Course report 2025

Higher Biology

This report provides information on candidates' performance. Teachers, lecturers and assessors may find it useful when preparing candidates for future assessment. The report is intended to be constructive and informative, and to promote better understanding. You should read the report with the published assessment documents and marking instructions.

We compiled the statistics in this report before we completed the 2025 appeals process.

Grade boundary and statistical information

Statistical information: update on courses

Number of resulted entries in 2024: 7,129

Number of resulted entries in 2025: 7,010

Statistical information: performance of candidates

Distribution of course awards including minimum mark to achieve each grade

Course award	Number of candidates	Percentage	Cumulative percentage	Minimum mark required
A	2,039	29.1	29.1	107
B	1,419	20.2	49.3	91
C	1,395	19.9	69.2	75
D	1,179	16.8	86.0	59
No award	978	14.0	100%	Not applicable

We have not applied rounding to these statistics.

You can read the general commentary on grade boundaries in the appendix.

In this report:

- ‘most’ means greater than or equal to 70%
- ‘many’ means 50% to 69%
- ‘some’ means 25% to 49%
- ‘a few’ means less than 25%

You can find statistical reports on the statistics and information page of our website.

Section 1: comments on the assessment

Question paper 1: multiple choice

Question paper 1 was slightly less demanding than intended. We considered this when setting grade boundaries.

Question paper 2

The overall level of demand of question paper 2 was slightly lower than intended. We considered this when setting grade boundaries.

Assignment

The assignment had the intended level of demand.

Section 2: comments on candidate performance

Overall candidate performance in the question papers improved this year.

Areas that candidates performed well in

Question paper 1: multiple choice

Most candidates performed well in the following questions:

Question 1	organisation of DNA
Question 5	gene transfer
Question 6	pharmacogenetics
Question 7	membrane proteins
Question 9	improving reliability of results
Question 10	external factors and metabolic rate
Question 11	regulation of body temperature
Question 12	comparing results in a table
Question 13	conformers and regulators
Question 14	migration
Question 16	recombinant DNA technology
Question 18	carbon fixation
Question 19	calculating R_f value from a given formula
Question 22	kin selection

Question 23	the bottleneck effect
Question 25	invasive species

Many candidates performed well in the following questions:

Question 4	gel electrophoresis
Question 15	calculating a percentage
Question 17	selectable marker genes
Question 21	calculating how many times greater
Question 24	species diversity

Question paper 2

Most candidates performed well in the following questions:

Question 1(b)(i)	temperatures used in PCR
Question 1(d)	calculating a percentage
Question 1(e)	calculating how many copies are produced in PCR
Question 2(a)(i)	deletion mutations
Question 2(c)	comparing the length of pregnancy and birth mass of beef and dairy cattle
Question 3(b)(i)	making a prediction from a table of results
Question 3(b)(ii)	suggesting why results from a video camera may be inaccurate
Question 3(b)(iii)	comparing distributions in a table of results
Question 4(a)(ii)	using a phylogenetic tree to identify a last common ancestor
Question 4(a)(iv)	using a phylogenetic tree to justify relatedness

Question 6(a)(i)	identifying catabolism
Question 7(a)(ii)	identifying ATP synthase
Question 8(c)	identifying fermentation
Question 10(b)(i)	calculating how many times greater
Question 11(a)(i)	identifying an independent variable
Question 11(a)(iii)	identifying and stating the purpose of a control
Question 11(b)	drawing a line graph
Question 12(a)(ii)	explaining what range bars show
Question 12(c)(i)	advantages of intensive farming

Many candidates performed well in the following questions:

Question1(a)	nucleotide structure
Question 1(b)(ii)	the role of DNA polymerase
Question 1(c)(i)	why ligase is not required for PCR
Question 1(c)(ii)	heat tolerant DNA polymerase
Question 3(a)(i)	isolation barriers in speciation
Question 3(c)	proving speciation has occurred
Question 4(a)(i)	evidence used to construct a phylogenetic tree
Question 4(b)(i)	definition of a genome
Question 7(a)(i)	location of the electron transport chain
Question 7(a)(iii)	role of oxygen in respiration
Question 8(a)(i)	using values to describe changes in a graph

Question 8(a)(ii)	identifying a value in a graph with two vertical axes
Question 8(a)(iii)	calculating a percentage increase
Question 8(b)(ii)	identifying a value from a graph and a table
Question 10(a)(i)	effect of weeds on crop plants
Question 11(a)(ii)	identifying a variable that should be kept constant
Question 11(d)	problems with pesticide use
Question 12(c)(iii)	hysteria
Question 14(a)	co-operative hunting
Question 14(c)	habitat corridors

Assignment

Section 1	Most candidates stated an aim that described the purpose of the investigation.
Section 2	Many candidates gave a relevant account of underlying biology.
Section 3(a)	Many candidates provided a brief summary of the approach used to collect their experimental data.
Section 3(b)	Most candidates included sufficient raw data.
Section 3(c)	Many candidates presented their results in a table.
Section 3(d)	Many candidates included a relevant internet/literature source.
Section 3(e)	Many candidates provided a citation and reference for the internet/literature data.
Section 4	Most candidates successfully drew a graph.
Section 8	Most candidates produced a clear and concise report with an informative title.

Areas that candidates found demanding

Question paper 1: multiple choice

Only some candidates were successful in the following questions:

Question 2	stating how many tRNA molecules would have only one uracil base
Question 3	stating how the validity of an investigation could be improved
Question 8	naming molecules required for glycolysis
Question 20	identifying the feature of field trial design that takes account of variability

Question paper 2

Only some candidates were successful in the following questions:

Question 2(a)(ii)	how a deletion mutation affects protein structure
Question 2(b)	effect of a mutation on muscle growth
Question 3(a)(ii)	importance of isolation barriers in speciation
Question 4(b)(ii)	describing how different proteins can be produced from a single gene
Question 6(c)(ii)	identifying non-competitive inhibition from a rate of reaction versus substrate concentration graph
Question 9(a)(i)	calculating a simple whole number ratio
Question 9(a)(ii)	describing evidence suggesting not all arsenic had been broken down
Question 10(a)(ii)	selective herbicides

Question 10(c)	using knowledge of natural selection to explain an increase in the incidence of herbicide resistance
Question 12(a)(i)	calculating a difference from a graph with range bars
Question 12(b)	variability of the F_2 generation when F_1 hybrids are bred together
Question 13(b)	role of worker bees
Question 13(c)	kin selection
Question 14(b)	making a prediction from a line graph

Few candidates were successful in the following questions:

Question 6(c)(i)	explaining why the rate of an enzyme-controlled reaction stops increasing as substrate concentration increases
Question 7(c)	electron transport chain
Question 8(b)(i)	calculating an average increase
Question 8(d)	reversibility of lactate production in fermentation
Question 11(c)	stating a conclusion from results with a change in the trend
Question 12(c)(ii)	transmission of parasites by direct contact

Assignment

Section 5	Few candidates analysed their results using a valid comparison or calculation.
Section 6	Only some candidates stated a valid conclusion.

Section 3: preparing candidates for future assessment

Question papers

Candidates generally prepare well for the question papers.

Candidates tend to show good knowledge and understanding of areas such as organisation of DNA, gene transfer, pharmacogenetics, PCR, single gene mutations, phylogenetics, membrane proteins, catabolism, regulation of body temperature, migration, recombinant DNA technology, carbon fixation, parasites, kin selection, the bottleneck effect and invasive species.

Candidates can find questions testing alternative RNA splicing, the effect of substrate concentration on enzyme activity in the absence or presence of an inhibitor, the electron transport chain, the reversibility of lactate production in fermentation, selective herbicides and transmission of parasites more difficult.

Teachers and lecturers should ensure that candidates understand the following:

- the effect of single gene mutations on amino acid sequence
- that isolation barriers prevent one population breeding with another
- that organisms of different species cannot interbreed to produce fertile offspring
- that alternative RNA splicing produces different mature transcripts
- that duplication mutations are important in evolution by allowing beneficial mutations in one gene while the other gene is still expressed
- that induced fit reduces activation energy
- that increasing substrate concentration increases reaction rate until all active sites are occupied
- that increasing substrate concentration does not reverse non-competitive inhibition
- the role of electrons, carrier proteins and ATP synthase in the electron transport chain

- that lactate produced in fermentation is converted to pyruvate when oxygen is available
- that weeds compete with crop plants for water, nutrients and space (not simply resources)
- that intensive farming results in overcrowding, increasing the chances of parasites being spread by direct contact
- that worker bees care for relatives to increase survival of shared genes

In skills questions, candidates tend to answer questions on improving the reliability of results, making a prediction from a table, naming the independent variable, identifying and stating the purpose of a control and drawing a line graph well. Most candidates can calculate a percentage and how many times greater.

Many candidates have difficulty with questions that ask them how to improve the validity of an investigation or identify the feature of a field trial that takes account of the variability of the sample. Candidates can find it challenging to calculate an average increase or state a conclusion where there was a change point in the results.

Teachers and lecturers should give candidates practice in these types of questions from SQA past papers and other appropriate sources. Candidates should assess themselves using the SQA past paper marking instructions to ensure that they are answering to the required standard.

Assignment

Candidates generally prepare well for the assignment.

Candidates tend to do well with stating a clear aim, drawing the graph, and producing a report with a clear and concise structure and an informative title that refers to the independent and dependent variables.

The following advice refers to specific sections of the assignment.

Aim

When writing the aim, candidates should refer to the independent and dependent variables, specifying what they are changing and what they are measuring. If they indicate a specific substance or enzyme in the aim, then they need to refer to it in subsequent sections, including the internet/literature source.

Data collection and handling

A brief summary of the approach used to collect experimental data

Candidates should state how they changed the independent variable and name any key chemicals. They should not include volumes, concentrations, or temperatures in the summary, unless they refer to the independent variable. Candidates must describe how they measured the dependent variable, for example a stopwatch to measure the time for a disc to rise or a ruler to measure the height of foam.

Data, including mean/average values, presented in a correctly produced table(s)

The table candidates produce must contain clear headings, units, and correctly calculated averages. If candidates use a chemical for the independent variable, they must name it in the table. The column of average results must have an appropriate heading. This can be a heading overarching the individual results and the averages. Candidates must not construct a pre-populated table in the research stage. They must calculate the averages and write the headings in the report stage.

Data relevant to the aim from an internet/literature source

Candidates should be prepared to cite and reference the internet/literature source correctly. Candidates should not give the reference alongside the data. This is not appropriate at Higher level. Candidates should cite the data and provide a full reference (including date accessed) at the end of the report.

Candidates should provide a statement describing the relevance of the internet/literature data, as it is not always obvious.

Analysis

When analysing the results with a comparison or calculation, candidates should state the values of the independent variable between which they have made the calculation or comparison. In many cases, candidates achieve the mark by doing an appropriate calculation, but they should also make a statement linking the results of the calculation to the aim.

If candidates give a comparison, they should compare the data from both sources between the values of the independent variable that the two sources have in common. If the independent variable is discrete, candidates should compare the common values, for example, the sugars that were common to both sources.

Conclusion

Teachers and lecturers should remind candidates that they should refer to the aim when stating their conclusion. They should state a conclusion that relates clearly to the aim and is supported by both sets of data. Candidates should state a concise conclusion that relates to the aim and not provide an expanded description of the results. Teachers and lecturers should prepare candidates to state a conclusion from results where there is a change in the trend as, in many cases, either the experimental or internet/literature results show this. If the independent variable is discrete, candidates should rank the results for both sources of data.

Evaluation

In the evaluation section, candidates should provide justifications for evaluative statements relating to evaluative procedures. For example, if a candidate states that temperature should be controlled with a water bath, they should state why this is important. Candidates should be prepared to correctly use the terms ‘validity’ and ‘reliability’. If candidates find this difficult, they should avoid using these terms. When

referring to the reliability of their own experimental results, candidates should refer to variability or concordance in values.

Teachers and lecturers should make sure candidates know not to evaluate the robustness of the internet/literature source as this will not gain them any marks.

Structure

Candidates should include a heading that refers to both the independent and dependent variables.

The materials on the Understanding Standards website are a useful resource to prepare for the assignment. Candidates can use these with the SQA marking instructions in the Higher Biology Assignment Assessment Task.

Appendix: general commentary on grade boundaries

Our main aim when setting grade boundaries is to be fair to candidates across all subjects and levels and to maintain comparable standards across the years, even as arrangements evolve and change.

For most National Courses, we aim to set examinations and other external assessments and create marking instructions that allow:

- a competent candidate to score a minimum of 50% of the available marks (the notional grade C boundary)
- a well-prepared, very competent candidate to score at least 70% of the available marks (the notional grade A boundary)

It is very challenging to get the standard on target every year, in every subject, at every level. Therefore, we hold a grade boundary meeting for each course to bring together all the information available (statistical and qualitative) and to make final decisions on grade boundaries based on this information. Members of our Executive Management Team normally chair these meetings.

Principal assessors utilise their subject expertise to evaluate the performance of the assessment and propose suitable grade boundaries based on the full range of evidence. We can adjust the grade boundaries as a result of the discussion at these meetings. This allows the pass rate to be unaffected in circumstances where there is evidence that the question paper or other assessment has been more, or less, difficult than usual.

- The grade boundaries can be adjusted downwards if there is evidence that the question paper or other assessment has been more difficult than usual.
- The grade boundaries can be adjusted upwards if there is evidence that the question paper or other assessment has been less difficult than usual.
- Where levels of difficulty are comparable to previous years, similar grade boundaries are maintained.

Every year, we evaluate the performance of our assessments in a fair way, while ensuring standards are maintained so that our qualifications remain credible. To do this, we measure evidence of candidates' knowledge and skills against the national standard.

For full details of the approach, please refer to the Awarding and Grading for National Courses Policy.