



External Assessment Report 2014

Subject(s)	Technological Studies
Level(s)	Advanced Higher

The statistics used in this report are prior to the outcome of any Post Results Services requests

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 in this year's external assessment was of a high standard, very similar to that of recent previous years. Clearly, though relatively small in number, this was a group of well-prepared, motivated and able candidates.

The overall pass-rate was in excess of 85%, with only seven candidates gaining no award.

Areas in which candidates performed well

Questions 2; 7(f); 8(b); 9(c); (low-level programming): most candidates were able to provide responses of a very high standard, with a range of correct solutions being offered. Use of the STATUS register was generally correct and appropriate.

Question 3: The majority of candidates scored well here, though some did not plot all the points on the Bending-Moment diagram, and so failed to identify the curved part of the graph.

Question 5: The majority of candidates correctly calculated the Second Moment of Area and the maximum stress due to bending.

Question 10(a) and (b): candidate responses to the frame structure were generally of a high standard, with most candidates scoring well. There has been a steady improvement in the area of Method of Sections over recent years.

Areas which candidates found demanding

Question 4(a): Producing a valid block diagram for the sequential control system proved challenging to a number of candidates — in many instances something resembling a flowchart was offered.

Question 4(b) and (c): though most candidates made a fair effort at the JK circuits, there seemed to be confusion in respect of clocking from the Q or Qbar outputs. Some candidates did not correctly connect the S and R connections.

Question 6: Few candidates actually described how the circuit functioned; a number simply identified the components used in the circuit. Written descriptions continue to be an area that candidates find challenging, with some unable to provide a clear and concise explanation.

Question 7(a) and (c): a number of candidates did not clearly show the variation in response between the various types of control strategy.

Question 8(c): a few candidates split the section up correctly, taking the main rib, two flanges, and semicircle as separate areas to be summed together. The correct method was

to take a full rectangle, then *subtract* the inner rectangle (a 'hole'), and add the semicircle thereafter.

Question 9(b)(ii): As in Question 6, with some candidates struggling to provide a concise, logical description of the operation of the circuit.

Advice to centres for preparation of future candidates

Over the years, candidates have found 'explain' and 'describe' questions challenging. However, an understanding of the function of systems, and an ability to communicate, is an important aspect of engineering. There are many examples of these types of question in past papers, and centres are encouraged to give some attention to this area.

It appears that some candidates were less well-prepared in the area of JK counters than in previous years. Centres should place a greater emphasis on the topic.

Since the Parallel Axis Theorem is not within the terms of this course, centres should give more practice to candidates in dealing with oddly-shaped sections when calculating Second Moment of Area. Developing an understanding here will lead to a better overall appreciation of the concepts associated with Bending of Beams.

Statistical information: update on Courses

Number of resulted entries in 2013	56
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Number of resulted entries in 2014	70
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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 200				
A	52.9%	52.9%	37	134
B	12.9%	65.7%	9	116
C	20.0%	85.7%	14	98
D	4.3%	90.0%	3	89
No award	10.0%	-	7	0

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.