



GCSE EXAMINERS' REPORTS

DESIGN AND TECHNOLOGY

SUMMER 2015

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<https://www.wjecservices.co.uk/MarkToUMS/default.aspx?!=en>

Online results analysis

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Annual Statistical Report

The annual Statistical Report (issued in the second half of the Autumn Term) gives overall outcomes of all examinations administered by WJEC.

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DESIGN AND TECHNOLOGY
General Certificate of Secondary Education
Summer 2015

CONTROLLED ASSESSMENT TASK

Chief Examiner/Principal Moderator: Jason Cates

General Comments

Candidates and centres must be congratulated for their hard work in completing tasks to the standards witnessed by moderators this year. The 2015 series of Controlled Assessment Tasks (CATs) for Unit 2 represents the fifth year of this type of assessment for centres and candidates. Most centres are very comfortable with the task setting, taking and assessment processes by now. There are an increasing number of valuable resources to be used to support the CAT delivery and assessment including the OER (Online Examination Review) where each focus area has marked CAT pages available for teachers and candidates to consider. Again this year, there are some excellent examples of innovative and creative designing and manufacturing, demonstrating that centres and candidates are comfortable with the way tasks are set, completed and assessed. A significant number of new centres have completed the course this year.

Assessment of CAT work

In general, the majority of centres apply the assessment criteria consistently and fairly across all candidates in all focus areas. There are instances where marks are generous, and in few cases, rather harsh on candidates where they may deserve slightly more. Internal cross moderation remains an area for further development within centres. It is clear and evident that when an adjustment is required to bring candidates in-line with the national standard, this is often in one focus area in a centre which is delivering multiple focus areas with various classes and teachers. Some centres would benefit from an internal discussion on standards, considering candidate outcomes and the detailed marking criteria, and then the application of that agreed standard to all candidates in all focus areas. The likelihood of one focus area being over generous or harsh will be much reduced, and as such, less adjustment will be necessary.

Delivery Issues

Centres largely comply with the instructions for delivering and assessing CAT work. However, this year it was evident that there were some issues relating to procedures and managing CATs in centres.

- (i) **Centres must use the CAT dated for the year of the award.** A small number of centres failed to use the correctly dates CAT workbook sheets. This presents issues regarding task taking and raises questions regarding the 'control' of the task taking.
- (ii) **Adhere to the '3 set briefs.'** A small number of centres failed to closely adhere to the '3 set briefs' within the focus area, and candidates work may have 'strayed' from the outcomes expected.

- (iii) **Prepare for Moderation.** Communication via email is critical in organising moderation dates and times. A number of centres failed to display work effectively this year as a lack of organising and managing the moderation process. Centres are responsible for ensuring effective communication between WJEC and themselves in order to present the generated sample of work for the visiting moderator. Contact must be made if there are any issues to jeopardise this process.
- (iv) **15 page A3 CAT workbook.** A very small number of candidates amended or added to pages when completing designing pages in the CAT workbook. Working on any materials outside the page frame will not be considered part of the CAT. Fold out parts, notes on the back of pages, duplicate pages etc. will be ignored by the moderator.
- (v) Writing frames given by centres to help candidates complete pages constitutes support and guidance. This will therefore reduce the marks awarded when compared to a candidates who has worked without support, guidance or a writing frame.

Administrative Issues

The Notes for Teachers clearly sets out the requirements for assessing and authenticating candidates work in a standardised manner. There appeared to be some areas of uncertainty for centres which resulted in some modifications, additions or replacements for some paperwork during moderation days. In order to host a 'problem free' moderation day, the following is suggested:

- (i) Once marking is complete, the sample is generated automatically when all marks are entered via www.wjecservices.co.uk. Centres must then print a hard copy of the WHOLE entry for each focus area, and print a SAMPLE for each focus area. It is then clear to moderators how the sample represents the whole entry, and whether other candidates work outside the sample may be required.
- (ii) All DT2 forms must have Candidate Numbers, Centre Numbers, Focus Areas highlighted, Brief Number highlighted and a Candidate and Teacher authentication signature. Some centres failed to ensure that work was authenticated this year, and moderators require this for all tasks.
- (iii) The justification of the mark awarded to candidates by a centre is critical. For designing pages, **supporting comments should be added to the bottom of CAT pages.** This is an opportunity to support the marks awarded by giving some reasons. This helps the moderator agree with centre marks. For making marks (M1 to M6) the DT2 has areas for brief supporting comments.
- (iv) For the moderation display, the sample should be presented in rank order using the generated sample sheet. The DT2 should be attached to the front cover. Page 15 should contain 4 photographs of the artefact/s made. All product/s should be available to support design folios. Work from outside the sample still needs to be available to the moderator and may be requested. No CAT work, design based or practical, should be removed from the centre before November after the award.

COMMENTARY ON THE CAT WORKBOOK

Pages 1 to 4

Candidates analyse products well. This page allows candidates to report on investigations and research in a realistic timeframe. The analysis / disassembly of a competitor product could be more detailed in some cases.

Specifications can be improved. The majority do not use data when presenting Design Specifications. Sizes, weights, costs and tolerances can all allow candidates to access higher marks by adding numerical data to criteria. It also provides a clear set of tests during the Evaluation process. SMART specification criteria require some additional thought, so candidates need to develop specification points into meaningful designing parameters. E.g. *..It must be safe to hold..* is a low level response, whereas *..it must be no larger than 100mm x 45mm x 20mm so that it safely fits in the users hand...* is a more developed and higher level response.

Initial ideas require 4 appropriate concepts that reflect the specification criteria. The best features from these ideas are then 'morphed' into a best idea on page 4.

The assessment of the D&T content and the QWC was usually accurate.

Pages 5 to 9

The development pages have improved progressively in the last few years. Candidates need to develop ideas, and this needs to be done using modelling, testing, experimenting and reflecting. Tables of words are not really idea development. The assessment scheme clearly shows that the marks from 2 to 5 can only be awarded if a candidate has explored a number of possibilities and made a decision based on analysis. Many candidates fail to offer options and alternatives and as a result access low marks. If a narrow and 'thin' approach is evident throughout the development pages, candidates are failing to access the majority of the marks available. This is an area where moderators generally disagree with centre marks because the candidates work does not fit the assessment descriptors. It is the intention that development pages contain notes, sketches, diagrams, models and testing. These pages should 'tell a story' of how ideas are being refined. This year, moderators saw some very 'wordy' development sheets, with information often presented in tables, which offered possibilities and decisions with little or no reference to sketches of the ideas. This approach prevented candidates from understanding the constructional details, form, components required and possible sizes of their ideas and only limited development could take place as a result.

The assessment of these pages was usually generous. Centres must only award high marks if the work presented clearly meets the descriptor. If work does not match the descriptor, a lower mark should be considered.

Pages 10 and 11

These pages are the final detailing required to visualise products, and also clearly understand technical details such as dimensions, assembly methods, fixtures and fittings etc. An effective approach is for candidates to consider:

- (i) Page 10 is where the final proposal is presented to a client. A highly visual representation of the concept. Colour renderings and CAD generated images work well here.
- (ii) Page 11 is where all the Engineering drawings, sizes, measurements, assembly details are presented. Anything a manufacturer would need to make the product drawn on page 10 needs to be presented here.

Together, these pages should give enough detail for a manufacturer to produce their product/s without consultation to the designer. If sufficient details are present, high marks may be awarded. To award four marks the assessment scheme states: “A **very good graphical presentation** of the final product. It **uses a recognised graphical technique**, is **accurate in its structure** and it shows **effective shading and / or colour rendering**.” A sketch will not fulfil these requirements.

Centres are reminded that these pages impact on the Dimensional Accuracy mark awarded in the making of the product.

The assessment of page 10 was often generous with poor quality illustrations awarded high marks.

CREATIVE THINKING

This mark is available for any evidence of creativity throughout the designing and development process. There may be innovative use of materials in designing. Sketching and development of form may be very imaginative and artistic. Candidates may approach function divergently and have a product with inventive features. There may be a clever use of a manufacturing method or process in the development of construction. Candidates should be rewarded for their creative thinking wherever it occurs.

Centres appear to be comfortable and confident when marking Creative Thinking. It is not an area where Moderators generally disagree with Centres. The assessment of this aspect was usually accurate.

Page 12

Planning is probably still the weakest sheet within the CAT workbook. Few candidates presented fully detailed manufacturing stages, with time constraints, equipment and tools required, and details of the practical activities that would take place. Many candidates presented a retrospective ‘diary’ of what they had done to make their product. This is not a plan and will only fit the 1 – 2 mark descriptor.

Centres should note that to award more than 7 marks “A list of realistic manufacturing steps is evident.. detail of the processes required... a realistic estimate of the time needed to manufacture the outcome.” A simplistic Gantt chart with basic details is not enough to access 7 marks. Moderators frequently adjusted centre marks in this area.

The assessment of the D&T content and the QWC was usually generous. Adjustments were common in Planning.

Pages 13 and 14

Evaluations are generally good. They must be presented as continuous writing, and candidates who use bullet points or table with ticks and crosses are penalised here. The quality of QWC is critical to accessing higher marks. Candidates with well-structured Specifications find the analysis easier because they have clear criteria to measure the product/s against. Where Specifications are weak, basic or limited it is difficult for candidates to establish how far they have or have not met their design intentions and the target markets requirements. Writing frames are discouraged here because they structure candidates work, and often this support and guidance is not reflected in the marks awarded.

Modifications pages are often repetitive and reflect similar features from the Evaluations. This page is an opportunity to further develop solutions, to modify and re-design aspects which have been criticised in the Evaluation. Candidates should follow on from the Evaluation and ‘put right what is wrong’ rather than accept that the project has ended.

There were some very good examples where candidates had produced sketches and diagrams of alterations and changes that would further improve proposals. These gained higher marks.

There is a tendency for weaker candidates to 'run out of steam' during pages 13 and 14 and gain low marks. There are 20 marks available for these pages and time must be allocated to complete the pages as fully as possible.

The assessment of the D&T content and the QWC was sometimes generous. Centres must award marks for work that fits the descriptors clearly, so that moderators will not have to recommend adjustment of the marks awarded by the centre.

MAKING

There are 90 marks available for candidates to access when manufacturing the product/s that they have designed, developed and presented in the CAT workbook.

Range & Difficulty of practical processes

Candidates must demonstrate several accurate practical processes that would be considered demanding or challenging for GCSE students in order to access high marks here. Simplistic processes will not allow high marks to be gained. Repetitive processes will not allow high marks to be gained. Wholly CAM projects with one process, like laser cutting, will not allow the range of processes to be accessed. Candidates should use CAM with other methods of manufacturing where appropriate in order to demonstrate the variety required. Most centres awarded marks correctly in this section but some centres awarded high marks for simple and repetitive making processes which did not meet the assessment descriptors. *The assessment of this aspect was usually generous and the award of marks needs to be reviewed by centres so that moderators will not have to recommend adjustment of the marks awarded by the centre.*

Quality of Making

This mark relates to the levels of accuracy achieved by candidates in their practical outcomes. A common problem is that centres award high marks for products that are generally adequate, and the levels of accuracy are quite low. Also, some centres award inflated marks for partly complete products.

To access 11 to 15 marks, the assessment descriptor states "An adequate level of accuracy is evident in some aspects of the construction/making". If the work is unfinished but what has been done is very good then this is the maximum mark range that can be awarded. Poor quality making would of course gain a lower mark.

The assessment of this aspect was usually generous and the award of marks needs to reflect the assessment descriptor so that moderators will not have to adjust the marks awarded by the centre.

Dimensional accuracy

This factor caused problems again this year. This mark is for candidates producing their proposal that has been presented on pages 10 and 11. If pages 10 and 11 are blank or incomplete then a lower mark is likely because it is impossible to evaluate how close to their intentions candidates have worked. Moderators will consider work on pages 5 to 9 to see if information about the final design proposal is present in considerable detail and award some marks. Centres must provide a full justification on the DT2 if this occurs, but even with very full and detailed development pages, no more than 6 marks should be awarded.

The assessment of this aspect was usually generous and the award of marks needs to reflect the assessment descriptor fully so that moderators will not have to recommend adjustment of the centre marks.

Quality of Finish / Appearance

This aspect of making has proven to be clearly understood by centres and candidates work is consistently and accurately assessed.

Moderators generally agree with centre marks here.

Function

This aspect of the assessment caused problems this year. It is not possible to award high marks here if the Final Brief and Design Specification are not detailed about the function of the product. The major problem is that candidates do not provide enough details on pages 1 and 2 to cover what the exact function of the product needs to be. Again, it is then impossible to determine whether a product functions without a frame of reference to compare it to. The assessment scheme states that for a mark of 3 or 4 to be awarded “The product functions to a limited extent.” This would be the correct mark band when the brief and specification are limited, basic or lack detail. If a candidate has a detailed brief and comprehensive measurable criteria in the specification and the product meets all of these intentions then a high mark can be awarded.

The assessment of this aspect was usually generous. Marks needs to reflect the assessment descriptor so that moderators will not have to recommend adjustment of the marks awarded by the centre.

INDEPENDENT WORKING

This mark is a reflection of how well the candidate has produced the product by following their plan of manufacture. The amount of support, guidance, help and assistance given here will affect the mark awarded. It is likely that the sample in a centre will contain candidates who have had varying levels of teacher support. Therefore, not all candidates will be awarded the full 15 marks here. Thus said, some centres ignore the assessment descriptors and award all candidates 15 marks. Moderators are unlikely to accept these marks unless the sample consists of very high achieving candidates with very detailed planning pages.

When making a judgement of the marks to be awarded the following should be borne in mind:

- (i) Marks awarded are for following the plan on page 12. A candidate is likely to need support and guidance if the plan produced is basic, lack depth and does not clearly define the production stages in detail.
- (ii) The degree of intervention the teacher needed to make is crucial in making the judgement.
- (iii) An incomplete product cannot be awarded all 15 marks as the candidate has not worked independently to the plan to produce a complete product.

It is expected that most candidates will be awarded 7 to 9 marks as the assessment scheme states “The candidate has required some support and advice during the making of the product.” If a higher mark is awarded then the centre must provide a detailed justification on the DT2 that explains the independence and self-sufficient candidate.

The assessment of this aspect was usually generous and the awarding of marks needs to reflect the assessment descriptor so that moderators will not have to recommend adjustment of the marks awarded by the centre.

Finally, I wish to thank centres for producing such good quality work overall. Although this report focuses on many of the shortcomings from the 2015 CAT moderation, the process was very positive for both centres and moderators. At this particularly busy and stressful climax to the year, the standard of work presented continues to uplift all parties involved. I hope the visiting moderation process remains a constructive mechanism to ensure that candidates work meets the expected standards and that centres are supported in order to improve candidate performance in future.

DESIGN AND TECHNOLOGY
General Certificate of Secondary Education
Summer 2015
FOOD TECHNOLOGY

Principal Examiner: Jacqui Keepin

General Comments

The examination paper this year appears to have been less accessible than in previous years. It is evident from many of the candidates' responses that some of the topics included in the examination paper were not that familiar to them. All centres must continue to ensure that preparation for the examination is thorough and detailed. Candidates should be given opportunities to complete past papers and practise questions related to the different specification areas to enable them to understand the depth of knowledge required and the difference between a basic and developed response. Centres are encouraged to make use of the Online Examination Review which is available via the WJEC website. This e-resource provides marked exemplar scripts which include examiners marks with comments on why marks have been awarded and reasons why some responses have not gained marks. Example exam questions accompanied by the marking criteria are available for classroom use.

Centres are encouraged to use the Item Level Data to assist in analysing the performance of individual candidates and the performance of the entry from the centre in order to identify strong successful areas and also any specification content that needs further development.

Q.1 Product Analysis – worth 15 marks

This question was well attempted by the majority of candidates.

- (a) Most candidates were able to identify why the vegetable wrap had been used.
- (b) Many candidates failed to give a detailed explanation for this question. They were able to suggest that the manufacturer has presented the wrap this way so that the consumer could see inside the product but did not give a developed statement to gain full marks.
- (c) Many candidates were able to correctly identify that packaging the additional items separately gave the consumers a choice if they wanted to use them and that consumers may not have liked them all.
- (d) Very few candidates gained the 3 marks available. Many candidates did not identify Sushi rice as the product that could be unsafe if not stored correctly. Identifying the Sushi rice as a high risk food and the link to food poisoning was required to gain marks in the explanation.
- (e) This question tested the candidates' knowledge of materials and performance in this question was poor. Just stating the seaweed was to provide 'flavour and texture' is not sufficient to gain marks. Candidates must state the type of flavour and texture materials provide and carefully consider the product they are analysing.

- (f) Generally well answered, many candidates gained at least one mark.
- (g) They were many errors in the calculation. Many candidates failed to correctly add up the total score awarded for the Sushi style vegetarian wrap. Incorrect additions for texture and flavour then led to incorrect percentage figures being presented. Some candidates gained one mark with the correct addition but did not calculate the percentage correctly.

Q.2 General Issues – worth 10 marks

This question was not answered well by the majority of candidates.

- (a) The soil association (organic standard) logo was not identified by the majority of candidates. The recycling logo was correctly identified.
- (b) Many candidates were able to correctly identify the missing R's. Rethink was problematic for many with Redo and Remake common responses. (ii) Most candidates gained one of the 3 marks available. Candidates were required to give a developed response discussing the impact and issues rather than three separate refuse points.
- (c) Very few candidates understood the term 'lifecycle' in relation to a food product and based their answer on the manufacturing, storing and eating of a product.

Q.3 Designers Essay – worth 10 marks

The essay question is still proving to be quite demanding and challenging for some candidates. There is still only a small number of candidates achieving the full 10 marks.

- (a) The majority of candidates were able to match the information to the correct designer.
- (b) Jamie Oliver was the most popular designer with the candidates. There were some very good, well written responses. Some of the candidates' responses are still very factual and discuss the designers' career, repeating information from section (a). Centres must practise this question and teach candidates how to develop the facts.

Q.4 Designing and Design Question – worth 25 marks

Many candidates did not access the full 7 marks available in the first section of this question. Candidates need to apply the knowledge gained from completing the CAT and the process they went through to both sections of the question.

- (a) The majority of candidates were able to match the correct term to each meaning. Specification was confused with design brief by some candidates.
- (b) Many gained a mark for identifying a piece of information that is included on a plan for making. 'Target group' and just 'size' were not correct responses.
- (c) The majority of candidates failed to read the question correctly and discussed evaluation at the end of the project not evaluation during research. Some lost all 3 marks here.

- (d) Normally this part of the question is generally completed well. This year many candidates did not read the question carefully which led to unsuitable dessert products being put forward in the style of a cheesecake, or fresh cream cake when the question asked for a dessert that is served and eaten hot. Many marks were lost due to candidates not relating to the 'marks will be awarded for section'. This section of the question carries 18 marks and candidates must practise it so that they become familiar with the layout and demands of the question. It is disappointing to see so many uncoloured, unannotated designs.

Q.5 Commercial Manufacturing – worth 10 marks

Most candidates scored well on this question.

- (a) No real issues with the identification of true or false statements.
- (b) Many candidates were able to gain 1 of the 2 marks. Responses needed to be detailed and developed for the second mark to be awarded.
- (c) Including the image of the fruit tart enabled candidates to understand why workers would complete the decorating by hand. The majority secured one mark with many gaining the 2 marks by discussing the limitations of the machinery.
- (d) Most candidates were able to identify an advantage of using the mandolin slicer. Benefits identified for one mark included uniform sizes/thickness. Candidates do not gain marks for simple responses such as 'quicker' or 'easier'.

Q.6 Materials and Components – worth 10 marks

For many candidates functions of materials and components proves to be problematic.

- (a) Improvements for the taste and appearance of the products were generally well answered by most.
- (b) Limited candidates were able to identify an ingredient that enriched the yeast mixture and then explain how it enriched the mixture. Flour, sugar and yeast were common responses.
- (c) Many candidates identified two or the three component parts. Almonds on top was not an acceptable response.
- (d) Protein was correctly identified by the majority of candidates. Many were able to gain one mark by stating it sets/hardens, some continued with a developed response by including coagulation. The third mark proved more challenging to most.
- (e) Some candidates were able to secure 1 of the 3 marks available but were not able to fully discuss the use of antioxidants.

Q.7 Tools, Equipment and Making – worth 10 marks

Generally a very accessible question, once again visual images assisted candidates when answering questions.

- (a) Most candidates struggled to name the fish slice.
- (b) Safety points suggested by some candidates were not applicable for 'before use' of the food processor and many suggested hygiene points. Not all candidates related their answer to (ii) to the making of a cheese and vegetable pasty.
- (c) Required knowledge in relation to making processes, ingredients and stages of making, this aspect was not so well answered.
- (d) Focussed on a skill many of them may have used in the CAT, so this was generally well attempted and answered.
- (e) The question on methods of thickening was attempted by many but limited candidates were able to secure full or 2 of the 3 marks. Many candidates have obviously learnt about the process of gelatinisation during the course so they just wrote all they knew about it, which was not correct for the question asked. Had they related some of the information to the making of the tomato sauce they would have secured some marks.

Q.8 ICT, CAD, CAM, Systems and Processes – worth 10 marks

Most candidates scored well on this question.

- (a) The majority of candidates gained full marks.
- (b) Many candidates identified processing as the correct term missing from the meaning.
- (c) Many gained full marks. Some placed equipment as a process instead of as an input.
- (d) The two questions were based on CAD and as in previous exams with this style of question responses can be limited. Many candidates dropped silly marks because they mixed up the two stages they were questioned on. Some candidates did not give sufficient information to gain a mark.
- (e) Most candidates were able to identify why a manufacturer may use a computer to control the adding of ingredients some were able to extend their response. Once again response such as 'its quicker' or 'it is easier' do not gain any marks.

DESIGN AND TECHNOLOGY
General Certificate of Secondary Education
Summer 2015
GRAPHIC PRODUCTS

Principal Examiner: Matthew Burrows

General Comments

The Graphics Products examination seems this year to have been well received. A similar amount of candidates as last year attempted all questions. This was pleasing as the questions in section B of the paper were designed along with the mark scheme to be more accessible for all. Many candidates showed they had a good knowledge of certain aspects of the course, but like last year it remains a fact that when the candidates were required to show a deeper understanding of the course, many struggled to gain half marks. Questions designed to test the candidates' knowledge of readable and legible text and packaging regulations, proved that some candidates are fully informed of the difference whilst others across entire centres were struggling to recall any information on the topic. Unlike previous examinations, the technical drawing question seemed to be answered well with many more candidates getting full marks, with the ellipse question in particular receiving more good responses than I expected. However, again I feel that poor preparation and time management play a major role in the second half of the paper being less well answered than the first. It is imperative that centres teach the specification content in depth in year 10 as well as in year 11. Candidates from the centres that do this gain more marks than the centres that employ other methods. **Could I remind centres that candidates are expected to have basic equipment i.e. ruler, coloured pencils etc.**

Q.1 Product Analysis – worth 15 marks

This question was done well by most candidates. Questions about why certain materials had been selected for the box were well answered on the whole, but some candidates missed the fact that the box had to withstand the wear and tear of being posted. Answers were limited to issues surrounding sustainability. Candidates were not able to explain why food packaging has to be made from recyclable material and therefore not compromise the safety of the food. Part (d) similar to last year, responses were mixed with many candidates unable to do the calculation. Again, as last year, some didn't understand where to place the decimal point.

Q.2 General Issues – worth 10 marks

Many candidates attempted the first part of the question, with most able to identify the Life Cycle Analysis, and list at least one organization the C.E.N work with. Part (b) was mixed with answers either being answered very well, or the point of the symbols and how they encourage consumers to think about sustainable issues lost on the candidates. Part (c) only prompted very brief responses that were often incorrect and highlighted gaps in the candidates' knowledge about The Packaging (Essential Requirements) Regulations 2003.

Q.3 Designers – worth 10 marks

This question required candidates to describe the impact of the work of either David Carson or Neville Brody. There were many good answers to this question. However it is clear some candidates have practiced a standard essay, and were going to write that regardless of the question being asked. Most candidates were able to correctly identify the magazine that Carson worked for as an artistic director, but fewer were able to give a Font created by Brody. Please note that whilst many candidates wrote good essays and used good quality written communication, it should be stated that:

- (i) Biographical data does not gain any marks.
- (ii) The fifteen lines provided are sufficient.
- (iii) Marks are awarded for answering the questions and the quality of written communication.

Q.4 The Design Process – worth 25 marks

Part (a) (i) was very well answered by the majority of candidates. Part (ii) was less well answered with a surprising number of candidates unable to name an activity that helped a designer find out what a customer would like from a product. Part (b) was done well by some candidates, but others struggled to know why the manufacture of products was planned so carefully. Part (c), again like in previous years, demonstrated that centres are clearly well rehearsed in getting their candidates ready for this question, and the results of the design question were very pleasing indeed. Some candidates found it a struggle to draw their solution for the pop up mechanism, with some responses being very difficult to understand.

Q.5 Commercial Manufacturing Practices – worth 10 marks

In general terms, question 5 was well answered with many of the responses offered gaining half marks or more. Part (a) (i) was done very well. Part (ii) caused a few more problems but again was done well on the whole. Part (b) was very mixed and generally if candidates knew what registration marks were for, then they knew how colour bars worked. Few candidates mentioned that they were a form of quality control. The question as a whole however was better answered than in previous years.

Q.6 Materials and Components – worth 15 marks

This question required the candidates to recall information they had been taught during the course and again the answers were much better than in previous years. This however should be offset against the fact that, similarly to last year, the responses required for the first part of the question were less complex than in previous examinations. Part (a) was the best-answered part of the question, with candidates able to place the different paper sizes in the correct order. Parts (b) (i & ii) prompted far more incorrect responses than anticipated with many unable to recognise the complimentary colour scheme and colour gamut. Part (b)(iii) was one of the most poorly answered questions on the paper with lots of candidates only being able to offer rudimentary responses about subtractive colour systems meaning colours were removed, and additive meaning that colours were added, responses such as these gained no marks. There were better responses to the composite materials question, part (c) (ii). Part (d), many candidates were able to state that legible text made it easy to read letters. Extended responses about the design of legible and readable text explaining how they work and the difference between the two were not commonplace.

Q.7 Tools, Equipment and Making – worth 20 marks

This question is about what candidates do themselves and not about commercial practices - therefore should provide opportunities for good marks. Part (a) surprisingly was poorly answered with many candidates suggesting that the compass cutter made squares. Most candidates were able to identify the basic safety features of the tools shown in Part (b)(i). Part (b)(ii) was well answered by most with the mean mark well over half. Parts (c) required candidates to recognise different tools used in CAD packages, these drew a mixed response with only a few able to identify the gradient and blur tools. Parts (ii) & (iii) were well answered by some whilst the term duplex caused others to make responses about the strength of the material.

Q.8 ICT / CAD / CAM and Systems and Processes – worth 10 marks

Answers to the first part of this question were very mixed with many candidates unable to identify either type of drawing shown. Part (ii) was quite straightforward. Many candidates were able to identify at least two of the folds. Responses to both technical drawing questions were much better than previous years. Many candidates produced excellent isometric drawings that gained at least 3 marks, although it was still possible to see some responses that had copied the orthographic shape used in the question. The mark scheme for Part (c) allowed for credit to be given for the completion of the construction lines, which meant that even if the candidates struggled to draw the ellipse, they were able to gain marks for the construction lines drawn. Although it was expected that the question would be difficult for many candidates, it was pleasing to see so many excellent drawings of the ellipse, which scored highly.

Finally, Section B of the examination raises the same issues as last year, raising questions about poor drawing skills, failure to read the question thoroughly, poor time management and a lack of knowledge and understanding.

DESIGN AND TECHNOLOGY
General Certificate of Secondary Education
Summer 2015

RESISTANT MATERIALS TECHNOLOGY

Principal Examiner: Gareth Wilkins

GENERAL COMMENTS

Whilst fully understanding the increasing frustrations and limitations of time being experienced by D&T teachers at this present time, it is essential that time is found to revise and prepare the students for this examination. It is evident that preparation for the exam is insufficient in some centres with many knowledge based questions being answered poorly by all of the candidates. Increasing numbers of low ability candidates are being entered who struggle with the nature of many questions on the paper especially those questions that require an extended answer to gain 3 or 4 marks. The paper was designed to be accessible to all whilst also being challenging to candidates of higher abilities. It is evident that the centres with the best performing candidates are those in which the specification has been systematically taught during year 10 and revised thoroughly prior to sitting the examination.

A variety of free resources are available to aid teachers in their delivery of the RMT specification. A comprehensive series of multimedia materials can be accessed from the hwb.wales.gov.uk website.

As well as Item Level Data, which is, centre specific and allows a full statistical breakdown of candidate performance question by question, with all marks awarded for individual questions. Centres can also compare their performance against ALL centres to identify strengths and weaknesses in delivery of this specification. The Online Examination Review is also available via the WJEC website. This e-resource contains marked exemplar responses from scripts, where examiners marks are available, together with marking criteria and reasons why marks have been awarded and where responses lack the depth to access further marks. This is a powerful teaching tool for classroom activity with candidates. CPD face to face events have also resumed, where attendance to these sessions are encouraged.

Q.1 Product Analysis – worth 15 marks; the questions were based around the analysis of 2 products; a pullalong toy and a step stool.

- (a) This proved to be a very accessible starter question with the vast majority of candidates being able to match the correct heading to the appropriate specification point.
- (b) Most candidates gained marks, but far too many still offer simplistic one word answers such as ‘strong’ and ‘hard’.
- (c) The FSC logo was quite well identified with most candidates gaining 1 mark for stating, “For every tree chopped down, another is planted in its place”.

- (d) Advantages of flat packing to the consumer and the manufacturer were often confused.
- (e) Most candidates were able to read that the graph and gain 1 mark for (i) although the calculation of a fairly simple percentage (22% of 45,100) proved too difficult for many.

Q.2 General Issues – worth 10 marks

- (a) This question on the 6Rs was generally well answered. Misinterpreting the description “Don’t make a new product if you don’t need it” (correct answer – Refuse) preventing many candidates from gaining full marks.
- (b) (i) The BSI/Kite mark was correctly identified by many but for part (ii) few knew that the symbol denotes that the product has been tested for quality as well as safety for the full 2 marks.
- (c) This question proved to be a good indicator of ‘A*/A candidate ability with some candidates able to discuss both the negative and positive impact of the disposable products shown, although answers that earned 3 marks were rare.

Q.3 Designers – worth 10 marks

- (a) Virtually all candidates were able to name the designer of the products shown.
- (b) Candidates need to be taught to read this question more carefully. Many devoted a large part of their essay to personal facts about the designer such as their early life and education although the question asked for a description of their work and ideas. Centres are also reminded that the Quality of the candidates written communication is assessed here as part of the possible 8 marks that can be awarded.
Centres should note that Phillipe Starck and Bethan Gray will be the named designers for the 2016 examination.

Q.4 Design process – worth 25 marks

- (a) Candidates generally showed a satisfactory understanding of the design process in their responses here.
- (b) The term “Manufacturing specification” as used on page 11 of the CAT workbook seemed to aid candidates with many gaining marks.
- (c) Many answers conveyed the idea that the development stage involves improving on the initial idea but few provided sufficient detail on how this can be achieved in order to gain 2 marks.
- (d) The design question was understood by the vast majority of candidates. Very few misinterpreted the nature of the design challenge or did not attempt to answer the question. Some lost marks by designing a storage unit to hold multiples of each tool rather than ‘one of each’ as clearly asked for in the question. Candidates of all abilities sketched and annotated relevant responses and as a result gained marks appropriate to their abilities. There was continuing evidence of good practice to be seen here, in that an increasing number of centres are now encouraging candidates to practise this question with many using the technique of cross-checking their answer against the Specification points and the list of “Marks will be awarded for”. Fewer candidates are neglecting to dimension their solutions.

Q.5 Commercial manufacturing processes – worth 10 marks

- (a) Few gained the full 3 marks. Spinning was correctly identified by many; Extruding and Die casting were not.
- (b) Hardly any candidates scored marks here. The Furniture Industry Research Association is referenced on page 11 of the Specification.
- (c) Few gained the full 2 marks. The essence of Quality Control is that quality checks are carried out at all stages of production.
- (d) Poorly answered on the whole. Many candidates seem to confuse Rapid prototyping with Computer Aided Manufacturing. Despite the question asking for advantages related to product development answers most often discussed manufacturing in large quantity.

Q.6 Materials and components – worth 15 marks

- (a) A very straightforward question calling for basic knowledge of wood classification. 3 out of 4 was the most common mark with Balsa often being wrongly classified.
- (b) The correct names of these 2 common hinges were not well known by candidates.
- (c) The properties of Hardness and Toughness were commonly confused.
- (d) Most candidates could describe a Thermosetting plastic; less were aware of the meaning of a composite material.
- (e) The basic principle of Nanotechnology was understood by many candidates for 1 mark but few could expand on their explanation sufficiently to gain 2 marks.

Q.7 Tools, equipment and making – worth 20 marks

- (a) The names of these common holding tools that candidates must have used during their design and technology lessons have either not been taught by centres or have not been revised by candidates.
- (b) The Chuck and Tool post were generally identified with the Headstock and Tailstock being frequently confused.
- (c) Most candidates scored the full 2 marks.
- (d) In part (i) many correctly named the Mortice and Tenon joint but there was a disappointing response to part (ii) of this question. Few candidates were even able to list the basic marking out equipment required such as a try square and a marking/mortice gauge. Most explained how to cut out the joint which was not asked for.
- (e) Disappointing. A similar question was set in the 2013 paper but many candidates continue to misunderstand the essential purpose of a jig.

Q.8 ICT, CAD/CAM, systems and processes – worth 10 marks

- (a) An accessible starter question.
- (b) An accessible question again, many gained 2 or 3 marks.
- (c) This question asked for a process to be explained. Unfortunately, many candidates lost marks by discussing the benefits of coating the bird box in polyurethane varnish.
- (d) The Heat treatment processes of Tempering and Annealing were not well known by candidates.
- (e) Candidates in many centres were unfamiliar with this common finishing process. Again, information on the advantages of coating the hooks in plastic was not called for.

DESIGN AND TECHNOLOGY
General Certificate of Secondary Education
Summer 2015
SYSTEMS AND CONTROL

Principal Examiner: Jason Cates

General Comments

Systems and Control has remained relatively small compared to other focus areas, but candidate numbers appear to be very stable with some longstanding centres continuing to use this specification. There are a number of new centres, and some returning which is very encouraging. With the mathematical and scientific content within this specification and Examination Unit, it is understandable that some centres use this focus area as a STEM theme, and even More Able and Talented course for specific groups of learners. Although this entry is smaller in number, it is evident, historically, that candidates here are often of higher ability when compared to other focus areas.

There are many useful resources available when analysing candidate performance in this unit, particularly the Item Level Data which is centre specific and allows a full statistical breakdown of candidate performance question by question, with all marks awarded for individual questions. Centres can also compare their performance against ALL centres to identify strengths and weaknesses in delivery of this specification. The Online Examination Review is also available via the WJEC website. This e-resource contains marked exemplar responses from scripts, where examiners marks are available, together with marking criteria and reasons why marks have been awarded and where responses lack the depth to access further marks. This is a powerful teaching tool for classroom activity with candidates. CPD face to face events have also resumed, where attendance to these sessions are encouraged.

Q.1 Product Analysis – worth 15 marks

This question presented very few issues to the vast majority of candidates.

- (a) Most candidates produced appropriate explanations to how the given specification points had been met. Those who lost marks simple produced a reworded version of the specification point.
- (b) Most identified that user's fingers should not fit under the cutting / punching area. Some responses related to sharp edges which deserved less marks.
- (c) Most circled batch, based on the given limited number of products.
- (d) Some variation here. The majority scored well by describing free accessories as purchasing sweeteners. Some lost marks by offering generic responses including storing plectrums, which could be a lack of understanding the question or not reading thoroughly enough.
- (e) Generally, no issues here other than some problems evident in calculating percentages.

Q.2 General Issues – worth 10 marks

Most candidates scored well on this question.

- (a) Nearly all candidates could name at least two R's, some struggled accessing the third mark available.
- (b) Many responses simply stated that items with this logo could not be recycled. This gained no marks. The symbol refers to avoiding disposing of items in regular household waste. Some missed this mark but still accessed marks for part (ii).
- (c) A more difficult number of marks to access. Most candidates gained some marks, but if very basic responses are given e.g. a winner is the led bulb manufacturer... this will not gain high marks unless it is supported with further information.

Q.3 Designer Essay – worth 10 marks

Some problems here. Candidates offering 'stock' responses, and some comparing designers when the questions asks for one **or** the other.

- (a) Virtually all gained 2 marks here.
- (b) Most gained marks, but a large proportion accessed up to 4 or 5. This is because the question asks ".how this has influenced consumers.." and many failed to answer this. Candidates must read the essay question carefully and avoid rehearsed dialogue.

Q.4 Design Process – worth 25 marks

This question is a good differentiator. High levels skills are rewarded with high marks here.

- (a) No issues for almost all here.
- (b) Most gained at least one mark.
- (c) Some very good responses here including extension strategies and to keep the market share.
- (d) Some candidates do not read the design question fully. Highlighting critical parts is one strategy. Many block diagrams did not feature an input, process and output component and lost marks. Some offered a flowchart instead and gained no marks. Sketching ideas remains variable. A lack of colour can be disappointing in this design based question. Most circuit diagrams scored some marks, but candidates could improve with further practising of this type of question as homework tasks.

Q.5 Commercial Manufacturing – worth 10 marks

Not many candidates scored the full 10 marks for this question.

- (a) Some failed to identify the correct name for each image. Most circled CAD for 1 mark. Again, candidates were too quick to reel off prepared responses for advantages and included 'speed' where the question clearly states 'other than'. Some lost all 4 marks here.
- (b) Only the very detailed responses accessed the full 3 marks here. Most gained at least 2.

Q.6 Materials and Components – worth 15 marks

This is a broad area where knowledge can sometimes be 'patchy' and 'thin'.

- (a) Some errors with worm drive and spur. Even rotary motion through 90 degrees was difficult for some.
- (b) Most gained 3 marks for the true / false tick boxes. Calculations were generally good, but candidates dropped marks for giving answers without workings or making errors with the process.
- (c) Most accessed the mark for the ptm, some drew a bell not buzzer. Polarised capacitor was too far for some.
- (d) 4 marks is a lot to lose. A small number gained all 4, most gained 1 or 2 marks for showing some workings.

Q.7 Tools, Equipment and Making – worth 20 marks

Depth of knowledge is sometimes lacking here. Marks are lost too easily in this question.

- (a) Virtually all gained 3 marks here.
- (b) Very few failed to access the full 3 marks for identifying the different tools.
- (c) Some lost mark/s for incorrect temperatures here.
- (d) Some offered abs and injection moulding here. Most labelled the line bending machine, but when asked to describe making the transparent component, responses were poor. A methodical, clear and detailed response is needed. Again, a wordy question poorly read perhaps.
- (e) Very few offered a simple nut and bolt. Lots would use a hot glue gun, epoxy resin, some even 'sticky tape'. Very poor considering candidates may have just completed the CAT.

Q8 ICT, CAD, CAM, Systems and Processes – worth 10 marks

This was generally well done, but the usual pitfalls apply.

- (a) Some failed to tick false here.
- (b) Most candidates can comprehend the flowchart and how this is to control the scenario. Yes / No labelling in decision boxes remains the main source of lost marks. Feedback loops can be challenging for some. Most gained at least 4 marks for the flowchart. Explaining a problem proved quite tricky for some. Simple issues like the gap between 34 and 40 degrees being too far, or soil being dry even if the temperature wasn't 40 degrees gained the 2 marks.
- (c) Most gained at least 3 marks for allocating inputs and outputs to a PIC. The obvious problem proved to be matching the pin out data to the configuration, which resulted in inputs being positioned incorrectly.

It is evident that certain centres prepare candidates for this examination better than others. A systematic coverage of the teaching specification, together with some practical modules and making experiences appears to equip candidates with sufficiently broad knowledge and understanding to complete this paper. Completing the Controlled Assessment Task prior to this examination also reinforces and deepens the experiences that can be brought to bear in certain parts of the question paper, namely the design question (4) and tools, equipment and making in question 7. Overall, candidates appeared to find this paper accessible and scripts display very similar standards to previous years.

DESIGN AND TECHNOLOGY
General Certificate of Secondary Education
Summer 2015
TEXTILES

Principal Examiner: Jacqui Howells

General Comments

The performance of candidates in the 2015 paper was similar to that of the last few years. Candidates seemed familiar with the style of the paper and the level of demand within each question; the paper effectively tested their ability to demonstrate knowledge and understanding at GCSE level. The papers were accessible, with almost all candidates attempting all questions. There were no obvious questions causing any specific problems for candidates. The vast majority of candidates achieved around half marks in total for the paper. Of the marks awarded most were gained in section A whereas performance was considerably weaker in section B which tests specialist subject knowledge. This pattern is very similar to the last few years and continues to be **a major concern**. It should be noted that the latter part of each question is meant to be more challenging, targeting the more able candidate however very few actually gain full marks in these sections.

Many centres deliver a well-balanced course and thoroughly prepare their candidates for the examination; those centres are to be commended on their efforts. However there continues to be a huge disparity between performance in the controlled assessment task and the written examination. Many candidates do not appear to use the knowledge they would undoubtedly have gained prior to and during the completion of the controlled assessment task in the examination paper. There is also a sense that candidates currently taking the Textiles Technology examination appear weaker in terms of ability than previous years or is it simply a fact too much time is spent preparing for the CAT and not enough time allocated to examination preparation?

Centres might like to consider the following advice:

‘Candidates need to be taught the content of the specification, systematically and thoroughly throughout the duration of the two year course. Candidates also need to be familiar with examination style questions and how to answer questions in a way that will enable them to maximise on the marks available.’

General weaknesses in candidate performance include:

- Failure to **read the questions properly**.
- Repeating the stem of the question, then failing to demonstrate a specific body of knowledge.
- Failure to ‘*explain*.’ An ‘*explanation*’ requires a fact and an elaboration of that fact.
- General weakness in ***specific textile*** related knowledge.
- Lack of exam practice.

Q.1 Product Analysis – worth 15 marks

This question was very accessible for the majority of candidates. Most performed well.

- (a) (i) Most candidates gave the correct answer: Females from 10 to adults. (ii) Most gave valid reasons for the slippers appealing to females: colourful, fun printed patterns.
- (b) The majority of candidates identified the non-slip sole as the safety feature and gave good explanations for its importance.
- (c) (i) Most candidates gained one mark for correctly stating that the materials used for the slippers would keep the users feet warm however only a few were able to explain how the materials would do this. To gain full marks specialist knowledge of the insulating properties of the materials was required. (ii) The majority of candidates gave full explanations regarding the cost of the slippers as being unaffordable for the target market for a product with limited use.
- (d) Knowledge of batch production varied. Most gained one mark for identifying the product as 'seasonal' and therefore limited numbers would be needed. Only a few candidates were able to elaborate on this point for full marks for example, limited appeal; fashion Fad/novelty item.
- (e) The calculation question was done well.

Q.2 General Issues – worth 10 marks

This question was poorly answered; most candidates only gained marks in the first half of the question.

- (a) (i) Most candidates stated the full meaning of BSI – British Standards Institution. (Institute was also accepted). (ii) Most candidates knew the Mobius loop is connected to recycling. To gain full marks candidates needed to refer to materials/products being recyclable for the mark to be awarded. Most candidates gave the correct definition.
- (b) The 6 R's are well known; most candidates achieved at least two marks for this question.
- (c) The responses to this question were quite disappointing. (i) The answers that were credited with full marks demonstrated specific knowledge and understanding of the term 'sustainable design.' However, good answers were rarely seen, most were superficial and vague. Answers that were credited with full marks made reference to designers taking social, economic and environmental implications into consideration before designing. (ii) The responses to this part question were equally disappointing with many candidates misreading the question. Quite a high percentage of candidates described the life cycle of a product; this was incorrect. The question asked about the final disposal of a product; few gained full marks.

Several candidates repeated the same information for both parts of the question.

Q.3 Designers – worth 10 marks

The majority of candidates responded well to this question.

- (a) Most candidates correctly associated Vivienne Westwood with the re-launch of the corset however much fewer candidates knew her most successful commercial design is the tube skirt.
- (b) The answers to this question were variable but generally an improvement on previous years. Many candidates produced well written answers and were able to describe Matthew Williamson's signature style in detail in a **clear, coherent and concise way**. Clearly most candidates had been well prepared for this question. However, too many candidates are still just regurgitating facts with little thought to answering the *actual question*. Several candidates are still listing biographical information which is not required and does not gain any credit. Only a minority of candidates understood the impact Williamson's work has had on mainstream fashion, for example: use of embroidery and beading is widespread; credited with bringing colour back to the high street.

Q.4 The Design Process – worth 25 marks

Performance was generally much weaker than last year.

- (a) The majority of candidates do not understand the design process, the stages within it nor key words associated with it. How effectively is this taught? The controlled assessment task (CAT) is an opportunity to reinforce the design process and embed key terms. (i) Most candidates understood the terms and correctly completed the table. (ii) Disappointingly several candidates could not define the term design brief! Many confused this with specification points. (iii) Detailed product analysis is about examining a competitor product in depth for example, identifying its strength and weaknesses or conducting a disassembly. In other words a close inspection of **one** product to gain knowledge/ideas. Answers that referenced this were rare. The vast majority of candidates misread the question and gave superficial answers that referred to 'what their target market likes' or referred to researching existing products in more general terms. Few answers were credited with three marks. Detailed product analysis is on page one of the CAT!
- (b) Responses to the design question varied but were generally considered weaker than past years. Highly imaginative and creative ideas were rarely seen. Given the quality of designs seen in CAT folders this was disappointing. (i) A large number of candidates did not design a coat! I cannot stress enough how vitally important it is that candidates **read questions carefully**. (ii) The mood board was used to good effect by some candidates however most designs were not considered inspirational. Few candidates were credited with full marks. (iii) The creative use of colour was equally disappointing. To gain full marks for colour candidates need to show some creativity for example, more tones and shading of colours, or better use of complementary/contrasting colours. Using one or two flat colours would only gain a maximum of one mark! (iv) Candidates clearly know some style details but it should be noted that these have to be drawn correctly and be suitable for the product to gain credit. Pockets and collars should be named types for example, patch or welt pockets, shawl or rever collars. (v) Most candidates labelled their design with suitable materials; the most common answer was 'wool.' (vi) The quality of communication generally continues to be of a good standard.

Q.5 Commercial Manufacturing Practices – worth 15 marks

Performance was similar to last year and clearly demonstrated a lack of specialist knowledge.

- (a) (i) Most gained a few marks from correctly identifying the scales of production.
- (ii) The majority of candidates gained at least one mark for stating an advantage or a disadvantage of mass produced clothing.
- (b) (i) This question challenged the vast majority of candidates. Most candidates were able to describe a mood board and its purpose quite well and were awarded one mark. Describing in detail what a story board is proved too difficult. A story board has more of a theme and includes original illustrations and flats, as well as additional materials that have influenced the unique design. Few candidates fully explained this.
- (ii) Candidates found describing the work of fashion forecasters equally challenging; few gained full marks. Only a minority correctly stated that forecasters predict future trends ie *in a few seasons time*. A clear understanding of the time scale was essential to gain full marks.

Q.6 Materials and Components – worth 20 marks

This question continues to be an area of weakness in candidate knowledge and is an on-going concern.

- (a) (i) Most candidates correctly identified twill weave but not weft knitting.
- (ii) A disadvantage of satin weave is that threads lying on top snag easily; few answered correctly.
- (b) (i) & (ii) Correct answers were plants and lustre. Only a few got both parts correct.
- (c) (i) Only a minority of candidates managed to correctly explain the difference between mixed and blended fibre. The question proved too challenging for almost all candidates. (ii) Knowledge of regenerated fibres was considered quite poor however quite a large percentage of candidates were able to name two regenerated fibres (iii).
- (d) A number of candidates misunderstood or misread this question and therefore limited the marks that could be awarded. The question specifically asks about smart materials that *change their appearance*; a number of candidates named smart materials but not those that have a *visual* change. Marks were awarded to those answers such as thermochromic or photochromic that clearly change appearance.

Q.7 Tools, Equipment and Making – worth 10 marks

Performance in this question was good; an improvement on last year.

There was evidence of good subject knowledge in the latter part of this question.

- (a) (i) The question asked to state the name of *edge finishes*; a number of candidates did not take this into consideration. Several named gathers for the middle picture however the edge finish is a frill. Some confused the picture of a hem with the binding! These finishes are commonly used on textile products, which candidates should know! (ii) Most candidates understood the use of an overlocker. (iii) Most candidates were awarded one mark for stating a double stitched seam adds strength, only a few elaborated on this fact for two marks.

- (b) (i) The majority of candidates correctly named the resist method as batik. (Silk painting with gutta was also given credit). (ii) There were many excellent answers in the form of notes and sketches describing the named process of batik. It was obvious that this had been taught in schools and was a decorative process that most candidates were clearly familiar with. (iii) Candidates yet again did not read the stem of the question properly and missed out on marks. The question clearly refers to *assembling the front sections* of the cushion, correct responses should therefore refer to using a consistent seam allowance to ensure the panels meet accurately at the corners. (iv) The responses to this part question were quite pleasing with a large number of candidates demonstrating a good level of knowledge and understanding in their responses. It is clearly a topic that has been taught well in a number of centres.

Q.8 ICT, CAD, CAM and Systems and Processes – worth 10 marks

Candidate performance in this question was disappointing. Candidates do not have an in-depth appreciation of the wider issues associated with ICT, CAD and CAM.

- (a) (i) There were no issues with the first part of this question. Most correctly linked a software package to an appropriate task. Answers to (ii) however were poor with very few candidates gaining any marks! The question required knowledge of desk top publishing; answers reflecting this were rarely seen. It should be noted that *no marks are awarded for unqualified assertions for example quicker, easier or faster etc.*
- (b) There were no issues with answers to (i) and (ii) although some candidates confused the two flowchart symbols! (iii) There were no issues with describing a different piece of information found in a flowchart. It was clear that many candidates had considered the planning page in the CAT.
- (c) (i) Most candidates named a suitable software programme to create patterns.
- Answers to (ii) and (iii) were very disappointing and weak. The pictures shown in (ii) were there to support candidates in answering this question. The benefits of digital printing include: once the design is complete a range of samples can be produced immediately; a small length of material can be produced for clients immediately and changed if needed. Answers needed to reflect that the computer is linked directly to the fabric printer. Answers were generally superficial and lacked specialist knowledge or understanding. (iii) Answers varied but only a minority of candidates clearly understood the implications of seeing your design in a three dimensional format prior to making a prototype. Some confused this with 3D printing.

This report needs to be read in conjunction with the examination paper and mark scheme. Centres will also find the item level data, available on the WJEC's secure website useful when assessing candidate performance. Centres will also find the **new interactive resources** available on the WJEC website useful when preparing candidates for future examinations. The WJEC has also reinstated the January Inset programme for GCSE Design and Technology. I hope that the feedback I have provided in this report will enable centres to reflect on the strategies and advice given to their candidates as they prepare for the 2016 examination.

DESIGN AND TECHNOLOGY
General Certificate of Secondary Education
Summer 2015
PRODUCT DESIGN

Principal Examiner: Clive Wilkinson

General Comments

It is apparent the examination paper was again accessible and well received by the vast majority of candidates, demonstrating that although many elements of this course are demanding and challenging, centres and candidates remain well prepared for the Unit 1 Examination. It was very pleasing to see an increasing number of candidates achieving results in excess of 100 marks this year. It is evident that many centres deliver a well balanced course and thoroughly prepare their candidates for the examination; those centres are to be commended on their efforts. However, it is also evident that other centres are not teaching the full specification with some questions that required specialist knowledge of Product Design being poorly answered. It is recommended that centres approach delivering the specification in a systematic and 'chapter by chapter' approach, following the content as laid out in the specification and examination paper. Centres are encouraged to use the Item Level Data to assist in analysing performance of individual candidates and the performance of the entry from the centre in order to identify effective areas and also any specification content that needs further development.

Q.1 Product Analysis – worth 15 marks

This question was answered well by the majority of candidates.

- (a) A number of candidates failed to understand that the product shown was a concept model and hence the correct answer was 'One-off Production. Many lost the mark here.
- (b) Most candidates produced appropriate specification points for materials and safety, however it is clear that many candidates still do not understand the meaning of aesthetics and gave answers related to function or other areas instead.
- (c) Most candidates were able to suggest appropriate ways in which the function of the toaster was improved and possible difficulties that would be encountered.
- (d) The calculation was generally well answered other than some problems evident in calculating percentages.

Q.2 General Issues – worth 10 marks

This question presented very few issues to the vast majority of candidates.

- (a) Most gained 3 marks for correctly labelling the stages of the product life cycle curve however, the descriptions given for the introduction stage showed a general lack of understanding on the topic.
- (b) Most candidates gave a very good answer here, showing an increased understanding of life cycle analysis and how it can affect the environmental impact of a product.

Q.3 Designers Essay – worth 10 marks

The essay question is still proving to be quite demanding and challenging for candidates.

- (a) The majority of candidates were able to name a product for each designer to achieve 2 marks here. However, no marks were awarded for answers such as 'Apple Products' and some candidates did not know the correct names for the products, such as 'Juicy Salif' not 'Lemon squeezer'.
- (b) The majority of candidates are clearly familiar with Jonathan Ive's and were able to discuss its main features to gain up to 5 marks. However, candidates must read the question carefully and address the specific areas within the question. Many were unable to talk about Ive's main influence.

Q.4 Designing and Design Question – worth 25 marks

This question was generally well answered with a number of candidates showing that they were able to absorb the specification and produce a pleasing design solution.

- (a) Nearly all candidates selected the correct stages of the design process to gain 3 marks.
- (b) Most candidates gave a good response here gaining full marks by stating a suitable method of developing a product and giving a good explanation of how the specification is used to evaluate.
- (c) There was a pleasing standard of work evident in the design question. Candidates were able to follow the design specification to access the marks available and some innovative designs were produced. Graphic communication was very pleasing from a number of candidates but there are still many who fail to add colour rendering and sufficient annotation onto their designs. Candidates also need to remember to suggest a relevant manufacturing method for their product.

Q.5 Commercial Manufacturing – worth 10 marks

There was pleasing response to this question with many picking up high marks.

- (a) The majority of candidates were able to correctly label the scales of production gaining 3 marks.
- (b) Most candidates were able to describe two benefits of using an automated production line but simple responses such as "Its quicker" only achieved 1 mark out of the 2 available.
- (c) Candidates still struggle to understand what quality assurance is with some describing quality control instead. Only the very detailed answers scored 3 marks here.

Q.6 Materials and Components – worth 15 marks

There is a wide range of knowledge required here and candidates can often be found lacking here.

- (a) Many gained high marks by naming the correct properties related to the materials listed however some lost marks by stating aesthetic details rather than properties.
- (b) Many candidates were unable to clearly describe what a composite material is.

- (c) Some candidates were able to explain why photochromic material had been used but many were not. Only a small number of extended responses achieved the full 2 marks here.
- (d) Many were able to describe advantages of using standard components which was pleasing considering it is the first time this question has been asked.

Q.7 Tools, Equipment and Making – worth 20 marks

Candidates continue to find this question challenging with many lacking a depth of knowledge.

- (a) The majority were able to name the tools but many lost marks when describing their uses with many repeated responses and a lack of knowledge with respect to the use of Vernier calipers.
- (b) Only a small number gained full marks here but many gained up to 2 marks for naming some correct stages.
- (c) There were a lot of generic answers given here like ‘wear goggles’ for example which were not relevant during vacuum forming. Correct answers were those that related to working with hot materials and the risk of burns.
- (d) Very few candidates achieved high marks on this question. Many gained up to 3 for stating the basic processes of cutting, folding and sticking the cardboard but few were able to extend the answer to creating a net of the shape with tabs. The diagrams presented often lacked detail and quality.

Q.8 ICT, CAD, CAM, Systems and Processes – worth 10 marks

Generally well answered but again some areas where knowledge was weak.

- (a) Candidates struggled in general to gain the full 2 marks here with most stating ‘Computer’ instead of ‘Communication’ for the term ICT. However the majority named ‘Technology’ and were able to explain how spreadsheets are used and why the internet is used for research.
- (b) Many struggled here to name the correct input and output devices. There was also lack of understanding how feedback works in the system.
- (c) Most candidates could describe a benefit of using CAM to make a prototype to gain 2 marks.
- (d) The majority could discuss in detail the advantages of CAM for high volume production but some referred to CAD instead of CAM.



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