



Course Report 2015

Subject	Design and Manufacture
Level	National 5

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 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 assessment and marking instructions for the examination.

Section 1: Comments on the Assessment

Component 1: Question paper

The question paper for Design and Manufacture consisted of two sections totalling 60 marks. Section 1 examined materials and manufacturing processes in a workshop setting. All of the questions in this section centred around one product which this year was a child's toy helicopter, with a section total of 24 marks. Section 2 examined knowledge and understanding of design issues and commercial manufacturing within a framework of 5 individual questions, each with a different focus. Section 2 totalled 36 marks.

The question paper performed well, with the level of demand as expected. Further details of specific demand levels of individual question performance will be addressed later in this report.

Component 2: Assignment

The Assignment for Design and Manufacture was allocated a total of 90 marks; design skills (45 marks) and practical skills (45 marks). Tasks for the Assignment were set by SQA, assessed by centres and subject to external verification by SQA. Candidates undertook one task from a bank of three.

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

Component 1: Question paper

Candidate performance throughout the question paper was generally of a good standard. There were several areas of questioning that were answered very well by candidates. These included question 1, where performance throughout was mostly of a good standard. There were some sections in question 1 that candidates found demanding (see section 4 of this report).

Question 3(c), was answered well by most candidates, and this was particularly pleasing as this style of question addressed one of the less demanding areas from last year's question paper. The question was devised to be at the correct level of demand and this was demonstrated through candidate responses.

Question 5 was also answered very well, where candidates effectively described evaluation techniques and the role of members of the design team.

Component 2: Assignment

All tasks performed well and allowed candidates to access full marks. All tasks also generated a wide range of responses and marks.

Section 3: Areas in which candidates performed well

Component 1: Question paper

- Question 1 (a) (i): Answered correctly by the majority of candidates.
- Question 1 (b) (v): Answered correctly by the majority of candidates.
- Question 1 (c) (i): Answered correctly by almost all of the candidates. The properties of acrylic are clearly well known by candidates.
- Question 1 (c) (ii): Answered correctly by the majority of candidates, showing clear evidence of practical activity with plastics being undertaken in centres.
- Question 1 (e): Answered correctly by almost all candidates, showing a clear understanding of target markets.
- Question 1 (f): Answered correctly by almost all candidates, showing a clear understanding of environmental awareness.
- Question 2 (a) (i): Answered correctly by almost all candidates, showing a clear understanding of the properties of plywood.
- Question 3 (c) (i)/(ii): Answered correctly by the majority of candidates, showing a clear understanding of modelling and its uses. This once again is pleasing as it forms a significant part of the coursework assessment, showing centres are tackling this area with confidence.

Component 2: Assignment

Design Skills

Most candidates produced good evidence in the 'Ideas' stage.

A number of candidates used excellent graphic and modelling techniques to advance and communicate their design proposal.

Most candidates carried out effective Evaluations and made good reference to the specification.

Practical Skills

Evidence submitted to assess Practical Skills was generally strong. Most candidates had designed and made items which were manageable and allowed them to demonstrate the skills being assessed.

Section 4: Areas which candidates found demanding

Component 1: Question paper

- Question 1 (b) (iv): Candidates found this question demanding. There were a significant number of 'no responses' to this question. There were many possible correct responses in the marking instructions, and also under the 'any other suitable response' heading. However, candidates did not respond suitably and therefore found this question demanding. Many candidates responded with die-casting. This was not acceptable due to the fact that the legs were mild steel and the melting point of mild steel would prevent die-casting being used in industry.
- Question 1 (d) (i): Some candidates found this question demanding. This question included an option to use sketches. Where this was utilised, candidates gained marks.
- Question 2 (a) (ii): Most candidates found this question demanding. There were a significant number of 'no responses' to this question, which was surprising given the drive of centres to use laser cutting and associated CAM methods.
- Question 6 (b): Most candidates found this question demanding. Many responses showed understanding of the benefits of injection moulding, but not the visual features of the process. The benefits of injection moulding were deemed to be not of sufficient demand when considering last year's question paper responses, such as 'quick', 'easy', and 'cheap'. This question performed very well as a discriminator question as described in the Course Assessment Specification.

Component 2: Assignment

Design Skills

A number of candidates carried out very superficial 'development of ideas', often simply adding a few details such as sizes, to one of their ideas.

Practical Skills

A number of candidates undertook projects that did not allow them to demonstrate the practical skills being assessed. If a project is very simple it may not allow the candidate to demonstrate skills in 'cutting, shaping and forming'.

If materials are supplied to the candidate cut to size, this may reduce the opportunity to gain marks in 'measuring and marking out'.

Section 5: Advice to centres for preparation of future candidates

Component 1: Question Paper

It would be good practice to become familiar with the relevant Marking Instructions, which are published annually on SQA's website. This is the second question paper for Design and Manufacture at National 5 level, and question trends will undoubtedly emerge. The question styles will remain similar with further sampling of the mandatory content over the coming years.

It would be considered 'good practice' to ensure candidates respond in sentences rather than single-word responses. Single-word answers can attract marks where the command word is 'State', but where 'Describe' and 'Explain' are used as the command word it is expected that some degree of description or explanation respectively is expected. Candidates are likely to gain marks more easily where descriptive and explanatory responses are given when required.

The best possible preparation for the question paper is to give candidates the opportunity to work through question papers that are similar in style. Teachers would be best placed to talk through the marking instructions with candidates as they complete each question. There are specific tactics that can be employed by candidates to ensure their responses attract marks. These can be practiced to ensure candidates are fully prepared for the final examination.

The Course Assessment Specification contains a section titled *Further mandatory information on Course coverage*. This contains all the available areas of sampling for production of the question paper. It would be anticipated that centres use some time prior to the examination to prepare candidates to respond to these areas of questioning. This would be of specific use where candidates have not fully experienced the content during their course.

Exemplification of National 5 candidate responses can be found in the Understanding Standards section on SQA's secure website.

Component 2: Assignment

Candidates should be aware of the skills and knowledge that are being assessed in this component:

Practical Skills: Candidates need to be aware that their proposal will have to allow them to demonstrate all of the practical skills being assessed. A very simple proposal may have to be altered to allow them to do this — assessors should advise candidates on the suitability of their proposal for generating practical evidence.

Design Skills: Candidates should be prepared with the skills to allow them to develop design proposals. In particular, candidates should be able to explore and evolve ideas, demonstrate application of knowledge of materials, and design issue and review their ideas.

Candidates should be made aware that appropriate graphics and/or modelling should be used. Fully detailed and rendered graphics are time consuming and are not required throughout the folio.

Exemplification of National 5 Assignments can be found in the Understanding Standards section on SQA's secure website.

Statistical information: update on Courses

Number of resulted entries in 2014	4135
Number of resulted entries in 2015	5169

Statistical information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark - 150				
A	33.6%	33.6%	1738	110
B	30.4%	64.0%	1572	95
C	21.6%	85.6%	1117	80
D	5.9%	91.5%	304	72
No award	8.5%	-	438	-

For this Course, the intention was to set an assessment with grade boundaries at the notional values of 50% for a Grade C and 70% for a Grade A.

The question paper was to standard, however it was felt that, as a consequence of the application of the marking instructions of the course assignment, that demand had been eased in this area, so therefore, a 5 mark shift was needed to be reflected in the Upper A, A and C boundaries.