



## External Assessment Report 2011

Subject	<b>Technological Studies</b>
Level	<b>Intermediate 2</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

This year's question paper was found to be fair, balanced and accessible with the full range of marks awarded in each question. In addition, it was confirmed that the paper was set at a similar standard to previous years and as a result the grade boundaries were not adjusted.

There was an increase in the number of Grade A–C awards due to an improvement in the ability of this year's candidates and this fact was confirmed by both the centres in their estimates and feedback from the Markers.

## Areas in which candidates performed well

Question 2: Most candidates performed well with the digital electronics questions and particularly strong responses were noted in (a)(ii) the completion of the truth table.

Question 3 (a): Calculating potential energy was well answered.

Question 6: Calculations associated with the electrical circuit were generally well attempted although determining the total resistance of the parallel branches was less so.

Question 8: Stating the name of the pneumatic components and describing the operation of the circuit were consistently attempted well.

Question 9 (c) & (f): Candidates performed strongly when reading the appropriate thermistor graph from the Data Booklet and calculating the electrical energy.

Question 11 (a) & (b)(ii): Candidates demonstrated a sound knowledge of pneumatic actuators.

## Areas which candidates found demanding

Question 1 (b): Converting decimal to binary proved demanding for many candidates.

Question 3 (b)(i): Candidates lacked an understanding of the principles of conservation of energy and, as a result, many did not score well in this question.

Question 4 (b): Knowledge of the use of negative feedback was poor.

Question 5 (a): A number of candidates made basic mistakes when using the Data Booklet in order to complete the PBASIC commands.

Question 7 (b)(i): Candidates generally could not correctly establish the velocity ratio.

Question 9 (a): The description of the circuit operation provided many poor responses.

Question 9 (e)(ii): Few candidates could state the meaning of volatile memory.

Question 11 (b)(i): Knowledge of the symbol, position and orientation of the uni-directional restrictor was limited.

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

### **General**

Centres may wish to address the following areas where poor responses were noted:

There was a general misunderstanding by candidates of questions that asked for a description of the function of a particular component/sub-system. Many answered by simply stating characteristics.

Candidates often did not correctly use the Data Booklet when completing PBASIC commands and mistakes were frequently made particularly with *for...next* loops and *if...then* decisions. In addition, converting decimal to binary and naming the bits received poor responses from many candidates.

Candidates showed a limited understand of the principle of conservation of energy.

The knowledge of the positioning and orientation of a uni-directional restrictor when used to produce a pneumatic time delay was limited in a significant number of candidates.

Candidates showed a lack of understanding of negative feedback and how it can be used within a closed-loop control system.

## Statistical information: update on Courses

Number of resulted entries in 2010	173
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Number of resulted entries in 2011	131
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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	37.4%	37.4%	49	72
B	16.8%	54.2%	22	61
C	14.5%	68.7%	19	51
D	3.8%	72.5%	5	46
No award	27.5%	100.0%	36	-

## **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.