



**Technological Studies  
Advanced Higher  
External Assessment Report 2008**

**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 was encouraging, with an average mark of 59% (2.4% improvement on last year). There was evidence of some very able candidates, with 28 (30% of candidature) gaining over 70%, and only 12 candidates (13% of candidature) achieving less than 40%. This reflects the focus and commitment of pupils following this course, and of their teachers.

As expected, candidates found Section B more demanding than Section A.

## Areas in which candidates performed well

Q1 (bending of beams) proved to be a good 'starter' question which was very well answered. Q3 (low-level programming) was also done well by the majority of candidates, as was Q5 on PID Control.

## Areas which candidates found demanding

Q2(a) – 'Explain the operation of ...' caused difficulties; many candidates appear unable, even at this stage, to write clear and concise explanations. All too often, the response was simply a description of the various elements of hardware in the circuit.

Q6(a) – many candidates were unable to integrate the function in 'dt' correctly. The DAC also caused some difficulty, and few candidates arrived at the correct values.

Q7 caused confusion for candidates from some Centres; there appeared to be a lack of understanding of some of the required commands ( e.g 'subwf', 'rlf' etc).

Q8 – Shear-Force and Bending-Moment diagrams – few candidates dealt correctly with the Restoring Moment (many multiplied the  $M_R$  by 'distance', indicating a lack of understanding of the concept of restoring Moments).

Q9 – Method of Sections – as ever, candidates found this question very challenging, and many were unable to correctly calculate, or select, distances.

Q10 – responses for the D-type and J-K circuits were disappointing; this was the least popular question, and the least successfully answered.

## Advice to centres for preparation of future candidates

Arithmetic errors in transposition and manipulation continue to cost the majority of candidates some marks; this area needs to be constantly revisited. Calculus (for Integrators) is clearly challenging, even though the actual integration is very simple. Centres should spend some time with this, as more complex integrations may appear from time to time.

The resolution of inclined forces continues to be problematic, with 'sin' and 'cos' often being selected incorrectly. There are techniques to help overcome this, for example simply calculate the

unknown part of the angle, then always use 'cos'. Centres are encouraged to give some thought to this perennial problem. This was very apparent in the calculations for distance in Method of **Sections**.

Very few candidates find it easy to express themselves clearly and fluently when called upon to 'explain the operation of'. Centres should spend some time and effort in developing a methodology to enable candidates to write down – in a logical and progressive format – the salient factors involved in *the operation of* the required system, (rather than simply a description of the physical elements of the system itself).

Attention is drawn to material available from the SQA website which will assist Centres in the delivery of low-level programming for proportional control. Go to the 'Technological Studies' page, select 'Data Booklets' on right side of page, then select 'Advanced Higher – Notes on Assembler Code'.

## Statistical information: update on Courses

Number of resulted entries in 2007	97
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Number of resulted entries in 2008	90
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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	33.3%	33.3%	30	67
B	14.4%	47.8%	13	58
C	25.6%	73.3%	23	49
D	4.4%	77.8%	4	44
No award	22.2%	100.0%	20	-

## 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.