



GCE EXAMINERS' REPORTS

DESIGN AND TECHNOLOGY AS/Advanced

SUMMER 2015

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DESIGN AND TECHNOLOGY
General Certificate of Education
Summer 2015
Advanced Subsidiary/Advanced
DT1 - PRODUCT DESIGN

Principal Examiner: Mr. Roger Pettit

The paper was well received by candidates and the performance was consistent with previous years with regards to Section A, however Section B responses were considered to be weaker than had been shown in previous years. This indicates a need for candidates to require more in-depth subject knowledge and its application to Product Design.

Candidate's use of terminology and technical language together with knowledge of materials and manufacturing processes is again improving with a number of scripts demonstrating this in their responses within Section A.

In Section B there is a clear indication that the essay responses generally require more structure and planning, whilst ensuring that ALL elements of the question are covered. The better responses also show candidates using products as examples to illustrate the context of the question.

Centres should continue to advise candidates to use the mark allocation indicated at the end of each question to guide the depth of response required and manage time effectively.

Centres should also continue to advise candidates to read the front of the examination paper carefully and add the correct number of questions along with the question number to their answer booklet in the order they are attempted.

Centres should also be advised to remind candidates that answers could be amplified with sketches and/or diagrams where appropriate.

General Points

There were less instances of rubric where candidates answered all questions on the paper. Candidates should be advised to read the question carefully in order to ensure that all elements are understood and are also included in their response.

Where candidates are asked to select a number of responses from the question, there are an increasing number of candidates answering the entire question instead e.g. select two responses from three.

There were a number of instances where the responses throughout Section A were not detailed enough to gain the higher level of marks.

Well-planned and structured responses (particularly in Section B) score well. These responses contain clear, and specific details relating to the question. They also show accuracy in terms of spelling, punctuation and grammar. However the quality of the responses in Section B are weaker this year. An increasing number of candidates require more structure and planning in order to organise information clearly and coherently.

The quality of written communication and extended writing is weaker than previous years. Generic terms, particularly in naming materials (together with their characteristics or properties) are still used by candidates and are therefore not given credit e.g. wood, plastic, metal, as opposed to oak, polypropylene and steel.

Section A responses continue to improve however the weaker candidates continue to provide very brief responses in Section B and are consequently not achieving beyond Level 1. This indicates a decrease in candidate's breadth and depth of subject knowledge in Product Design.

Section A

1. Products may have pre-finished surfaces produced during manufacture or have surface finishes applied by the consumer.

(a) Name a product which has a surface finish produced by the manufacturer, the type of finish and two reasons why it is appropriate. [4]

(b) Name a product which has a surface finish produced by the consumer, the type of finish and two reasons why it is appropriate. [4]

A popular question in this section, but there was some confusion over surface finishes applied by the manufacturer and consumer. A lot of weak responses gave very general answers but did not give reasons for their choice. The better responses demonstrated their knowledge of the type of finish applied and could justify their choice using a specific product and its use as an example. The finishes applied by the consumer were very general and a lot of candidates could provide one reasons for why it is appropriate but struggled to provide two. In most cases the stronger candidates answered both parts of the question very well.

2. (a) Describe the main features of a high volume (mass) production system. [4]

(b) Explain four benefits of a high volume production system to the manufacturer. 4 x [1]

One of the most popular and well-answered questions within Section A. The majority of candidates were able to describe the features of high volume (mass) production system very well. The better responses displayed in depth knowledge in its application and also provided four benefits of high volume production to the manufacturer. Weaker candidates could only provide one or two very general points with no explanation.

Weaker responses to (b) listed the benefits and their answers lacked detail in order to explain each one. The stronger responses scored well in this question.

- 3. Products that are certified by the British Standards Institute (BSI) have passed specific tests before use by the consumer. Name four products that are BSI certified and describe a specific test that each needs to pass. 4 x [2]**

The majority of candidates were able to identify BSI certified products but the description of the specific tests carried out to these products were generally weak. The products chosen as the examples must have a specific test the product needs to pass for it to be considered safe enough to sell. It was obvious that some of the candidates had not read the question carefully.

- 4. Materials may be classified as natural, synthetic or regenerated. For any two of these, name a specific material, its particular properties and its applications. 2 x [4]**

A number of candidates misread this question and answered all three material classifications. Most candidates could name specific materials within each classification and were able to give examples of their use. Candidates could not relate all parts of the question together. The candidates, who did, scored the higher range of marks.

- 5. Product designers use information from both primary and secondary research to inform their designing.**

(a) Describe the kinds of information identified through primary research. [4]

(b) Describe the kinds of information identified through secondary research. [4]

A good number of candidates attempted this question and successfully responded to the two areas. They were able to distinguish between the two and could give examples of the kind of information collected from each of them. Weaker responses got the two mixed up and others listed the different types but with no description. The best responses used different scenarios to put the kinds of information collected into context.

- 6. Explain the following terms:**

(a) Reverse Engineering as used within design and production. [4]

(b) Concurrent Engineering as used within product development. [4]

A good number of responses were received and generally scored well in both part (a) and part (b). Candidates were able to describe the term Reverse engineering and could relate this to its use within design and production. The better responses gave examples of products in order to illustrate their answers. There were very few weak responses to this part of the question. A lot of candidates did this question very well and scored high marks for their responses. The weaker candidates failed to provide a suitable response to Concurrent Engineering whereas the stronger candidates displayed their depth of subject knowledge and knew both parts (a) and (b).

7. (a) **Explain the terms qualitative and quantitative performance criteria when used in a design specification.** 2 x [2]
- (b) **Within the specification for a named product, state two examples of qualitative performance criteria and two examples of quantitative performance criteria.** 2 x [2]

This was one of the least popular questions and it posed a lot of confusion for candidates as a lot had the terms mixed up the wrong way around. A lot of candidates could explain the terms correctly but could not relate this to the design specification or named product. The better candidates were able to provide an explanation along with a product and two performance criterion for each.

8. **With reference to the production of a particular product or material, explain what is meant by quality control and state why it is important to the manufacturer.** [8]

This was the least popular question of Section A. It was attempted by a small number of candidates. It was generally well answered in terms of knowing what quality control is, but putting it into context with examples is a weakness in some responses. Very few candidates had the higher range of marks for this question as they failed to link the product/material with the definition and its importance to the manufacturer. Candidates need to read the questions very carefully as it was obvious again that candidates had not read or fully understood the content of the question. The weaker candidates only answered two parts or even only one part of the question. Where as the stronger candidates could answer all three. The weaker responses were quite vague and repetitive and failed to focus on the importance to the manufacturer.

Section B

An increasing number of essay responses showed weaknesses generally with a lot of essay responses lacking structure and coverage of the whole of the question.

9. **With reference to at least two different products, explain why both styling and image creation are important in product development, commenting on the importance of these factors to the consumer.** [30]

This was the least popular question in this section. The question clearly asks for two different products to be used in order to explain why both styling and image creation are important in product development. The weaker candidates failed to link all parts of the question. Responses also used two very similar products instead of different products as the question asked. Candidates should read the question carefully and note the emphasis of word highlighted in bold text within the question. The better responses used a plan in order to add some structure to their essay response. This is a weak area generally in this section of the examination.

- 10. Technological developments have had an inevitable impact on the design and manufacture of products.
Explain how technological developments have improved the manufacture, function and appeal of named products. [30]**

Generally products such as mobile phones, iphone and ipad were used in responses. This was the better part of the essay and candidates were able to explain how the products have improved over time. This is a three-part essay and all parts should be included in the response. The best responses mentioned incremental changes to products and also planned obsolescence in relation to their responses. Tastes and fashion trends of the target market should also be considered. A lot of candidates were aware of new technologies and could clearly link these to named products. The weaker candidates struggled with this. There were some excellent responses to this essay question and this was where planning was evident prior to the candidate's answer giving it structure and the use of technical vocabulary enabled candidates to access the higher levels of 3 and 4.

- 11. Designers create products using their knowledge and understanding of materials, production methods and market needs.
Discuss the validity of this statement in relation to a specific product or range of products. [30]**

This was the most popular question in this section. A good number of candidates scored well. The best responses were well planned and focused on discussing the validity of the question using a range of products. The better responses also had extended writing and used key technical terms and vocabulary carefully executed using grammar and punctuation. These candidates scored well. A number of candidates provided much shorter responses that clearly lacked planning and missed a lot of key points relating to the question. Only the higher caliber candidates were able to use market needs in the context of the question. A good number of candidates interpreted this in their own way and made their response illustrate their own opinions and beliefs. There were some excellent responses to this essay question and this was where planning was evident prior to the candidate's answer giving it structure and the use of technical vocabulary enabled candidates to access the higher levels of 3 and 4.

DESIGN AND TECHNOLOGY
General Certificate of Education
Summer 2015
Advanced Subsidiary/Advanced
DT1 - FOOD TECHNOLOGY

Principal Examiner: Mrs S Reynolds

Many centres had prepared candidates well for the DT1 examination with candidates displaying a good level of knowledge. Many candidates answered questions well, using appropriate detailing, good grammar, spelling and punctuation. These candidates appeared to have been made aware of the importance of good examination technique and had been given the opportunity to complete practice examination questions. Some candidates did however, appear not to have been prepared fully for the examination. Some displayed only an extremely basic knowledge and understanding and were not able to answer the required number of questions. Candidates should be encouraged to practice examination questions under timed conditions and should be reminded of the importance of referring to the mark allocation for each question.

Section A

1. (a) **State one finishing technique that could be applied to a named food product.** [2]
- (b) **Describe three different reasons for using this technique to improve the named food product.** 3 x [2]

The majority of candidates who answered this question were able to name one finishing technique and apply it to a named food product. Glazing was a popular answer using sausage rolls or pasties as the named product. Another popular answer was adding colour via caramelisation. Many candidates were able to give two developed answers but some were unable to explain their third reason to gain full marks. Popular answers were linked to colour/ texture and taste.

2. (a) **Describe the main features of a high volume (mass) production system in the food industry.** [4]
- (b) **Explain four benefits of a high volume (mass) production system to the manufacturer.** 4 x [1]

This was a popular question and many candidates were able to explain the main features of a high volume production system giving a variety of relevant detailed answers and were also able to explain the benefits of a high volume system. Some candidates however misread the question and only discussed the features of mass production.

- 3. Copyright, patents and design rights are all Intellectual Property Rights granted by the Patent Office. Describe two of these rights in relation to specific food products. 2 x [4]**

This question was reasonably popular, copyright and patents were described more often than design rights. Many candidates only had a basic knowledge and very few provided enough information to secure four marks for either description. Many candidates confused / mixed up the specific intellectual rights, giving inaccurate details in their answers for the actual right that they were describing. Few had a good knowledge of two of the rights. Some candidates gave answers that were not related to food products.

- 4. New food materials have been developed which have specific properties and characteristics. Name two such food materials and describe their particular properties, characteristics and use.**

This was a popular question which was well answered by many candidates. Candidates did not, however, always understand the uses of the smart materials and some were unable to describe properties or characteristics appropriately. Most candidates who answered this question referred to modified starch, Quorn, or functional foods. Some had a good knowledge of two materials, but many could provide only one detailed answer.

- 5. Food product designers use information from both primary and secondary research to inform their designing.**
- (a) Describe the kind of information identified through primary research. [4]**
- (b) Describe the kind of information identified through secondary research. [4]**

This question was generally well answered. Candidates were able to draw on personal knowledge gained from completing their coursework. Many were able to describe primary and secondary research, using examples from their coursework. Some candidates were, however, able to describe and give examples of primary research in more detail.

- 6. Explain how stable emulsions and foams are formed and used in the manufacture of named food products. [8]**

This question gave candidates an opportunity to revisit aspects of practical experimental work by asking them to explain how stable emulsions and foams are formed. Only a relatively small number of candidates were able to provide detailed, in-depth answers explaining how emulsions and foams were formed. Most candidates were able to suggest appropriate examples of foams and emulsions. Candidates should be encouraged to revisit the experimental work that they have completed prior to the examination to be able to refer to this knowledge.

7. (a) **Explain the terms quantitative and qualitative performance criteria when drawing up a design specification for a food product.** 2 x [2]
- (b) **For a named food product specification, state two examples of detailed qualitative performance criteria and two examples of detailed quantitative performance criteria.** 2 x [2]

This was a popular question and was answered well by many candidates. Candidates were able to refer back to their coursework specifications and many provided good examples. Some candidates, however, misread what the question was asking and consequently only spoke about the criteria in their answer and didn't give the required examples of qualitative and quantitative criteria. This shows the importance to candidates of reading the question carefully. It was disappointing to see that some candidates were confusing / mixing up quantitative and qualitative criteria.

8. (a) **Define the term quality control in the production of food products.** [2]
- (b) **With reference to the production of a particular food product or material, explain how quality control is carried out and why it is important to the manufacturer.** [6]

Most candidates that answered this question were able to define the term quality control; many provided good definitions enabling candidate's to secure the marks available. Some candidates only provided a very basic answer. Centres could encourage their candidates to be able to define terms, by encouraging them to practice quick response answers during discussion and or practical session. Part (b) of the question was answered well by some candidates who had read the question carefully and consequently referred to the quality control procedures for one particular product or material and clearly stated why it is of importance to the manufacturer. Candidates were not required to discuss quality assurance procedures; some candidates did this and as a result did not gain marks.

Section B

Some candidates produced good answers showing sound depth knowledge. Many candidates however seemed to struggle with the demands of answering the essay question, indicating that they had not been provided with opportunities to complete practice questions prior to the examination. Very few candidates had planned out their essay and many were of inappropriate length (some extremely short and some far in excess of expectations due to the extent of 'waffle').

9. **With reference to at least two different food products, explain why both styling and image creation are important to the manufacturer in product development and to the intended target market.** [30]

This question was answered well by candidates who covered a wide range of issues effecting why style and image creation are important to the manufacturer. Reference was often made to nutritional claims, sustainability, advertising, fashion trends and costs; very few candidates surprisingly, included reference to the influence of the media e.g. 'Great British Bake Off' or to the influence of celebrity chefs. Many candidates did not answer referring to at least two products; again showing the importance of instructing candidates in to good practice regarding reading the question correctly.

- 10. Technological developments have had an inevitable impact on the design and manufacture of food products. Explain how technological developments have improved the manufacture, function and appeal of named food products. [30]**

This was a popular question and was answered well by some candidates who explained how technological developments have improved manufacture, function and appeal of a range of different products. The use of smart foods formed part of a popular answer particularly referring to the development of Quorn and use of encapsulation technology. Candidates also referred to functional ingredients but some were confused between their use in cholesterol lowering spreads and probiotic drinks. Not all candidates referred back to the essay title once they had started writing their essay; consequently candidates missed out on opportunities to gain marks by omitting details that were expected e.g. discussed manufacture but not function and appeal.

- 11. Discuss how manufacturers exploit the properties of sugar to create the desirable properties and characteristics in a range of food products. [30]**

This question was answered well by some candidates who were able to discuss a variety of the properties and characteristics that sugar has. Popular answers included explaining the role of sugar in caramelisation, its use in sweets and confectionary, its use in making meringues and its use in cake making. Very few candidates were able to discuss a wide range of the properties of sugar and many candidates offered superficial answers relating only to the different types of sugars used. Some candidates who attempted this question showed little factual knowledge of the use of sugars and many centres should be proactive in encouraging candidates to practice completing essay style questions under timed conditions.

DESIGN AND TECHNOLOGY

General Certificate of Education

Summer 2015

Advanced Subsidiary/Advanced

DT1 - SYSTEMS AND CONTROL TECHNOLOGY

Principal Examiner: Mr Phil Glover

Systems and Control Technology remains a small entry at AS level compared to Product Design. The report concentrates on the performance of the candidates in those questions which specifically address the Systems and Control Knowledge and Skills as outlined in the specification. The report for DT1 Product Design addresses performance in the other questions set for this paper. However, good use of systems and control examples was evident throughout these answers.

PART A

1. **Creating a time delay in a system can be achieved using microprocessor, electronic and pneumatic circuits.**

With the aid of sketches describe two different methods of creating time delays in systems. **2 x [4]**

The question examined the candidates' knowledge of circuits used to create a time delay. A fairly popular question with most candidates able to sketch and describe two circuits. The majority of these candidates were able to give detailed descriptions of their chosen system for creating the time delay.

4. **Plain bearings can be used in drive systems to support radial rotating shafts.**

(a) **Describe a plain bearing.** **[2]**

(b) **State two materials used for plain bearings and explain why they are suitable.** **2 x [3]**

This question examined the candidates' knowledge of plain bearings for radial rotating shafts. Tackled by a limited number of candidates, generally the answers lacked a depth of knowledge. Those candidates that attempted this question lacked any depth of knowledge of plain bearings or the materials they are made of.

8. **With reference to the production of an electronic circuit for a particular product, explain what is meant by quality control and state why it is important to the manufacturer.** **[8]**

The question focused on quality control in the production of electronic circuits and its importance for the manufacturer. A very popular question in which candidates were able to describe quality control in relation to the production of electronic circuits with some detail of its importance to the manufacturer. Weaker answers often mixed up quality assurance with quality control.

PART B

- 11. Designers create products using their knowledge and understanding of electronic components, production methods and market needs.**

Discuss this statement in relation to a specific product or range of products.

[30]

Candidates were asked to discuss how designers use their knowledge and understanding of electronic components, production methods and market needs in relation to specific products. This was the least popular section B question. Candidates who attempted the question showed a good general understanding of electronic components, production methods and market needs, but often lacked any real depth to their knowledge, particularly with the electronic components they were discussing.

DESIGN AND TECHNOLOGY

General Certificate of Education

Summer 2015

Advanced Subsidiary/Advanced

DT2 - DESIGN AND MAKE TASK

PRODUCT DESIGN/SYSTEMS & CONTROL TECHNOLOGY

Principal Examiner: Mr John Huxtable

I would like to begin this year's report by thanking the majority of centres for continued improvements in aspects of administration including their efficient use of the WJEC website to record centre marks.

Internal standardisation between teachers and across material areas continues to be an issue in some centres. This is an essential aspect of the internal marking and moderation process.

The choice of project is a concern with some centres allowing candidates to undertake large scale projects which are over reliant on technician support to machine sets of parts which candidates assemble using low level skills. The choice of 'smarter' projects which play to the centres strengths and facilities are an effective way forward. It is essential that candidates are able to demonstrate high level making skills and standards of accuracy if they are to secure high level marks.

DESIGNING

Product Analysis and Research

This was effectively used by many centres enabling candidates to develop a thorough understanding of an area in which they were working. Good work was exemplified by candidates undertaking first hand in depth analysis of relevant products based upon draft specifications. This approach ensured relevance to the subsequent design work and aided the composition of final specifications. When this was done well candidates developed a sound appreciation of the needs of the target audience.

Effective analysis and relevant research also enabled candidates to thoroughly understand the task ahead and to develop sophisticated final specifications that then underpinned the entire project. Effective use was made of establishing Unique Selling Points as a part of this process. Where centres relied solely upon virtual product analysis the relevance and depth of the work was limited.

Developing a specification

Where quality product analysis and research had been undertaken candidates showed a thorough understanding and their final specification effectively addressed the main issues of the design task. Good practice showed the use of a hierarchy and included measurable criteria. Where this was not done well it tended to be the cause of significant difficulties later on in the project.

Good specifications were relevant, concise and meaningful and helped to focus subsequent design activity. A common problem was still an over reliance on centre generated check lists which candidates used to create lengthy lists of very general and often irrelevant specifications.

A common problem was the use of photocopied sets of notes of materials and processes pasted into folio pages; work of this type is of no value. Specific materials explored in depth and trials of manufacturing processes are much more what is required and have considerable value.

Generating and Developing Ideas and Proposals

Sketchbook work is now firmly established and much good practice was evident. Modelling and testing was used by many centres as an essential development tool both through traditional hand modelling and through 3D modelling software. Clear reference was made back to the design specification to evaluate ideas and proposals and also to establish a clear direction for the project.

Detail Designing

This was an area which still causes some difficulties mainly due to assessment criteria not being fully read and understood. Effective detail design must have all the information needed for the product to be made by a third party, good work must include all relevant dimensions and tolerances. Appropriate ICT should also be used to present detailed dimensions of the final proposal to gain high marks. Parts drawings are also expected if the higher marks are to be accessed. Textiles candidates made very effective use of appropriate software to explore pattern and colour possibilities within their design development and used toiles and patterns to detail their designs.

Evaluating, Reflecting and Decision Making

This aspect was effectively dealt with by many centres. Where difficulties were encountered it was almost entirely down to poor specifications which failed to give sufficient focus. The criteria regarding objective comment from those with commercial or specialist knowledge was the main area of weakness. Some candidates made contact with professionals and retailers to provide additional objective feedback. End testing is a crucial aspect to help candidates to be more objective and to formulate effective suggestions for modifications.

Communication / Key Skills

The candidates in some centres are producing folios which demonstrate high levels of creativity with very effective use of graphical work and rapid concept modelling together with highly developed CAD and CAM. This rounded approach is very effective and enables candidates to fluently develop design ideas.

MAKING

Planning for Making

This area is now generally well done, but centres are reminded that marks can only be awarded for the use of appropriate project management systems (in planning for production) coupled with detailed quality assurance and quality control measures.

Selecting and Testing Materials and Components

If candidates are to access all the marks then in depth researching relevant materials data and undertaking experimental making is a sound way forward. Costings and fair testing should also be included here. Relevance is crucial and selection needs to be supported by data comparing a selected range of available materials is a sound approach.

Use of Materials and Processes

The need for candidate's work to show increasing degrees of creativity and sophistication is one of the challenges of the specification. Where candidates have previously selected and tested appropriate materials and processes they are more likely to be better equipped to rise to the challenge here. Compact projects do have advantages in this section and enable candidates to demonstrate their making capability well.

Accuracy, Quality and Finish of the Design Solution

This was exemplified by high quality accurately made and well finished products. Where projects such as architecture and graphics are undertaken then it is expected that the outcomes should be in line with the normal professional / commercial practice. It is essential that candidates produce architectural models that are to scale and of a complexity that clearly demonstrate the appearance and layout of the proposed building.

Functionality and Innovation of the Design Solution

Products must function very well and show innovative aspects to secure high marks. Attempting to be innovative is a risky business where a product has failed to meet expectations despite a great deal of hard work demonstrating a degree of high level making skills and accuracy. The functional aspects of architectural projects are sometimes a concern. The folio and model must show an appreciation of how the building will function.

Additional Notes

Overall, the standard of making was similar to previous years with some good work produced. Many centres have adjusted the scale of products and focused on the materials and processes used; this has a positive effect on candidate's ability to earn marks. Good work demonstrated high level skills with significant progression from GCSE. Medium size final solutions with a good range of processes offer candidates a greater potential of accessing all the marks. Identifying appropriate processes and working out ways of achieving quality is vital. Where a product relies upon significant numbers of commercial components requires a cautious approach.

In textiles the use of a commercial pattern is perfectly acceptable as a starting point, but candidates need to move on by customising, modifying and experimenting to develop a design which is much more original. The modified pattern and/or toile are important pieces of evidence and are part of the Detail Design section.

There are a few key areas which are consistently used to very good effect in some centres which is useful to share within this report. All of the points that follow have a direct effect on the quality of the learning experience and on the ability of candidates to access marks:

- Writing clear, wide ranging and well-structured specifications is vital.
- Establishing design tasks which relate to the market place and industrial practice.
- Boosting idea generation by integrating rapid modelling techniques into early designing can be very effective.
- Creativity can be nurtured by identifying and resourcing new processes, technologies and materials to encourage new approaches e.g. bag press laminating, knock down fittings, polypropylene sheet forming, frosted acrylic, LED lighting.
- Evaluating thoroughly, and getting the opinions of others, considering commercial potential and manufacturing requirements, testing by using (or wearing where appropriate) are all valuable approaches.

DESIGN AND TECHNOLOGY
General Certificate of Education
Summer 2015
Advanced Subsidiary
DT2 - DESIGN & MAKE TASK
FOOD TECHNOLOGY

Principal Examiner: Mrs Karen Brassington

As usual, coursework at AS Food Technology has varied in quality this year. A great deal of very good work has been seen, with only a minority of candidates struggling with the transition from GCSE to AS level. Most are using appropriate briefs. Projects were generally very well presented, with most now choosing to work in the more manageable A3 format. An excellent range of presentation techniques was seen with very good use of ICT. Many candidates are explaining their ideas clearly through written communication and some are also using sketching effectively to put across their ideas. We are, however, seeing some projects with virtually no diagrams included. This makes it very difficult for design intentions to be communicated effectively and must be discouraged. The use of the sketchbook continues to vary. Some are using sketchbooks as a place to keep source material and jottings / notes etc. It is becoming quite common for Food Technology candidates to be using recipes from magazines / the internet as a starting point. This is acceptable as long as they are annotating / commenting on these, then going on to carry out developments. It is essential that there is 'sketchbook type material', be this in an actual sketchbook or within the main body of the project.

The quality of photographic evidence this year has generally been good, with a good number of projects where it has been excellent: plenty of clear photos of a good size, showing all practical work carried out. This would be the ideal from all candidates. There have been some this year where photographic evidence has been of a poor quality and inadequate to properly show practical work carried out and to justify the making marks awarded by the teacher. Centres need to ensure please that photographs are in focus and of a reasonable size. There must be a photograph for each practical item for which marks have been allocated. There have been some new centres this year which seem to have been unaware of the requirement to produce the actual food items for the moderator. It should be noted that it has for several years been a requirement that food items are retained for AS as well as A2 projects. It is adequate that the centre freezes only a section of the item so that the remaining food can be taken home by candidates. This is for the final outcome only; it is not necessary to retain samples of practical items made during development.

At AS, many candidates are carrying out a detailed product analysis on an appropriate food product. This should form a main focus of the research section, though other supplementary research will be necessary in addition. In many cases, candidates are pitching their research well, both in terms of content and quantity. There remain some candidates though who are including information in their research which is superfluous and lacking sufficient focus. Research material should only be included if it serves to inform the candidate usefully.

The standard of specifications at AS is generally improving with many including a good range of appropriate measurable criteria arranged into a hierarchy. There were many examples seen this year of candidates showing creativity in their designing. Many are developing their ideas fully, including using plenty of trialling and experimental work to inform their decision-making. Food materials are generally used appropriately and effectively. A number of candidates are failing to include an annotated diagram of their final design intention which is generally a good way of communicating their ideas.

Evaluation tends to be a real strength in a number of centres, with many candidates providing quality on-going evaluative comment throughout their projects and detailed summative evaluations. A range of techniques have been seen being used to good effective, including quality organoleptic testing and third party evaluations, sometimes by an expert in the field. Where nutritional analysis programs are used, it is essential that candidates interpret the information gained to make it meaningful and to show understanding.

Plans for making have gained good marks in many instances, with most if not all details needed for the food product to be made by a third party. Some centres are including information such as scaling up and mass production considerations. This is unnecessary and is achieving no marks.

The standard of practical work has generally been very good this year. In many cases the quality of finish has been high; candidates must aim to achieve a professional, marketable standard of finish, particularly on their final outcome. Overall, the standard of coursework has been high with many centres making further developments from last year.

DESIGN AND TECHNOLOGY
General Certificate of Education
Summer 2015
Advanced Subsidiary/Advanced
DT3 - PRODUCT DESIGN

Principal Examiner: Mr Mansel Davies

A good number of candidates provided very good answers both within section A and section B and justifying their reasons for their responses where necessary.

These candidates also demonstrated some excellent responses to the essay questions, most of who had clearly prepared well and structured their responses.

However, many candidates fail to achieve above level 2 marks in their essay response as a result of not including the essential requirements of the question – which may be as a result of very little practice at writing essays and actually analysing set essay questions. We would also encourage candidates to practice short answer questions as it is often more difficult to include all details asked for in the question in a short precise answer.

Candidates knowledge of materials' properties and characteristics is improving at the top end but remains an area for improvement.

Although many candidates demonstrate very good awareness of product design and the development of specific products, centres are encouraged to include a wider range of designers and products for study at A level.

Section A

- 1. Explain the terms customer needs and customer wants, when making decisions about the design of products. 2 x [4]**

Good responses were able to explain clearly the customer needs as essential features of products and the wants as the supplementary features. However many responses did not clearly differentiate between the two terms to gain the higher level marks.

- 2. Explain what you understand by the term Computer Integrated Manufacturing (CIM) as a system used in volume production. [8]**

The majority of responses highlighted the main areas of CIM as a process using computers to control production processes, enabling faster production with less errors. The weaker responses did not detail the automation aspects with input from sensors and the levels of communication possible across areas of production.

3. **Describe one benefit and one limitation of using the following sources of energy when manufacturing products.** 4 x [2]
- (a) fossil fuels;
 - (b) nuclear fuels;
 - (c) hydro generation;
 - (d) wind generation.

A very popular question in which many candidates scored well. Responses provided very good clear benefits and limitations to all the sources of energy. A small number of responses tended to repeat benefits and limitations across the four areas and were therefore unable to access the higher marks available.

4. **Name a product which has been subjected to incremental improvements over time and explain the reasons for two of these improvements.** 2 x [4]

Many responses used mobile phones as their chosen product and described many of the features available within each model as it developed. This was generally superficial and responses did not provide reasons for improvements or describe the incremental improvements due to new materials or manufacturing methods. A small number of good responses traced the incremental improvements of products through time.

5. **Give reasons why an understanding of the product life cycle is so important when deciding on strategies to sell a product.** [8]

Candidates' knowledge of the life cycle of products is improving as exemplified by some good responses. Enabling retailers to gauge when promotion is required and also the type of promotion necessary to ensure the continued sales of a particular product was clearly understood by a number of candidates. The weaker responses merely described the product life cycle without a link to the strategies necessary to sell a product.

Section B

6. **Explain why the development and refinement of aesthetic values is so important to the designer.** [8]

Candidate responses correctly focussed on aesthetic design values together with the appearance of a product and the emotional responses it evokes. Good responses also highlighted the strong brand identity seen in contemporary products. Weaker responses merely described the importance of aesthetics with no reference to the designer.

7. **Describe the impact that innovation has on the success of products.** [8]

Responses did highlight the importance of innovation in developing successful products but were too often lacking in their reference to innovation as 'doing something different rather than doing the same thing better'. Good responses did highlight the importance of innovation within a particular market segment or society in general.

8. (a) Name two composite materials. [2]
(b) Describe what you understand by the term composite materials. [6]

A range of composites (both wood and polymer based) were named by candidates with a small number confusing composites with alloys. The candidates who scored well provided good understanding of the term through examples of its application, a description of its improved properties and benefits to a particular situation or specific product/component.

9. Describe the essential features of:
(a) registered design; [4]
(b) registered trade mark. [4]

The responses received were generally good and candidates described features of registered design as being the appearance of the whole or part of a product including the features of particular lines, contours, colours, shape, texture or materials of the product - meaning that protection is given to the way a product *looks*. The essential features of registered trademarks were noted as any sign, logo, names or even slogans with relevant examples provided by the stronger responses.

10. Evaluate the effect of market research in ensuring the success of products that enter the market place. [8]

A small number of responses were able to truly evaluate the effect of market research thus ensuring the success of products. This was achieved through their description of different markets, their need, size and ways of gathering and interpreting information – thus ensuring the success of products.

Section C

This section involves extended written answers and the marks allocated takes into account the four levels within the assessment criteria (together with the structure and quality of the written information). Candidates who plan and structure responses carefully, together with answering specific areas within the question inevitably score well. Many of the weaker responses do not respond to the specifics within the question, lack any order or structure, are poorly written and are much too brief.

11. Prior to use in the manufacture of products, raw materials are processed and finished to make them suitable for use.
Explain how a material you are familiar with, is processed and finished into a form which is suitable for use in the manufacture of products. [26]

The few candidates who attempted this question responded with general descriptions of processing materials (wood, metal, plastics or textiles) into suitable forms for use in manufacture. Responses did not detail specific information relating to the different stages or processes involved.

- 12. Evaluate the design features of products developed by a designer you are familiar with, suggesting why the products have become successful and how they have influenced the development of similar products. [26]**

Responses highlighted the development of products produced by named designers through time but were unable to suggest how they have influenced the development of similar products. Mobile phones or vacuum cleaners were used by the majority of candidates to exemplify their answer. Candidates scored well when answers provided good evaluative comments relating to specific products.

- 13. "Design must reflect the practical and aesthetic ...but above all...good design must primarily serve people." [Thomas J Watson] Suggest ways in which this quote can be applied to good design. [26]**

This type of question provides opportunities for candidates to take into account a range of factors and have clear understanding of the issues involved within product design. Candidates who scored well here provided responses which highlighted the impact of specific products, their aesthetic features and how these products serve their target audience.

- 14. Describe a product that you consider to be a 'design classic', giving reasons for its classification, and trace the development of the product through time. [26]**

The best responses provided clear understanding of the term 'design classic' in that it can have a timeless aesthetic value, is a standard of its kind, has historical significance and is both enduring and elegant. The many examples seen were the coca cola bottle, the London Underground map, the red telephone box, the little black dress and angle poise lamp – these provided the context for answers justifying their classification and development through time.

- 15. Evaluate the part that quality assurance and quality control have played in high volume product manufacturing. [26]**

Responses invariably did not differentiate between the two areas in that Quality Assurance ensures quality in the process and Quality Control identifies defects in products before release. The better responses were able to provide some definition but were unable to truly evaluate the part that both play in high volume manufacturing.

DESIGN AND TECHNOLOGY
General Certificate of Education
Summer 2015
Advanced Subsidiary/Advanced
DT3 - FOOD TECHNOLOGY

Principal Examiner: Mrs Karen Brasington

This year saw fewer candidates taking the A2 paper. As in all years, there was a range in the standard of papers. Many candidates had a good understanding of Food Technology and had clearly been well-prepared for the examination by their teachers. Many had a good grasp of technical language and were able to explain themselves effectively.

SECTION A

- 1. Retailers sell products which are designed for consumers with food intolerances.**

For a named food intolerance:

- (a) outline the symptoms; [2]**
- (b) describe how different food products have been adapted to meet the needs of consumers with this intolerance. [6]**

The most popular choice of food intolerance was gluten and many candidates were able to outline the symptoms correctly. There were many mid-range responses to the second part of the question. In many instances the knowledge of alternatives to wheat was disappointing and very few seemed to be able to write about the topic in any depth. Very few candidates discussed examples of specific food products which had been adapted to meet the needs of coeliacs. This may well have reduced the amount of information provided by some. Lactose intolerance was also reasonably popular and candidates who chose that seemed more able to offer examples of appropriate alternative food materials.

- 2. Explain what you understand by the term Computer Integrated Manufacturing (CIM) as a system used in volume food production. [8]**

This was not a popular question and many who attempted it wrote rather vaguely about mass production. Responses tended to lack focus and explain in very general terms about quality control rather than CIM.

- 3. Name a food product which has been subjected to incremental improvements over time and explain the reasons for two of these improvements. 2 x [4]**

Candidates who attempted this question clearly understood the term 'incremental improvements'. Most answers tended to focus on meeting consumer demand / increasing sales. Some wrote their responses in terms of technology push / consumer pull. A smaller number of candidates looked at the improvements made to food products in terms of health.

4. **Give reasons why an understanding of the product life cycle is so important when deciding on strategies to sell a food product.** [8]

There were a number of good responses to this question. Weaker responses failed to apply understanding of the product life cycle, simply describing its stages. Better answers did indeed consider how understanding the anticipated life cycle of a food product aids decisions regarding sales strategies. A number of candidates used specific examples, such as foods for the Christmas / Easter season.

- (a) **Outline briefly two factors affecting the growth of bacteria.** 2 x [2]
- (b) **For any one of these factors, explain how the growth of bacteria is controlled within a named method of food preservation.** [4]

The vast majority of candidates knew the factors which affect the growth of bacteria and many responses to (a) were sufficiently detailed to gain full marks. Only the minority simply listed rather than outlining factors. Freezing was probably the most popular choice for a method of preservation in (b), with canning also fairly popular. Candidates who wrote about canning showed the greatest degree of knowledge and understanding, with many able to state exact temperatures and timings of the canning process and explaining clearly how preservation is achieved.

Section B

6. **Evaluate the effect of market research in ensuring the success of food products that enter the market place.** [8]

Many candidates answered this question well. A number made direct and close reference to the 4Ps and several cited research carried out during their coursework. Meeting consumer needs and determining an appropriate price were most commonly discussed.

7. (a) **Outline the functions of protein in the diet.** [2]
- (b) **Using examples of named foods, explain in detail the meaning of the term 'biological value' and discuss its importance in diet planning.** [6]

This question was generally answered well with candidates demonstrating very good subject knowledge and using technical vocabulary effectively. A thorough understanding of biological value was evident in many responses, with clear and detailed explanations given. Examples were used effectively to demonstrate the value of combining certain foods with a low biological value.

8. Explain how prototyping and trialling are used within the development of new food products. [8]

Many candidates were clearly reflecting on coursework activities when answering this question. A very wide range of uses were described. The most common were searching for areas for improvement and determining consumer likes / dislikes. Some made reference to more technical aspects such as costing and manufacturing issues. A number of candidates discussed making products e.g. regionalised product trialling in order to get a feel for potential sales.

9. Describe the essential features of:

(a) Registered Design. [4]

(b) Registered Trade Marks. [4]

Few very answered this question and generally those who attempted the question had quite a good subject knowledge, although there was some confusion between the two terms in a few cases.

(a) Describe the use of two named items of industrial equipment used within the large-scale manufacture of food products. 2 x [2]

(b) Describe the benefits of using these items of equipment to manufacture food products. [4]

Generally this question was not answered particularly well. Many candidates wrote rather generic answers to part (b) rather than focussing on the benefits of the particular items of equipment they had chosen to write about in part (a). Many answered lacked depth.

Section C

As usual, the standard of essays varied widely. These ranged from answers comprising a few simple paragraphs, showing only limited understanding of the topic to essays where candidates had answered questions in great depth and demonstrated an excellent level of knowledge. It was pleasing to see a large number of candidates using essay plans to help structure their responses. Some had clearly practised essays during the course of their studies. Centres must be encouraged to give their candidates opportunity to develop their essay writing skills, particularly given the large number of marks available for this section of the paper.

It is still most common to see candidates writing their essays last and it would appear that some may have left themselves insufficient time to do them properly. The management of time during the exam is something that some candidates would benefit advice and practice on. Centres should point out to candidates that they may tackle questions in any order they choose. There may be benefit to some candidates if they were to do their essays earlier on in the exam rather than leave them until last.

- 11. Discuss in detail how named food materials can be manipulated and combined in order to enhance named food products. [26]**

Few attempted this question. There were a very small number of excellent responses, with those candidates showing in-depth knowledge and understanding of the food materials they discussed and using technical language extensively. A number seemed to simply write everything they knew about a particular food material, rather than considering the focus of the question of manipulating and combining ingredients.

- 12. Food related health issues are increasingly becoming a major concern.**

Discuss the impact of poor diet on health and describe how food products have been adapted to address these issues. [26]

This was a popular question. Unfortunately, many candidates focussed their responses almost exclusively on the impact of poor health on diet with often only minimal consideration given to the adaptation of food products. Obesity was perhaps the most widely discussed issue with many discussing the impact of diets high in fat / sugar.

- 13. Evaluate the importance of food packaging to the manufacturer, retailer and consumer and discuss to what extent packaging can enhance a food product. [26]**

Another popular question, with quite a varied standard of responses. Many focussed their answers on the consumer, thus limiting the scope of their essay and consequent mark. There was some limited reference to the retailer, but very little to the manufacturer. A range of technical and aesthetic issues were considered.

- 14. Explain the purpose of design specifications and manufacturing specifications when developing and producing food products. [26]**

Candidates generally appeared to have a good understanding of both design specifications and manufacturing specifications but many did not answer in enough depth. The best responses tended to be well illustrated with plenty of examples. A number of candidates made specific reference to their coursework projects.

- 15. Evaluate the part that Quality Assurance and Quality Control play in high volume food manufacturing. [26]**

Few answered this question with the emphasis certainly of QC rather than QA. A number described examples of quality control and responses tended to lack analytical comment.

DESIGN AND TECHNOLOGY
General Certificate of Education
Summer 2015
Advanced Subsidiary/Advanced
DT3 - SYSTEMS & CONTROL TECHNOLOGY

Principal Examiner: Mr. Jason Cates

General Comments

- Candidate numbers have increased this year, but again this represents very few centres. The entry is consistently small in-line with trends over recent years.
- Candidates tend to be generally more able when compared to the average Product Design candidate.
- Most candidates have had successful experiences with Systems and Control at GCSE level.
- The paper appears to have been accessible in comparison to recent years' papers.
- Candidates selected from the range of Systems and Control specific questions in addition to the common questions with Product Design.
- There was a narrow range of performance from candidates in this paper, consistent with previous years.
- The detailed knowledge and understanding of some control system components lacked depth.
- Candidates' experiences when completing the course is not always brought to bear when completing the examination paper.
- Candidates tend to centre responses on mobile phones and iPod when discussing products, features and functions. A wider range of products should be studied, especially those with innovative or radically new control systems.
- The report for DT3 Product Design addresses performance in the other questions set for this paper.

Section A

2. **Designers often adopt a 'systems' type approach when developing control systems.**

Explain, with diagrams, the type of 'systems' approach they may take and evaluate how this contributes to the development of an effective control system.

[8]

Surprisingly, there were no responses to this question from Systems and Control candidates.

4. **When developing successful control systems for products, designers must consider technology push and market pull forces. Using named products, explain how these technology push and market pull forces have impacted on control system development.** [8]

A fairly popular question, candidates responded with typical examples of iphone, ipad and dual cyclone Dyson cleaners. Sometimes, answers were descriptive of the products used, rather than analytical with focus on the control system development. Good responses included technological advancement and how 'improved' components provide opportunities for innovation within the function of control systems.

Section B

6. **Describe why the development and refinement of functional values is so important to the designers of control systems.** [8]

This was selected by a very small number of candidates, who generally defined the meaning of functional values rather than evaluating the importance of refining control systems for optimum performance. Candidates are reminded that making generic or basic statements without depth or qualification will not access the higher range of marks.

8. (a) **Name and sketch the circuit symbols for two different input components used in electronic control systems.** 2 x [1]
(b) **Describe how both input components react when used as inputs in control systems of your choice.** 2 x [3]

This was a popular question with candidates, and the majority of those selecting this responded very well with a high mean mark for this question. Responses required detailed knowledge of input components and the technical knowledge of how the named components reacted as input components. Many selected LDRs and offered the changing resistance with light and how resistance became very large without light. Some candidates used passive components, such as hold down resistors, which are acceptable when used in an input potential divider, but not really as input components in isolation. More marks would have been gained if candidates picked a thermistor in addition to an LDR, and then described a potential divider for part b.

10. **Using named products, evaluate how far the control system is responsible for:**
(a) **incremental development of products;** [4]
(b) **radical new development of products.** [4]

A question answered by a small number of candidates, with a wider range of success. Higher scoring candidates dealt with (a) and (b) separately, and could identify typical products that illustrated 'facelifted' products that were slightly modified from previous versions as a basic sales extension exercise. Radically new products use new and unseen technology within the control system, and again some responses used Apple or Dyson products in supporting this response.

Section C

11. **During your studies, selecting appropriate materials and components has been critical when developing effective control systems for products. Using named materials and / or components, describe how their specific properties and characteristics have made them suitable for use in control systems for products that you have made.** [26]

Around a third of candidates opted for this essay, but it was not always answered well by those selecting it. This essay required a real depth of knowledge about specific control components which was 'thin' in some of the responses offered. Candidates need to examine the properties and characteristics that control components have, and why they are appropriate for use in the chosen control system. This level of analysis was often absent in responses. Low marks are awarded for a general description of components without the detailed knowledge and understanding to support this. Unfortunately, some candidates proceeded to discuss general materials such as flexi-ply and its suitability for lamination which failed to gain credit within the question.

13. **“Design is not just what it looks like and feels like, Design is how it works.”
Steve Jobs**
Using this statement, evaluate the contribution of the control system to creating an innovative product. [26]

Again this question was not commonly answered and where it was attempted the outcomes were limited and marks awarded were generally around half of the 26 available. Candidates understand form versus function, but this was not evident in responses. The link between innovation and function was not made as clearly as it could have been, and as a result essays failed to develop into balanced and full discussions, thus limiting the marks awarded. More mature responses could have included the 'juicy salif' and how function is not always paramount to the success and innovative value of products. Sadly, responses failed to demonstrate the expected level of knowledge and understanding to penetrate Level 3 of the assessment criteria.

DESIGN AND TECHNOLOGY

General Certificate of Education

Summer 2015

Advanced Subsidiary/Advanced

DT4 - PRODUCT DESIGN/SYSTEMS & CONTROL TECHNOLOGY

Principal Examiner: Mr Mansel Davies

General Comments

The majority of centres are demonstrating continued improvements in aspects of administration, internal standardisation between teachers and across material areas, (although this continues to be an area of concern at a small number of centres - this is an essential aspect of centres' internal marking and moderation process). At the majority of centres the DT4 (and DT2) coursework folio sheets are annotated clearly showing justification for the marks awarded.

Moderators have again noted the challenging designing and making experiences undertaken by many candidates on their visits to centres - the high standards achieved for DT4 compare favourably to previous years. The variety of work indicating high quality and depth of studies were seen in centres and this is also evidenced at the Innovation Awards exhibition, which continues to demonstrate an increasingly diverse and high standard of work.

As in DT2 we continue to see student projects that are simplified to the point that they fall below standard for advanced level work. A good reminder of the level of challenge required to get a good grade at Advanced Level are the many CD Rom's on the Innovation Awards that have been produced over the years.

Again a reminder to all centres that any preferred design studies derived under question 9 must be submitted for approval before the end of September of the academic year that the candidate intends entering.

DESIGNING

Analysis, research and developing a design specification

This is a crucial starting point for all design studies and as such should be as focussed and thorough as possible, and not be seen as an exercise in isolation. The analysis should consider every possible factor that needs to be considered during the course of designing, the probable target audience and client profiles. The target audience should then be consulted in the evaluation stage to bring the process of designing to a full circle. Some candidates continue to produce superficial analysis lacking the depth to inform and affect designing. As stated most important feature of the research and analysis is that it should be focussed on the problem at hand enabling an understanding of the important factors that will be directly relevant to the design solution.

In many good examples candidates final specifications effectively addressed the main issues of the design task with good use of a hierarchy and measurable criteria. These were relevant and meaningful and helped to focus subsequent design activity through the whole development of the design work.

Generating and developing innovative ideas and proposals

Effective use of sketchbooks continue to improve, enabling candidates to produce creative, innovative thinking early on in their project – very often referring back to their specification points.

The specification continues to be used as a design tool throughout idea generation and should also be used when candidates evaluate existing products. The specification is often used effectively to assess initial ideas by annotation and evaluating early design ideas. Candidates who show evidence of this activity within their design folio score well. All candidates should reflect on the findings of their research and analysis, before starting to designing solutions.

A number of candidates fail to explore their designs to any depth by unpacking ideas and developing their propositions by sketching and annotating. It is good design practice to undertake continued research at relevant points in the project, as and when it is appropriate. It is also essential that candidates should be aware of the value of innovative steps or unique selling points that could be introduced into aspects of their design ideas.

Sketchbook work needs continued development in many centres as they are not being used to their best advantage – i.e. directly related to the designing activities being undertaken. Sketchbook work and the portfolio should be more closely related with early ideas sketched, partly developed and annotated – sketchbooks enabling candidates to work with freedom.

The use of modelling and other forms of quick modelling continues to feature in candidates' work. Experimental work and modelling in the designing and development stage of the project are fundamental into possible solutions to the task. It would be useful to include annotated digital images of early modelling in the sketchbook and portfolio. Where candidates are working on fashion design, commercial patterns should be a possible starting point.

Centres are encouraged to display all development models, jigs and formers used by the candidates (if this is not possible, photographic evidence should be made available).

Detail designing

As within the assessment criteria candidates must aim for sufficient details for the product to be made by a third party without reference back to the designer. Detail designing is most often seen in the form of formal three dimensional or orthographic drawings with detailed dimensions, sections and parts drawings down to component level.

If a candidate is undertaking a design exercise that results in a model, i.e. architectural model, interior design portfolio or a high quality concept model then this must be accompanied by a complete set of client visuals and business plan together with a quality realistic model.

Evaluating, reflecting and decision making

Many candidates produce good written objective evaluations against initial specification points but there were far too many that only used this form of evaluation technique. End testing must continue to be encouraged by teachers using the target audience to test products. Fully annotated photographic evidence is critical to demonstrate the nature and effectiveness of the end testing.

The candidates who score well here can also seek the opinions of their target audience or experts in the field as to the success or otherwise of their prototype.

It is important to note that the assessment criteria used for the higher mark allocation requires the evidence of a range of evaluative techniques.

Graphic communication and key skills

Candidates continue to demonstrate a structured design approach with some excellent communication skill levels. Good communication often contains clear appropriate presentation of written research and analysis, good quality sketching in the sketchbook and portfolio, indicating a broad range of presentation techniques which include ICT and appropriate numeracy.

However, further work needs to be devoted to producing accurate sketches and clear annotations, which demonstrate clarity and depth of understanding.

MAKING

Planning for making

Many candidates produce good quality forward planning for making and use appropriate quality control and quality assurance features (although a number of candidates' understanding of quality control and quality assurance needs attention). Writing frames enable candidates to include these elements together with a journal indicating the intended work, materials used and processes to be undertaken during particular weeks.

Range and sophistication of making skills

Candidates' occasionally demonstrate low level making skills reflecting a poor understanding of materials and equipment. However, the majority show evidence of a range of challenging making skills. Innovative characteristics feature in the production of the final solution where candidates have detailed knowledge of the characteristics and working properties of the materials they are going to use also understanding the equipment that they intend to work with.

Candidates should be encouraged to experience some of the properties by subjecting materials to some form of testing, thus benefiting candidates in the written papers.

Accuracy, quality and finish of the design solution

Centres candidates' demonstrated excellent work in terms of accuracy, quality and finish of their design solutions. Challenging products demonstrated mature design, accuracy of construction, tolerances and good function. These products were a pleasure for moderators to see and demonstrated the care; precision and hard work undertaken by candidates and the quality of support given by their teachers.

Functionality and innovation of the design solution

This area rewards innovation and functionality and this year saw some challenging projects which were a credit to candidates and their teachers. Innovation marks are a reward for the application of new ideas, identified needs or existing market needs as exemplified at some centres this year. Some of the work seen demonstrated exciting new innovative end products, steps or materials used within the end product.

It is encouraging to see more candidates willing to take a risk in answering a complex problem and taking on a challenge which is an area rich in thinking skills and enabling a high level of innovation in designing.

The value of attending the WDA/WJEC Innovation Exhibition and INSET each year is considerable and provides an excellent way for both staff and candidates to access high quality work and thereby fully appreciate the range and standard which is required at both AS and A level. The student seminars are very popular and relevant to all areas of the specification, and help to make this a very rewarding visit. This is a particularly valuable event for new centres.

DESIGN AND TECHNOLOGY
General Certificate of Education
Summer 2015
Advanced
DT4 - FOOD TECHNOLOGY

Principal Examiner: Mrs Karen Brassington

A2

A very high standard of work was seen in many centres this year. Food Technology projects were generally very well presented with most now choosing to work in the more manageable A3 format. An excellent range of presentation techniques was seen with very good use of ICT. Many candidates are explaining their ideas clearly through written communication and some are also using sketching effectively to put across their ideas. We are, however, seeing some projects with virtually no diagrams included; this makes it very difficult for design intentions to be communicated effectively and must be discouraged. The use of the sketchbook continues to vary. Some are using sketchbooks as a place to keep source material and jottings / notes etc. It is becoming quite common for Food Technology candidates to be using recipes from magazines / the internet as a starting point. This is acceptable as long as they are annotating / commenting on these, then going on to carry out developments. It is essential that there is 'sketchbook type material', be this in an actual sketchbook or within the main body of the project.

The quality of photographic evidence this year has generally been good, with a good number of projects where it has been excellent: plenty of clear photos of a good size, showing all practical work carried out. This would be the ideal from all candidates. There have been some this year where photographic evidence has been of a poor quality and inadequate to properly show practical work carried out and to justify the making marks awarded by the teacher. Centres need to ensure please that photographs are in focus and of a reasonable size. There must be a photograph for each practical item for which marks have been allocated. There have been some new centres this year which seem to have been unaware of the requirement to produce the actual food items for the moderator. It should be noted that food items are required for both AS and A2 projects. It is adequate that the centre freezes only a section of the item so that the remaining food can be taken home by candidates. This is for the final outcome only; it is not necessary to retain samples of practical items made during development.

At A2, the research of most candidates is well focussed and concise. Only a minority are spending too long on research, considering the much reduced mark availability for this section in A2 compared to AS. There are still a few weak specifications seen, but this is certainly only from the minority. In most instances, specifications include a good range of measurable criteria arranged into a hierarchy. There were many examples seen this year of candidates showing creativity in their designing which is an important element at A2. All should strive to show innovation at this level. Many are developing their ideas fully, including using plenty of trialling and experimental work to inform their decision-making. A number of candidates are failing to include an annotated diagram of their final design intention which makes it difficult to meet the higher marks within the detail designing section which states "identifies the aesthetic detailing to a high level of clarity." It is desirable that candidates include a fully annotated diagram of their final design idea.

Evaluation tends to be a real strength in a number of centres, with many candidates providing quality on-going evaluative comment throughout their projects and detailed summative evaluations. A range of techniques have been seen being used to good effect, including quality organoleptic testing and third party evaluations, sometimes by an expert in the field. Where nutritional analysis programs are used, it is essential that candidates interpret the information gained to make it meaningful and to show understanding.

Plans for making have gained good marks in many instances, with most if not all details needed for the food product to be made by a third party. Some centres are including information such as scaling up and mass production considerations. This is unnecessary and is achieving no marks.

The standard of practical work has generally been very good this year though some candidates at A2 are not using a large enough range of skills to access the higher marks. It is essential that a wide range of challenging making skills is used at A2. Some attain the range by doing a selection of initial makes prior to focussing more specifically within their development. Candidates need to consider the level of challenge required when making decisions about practicals: at this level they should not be making simplistic items. In many cases the quality of finish has been high; candidates must aim to achieve a professional, marketable standard of finish, particularly on their final outcome.

Overall, the standard of coursework has been high with many centres making further developments from last year.



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