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Examiners' Report
Principal Examiner Feedback

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Pearson Edexcel Advanced Level GCE
In Biology A (Salters Nuffield)
Paper 01 The Natural Environment and Species Survival

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Question 1(b)(i) Many students scored full marks. Some students lost a mark by not stating it was **rough** endoplastic reticulum.

Question 1(b)(ii) This is an explain question so candidates were required to give reasons. Although most students recognised that the active site changes, some did not link this to the change in the tertiary structure. Many students failed to explain the function of enzymes.

Question 2(a) Most students can state the meaning of endemic, although some confused geographical location with habitat or environment.

Question 2(c) Most students realised that the monkeys would have less food available and therefore that the population size would decrease. However, only a few realised that this would impact on their ability to generate heat or to prevent heat loss.

Question 3(b) Most students recognised that competition was involved but marks were lost by failing to explain that the pathogenic organisms were outcompeted. Some candidates talked about the role of stomach acid, which does not answer the question.

Question 3(c) Many students simply stated that the pH was too low for bacteria to survive without linking this to enzymes denaturing. Less than half recognised adaptations as the explanation why any bacteria could survive.

Question 4(b) There were some excellent responses to this question. In order to achieve the highest marks, students needed to ensure that their answers were specific to the question, e.g. referring to this triplet being different / AAA being changed to GAA and that one amino acid is different, not that the sequence of amino acids was different.

Question 4(c)(i) This question tested students' knowledge of the role of introns and exons in pre-mRNA. Although there were some good answers, it appears to be an area that many students were not familiar with. Some students talked about the degenerative nature of the genetic code.

Question 4(c)(ii) Again, this question demonstrated a lack of knowledge for many students, however there were some excellent accounts of how different exons could be removed / remaining exons could be arranged in a different order. Not all went on to say that the amino acid sequence would be different.

Question 5(a)(i) Students responses demonstrated detailed knowledge of this area of the specification, with many achieving at least 2 marks. Only the better candidates described the acrosome fusing with the cell membrane of the sperm.

Question 5 (b)(iii) Marks were lost here because students did not take account of the command word "deduce". Although they were told that PCBs affect the mitochondria, few students linked this to a reduction in respiration. Most students realised that less energy would be available, but many did not specify that less **ATP** is produced.

Question 6(a) Many students lost marks because they did not identify the specific information required to answer the question. There were many generic answers that merely described the changes in population for each species. Relatively few candidates realised that competition was involved, and those who did often did not say it was between alder, spruce and hemlock, or what was being competed for. Nutrients was suggested several times. A small number of candidates were not able to read the information from the graphs accurately.

Question 6(b) Many students were able to give a detailed account of soil formation. The most common errors were to describe the development of "a basic soil" without referring to humus or organic matter and to say the soil becomes richer over time, rather than saying it is deeper or can retain more water.

Question 6(c) Marks were lost because students did not make use of the information in the stem of the question. Most students were able to explain why plants need nitrates, but few seemed to realise that it is the bacteria in the root nodules of lupin that can convert atmospheric nitrogen to nitrates.

Question 7(b)(ii) This question concerned a fieldwork investigation. Students were asked to apply their practical experience to a novel situation. Many students lost marks by describing the investigation they have carried out rather than answering the question. Most students used a quadrat and made an attempt to control the abiotic variables. It is not enough to simply state that a statistical test will be carried out, it must be a named test.

Question 7(c) This question required students to link data they were given to the investigation. Most realised that the difference in light would be a key factor in determining the number of species and correctly linked this to photosynthesis, but a few simply said they would have to compete for light. A few stated that pH 5 was not suitable without saying it was acidic or failed to realise that the difference in moisture content was too small to affect the results. By far the biggest problem was describing the differences and not relating them to species number, i.e. not answering the question.

Question 8(a) Students clearly knew this section of the specification and there were some very good answers. A small number thought that individuals of different species were bred together.

Question 8 (b)(ii) This was a levels-based question. In order to achieve levels 2 or 3, students had to make use of all the data they are given, linking the information on habitat loss with that on conservation. There were a range of answers. Many students were able to organise the information given into a coherent argument, but only those students who supported their arguments with further biological knowledge were able to achieve level 3.

Question 9(a) Many students had good knowledge of the structure of HIV and were able to compare it to the Ebola virus, but some students lost marks because they only gave similarities. Full marks could only be achieved in a "compare and contrast" question if at least one similarity and one difference were given.

Question 9(b)(ii) This question proved challenging for many students although some gave excellent answers achieving full marks. It is important that students read the questions carefully and ensure that their answers are specific. The most common errors were to write about T cells (rather than T helper cells) and to describe B cells

as making antibodies (rather than differentiating into plasma cells which make antibodies). Many students said the secondary response would be more rapid, without referring to antibodies.

Question 9(c)(i) This was not a high scoring question because many students described drug trials rather than vaccine trials, thus not answering the question. Most students did recognise that the first stage is to use healthy volunteers to test for side effects.

Question 9(c)(ii) Most students realised the key point here – that the disease was far more dangerous than the risk of a not fully-tested vaccine and were able to explain it clearly.

Question 10 (b)(ii) Students lost marks on this question by not giving sufficient detail, e.g. referring to enzymes without explaining they were secreted and not identifying the polysaccharide in stems as starch or cellulose. At this level, generic answers will not achieve many marks.

Question 10(c) This was a levels-based question which required students to apply their knowledge of a core practical to a new situation. There were many good answers, but a number of students simply described a practical they had carried out on concentration of fertiliser and failed to compare the chemical and biological treatments. Most students recognised the need to control abiotic variables, but not all gave sufficient detail about how to do this.

Overall most students were able to attempt the questions. Marks were lost by failing to read and answer the question properly.

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