Examiners' Report
Principal Examiner Feedback

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Pearson Edexcel Combined GCSE

In Biology (1SC0) Paper 1BH

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Examiners report 1SCO 1BH

Question 1

1b – many responses for this item scored maximum marks with antibody production by lymphocytes and the production of memory lymphocytes the most frequently awarded marks. Higher ability candidates referred to antigens. Marks were lost be candidates who referred to killing or engulfing of a disease or infection rather than a pathogen. Most candidates do not use the term secondary response, although some were able to give a description of one.

1ci – This item showed more of a distribution of marks, some candidates completed a division calculation or failed to recognize that the figure in the table refers to the number of people diagnosed per million. Some candidates did not round to 3 significant figures or did so incorrectly by giving 235.0. Many higher ability candidates were able to obtain full marks on this item.

1cii – Both of the possible correct answers were given frequently for this item with some more detailed responses giving both aspects. There were a number of commonly seen incorrect answers which included that the number was smaller and would scare people less or that it was easier to read or analyse.

1ciii – This question extends from cii, requiring candidates to give a reason why the number of people diagnosed is different in each country. Many identified vaccination, immunity or healthcare reasons. Some detailed responses referred to population density as a possible difference, the idea of preventative methods such as recognizing and isolating individuals was also seen, possibly as a result of the Covid-19 pandemic. Some candidates suggested that the populations were different which does not answer this question.

Question 2

2ai – This question required candidates to describe the function of the meristem in the growth of a plant. Growth is given in the question, so candidates needed to give more details on this. Most candidates who achieved full marks stated that the meristem was undifferentiated cells or contained stem cells which can become specialised rather than referring to the process of cell division by mitosis.

2aii – This item was answered well by candidates of all abilities on the paper, recognizing the method required by one of the core practicals. Nearly all candidates gain marking point 1 for putting the cells onto the slide, higher ability students recognized this needed to be a thin section and the second mark for adding a stain was frequently given. Some candidates described adding a second slide on top, rather than naming the cover slip, but this was credited as a possible method them might have used in school.

2bi – The mark for this item was awarded for chloroplast but not for chlorophyll as that is not a structure. Many candidates obtained the mark, but the most frequent incorrect answer was ribosomes and some gave mitochondria as the answer, even though one was labelled on the figure.

2bii – this item was answered well with most responses scoring the mark for respiration and/or energy released. Some responses did not gain the mark by referring to the production of energy. The production of ATP was also seen, possibly reflecting that some candidates may have started A-level specifications.

2biii – This item was also high scoring by most candidates with no nucleus, plasmids, no membrane bound organelles or named organelles frequently seen. The most common incorrect response was

that prokaryotic cells have no cell wall and a list rule was applied when incorrect responses were given.

Question 3

3ai – The majority of candidates recognised that this item was assessing knowledge on the complementary base pairs of DNA. Some incorrect responses included Uracil from RNA. Candidates need to ensure that their writing is clear enough that C and G all clearly distinguishable.

3aiii – This item required recall of the term mutation and the majority of candidates were awarded the mark for mutation, the acceptable answers of genetic modification or genetic engineering were occasionally seen.

3b – Higher ability candidates scored well on this item, recognizing that birds with longer beaks were able to get food, enabling them to reproduce and pass on the allele to their offspring. Many candidates also included the reverse argument that the birds with shorter beaks were not able to get food and therefore died. Fewer candidates recognised the key aspects that the population of great tits have variation in beak length or that the process needs to repeat over many generations.

3cii – Few candidates were able to recall that the three domain classification system was proposed based on increased knowledge of genetics. A few high ability candidates did refer to gene structure or RNA sequencing. The majority of responses focused on the idea that it was easier to classify this way or than not all organisms could be easily classified with the 5-kingdom method.

Question 4

4ai – To obtain the mark on this item, candidates had to recognise that the result at 150 seconds shows that all of the starch had been digested, not just that starch had been digested or that glucose had been produced. The candidates had to identify that the result at 150 seconds is the first where starch is not detected.

4aii – This practical skills-based question required the identification of controlled variables for an investigation. Marks were awarded most frequently for concentration of the starch or amylase and the time intervals used. The time taken to digest starch was a common incorrect response. Candidates who missed out on marks repeated information given in the question, which had already stated that equal volumes and a temperature of 25°C were used.

4aiii – Higher ability candidates recognised that the tubes without amylase added were a control, other responses which were also credited referred to the idea confirmed that it is the amylase that breaks down the starch. A control variable is incorrect and not credited but was seen as an incorrect response.

4b – Candidates scored well on this item which required them to devise a plan to confirm the optimum pH for amylase. Candidates frequently recognised that the starch and amylase needed to be combined at different pH values. Many candidates identified variables that would need controlling, such as temperature, and that the sample would need to be tested for glucose. Fewer candidates identified that buffers would need to be used or suggested a sensible range of pH values to test.

4c – One mark was frequently awarded on this item for recognizing that the stomach is acidic or contains hydrochloric acid and many more able candidates linked this to the enzyme being denatured. Very few went on to explain what this meant, with the active site changing shape or the

substrate being enable to bind. Candidates need to recognise the command words being used in questions and explain key scientific terms that they use in responses.

Question 5

5ai – The answer required a mean to be calculated from 6 people's difference in reaction time. Candidates of all abilities showed that they could complete this, although some excluded the result for person 2 which, is not a replicate and, should not be excluded, one mark was given for the maths skill if workings were shown. More able candidates were able to convert the answer into milliseconds and scored maximum marks.

5aii – This was well answered by many candidates who were able to identify improvements that a manufacture could make to a basic method. The most credited responses included testing on more people, multiple replicates for each person and controlling other factors that could affect the results. Other good responses also referred to varying the time between consuming the drink and completing the test.

5bi – Correct responses to this item had recognised either the structure of a sensory neurone or utilize the information in the question which indicates that the impulse would be travelling towards the central nervous system. A motor neurone was the most common incorrect response.

5c – Most candidates accessed at least level 1 on this extended open response, recognizing that a synapse is a gap between neurons or that the signals pass along the neurons to the synapse as an electrical impulse. More able candidates included the idea of neurotransmitters diffusing across the gap to the next neurone and higher ability candidates explained that this then triggered a new impulse in the second neurone and were able to access level 3. The top of the band was awarded for linking the scientific details of transmission at a synapse to painkillers and how they could have an effect by preventing the signal reaching the CNS. Candidates must be careful not to describe synapses as connections between neurons or that the electrical impulse travels across the synapse.

Question 6

6ai – Candidates frequently scored two marks on this question by identifying that cell division is controlled in cancer cells and that this leads to development of a tumour. Few candidates referred to mitosis in their answers and did not obtain maximum marks. The idea of faster cell division or that cell division doesn't stop was credited against the idea of uncontrolled.

6aiii – This question required an understanding of probability and candidates of all abilities were able to calculate that obesity is linked to 5% of all types of cancer. Higher ability candidates linked this to the idea that obesity increases the risk of bowel cancel more than other types of cancer. Some candidates misinterpreted the information suggesting that obesity is the biggest cause of bowel cancer. Other non-credit worthy responses centred around that idea that the bowel of obese people is surrounded by fat.

6b – most candidates were able to identify that the heights of the men are different or that the obese man is shorter than the normal weight male. Some incorrect responses referred to the idea of weight distribution or the difference between muscle and fat. Higher ability candidates were able to explain that BMI utilizes mass and height with some candidates recalling the equation for BMI.

6c – A full range of scores were awarded for this three mark question which required identification of a surgery, lifestyle change and the role of medication. Stents was the most commonly referred to surgery, although bypass and transplants were also seen. Many candidates referred to

improvements to diet or increased exercise for lifestyle changes. Higher ability candidates also referred to medication to reduce blood pressure or named statins as a medication used to treat people with cardiovascular disease.