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# Examiners' Report Principal Examiner Feedback

October 2017

Pearson Edexcel International Advanced  
Level Biology (WBI04) Paper 1  
The Natural Environment and Species  
Survival

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## Introduction

This was the first October sitting of the WBIO4 paper. We saw a wide range of responses to the paper indicating that some students were well-prepared for the exam whereas, unfortunately, others were not so well-prepared. An unusually high number of blank responses suggested this, along with responses to straightforward recall questions that were not of the quality that we have seen in the past.

### Question 1

From the responses seen for (a)(ii) it is clear that students have good knowledge of what the electron transport chain is but very few appear to appreciate the actual role of the electron transport in generating the ATP and NADPH needed for the conversion of GP to GALP. The role of RUBISCO was much better understood and we saw some very good responses.

Part (b)(ii) was a novel approach and many students attempted to answer the question. Some students stated that the units were measured e.g. the  $\mu\text{mol}$  of carbon dioxide and some tried to describe what was measured but described quantities as 'amounts' instead of concentration or volume.

Students clearly understand that calculations of means and range bars indicate reliability but long or overlapping range bars indicate low reliability. Unfortunately, a number of students did not make it clear which set of data they were talking about in their response.

### Question 2

Part (a) was answered very well, even by the weaker students. We saw well-organised responses, systematically addressing each response mechanism. The weaker students did not appear to appreciate that interferons are only involved in viral infections and that viruses cannot be killed by phagocytes.

In part (b) many students recognised that lysozyme would not destroy a virus as it has a protein coat and not a cell wall but only the more able students gave any sort of explanation for this. Students need reminding to check the mark allocation to ensure that they are supplying enough facts in their answer and that this paper can use knowledge from the AS topics. Surprisingly few students could actually name molecule S.

### **Question 3**

Student responses were variable to the calculation with many scoring both marks for part (i) but only calculating the 65% value in (ii) for one mark.

In part (b) a number of students commented on the fact that GPP and R were decreasing but only the more able students appreciated that R was decreasing at a faster rate. The more able students were the ones who went on to explain the reasons for the decrease in both values.

Part (c) was not so well done unfortunately as student responses often did not answer the question. We saw plenty of responses explaining that trees remove carbon dioxide from the air for photosynthesis but only the more able students realised that reforestation meant more trees to remove more carbon dioxide because there was more photosynthesis taking place. There were some attempts to comment on the fact that one car is putting far more carbon dioxide into the atmosphere than a few trees can actually take out.

### **Question 4**

Responses to this question made interesting reading as the majority of students made a really good attempt at answering the question. Many students identified that the question was testing natural selection and its role in the evolution of a new species. We saw some poorly worded responses making the sort of errors that we have seen in the past such as the selection pressure causing the mutation, not stating that the mutation is in the DNA, that the genes are passed onto the offspring of adapted organisms and that reproductive isolation causes the whole process.

### **Question 5**

All parts of question 5 were well-attempted and we saw some good responses. As in the past with questions relating to this topic, we saw incorrect statements about B cells producing plasma cells, B cells producing antibody and antibodies killing the pathogen.

It was pleasing to see the number of students who attempted (b)(ii); this was a novel context but students identified that the maternal antibodies would bind to and mask the antigens in the vaccine, preventing the stimulation of the immune response.

## **Question 6**

Students are still getting confused with correlation and causation and struggle with selecting their words that are equivalent to reflected but do not mean cause.

A range of responses were seen for other parts to this question. Disappointingly, in part (c), few students actually answered the question. We saw some excellent accounts of post-transcriptional modification but they were generic responses that did not explain why these two particular proteins could be produced.

## **Question 7**

For part (a) we saw lots of descriptions of the data but few explanations. The more able students identified that there were three marks available for this question and three columns of data in the table; these students dealt with each data set separately and made a description for each followed by 'because' and then the explanation.

Part (b) saw a range of experimental procedures described and very few students left the question blank. Weaker students are still giving generic responses and not considering the context of the question. For example, simply stating that the investigation is repeated is far too vague at this level – we want to know that several eggs / locusts should be used in order to calculate a mean. We also need to see control variables suggested that are relevant to the investigation.

Part (c)(ii) was another example where students identified key words in the question and then wrote everything that they knew about the topic without actually answering the question. We saw lots of accounts of how global warming is caused which did not actually tell us why raising locusts would decrease global warming.

## **Question 8**

For (b)(i) we saw lots of descriptions of PCR and DNA synthesis but not actual comparisons of the two processes. Students need constant reminding of how to structure their answer so that they are making direct comparisons. We will not piece together comparative points from two descriptions.

Part (d) was the most disappointing and we saw a lot of blank responses. Students failed to identify that this question was testing them on the structure of sperm and the events that occur on fertilisation. Students need reminding that any aspect of the AS course can be tested in this paper.

## Paper Summary

Based on the performance of students on this paper, the following advice is offered:

- Avoid the use of 'it' and 'they' in an answer, as it is not always clear what these pronouns are referring to, resulting in a response that is not unambiguous enough to be awarded marks.
- Check the mark allocation of a question and use this to help structure the response.
- Once you have written your response, read through both this and the question to ensure that what you have written actually answers the question.
- Always check the command word at the start of the question. If the command word is 'explain' make sure that there is some biological reasoning included in the response. If the command word is 'compare' make sure that you are writing each comparative point in one sentence; avoid writing two separate descriptions as this will not score.
- If a question has been asked in relation to a particular context, the answer must be specific to the context and not just be a generic description / explanation.
- Attempt all questions. A blank response will guarantee a mark of zero whereas a guess may pick up the odd mark.
- Show all working to calculations.

## Grade Boundaries

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