Examiners' Report

Principal Examiner Feedback

October 2020

Pearson Edexcel International Advanced Level

In Biology (WBI16)

Paper 01 Practical Skills in Biology II

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Introduction
As this is the first paper testing the new specification, the paper followed a similar format to past papers. However, there were mark distribution differences in each question.

Question 1 asked candidates to describe a method based on a core practical they were expected to have personally carried out.

Question 2 could be based around any biological context, the key parts of the question are always the same, data presentation and analysis.

Question 3 was based on a core practical, the context may be unfamiliar, however, they students could describe a suitable method from the practical they should have carried out personally.

In general, candidates showed knowledge of the core practical methods. Students clearly identified variables that needed to be controlled but their descriptions as to how the control could be achieved lacked the precision required for this examination in many cases. However, most students did try to tailor their answers to the given context of each question.

Question 1

1a
Candidates were asked to explain why starch is an energy storage molecule.
There were a significant number of responses that had elements of the marking points. However, only complete statements could be given credit.

1b
This question asked students to describe a suitable method to compare the water potential from two types of tuber. Many candidates did not seem to be very familiar with this investigation. The initial sample of cells was often not standardised in any way. In addition, the time interval was frequently too small to have given any change of mass.

1ci
Many candidates correctly identified one abiotic and one biotic variable other than the independent variable. A minority of candidates seemed not to distinguish between abiotic and biotic variables, giving answers in the wrong section of the question paper.

1cii
Candidates were then asked to choose one of the variables they had identified and explain how it could be controlled. Most students selected an appropriate variable with a method of control. Some candidates then went on to describe how the function of cell membranes might be altered if the variable was not controlled.

1d
Only a small number of candidates gained any credit for explaining the factors that may affect the water potential of potato cells.

Question 2
The context of this question was the effect of an insecticide on the growth of leaves.

2a
Many candidates wrote a suitable null hypothesis, however, there was a tendency to not refer to the treatment with insecticide and the treatment with water.

2bi
Most candidates completed the calculation correctly.

2bii
Most candidates presented the data in a clear table. In a few cases, the full headings from the information given were not included and units were repeated in one or more columns. Some candidates did not present both means to one decimal place.

2c
Most candidates presented graphs with both axes fully labelled. The plotting was usually easily checked as a sensible scale was chosen in most cases. If a student had presented incorrect means in part b, they could still be awarded the plotting mark here as an error carried forward. Only a small number of students failed to include any range bars on their graphs.

2di
Most candidates provided working that was appropriate. However, the final answer given suggested that an error had been made in the final calculation.

2dii
Most candidates correctly identified the critical value of 2.048 from the table and compared this with the calculated value of *t*.

Some candidates made the mistake of accepting the null hypothesis and suggesting there was no significant difference between the length of leaves treated with insecticide and the leaves treated with water.

2e
Many candidates commented on the need to control or measure environmental conditions. Very few suggested investigating the effect of different concentrations of the insecticide.

Question 3
This question was about investigating the effect of light intensity on the rate of photosynthesis.

3a
Nearly all candidates correctly identified one safety issue.

3b
Candidates were asked to describe preliminary work to ensure a proposed method would work. The candidates that had engaged with the context of the investigation gave descriptions that covered at least one of the points on the mark scheme.

Candidates were not given credit for the idea of practising the method to see if it works unless they provided some specific details.

3c
Nearly all the candidates described a method of their investigation in a logical sequence. However, a significant number of answers had the potential to gain more marks by making clear statements, for example, specifying how to provide five different light intensities. Sodium hydrogen carbonate is used to provide an excess for carbon dioxide. Some candidates stated it had been added to absorb carbon dioxide and other used soda lime.

3d
Candidates were asked to explain how the data from their investigation would be recorded presented and analysed. Most candidates either described or drew tables with headings and graphs with labelled axes. Only a small number of students suggested a statistical test that was not a suitable correlation test.

3e
Most candidates suggested at least one of the points on the mark scheme.

Advice for students:

- Read the whole question before you start to answer, and check that your answer covers everything the question asks for.
- Make sure your answer relates to the specific context of the question.
- When studying Core Practicals, think about what the techniques might be used for and the types of scientific question they might help to answer
- Carry out every Core Practical for yourself, so you understand how it works and any difficulties that might be encountered.
- If you are given the procedure for a practical technique, put yourself in the shoes of the person writing the procedure: how would they have worked out the details (such as volumes, concentrations and times)? They will have used preliminary practical work.
- Consider the strengths and limitations of each Core Practical technique.
- Practice writing null hypotheses for experiments you carry out, even if you will not necessarily be applying a statistical test.

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