edexcel

Examiners' Report/ Principal Examiner Feedback

January 2015

Pearson Edexcel International A Level in Biology (WBI04) Paper 01

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

January 2015
Publications Code IA040380*

Overall Impressions

Each question should be broken into individual components/parts.

Question 1(a)

This question didn't cause too many problems but some candidates lost marks by using an incorrect chemical formulae e.g. P for phosphate.

Question 1(b)

In response to part (b) we saw a number of very detailed accounts of the light-dependent reaction, however only the more able candidates actually tried to put emphasis on the role of the membranes. One misconception that we frequently saw was the idea that the energy needed for phosphorylation of ATP comes directly from the movement of the electrons between the electron carriers.

Question 2

Parts (a) and (b) (i) and (ii) caused very few problems; candidates have a good knowledge of the structure of proteins.

The question on gel electrophoresis (Q02biii) was poorly answered as many candidates only 'spot read' the question and only picked out the reference to gel electrophoresis, not reading to the end of the question and therefore missing the reference to proteins.

Parts (b) (iv) and (c) saw mixed responses. Most candidates knew that antibodies bind to specific antigens and could describe post-transcriptional modification, even though they did not link it to the question actually being asked.

Question 3

Candidates are familiar with global warming but are still making the same mistakes that we see every time we ask about it. Some try and refer to the wavelength of the light and muddle up the short wave and long wave; a reference to ultra violet and infra red is sufficient and probably easier to remember. We saw many vague references to the reflection of light, without a statement suggesting that it is being reflected from the earth's surface and to the warming of the earth, or a reference to surface or atmosphere.

Parts (c) and (d) were more challenging. Failure to read the question carefully cost a number of candidates dearly in (c), as they wrote about the advantage to the caterpillars of being laid two weeks early. Other candidates picked up on the idea that the birds would get more food for 1 mark but did not develop their answer further to make any other relevant points. In response to part (d) we saw a number of responses about reproductive isolation and the passing on of ‘advantageous alleles' to offspring.

Question 4

Poor exam technique cost candidates marks in part (a) as they described the data as a whole without using it to provide evidence for each claim. A number of candidates thought that the hands would be irritated less as the alcohol washing time was less, failing to appreciate that the presented data, or lack of it in this case, had to be used in their response.

Poor expression cost marks in (b). Candidates clearly knew that the presence of error bars, their length and the degree of overlap are linked to reliability, but they failed to state whether these aspects made the data more or less reliable. Many thought that the data in graph 1 was more reliable as there were no error bars and therefore no variation in the data. As seen in a previous series, the fact that the data was a mean was missed so many candidates talked about the lack of repeats in the investigation.

Some interesting responses were seen to part (c); many candidates seemed to think that a hand could be placed under a microscope and the bacteria counted. Other candidates wrote about the antibiotic practical and described discs being soaked in the hand washing products and being placed onto agar. Questions need to be read more carefully and knowledge applied more thoughtfully to the context of the question.

Part (d) did not cause too many problems except to candidates who did not demonstrate a range of procedures. Three marks will not be awarded for: sterilise the equipment, sterilise the gloves and sterilise the work surface.

Question 5

The usual errors were made in describing the graph in part (a): not quoting time intervals, not reading the time values from the graph correctly or exactly. Some candidates tried to explain the data, not appreciating the meaning of the command word 'describe'.

Many candidates understood that the liver temperature gives a core temperature reading and knew that it should be taken quickly. However the fact that the environmental conditions change with time, affecting the estimates was not appreciated by many of the candidates.

In part (c) candidates knew that the conditions that the body was kept in would affect the core temperature and the extent of rigor, but not many candidates realised that the actual conditions must have affected these two values differently, hence the discrepancy between the two estimates.

Question 6

Part (a) caused very few problems; most candidates have clearly learned the definition of NPP from previous mark schemes.

As in question 1, incorrect chemical formulae cost marks in part (a) of this question e.g. NO_3^{2-} for nitrates, M for magnesium. It is much safer to name the ion, provided it is clear that it is the ion that is used and not the element. Although candidates knew the role of each ion, very few developed their answer far enough to link the function in with how it would affect NPP.

In an A2 paper, two command words can be used in one question and full marks cannot be achieved if both command words aren't addressed. Many descriptions were given of the data presented in the graph in part (c), but fewer explanations. Those that did give explanations either discussed the temperature only or else gave very low level comments about water being needed for photosynthesis; this is GCSE knowledge and not A2 knowledge where a description of the role of water in photolysis is expected.

Question 7

Poor exam technique was responsible for candidates losing marks in part (a) (i). At A2 we expect candidates to make comparative statements as opposed to writing two separate descriptions.

Vague responses were seen for part (ii). Usually candidates just stated that the DNA coded for viral proteins without trying to specify what these protein could be.

The multiple choice questions scored highly.

From the responses to (b) part (v) it is clear that candidates have a good knowledge and understanding of the role of T helper cells and antigen presentation in the activation of T killer cells, although this was not actually asked for ! At the end of these lengthy descriptions candidates eventually told us that T killer cells release enzymes that lyse the host cells. Very few candidates understand the significance of this in destroying the virus: that once released from the host cells, antibody can actually bind to the particles facilitating phagocytosis enabling the macrophages to destroy the virus.

Question 8

This question also indicated that candidates do not read the questions carefully enough, that they pick out the odd word and then launch into their answers.

Part (b) (i) saw a number of descriptions of the brine shrimp practical. Those that did identify the ecology practical scored reasonably well, but many candidates clearly don't understand when to use random sampling and when to

use systematic sampling. We read many accounts of quadrats being placed randomly in the stream.

Part (ii) was the only question where we saw candidates repeating the stem of the question as their answer, instead of developing their answer further. Many simply stated that the shrimps needed more oxygen than the bloodworms instead of suggesting reasons why.

Grade Boundaries

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

http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE