Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

October 2023

Pearson Edexcel International Advanced Level In Biology (WBI16)
Paper 01: Practical Skills in Biology II

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

October 2023
Question Paper Log Number P75620A
Publications Code WBI16_01_ER_2310

WBI16_01 October 2023

Question 1 asked candidates to consider the practical aspects of an investigation of vitamin C content of fruits.

Question 2 was based on a core practical, the context of taking measurements using a spirometer should be familiar. This question focused on a detailed data processing and the control of variables.

Question 3 can be based around any biological context, the key parts of the question are always the same, data presentation and analysis.

Question 4 is based on a core practical, investigating the rate of photosynthesis of an aquatic plant.

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 frequently lacked the precision required for this examination. However, most students did try to tailor their answers to the context of each investigation.

Question 1

1a Candidates were asked to calculate the percentage decrease in vitamin C content after 28 days storage. Nearly all the answers were correct.

1bi Candidates were asked to describe an experiment to investigate the change of vitamin C content over time. Many candidates did not clearly state that the storage conditions needed to be controlled, particularly the temperature. Counting drops did not gain credit. The volumes needed to be recorded from titration. All the points on the mark scheme were seen regularly.

1c Candidates were asked to describe the structure of a collagen molecule. Only a minority of answers gained three marks. Some candidates frequently made sensible suggestions as to why each fish was only used once.

Some answers were too vague to gain credit.

Question 2

2a Most candidates identified a sensible risk, however some methods of reducing the risk were too vague to gain a second mark.

2b Most candidates read the graph using the line P to Q. Many answers were in the correct numerical range, but the second mark could not be given as the units should not have used the solidus in the answer.

2c Most candidates correctly identified biotic variables, however their stated metho of control was often vague.

2d Candidates were asked to describe how the ventilation centre controlled the ventilation rate. Most candidates gave a detailed description of the ventilation centre but did not tackle the rest of the question.

3a The majority of candidates did state a null hypothesis that had sufficient detail to gain the mark.

3b-c Nearly all the candidates presented tables and bar graphs.

The units were sometimes missing from the tables. Bar graphs should have a y axis starting at zero, this axis label was frequently not complete as mean and units were missing.

3di Most candidates worked through the given formula and correctly calculated the value of *t*.

3dii Most candidates correctly identified the critical value from the table and compared this with the calculated value of *t*. The explanations that followed were usually worthy of credit. Negative values were sometimes stated, in which case correct reasoning gained credit.

3e Candidates found it difficult to describe extensions that were appropriate to this investigation. However, all the marking points were given by the candidates that thought about extending the investigation.

3f Candidates that identified climate change as having a stimulation effect on locust activity gained credit. Alternatively a reasoned answer about change of environmental conditions also gained credit. Some candidates gave answers that were too vague.

4a The context of this question was the rate of photosynthesis under different light conditions. growing bacteria in liquid culture. 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.

4b 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 exactly how to control a variable. All the marking points were seen regularly and there were a significant number of good answers gaining maximum marks.

4c 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 statistical test for the raw data they envisaged collecting. Tables should only have headings with units for raw data.

4d Many 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.

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom