SCOTTISH QUALIFICATIONS AUTHORITY

Principal Assessor Report 2004

Assessment Panel:	**Physics**

Qualification area

Subject(s) and Level(s) Included in this report	**Physics, Intermediate 2**

Statistical information: update

Number of entries in 2003	2,069

Number of entries in 2004	2,240

General comments re entry numbers

There has been an 8.3% increase in the uptake in 2004.

Only 18.8% of this year's entry is from S4 but this percentage could well rise in future years.

Statistical Information: Performance of candidates

Distribution of awards

	Percentage of entries				
Grade	**2000**	**2001**	**2002**	**2003**	**2004**
A	11.2	14.1	12.7	25.9	23.1
B	20.1	19.0	19.0	21.0	17.5
C	27.9	25.7	26.0	19.7	19.4
Total A–C	59.2	58.8	57.7	66.6	60.0
D (Comp. Award 2000-2003)	11.6	12.4	9.6	8.6	8.7
No Award	29.2	28.8	32.7	24.8	31.3

Comments on any significant changes in percentages or distribution of awards

Both the mean mark and the pass rate were down on 2003.

There were a good number of grade A candidates but there were also many scripts seen in which the basic Physics was poor.

Grade boundaries for each subject area included in the report

Distribution of awards	%	Cum %	Number of candidates	Lowest mark
A	23.1	23.1	517	69
B	17.5	40.6	392	58
C	19.4	60.0	435	48
D	8.7	68.7	195	43
No award	31.3	100.0	701	0

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 prelim 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

The grade boundary for a C has been lowered by two marks compared to 2003.

This was because it was felt that there were a couple of items in the paper that proved to be less accessible to candidates than had been expected.

Comments on candidate performance

General comments

The number of A grade passes was again pleasingly high this year, but there was also a disappointing number of ill-prepared candidates failing to achieve a C pass (40%).

Compared to 2003, there was a wider range of average marks achieved across the different topics tested in the questions in the paper.

Areas of external assessment in which candidates performed well

The following multiple-choice questions had high facility values: 1, 6, 12, 13, 16, 18 and 20.

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

Question 21a:	gravitational potential energy
Question 22a, b:	acceleration from a speed-time graph
Question 23a, b, c:	power and efficiency
Question 24:	specific heat capacity (except part (b) on resistance wire)
Question 25b:	turns ratio for a transformer
Question 29a:	lens power
Question 31	industrial use of beta radiation and safety precautions when handling sources

Areas of external assessment in which candidates had difficulty

The following multiple-choice questions had low facility values: 2, 4, 9, 10 and 17.

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

Question 22c:	distance calculated from area under speed-time graph
Question 23d:	problem solving on initial unbalanced forces
Question 26b:	description of the operation of a MOSFET circuit
Question 27b, c:	use of a **parallel** circuit in a simple appliance and the consequence of the failure of one branch of that circuit
Question 28a:	**energy** is transferred by a wave
Question 30:	the purpose of the boron rods in a reactor

Recommendations

Feedback to centres

There were good responses from a number of candidates but there remain areas that continue to cause difficulty 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 receive attention:

Prefixes:	many candidates do not convert prefixes correctly (if at all) when substituting into formulae.
Scientific notation:	continues to cause difficulty for a number of candidates
Terminology:	incorrect use of language when describing a Physics process, eg "voltage through".