Examiners' Report
Principal Examiner Feedback

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Pearson Edexcel International Advanced Level

In Biology (WBI14) Paper 01

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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 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 and the improvement in the responses to the compare and contrast question.

Question 1

The two MCQs and the calculation in part (a) did not trouble many candidates. However, some candidates tried to express their answers in standard form but lost the mark as they had more than one figure before the decimal point. Part (iv) saw a range some good responses by the candidates who have been taught how to answer compare and contrast questions and who focussed on the structures of the two membranes.

In part (b), virtually all candidates could tell us that light was needed for replication of the chloroplast DNA but very few concluded that the replication was independent of either mitosis or the cell cycle.

Question 2

Candidates know the structure of the viruses well so the MCQs scored well.
In part (b) most candidates could complete the diagram correctly to show the bases on the positive RNA strand. However, part (ii) was poorly answered as most candidates simply rewrote the information in the diagram for their answer.

Part (c) saw several candidates scoring two or three marks for the description of viral replication and further host cell infection, during the 18-day period. Only the more able candidates used the mark allocation for the question to help them find a fourth point to write about.

Question 3

This was quite a straightforward immunology question and candidates who had been prepared for this exam using mark schemes from previous papers scored well. Candidates know the difference between the different types of immunity so scored well in the MCQs and they are used to writing about the role of macrophages in the generation of an immune response. In part (b)(ii), candidates who scored poorly were those who either confused the different types of lymphocytes or who did not use the mark allocation to guide them into how much to write. Candidates clearly do not appreciate why the T killer cells need to destroy the infected host cells, as our fifth mark point was rarely seen.

Question 4

The two calculations saw a range of responses, depending on how well the candidates had read the question. Easy marks were lost by those who did not round their answer to decimal places, as instructed in the question. Expressing an answer as a recurring number is not acceptable for two decimal places.

Answers to part (b)(ii) showed that candidates understand the use of tree rings in dendrochronology, but marks were lost by the candidates who did not look at the diagram they had been given carefully enough so did not express their answers in the context of the question. Part (iii) was less well-answered. Many of the candidates who wrote about measuring the diameter of the tree were not specific enough and were not awarded mark point as they did not state that the tree had to be measured at its base.

Question 5

The context for testing the theory of microbiology practical work was completely novel and this threw the less able candidates.

The first two components of part (a) were not too much of a problem as candidates appreciate what aseptic technique involves. Fewer candidates could explain why it is actually necessary other than to prevent infection of someone by a pathogen.

In part (b), candidates could tell us about the need for an appropriate temperature for incubation but could not explain why the time should be 72 hours.

In parts (c)(i) and (ii), we saw lots of vague answers about control wells and valid investigations, with only the very able appreciating the design of this investigation. Very few candidates could explain a 1 in 2 dilution plating method and just about the only mark that was scored in the calculation was the additional guidance value for 1 mark.

Question 6

Responses to parts (a) and (b) were disappointing. Candidates should be able to give the meaning of biodiversity, as it is a spec term, and we have asked this question a number of times before. We have also asked for an explanation of the role of chlorophyll before, yet we saw lots of responses talking about chlorophyll catching or trapping the light.

All the data presented for use in the levels-based question in part (c) did not phase candidates and we saw lots of descriptions of the extractions of pigments by the two solvents. Unfortunately, only the more able candidates read the question carefully enough so very few answers fully addressed the question and discussed the use of the solvents in the identification of the species of seaweed. In (ii) candidates picked up one of the three possible points on our mark scheme but very few scored the two marks.

Question 7

The calculation in part (a)(i) caused few problems. The calculation in part (ii) caused far more problems because there were some candidates who did not realise that they had to draw a tangent and there are candidates who do not recognise how many significant figures or decimal places are appropriate to use in their final answer. In part (iii) the first three of our mark points were awarded relatively frequently but very few candidates extended their answer to link this in with the actual loss of mass of the T bags. Responses to part (iv) saw all our possibilities but most candidates only scored one mark as they did not extend their answer to include two possible points.

In part (b)(i) we were pleasantly surprised at the number of candidates who recognised that both values were mean values. Candidates also had a really good stab at part (ii) and we saw a number of responses scoring the three marks.

Question 8

As in question 6, we were disappointed in the response to part (a). Again, we were asking for the meaning of a spec term which has been asked on other occasions before.

On the other hand, we were pleased that the novel Voronoi diagrams did not phase the candidates and we saw some good attempts at the three questions based on them. Likewise, in part (c), candidates could describe the information shown in the Voronoi diagram, and those who had read the question carefully, could explain what it showed.

The graph caused more problems as several candidates thought that the lengths of the bars were representing the proportion of that organism in each environment. For example, we saw lots of responses stating that the most common organisms on land were the plants. Although we could not credit this, we could ignore it and award any appropriate explanation if given.

There were a high number of responses that talked about the high number of bacteria underground because of all the dead plants and animals there were to decompose, again not realising the graph showed no organisms, other than the bacteria and the archaea, deep underground. Our indicative content for the explanations was very simple and straightforward but unfortunately many candidates simply wrote descriptions of the data.

Summary

A few suggestions for improving candidate performance are given below.

- Candidate should avoid repeating information in the stem of the question in their answers as this will not gain marks.
- In calculations, candidates should always check if units have been given at the end of the answer line. If there are no units given, then candidates should consider whether there are no units to the answer or whether they are expected to include the units with their answer.
- 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.
- Check the command word for each question before attempting your response. In particular, if the command word is 'explain, then make sure you have used some science to say why something has happened. Your answer should include terms like because, therefore, as a result, so. Appendix 7 in the specification lists all the command words and their meanings.
- Use appendix 6 in the spec to check that you can carry out the range of maths skills that can be asked in the paper.
- In levels-based questions, before you start writing, identify the command word and then each component in the question. Each component must be addressed if you are to access the higher-level marks.