



External Assessment Report 2011

Subject	Product Design
Level	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

Question paper

The question paper followed the same format as in previous years with a mix of short response and extended response questions.

Markers once again indicated that there were some outstanding design assignment folios accruing full or near-full marks. Overall, candidate performance was in line with last year.

Candidates generally scored higher marks in the design assignment than in the question paper; this is in line with previous years.

Year	2006	2007	2008	2009	2010	2011
Question paper average mark	35	35.3	35.3	33.2	36.3	36.4
Design assignment average mark	42.6	41.2	42.3	42.5	42.6	42.9

Question 1 (30 marks)

Generally responses to Question 1 were similar to last year.

- (a) As in previous years, many candidates' specification points are still too simplistic and reminiscent of Standard Grade. 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) Answered quite well.
- (c) A variety of responses varying from excellent to very poor.
- (d) Slightly disappointing. Candidates could not describe issues relating to national standards (BSI), guarantees, corporate image, etc.
- (e) Answered very well.
- (f) Still answered poorly; showed a poor understanding of ergonomic issues. Most candidates did not refer to the three areas covered in the Course (anthropometrics, physiology and psychology).

Question 2 (6 marks)

- (a) (2 marks) Candidates did not differentiate between piercing and blanking when answering this question. Answers were general in nature and did not show understanding of the benefits of these processes.
- (b) (1 mark) Answered reasonably well.
- (c) (3 marks) Most could not identify food grade stainless steel (stainless steel acceptable) or provide appropriate justifications for the choice of materials. Answers were general in nature and not specific to the product.

Question 3 (10 marks)

- (a) (2 marks) Answered well.
- (b) (3 marks) Not answered well. Again a question on intellectual property rights (IPR) gave the candidates difficulties during the examination. Course notes have previously been issued to centres on this topic.
- (c) (2 marks) This part of IPR was answered quite well.
- (d) (1 mark) Not answered well. Rapid prototypes are produced to test products across a wide variety of situations. Knowledge of the uses of different rapid prototyping methods and their uses is part of the Course. Course notes have been produced and are in centres.

Question 4 (6 marks)

- (a) (4 marks) Mixed responses. Some very good answers but generally answers were not extended enough to gain full marks.
- (b) (2 marks) Most answers were not extended enough to gain full marks.

Question 5 (4 marks)

A testing question on aesthetics produced a wide variety of responses. There were some excellent answers to this question showing a great understanding of the topic. There was, however, a full range of answers some of which fell far short of the standard expected at Higher.

Question 6 (7 marks)

- (a) (3 marks) Answered quite well and showed that candidates had an understanding of the issues surrounding project planning, JIT production, etc.
- (b) (2 marks) Mixed responses to this question.
- (c) (2 marks) Mixed responses to this question.

Question 7 (7 marks)

- (a) (4 marks) Answered reasonably well. This was a standard question on composites which has been examined before.
- (b) (3 marks) A standard question which has been asked before. Responses were disappointing for a question which most centres will cover in depth.

Design assignment

Centres were, as last 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 an opportunity for them to show creativity and expression. **This is done to enable candidates with a wide variety of talents and background knowledge to show their capabilities. It is essential that centres encourage candidates to carefully choose the topic they are about to embark on.**

The design assignment followed the same format as usual where candidates are limited to eight 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 eight pages. When this occurs the first eight 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 always highlighted and referred back to the specification.

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 in class looking at the balance of work and relating this to the design assignment specification could minimise this problem.

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 others.

Developments of ideas can be aesthetic, can use information from the research material supplied with the design assignment topics, can look at construction/production methods, standard parts, etc. All developments 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.**

There was more evidence of candidates trying to develop more than two ideas. When this happens, candidates tend to replicate development rather than develop new areas to consider. 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 here showed a lack of knowledge in either manufacturing process or related materials.

Section 3 Communication (25 marks)

This is split into three sections.

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

The marks awarded for this section were for the communication of 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 who performed well clearly demonstrated this.

Section 3 (b) Recording decisions made in producing a design proposal (10 marks)

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 (5 marks)

More centres are now using computer modelling in this section which is aiding candidates with less ability in manual graphics. However, there are still examples of impressive manual graphics which is encouraging.

General comments on the design assignment

Markers indicated that the level of response was similar to last year. There were some outstanding folios. Markers also commented that the topics this year allowed candidates more opportunity to show technical development. There were also impressive instances of the use of modelling to research solutions and inform decisions in the development stage.

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

Areas in which candidates performed well

In the question paper, candidates performed well in general in Questions 1, 2 and 3. This is with the exception of Question 1 (f) where the responses were disappointing.

In general, candidates performed well in the generation of ideas stage of the design assignment.

Areas which candidates found demanding

Question paper

Candidates found Questions 6 (manufacturing, standard components, JIT, outsourcing, etc) and 7 (IPR) demanding in the question paper.

Design assignment

Candidates sometimes do not leave themselves enough room to adequately develop their ideas. Less able candidates still have some difficulty with this section. The classroom teacher has a very important role in guiding the candidate during the preparation stage before they commence their design assignment. 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 aesthetic creativity while others allow for more technical detail and development.

Advice to centres for preparation of future candidates

Make sure that the exemplar material on SQA's website is being used to illustrate the format for the design assignment.

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 upon candidates' performance in the written paper.

The classroom teacher has an important role in teaching pupils about planning the structure of a design assignment to make best use of the eight 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. This should not, however, result in an entire cohort being directed to a topic.

Preparation for the written paper must consist of training in examination techniques and acceptable responses. It is no use expecting candidates to give 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 make acceptable answers to questions in the final examination.

Exemplar candidate responses for both the question paper and the design assignment from Diet 2011 have been published on SQA's secure website and centres are encouraged to make use of these materials.

Statistical information: update on Courses

Number of resulted entries in 2010	2,462
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Number of resulted entries in 2011	2,441
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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 140				
A	15.6%	15.6%	382	98
B	27.4%	43.1%	669	83
C	29.0%	72.1%	708	69
D	12.2%	84.3%	298	62
No award	15.7%	100.0%	384	-

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.