Examiners' Report
Principal Examiner Feedback

January 2018

Pearson Edexcel International Advanced Level In Biology (WBI03) Paper 01 Practical Biology and Research

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

Introduction

The performance on this paper was very much in line with previous series. There is evidence of a lack of enough care being given to the 'why do we do this?' aspects of experiments. Students tend to know what to do what to do but are much less confident about why things are done. Reading precisely what the question was asking was also a problem for some, leading to a significant loss of marks where a little more care and consideration would have helped.

Question 1ai

This question was quite well answered, with over 80% gaining marks. Many were able to suggest that the rinsing was to get rid of betalain released through cutting; far fewer suggested why this was necessary.

Question 1aii

A majority of students gained two marks on this question. The most commonly selected variable was temperature and this was often followed by the suggestion of a thermostatically controlled water bath or an incubator. It is rather disappointing, though, to see a significant number of students who still think a water bath will suffice, without any mention of it being maintained at a particular temperature. Other common answers were pH, which nearly always lead on to the award of the second mark point, and some feature of the beetroot, usually an aspect of size.

Question 1aiii

This question proved challenging for all but the best students, with only about 10% gaining both marks. Many more were able to gain 1 mark, usually for one of the alternatives in marking point (MP)2. There was a lot of confusion about colour and absorbance when students were attempting to gain MP1.

Question 1bi

The standard of graph plotting remains high for the majority of the entry. Over half of the students gained all 5 marks and over 80% got 4 or 5. The most common reasons loss of marks were in relation to MP L, where a significant number still think a bar graph/histogram is suitable for continuous data, or failed to draw there lines with a ruler. Some failed on MP S by not including a labelled origin. Inaccurate plots for MP P and reversed axes for MP A were less common. A not inconsiderable number of students chose very unsuitable y axis scales, which made plotting and the checking of plotting very difficult. Students should be advised to choose axes where the divisions are even numbers (unless they use 5, 0.5, 50 etc).

Question 1bii

Another quite challenging question which gave an even spread of marks between 0 and 3 out of 3. Those gaining 0 or 1 often did so because their entire answer was about absorbance rather than permeability. Sometimes they would get 1 mark if they made a point in the first line, which was correct in relation to the stem (membrane permeability). For example, a statement such as "both alcohols increase it", in which case "it" was taken as permeability. However, they would then go on and talk about absorbance for the rest of the answer. Another common mistake was that students often thought that by saying something about the effect they were saying something about increased permeability.   So an answer such as "both alcohols had a big effect on permeability " would not gain the mark because big effect is not the same as increase, although many seem to think it is. Students need to be clear that effects can be in either direction. So a big effect on permeability could mean they both make the membrane less permeable or make it more permeable.

Question 1biii/iv

These two linked questions were not well done. Only a quarter got 2 marks for biii, although nearly 60% got one. The simple idea of repeating was accepted as a standalone mark for one, but many failed to qualify it with either of the MP 2 possibilities.
Just under half got the one mark for biv.

Question 1c

It was very pleasing to see a majority of students able to discuss changes in absorbance and transmission and translate between the two to realise that the suggestion is supported. Quite a few, however, did not clearly state that the suggestion was supported, and thus failed to gain MP1, even though they would often gain MPs 2 and 3.

Question 2a

More than half of the students failed to gain this mark. This was almost entirely because they said that treatment options were the problem. Others muddied the waters by saying cardiovascular disease or equivalent and then going on to talk about treatment or side effects of treatment.

Question 2bi

The idea of manipulating data seemed alien to many students. To quote from the specification from the definition of the command word describe:

If interpreting numerical data, it is often appropriate to refer to the figures, and these should be 'manipulated' in some way, for instance the trend could be quantified or the percentage difference over a period of time calculated.

Some did suggest a percentage calculation but did not carry it out *or* describe how it would be done for MP2. The correct calculation could gain both marks in part bi. A mark was awarded if evidence of a correct calculation was apparent in bii.
Most who gained only one mark (over half) got it for showing a table, bar chart or pie chart in bii.
Nevertheless, nearly one quarter got all 4 marks.

Question 2c

Nearly half of the students were able to get 2 out of 4 on this question, but only 7% gained all four. Two marks were usually gained for comparing aspirin with placebo rather than strokes with heart attacks. Only the best students discussed the latter.

Question 2d

This quite challenging calculation was tackled well with over half gaining all three marks. Well over 80% gained some marks. The best noted that the cost of 0.75 USD was for 32 tablets. Others thought each tablet was 0.75 USD. However, after this mistake, credit was given as ecf. In other cases, some decided that their calculation for MP 2 (5.72) suggested 6 packs would be needed. This was an acceptable rounding and the answer it gave at the end (224.28 USD) was given full credit.
Despite the high scores, many of these were gained for the '3 marks for correct answer' route and the setting out of calculations in a clear logical way is still not apparent in many answers. This makes it hard to give credit for working in cases where the answer is not correct.

Question 2e

This question proved to be easy marks for most with only 3% achieving none and 87% gaining 2.

Question 2f

The commonest mark by far was 2/3. This was because most focused on the ethics of animal experiments in relation to pain and suffering and the inability of animals to give consent or that they have rights. Very few addressed MPs 3 and 4, only 8% getting 3 out of 3.

Question 2g

Despite the predictability of a reference-writing question, there are still a lot of errors made. This question gave the full spread of marks equally for 0,1,2 and 3. Just over a quarter got full marks and a quarter got zero. The rules for reference writing in the format acceptable on this paper still require careful consideration and revision.

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. Those who did not talk at all about permeability, which was what the question was asking about, lost many marks on 1bii.
- ensure that you are familiar with data handling, and understand what it means to manipulate data.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:

http://qualifications.pearson.com/en/support/support-topics/results-certification/grade-boundaries.html