2015 NCEA Assessment Report

Biology Level 3 91603, 91605, 91606

Part A: Commentary

Comment on the overall response of candidates to 2015 examinations for all achievement standards covered by this report. Candidates who had a good understanding of the key biological terminology and concepts were able to interpret and answer the questions to at least an achieved level. Candidates who read the stem of the question were better able to decipher information and plan their answers. Candidates who wrote clear and concise answers did better than that candidates who wrote long answers which were unrelated to the context of the question. Candidates should be able to apply their biological knowledge in new, unfamiliar contexts. They need to be able to read and interpret biological information in a variety of ways to explain, support and justify their answers.

Part B: Report on standards

1. Assessment Report for 91603: Demonstrate understanding of the responses of plants and animals to their external environment

Achieved	Candidates who were assessed as Achieved commonly: • defined basic terms • described the processes involved and identified key adaptive advantages for the responses to the environment.
Not Achieved	Candidates who were assessed as Not Achieved commonly: • rearranged the terms in the question with no attempt to answer the question • lacked basic understanding of the terms • wrote incorrect information that did not relate to the question • incorrectly stated that the animal behavioural responses were tropisms • left questions out completely • were unable to identify types of behaviours.
Achieved with Merit	Candidates who were assessed as Achieved with Merit commonly: • used the resource material and key biological terms to explain the adaptive advantages of the behaviours • linked the information in the question to a behaviour or relationship • explained the adaptive advantages that applied to the given example.
Achieved with Excellence	Candidates who were assessed as Achieved with Excellence commonly: • wrote concise answers, linking ideas from the resource material and their knowledge of Biology • attempted each part of the question logically • linked the responses, behaviours and outcomes with genetic diversity and 'survival of the fittest'.
Standard specific comments	Interspecific competition was not attempted well. Many candidates failed to mention the competition between birds despite being given this information.

2. Assessment Report for 91605: Demonstrate understanding of evolutionary processes leading to speciation

Achieved	Candidates who were assessed as Achieved commonly: • used the bullet points as guides to demonstrate understanding of evolutionary processes and speciation • correctly described the biological concepts • recognised and described trends from graphs • used correct biological terms in their answers (non-disjunction, polyploidy) • described convergent and divergent evolution, types of natural selection and causes of polyploidy.
Not Achieved	Candidates who were assessed as Not Achieved commonly: • left some questions out completely • wrote information that did not relate to the question • were unable to interpret graphical information • did not define key terms, or gave inaccurate definitions, e.g. natural selection acting on alleles rather than phenotypes • did not use biological terms or phrases accurately.
Achieved with Merit	Candidates who were assessed as Achieved with Merit commonly: • linked the information in the resource material to a biological concept • interpreted and articulated the information from the graph • explained divergent/convergent evolution, its cause and the type of selection pressure • gave more extended answers that covered the bullet points while using resource material • explained the impact of natural selection on allele frequencies • used appropriate terminology when explaining the outcomes of polyploidy.
Achieved with Excellence	Candidates who were assessed as Achieved with Excellence commonly: • linked the biological context to the information in the resource material, including at least one example • identified the possible consequences of the types of interactions between organisms (e.g. leading to speciation) and gave reasons to support this • discussed how a named feature could lead to niche differentiation and speciation following a polyploidy event • wrote coherent, fluent and confident answers that covered all of the bullet points • applied their knowledge in novel situations, using supporting resource material to support their answer.
Standard specific comments	If candidates defined key terms in each question they were able to achieve. Candidates must use the resource material. For example, there is no point referring to dolphin and shark fins when the resource material is about land lobsters and Metrosideros trees. Most candidates, at all levels, were unable to define or explain key concepts of natural selection, especially in terms of a change in allele frequency over time. A significant number of candidates found the polyploidy question difficult to explain. Many candidates did not use ‘selection pressure’ to explain how evolutionary patterns could arise. There was confusion between analogous and homologous structures. A number of candidates incorrectly identified ‘competition’ as a type of natural selection.

3. Assessment Report for 91606: Demonstrate understanding of trends in human evolution

Achieved	Candidates who were assessed as Achieved commonly: • described the difference between quadrupedalism and bipedalism • identified key skeletal changes associated with bipedalism • identified how the skeletal change gives evidence for the change to bipedalism • identified tool cultures and linked them to the correct hominin species • gave an effective use for tools and/or fire • recognised that hunter-gatherers were nomadic and early farmers increasingly settled • identified one advantage or one disadvantage of the early farming lifestyle.
Not Achieved	Candidates who were assessed as Not Achieved commonly: • failed to identify key changes to the skeletal feature and/or descriptions on how that change gives evidence for the change to bipedalism • were unable to arrange tool cultures • did not recognise the tool cultures nor link them to the correct hominin • did not identify H. erectus as the first hominin known to use fire • did not provide a clear description of the lifestyle of a hunter-gatherer AND an early farmer.
Achieved with Merit	Candidates who were assessed as Achieved with Merit commonly: • explained the significance of skeletal adaptations for bipedalism • explained trends in the development of hominin tool cultures and related the trends to cultural evolution • explained how the development of tool cultures and the use of fire improved the diet of the more recent hominins • identified and explained a range of cultural trends associated with the change to a farming lifestyle.
Achieved with Excellence	Candidates who were assessed as Achieved with Excellence commonly: • linked their answers back to the stem of the question • linked specific skeletal changes with specific evolutionary advantages • identified that change in hominins diet affected the changes in skull and muscle features which led to an increase in cranial vault • discussed the likely effects that fire AND/OR the use and development of tools had on the biological evolution of the hominins with respect to the development of language, increased cranial capacity or smaller molars • discussed the advantages and disadvantages of the change to farming lifestyle (e.g. linked surplus food to specialisation and trade and linked these to communication or linked dependency on farming and loss of hunting skills to the devastating effects of crop failure) • identified and discussed the cultural trend of selective breeding in farming practice.
Standard specific comments	Overall, it was very clear that many candidates had an excellent understanding of the content of this standard but it is important that candidates integrate this knowledge into what is required in the stem of the question. For example, when asked to link the skeletal changes to the evolution of the hominins, many candidates gave an excellent account of the significance of bipedalism but did not link these to specific skeletal changes. Many students linked the function of the S shape spine to that of a ‘spring’ rather than of a shock absorber. Many students incorrectly stated that apes have no valgus angle in the femur. Some students explained the cultural trends from a Lamarckian point of view (e.g. communicating led to an increase in brain size or similar).