



## External Assessment Report 2012

Subject(s)	<b>Technological Studies</b>
Level(s)	<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

Overall, the performance in this year's external assessment was similar to that of recent previous years, though there appeared to be significant variations between centres: there were some excellent performances, some poorly performing centres, and a minority of centres in the mid-range.

## Areas in which candidates performed well

Question 1 was the best-answered question, closely followed by Question 2, providing a good lead into the question paper for the majority of candidates.

Question 3 (a) and Question 10 (b) (i) and (ii) — PBASIC coding — were generally well attempted. Further guidance is given below under 'Advice to centres for future candidate presentation'.

Question 4: Most candidates scored well here (voltage divider, transistors).

Question 8 (control diagram, op-amps) was generally well attempted.

## Areas which candidates found demanding

Question 3 (b) (i): The majority of candidates were unable to adequately describe the 'soft stop' represented by the flowchart.

Question 9 (b): The response to Nodal Analysis, from some centres, was poor, with little use of statements of equilibrium, and unclear, incorrect calculations included in the response. This comment applies similarly to Question 7.

There were indications that many candidates did not adequately manage their time during the examination; it was quite common to see the second of the Section B questions being only partly, or hastily, answered.

## Advice to centres for preparation of future candidates

Many candidates were inconsistent in the level of accuracy: answers were rounded to one significant figure in some instances, whilst other answers would be stated with nine or so digits. Excessive rounding at several stages of a calculation meant that some candidates achieved final answers which were materially different from that required.

**All working should be to four significant figures, with answers expressed to three significant figures.**

The majority of candidates do still find difficulty in selecting the appropriate component when resolving inclined forces. The 'sin' and 'cos' operators were frequently applied the wrong way round. This was evident in the responses from candidates from certain centres.

**This could be overcome by always determining the included angle (ie between the force and the reference direction), and then only using the 'cos' operator.**

In Nodal Analysis, there was confusion in the application of the three statements of equilibrium. Often forces acting at other nodes were included when a node was being analysed. This was evident in the responses from candidates from certain centres. Centres should pay particular attention to the application of the conditions of equilibrium.

Many candidates did not achieve marks by using non-standard or incorrect flowchart symbols. Only symbols shown in the Data Booklet should be used.

There were clear indications of time-management issues in many candidate responses. Centres area are encouraged to stress the importance of good time management.

A possible breakdown of time allocation is shown below, as guidance:

- ◆ Read through the question paper and plan the order in which to attempt the questions: 10 minutes.
- ◆ Section A: 1 hour 40 minutes total, allocated between questions (at roughly 0.8 marks/min).
- ◆ Section B: 35 minutes per question.

**Statistical information: update on Courses**

<b>Number of resulted entries in 2011</b>	683
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<b>Number of resulted entries in 2012</b>	690
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**Statistical information: performance of candidates****Distribution of Course awards including grade boundaries**

<b>Distribution of Course awards</b>	<b>%</b>	<b>Cum. %</b>	<b>Number of candidates</b>	<b>Lowest mark</b>
Maximum Mark 200				
A	32.6%	32.6%	225	140
B	19.1%	51.7%	132	118
C	17.4%	69.1%	120	96
D	6.1%	75.2%	42	85
No award	24.8%	100.0%	171	-

## **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.