AQA

AS LEVEL
BIOLOGY

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Report on the Examination

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General Introduction to the November Series

This has been an unusual exam series in many ways. Entry patterns have been very different from those normally seen in the summer, and students had a very different experience in preparation for these exams. It is therefore more difficult to make meaningful comparisons between the range of student responses seen in this series and those seen in a normal summer series. The smaller entry also means that there is less evidence available for examiners to comment on.

In this report, senior examiners summarise the performance of students in this series in a way that is as helpful as possible to teachers preparing future cohorts while taking into account the unusual circumstances and limited evidence available.

Overview of Entry

The much smaller entry in this series resulted in a wide range of responses. There were fewer responses at the very top and very bottom of the mark range compared with the summer series.

Comments on Individual Questions

Many of the questions were attempted in full and it was pleasing that very few questions were not attempted.

Question 1. It may be worth noting that for question 1.1 students could use a letter once, more than once or not at all as stated in the question stem. In question 1.2, it was surprising how few students could gain the one mark for calculating the number of carbon, hydrogen and oxygen atoms in raffinose. Many students were able to score at least one mark in question 1.3 although few could clearly and correctly write down the practical steps in order to gain three marks.

Question 2. This question was largely well attempted. In question 2.1, better answers related the hydrophobic and hydrophilic properties of the phospholipid molecules to the water on either side of the cell-surface membrane. Questions 2.2 and 2.3 were largely well answered.

Question 3. Students should be reminded to use the correct biological terminology when describing phagocytosis. Some students wrote of vacuoles rather than vesicles or confused lysosomes with lysozymes. However, it was pleasing that some students could give a clear sequence of events. Many students did not read question 3.2 properly and still named types of pathogens in their answer, which was not creditworthy. It was surprising how many students could not correctly identify the ends of the Y-shape where the antibody binds in question 3.3 or did not refer to the polypeptide chains within the quaternary structure that are held together in question 3.4

Question 4. Question 4.1 produced some very good responses. Better answers showed that students had read the question carefully and so focused their answer on an explanation of the roles of organelles and achieved full marks. The electron micrograph in Figure 3 caused many students difficulty in answering questions 4.2 and 4.3. Some students erroneously concluded that the cell must be in mitosis or meiosis as the nucleus was not present in question 4.2, rather than it was out of view or not stained. Although many students could correctly identify organelle T, many could not also identify organelle S and so failed to gain the mark in question 4.3. The mathematical demands of question 4.5 proved a challenge, but many students were able to achieve at least one

mark. It was pleasing that some did calculate the correct number of cells and write their answer in standard form.

Question 5. This question proved difficult for many students. Although some students were able to score full marks in question 5.1, students should be reminded to give full descriptions and explanations to gain credit as AS level. Some students wrote a basic answer barely creditworthy at GCSE or mixed up the movements of the diaphragm to cause inhalation. Question 5.2 was poorly answered. Many students identified structure L in Figure 5 as a capillary and so failed to gain the mark for this question. Many students correctly realised that animal tissues do not contain starch, although reference to cells or tissues was needed. Students who stated, 'animals do not contain starch' were not awarded this mark. Unfortunately, question 5.4 scored very poorly. Many students completely misunderstood the data in Table 2 and thought burning wood indoors is a significant risk factor for cancer. Many students could not relate probability values to statistical significance and still stated that 'results are significant' or not.

Question 6. Many students oversimplified the answer for question 6.2 stating that an exon codes for a protein. They omitted the detail that it is the base sequence that codes for the amino acid sequence. Question 6.4 was well attempted; many students had a good knowledge of substitution mutations or frameshifts.

Question 7. It is pleasing to see that few students mentioned mitosis for binary fission and could use the graph in Figure 7 and details of a femtogram to answer questions 7.2 and 7.3. Students should be reminded to explain clearly how a factor causes an increase rather than just an effect on the growth in order to get full marks in question 7.4.

Question 8. There was a wide number of graphs attempted in question 8.1 It was pleasing to see students score full marks having drawn a histogram with bars touching and bar width proportionate to range in mass. Many students could also score at least one if not two marks for question 8.2. Although some students did not understand the graph in Figure 9, others could draw two conclusions out of three. Few achieved marking point 3.

Question 9. In questions 9.1 and 9.2, few students appreciated that adding an additional gene from another species would result in one new protein being expressed. However, many realised that this would cause more protein channels to be synthesized and so would increase membrane permeability. Question 9.3 was well attempted with many students appreciating the effect of stomatal density on both gas exchange and transpiration.

Concluding Remarks

It is pleasing to note that many students have a good grip of the specification. However, for some low-demand AO1 marks students should be reminded to give a more detailed answer in order to gain a marking point. The mathematical and practical aspects of the specification were all well attempted with many students able to score some marks even if they got the wrong final answer or if they missed some steps out. Students need to practise using source material, such as electron/light micrographs or diagrams, in order to identify simple labelled structures. Students may also benefit from practising drawing graphs from data and selecting the best graph to draw.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the Results Statistics page of the AQA Website.