



External Assessment Report 2013

Subject(s)	Product Design
Level(s)	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

There was a considerable improvement in candidate responses in the question paper this year. This was evidenced across the entire paper.

There was minimal change in the layout of the paper, with a mix of short response and extended answer questions.

Markers indicated that there were fewer outstanding Design Assignment folios accruing full or near full marks. Overall performance in this component was poorer than last year.

Candidates generally scored higher marks in the Design Assignment than in the question

Year	2006	2007	2008	2009	2010	2011	2012	2013
Question Paper (average mark)	35	35.3	35.3	33.2	36.3	36.4	32.5	39.3
Design Assignment (average mark)	42.6	41.2	42.3	42.5	42.6	42.9	40.5	38.3

paper. This is in line with previous years.

Question 1 (30 marks)

There was a considerable improvement in the responses to questions in this section.

- Less evidence of copying statements from technical data supplied. Specification points are generic for this question, and lifting data directly from the question paper will not accrue marks. The information given is to enable candidates to identify issues that would appear in a design specification. Technical specification points will not gain marks if they are simply lifted from the data given (6 marks).
- Answered reasonably well. It was however rather disappointing that a significant proportion of candidates believed that mild steel was corrosion-resistant (6 marks).
- Answered quite well this year. The inclusion of the identification of production processes helped with this, but the production process must be targeted at a component, and must be valid for that component to gain full credit (6 marks).
- As usual candidates found ergonomics challenging (4 marks).
- Answered quite well (4 marks).
- Answered reasonably well (4 marks).

Question 2 (5 marks)

- Answered well, although few candidates mentioned grain flow on cooling which increased strength (1 mark).
- Answered well (2 marks).
- Very few candidates were able to identify stainless steel or tool steel (2 marks).

Question 3 (4 marks)

It was surprising how many candidates answered this question in terms of ergonomics rather than as the question asked, aesthetics. There was little appreciation of harmonic shapes, asymmetry, layout, contrasting textures etc.

Question 4 (6 marks)

- a) A majority of candidates answered this in general terms and gained 1 mark only (2 marks).
- b) Answered very well.
- c) Mixed responses to this question. Candidates showed little understanding of: volume issues, set up costs, staff training, market expectation (2 marks).

Question 5 (7 marks)

- a) Answered quite poorly, with few candidates referring to the tie-up to Just in Time production, subcontracting, use of rapid prototyping etc to reduce lead times so that products could come to the market more quickly (2 marks).
- b) Answered quite well, although very few candidates observed that the area under the graph for tablet 2 was considerably larger than that of tablet 1. However, overall, candidates performed quite well in this section (3 marks).
- c) Answered very well (2 marks).

Question 6 (6 marks)

- a) Answered well (2 marks).
- b) Answered very well (2 marks).
- c) Mixed response to this question. Little reference to: wear and tear of carcasses, the possibility of replacing doors to give a new look, obsolescence of appliances, fashion, new technology (2 marks).

Question 7 (5 marks)

- a) Candidates answered this as if it was a graphics question rather than as the use of modelling to test products and simulate conditions prior to physical modelling (2 marks).
- b)i) Answered poorly, with most candidates naming polypropelene (1 mark).
- b)ii) Answered reasonably well (2 marks).

Question 8 (7 marks)

- a) Answered well (1 mark).
- b) Answered well (3 marks).
- c) Answered well (2 marks).
- d) Answered well (1 mark).

Design Assignment

Candidates were, as every year, given a choice of design options based on a theme. The range of tasks was devised to give as much choice as possible to candidates whilst allowing centres to retain a level of control over the assessment process.

Candidates were given four scenarios, giving them the opportunity to show creativity and expression. **This is done to enable candidates with a wide variety of talents and backgrounds to perform to their capabilities. It is essential that centres encourage candidates to choose the topic that suits them best.**

The Design Assignment followed the usual format. There was little evidence of candidates producing complex front covers and contents pages, which are superfluous in the design folio. Once again the addition of page numbers by centres greatly assisted assessment.

The 8-page format was generally followed. There were a few instances of folios exceeding 8 pages. When this occurs the first 8 pages of work, excluding front covers, are assessed.

Section 1: Initial Ideas (15 marks)

This section is generally done well by candidates, although the decisions reached still tend not to be highlighted and referred back to the specification. There was a significant drop in the average mark in this section.

In some cases candidates still use four or five pages for this section. This does not leave adequate opportunity to gain marks in the rest of the folio. Some time spent before in class looking at the balance of work, and relating this to the Design Assignment specification, could help to minimise this problem.

Section 2: Development towards a Design Proposal (30 marks)

This is where the more able candidates tend to gain significantly more marks than others. It is also the area which candidates find the most challenging.

Development of ideas can be aesthetic, and can use information from the research material supplied with the topics. Supplementary research can be included but it is the **use** of this material which will gain marks. Candidates can look at construction/production methods, standard parts etc. All should show progression. Sketches must be well annotated and relevant to the topic. Decisions should be made and highlighted throughout the folio. Candidates who score high marks in this section **usually consider technical as well as aesthetic development**. Candidates can also source and use other relevant research material.

There was more evidence of candidates trying to develop more than two ideas. When this happens, candidates tend to duplicate development rather than look at new areas to develop. This duplication does not accrue marks.

This section is awarded 30 marks and should be where most of the marks are gained by candidates; this was not the case in some instances.

Candidates who did not score well tended to show a lack of knowledge in either manufacturing process or related materials.

Again, there was a significant drop in the average mark in this area of the Design Assignment.

Section 3: Communication

The marks in this section are awarded for communication throughout the folio. The marks are awarded in three categories:

Section 3a) Communication of ideas and development (10 marks)

The marks awarded for this section are for the communication information, both graphical and textual, throughout the Design Assignment. Examiners are looking for links to the information given, use of the specification, and progression of ideas and developments towards a final design proposal. Candidate folios that performed well had a flow which clearly demonstrated this.

Section 3b) Recording and justification of decisions taken (10 marks)

Again, marks are allocated right across the folio for this. In many cases, decisions made were not justified and evaluated, so it was not clear why they had been reached. Decisions in many cases were just plucked out of the air. This area is still a problem for candidates.

Section 3c) Communication of design proposal (5 marks)

More centres are now using computer modelling in this section, which is aiding candidates with less ability in manual graphics.

General Comments on Design Assignment

Markers indicated that the level of response was slightly poorer than last year. There were, however, still some outstanding folios.

The use of the research information given is minimal in some cases, which is why some candidates perform less well in the development stage. This is particularly still the case with the anthropometric data.

Areas in which candidates performed well

- ◆ In the question paper, candidates performed well in Questions 1, 2a), 2b), 3b) and 3c), 4c) and 6.
- ◆ In general, candidates performed well in the generation of ideas stage of the Design Assignment.

Areas which candidates found demanding

Question paper

- ◆ Question 1d) candidates could not fully explain ergonomics issues.
- ◆ Question 3 candidates found it difficult to explain aesthetics when applied to a product.
- ◆ Question 5a) there was little appreciation of how to get a product to market, the importance of production planning, outsourcing for components, research and development, etc, and how the reduction of lead times can make a marginal product profitable.

Design Assignment

Candidates sometimes do not leave themselves enough room to adequately develop their ideas. There is still some difficulty with this section for less able candidates. The classroom teacher has a very important role in guiding candidates during the preparation stage before they commence their Design Assignments. Candidates must be encouraged to choose the

task carefully so that the topic suits their strengths and gives them the opportunity to perform to their best ability.

Some Design tasks allow more creativity aesthetically, while other allows for more technical detail and development.

Advice to centres for preparation of future candidates

Centres are advised to use the exemplar material on the SQA website.

SQA's Understanding Standards website is a valuable source of information on assessment procedures.

While there is an understandable temptation to use more than 10 hours for the Design Assignment, evidence suggests that this has an adverse effect on candidate's performance in the question paper.

The classroom teacher has an important role in teaching candidates about planning the structure of a Design Assignment to make best use of the 8 pages available. The choice of topic is also important. Guidance in choosing a topic that will allow the candidate to show their strengths is vital.

Preparation for the question paper should include training in examination techniques and acceptable responses. Candidates will struggle to produce extended answers in the final exam if they have not been used to doing so in class. Candidates should be encouraged to discuss, debate and argue so that they can acquire a technical vocabulary that will enable them to give acceptable answers to questions in the final examination.

Centres are reminded that although marking instructions contain bulleted lists of possible responses, candidates must respond to the "command" word as appropriate and write extended answers in order to communicate fully their knowledge and understanding.

Candidate responses in the form of bulleted lists may not be able to access the full range of available marks.

Statistical information: update on Courses

Number of resulted entries in 2012	2452
Number of resulted entries in 2013	2382

Statistical information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark 140				
A	11.4%	11.4%	272	98
B	24.9%	36.3%	593	83
C	33.4%	69.7%	796	69
D	13.7%	83.5%	327	62
No award	16.5%	100.0%	394	-

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.