

Assessment Report

New Zealand Scholarship Physics 2018

Standard 93103

Part A: Commentary

Most candidates made a serious attempt at this examination. The performance of candidates was more even across all questions compared to recent years.

There was substantial evidence that candidates had ample time to complete the examination. However, candidates are once again strongly advised to spend a small amount of time at the beginning of the examination reading through the entire paper to help ensure they answer every question in a succinct, logical fashion. Candidates achieving Scholarship were well prepared and had an adequate grasp of the physics required at this level.

Once again candidates who gained Scholarship with Outstanding Performance found the paper accessible. Their approach to solving the problems presented was extremely impressive. They showed significant physical insight across all areas of the examination.

Candidates need to be aware of the requirements of Scholarship Physics and especially the assessment specifications to ensure they can respond to all questions. For a candidate to be successful at this level they need to have a very extensive understanding of the physics content at Level 3. It appears that many students are not exposed to this range of content resulting in questions or parts of questions not being attempted by some candidates.

Candidates are also advised to use diagrams as a useful way to communicate complex ideas. Few candidates made use of this strategy.

Part B: Report on performance standard

Candidates who were awarded Scholarship with **Outstanding Performance** commonly:

- applied a range of mathematical skills in different situations
- explained their reasoning when solving mathematical problems
- gave precise but complete text-based answers to problems utilising appropriate physics concepts
- interpreted their answers to extract the physical significance of mathematical results
- exhibited no significant knowledge gaps and were able to attempt the entire paper
- correctly applied more than one physics concept to solve a problem
- showed a deep understanding of the concepts being tested
- had a very good understanding of conservation laws
- understood the effect of mass on SHM. (both springs and pendulum-like systems)
- gave a detailed explanation in terms of energy, voltage, charge and capacitance the effect of adding/ removing a dielectric from a capacitor

Candidates who were awarded **Scholarship** commonly:

- provided reasonable attempts at all sections of the paper, with no clear knowledge gaps
- possessed sound mathematical ability
- correctly applied fundamental physics concepts, such as conservation laws, to solving problems

- provided written explanations to problems that consisted of clear factual statements based on sound understanding of physics concepts
- described the emission spectra of the hydrogen atom in detail
- understood the function of a dielectric in a capacitor and the effect on the capacitor voltage when a dielectric was added
- recognised the effect of a reflected wave phase change on interference patterns
- stated the conditions for simple harmonic motion and completed calculations to evaluate whether these were valid in a given situation
- completed simultaneous circuit calculations to determine unknown quantities
- correctly explained energy changes when a dielectric is removed from a capacitor.

Other candidates

Candidates who were **not** awarded Scholarship commonly:

- were not able to answer all sections of the paper, leaving substantial parts of questions or entire questions blank
- could not apply the mathematical skills required to answer questions
- did not provide clear explanations, and used explanations that were not based on fundamental concepts
- incorrectly applied fundamental concepts, or were unable to identify the correct concept to use
- lacked the foundational knowledge in regard to Simple Harmonic Motion, Interference and Capacitors.

[Subject page](#)

Previous years' reports

[2016 \(PDF, 184KB\)](#)

[2017 \(PDF, 41KB\)](#)

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