Scholarship

2009 Assessment Report

Physics

COMMENTARY

Most candidates made a serious attempt at this examination. It was clear that virtually all candidates had ample time available to complete the examination. However a large number of candidates showed poor examination technique in relation to the reading of questions, in particular did not take enough time reading the questions and considering their responses. Many candidates seemed poorly prepared for this examination. Successful candidates clearly had appropriate knowledge of physics.

Most candidates showed good understanding of:

- charge separation and earthing
- the role of electromagnetic force between current-carrying conductors
- the concept of RMS values and resonance in an LCR circuit
- the conditions for interference and diffraction.

Many candidates had difficulty with:

- the fundamental principles of the Bohr atom
- solving for resistance in an LR circuit
- understanding that the maximum range is produced when the angle of release (from ground) is 45 degrees
- understanding the concept of conservation of momentum when related to centre of mass motion
- understanding how the conservation of energy principle is applied to a rolling object
- an understanding of the limitations of the interference formulae
- applying the interference formulae to solve problems
- applying their understanding of forces, motion and energy in a unfamiliar context.

SCHOLARSHIP WITH OUTSTANDING PERFORMANCE

Candidates who were awarded Scholarship with Outstanding Performance typically:

- demonstrated all the skills demonstrated by candidates awarded Scholarship
- clearly identified a detailed rationale for each step when deriving expressions for a physical quantity
- displayed depth and breadth of conceptual understanding
- interpreted an unfamiliar situation in context
- gave more than a superficial response.

SCHOLARSHIP

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

- included relevant diagrams with their answers
- showed clear evidence of mathematical reasoning
- were succinct and relevant in their written responses
- displayed a wide range of relevant physical understanding
- approached mechanics problems by applying the appropriate laws of Newtonian mechanics
- showed a broad knowledge of the curriculum
- coped easily with algebra and manipulating very large or very small numbers.

OTHER CANDIDATES

Candidates who were not awarded Scholarship or Scholarship with Outstanding Performance commonly:

- made only limited attempts at many questions
- did not interpret questions correctly
- made mathematical errors
- had difficulty with Newtonian mechanics, or with identifying where to begin solving Newtonian mechanics problems
- did not understand the Bohr model of the atom
- made guesses that appeared to be based on general intuition about physics, but did not show knowledge of accepted physical theories
- did not answer exactly what was asked, which suggests that they did not read the question carefully.