



Examiners' Report Principal Examiner Feedback

October 2023

Pearson Edexcel International Advanced
Subsidiary Level In Biology (WBI11)
Paper 01: Molecules, Diet, Transportation
and Health

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Introduction

We saw a wide range of responses from candidates, with some really excellent responses from the more able candidates. The MCQs generated a range of responses as did the calculations. The one levels-based question did generate level 3 responses but candidates still need schooling on how to structure their responses to access all six marks. A vast number of centres are using our mark schemes and examiners reports to prepare their candidates; this is evident in the answers where mark points have appeared on previous mark schemes and the improvement in the responses to the compare and contrast question.

Question 1

The ‘fill in the gaps’ question at the start of this paper did not cause candidates too many problems. There was the expected confusion between hydrolysis and condensation reactions and the names of some of the bonds. A mark was lost by candidates who did not specify that the DNA molecule twists to form a double helix.

The drawing of a mononucleotide in part (b) saw a range of responses with most candidates picking up at least two of the marks. The commonest errors were drawing a pair of mononucleotides joined by their complementary base pairs and not indicating if the base was thymine or uracil or the sugar was ribose or deoxyribose.

Question 2

The three MCQs at the start of this question saw a range of responses but with the majority of candidates selecting the correct answer.

For part (b), more candidates were drawing tangents on the graph but careless drawing or reading of the scale on the x axis meant that the lines were not drawn in the correct place. Marks were also lost by candidates expressing their answer to an unrealistic number of decimal places; selecting an appropriate number of decimal places or significant figures is one of the maths skills that we can assess.

The last part of this question was poorly answered. There were numerous responses that talked about the curve shifting to the right or to the left, with very few candidates considering the gradient and the point of levelling off. Many candidates picked up mark point 2 for explaining the increase in rate of reaction but a very limited number of candidates came even close to explaining the plateauing of the curve.

Question 3

The calculation in part (a) was fairly straightforward but there were candidates who only calculated the mass of protein per person and not per person per week, gaining only mark point 1.

The majority of candidates scored the mark for the two stages of protein synthesis, although the weaker candidates did get them the wrong way round.

For the last part of this question there were candidates who described the process of transcription and translation without homing in on the role of the two types of RNA. Mark point 1 was rarely awarded as candidates wrote about the mRNA actually copying the DNA sequence which was too inaccurate to accept. The other mark points were frequently awarded but rarely all in one response.

Question 4

The two calculations in part (a) were straightforward and candidates scored both marks provided they copied the format of the other figures in the table.

Ratios are still causing candidates problems. There were some who could express the ratio correctly but incorrectly rounded 16.75 down to 16.7, losing the mark.

The majority of candidates knew why more males are colour blind than females but could not express their answers accurately. There were the expected errors of expressing points in terms of alleles when it should have been genes and vice versa. There was some confusion about whether the recessive allele was on the X chromosome or the Y chromosome. There were also several references to carrier females without actually answering the question and stating that a female had to be homozygous recessive to be colour blind.

Question 5

The first part to this question was very poorly done, although this was not unexpected as we have not asked candidates to give the meaning of the term mass transport before. It was very obvious that some centres had given their candidates an appropriate definition of the term as we saw groups of responses where the candidates were coming out with the same definition. With the exception of these candidates, many simply reworded the term.

Similarly, some candidates struggled with part (ii) as we have not tested this part of the specification in quite this format. Many knew that diffusion would be too slow but very few could explain why. The majority of candidates wrote about what they had learnt about a small surface area to volume ratio which was not really relevant in the context of this question.

Completing the heart diagram in part (b) scored well provided that the candidate had read the question properly and did as we asked.

We have seen in previous series that when candidates are asked to explain something, they frequently only write a description. This question was no exception. We saw several accounts putting the information given in the table into

words. The more able candidates explained the data as asked and methodically worked their way through explaining the smooth muscle cells, then the collagen and then the elastin.

The two MCQs at the end of question 5 performed pleasingly well. Candidates have not seen this format before but a high proportion selected the correct graphs.

Question 6

Candidates are familiar with MCQs testing aspects of carbohydrate chemistry so the three MCQs at the start of question 6 scored well.

Describing conclusions from data can cause candidates problems but candidates coped well with the data shown in the graph in part (b).

Candidates have become very familiar with the command word 'compare and contrast' as centres are making it very clear to them what is expected. Comparing and contrasting data is trickier but on the whole candidates could cope with this but lost the marks by not reading the values from the graph accurately.

'Comment on' is a command word that candidates find difficult to respond to and (c)(ii) was no exception to this. Many candidates simply described the data in the table without actually stating what the effects of the replacement liquids were. This was a low-scoring question.

A range of responses were seen to the last part of question 6. A number of candidates could tell us that the lid had to remain on so that water would not be lost from the vessel but then linked this into making the investigation valid.

Question 7

Candidates struggled with the first part of this question. The spec point being tested has not been approached from this angle before and candidates found it quite difficult interpreting the data in two different ways, especially describing the evidence against the relationship.

Candidates are familiar with being asked to describe conclusions from data but having to use the data as evidence for given conclusions threw some of them. Many could access the third mark point and picked two calculated values to illustrate the ratios but for the other two conclusions many candidates simply repeated the conclusions.

The three components of part (c) saw some good responses as candidates felt back on more familiar territory. In (i) there were several candidates who thought that the LDL receptor was a channel protein and discussed facilitated diffusion, despite us using the term endocytosis in the question. In parts (ii) and (iii) a significant number of candidates thought that the LDL receptor was an enzyme, which did cost marks.

Question 8

Candidates find expressing values in standard form really difficult and this calculation in (a)(i) was no exception.

A range of responses were seen to (ii) with most candidates going for the third suggestion on our mark scheme. Surprisingly, few candidates talked about making extrapolations, although this type of question has scored well in the past.

Antioxidants have now been tested several times and candidates have clearly been taught this topic using past exam mark schemes.

For (b)(ii) most candidates came up with the idea that ginger was a food and therefore harmless. Weaker candidates simply repeated what we had told them and stated that it was because the ginger contained antioxidants.

At the end of this paper was our one levels-based question. We saw lots of detailed methods for collecting the data but unfortunately many candidates had not picked up on the command word 'explain' used in this question so we got very few reasons in the responses. This limited candidates to level one marks unless their method indicated that the study would have to be long-term to work.

Summary

A few suggestions for improving candidate performance are given below.

- Candidates should avoid repeating information in the stem of the question in their answers as this will not gain marks.
- In calculations, candidates should consider an appropriate number of decimal places or significant figures for their answers, if we have not specified how many to give.
- Candidates need to take notice of the mark allocation for each item to help them decide if they have written enough points to be awarded that many marks.
- Early question parts frequently give clues to what latter parts of the question are about so should be considered.
- The command word for each question should be checked before attempting the response. In particular, if the command word is 'explain' then reasons must be given. The answer should include terms like: because, therefore, as a result, so. Appendix 7 in the specification lists all the command words and their meanings.
- Appendix 6 in the spec should be used as a checklist for the maths skills that can be covered in the paper.
- Always read through answers very carefully as it is easy to make some silly mistakes under the exam pressure. Think about each word used and make sure that you have actually written what you meant to write. This goes for calculations too where it is easy to press the wrong button on the calculator.
- In levels-based questions, before you start writing, identify the command word and then each component in the question. Each component must be addressed if you are to access the higher-level marks. In the question on this paper you were asked to think

about validity and repeatability. These are terms that are different in meaning but frequently mis-used.