



**General Certificate of Secondary Education
June 2012**

**Design and Technology: 45652
Systems and Control
Technology**

(Specification 4565)

Unit 2: Design and Making Practice

Report on the Examination

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45652 Principal Moderators report on Controlled Assessment for DT: SCT 2012

This was the second year of the controlled assessment unit for Design and Technology: Systems and Control Technology, and it was again pleasing to see the variety of ways in which candidates responded to the tasks. All 12 design tasks were attempted and candidates produced a wide range of largely successful outcomes. There were very few requests to contextualise the tasks and a couple of these were granted where the context did not affect the nature of the system required.

Most centres offered a limited choice of tasks, but it was pleasing to see that the majority of centres offered a choice of several tasks to candidates allowing a much greater range of outcomes than seen with the previous specification. Where only one task was undertaken by all the candidates from a centre, there were generally still opportunities for creativity and individuality.

The vast majority of candidates completed functioning products or systems for criterion 3 which combined technologies. It was extremely pleasing to see that teaching staff had managed the time and resources available to candidates very successfully. Design work was submitted in either paper-based folders or electronically as Powerpoint or PDF files. All candidates were able to respond to the tasks undertaken at a level appropriate to their ability. There has been a review of the 'contexts and tasks' offered to centres so please note some have changed for submission in 2013 and 2014.

It is evident that exemplar work produced by AQA had been used to assist assessments by the vast majority of centres and most were within tolerance with their marks. Where centre assessments were inaccurate, it was usually most apparent in Assessment Criterion 2, Development of Design Proposals (including modelling) and Assessment Criterion 4, Testing and Evaluation.

Administration

Design work should be submitted either as paper based folders or electronically as Powerpoint or PDF files. Please do not use any other format. There were many excellent design folios which were focused and concise with all the relevant areas covered. Photographic evidence was being used in virtually all instances, but please remember that with Systems and Control it is very important to show photographic evidence of **all** aspects of the system. Annotation on Candidate Record Forms (CRFs) is important and helpful in aiding a moderator to support the centre's judgement. Teachers should use the CRF positively by explaining particular circumstances and considerations which have arisen and affected the assessment of a candidate which may not be apparent to the moderator. Most centres were prompt with the dispatch of marks and sample folders.

Assessment Criteria 1: Investigating the design context.

This criterion is worth a maximum of eight marks but if used purposefully sets the agenda for a successful piece of project work. Candidates who wrote down the selected controlled assessment task and context, and then investigated it, tended to be more successful with their project as it gave them an opportunity to analyse and research with a more open mind, rather than stating what was going to be manufactured. When analysing relevant existing products or systems the best candidates analysed the systems in terms of 'Input', 'Process', and 'Output'. Where the target market was profiled well, it often helped the candidate to focus the designing and evaluation, including seeking client opinion as the design progressed. Initial specifications that reflected the analysis and research undertaken put candidates in the top mark band.

All candidates need to keep their research brief and focussed but use it to directly influence their design ideas. This section attracts 8 marks out of 90. A number of candidates spent a disproportionate amount of time on this aspect of the task.

Assessment Criteria 2: Development of design proposals (including modelling)

Successful candidates had created a specification with measurable factors (objective where possible, rather than subjective), and identified a system, rather than a specific process. They included reference to the broader social and moral issues, as well as environmental considerations and sustainability, but linked to their particular project. The more successful candidates had PCB's which showed development; if auto-routed, the tracks were made thicker, re-aligned, pads made bigger, component location identified etc.

Where PIC programming was used, this often appeared in completed form with little or no explanation with generally only the very best candidates explaining and showing how programs were developed.

Moderators were pleased to see photographs used to evidence modelling with many candidates modelling shape and size of final outcomes in card. For the manufacturing specification, moderators are looking for candidates to try to provide enough information for a competent 3rd party to be able make the product. This could be conveyed successfully through some sort of formal drawing/sketch/CAD with measurements, a cutting list and a plan of making. Other approaches can also convey the same information.

Assessment Criteria 3: Making

Many candidates presented work worthy of being in the top mark band; this work was often demanding and of an excellent quality. Candidates obviously put a great deal of time and effort into this criterion and to be successful they have to manage their time very well.

In some cases however, candidates were awarded marks from the top mark band where the outcome was not overly demanding or rigorous, and where they had not taken time to hold down circuits and battery packs appropriately, had not fixed or mounted switches appropriately, had not dressed wires neatly, and had not made or attached mechanisms appropriately. Excessive use of glue gun was also visible in some cases. Centres must also provide moderators with detailed photographs of all aspects of the making, including photos, to show the quality of soldering if PCBs are made by candidates.

It was very pleasing to see the number of outcomes that had the potential to be commercially viable with further detailed development. There were again a number of candidates producing creative products. This is generally in centres where the candidates have been offered a choice from a large number of the set tasks. Candidates who achieved top band marks showed a high level of making / modelling / finishing skills and accuracy.

However the lack of finesse demonstrated in some of the practical outcomes meant that in some cases the marks awarded by some centres were unjustified; for candidates to be awarded marks from the top band, there should be evidence of a number of the following quality standards:

- PCB and battery secure in the product or system.
- Circuit assembly and soldering completed to a high standard,
- Exposed wires insulated by use of heat shrink,

For a Systems and Control project to have commercial viability and suitability for the target market, it must be complete so that the customer/client can see how it would work and understand it's commercial appeal. If this is not the situation with a piece of practical work, its 'best fit' is under the descriptor of "viable with further development".

Assessment Criteria 4: Testing and evaluation

Successful candidates in this section honestly appraised their work and told the moderator whether it worked or not, what they had found difficult and what was successful, and said how they might improve their product taking into account feedback from their client/target market. They also referred back to their initial design criteria statements and specification, produced formative as well as summative evaluation and tested the practical work on a regular basis during its manufacture and at completion seeking 3rd party opinions of their designs.

Candidates who did not score highly on this section missed many aspects of the above, possibly through poor time management and not finishing the outcome in the time period available. All candidates should realise that, at 12 marks out of 90, this is a significant element of the controlled assessment work.

Assessment Criteria 5: Communication

The majority of centres were accurate in their assessment for this criterion however there were a significant number of candidates awarded marks in the top band where this was not justified. To achieve this candidates should:

- have a narrative which explains and justifies their decisions and processes
- have an organized, concise, focussed and legible design folder, including name, cover, contents, page numbers, page titles, acknowledgements,
- used technical language,
- have appropriately produced design work by hand and by use of ICT.

A few reminders

- Please use your Controlled Assessment Adviser. They are appointed to help and guide you with your candidates' choice of projects - especially if you want to try something that is unusual and you need reassurance.
- Photographs – as many as possible of 3-D modelling and the practical work so that the moderator is in no doubt why marks have been awarded.
- If a moderator wishes to visit your centre, it would be appreciated if centres could provide batteries, screwdrivers and written instructions describing how the projects work.
- Moderators would be helped if projects were left with screws removed from cases or loosened ready for examination;
- All documentation is sent to your centre's examination officer; please check regularly for AQA correspondence

Conducting controlled assessment tasks

Centres are reminded of the need to restrict feedback to candidates to generic feedback, i.e. feedback given to the whole group. Detailed guidance on conducting the controlled assessment can be downloaded from e-AQA on the secure area of the AQA website. This is printed following the Controlled assessment tasks. If you have no access to e-AQA, register, or speak to your examinations officer. Whilst logged on to the site, you will also be able to access the very useful enhanced results analysis service (ERA), enabling you to analyse the performance of your candidates (once results are published).

The exemplar materials produced for training meetings over the last few years have been used in many centres to allow pupils to self-assess their work as it progresses.

Some centres have made use of scaffolding, frameworks, templates etc to assist pupils in the production of their controlled assessment work. Whilst these prove useful in ensuring all candidates have some response to all assessment objectives, they can stifle the creativity of middle and higher ability candidates.

Centres are reminded that controlled assessment tasks have been reviewed and possibly amended for examination submission in 2013 and 2014.

Administration of assessments

It is evident that exemplar work produced by AQA had been used to assist assessments. The vast majority of centres were within tolerance with their marks. Where centre assessment was inaccurate, it was usually most apparent in criteria 2, 3 and 4.

The candidate record form was well used by many centres to explain the marks awarded. It was particularly useful to clarify if any help had been given to candidates e.g. where PCB designs were given to the candidate.

Most centres were prompt in the dispatch of marks and requested folders. A few centres did not realise that they needed to send all folders where there were 20 candidates or less.

Many centres were very helpful in providing clear photos of outcomes, thus avoiding the need for moderator visits (where the assessments were accurate!).

Centres producing electronic portfolios could consider short video clips of outcomes and systems functioning, although care must be taken so as not to make file sizes too large and cumbersome.

Mark Ranges and Award of Grades

For grade boundaries, please click the following link:
www.aqa.org.uk/over/stat.html

For the UMS conversion calculator, please click the following link:
www.aqa.org.uk/umsconversion