



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

Scholarship, 2006

Science

Assessment Report

General Comments: Key messages about candidate performance in the 2006 examination.

The standard of work presented by the candidates gaining scholarship continues to be very pleasing. There was evidence of many candidates being well prepared across the whole paper. 3.1% of the Level 3 Science cohort gained a scholarship pass, and 0.44% gained an outstanding pass. These were similar statistics to 2005.

Successful candidates:

- carefully read and understand the supplied passages, diagrams and photographs
- understood the questions
- drew on knowledge from all aspects of the Level 3 Science curriculum and realised that understanding Science is about being able to think across the separate disciplines of Biology, Chemistry, Physics, Geology and Astronomy
- applied scientific knowledge to unfamiliar contexts
- showed evidence of scientific thinking
- answered questions in a logical and considered manner
- drew links between key points deduced from the information provided and their existing knowledge, or between aspects of their existing knowledge
- gave evidence of critical thinking in unfamiliar contexts
- drew on skills required to design investigations
- planned their time well so that all questions were attempted and answers completed.

Specific Comments: Candidates who achieved outstanding scholarship most commonly demonstrated the following skills and / or knowledge.

- maintained a consistently high standard over all the questions
- exhibited the skills required by each question
- used knowledge from the Level 3 Science curriculum effectively and precisely
- showed a deeper understanding of aspects of Level 3 knowledge beyond that which is required for Level 3
- gave evidence of extra scientific thought, such as bringing in relevant knowledge from other disciplines in an answer
- gave original interpretations and additional perspectives to the material provided
- recognised factors important in the integrated context being considered
- presented well developed arguments
- justified the manipulation of variables in experimental design
- showed evidence of original and / or critical thinking in unexpected contexts.

Specific ways in which candidates were able to demonstrate these abilities were as follows:

- gave a precise and complete description of the different forms of radiation and their penetrating ability and effects of ingestion increasing ionisation
- understood the implications of different point mutations beyond the level required for Level 3, eg amino acids must be in the correct sequence so that the protein can fold correctly and therefore function properly
- provided original interpretations and points of view about the issue of storing babies' blood samples such as the lack of genetic variability in small isolated communities
- understood and articulated the role of water in subduction and applied this to an unfamiliar context and hypothesised how the subducting plate caused slow earthquakes
- showed evidence of original thought in discussing the possibility of life in a non-polar fluid, such as the possibility of a unique chemistry
- were highly competent at justifying the manipulation of many variables in an experimental situation

- enhanced answers by adding additional comments such as the need not only for multiple measurements of decibel level but also the need to monitor variations in background noise such as caused by reflection off the walls.

Specific Comments: Candidates who achieved scholarship most commonly demonstrated the following skills and / or knowledge:

- gave a complete description of the different forms of radiation and their penetrating ability.
- understood the implications of different point mutations - for example, could link all the stages from a change in a base with the functioning of a protein.
- had mature interpretations and points of view about the issue of storing babies' blood samples such as the need for large amounts of data to determine the prevalence of particular genetic diseases
- understood the role of water in subduction and applied this to an unfamiliar context by suggesting how the Pacific plate subducted under the Australian plate to cause slow earthquakes.
- showed evidence of critical thinking in discussing the possibility of life in a non-polar fluid such the possibility of the use of more non-polar compounds.
- competently justified the manipulation of many variables in an experimental situation.
- enhanced answers by adding additional comments such as the need not only for multiple measurements of decibel level but also the need to monitor variations in background noise.