



## External Assessment Report 2009

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Subject	Technological Studies
Level	Higher

**The statistics used in this report are pre-appeal.**

**This report provides information on the performance of candidates which it is hoped will be useful to teachers/lecturers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding. It would be helpful to read this report in conjunction with the published question papers and marking instructions for the Examination.**

# Comments on candidate performance

## General comments

The overall standard of response this year was significantly better than in previous years.

The vast majority of candidates performed very well in Section A.

Section B was more challenging, but nevertheless, the standard of response showed an improvement. There were indications that some candidates ran out of time before completing the second Section B question; a number of candidates found time to attempt all 3 questions in Section B.

## Areas in which candidates performed well

Question 1 (combinational logic) was an excellent starter question, with virtually all candidates scoring nearly full marks; question 2 (transistor circuit) was also well answered.

Candidates performed better than expected in question 7 (moments) and question 10(a) (nodal analysis) – there also appeared to be fewer transposition errors this year.

## Areas which candidates found demanding

Question 5 elicited a poor response overall. Many candidates were unfamiliar with the purpose and operation of the multiplexer. The use of sub-procedures in acquiring and storing readings was not well understood. Flowchart symbols were used haphazardly, apparently without reference to the Data Booklet.

In question 9 (PBASIC), many candidates used incorrect syntax for “if ..... then.....” statements, and there were again many instances of “if.....then goto....” which has been noted in previous External Assessment Reports.

In question 10(b) the calculation of force on one bolt was not well done.

## Advice to centres for preparation of future candidates

When teaching PBASIC programming care needs to be taken. It appears that some centres may be teaching through flowcharting GUI, which can lead to code being produced which is almost, but not precisely, PBASIC. “if...then goto...” is one of the very common mistakes.

Responses offered in this paper indicate that Outcome 4 of Systems and Control is not being taught in sufficient depth or detail.

Many candidates, when attempting Nodal Analysis questions, simply write down numbers for components of forces, without combining these into equations for individual nodes. This can lead to the wrong forces being included, or omitted.

The use of equilibrium equations at nodes is vital in the successful solving of nodal analysis problems; it is strongly recommended that centres enforce this approach.

Continued effort is required to improve understanding of components of forces – many candidates are still confused by choice of ‘sin’ and ‘cos’ (see suggestions in the 2007 External Assessment Report).

## Statistical information: update on Courses

Number of resulted entries in 2008	755
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Number of resulted entries in 2009	621
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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	32.2%	32.2%	200	70
B	24.0%	56.2%	149	59
C	18.0%	74.2%	112	48
D	7.6%	81.8%	47	42
No award	18.2%	100.0%	113	-

## General commentary on grade boundaries

- While SQA aims to set examinations and create marking instructions which will allow a competent candidate to score a minimum of 50% of the available marks (the notional C boundary) and a well prepared, very competent candidate to score at least 70% of the available marks (the notional A boundary), it is very challenging to get the standard on target every year, in every subject at every level.
- Each year SQA therefore holds a grade boundary meeting for each subject at each level where it brings together all the information available (statistical and judgemental). 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 management team at SQA.
- The grade boundaries can be adjusted downwards if there is evidence that the exam is more challenging than usual, allowing the pass rate to be unaffected by this circumstance.
- The grade boundaries can be adjusted upwards if there is evidence that the exam is less challenging than usual, allowing the pass rate to be unaffected by this circumstance.
- Where standards are comparable to previous years, similar grade boundaries are maintained.
- 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, and the mix of questions are different. This is also the case for exams set in centres. If SQA has already altered a boundary in a particular year in say Higher Chemistry this 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.
- SQA's main aim is to be fair to candidates across all subjects and all levels and maintain comparable standards across the years, even as arrangements evolve and change.