Version 1.0: 14/11

ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Design and Technology: Electronic Products 45402

Unit 2: Design and Making Practice

Report on the Examination

2011 examination – June series

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Set and published by the Assessment and Qualifications Alliance.

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General

- In the first year of the submission of controlled assessment for DT: EP, it is very pleasing to report on the success of so many centres in responding to the new specification in such a positive and enthusiastic manner. Many centres spent a considerable amount of time and effort in the presentation of the controlled assessment projects for moderation and this was very much appreciated by the moderation team, for whom the task was made significantly easier. Candidates submitted completed design folders with detailed photographic evidence of their completed electronic products for assessment. Congratulations to all the teaching staff for the determination shown to help their students achieve their potential.
- All twelve contexts and tasks proved popular and they allowed the candidates to respond with creative ideas. There were very few requests to contextualise the tasks, and in all cases, merely adapting the context could accommodate the brief suggested.
- Centres had the opportunity to offer all, or as little as just one design task, but in either case, there was the opportunity for candidates to show creativity and individuality.
- There will be a review of the 'contexts and tasks' offered to centres so it is possible that these may change slightly for submission in 2013. As Principal Moderator, I have listened to your requests over the last two years and hope to be able to meet them in the revised version of the Controlled Assessment Tasks..
- It is evident that exemplar work produced by AQA had been used to assist assessments and the vast majority of centres were within tolerance with their marks. Where centre assessments were inaccurate, it was usually most apparent in Assessment Criterion 2 and 3.

Administration

- Design work was 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 'mean and lean' with the relevant areas covered and not padded out, and photographic evidence was being used in virtually all instances.
- Annotation on CRF's is important and very 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 would not be apparent to the moderator.
- Most centres were prompt with the dispatch of marks and requested folders.

Applying the standard

Assessment Criterion 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.
- Research needs to be focussed on the project topic, candidates suffered if generic research filled out too much of the design folder - research should be an aid to decision making.
- Identifying the target market and user helped many candidates to put a structure to their project by producing a more rigorous specification and also offering the opportunity for on-going feedback and evaluation.
- Candidates who investigated similar products, identified inputs and outputs, examined 'case designs' that fitted in with their design ideas, and did not have too many pre-determined conclusions, tended to generate imaginative and innovative ideas in Assessment Criterion 2.

Assessment Criterion 2

Development of Design Proposals (including modelling)

Successful candidates:

- had a specification with measurable factors (objective where possible, rather than subjective), addressed qualities of materials, identified a system, rather than a specific process.
- included reference to issues including social, moral, environmental and sustainability, but with reference to their particular project.
- modelled ideas by both real world and virtual methods, whether it be hand drawn circuits or CAD, or bread board or CAD/CAM.
- had PCB's which showed development; if auto-routed, the tracks were made thicker, re-aligned, pads made bigger, component location identified.
- made the shape and size of the PCB fit the 'case'.
- showed development of the 'case' through initial sketch ideas and 3-D modelling.
- applied QC, QA, and RA to relevant areas of the project.
- for the manufacturing specification, should try to provide enough information for a competent 3rd party to be able to make the product; this could be conveyed successfully through a formal drawing, sketch or CAD with measurements and a plan of making.

Assessment Criterion 3

Making

Candidates who achieved top band marks showed a high level of making / modelling / finishing skills and accuracy.
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 case/package,
- Circuit assembly and soldering completed to a high standard,
- PCB strain holes used to secure wires, preferably stranded wire,
- Exposed wires insulated by use of heat shrink,
- External components appropriately fitted to case/package,
- Case/package completed to a high standard with access to the circuit and battery; it must be fit for purpose – ergonomics/anthropometrics applied (size, shape, weight, materials, colour, texture).

An electronic product, to have commercial viability and suitability for the target market, must be complete so that the customer/client can see how it would work and understands 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 Criterion 4

Testing and Evaluation

Successful candidates:

- honestly appraised their work and told the moderator whether it worked or not, what they had found difficult and what was successful, how they might improve their product and, a good example of differentiation, had feedback from their client/target market.
- would have 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 it's manufacture and at completion.
- might have considered commercial production.

Assessment Criterion 5

Communication

Successful candidates:

- had a narrative which explained and justified decisions and processes,
- had an organized, concise, focussed and legible design folder, including name, cover, contents, page numbers, page titles, acknowledgements,
- used technical language,
- had 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 trying 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 worked.
- Moderators would be helped if projects were left with screws removed from cases or loosened ready for examination; it would also be helpful to moderators if PCBs were removed from PCB pillars, allowing for the inspection of soldering and circuit build quality. It is pleasing to report most candidates used commercial / industrial methods to ensure QC and that very few candidates used glue to seal their cases or hot glue guns to hold printed circuit boards, speakers, seven segment displays or batteries in place.
- Candidates are producing prototypes in a fixed time, so be realistic about what can be achieved and please note that Assessment Criterion 2 and 3 include the word 'modelling' – it is to be used to support and enhance the electronic product.
- All documentation is sent to your centre's examination officer; please check regularly for AQA correspondence.

Conclusions

- The specification is called Design and Technology: Electronic Products, and AQA wants it to be an inclusive, broad based specification capable of meeting the requirements of a wide and diverse group of centres; those who might be more biased towards electronics or for those who see it as leaning more towards product design. The vital word which distinguishes and differentiates it, is “Electronic Products” - candidates should be designing electronic products that are fit for purpose and they should also show an understanding of electronics and its practical application.

There is evidence that many centres are using strategies to encourage innovation and the development of original electronic products, particularly centres that are new to AQA. Innovation, creativity, flair, originality and risk taking will be rewarded so unless there is an educational need to limit candidate’s opportunities, try to let them be as individual as possible in their approach – it’s not complexity that is needed but creativity.