosynthesis.

(b) The most common incorrect response was 'photosynthesis'. The failure rate was similar to 2(a).

(c) The level of response seen to this question would suggest that candidates need more opportunity to develop their skills in responding to QWC questions. The majority of students gained a mark in level 2. A significant number of students wasted time and space by repeating the stem. There was generally a lack of precise detail in responses. 'Change the colour of the light used', but no suggestion how this could be achieved. 'See if response is the same or different', without saying what response the student would be looking for. Many students failed to appreciate that the question was about phototropism and not unusually gravitropism was mentioned. Many candidates gave *their* expected outcome rather than what they would need to look for in the growth of the seedlings to answer the question posed. A stopwatch used to measure time is not appropriate nor is checking every few minutes. Observing 'where the auxins go' is not a reasonable suggestion.

Question 3 (Standard demand)

(a) A minority of students failed to read the lengths correctly, often giving the higher value at the end of the bubble, forgetting to subtract the lower reading on the scale.

(b) A significant number of candidates who did manage to read the lengths of the bubble correctly were then unable to calculate the percentage. Students who used their incorrect values from 3a correctly here were able to gain all three marks, but the calculation is impossible if the value suggested for figure 3 is greater than the other two.

(c) There was evidence of confusion between photosynthesis and respiration in relation to oxygen. A disappointing number of candidates, about half, were unable to make the link between oxygen and photosynthesis.

Question 4 (a & b High demand, c Standard demand)

(a) Only the very best students realised that to extract the maximum amount of nickel over 20 years a new crop should be grown each year so that maximum of 50 mg per kg can be extracted over 20 years rather than 35mg per kg if plants are grown for 2 years.

(b) Most of the students were able to gain one mark here. Many answers were incomplete. 'Good for the environment' begs the question 'how?'

(c) About two thirds of students were able to gain at least one mark here. Students, who recognised correctly that decomposition happens, failed to gain the second mark for giving an organism which causes the decomposition. A surprising number of students think that dead plants respire to return nutrients to the soil!

Question 5 (High demand)

(a) A significant number of students demonstrated confusion about sub atomic particles. Students who recognised that there were too few electrons failed to say that in an atom the number of electrons equals the number of protons. Some students stated that the atomic number is the number of electrons rather than number of protons.

(b) Many students, nearly two thirds, failed to appreciate the significance of the number of protons in identifying the element.

(c) About one third of the students were able to gain one mark for saying the charge would be positive. Few students were able to give the charge as 2+ and then give a correct explanation. There was some confusion that losing negative charge makes ion negative, or that proton neutron balance causes the charge.

Question 6 (High demand)

(a) It is disappointing that students have such a poor understanding or even awareness of this section of the specification. This question was very poorly attempted, or not attempted at all. Candidates were expected to know the effect of auxin on shoots in that auxin promotes 'growth' and uneven distribution causes more 'growth' on the side with more auxin. Candidates were then asked to apply this knowledge and think about how this uneven distribution might come about. A number of students responded in terms of changing the experiment rather than considering the one described. A small number of students answered in terms of auxin being 'alive' or 'killed'.

(b) Most of the students who attempted this question were able to gain at least one mark. There was some confusion about the role of auxins and a consequent inability to answer the question correctly. Generally students failed to use the evidence provided in the question in their responses.

Question 7 (High demand)

(a) A surprising minority of students still think that a line of best fit must be straight. Most students were able to plot the points correctly, but the line was often too thick, 'fuzzy', or drawn point to point.

(b) (i) Many students were unable to rearrange the equation correctly and so either ignored the 1 and gave the answer 3.6, or added it on to 3.6 to give 4.6. In the latter cases, students who showed their working were able to gain some marks.

(b) (ii) Fewer than half of the students gained this mark. A small number of students failed to multiply their reading by 1000. More failed to interpret the scale on the y axis correctly.

Question 8 (High demand)

(a) Only 20% of students were able to gain any marks here. Many candidates do not know the meaning of the term 'organic' and so gave a variety of incorrect responses, oxygen being the most common. A number who gave a correct organic molecule were unable to explain their choice.

(b) (i) The correct writing of chemical formulae remains an issue. Students must use upper and lower case letters and subscript numerals **clearly** when appropriate, Co_2 and CO2 and CO^2 are all incorrect. Some candidates gave CO_2 on both sides of the equation, either hedging their bets or demonstrating a lack of understanding of the meaning of a symbol equation. A surprising number failed to copy $Ca(OH)_2$ correctly. O_2H was a not an uncommon response. Unnecessary brackets and attempts at unnecessary balancing were frequently seen.

(b) (ii) Some students chose to ignore the information that tells them that the air in the greenhouse had been changed and answered in terms of some being left in. Few students mentioned respiration.

Question 9 (Standard demand)

A majority of students were able to attempt this question, which asks students to apply the processes of evolution to a specific unfamiliar example. This means that responses in terms of other organisms, which were not uncommon, cannot gain full marks. Details of moth, human and elephant evolution, which while interesting, are inappropriate to the question. Some students suggested that the hoverflies mated with wasps to get their stripes. A number thought that the development of stripes was a result of observation and choice on the part of the stripe-less hoverflies. Stripes, as camouflage, rather than a warning mechanism, was a common answer.

Mark Ranges and Award of Grades

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

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