



Examiners' Report Principal Examiner Feedback

October 2022

Pearson Edexcel International Advanced Level
In Biology (WBI14) Paper 01: Energy,
Environment, Microbiology and Immunity

Introduction

We saw a wide range of responses from candidates, with some excellent responses from the more able candidates. The MCQs generated a range of responses as did the calculations. The two levels-based questions did generate some level 3 responses, but candidates still need schooling on how to structure their responses to access all six marks. A vast number of centres are using our mark schemes and examiners reports to prepare their candidates; this is evident in the answers where mark points have appeared on previous mark schemes.

Question 1

The MCQ at the start of this question did not cause many candidates an issue. The most common mistake was to select distracter **B**.

The two parts to part (b) caused many candidates a problem as they either did not read the question carefully enough or else did not appreciate what was expected of them from the command word 'explain'. In part (i) we wanted the importance of an aseptic explained but frequently saw responses that simply stated 'to avoid contamination' without explaining why, scoring one mark. In part (ii) candidates tended to list several aseptic techniques without explaining why they should be used. We saw a range of techniques listed. Those who did, rarely explained two techniques as required by the question.

Question 2

The MCQs in the first part of this question were straightforward, causing very few candidates a problem as they are now used to us asking about viral structure. However, (b) part (i) saw a surprisingly high number of incorrect responses, with a whole range of enzymes being named. Part (ii) saw more correct responses, usually the one listed in our additional guidance.

Question 3

The MCQ that started this question was generally correctly answered with a mixture of the incorrect distractors being selected by those candidates who got it wrong.

Candidates tended to know the structure of a chloroplast and some very accurate diagrams were drawn for part (b)(i).

Centres have clearly schooled their candidates into the type of answer required by a 'compare and contrast' question and we saw far more paired comparisons and far fewer separate descriptions. Marks were lost by those candidates who described processes or properties of the membranes instead of their structure.

Question 4

The MCQ caused few problems, but the calculation was less well-answered as candidates either selected the wrong measurement from the diagram or did not round their answers up to a whole number.

Part (b)(ii) saw lots of descriptions but fewer explanations. Those candidates who did identify the command word and offered explanations did not make enough points to be awarded the full four marks. A proportion of candidates went down the route of succession instead of changes in climate; these candidates could still pick up a couple of marks.

Question 5

The calculation at the start of this question did not cause too many candidates problems, nor did the second calculation in this question.

Candidates scored well in the second part of part (a), picking up the idea that all the negative charges on the albumin would cause it to be soluble. A reasonable number of candidates knew this would enable the formation of hydrogen bonds.

In part (b)(ii) there were a high number of candidates who clearly understood the principles behind separation of molecules by gel electrophoresis. However, only a few candidates used the mark allocation to guide them into describing three conclusions. A range of responses were seen to part (c) but again, few candidates used the mark allocation to guide them into how much to write. We saw a lot of responses from candidates who thought that the concentration gradient was important, and a number of candidates simply repeated the information that we had given them in the stem of the question.

Question 6

We saw some very good responses to part (a), although several candidates wrote about pre-clinical and clinical trials; we tried to pick out marks from these responses. Again, marks were limited as candidates did not describe four pieces of information which the marks allocated to the question indicates is needed for full marks to be awarded.

Variable responses were seen for (b) part (i). Less-able candidates could not describe what specific meant and used the term in their responses. There was some confusion between the binding site of the antibodies and the active site of enzymes, although we did try to ignore this. Others tried to explain the phrase generically and did not refer to the amyloid.

Responses to part (ii) frequently scored mark point 1 but rarely were extended further to access the other two-mark points. Although we ignored references to agglutination, candidates clearly do not understand the difference between agglutination and opsonisation.

In (c)(i) we saw quite a few references to memory cells being present for mark point 1 but few candidates extended their answer far enough to answer the question and we rarely awarded the second point on our mark scheme. The second part of (c) did not score so well and there were several blank responses.

Question 7

Many candidates knew the concept of an evolutionary race but could not express themselves clearly enough to score both marks.

Part (b) was scored much better as candidates are very familiar with the role of skin flora in the defence of the body to infection.

There were mixed responses to part (c). Although all our mark points were seen, very few candidates offered two ideas, despite the mark allocation of two.

Part (d)(i) generally only scored one mark, the second one. We saw numerous references to the solvent only being a control, which we felt was too vague at this level. We also saw a lot of references to the solvent only being a placebo to remove the psychological effect of the drug.

It was clear from the responses to part (ii) that candidates still have not got to grips with the command word 'determine'. We saw a few responses with quoted values but very few with calculations. Full marks cannot be awarded to a response if a calculation has not been included. The calculation does not need to be complicated. Candidates could have picked one time point and simply worked out how much smaller the lesion was with the higher concentration of drug.

There were two approaches that candidates could have taken to the calculation in part (iii) with most opting for the first one in our mark scheme. Unfortunately, there were several candidates who did the tricky part of the calculation and then did not express their answer to the nearest kilogram as instructed.

Question 8

Candidates overall knew that we were after 'anthropogenic' in (a) part (i) but there were a wide range of spellings and pronunciations, many of which we accepted unless the word was too much like another term. Part (ii) was well-answered with candidates coming up with similar reasons to those on our mark scheme. Again, marks were lost by those who did not offer two reasons.

The first of the two-levels based questions was very accessible to the candidates, even the weakest ones and we saw very few blank responses. The commonest error made which prevented high marks from being scored was to not give sufficient A level knowledge in the answer. We did not expect very much A level detail, but we did expect responses to go beyond a GCSE level of knowledge and understanding. Only a minority

of candidates made it clear from their accounts which were the short-term effects, and which were the long-term effects.

We saw a range of responses in part (c) but again few responses included sufficient detail to be awarded the full four marks. Some candidates gave changes that would not be associated with climate change directly so could not be awarded the mark unless they qualified their answer. However, they still could be credited an appropriate reason.

Question 9

Responses to the three MCQs were good as this is another part of the specification that candidates are very familiar with.

The second levels-based question was also accessible to the candidates, and we saw several responses where the candidates worked their way down the list of abiotic factors. However, access to the higher marks was, as in the first levels-based question, limited by the basic level of explanations given lacking A level details. Again, we were not after lengthy explanations, just some A level content. For example, RUBISCO being named as an enzyme whose activity might be affected by temperature and therefore the GALP produced, reference to photolysis and the fate of the H^+ and the electrons during photosynthesis.

The highest quality sections were for temperature and moisture content. A common error made was the use of soil carbon by plants for photosynthesis. Only the more able candidates were able to link their explanation back to root biomass specifically.

Summary

A few suggestions for improving candidate performance are given below:

- Candidates should avoid repeating information in the stem of the question in their answers as this will not gain marks.
- Candidates need to take notice of the mark allocation for each item to help them decide if they have written enough points to be awarded that many marks.
- Candidates should consider the questions asked in the early question parts as they are quite often trying to give a clue as to what is expected in the latter question parts.
- Answers should include A level detail and terminology.
- Candidates should check the command word for each question before attempting their response. If the command word is 'explain', then they need to make sure that some science has been used some science to say why something has happened. Their answer should include terms like: because, therefore, as a result, so. The other poorly addressed command word being 'determine' where a calculation must be included. Appendix 7 in the specification lists all the command words and their meanings.
- Any information given in a question is there for a reason, albeit in a table, a graph, a diagram or in the text of the question, so must be used in the response.
- Maths skills as outlined in the appendix should be practiced and in particular candidates need to be able to convert one unit into another, write a ratio in the form $x : 1$, express a value in correct standard form (only one digit to the right of the decimal point), round up values to a given number of decimal places or significant figures and work out percentages.
- Diagrams should be drawn carefully to be an accurate representation and labelled carefully.