Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

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

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Introduction

We saw a wide range of responses from candidates, with some really 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 MCQs in this question overall scored reasonably well. The first two scored the highest with the fourth one proving to be the most challenging of the five.

In the calculation, most candidates could calculate the magnification correctly but dropped a mark for not expressing their answer to two significant figures.

Question 2

Candidates are familiar with the part of the spec being tested in this question.

Most candidates could name two other characteristics of inflammation for part (a)(i) and knew that enzyme reactions would be affected by heat in part (ii). Fewer could go on to be awarded the two marks as they could not link an increase in enzyme activity with faster destruction by phagocytes. Very few candidates wrote about the enzymes in the host and the enzymes in the bacteria.

For part (b) we saw several responses describing the affect of interferons on viruses (mark point 3) but few candidates thought about the mark allocation and the requirement to write more details for two marks to be awarded.

Compare and contrast is a command word that candidates are now very familiar with and we saw some excellent responses to the last part of this question.

Question 3

The first part of this question was not answered well, with most candidates quoting a value of 7.5×10^5 as they simply read the value from the graph without considering the headings in the table.

Many candidates identified that the question was referring to the lag and exponential phase of the growth curve but few went on to actually explain what was going on in these phases. Those that did, focussed on the acclimatisation to conditions for explaining the lag phase but did not consider why the cells could divide in the exponential phase.

In part (c)(i), some candidates described the dilutions that needed to be made but failed to describe that the bacteria would then need to be plated onto the agar.

For (c)(ii) most candidates recognised that each method would produce different curves when the data was plotted but did not try to explain why. The mark point frequently awarded was the fourth for knowing that the birth rate equals the death rate in the stationary phase.

Question 4

Estimates given in (a) were generally within our range but many candidates gave their value with decimal places which is not realistic.

In (b)(i) we saw a lot of descriptions of what the graphs were showing rather than actual trends shown by the data.

Part (b)(ii) was testing another familiar spec point but the number of candidates who specified that the bacteria being inhibited were pathogenic bacteria was low. The clue to this was in the question where is said 'preventing infection'.

All four of our mark points were frequently seen but very few candidates gave more than one of them in their response, causing the question to score lower than it should have done.

Question 5

The calculation at the start of this question scored poorly, as expected, as candidates cannot express an answer in standard form.

The following MCQs saw a range of responses with the first of the three scoring the lowest.

A range of responses were seen for the first of our two levels-based questions. Candidates have clearly been schooled to work their way through the stimulus material that they have been given, so the vast majority of responses mentioned both diagrams. However, responses from the weaker candidates went little further than repeating the information in the lower chart and did not give any A level detail in their response. Some candidates did not appreciate that these seaweed farms are in the sea and tried to discuss the loss of woodland, farmland and homes.

Question 6

The MCQ scored extremely well, causing few candidates any problem. Surprisingly part (a)(ii) scored very poorly.

Questions on temperature and enzyme activity tend to score well and we awarded mark points one and two frequently. However, only the more-able candidates realised that their answer had to link into the faster growth of the lizard, so our third point was not awarded much.

The graph in (b)(ii) caused huge problems to candidates. It was very clear from candidates' responses that they had not read the label on the x axis. The vast majority assumed that there was a negative correlation. The other mistake was to not read values from the graph accurately.

Responses to part (iii) were varied with many candidates making good attempts at answering this question which was set in a very different context. One common mistake was to state that cell division would occur faster in longer lizards; we tried to ignore these statements.

Question 7

In part (a), candidates were not thrown by the expression active immunotherapy; they picked up on the active immune bit and used their knowledge of active immunity to answer the question. A mark of one was common as few candidates used the mark allocation to write sufficient detail.

A number of candidates over-complicated their response to (b)(i) and gave details of the various types of mutation and not mentioning that the amino acid sequence would be subsequently affected.

Candidates are very familiar with the questions in this paper that are based on the immunology spec points and we saw long responses from many candidates. Unfortunately, candidates are making the same mistakes that we have seen in the past and the question did not score well as a result. Mistakes included: the mRNA itself being expressed on the surface of the cell; B cells presenting the antigen to activate the T cells, T helper cells not being specified as the type of T cell that macrophages present to, T helper cells becoming T killer cells and no mention of cytokines being released.

For part (c) we saw plenty of references to opsonisation, agglutination and neutralisation; it was clear however that candidates do not appreciate the difference between the three processes. We tried to ignore this where possible but could not ignore descriptions of antibodies killing or destroying the cancer cells, which is a common misconception amongst candidates.

In 7(d), we saw both our mark points but rarely in the same response. Candidates either picked up on the large number of cells and gave us mark point one or picked up on the cells being genetically-identical and gave us mark point two.

A similar thing was seen in part (e). Candidates between them covered all three of our mark points but rarely wrote about more than one.

Question 8

A wide range of values were picked for the calculation in (a)(i) but we really felt that 35 452 and 83 240 were the only values that made any biological sense. The other error was to round up the answer either incorrectly or to an unrealistic number of decimal places.

A range of responses were also seen for part (ii), with no evidence that candidates had been thrown by a diagram that they had not have seen before. A bit of carelessness or exam nerves was evident in drawing the arrows, with not all the grey boxes having an arrow added to them.

Candidates were back on familiar territory with part (iii) as we have asked about enzymes and decomposition on a number of occasions in previous series. Marks were lost by those who did not describe what happened to the soluble molecules that had been produced as a result of digestion.

Candidates coped really well with the idea that humans could be on a trophic level that was not a whole number and could equate the increase in TLN with an increase in the proportion of meat in the diet. The more able candidates were able to work out that the low TLN value meant that the diet consisted of a higher proportion of plant material than animal material.

Question 9

The two calculations at the start of this question scored reasonably well. The errors have been commented on previously: an inability to express answers to the required number of significant figures and using too many decimal places in an estimation.

Many candidates could suggest why the value might be an under-estimate, but ironically tried to explain why when we did not actually need an explanation. These explanations were ignored and the suggested reason was marked.

We had hoped that candidates would recognise the shape of the curve in (b) from their studies on haemoglobin and be able to describe it as being sigmoidal or S shaped. We had to award descriptions of the changes in gradient as an alternative, but could not credit responses that talked about rates changing. Few candidates used the mark allocation to try and find a second description to include in their response.

Part (b)(ii) was unfortunately another example of where the wording of the question or the mark allocation was not used to guide responses. Very few candidates offered two reasons for the limitations, although all our possibilities were seen in responses overall.

Part (c) was our second levels-based question. Again, it was evident that centres had trained their candidates to work through each set of data or visuals in their responses. We saw lots of responses that included descriptions of both graphs and the appearances of the packaging. Unfortunately, that is where most responses ended with very few candidates actually discussing the advantages of using the modified banana packaging.

Summary

A few suggestions for improving candidate performance are given below.

- If a candidate is asked to describe a spec term or spec expression, there will usually be one mark for each part of the term. Therefore, each part of the term needs a description.
- If a question asks for conclusions to be drawn then generalisations of what the data shows is required not a detailed description of each piece of data.
- Always read the labels for the axes on graphs carefully to ensure that you understand what the data plotted relates too.
- Values read from a graph need to be accurate and not approximated.
- Levels-based questions generally require you to use the data or visuals that we give you to write some sort of explanation, discussion or evaluation. If you only describe the data, you will not score well however much description you include in your response. Write three or four descriptive points and then use your time to extend your response to answer the question.
- Although one of the keys to answering a levels-based question is to write a lot about a little, A' level detail is still required to access the higher marks.
- The mark allocation for the question should be used as a guide to judge how much detail is needed in a response.

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