



Course Report 2016

Subject	Design and Manufacture
Level	Higher

The statistics used in this report have been compiled before the completion of any Post Results Services.

This report provides information on the performance of candidates which it is hoped will be useful to teachers, lecturers and assessors in their preparation of candidates for future assessment. 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 assessment documents and marking instructions.

Section 1: Comments on the Assessment

Component 1: question paper

The question paper consists of two sections totalling 70 marks and was structured in the same way as the published specimen question paper (SQP) and exemplar question paper (EQP) incorporated a mixture of short response and extended response type questions.

The question paper performed in line with expectations, and feedback from the marking team suggested that it was fair in terms of course coverage and overall level of demand.

Component 2: assignment

The Assignment for Higher Design and Manufacture was allocated a total of 70 marks. A bank of Course Assessment Tasks was set by SQA, assessed by centres and subject to external verification by SQA. All tasks performed well and allowed candidates to access full marks. All tasks also generated a wide range of responses and marks.

Section 2: Comments on candidate performance

Areas in which candidates performed well

Component 1: question paper

Candidates generally performed well in the following questions:

Question 1

- a) This was answered well by most candidates. Candidates should avoid duplication and explain six different properties/characteristics of the materials given.
- b) This was answered well by most candidates. Candidates were given credit where a correct explanation was given to an incorrect process.
- c) This was answered well by some candidates. However, many candidates did not refer to four different aesthetic aspects as detailed in the question.
- d) This was answered reasonably well. Many candidates repeatedly used recycling of materials to answer this question. This was sufficient to be awarded one mark. Candidates were given credit where they referred to the environment that the scooter was used in.
- e) This was answered well by most candidates.

Question 2

- a) This was answered well by some candidates. Many candidates only gave one reason for using thermosetting plastic although it was a two-mark question.

- b) This was answered well by most candidates. Some candidates answered this question by providing information on research techniques *after* development of the product range and were therefore not awarded marks.

Question 3

- a) This was answered well by most candidates.

Question 4

- b) This was answered well by most candidates.

Question 5

This was answered well by some candidates. Many candidates gave a brief description and did not provide the depth of answer required to be awarded full marks.

Question 6

- a) This was answered reasonably well by most candidates. Some candidates explained idea generation techniques but did not answer the question about why they are effective.

Component 2: assignment

Candidates generally produced good evidence for Section 1: Generating Ideas.

A significant number of candidates produced very good evidence for Section 3: Applying Graphic Techniques.

An increased number of candidates produced good evidence for Section 4: Applying Modelling Techniques.

Areas which candidates found demanding

Component 1: question paper

Candidates had difficulty with the following questions:

Question 2

- c) Many candidates did not respond to this question at all. It had some overlap with question 6b) when candidates identified models to describe presentation techniques.

Question 3

- a) Many candidates explained the benefits of fully automated manufacturing but did not explain the impact on society as required by the question.

Question 4

- a) Candidates did not provide a clear explanation of the suitability of these processes.
- c) Many candidates did not explain the drawbacks to the manufacturer specifically. A small number of candidates did not understand the term 'drawback'.

Question 6

- b) Candidates readily identified different types of models. However, they struggled to describe how these models could be used within the design process.

Question 7

This question was designed to assess candidates' understanding of all aspects of ergonomics and how it influences the design of products, and there was a wide range of responses.

Some candidates managed to explain ergonomics well using good examples to illustrate their points. However, many candidates struggled to stay focused on ergonomics and, as a consequence, the points made were very generic in nature and did not demonstrate a good understanding of all three aspects of ergonomics.

Component 2: assignment

A significant number of candidates carried out very little exploration or refinement, simply making very minor changes to one of their initial ideas. This impacted on marks for Sections 2–6.

Section 2: Exploring and Refining Ideas. A significant number of candidates simply described how they were going to make one of the initial ideas and carried out very little exploration or refinement.

Section 3: Applying Graphic Techniques. Although a significant number of candidates demonstrated excellent graphic skills, the range was often limited because very little exploration and refinement had taken place.

Section 4: Applying Modelling Techniques. Although there was improvement in this section, there was still often limited demonstration of modelling skills because very little exploration and refinement had taken place.

Section 5: Applying Materials and Processes. The application of knowledge of materials and processes was often very superficial.

Section 6: Applying Knowledge and Understanding of Design Issues. Again, application of knowledge of design issues was often very superficial.

Section 3: Advice for the preparation of future candidates

Component 1: question paper

Assessors are advised to use the exemplar materials (for example, specimen/exemplar question papers and marking instructions) which are available on the SQA website, when preparing candidates for the examination.

Preparation for the question paper could also include training in examination techniques and in producing acceptable responses to questions. Many candidates are not *describing* or

explaining their answers in sufficient detail for a question paper at Higher. Candidates will continue to struggle to produce extended answers in the question paper if they have not been used to doing this. They should be encouraged to discuss and debate to allow them to acquire a technical vocabulary that will allow them to produce acceptable answers to questions in the question paper.

In addition, candidates should consider the mark allocation for individual questions when producing a response. A four-mark question is generally looking for four correct statements to be provided to achieve full marks.

The Course Assessment Specification contains a section titled *Further mandatory information on course coverage*. This section lists all the available areas of sampling for production of the question paper. Assessors are advised to familiarise themselves with the mandatory content to prepare candidates to respond to these areas of questioning.

Exemplification of Higher candidate responses can be found in the Understanding Standards section on the secure website.

Component 2: assignment

The Design Information Record (DIR) should be completed by candidates before they undertake the task. The information on the DIR provides much of the direction for the exploration and refinement of the proposal.

Candidates should apply the skills they have gained in the Units. In particular, they should:

- ◆ use idea generation techniques to ensure that they access full marks in Section 1
- ◆ be able to explore and refine ideas. In doing so they will require to apply modelling and graphic techniques and knowledge of materials, processes and design issues, resulting in enhanced marks for Sections 2–6

Exemplification of Higher Assignments can be found in the Understanding Standards section on the secure website.

Grade Boundary and Statistical information:

Statistical information: update on Courses

Number of resulted entries in 2015	2224
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Number of resulted entries in 2016	3078
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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 -				
A	14.2%	14.2%	437	101
B	22.2%	36.4%	682	87
C	26.0%	62.3%	799	73
D	12.2%	74.5%	374	66
No award	25.5%	-	786	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.