Scholarship

2010 Assessment Report

Physics

COMMENTARY

Most candidates made a serious attempt at this examination. There was evidence that candidates had ample time to complete the examination. However, there was considerable evidence that many candidates did not carefully read all parts of the questions. Candidates are 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. Successful candidates clearly had appropriate knowledge of physics.

SCHOLARSHIP WITH OUTSTANDING PERFORMANCE

Candidates who were awarded Scholarship with Outstanding Performance typically:

- demonstrated all the skills shown by candidates awarded Scholarship
- identified the main physical ideas required to solve problems and had the mathematical skills to support their ideas
- succinctly expressed ideas using appropriate language, symbols and terms
- understood that the model they used to solve a problem was based on assumptions and knew the consequences these assumptions had on their solutions
- displayed depth and breadth of conceptual understanding
- showed substantial evidence that they had read around the subject.

SCHOLARSHIP

Candidates who were awarded Scholarship but not Scholarship with Outstanding Performance typically:

- could analyse everyday use of physics ideas and determine their correctness
- showed some evidence of reading around the subject
- displayed a wide range of relevant physical understanding
- understood that phasor diagrams were needed in circuits involving AC
- understood the role of the inductor in a DC circuit
- understood the concept of capacitance
- approached mechanics problems by applying the appropriate laws of Newtonian mechanics.

OTHER CANDIDATES

Candidates who were not awarded Scholarship typically:

- lacked the conceptual and algebraic skills to attempt the modelling questions
- failed to provide the necessary assumptions when answering a question
- made only limited attempts at many questions
- had difficulty with Newtonian mechanics, or with identifying where to begin solving Newtonian mechanics problems
- made guesses that appeared to be based on general intuition about physics, but did not show knowledge of accepted physical theories.

OTHER COMMENTS

Most candidates showed good understanding of:

- the fusion process
- charge separation
- the Doppler effect

- the relationship between kinetic energy and momentum.

Many candidates had difficulty with:

- the concept of binding energy
- phasor relationships in relation to AC circuits
- the role of an inductor in a DC circuit
- the conditions required for conservation of momentum to apply
- the concept of centripetal force.