

Assessment Report

New Zealand Scholarship Physics 2017

Standard 93103

Part A: Commentary

Successful candidates were well prepared and had a reasonably sound grasp of the physics required at this level. They were able to clearly demonstrate their knowledge and skills. Candidates who gained Scholarship with Outstanding Performance complemented their physics understanding with strong mathematical skills resulting in clear solutions and explanations to the problems set.

A very high percentage of Level 3 students attempt this challenging examination. Many candidates were unable to extend their knowledge to more sophisticated situations than that provided in Level 3. In some cases, their physics understanding was below that of Level 3 and many candidates left significant parts of the examination blank. Many candidates were unable to complete “show that” questions; often being unable to state the required fundamental physics involved and preferring to simply apply a formulaic approach. Candidates need to have a very sound understanding of the physics content at Level 3 to access the problems set at Scholarship level. There was strong evidence that many candidates have not studied all aspects of the required content. Candidates need to be made aware of the requirements of Scholarship Physics and especially the assessment specifications.

Part B: Report on performance standard

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

- provided full and clear explanations of their reasoning on questions where they were asked to demonstrate a particular result (“show that...” questions)
- demonstrated broad and deep knowledge of the curriculum
- were able to correctly identify and apply appropriate strategies to solve difficult physics problems
- knew how to simplify complex problems
- could use insightful ways to solve problems
- possessed excellent mathematical skills.

Candidates who were awarded **Scholarship** commonly:

- provided some explanation of their reasoning on questions where they were asked to demonstrate a particular result (“show that...” questions)
- demonstrated broad knowledge of the curriculum
- correctly applied fundamental physics concepts such as conservation laws
- were familiar with the correct treatment of vector-valued quantities
- possessed sound mathematical skills.

Other candidates

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

- showed large knowledge gaps, leaving entire questions not attempted
- did not explain their reasoning on questions where they were asked to demonstrate a particular result (“show that...” questions)
- were unable to apply fundamental physics concepts such as conservation laws
- were unable to apply fundamental physics concepts in an unfamiliar situation
- made mathematical errors on questions involving numbers with exponents
- were unable to correctly analyse problems in two or more dimensions
- often presented results that were physically unrealistic
- understood only the basics of the Doppler Effect
- did not understand the energy relationships involving springs and potential energy
- did not know how to use radian measure
- did not have a clear understanding of simple LCR circuits
- did not know how and when to use components.

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Previous years' reports

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