

Principal Assessor Report 2006

Assessment Panel:

Engineering

Qualification area

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

**Electronic and Electrical Fundamentals
Intermediate 2**

Comments on candidate performance

General comments

It is very pleasing to report that the general standard of responses from candidates in the 2006 Examination was excellent. This can be evidenced by a pass rate of 87.2% in 2006 compared with a pass rate of 62.4% in 2005. The 87.4% pass rate is the highest ever achieved in an Electronic and Electrical Fundamentals Int 2 Examination Paper. It is also interesting to note that the number of candidates achieving Grade A increased to 47.2% in 2006 compared with only 20% in 2005.

Following marking, members of the Examination Setting Team reviewed the 2006 Paper to assure themselves that the standard of the 2006 Paper was the same as the 2005 Paper. The Team were convinced that the 2006 and 2005 Papers were of a comparable standard and that the improvements in candidate performance were due to better candidate preparation for sitting the examination in 2006.

The Electronic and Electrical Fundamentals Int 2 Examination Paper is made up of the following three main components: Analogue Electronics, Digital Electronics and Electrical Principles. Traditionally candidates have answered Digital Electronics questions very well and this continued to be the case in 2006. Electrical Principles questions have in the past been answered reasonably well. In 2006 there was evidence of a clear improvement in the way these types of questions were answered. Analogue Electronics questions have usually been answered poorly with most candidates avoiding answering the large Analogue Electronics question in Section B of the examination. While the Analogue Electronics questions continue to be the ones that candidates answer worse there was clear improvement in the way these questions were answered in 2006.

While the results in 2006 were very good it is disappointing to note that there was only a small increase in the number of candidates sitting the Electronic and Electrical Fundamentals Int. 2 Paper (up from 85 in 2005 to 94 in 2006). The number of examination entries has still failed to break through the 100 barrier. Furthermore, only one FE centre presented candidates for the examination in 2006 and this was only two candidates. By far the largest number of candidates presenting for the examination came from an overseas centre. The only other centre entering candidates was a secondary school which had eleven entries.

Areas in which candidates performed well

- Q3 The coding question was as usual answered very well by most candidates.
- Q6 In the past candidates have found magnetic field questions hard to answer so it is pleasing to report that in 2006 both Q6 (a) and Q6 (b) were answered well by most candidates.
- Q8 It is pleasing to report that many candidates got all parts of the electrical circuit calculations in this question correct.
- Q11 As in the past, most candidates answered the digital question in Section B and most scored highly in this question.
- Q12 (c) This question was answered better than in the past, although candidates still struggled with the concepts of voltage and current division

Areas which candidates found demanding

- Q2 Many candidates were weak on identifying components from circuit symbols
- Q10 This was the least well answered question in Section A with many candidates not knowing what conditions were required to start and sustain thyristor conduction.
- Q13 As noted previously, this was the least well answered question in Section B although a few candidates did score reasonably well with this question. Most candidates still find Q13 (d), the biasing question, challenging although the general impression was that candidates made a better attempt at this question in 2006.

Advice to centres for preparation of future candidates

As noted earlier, it was clear from the 2006 results that candidates were better prepared for the examination this year than in 2005. Candidates and centres are encouraged to keep this level of preparation up in future examinations.

It is evident from the improvement in candidates' answers to the Electrical Principles and Analogue Electronics questions that lecturers and teachers are finding better and more innovative ways of teaching these subjects. Candidates are encouraged to revise the Power Electronics section of the Electronic and Electrical Fundamentals syllabus so that they can improve their answers to questions in this area of the syllabus. Lecturers and teachers may also wish to spend more time on component recognition from circuit symbols as this is an important skill in interpreting circuit diagrams and many candidates found it difficult to recognise the two electronic symbols in Question 2 in the 2006 Examination Paper. Colleagues in schools and colleges are encouraged to continue to look for new and innovative ways of teaching Analogue Electronics to candidates as this is a subject that many students find hard to grasp.

Statistical information: update on Courses

Number of resulted entries in 2005	85
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Number of resulted entries in 2006	94
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Statistical Information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum %	Number of candidates	Lowest mark
Maximum Mark - 100	-	-	-	-
A	50.0	50.0	47	70
B	18.1	68.1	17	60
C	19.1	87.2	18	50
D	5.3	92.6	5	45
No award	7.4	100.0	7	-

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 arrangements evolve and change.