



Examiners' Report

Principal Examiner Feedback

January 2019

Pearson Edexcel International Advanced Level

In Biology (WBI03) Practical Biology and Research
Skills

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Publications Code WBI03_01_1901_ER

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Introduction:

The performance on this paper was very much in line with previous series. One of the most important reasons for loss of marks was insufficient attention being given to command words. This was most evident in 1b(iv) (explain), 1c(ii) (explain) and 1d (compare). This meant that many candidates lost marks on all three of these items because they did not even attempt to do what they were asked to do.

Question 1(a)

This question was well done with about half gaining both marks. A few mentioned beta-glucose, which would negate a mark, some failed to talk about the reaction in which the bond is formed but got one mark for naming it. A substantial number discussed the breakdown of starch, indicating they found it hard to move away from what they knew about enzymes in relation to starch. They are clearly seeing the words enzyme and starch and somehow thinking it is a knowledge question. It is important that students understand that they need to apply what they know in many questions.

Question 1(b)(i)

A majority scored a mark in this question but, on the other hand, a substantial minority did not. In this case volume of iodine solution was quite often given. Some wrote too vaguely mentioning such things as the colour of the solution.

Question 1(b)(ii)

Most students confused the term 'control' with 'control variable'. Less than one fifth of candidates gained this mark. The rest described conditions that should be kept the same so that the independent variable is not affected.

Question 1(b)(iii)

Very well answered, with missing units being the main reason for the loss of marks.

Question 1(b)(iv)

Most students recognised that temperature would affect the results. Many were very vague, suggesting that fluctuating temperatures would lead to inaccurate or invalid results. As a result, over a third scored zero marks.

The next group of a third scored 1, this was usually for their suggestion that high temperatures will cause the enzyme to denature. A significant number erroneously think that low and high temperatures will cause denaturation. Such a suggestion did not gain a mark.

Oddly, in this question many gave an explanation (for example, high temperature causing denaturation) but did not go on to suggest the consequence for the results, as clearly asked for in the stem. Only a very few candidate scored full marks on this question.

Some students described the effect of temperature on membrane permeability.

Question 1(c)(i)

Most students did well on this question. But some chose scales that were not suitable. Scales that go up in 3s are not advisable because each small square goes up by 0.33333. This means it is impossible to plot an exact point. The main reason for loss of a mark was poor joining of points, followed by a failure to put units on the y-axis.

Question 1(c)(ii) Less than one fifth of candidates scored more than 2 on this question. This can be almost entirely blamed on the fact that they failed to explain anything and thus could not access marking points 2 and 4. Those who did gain an explanation mark usually got mp 4, mp 2 was very rarely seen. This is an excellent example of the use of the command word explain.

Again, some got this practical confused with the membrane permeability practical and, as a result, discussed irrelevant information.

Question 1(c)(iii) Although most students recognised that repeats of the same experiment would need to be done, many described changing some conditions. Whilst the mark scheme did not expect candidates to explicitly say repeat under the same conditions, the mark would be lost if this was clearly what they were not suggesting.

Many students recognised that standard deviation should be used but only stated that standard deviation should be plotted onto a graph without first explaining that it would first need to be calculated.

Question 1(d)

By far the commonest mark here was 1. This would invariably have been for mp1. Mp 2 was much less commonly seen. Many students tried to give an explanation of the results, which, on this occasion, was not required. Again, this demonstrates the lack of a careful reading of the question and its command word. Some students only described the second experiment in detail and did not address the first experiment at all. Quite a few did a calculation of some sort, but unless it was comparative in some way it could not gain a mark

Question 2(a)(i)

This question was accessible to most, with about three quarters gain all 3 marks. Most of those who lost marks did so because they lumped Tamoxifen and Anastrozole together, rather than stating precisely how each of the drugs works.

Question 2(a)(ii)

Again, this question was accessible to most. A few thought Anastrozole was an alternative treatment and some discussed surgery in a way that was too vague for the mark.

Question 2(b)

Again, a question which students did well, most recognising that a bar graph would be the most appropriate for this data. Tables were invariably high score whereas those who drew pie graphs struggled to get full marks.

Question 2(c)(i)

Referencing is now well enough known for this question to yield a mark for the vast majority of candidates. Publisher, place of publication, dates and references were the most common wrong answers.

Question 2(c)(ii)

A third of students wrote a complete reference and gained but another third lost a mark, most commonly from missing et al out of the author section. About one fifth of candidates showed no understanding of how to write a reference, and just copied the information given again in a different order.

Question 2(d)

The vast majority of candidates were able to pick out the relevant material from the passage and score the mark here

Question 2(e)

This proved to be a very challenging calculation with well over half getting a mark of zero. However, nearly 10% did get 2 and the rest achieved mp1 for one mark.

Question 2(f)

This question discriminated well with nearly half gaining one mark and a significant number achieving both.

Question 2(g)

This question gave an almost identical mark distribution to that of 2f. The most common reason for loss of marks was by candidates who were, again, too vague in their responses. They would say such things as 'Anastrozole leads to fewer side effects' but failing to follow up with a phrase such 'than Tamoxifen'. In other words, they had failed to appreciate that Anastrozole is preferred over Tamoxifen and mastectomy, so a comparative statement was needed for the marks.

Paper Summary:

Based on their performance on this paper, students are offered the following advice:

- Ensure that you are familiar with all of the nine core practicals. Within the context of the 9 core practicals learn the details of the scientific method and think about how it applies to each of them.
- Read questions very carefully, especially the command word.
- Ensure that you are familiar with data handling, and understand what it means to manipulate data.

