



## External Assessment Report 2010

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

Within Section A of the question paper, the general performance of candidates this year was good, but many candidates found Section B challenging. It was common to see candidate responses where several questions were not attempted or where there were incomplete responses. The Section B questions were spread across more pages than normal this year and it was felt that this may have made the paper slightly more challenging for some of the candidates. As such, the grade boundary for 'C' was changed to redress this.

The reduced estimate grades submitted by centres were reflected in the candidate performance which was not as high as last year's cohort. 5.3% of candidates achieved an Upper A, whilst one in eight candidates scored less than 30%.

Centres and candidates are reminded that legible handwriting is important to allow responses to be interpreted fully and marks to be awarded where they can be. The layout of calculated solutions should also be set out clearly.

## Areas in which candidates performed well

Question 1: This proved to be a good initial question, though some candidates were unable to produce the required Boolean expression.

Question 2: Candidate performance in this question was good with most candidates providing better responses to this topic than in previous years.

Question 4: Strength of materials. The majority of candidates performed very well in this question.

Question 8: Electronics — drivers. This question was well attempted, however, many candidates found part (d) of the question challenging.

## **Areas which candidates found demanding**

Programming is a topic area which has seen an improvement in performance for some time; however candidate performance was poor in Question 3 and Question 7 this year. It appears that some centres are teaching invalid syntax ('if....then goto.../else goto...'; 'if....then high4'; 'high pin7' etc). Further guidance is given in the 'Advice to centres for preparation of future candidates' section below.

Candidate performance was poorer throughout Section B of the question paper. Very few candidates could describe the operation of a system as in Questions 9 and 11.

Many candidates confused 'force' and 'moment' and used force equilibrium to calculate the Applied Force F in Question 9, ignoring the reaction at the pivot. In some candidate responses, 'moments' lacked distances and 'components of forces' proved challenging.

## **Advice to centres for preparation of future candidates**

Centres are reminded that only the use of PBASIC1 is suitable for question paper responses and extended PBASIC and PICAXE BASIC should not be used. Syntax performance is often poor and more time should be devoted to writing and running programs, which will alert candidates to the correct structures to be used. Decisions and loops prove to be challenging topics and further guidance should be given to candidates in these areas.

There was little evidence of candidates planning programs (Question 3 and Question 7) and many candidates were unable to directly interpret the required sequence.

Nodal analysis (Question 6) and Moments (Question 9) require forces to be resolved into vertical and/or horizontal components. There appears to be confusion regarding the selection of 'sin' or 'cos'; and centres are recommended to ensure that candidates determine the angle between the force and the required component, and then *always* use 'cos'.

Centres are reminded that greater emphasis needs to be placed on descriptive questions and there is a varied sample of such questions in the past papers and marking instructions which are available from SQA's website. Centres may find these provide a useful resource to assist candidates to prepare for such questions.

## Statistical information: update on Courses

Number of resulted entries in 2009	621
Number of resulted entries in 2010	728

## 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	22.9%	22.9%	167	70
B	20.6%	43.5%	150	58
C	20.7%	64.3%	151	47
D	9.6%	73.9%	70	41
No award	26.1%	100.0%	190	—

### 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.