



GCSE

Design and Technology: Product Design

General Certificate of Secondary Education **J305**

General Certificate of Secondary Education (Short Course) **J045**

OCR Report to Centres June 2014

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

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This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the examination.

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A551 Developing and Applying Design Skills

General Comments

When completing this unit, Candidates should be 'designing to satisfy a need'. The process candidates follow should be completely joined up. Every step is conditional on the previous step and influential on the next step.

There are no 'isolated activities' within this design process. The specification, for example, is not a stand-alone activity; it is derived from an analysis of the research into user needs and the data revealed from the analysis of existing products. The specification should then go on to both drive and control the generation of ideas and the development of a design solution.

Centre Administration

In general, Centre administration was effective and moderators received the required documentation and sample candidate materials on time. Centres are reminded that forms CCS160, CCS/A551 and form MS1 (or electronic equivalent) must be fully completed and submitted to the moderator. Form A551/CSF is an optional form for use by centres. Centre arithmetic and transcription errors have also been seen during this examination series. It is important that centres check the addition of candidate marks carefully. The transcription of the candidate mark to the MS1 should also be checked.

Centres must take care to use the correct entry codes for this unit. The entry codes are A551/01 for entries using the OCR Repository and A551/02 for either paper or electronic folios submitted by postal moderation.

When using electronic folios centres should ensure that the work of candidates is presented in one cohesive format. Producing individual documents for each page of a candidate folio is not an acceptable format. Centres using the OCR Repository should be aware of the file size limit of 20MB. If file sizes exceed this limit it is possible to load separate files for an individual candidate but these should be clearly labelled. Each individual file should not exceed 20MB. Electronic portfolios may be submitted to the moderator on a single CD or USB Memory Stick. These devices must be clearly labelled with a 'permanent marker' to show the Centre name and Centre number.

The majority of entries were A551/02 postal with many centres using the option of producing e-folios in a PowerPoint format. This enabled candidates to use sound and video within their folios. Centres are reminded that they must submit candidate work using one of the formats detailed in the OCR Specification for this subject.

Where work is submitted on paper it should be presented in a logical sequence and suitably bound to enable the moderator to complete the moderation process effectively. Folders should not include teaching materials and classroom project work.

Where centres have 15 or fewer candidates entered sending all the folios to the moderator without waiting for notification of the selected sample will aid the speed of the moderation process.

Centres must ensure that candidate work is easily identifiable with candidate name, candidate number and centre number being clearly stated.

Internal Assessment Objective 1

In general, candidates undertook design activities which were manageable and appropriate. Occasionally centres allowed candidates to undertake problems which were too challenging within the 20 hour controlled assessment limit.

It is vitally important that all candidates identify a clear problem to solve with a specific user or user group and summarise the direction of their design activity at the start of their folio. This enables them to identify and access appropriate research opportunities and also allows the creation of designs which reflect the needs of their identified user group.

Work such as planning and “what I will do and where I will look for evidence” should not be submitted in the folios as this does not attract marks against the assessment criteria.

Moderators reported that candidate’s performance was higher when they were presented with a variety of ‘situations’ which they were able to explore in order to identify their own ‘design problems’ as opposed to simply being presented with a ‘stock’ teacher generated problem that the whole teaching group followed.

Candidate performance in A551 is often better where candidates undertake design activities involving the ‘real’ needs of an elderly person, a young child, a brother or sister, a friend at school, a parent or a whole family: essentially someone who is known to the candidate.

Centres must ensure that the level of the task is appropriate for a GCSE project. A number of centres selected projects that were more suited to KS3 and this has had an adverse effect on candidates’ marks.

It is essential that Candidates keep an open mind whilst undertaking the design activity. It is clear that some candidates approach the task with a pre-conceived idea from the outset. This limits their ability to produce a range of creative design solutions to the initial design problem.

Candidates need to present evidence of the user or user group. An interview, a profile, likes, dislikes, lifestyle, etc. can all contribute to the first layer of understanding for the subsequent design activity. Fictitious users, such as ‘celebrities’, should be avoided. Consideration of the situation where the user experiences the need, will add context to the design problem.

As a consequence of focussing on a specific user with a specific need in a specific situation, a candidate should be able to compile a brief statement to explain what that they are going to design to satisfy the need of the user (design brief).

Internal Assessment Objective 2

The main area of work within IAO2 is a research activity, where the candidate investigates, collects and analyses information. The purpose of this research activity is to ensure that the candidate has obtained relevant facts, data, measurements and opinions to be able to formulate a viable specification for the development of a solution to the design need. There should be two aspects to the research activity undertaken by candidates. These are: product analysis of similar or associated products (strand 1) and “other research” such as user requirements, ergonomic considerations and location (strand 2).

When undertaking existing product analysis, ‘primary’ research was clearly seen to provide greater depth of information than the use of ‘secondary’ research methods. Undertaking primary product analysis should be one of the underpinning activities of the GCSE Product Design Course. The research of two or three products ‘in depth’ should be sufficient to inform the future design activity and satisfy the assessment criteria for the award of full marks. Some centres used a writing frame approach for the product analysis activity. It should be noted that this

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approach, or the use of pre-determined headings, can be restrictive for candidates. Each product has its own intrinsic set of features that may not neatly fit into a predetermined list or set of headings. Product analysis is not the same as a consumer survey about a product. Neither is it a 'what I like and what I dislike about this product'.

Ideally, candidates should start their analysis of a product by identifying and possibly sketching the key features of the product. An explanation of the purpose of these features will provide the candidate with the information required to both inform the writing of their design specification and aid the formulation of design ideas.

When researching the user requirements for the product to be designed, many candidates use either questionnaires or interviews. The design of these methods of obtaining 'User' data requires careful consideration. Often, the questions asked are either irrelevant or gain very little information that will aid the design of the product. Moderators report that some centres are awarding high marks to questionnaires that often do little more than present evidence of the existence of the design problem (more suited to Assessment Objective 1). In order to achieve high marks the questionnaire or interview should illicit key information about the features or functions of the product to be designed and be fully analysed. Specific ergonomic data and other size information should also be researched and presented by candidates.

An analysis of all the information collected from and about the user, as well as the information about the features of existing products, should produce a list of key features for the solution to the need. This list can form the foundation of the specification. Some candidates fall into the trap of compiling a specification based on their own preferences, or a superficial set of points such as 'it must look good', 'it must be colourful', or 'it must be safe'.

Candidate specifications were often found to contain vague or generic points which could apply to almost any product. Superficial specification points such as 'it must look good', 'it must be colourful', 'must not be too heavy', 'must be suitable for the user', 'must be ergonomic', 'must be inexpensive' or 'it must be safe', should be avoided. This type of specification should not be rewarded highly.

The specification should be the foundation to the design activity of IAO3 and it should be 'visible' when Candidates are generating and developing ideas. Weak specifications often lead to poor design activity.

Candidates who produced a summary of the research findings were able to identify the key features of the product to be designed and were able to produce a series of justified specification points. The specification should be derived from facts and data and information: it should not be based on just the candidate's thoughts and preferences.

Internal Assessment Objective 3

There were examples of some excellent design activity, with some very creative thinking evidenced.

Development was limited in some of the work seen and candidates need to understand that development means improving and moving forwards, rather than just redrawing what has already been generated. Modelling should be used to test the feasibility of aspects of the design work. This modelling activity will then contribute to design development. Centres should note that a model of the final proposal is not required as modelling is seen as a design development tool rather than a presentation tool.

The evaluation of design ideas against the design specification is an area where candidate performance could be improved. Moderators report that candidates often produce little more

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than a tick box grid with limited meaningful analysis. To be awarded high marks in strand 3 of IOA3, candidates need to show an analytical evaluation of their design ideas. Communication skills varied widely between candidates. More successful candidates presented their ideas in a 'free flowing' format, using sketching to show different views or parts of their product. They used annotation to communicate their design thinking and used modelling and enhancement techniques, such as rendering, to fully communicate their ideas.

Design annotation should make reference to the user, aesthetics, ergonomics, function or other design influences.

When producing electronic portfolios, candidate's performance is seen to be higher when all the design work, including annotation, is completed on paper. The whole design page is then scanned into the folio. Moderators have reported problems in viewing candidate's work where poor quality, low resolution scanning has been used.

Moderators have again reported that a number of centres are awarding marks for the use of CAD or Other Computer Applications (OCA) where no evidence exists within the folio. The mark for the 'use of CAD or Other Computer Applications (OCA)' is rewarded for work in **IAO3 only**. To be rewarded with higher marks, CAD should be used as a design tool rather than just to produce an image of the final design.

A552 Design and Making Innovation Challenge

General Comments

The 2014 theme 'Adventure Breaks' was accessible to all candidates and work has been seen for each of the four set challenges. Candidates continue to enjoy the work they undertake during the 'challenge' with many reflecting positively on their experience.

Running the Challenge

As this is an external examination an invigilator must be present.

Centres are reminded that the role of the teaching colleague is that of a facilitator and not that of a normal classroom teacher. They are there to provide access to materials, monitor health and safety issues and read the teacher script to candidates, elaborating and explaining where this is indicated within the script.

Teaching colleagues and support staff must not give advice to candidates about the design/manufacture of their prototype product or cut materials to correct shape or size. It must be made clear to all candidates that this is an examination and we are assessing the individual candidate's designing and modelling capability.

Photographs

The quality and size of photographs supplied by most centres is appropriate for this examination. Photographs form an essential part of the assessment process. Photographs must be good quality colour images that are of an appropriate size to fit into the space provided on the work book.

The addition of a card with the candidates name within the photo aids the return of photos to candidates. Centres are reminded that four "teacher" photographs is the minimum required.

Additional photos can be added to the workbook. This is particularly important if it is necessary to show other parts or views of an artefact to fully illustrate the final outcome. Close-up views to demonstrate quality would be particularly beneficial.

It is recommended that if candidates wish to annotate photographs that a second print is produced and stuck into either the appropriate section of the workbook or into the 'additional space' and clearly labelled and then annotated.

Examiners have reported that some centres have produced poor quality, black and white or greyscale images that do not show sufficient clarity to allow examiners to reward the higher marks for quality of modelling or use of materials.

Completion of the workbook

Despite previous comments examiners have again reported difficulty in understanding candidate's work where blunt pencil, highlight pens or gel pens have been used for written work. Please advise candidates of the need for all of their work to be legible. Work should be completed in English. 'Text messaging' abbreviations are not acceptable. It is essential that candidates fully complete the front of the workbook with their name and candidate number.

Security of Workbooks

Centres are reminded of the importance of appropriate security of all workbooks between the three sessions of the Innovation Challenge. Workbooks must be returned to the examinations officer and should be stored in secure conditions.

Development of design. Evolution through making.

Initial Thoughts

Candidates used a mix of text and drawings to explore the selected challenge. The majority of candidates produce a range of initial concept ideas and think creatively about the challenge that they have selected. The production of a thought shower is not sufficient to justify the reward of higher marks. Occasionally, candidates produce ideas for all four challenges despite indicating their selected challenge on the front of the workbook.

Briefs

Candidates often gain little or no reward for Initial Briefs or the Design Brief. These briefs are often too prescriptive with many candidates confusing the design brief with the specification. Candidates should be encouraged to write clear and precise design briefs that offer scope for creativity. The brief should be a short statement of intent.

User/Clients

The majority of candidates identified appropriate user groups for their products. Higher performing candidates gave clear consideration of their user group whilst undertaking the design activity making clear reference to the target user and user needs.

Specifications

Examiners have again raised concerns that candidates are producing vague, often generic specification points that could apply to any product. The specification must be 'specific' to the product that is being designed. Vague points such as 'it must be the right size', 'it must be ergonomic' and 'it must not cost too much' will not attract high marks. Presenting the specification in a bullet pointed format rather than in an essay style would be of benefit to candidates. Re-wording the points outlined in the exam question is not enough to gain high marks for the specification.

It is clear that some candidates do not understand the difference between a design brief and a specification.

Ideas

The majority of candidates used a mix of drawings, text, annotation and occasionally modelling/photographs to show their ideas.

Higher performing candidates produced a range of creative ideas that clearly related to their design brief, specification and potential users. Drawings of both full designs and parts of designs were provided along with detailed annotation relating to materials and construction methods. Development of the design from the 'initial thoughts' was clearly evident. Designs were 'rendered' to enhance communication.

Lower scoring candidates reproduced the initial thoughts from box 1 of the challenge activity or only produced a single design idea. Very often these candidates disregarded both the design brief and specification from boxes 3 and 4.

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Some candidates produced ideas based upon production using modelling materials. The design ideas should be based around the future manufacture of the product. Appropriate materials and construction methods should be indicated.

Examiners reported a lack of material and construction knowledge amongst candidates. The majority of candidates failed to identify specific materials or techniques for product manufacture.

Communicating information through sketches, writing and photographs

The standard of design communication was satisfactory overall. Candidates presented their ideas using annotated drawings and text.

Higher performing candidates gave different views of objects or parts of objects and clearly communicated their design thinking through the use of annotation.

The work of many candidates could have been enhanced with the use of 3D drawing techniques and rendering. Centres should encourage and support candidates to be more adventurous in their forms of communication. Time spent developing graphical communication skills would be of benefit to all units within this qualification.

Written communication is generally good but many candidates fail to use technical vocabulary when this is appropriate.

Materials, Components, Processes, Techniques and Industrial Practice

Examiners have reported that the majority of centres have prepared their candidates well for this part of the examination. Candidates from these centres clearly understood that they were making a prototype model rather than the 'final' product. Appropriate materials were supplied by these centres for candidates use. These materials included foam, foam board, card, balsa, clay, modelling clay, mechanism kits, polymorph, etc.

Some candidates whose design work was of a good standard were limited by the materials supplied by their centres. Inappropriate or junk modelling materials impose restrictions upon candidate's use of materials and can have an adverse impact upon the quality of modelling. Some candidates highlight the availability of materials as a problem within the evaluation activity.

It is essential that during the product design course candidates undertake modelling activity in order to develop their manufacturing skills and knowledge of modelling materials.

Models must be an appropriate size for the candidate to be able to successfully manipulate materials and demonstrate the features of the product. Solid block models limit the candidate's ability to test, analyse and develop their design.

Higher achieving candidates considered the choice of materials and components available and identified the most appropriate materials for the manufacture of their product demonstrating adept use of these materials. They completed their models to a high standard, showing all features of their design.

Analysis of ideas, models and prototypes

Peer Evaluation

The majority of candidates planned for the presentation and recorded the outcome. Clear evidence was seen of candidates using the feedback to further develop ideas. Occasionally, candidates failed to record the feedback or planning for this activity.

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Development of ideas

Design development was generally satisfactory. Higher achieving candidates show clear development of their ideas between box 1 'initial thoughts' and box 5 'initial ideas'. They also show development between box 5 'initial ideas' and box 9 'developing your idea'.

It is important that candidates use notes or annotations to show how they are developing their design towards an optimum solution that satisfies the design brief, specification and needs of the user.

Some candidates either produce a model of the initial idea or simply redraw the initial idea again. This does not show development of the design and therefore will gain no marks for design development. Candidates should consider the construction and operation of their design during design development.

Evaluation

Many candidates produced detailed evaluations of their prototype product. Higher performing candidates clearly considered each element of the evaluation section of the workbook and also provided detailed analysis of their design in relation to the design specification. Candidates are asked within evaluation to reflect upon the future of the product. Many candidates fail to give sufficient detail within this section of work with generic comments being given such as it will be made from plastic.

Reflection

To score highly candidates should focus on the product design rather than the modelling activity that has taken place. It is essential that candidates use the 30 minutes available to read through their workbook and reflect upon the product design. They should identify strengths and weaknesses in the design and suggest detailed alterations/improvements.

A553 Making, Testing & Marketing Products

General Comments

Centres should ensure that files are packaged properly within the presentation to give candidates full credit for their efforts. Moderators have experienced difficulties when accessing files that have not been correctly uploaded.

The use of PDF files with hyperlinks to you tube or similar web based programmes is also working well and giving centres a range of options

It is the centres responsibility to ensure sufficient photographic evidence is available to support the marks for the practical outcome.

In centres where there are more than one staff teaching candidates, it is essential that internal standardisation is completed in order to ensure that standards are maintained and the correct rank order is applied. All work should be carried out in the presence of a teacher at the Centre. To save delays in the moderation process, form CCS160 (which needs to be signed by all staff teaching the specification), should be enclosed with the selected sample of work sent to the moderator (paper or electronic format).

Candidates are free to present the work in any appropriate medium, both on paper format or in electronic format on CD, but not a combination of the two. CD seems to be the favoured format for this unit and the use of photographs, sound and video is becoming popular. The use of the OCR repository has worked very well where Centres have uploaded work to the system.

OCR would prefer candidates' work to be submitted on individual CDs for this unit. Centres should be aware that electronic folders are not returned, so ensure a copy is kept at the Centre.

Comments on Individual Objectives

Internal assessment Objective 4

This is all about creating a single, functioning, quality product. All evidence in the portfolio should be through photographs and annotation and the final outcome should be a working product **not a model**.

A good range of products were presented for moderation varying considerably in size and complexity. If centres are making similar products with all candidates it is important that candidates show ownership of the work and folio - photographs should show the individuals approach to the product and be commented on accordingly.

The submitted evidence should be a diary explaining what has been achieved and how problems have been solved and must include evidence of how candidates have used economy in their approach, how they have worked safely and how they have worked with precision. A plan, time lines or similar are not required.

The best candidates are presented detailed and well thought out evidence of how the product was made. The production log should be a range of photographs showing a range of skills, materials and equipment used and candidates showing ownership in their confident ways they are explaining how they completed the product. Areas to focus on is evidence of how candidates demonstrate economic use of materials and how they obtain precision in the making of the product.

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The use of CAD/CAM should be encouraged; however this is just one skill. Centres must ensure candidates have used a range of skills in producing the practical work to achieve the higher marks. If CAD/CAM is used, candidates should produce evidence they understand the process by using screen shots and appropriate annotation.

The quantity and quality of photographs enclosed in the portfolio is important, centres should ensure sufficient photographic evidence of a good quality is available to justify the awarded marks. Candidates tend not to include close ups showing the quality and precision of their work.

Internal assessment Objective 5

This objective is all about taking the product forward and needs to contain no reference to the making process.

Evaluations were well done with reference to the specification and appropriate photographic evidence of realistic user testing. Good video evidence of testing and user views is now a strength of this unit.

Modifications and improvements to the product should be seen as a product development opportunity, candidates should sketch possible improvements that could be made to their product with appropriate annotation. Candidates may wish to alter or draw on original images of the finished product or use overlays in an innovative design way. This element of the objective tended to be over marked by centres as it was not design based and improving the product, but often focused on what could have been done during the making.

Quantity production continues to be an area where candidates/centres could improve marks. Candidates researching how their product could be made in a Real World situation and then applying the knowledge gained to parts of the candidate's product, providing the necessary evidence to generate additional marks.

This element should be the fun element of the course and becoming disappointing as candidates seem to be playing safe and creating an advert on a bus or shelter with an insert into a web based shopping site seems to be the norm. Centres need to encourage candidates to explain the reasoning behind the type of marketing presentation used. If the product was to be taken to full production, where and how would the candidate want to advertise/promote the product in order to maximize its market potential? In answering this question candidates will hopefully produce a much more meaningful and pertinent marketing presentation.

A554 Designing Influences

General Comments

The Examination Paper provided a wide range of opportunities for candidates to reveal both their knowledge of Product Design and their ability to apply it.

The majority of candidates found the paper accessible and were able to attempt all questions. The paper proved successful in discriminating across the ability ranges.

Centres should note that there is still a tendency amongst candidates to confuse the trend setter with the iconic product. For example, in question 4(a), the impact and legacy of the trend setter (such as IKEA), candidates often wrote about the iconic product rather than the wider work and impact of the Trend Setter.

Comments on Individual Questions

Question No.1a

The matching of three features to design influences was all that was required to attract full marks and almost all candidates were able to do this for the sports bag.

With this kind of question, candidates need to firstly look carefully at the illustration and then identify three **features**, matching them to Function, Sustainability and Ergonomics. There was some confusion between function and ergonomics, resulting in candidates gaining 1 mark only and a small number had problems lining up boxes, but generally it acted as a good confidence booster at the start of the exam.

Question No.1b

The candidates were required to identify two relevant market research methods a manufacturer may carry out, such as; Focus groups, Examination of Competition and Collecting Data about Market Trends. Many candidates described an outcome of market research, rather than a method or type of market research. The most common answer identified was 'Survey and Questionnaire' given as two separate market research methods, gaining only one mark due to it being a repeat. A common mistake was the candidate asking a question, which is an integral part of a questionnaire, i.e. 'what size bag required?', a frequent answer was stating anthropometric data, instead of stating an example of market research.

Question No.1c

The requirement of this question was to give **two** reasons why manufacturers carry out market research, when designing a new product. Most candidates were able to explain how market research types are used by manufacturers to help in the design of new products. A common error made was answering the question by referring to anthropometric data or ergonomics in designing the product, rather than why the market research was carried out. Some candidates answered Q1b and Q1c with similar responses with very subtle differences, this confusion stopped the candidate gaining marks in this question.

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Question No.1d

In this part of the question, candidates explain the importance of advertising a new product. The answer should include reasons and exemplifications, explaining how the goal of the company/advertiser is achieved. This could include such words as promote/inform/attract/persuade and making sure the answer targeted the consumer. Candidates sometimes gave three different clear reasons, but could only be rewarded two marks. The lack of explanation of one of the points cost many candidates the third mark.

Question No.2a

Candidates were asked to give **two** reasons why ready meals are popular with consumers. Two points which are qualified would gain the 2 marks; the most common reason for not gaining marks was a lack of detail in the answer. Using simple statements e.g. quick and easy or cheap without explaining in which way they were quick and easy or cheap, gained no marks. Answers also included some diversity of cuisine and special dietary requirements, which with qualification would also be rewarded.

Question No.2b

The candidate was asked to give **three** benefits to the manufacturer of using batch production. This question was poorly answered; most answers were limited to only a basic level, brief references to batch production being cheap/quick/easy. It did not achieve sufficient differentiation because so few candidates understood batch production and answers being often vague or generic. Most students did not understand batch production in this context and resulted in lots of responses about the amount produced. Candidates generally were able to access 0 or 1 mark; the best answers which got full marks showed a real understanding of batch production with clarification.

Question No.2c

Explanation of why companies use trademarks was required in this question. This was answered well, with most candidates knowing that trademarks protect the brand/logo and either gave one further point or a good explanation. In some cases the explanation was not clear and no additional point offered, so only 1 mark was achieved. Some candidates confused trademarks with copyright and patents, this resulted in no marks being awarded.

Question No.2d

This question was answered very well, with most candidates achieving at least 2 marks. The candidate needed to explain how the labelling of products could help protect the consumer. Due to the theme of Q2 being ready meals, most common reference was ingredients and allergic reactions. Weaker candidates gave limited explanation gaining 1 mark only and the common reason for achieving 0 marks was giving a general statement about the function of labels and not relating it to the protection of the consumer. A number of candidates, including some of the candidates who scored highly overall on this paper, gave three separate points, this saw them capped at two marks for not having an explanation.

Question No.3a

The question required the candidate to give **three** design features of modern prams that benefit the baby. These worked well and suspect the reason for this is that the topic falls within the candidate's knowledge base, because of experiences with younger siblings. The difficulty that some candidates experienced was that part (a) and (b) were separated into two, one concerned with the needs of the baby and the other the needs of the parent. Most candidates understood this and gained 3 marks easily, but with a smaller number of candidates the question wasn't

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read properly and they missed the reference to the baby. The most common error in the answer, which was a benefit to the parent, was the swivel wheels and the storage area under the buggy, which gained no marks.

Question No.3b

Candidates had to identify **two** features and explain how the design of the modern pram benefits parents. The best answered question on the paper; most achieved the full four marks. Good answers were given here, references to the advantages of the modern pram in respect of the parent. Candidates clearly understood the features of the pram and most made comment on the ability of the **wheels to swivel**, **adjustability of the handles** and **padding on the handles**. There were a small minority who confused benefits for the parents with benefits for the baby.

Question No.3c

Candidates had to explain how new materials and technologies influence the design of modern day products. There seemed to be a lack of knowledge and understanding of new materials and technologies, candidate's grasp of smart materials is very weak. Responses did not include reference to either modern materials or modern technologies. The most common example from high achieving candidates, described smart materials in particular Kevlar and Thermochromic material. Statements were generally vague, e.g. how modern materials allowed designers to move forward, simple, general statements of advantages of modern technology without reference to specific examples. Candidates regularly wrote several sentences, but failed to answer the question, saying little of significance. It may have been that candidates misunderstood the meaning of the question, considering that CAD/CAM is now common place in schools.

Question No.4a

Knowledge of the important influences and the long-term legacy of the Trendsetter have to be explained in 4(a), candidates need to be encouraged to write about **three** paragraphs for their answer; within each paragraph to identify **one specific issue**, and using specialist terms, accurate spelling, punctuation and grammar, and a balanced argument, to exemplify the issue explaining the **importance** of the trendsetter in the context of **modern design**. Ikea was the most common to be chosen by candidates, with Levi Strauss & Co, John Pasche and Cadbury well represented in many of the answers to this question, Integrated Circuits was less popular.

In preparing for this question, candidates need to be very clear that marks will be awarded in 4(a) for information about the Trendsetter. Candidates have to be especially careful to avoid repeating the same information in 4(a) and 4(b), and to ensure that they give information in 4(a) that focuses on the Trendsetter rather than their Iconic Product.

This question was reasonably well answered, with some candidates finding it very difficult to separate the product from the trendsetter.

Most common answer referred to was IKEA Candidates included a wide range of reasons of the influence IKEA has had on furniture and the shopping experience, and this may be due to IKEA's familiarity from their advertising. They described in detail the impact of reasonably priced food, the tour approach, the wide range of accessories on offer and the sustainability policy of the company with little reference to "flat pack" furniture at this stage. Candidates who answered the question with IKEA's flat pack furniture, the main discussion revolving around self-assembly and ease of transport, were capped at 2 marks.

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There were a few candidates who attempted the Cadbury option, these were not well done. Only a few attempted the question with reference to John Pasche, with a reasonable attempt looking at the wider consequences of Pasche's work. There were a few who attempted the question by referring to Levi Strauss. Integrated circuits were rarely seen. Very few accessed the full range of marks as most of the responses focused on one aspect.

Question 4b

In preparing for this question, candidates need to be very clear that marks will be awarded in 4(b) for information about their Iconic product. Knowledge about the Flat pack furniture, Levi 501 jeans, and 555 Timer, Rolling Stones tongue & lips logo and Cadbury Dairy Milk gain credit in 4(b).

Candidates have to be especially careful to avoid repeating the same information in 4(a), and to ensure that they give information in 4(b) that focuses on the Iconic Product rather than their Trendsetter. In 4(b), candidates need to identify specific features of the Iconic Product, and explain the importance of the features, their legacy, and how they have influenced the design of other products.

The most common answer referred to Flat Pack Furniture and these were often well done with full marks awarded. There were only a few which made reference to 501 Jeans and to the Rolling Stones tongue & lips logo. Very few candidates mentioned Cadbury's Dairy Milk and the 555 timer. Due to references from the trendsetter in 4a, some candidates repeated the information which gained no marks in this section.

Question No.5a

Writing specification points is a fundamental skill in all aspects of Product Design. This skill may require direct formal teaching and students should be given extensive opportunities to write specifications for a wide range of design needs.

Specification points that merely re-phrase the design, identify features that a solution must **not** have (*no sharp edges, not too heavy*), stipulate selling price or cost, suggest that it *must look good or bright bold colours or in the style of*, gain very few marks and should be avoided.

Specification points that name particular materials (must be made of aluminium) or stipulate precise measurements (must be 300 mm high) are rationally objective: they can become controls in the development of an idea. Specification points that list particular colours (*red, white and blue*), or describe particular features (*comfortably fit in the hand, or easy to open and close*), are definable and impartial enough to control the generation and the development of the design solution. To be successful in Question 5, candidates must compile four considered specification points that can be used to direct the design thinking in Part (b), refine the developments in Part (c) and evaluate the final proposal in Part (d).

Candidates struggled to write a good specification, they were generally not sufficient for the designing to proceed. Most candidates took the ***multi-functional coffee table to be sold flat packed*** option. There were some ***novelty celebration cake using chocolate*** and the ***denim garment suitable for a young child aged 2–5 years***. Very few attempted the ***children's automatic night light that remains on for a set period of time*** or ***pop-up card with a 'rock music' theme***.

Specifications generally remained far too generic and would have been of little or no value to the designer. Many candidates quoted directly from the question, offering no new specification points.

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It would not have been possible to deduce what the product may have been by reading the specification. Most specifications were vague and did not address the fundamental design requirements of the product in sufficient detail. Common weak points were 'pleasing to the eye', 'strong enough to carry weight', 'reasonable size', 'fits in most front rooms', etc. Centre's need to get across to students that products are designed for a purpose and their specifications need to address this, being prefaced with 'it must be' and then expanding on the detail being focused on saying why it needs to be like this.

Question No.5b

In this part, candidates must provide a **range** of different ideas, each with explanatory notes (rather than just labels), and with indication that aspects of some of the ideas, address their specification points. Typically, candidates score 3 or 4 of the available marks for design ideas. Pictorial sketches with appropriate colour or shading should be encouraged, as they tend to communicate the thinking of the candidate more fully. There was very little use of colour, but those that did enhanced the communication of their designs making them stand out.

High quality responses with creativity were less evident this year and fewer candidates gained the sixth mark. Some detailed designs were produced for the table; however most of the table designs were standard coffee tables with some added multi-functionality such as storage or games table. Candidates generally produced at least two designs and notes, but design ideas were not of high quality and normally simplistic. The general standard of sketching remains limited, candidates struggling to use drawing systems to display their ideas in pictorial view.

Question No.5c

Development at this level requires the competent application of subject knowledge to **move** a particular idea towards a solution that more successfully satisfies the requirements of the design need and meets the specification points. This requires analytical thinking and decision making about such influences as materials/ingredients, sizes/quantities, constructions and finishes, ergonomic considerations, ease of use, cleaning and hygiene, maintenance, durability and life expectancy. Through the use of **notes** and **sketches**, the candidate should show how they have considered and refined key aspects of their idea to make it more likely to satisfy the original design need. The presentation of just one well drawn idea, without evidence of any design thinking may qualify for only 1 or 2 marks as it is unlikely to evidence the developmental activity required.

There were a lot of well-developed coffee tables, this is unsurprising due to this being a common item in the home and well known to candidates. As a result, there were many tables but with the multi-functionality aspect ignored which reduced the marks awarded. There were no circuit diagram or schematic diagram for the night light; this would be a requirement at the development stage of designing an electronic product, this resulted in the award reduced to 2 marks. Candidates seemed unable to develop their chosen idea, there were many with no indication of size, details of construction and materials, suggesting that they do not possess enough knowledge about materials or construction to confidently state them. Some developments were merely limited to redrawing of the original idea with a few additional notes about how it might meet one or two specification points.

Question No.5d.

The candidate evaluates their final idea against the four design specification points identified in part **(a)**. A reasonable consideration of how their design satisfies their original specification enables full marks to be awarded. The format of the question directs candidates to carry out an audit of their specification, which enabled responses by candidates which had more focus. The new format in the question this year has seen an improvement in the candidate's performance. The addition of lines sent a very clear message that candidates should write an evaluation of their ideas against the original specification. There were a good range of responses, indicating

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that the question differentiated well. Candidates, who restated their specification and gave little further insight into their designs, were awarded the lowest marks. Candidates with a weak specification in 5a commonly were awarded with a low mark in 5d. Conversely, an excellent specification commonly converted into full marks in the evaluation.

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