



## External Assessment Report 2011

Subject	<b>Technological Studies</b>
Level	<b>Higher</b>

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

Section A was well attempted by the majority of candidates, with an overall average mark of over 60%. Section B was more challenging, as intended, with lower scores overall in the two optional questions.

The first of the two Section B questions attempted was generally well answered, though in the second question the candidate performance was not as high.

## Areas in which candidates performed well

Question 1: The combinational logic topic was generally well answered. Some candidates drew up a truth table, from which they derived a very complex Boolean expression: this then made the rest of the solution more difficult to handle.

Question 2: Most candidates were competent in selecting the correct op-amp and in determining the required values; a significant number were unable to read the resistance of the thermistor from the graph.

Question 3: The general performance in this question was better than in previous years; some candidates were unsure when selecting 'sin' or 'cos' for components of forces.

Question 5 (b): Most candidates produced a working, valid program.

## Areas which candidates found demanding

Questions 5 (a), 8 (e), 9 (c) and (f), 10 (c): Candidates continue to find it challenging to describe or explain succinctly and clearly, the operation or function of a process or system.

Question 9 (d): Many candidates worked to fewer than three significant figures and, consequently, produced inaccurate answers. Strain-gauge resistance changes should generally be calculated to five or six significant figures.

## Advice to centres for preparation of future candidates

### General

Time management is still a concern for many candidates and there was evidence that some candidates may have spent too much time on earlier questions, which allowed little time for the last question to be fully attempted. Most candidates attempted questions entirely sequentially, with very little evidence of any planning being applied. This is an area that, given some attention, could help candidates to optimise their efforts, and their scores.

Many candidates were unable to manipulate mathematical equations in order to 'change the subject'. This caused a significant loss of marks in many cases, and is an area which requires constant attention throughout the Course. Calculator errors were also very common, and candidates should be encouraged to mentally estimate the order of magnitude, and value, of an answer, to support their calculated answer.

There appeared to be an increasing trend in many centres where candidates 'rounded-off' intermediate answers to one significant figure — or simply truncated the answer, which caused errors in final answers. Final answers should be stated to an accuracy of **three** significant figures; this means that all working and intermediate values should be calculated to an accuracy of at least four significant figures, with rounding only taking place at the final answer. This is an area to which all centres are advised to give some emphasis..

Generally, PBASIC programming questions are answered well by most candidates. However, there are still many instances of commands which seem to be confused with other versions of BASIC. Typical examples of this are 'if....then goto....' and 'if.....then pin5 high'. Centres are recommended to reinforce the need for precision in programming, and the use of correct syntax.

Though the structured questions appeared to be better attempted better this year, there is still confusion over the selection of 'sin' or 'cos' when taking components of forces. Centres are recommended to give greater emphasis to this aspect of the Course.

## Statistical information: update on Courses

Number of resulted entries in 2010	728
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Number of resulted entries in 2011	683
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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	28.8%	28.8%	197	70
B	19.9%	48.8%	136	58
C	15.7%	64.4%	107	47
D	9.1%	73.5%	62	41
No award	26.5%	100.0%	181	-

## **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, therefore, SQA 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 Head of Service 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.