



External Assessment Report 2011

Subject	Technological Studies
Level	Advanced 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 response of candidates to the external assessment was of a good standard, especially in Section A, where the average for every question (across the whole population) was over 60% of the available marks.

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 (a): Most candidates were able to draw the 555 timer correctly.

Question 2: The assembler code program was well written by most candidates.

Question 4 (a): Virtually all candidates successfully calculated the reactions.

Question 4 (b): The shear-force and bending-moment diagrams were completed better this year than in previous years.

Question 8 (d) and (e): There was improved candidate performance in the method of sections question compared to previous years.

In general, assembler code programming questions proved to be very accessible, with most candidates developing valid and comprehensive solutions.

Areas which candidates found demanding

Question 3 (d): Many candidates were unable to integrate the function, and thus could not calculate the capacitance.

Question 5 (a): Relatively few candidates drew the 4-bit counter correctly, though most produced a partial solution.

Question 9 (e): Most of the candidates who attempted Question 9 found the timing diagram challenging; few produced correct lines for the Q outputs, though virtually all got the \bar{Q} outputs.

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, and the process of integration is still very challenging for many. These are areas which require constant attention throughout the Course.

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.

Candidate knowledge of bistables and counters appeared less thorough than in previous years. Centres should consider giving more emphasis in these areas, especially in terms of the design of multiple-bit up-and-down counters.

Use of the STATUS register and the ‘add.’ and ‘sub.’ commands caused some difficulty, and centres are encouraged to ensure that candidates are thoroughly prepared in these areas.

Attention is again drawn to the use of method of sections in solving forces in frame structures. Candidates were instructed in Question 8 (e) to use the left part of the frame; however, many used the right part, causing significant difficulty. Many centres also appear to be teaching that forces in all the members must be determined using the principle of moments (ie $\Sigma M = 0$), however vertical and/or horizontal equilibrium may also be freely used, as most appropriate.

Statistical information: update on Courses

Number of resulted entries in 2010	90
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Number of resulted entries in 2011	81
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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	43.2%	43.2%	35	67
B	11.1%	54.3%	9	58
C	19.8%	74.1%	16	49
D	6.2%	80.2%	5	44
No award	19.8%	100.0%	16	-

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.