

Principal Assessor Report 2003

Assessment Panel:

Physics

Qualification area:

**Subject(s) and Level(s)
Included in this report**

Physics Intermediate 2

Statistical information: update

Number of entries in 2002	
Pre appeal	1891

Number of entries in 2003	
Pre appeal	2069

General comments re entry numbers

There has been a modest (9%) increase in the number of candidates entered at this level compared to last year.

Grade boundaries at C, B and A for each subject area included in the report

	Lowest mark out of 100		
Year	A	B	C
2003	70	60	50

General commentary on passmarks and grade boundaries

- While SQA aims to set examinations and create mark schemes which will allow a competent candidate to score a minimum 50% of the available marks (notional passmark) and a very well-prepared, very competent candidate to score at least 70%, it is almost impossible to get the standard absolutely on target every year, in every subject and level
- Each year we therefore hold a passmark meeting for each subject at each level where we bring together all the information available (statistical and judgmental). The Principal Assessor and SQA Qualifications Manager meet with the relevant SQA Business Manager and Statistician to discuss the evidence and make decisions. The meetings are chaired by members of the senior management team at SQA
- We adjust the passmark downwards if there is evidence that we have set a slightly more demanding exam than usual, allowing the pass rate to be unaffected by this circumstance
- We adjust the passmark upwards if there is evidence that we have set a slightly less demanding exam than usual, allowing the pass rate to be unaffected by this circumstance
- Where the standard appears to be very similar to previous years, we maintain similar grade boundaries
- An exam paper at a particular level in a subject in one year tends to have a marginally different set of grade boundaries from exam papers in that subject at that level in other years. This is because the particular questions are different. This is also the case for exams set in centres. And just because SQA has altered a boundary in a particular year in say Higher Chemistry does not mean that centres should necessarily alter boundaries in their pre-exam in Higher Chemistry. The two are not that closely related as they do not contain identical questions
- Our main aim is to be fair to candidates across all subjects and all levels and maintain standards across the years, even as syllabuses evolve and change

Comments on grade boundaries for each subject area

It was felt that the paper was fully accessible to well prepared candidates. The grade boundaries have therefore been set at 50, 60 and 70%. This is one mark higher at each grade than in 2002.

Comments on candidate performance

General comments

There is welcome evidence that a greater proportion of this year's entry was better prepared for the external assessment. This is true at both grade C and at grade A. At the upper level there were some very well written scripts displaying excellent Physics skills. There was a more uniform performance by candidates across different questions compared with previous years.

Areas of external assessment in which candidates performed well

The following multiple choice questions had high facility values: 1, 9, 10, 15 and 19.

In the written part of the paper, responses to the following questions were reasonably good:

- | | |
|--------|----------------------------------|
| Q 21 a | gravitational potential energy |
| Q 24 a | power, voltage and resistance |
| b | series resistance |
| c i | parallel resistance |
| Q 27 | nuclear reactors and heat energy |
| Q 29 | microwave transmission |

Areas of external assessment in which candidates had difficulty

The following multiple choice questions had low facility values: 5, 7, 12, 14 and 16.

In the written part of the paper, the following questions caused difficulty:

- | | |
|--------------|--|
| Q 21 b i, ii | extracting data from a graph |
| Q 22 a iii | calculation of acceleration when two forces act |
| Q 23 a i | calculation of speed through a light gate from given data |
| ii | calculation of speed using the conservation of momentum |
| Q 24 c ii | using a graph to solve a transformer problem |
| Q 25 b ii | calculation of the value of the resistor in series with an LED |
| Q 26 b iii | description of the operation of a transistor |
| Q 28 b | relationship between the angle of incidence and the critical angle |
| Q30 c | knowledge of the equations for energy and dose equivalent |

Recommendations

Feedback to centres

There was a pleasing improvement in the general standard of candidate response this year. There remain, however, areas which continue to cause problems as in previous years. Apart from the specific topics outlined under the heading 'Areas of external assessment in which candidates had difficulty', it is recommended that the following points receive attention:

Units	some candidates are still using incorrect (or no) units in answer to numerical questions
Prefixes	many candidates do not convert prefixes correctly (if at all) when substituting into formulae
Scientific notation	causes difficulty for a number of candidates
Terminology	incorrect use of language when describing a Physics process