External Assessment Report 2015

Subject(s)	Product Design
Level(s)	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

There was an improvement in the exam responses in paper 1 this year. This was evidenced across the entire paper

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

Candidates generally scored higher marks in the Design Assignment than the written paper this is in line with previous years.

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Written Paper Av. Mark	35	35.3	35.3	33.2	36.3	36.4	32.5	39.3	36.2	37.7
Design Assignment Av. Mark	42.6	41.2	42.3	42.5	42.6	42.9	40.5	38.3	38.6	40.3

Paper 1

There was a considerable improvement in the exam responses in paper 1 this year. This was evidenced across the entire paper. There was minimal change in the set-out 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 exam performance was poorer than last year.

Candidates generally scored higher marks in the Design Assignment than the written paper. This is in line with previous years.

For the first time a correction notice was issued — concerning question 4. As, for this last year, we were marking candidate's responses centrally, we were able to look at individual cases as they arose. Steps were taken to ensure that no candidate was disadvantaged as a result of this.

Question 1 (30 marks)

There was an improvement in the responses to questions in this section.

a There was less evidence of direct lifting of statements from the technical data supplied. Specification points are generic for this question and lifting data from the question paper will not accrue marks. The information given is to enable candidates to identify issues

which would appear in a Design Specification. Technical Specification points will not gain marks if they are simply lifted from the data given.

b This was answered reasonably well. It was however rather disturbing that a significant proportion of candidates did not realise that chromium was a plating added to the metal to make it corrosion-resistant.

c Answered quite well this year. The inclusion of the identification of production processes once again helped with this. However, the production process must be targeted at a component, and must be valid for that component, to gain full credit.

d There were difficulties with this question for some candidates, which is surprising with the high profile this issue has in the media.

e Answered quite well.

f This question was not answered well by some candidates and from the statistics was found to be the most challenging in section A

Question 2 (5 marks)

a (2 marks) Most candidates were able to get 1 mark for this question, most could not identify a thermosetting plastic.

b (3 marks) Identification of compression moulding and reasons for its use. Responses were mixed some very good most candidates however scored 1 or 2 marks

Question 3 (4 marks)

i (2 marks) Answered well

ii (2 marks) Answered reasonably well

Question 4 (6 marks)

a (2 marks) Candidates usually answered this in general terms and gained 1 mark only.

b (i) (1 mark) Answered reasonably well.

(ii) (1mark) Disappointing responses showing poor understanding of the properties of brass.

c (2marks) mixed responses to this question. However there were some very good answers to this question

Question 5 (6 marks)

a (2marks) Answered reasonably well. Some candidates however strayed from concentrating on function.

b (i)(2 marks) Standard question answered reasonably well.

(ii)(2 marks) some candidates tended to repeat themselves when answering this question. Most could get 1 mark

Question 6 (6 marks)

a (3 marks) Answered well.

b (3 marks) Answered poorly little understanding of rapid prototyping, its uses and the issues surrounding its use.

Question 7 (5 marks)

a (3 marks) Answered quite well

b (2 marks) Answered quite poorly. Candidates showed little understanding of the issues and tried to waffle their way through.

c (2 marks) Answered well

Question 8 (6 marks)

Answered quite well. Some candidates surprisingly missed out Materials completely, however. Some excellent answers showing how these three issues were interlinked.

Design Assignment

Centres were, as every year, given a choice of design options based upon a theme. The range of tasks was devised to give as much opportunity as possible to candidates while being able to keep a level of control on the assessment process.

As usual candidates were given four scenarios, giving them an opportunity to show creativity and expression. This is done to enable candidates with a wide variety of talents and with a wide background in knowledge to be able to show their capabilities. It is essential that centres encourage candidates to choose the topic that suits them carefully. It is sometimes surprising to see the lack of variety of tasks chosen by candidates from centres with a high number of entries.

The Design Assignment followed the same format, where candidates are limited to 8 pages of material. 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 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 decisions reached are still not highlighted and referred back to the specification.

Section 2 Development of ideas towards a Design Proposal (30 marks)

This is where the more able candidates tend to gain significantly more marks than the rest of the field. It is also the area that causes most problems to candidates.

Developments of ideas can be aesthetic, it can use information from the research material supplied with the DA topics, and 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 being made throughout the folio and highlighted**.** 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 showed a lack of knowledge of either manufacturing process or related materials.

Section 3 Communication

This is split into three sections

Section 3 a Communication of ideas towards a design proposal (10 marks)

Marks are awarded for 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. The candidates' folios that performed well had a flow which clearly demonstrated this.

Section 3 b Recording decisions made in producing a design proposal

Again, marks are allocated right across the folio for this. In many cases decisions made were not justified and evaluated, so that 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 3 c Communication of Design Proposal

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

General Comments on Design Assignment

Markers indicated that the level of response was better than last year. There were 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 of the DA. This is particularly still the case with the anthropometric data.

The anthropometric data produced this year was inadvertently copied from the previous year's paper. This was taken into account at central marking and steps were taken to not disadvantage candidates.

Areas in which candidates performed well

In paper 1 candidates performed well in general in questions 1.

Areas which candidates found demanding

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 the candidate at 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 allow for more technical detail and development.

Statistical information: update on Courses

Number of resulted entries in 2014	2369

Number of resulted entries in 2015	616

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	17.5%	17.5%	108	98
B	23.7%	41.2%	146	83
C	26.5%	67.7%	163	69
D	9.4%	77.1%	58	62
No award	22.9%	-	141	-

The Course assessment functioned as intended, therefore no adjustment to grade boundaries was required.

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.