



Examiners' Report Principal Examiner Feedback

Summer 2025

Pearson Edexcel International GCSE
in Biology (4WSD2) Unit 2BR

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Overall paper comments

This was the first sitting of this paper and examiners were generally pleased with how candidates accessed the questions. There were many good responses seen across all items in the paper with clear evidence that candidates knew the specification well and could apply their knowledge to the contexts provided. A range of mathematical skills were seen with some candidates demonstrating excellent mathematical ability while others struggled a little with skills such as calculating percentage change or plotting a line graph. In many cases candidates engaged well with the command verbs for questions giving complete explanations where this was needed. However, in some cases candidates did not read the full stem of the question thoroughly and ended up misinterpreting the question and so missed out on achieving marks.

Question 1

This question was about the use of microorganisms in food production, particularly that of *Lactobacillus* in the production of yoghurt.

Q1(a)

The idea of the need to remove bacteria from the milk was well understood by candidates with most responses scoring the mark for this question.

Q1(b)

Candidates found this question challenging. There was frequent confusion seen in responses between a decrease in pH and a decrease in acidity. Many lost the second marking point through misunderstanding the breakdown of proteins, referring to digestion by enzymes rather than the effects of the lactic acid. The third marking point was most often achieved, usually for a description of a change in temperature. Few candidates scored two marks, though many incorrect answers were close to the required points.

Q1(c)

Many candidates achieved good scores on this question asking for identification of three improvements that could be made to a given method. Ideas around using a wider range of temperatures, stated methods for maintaining a constant temperature and increasing incubation time were all seen frequently. Overall, this question was very well answered.

Question 2

This question was about feeding relationships in an Arctic ecosystem. Candidates had to interpret a food web and use their knowledge to identify a food chain with specific features as well as explain the effects of an environmental change on a named species.

Q2(a)

Nearly all candidates scored at least one mark on this question requiring them to identify organisms from a food web which fit the descriptions given. Candidates were most confident identifying the primary consumer and an organism that photosynthesises. Identification of an organisms in the fourth trophic level was more challenging, and this

tended to be the mark lost. Many candidates incorrectly identified the killer whale instead of the seal or sea birds for this response.

Q2(b)

This question was generally done well by most candidates with the majority of responses scoring both marks. Where candidates did score but not gain full credit this was usually for a food chain that did not include the Arctic cod, but did have the correct number of trophic levels. A few cases were seen where candidates had not interpreted the question correctly with some pyramids seen as well as some food webs.

Q2(c)

Candidates performed very well on this question across the board with many excellent responses seen. Many candidates correctly linked loss of habitat and food sources leading to a population decrease. Some gained the third marking point via additional guidance despite incorrect reasoning. Common incorrect answers referred to climate change or fossil fuel use, showing that candidates had not interpreted the question correctly.

Question 3

This question focused on the different components of blood. It asked candidates to identify a specific type of red blood cell as well as discussing the functions of other components of blood.

Q3(a)

Candidates generally did well on this multiple-choice question with around half of responses correctly identifying the phagocyte from the diagrams provided.

Q3(b)(i)

The function of blood plasma was well understood by some candidates although there were mixed responses to this question in general. Many vague responses simply cited "nutrients" without detail, this did not gain marks as a generic umbrella term such as "nutrients" also encompasses incorrect answers to the question. Some listed specific products of digestion or waste products but addressed only one marking point.

Q3(b)(ii)

This question was done well with most candidates scoring at least one mark, this was usually for the identification of an increased number of white blood cells. Where two marks were scored this was generally for linking the idea of increased white blood cell numbers to more being produced by the body. The third marking point was seen less often, although many candidates expressed the idea of white blood cells being needed to "fight the infection" this was too close to the information given in the stem of the question and lacked the specificity to meet the requirements for this particular mark.

Q3(b)(iii)

The function of red blood cells was well understood by the majority of candidates and relatively few responses were seen which failed to score. Most candidates correctly

linked red blood cells, haemoglobin, and oxygen transport. Ideas about respiration were seen in many answers though the fourth marking point was often missed due to no reference to the respiration being aerobic.

Question 4

This question was about human reproduction, candidates needed to know the function of the amniotic fluid as well as the different hormones involved in the menstrual cycle and testosterone.

Q4(a)

This question had mixed responses. Where one mark was scored this was usually for correctly stating the function of amniotic fluid. Correct naming was seen less often, with many candidates giving incorrect responses. Where no marks were scored this was usually due to confusion between the role of the amniotic fluid and the placenta with some responses stating that the fluid contained nutrients for the fetus to absorb.

Q4(b)(i)

Around half of candidates were able to correctly determine which day of the cycle ovulation occurred and give a response within the stated range. Common incorrect responses related to other landmarks on the graph – for example the lowest point in the curve for oestrogen at 17 days or the peak of progesterone at 21 days.

Q4(b)(ii)

This question was very challenging for candidates. The most commonly awarded marks were for how oestrogen and progesterone affect the lining of the uterus, although these were often confused and given the wrong way around. Some candidates attempted to answer in terms of FSH and LH which are not on the double science specification. If correct these responses were given credit but this was rarely the case as it was clear that this topic was not well understood.

Q4(c)

Most candidates were able to give at least one effect of increased testosterone. The most frequently seen ideas were those around increase growth/muscle mass, vocal changes and increased growth of body/facial hair. Many repeated the same marking point in different words (e.g. “taller” and “more muscle”), which limited the marks they could achieve for the question. Others gave unrelated points such as increased aggression, sex drive, or adult traits like baldness. A frequently missed point was specifying body or facial hair rather than just “more hair” meaning that some answers missed the mark due to lack of specificity.

Question 5

This question was about how plants respond to different stimuli – particularly in terms of shoot and root growth. As part of this, candidates needed to read data from a graph and use it in a calculation.

Q5(a)(i)

Candidates found this question challenging. Confusion about B responding to light or phototropism led to many missed marks. It is important that candidates read the information provided in the question and use it to inform their responses. Where candidates did score marks, it was usually for the comparison between the length of the stems on plants A and B. The strongest responses linked this idea to the plant growing faster to find a source of light.

Q5(a)(ii)

This question was answered fairly well with a full range of scores seen. Some candidates used this as an opportunity to demonstrate their thorough understanding of the topic with some very detailed response seen. Many high-scoring responses correctly described auxin movement and elongation on one side. In lower scoring responses there was some confusion seen over root versus shoot tips and between negative geotropism and positive phototropism.

Q5(b)

This question was addressed well by candidates with many correctly naming the growth response.

Q5(c)

This calculation question asked candidates to determine the rate of growth of a root in a given time period by using data provided in the form of a graph. This was generally done well with many candidates scoring full marks. Where a mark was lost this was usually for incorrect reading of the graph, or occasionally for division by the incorrect number of days. Where responses did not score a mark, it appeared that candidates did not know how to approach the problem, some attempts to use the graph were seen but the correct processes were not performed.

Question 6

This question was around the effects of fertiliser on crop yield. There was a more practical focus to this question and candidates had to identify variables, plot data and explain why the results of an experimental model may not be applicable on a larger scale.

Q6(a)

This question asked candidates to identify the independent variable from the investigation given in the question. This was done well by many candidates although there was confusion between independent and dependent variables seen. In some responses candidates had the right idea but simply stated “fertiliser added” without

stating mass, these responses could not be given a mark as there was not enough specificity.

Q6(b)

Candidates did well on this graph drawing question with the vast majority scoring at least one mark. The most commonly awarded score was four out of five marks, in these cases the lost mark was for the scale marking point – either for being too small, with the plotted points failing to cover over half of the grid or because the candidate failed to provide a clear break between zero and the start of the linear scale. Some did not label axes at all although where this mark was lost it was usually for the omission of units in the axis label.

Q6(c)

Most candidates managed to score at least one mark for this question although far fewer managed to gain a second or third mark. Many responses listed abiotic factors controlled in a greenhouse, addressing only the first marking point, or explained that there would be an effect without stating the direction of change inside or outside. It is important that candidates understand that glasshouses are designed to increase yield. Where more marks were scored this was usually due to the idea of the plants outside being potentially affected by pests or disease. Some incorrect ideas about pesticides outside the glasshouse potentially decreasing the yield of crop were seen but these were relatively rare

Question 7

This question looked at the differences between genetic and environmental variation as well as asking candidates to explain the process of natural selection as related to a specific feature of the desert hare allowing it to survive in a hot climate.

Q7(a)(i)

Many candidates could correctly identify the xylem as the tissue that transports water in plants.

Q7(a)(ii)

This three-mark question provided a good degree of challenge with marks seen across the full range available. Many low-scoring responses failed to specify measuring roots, though some gained the third marking point for a plausible length comparison. Many did not state using the same species/type of plant as a way of ensuring genetic similarity, and some suggested growing different plants in the same conditions, which showed a misunderstanding of the question. There were also some excellent responses which addressed all marking points correctly and scored full marks. The strongest of these had very good suggestions for ensuring that the plants were genetically similar such as taking cuttings.

Q7(b)

Candidates addressed this longer answer question well with the full range of marks seen, although responses scoring full marks were much less commonly seen than all

other scores. Among lower scoring responses with many omitted details relating to temperature regulation and instead describing hearing-related functions inappropriate to the adaptation shown. Implausible advantages such as hearing rain were frequent. Even amongst responses which scored highly few candidates achieved the third marking point for variation, and those who did often omitted "genetic" – in questions about natural selection it is key that candidates are specific about variation driving the process being genetic in order to gain credit.

Summary comments

In future series candidates should:

- Make sure that they are fully familiar with all core practicals and key processes listed in the specification. Particularly when it comes to identifying variables in experiments described by the question.
- Understand what each of the command words listed in the specification requires, especially the difference between describe and explain.
- Read through each question carefully and be sure to answer in the context provided and not repeat information already given in the question.
- Ensure that they use key terms precisely and accurately, particularly around the specification points which topics related to genetics. Specificity of key terms is also important and generic terms such as “nutrients” should be avoided where more precise responses can be given.

