Pearson Edexcel

Examiners' Report
Principal Examiner's Feedback

January 2022

Pearson Edexcel International
Subsidiary/Advanced Level
In Biology (WBI11) Paper 01
Molecules, Diet, Transport 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 two levels-based questions did generate some 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.

Question 1

This question was reasonably well-answered, as we would expect for the first question on the paper.

In part (a), there were some candidates who opted for distractor B, presumably because they thought that starch was soluble in water.

The sentence completion generally saw between 2 and 4 marks, as some candidates switched the sucrose and lactose monosaccharides around.

The MCQ at the end of the question caused little problem to those candidates who took the cue from (b)(ii) and realised that we were testing them on the loss of a water molecule during a condensation reaction.

Question 2

The two MCQs in part (a) were generally answered correctly.

The calculation caused some issues, with many candidates only scoring one mark for the first part of their calculation. The reason being that they had either not read the question correctly so did not realise that they had been told to express their answer to three significant figures or else did not realise that a zero had to be used to indicate no decimal places (75.0).

Part (b)(ii) saw a range of answers with the higher marks being scored by those candidates who could express their answers clearly or who appreciated that they had to provide an explanation as well as a description of the line for the right ventricle. Our second mark point was rarely seen; partly for the reason given above but also because quite a few candidates thought that the right ventricle contracted after the left ventricle. A number

of candidates knew that the differences were due to the right ventricles pumping blood to the lungs, but they did not always link the lower pressure in with this.

Question 3

In part (a) we saw lots of descriptions of phosphodiester bonds joining two adjacent mononucleotides in a DNA strand, partly because candidates simply wrote everything that they knew about DNA. We awarded marks by ignoring all this surplus information and picked out the points that we were actually looking for.

The responses to part (c) were disappointing as the majority of candidates did not refer back to our diagram of the replication bubble and simply wrote what they knew about DNA polymerase.

Part (c) was not particularly well-answered either as candidates did not think about the calculation that we had asked them to do and use their value of 833 hours (which many candidates did calculate correctly) to realise how much shorter S phase is as a result of the replication bubble.

Question 4

Candidates were back in familiar territory with the first two components of this question. They have learnt the definition of a gene from our previous mark schemes, and they can describe the cause of cystic fibrosis very well.

Part (c) was less familiar, but the majority of candidates could tell us that the screening gave parents the chance to make informed decisions about having a baby. Marks did get lost by the less able candidates who then started describing the option of abortion as they had confused the screening of adults with the screening of an embryo. Our last mark point was rarely seen, as even the more able candidates did not extend their answer to fully answer the question.

Question 5

In part (a) candidates were still in familiar territory and those candidates who had been prepared for this exam using past papers scored well. Responses generally scored 2 or 3 marks in (i). The vast majority of candidates referred to fibrous protein and the triple helix and it was very encouraging to see a reasonable number referring to short, repeated amino acid sequences of glycine or high proline or hydroxyproline content. Candidates also knew that collagen provided the strength in the aorta wall but did not always link the protection from damage with the high pressure of the blood passing through it.

Part (b) was the first of our levels-based questions and it generated a range of responses with very few candidates failing to score zero. The less able candidates simply compared individual bars with each other e.g. young male monkeys have less aortic stiffness than old male monkeys, young female monkeys have less aortic stiffness than old female monkeys. The more able candidates could make statements that summarised the information shown in any one graph, which put them into the level 2 bracket. Surprisingly, there were relatively few comments about the error bars or the lack of them; we have asked shorter questions about data with error bars in past series and candidates generally comment on them. Some of those candidates who did comment on the error bars are still linking them to the reliability of the data, when they should have been linking them to the significance of the data. The term reliability is not appropriate in many contexts.

Question 6

Part (b) to this question was poorly done as many candidates just repeated the definition, adding on 'from a high-water potential to a lower one'. We had hoped that they would note the mark allocation and explain each of the three components of the definition i.e., what does free wat er mean, what does partially permeable membrane mean and what does water potential mean. Candidates who did pick up on this gave some excellent explanations of free water and partially permeable membranes. There are still some candidates who are talking about water concentrations when explaining the meaning of water potential, when they should be talking about solute concentration or solute potential.

Part (c) was the second of our levels-based question and a wide range of responses was seen. There were some very detailed and very accurate

explanations for the changes in the water content of the muscle cells but the explanations for the changes in the amino acid content were not so good. Many candidates had missed the hints that we had given them earlier in the question where the MCQs were all about cell transport mechanisms. We saw quite a few suggestions that the amino acid content had to rise so that the crabs would have sufficient protein for reproduction, totally missing the idea that if the data was plotted on the same graph, it was somehow interlinked.

Question 7

Over all, this question was done well. Quite a high proportion of the spec for this paper is about CVD and there have been numerous questions in the past on the various aspects of this topic. Candidates have used the past mark schemes and know what is expected from them in answers to questions about CVD.

Part (a)(ii) scored well, except by the less able candidates who were not completely sure on which drug treated which aspect of CVD.

The October paper had a question on antioxidants, so some excellent answers were seen in (b)(i). Marks were lost in (iii) by candidates who had not read the question properly and wrote about non-dietary risks; several references to smoking were seen. Others lost marks by naming the dietary factor without stating the necessary change needed.

Question 8

This question was more challenging but then it was the last one on the paper and therefore predominantly targeted at the higher grades.

Parts (i) and (ii) in (a) were answered well but candidates definitely found part (iii) more difficult. All our mark points were seen but the most frequently awarded was the last one, as candidates knew that a hydrophobic R group would be repelled by water.

The calculation in (b) was incorrectly done by many for a variety of reasons. Some candidates did a ratio between the number of babies born with sickle cell disease and the total number of babies. Some expressed the ratio the wrong way round whereas others did not express the ratio with one of the values as 1.

The first calculation in (c) also saw a range of different answers, with marks being lost because the values were not read from the graph accurately. Part (ii) saw most candidates able to give us the first conclusion on our mark scheme, but fewer candidates commented on the range of saturation, our second mark point. The second calculation was more straightforward, and the mark was only lost by candidates who did not express their answer as a whole number. The final part to (c) saw a variety of answers, with the most frequently awarded point being our third one. Only a minority of candidates used the graph to be awarded the first point about the decrease in binding ability of the haemoglobin to oxygen. Some candidates realised that the red blood cells would get stuck in the capillaries but did not link this to the prevention of blood flow and those candidates who realised that the surface area would be decreased did not link this to the decrease in diffusion of oxygen. Surprisingly, we did not see many candidates scoring the final mark point which actually answered the question by stating the cause of death.

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.
- 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.
- Candidates should consider the questions asked in the early question parts as they are quite often trying to give a clue as to what is expected in the latter question parts.
- Candidates should check the command word for each question before attempting your response. In particular, if the command word is ‘explain, then make sure you have used some science to say why something has happened. Your answer should include terms like: because, therefore, as a result, so. Appendix 7 in the specification lists all the command words and their meanings.
- Candidates should always read through their answers very carefully as it is easy to make some silly mistakes under the exam pressure. They should think about each word used and make sure what they have is actually written is what was meant to be written. This goes for calculations too where it is easy to press the wrong button.

- 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.
- Any information you are given in a question is there for a reason, albeit in a table, a graph, a diagram or in the text of the question, so make sure you use it.

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