Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

October 2023

Pearson Edexcel International Advanced Subsidiary Level In Biology (WBI13)
Paper 01: Practical Skills in Biology I

Introduction

This paper was answered with roughly the same facility as in previous series.

Attention needs to be drawn to the necessity for candidates to devise experimental procedures. These will always grow out of core or recommended additional practicals but involve them having to think about how they will apply their understanding of the techniques used in the core practicals, together with that of the scientific method, to devise a procedure. A relatively poor response to this aspect was seen, especially in relation to question.3bii. As always, lack of a careful of reading of what was required lost some marks and a lot of time for many. See particularly the report on question 1ai in this respect.

Question 1

ai Full marks were rather rarely awarded on this question and it proved to be difficult. This was in part due to a misreading of what was required. Due to this, many spent at least half their time and space writing about how to make a cheek cell slide. The question stem made it clear they already had the slide and were to measure a specific cell on it.
After this, most gained marks for realising that the cells would need to be found under low power but then measured under high or medium in order to have any chance of an accurate determination, as asked for. Many were able to talk about graticule calibration, fewer about final conversion to 'real' length units and, finally, very few understood how the cell is initially measured in graticule units.

aii It is clear that candidates do not practise drawing enough. As well as those who drew what they saw there were those who simply drew a cell from memory, and often with much detail such as Rough ER, mitochondria, nuclear pores etc. Others drew a cell wall, drew the cell as a simple circle, drew the nucleus either too large or too small or in the wrong place. Finally, a good number were unable to draw smooth lines without gaps.

aiii This was quite well done until it came to expressing the ratio. So, the maths was right but the ratio written the wrong way round.

bi/ii Although the majority could answer part i well, fewer could recognise a longitudinal section of phloem in part ii.

Question 2

ai A few candidates did not remember the correct reagent with some references to iodine. Most recalled that they needed to use Benedict's reagent. The main issue here was that many candidates either did not recall that the solution then needed to be heated - or they just stated that it should be placed in a water bath, without any reference to heat or a suitable temperature. The more successful answers avoided being vague and quoted an appropriate temperature or simply said heat was needed.

aii The detail was important in this question, especially for mp 1. Many lost the mark for stating 10-15, 10-15.0 or 10.0-15.0 etc. The only correct answer is the one on the mark scheme. Mp2 was more often seen, but quite a few failed to realise there would still be precipitate, as well a change in colour.

bi This question proved to be very challenging, although a few full answers were seen. The word processed in the question stem seemed to be misunderstood. For those who did have an idea of what was needed, the route to a mean was much more often known than the route to a standard deviation.

bii Many candidates scored 4 out of 5 marks. The poor drawing of a suitable line of best fit was the most frequent reason for loss of a mark. The poorer answers were from those who chose an inappropriate scale, did not plot the SD or failed to label the axes correctly.

biii Good candidates produced some clear concise answers for full credit. Mp1 was most often awarded with Mp2 less common. Mp3 was often missed due to lack of clarity in answers. Candidates talked about reliability rather than noting that the overlap of SDs signals a lack of significance.

biv There were many good answers here, it proving to be one of the most accessible questions on the paper.

Question 3

ai As would be predicated, this question was well done but still about a quarter failed to get the mark.

aii This question proved to be one of the more difficult on this paper. Apart from those who made comparisons of mitosis with meiosis, many simply stated that animals did not have or do something that plants have or do, without making a proper comparison.

bi Less well answered than it should have been, with about half failing to gain the mark. Of these, some were content to just quote 'lectin'. Others thought cell number was independent.

bii This question proved to be quite discriminating, with 3 marks being the most commonly awarded score. The most serious omission was the idea of treating growing roots with the lectin (mark point 2). Most either did not mention the treatment they would apply of or decided to treat cells, bits of root or even epidermis. This signals a fundamental lack of clear picture in the mind of what is going on here. Such candidates could gain full marks, even though what they described would not give meaningful results. In a tighter mark scheme this may not be possible and candidates need to think about how they would adapt what is a core practical to solve a specific problem.

biii The table was quite straightforward and was well done, although some marks were lost due to sloppy transposing of data.

biv Well done in the main, with a good appreciation of how to calculate a percentage.

bv Having just guided candidates to calculate a percentage it was disappointing to see them then ignore their answer in this next section. Far too many just quoted and discussed numbers, which is not satisfactory when the absolute numbers viewed in each treatment were different.

bvi Centres are reminded of the document "Mathematical Skills: clarification in assessing statistics in examinations" which was circulated about 2 years ago. Among other requirements is this:

Select and justify a particular statistical test e.g. that chi squared can be used to compare observed to expected outcomes.

This was the first time this has been examined on this paper and, hopefully, such questions will produce a better response in the future in the light of this.

Paper Summary

The paper performed similarly to previous series with the exception of that on Q 3bvi, from which important lessons should be learned.

The following advice should be heeded.

- Read the question very carefully to interpret precisely what is being asked.
- Lay calculations out clearly. In that way credit may be given for working.
- Practise familiarity with all 9 core practicals and the 5 recommended practicals. The questions are always in the context of one or more of these.
- Practise designing experiments to become familiar with this way of thinking.
- Understand the variables involved in any experiment. The DV, the IV, and the CVs.
- Focus on command words and what they mean. There are definitions in the specification.
- Take note of the document *Mathematical Skills: clarification in assessing statistics in examinations*, any of the requirements set out in there are likely to be examined on this paper.