Course Report 2017

Subject	Biology
Level	National 5

Section 1: Comments on the Assessment

Summary of the Course assessment

Component 1 — question paper

This component of the assessment performed as expected. However, some questions proved slightly more challenging than initially intended. This was taken into account when setting grade boundaries.

Markers commented that most candidates were able to attempt all questions and they felt that there was a good balance of accessible questions as well as a number which presented a challenge for the more able candidates.

The paper was constructed to give a good balance of marks across the course, and included opportunities for candidates to display a range of skills as well as demonstrate and apply their knowledge and understanding.

As in previous years, there was evidence that some candidates are not reading the questions carefully enough, and this leads to incorrect or partially correct answers.

Candidates continue to confuse 'describe' and 'explain', which results in them failing to express a detailed answer appropriate to the question.

Component 2 — assignment

This component of the assessment performed similarly to last year.

Markers commented that many centres appeared to have prepared their candidates well for the assignment; this may be due to centres becoming more confident in what is required. However, there continues to be a large variation in the level of support given to candidates. Candidates who worked their way systematically through the Instructions to Candidates performed well.

Some areas of the assignment continue to be rather challenging for some candidates, and centres are encouraged to concentrate on these areas with a view to improving them.

A wide selection of topics were presented in the assignment. Centres need to be active in guiding their candidates away from topics that will not allow them to access the full range of marks available.

Underlying biology described in the assignment should be at National 5 level, and the data chosen to be processed should not be so complex that it cannot be accurately handled.

Section 2: Comments on candidate performance

Areas in which candidates performed well

Component 1 — question paper

Section 1 (Objective Test)

Question 3	Most candidates were able to identify the correct order of the stages involved in genetic engineering.
Question 7	Most candidates could identify increasing levels of organisation in a multicellular organism.
Question 9	Most candidates could select the correct information about the gametes produced by the anther.
Question 12	Most candidates could identify the process which moves food along the digestive system.
Question 15	Most candidates showed an understanding of the term 'predation'.
Question 16	Most candidates could identify a factor causing energy loss in a food chain.
Question 17	Most candidates could identify the producer from a pyramid of numbers.
Question 19	Most candidates demonstrated an understanding of the types of competition.
Question 20	Most candidates could use a biological key to identify an unknown organism.

Section 2

Question 1(a)(i)	Most candidates were able to choose a part of a cell and identify its function.
Question 1(a)(ii)	Most candidates showed that they understood the term 'osmosis' as a form of diffusion involving water movement.
Question 1(b)	Most candidates could state that the cell wall prevents a plant cell from bursting.
Question 2(a)(i)	Most candidates could identify the third stage of cell division from a given list.
Question 2(a)(ii)	Most candidates could identify spindle fibres from a diagram.
Question 3(c)	Most candidates could identify that the molecule carrying the complementary code from DNA is mRNA.
Question 4(c)	Most candidates were able to state what the effect would be if the pH was changed in the experiment described.

Question 6(a)	Most candidates could choose the correct options regarding variation and showed understanding of the term 'heterozygous'.
Question 6(b)(i)	Most candidates could identify testes as producing sperm.
Question 9(a)	Most candidates could state that the cerebellum controls balance.
Question 10(a)(i)	Most candidates could state that insulin is produced by the pancreas.
Question 10(b)	Most candidates could select the appropriate information from the table.
Question 11(b)	Most candidates could read the figures from the graph and calculate the difference between the yields.
Question 11(d)	Most candidates could identify an alternative to genetic engineering in crops.
Question 12(a)	Most candidates demonstrated that they understood the term 'niche'.
Question 14(a)	Most candidates demonstrated that they understood that nitrites are converted into nitrates and the involvement of nitrifying bacteria in the nitrogen cycle.
Question 15(a)(ii)	Most candidates were able to calculate an average.

Component 2 — assignment

Section 1	Most candidates were able to state an appropriate aim.
Section 2	Most candidates could give a suitable application and state its effect on society or the environment.
Section 4	Most candidates could select relevant information from their sources.
Section 5(a)	Most candidates could present their data/information in an appropriate format.
Section 8(a)	Most candidates presented a report with good structure and used appropriate headings.
Section 8(b)	Most candidates were able to provide suitable references.
Section 8(c)	Most candidates presented a report which was clear and concise.

Areas which candidates found demanding

Component 1 — question paper

Section 1 (Objective Test)

Question 1	Some candidates found difficulty in identifying plant cells from simple diagrams.
Question 2	Some candidates found difficulty in identifying the process of active transport from information given in a graph.
Question 5	Many candidates found difficulty in identifying the process in plants which requires sugar and a substance into which sugar is converted.
Question 11	Some candidates found difficulty in identifying the products of digestion which are absorbed into the lacteal.
Question 18	Some candidates found difficulty in calculating a percentage increase.

Section 2

Question 2(b)	Many candidates found difficulty in carrying out the calculation from the given data.
Question 3(b)	Many candidates had difficulty in explaining the way in which DNA differs from person to person.
Question 4(b)	Many candidates found difficulty in forming a conclusion even when the aim was clearly stated.
Question 5(a)(iii)	Many candidates were unable to explain why peas could not respire at 60°C. A large number of candidates stated, incorrectly, that enzymes are denatured at temperatures above the optimum.
Question 5(a)(iv)	Many candidates could not describe the purpose of controls in the given experimental set up.
Question 5(b)	Some candidates were unable to identify substances produced in the fermentation pathway.
Question 6(b)(ii)	Many candidates were unable to describe fully the process of fertilisation.
Question 7(c)	Many candidates found difficulty in applying their knowledge of exchange surfaces to the given situation.
Question 8(b)(i)	Many candidates were unable to suggest why fewer stomata can be advantageous to a plant.
Question 8(b)(ii)	Some candidates found difficulty in selecting the environmental condition to which the plant was adapted.

Question 9(b)	Many candidates did not read the question carefully enough and used the space to write everything they knew about neurons and nerve pathways.
Question 10(a)(ii)	Most candidates were unable to express coherently the link through respiration between diabetes and extreme tiredness.
Question 10(c)	Many candidates found difficulty in identifying that it is receptors which are found on target tissues.
Question 11(a)	Many candidates found difficulty in describing how the reliability of results in the given situation could be improved. Too many gave generic answers.
Question 11(c)	Many candidates found difficulty in identifying a variable to keep constant in the given situation. Too many gave generic answers.
Question 12(b)	Some candidates found difficulty in naming the process by which new alleles are produced.
Question 12(c)	Many candidates were unable to identify the feature of offspring produced by two different species.
Question 13	Many candidates found difficulty in identifying that the second statement was false, and the underlined word should be replaced with 'ecological'.
Question 14(b)(i)	Many candidates found difficulty in naming the type of organism which absorbs nitrates from the soil.
Question 14(b)(ii)	Many candidates were unable to identify another microorganism which breaks down waste.
Question 15(a)(i)	Many candidates found difficulty in describing evidence from two sources to support a statement.

Component 2 — assignment

Section 5(b)	Many candidates found difficulty in processing their raw data accurately. This was sometimes due to selecting data which was too complex and beyond the skill of the candidate to successfully handle. At other times, this was simply due to carelessness on the candidate's behalf.
Section 5(c)	Many candidates found difficulty in labelling their processed data correctly. This was sometimes due to the complexity of the data. At other times, it was due to careless errors in labelling, eg the incorrect copying of the axis label of a graph, or units omitted.
Section 5(d)	Many candidates found difficulty in making a suitable comparison between their chosen pieces of data/information, or failed to state that no comparison was possible and provide the reason for this. A significant number of candidates failed to attempt this section.

Section 6   Many candidates found difficulty in drawing a valid conclusion which was related to the stated aim and supported by evidence in their report.

Section 3: Advice for the preparation of future candidates

Due to the removal of units from the National 5 Biology Course, and as a result of feedback from stakeholders, the mandatory course content has been reviewed. Key areas have been rearranged to give a more coherent course, and certain areas of content have been removed. Centres must ensure that they are using the revised National 5 Biology Course Specification for session 2017–18 onwards.

The Course Specification explains the overall structure of the National 5 Biology Course, including its purpose and aims and information on the skills, knowledge and understanding that will be developed. Course support notes are provided as an appendix to the document; these provide further detail on the depth of knowledge required for each key area of the course. The key areas **and** the depth of knowledge **can be assessed in the question paper**.

Component 1 — question paper

Due to the removal of units, changes have been made to the structure of the question paper for National 5 Biology for session 2017–18 onwards. Section 1 will increase to 25 marks and Section 2 will increase to 75 marks.

Candidates need to spend time consolidating the mandatory knowledge of the course and develop their understanding of it to the point where they can apply it to new and unfamiliar situations. The course assessment tests the application of knowledge as well as its demonstration.

Candidates should be encouraged to take their time and read all parts of a question thoroughly. There is evidence that some candidates skim over the question, recognise the topic and then give a response within the topic but not related to the actual question.

Candidates continue to find difficulty in understanding the difference between the terms 'describe' and 'explain'. Too many candidates are mixing these terms up and failing to provide the detail required to access the marks. Examples of valid responses to command words are provided in the General Marking Principles within the marking instructions.

Candidates should be given opportunities to practise questions where the responses require explanations or extended pieces of writing, as many struggled to express themselves in these types of questions. Question 9(b) was poorly answered, both in terms of candidates struggling to express their ideas and not reading the question carefully enough to formulate a considered response.

Some candidates struggled with the experimental type questions; for example Question 5 and Question 11. In addition, many simply provided generic responses without considering the actual experiment and circumstances described. Candidates should be encouraged to apply their knowledge and skills to the given situation instead of providing a generic response.

There was an improvement this year in the standard of responses to questions involving calculations, and centres are advised to encourage practice of these. Candidates should be encouraged to review responses to their calculations to check whether their answer is feasible. Some candidates gave responses that were unrealistic.

The use of a ruler in the completion of graphs/charts should be encouraged. The use of a common zero needs to be explained more fully to candidates as it is most often inappropriate for use in a bar graph.

Component 2 — assignment

Due to the removal of the units from the National 5 course, changes have been made to the structure of the assignment. Centres therefore must ensure that they are using the revised National 5 Biology Coursework assessment task document for session 2017–18 onwards. The document includes instructions for candidates which must be issued to candidates at the outset.

The choice of topic for the assignment needs careful consideration. It must be commensurate with National 5 Biology and allow candidates the opportunity to access all the available marks.

An appropriate title is required for the report and this should not be a reiteration of the aim. The title should reflect the content of the report. 'National 5 Assignment' does not constitute a title.

Centres are required to discuss aims with their candidates and give advice on the suitability of the chosen aim before the candidate goes further with their investigation. Centres are advised to steer candidates away from multiple aims as these generally result in candidates failing to achieve the conclusion mark, as they rarely address them all.

There is no longer a requirement for the candidate to state an application related to their aim, nor do they need to state its effect on society/environment. This will allow a greater choice for candidates.

Candidates are now required to carry out a practical experiment or fieldwork to generate data which they will use in the report stage of the assignment. Conditions for assessment are provided in the coursework assessment task document.

Candidates often fail to gain marks in the sections involving graph drawing, comparison of data and drawing conclusions. Therefore, centres are encouraged to practise these skills outwith the context of the assignment to build confidence.

There is no word count. However, candidates should be reminded that the reports should be clear and concise. Excessively short reports may be self-penalising due to lack of content; overly wordy reports may lose the concise mark.

Centres should note that candidates must be given a maximum of 1 hour and 30 minutes to produce their report. The report stage of the assignment must be conducted under a high degree of supervision and control. This may be completed in one session or over more sessions; candidates' work must be retained and stored securely between sessions. Giving feedback to candidates is not permitted. Marking by centre staff and redrafting by candidates is not permitted.

Whilst it was pleasing to see that the conditions of assessment for coursework were adhered to in the majority of centres, there were still a number of cases where this was not the case. SQA's criteria on assessment conditions are published clearly on our website and in course materials and must be adhered to. SQA takes very seriously its obligation to ensure fairness and equity for all candidates in all qualifications through consistent application of assessment conditions and investigates all cases alerted to us where conditions may not have been met.

Grade Boundary and Statistical information: (Completed by SQA)

Statistical information: update on Courses

Number of resulted entries in 2016	21211

Number of resulted entries in 2017	21417

Statistical information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark -				
A	27.4%	27.4%	5874	68
B	22.8%	50.2%	4886	58
C	21.1%	71.3%	4517	49
D	10.4%	81.7%	2218	44
No award	18.3%	-	3922	-

General commentary on grade boundaries

♦ While SQA aims to set examinations and create marking instructions which will allow a competent candidate to score a minimum of 50% of the available marks (the notional C boundary) and a well prepared, very competent candidate to score at least 70% of the available marks (the notional A boundary), it is very challenging to get the standard on target every year, in every subject at every level.

♦ Each year, SQA therefore holds a grade boundary meeting for each subject at each level where it brings together all the information available (statistical and judgemental). The Principal Assessor and SQA Qualifications Manager meet with the relevant SQA Business Manager and Statistician to discuss the evidence and make decisions. The meetings are chaired by members of the management team at SQA.

♦ The grade boundaries can be adjusted downwards if there is evidence that the exam is more challenging than usual, allowing the pass rate to be unaffected by this circumstance.

♦ The grade boundaries can be adjusted upwards if there is evidence that the exam is less challenging than usual, allowing the pass rate to be unaffected by this circumstance.

♦ Where standards are comparable to previous years, similar grade boundaries are maintained.

♦ An exam paper at a particular level in a subject in one year tends to have a marginally different set of grade boundaries from exam papers in that subject at that level in other years. This is because the particular questions, and the mix of questions, are different. This is also the case for exams set in centres. If SQA has already altered a boundary in a particular year in, say, Higher Chemistry, this does not mean that centres should necessarily alter boundaries in their prelim exam in Higher Chemistry. The two are not that closely related, as they do not contain identical questions.

♦ SQA's main aim is to be fair to candidates across all subjects and all levels and maintain comparable standards across the years, even as arrangements evolve and change.