

GCSE

Design and Technology: Graphics

General Certificate of Secondary Education **J303**

OCR Report to Centres June 2015

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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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A531 Introduction to designing and making

CREATIVITY

It was very pleasing to see an improvement in the evidence presented for the Creativity strand. Candidates should identify and explain their theme and starting point, Successful candidates used a mixture of detailed notes/annotations and relevant images to explain their choice of theme, including relevant and detailed data/background research to support their choice. Using the 5WH's may be a useful framework for candidates to follow to allow them to fully explain their choice. From the Theme and starting point candidates should identify a maximum of two appropriate existing products to analyse. Successful candidates analysed two products that they had **primary** access to, it is difficult to fully analyse products from internet images/photographs alone and it would be beneficial for centres to advise candidates against this. Analysis of products should include analysis of the construction of the product, materials used, surface graphics and target audience. From this analysis they need to establish an understanding of the principles of **good design** and then identify **the trends** in the design of the existing products. From these findings they should demonstrate that they have an understanding of the needs of the users, questionnaires and the resulting analysis of this data can prove most useful here. With all this information to hand they should then produce a clear concise and precise design brief.

DESIGNING

Candidates should start this strand by analysing their design brief. They then need to produce a suitable and detailed specification for their prototype product. Candidates are advised to make clear links between their analysis of the design brief and the Design Specification.

The design specifications produced by candidates varied in content and detail. Some candidates produced simple lists that were vague and generic and which could well have applied to most prototype products. Other candidates provided unique detailed specifications that clearly applied to the prototype product they intended to make. A good design specification forms an essential checklist that will guide the candidate through this controlled assessment. To be awarded high marks, candidates should ensure they include dimensions or measureable data in their specifications. If they are designing packaging for a CD, it is essential that they identify the dimensions of the CD itself so that they are able to produce a suitable package that is fit for purpose.

Most candidates used freehand sketching to illustrate their initial design ideas, and there were many excellent examples of fluid and creative freehand illustrative work, although there were a few centres whose candidate folders contained no freehand design ideas at all. Centres should encourage all candidates to start their design section with freehand illustrations. Successful candidates generated and developed detailed ideas showing a wide range of various different styles, shapes and surface graphic solutions. These ideas were fully explained with notes, referring back to the specification, target audience and design brief. Some candidates provided simple sketches, with limited styles, or pre-determined shapes that showed little detail or explanation to support the ideas. Most candidates clearly identified a chosen idea and fully explained their choice of idea, evaluating it against the specification and design brief.

To illustrate their chosen prototype design, successful candidates produced an orthographic or Isometric drawing and provided further details of the prototype, detailing its size, construction and materials to be used. However, a number of candidates failed to provide clear details of their proposed prototype at the end of the designing strand, an orthographic or Isometric drawing should form an essential part of the designing strand.

Many candidates used ICT to present their detailed drawings and surface graphics. At this stage, some candidates clearly used ICT to produce a final design for their prototype but failed to include in their portfolios the developmental work that they had undertaken using ICT. A series of print screens of the work they had undertaken would have seen them gain greater credit. Candidates must take ownership of their design work and if they have modified and edited an existing image or created their own image/surface graphics they must explain how they have done so, ensuring that they reference what software has been used and from where any existing imagery has been sourced. There were many examples of excellent editing and manipulating of images but it was not always clear how the candidate had arrived at the final result.

For candidates to achieve high levels of competency marks for surface graphics, they need to show that they have used sufficient rigour in creating the graphics and that they have adapted or developed the graphical images from the original idea concepts. If a candidate only takes the images without adapting them, i.e. 'cut and paste' using just original images from the internet then candidates are not demonstrating high levels of competency in producing the surface graphics.

Successful Candidates briefly analysed their design brief and drew conclusions from this work. This was then incorporated into a structured, detailed, bullet pointed design specification that incorporated dimensions or measurable data. Successful candidates presented their design ideas using pencil sketches to generate a range of free-flowing ideas which were then fully explained with annotation. They then explained, with reasons, their choice of prototype product. Successful candidates then produced a detailed scale drawing of the prototype product giving full details of possible materials, dimensions, likely construction methods and processes. Successful candidates also demonstrated how they had generated, developed and chosen suitable surface graphics. Candidates should communicate their designs using appropriate skills and techniques including ICT.

MAKING

Most candidates successfully produced a prototype product, although there were a number of centres where there was no evidence in the candidate portfolio that a final prototype had been made, yet high marks had been awarded. Most candidates appeared to have worked skilfully and safely to produce prototype products of reasonable to high quality.

Most candidates provided evidence of modelling in their portfolios. It is essential that all candidates include evidence of modelling in their folders in order to gain credit. Modelling evidence might include paper or card models, photographic images, and screenshots showing how their design, or part of it, was modelled and details how the prototype could be modified and developed to be further improved.

Successful candidates investigated a range of suitable materials that could be used in the manufacture of their prototype, testing them for suitability and performance. This was often successfully incorporated into the modelling of the prototype where it provided a useful stepping stone for analysis and genuine development of the prototype. Further identification, selection and testing of suitable printing and manufacturing processes available to the candidate allowed candidates to access the high ability strand in the assessment criteria.

A wide range of suitable surface graphics were successfully applied to most prototype products, this was seen using both traditional rendering methods and the extensive use of ICT.

Most candidates had chosen compliant materials for graphics for their prototype products and had made sound choices of tools and equipment. Furthermore, all candidates had chosen and used facilities appropriate to graphics.

TWO DIMENSIONAL SOLUTIONS

Centres need to understand that the Making assessment strand requires candidates to both make a prototype product from compliant materials and apply graphics to that prototype product. There is a danger that a 2-Dimensional outcome may require only limited making and this will make it difficult to apply the full range of marks when little making has taken place. For example, a paper/card insert for a plastic CD/DVD case has little making to assess, just the graphics that have been applied. Whereas, if a candidate produces a card CD/DVD case (box set type or a more complex card structure) and then applies graphics, both making elements can be assessed and the full range of marks applied.

If there is insufficient rigour and depth to work produced in the surface graphics of these 2D solutions, then the prototype can only attain the basic ability strand for the **making**. In order to achieve higher marks for the surface graphics, candidates are required to manipulate and develop these graphics, rather than a simple cut and paste solution.

It is essential that candidates include in their portfolio, identification, annotation and explanations that provide evidence that they have effectively solved technical problems as they had arisen during the making of the prototype product. This aspect of the assessment was often over marked by centres, with high marks awarded where little evidence was **present** in the portfolios, or was credited to the modelling section of the candidate's folder. Successful candidates used detailed notes (often in a table format) to identify technical issues that occurred during the making of the final prototype product and then used photographs and detailed notes to explain how they overcame the issues. To obtain higher marks, candidates should demonstrate that they overcame **complex issues, independently**.

Almost all candidates had planned the making of their prototype product. There was good evidence of flow charts and table charts being used by candidates to plan carefully the stages in making their prototype product. This plan should always be completed prior to the actual making. Most candidates had then included a record or diary of the key stages in making the prototype product using notes, sketches and photographic images. To obtain high marks, the notes must be comprehensive and detailed to explain the actual making process – which may differ from the planned process. Many had highlighted difficulties and problems they had encountered and how they had overcome them.

Successful Candidates used modelling to identify problems and made appropriate modifications. They clearly assessed the suitability of the prototype considering in detail the needs of the user. Successful candidates made appropriate choices of materials, tools and equipment. They worked skilfully and safely to produce a high quality prototype product suitable for the intended user which had surface graphics applied that demonstrated a high level of competency. Throughout their portfolio they assessed and applied knowledge appropriate for Graphics. Successful candidates clearly demonstrated their ability to solve problems effectively and efficiently as they arose. Successful candidates recorded the key stages in the creation of the prototype product providing comprehensive notes and visual evidence.

CRITICAL EVALUATION

Moderators felt that some centres may well have run short of time and this could have further contributed to very limited evaluations in many folders.

Successful Candidates produced a critical and detailed evaluation that evaluated the processes that the candidate went through during the designing and making of their prototype product. Through reference to their planning and recording of the stages in making their prototype product they were able to reflect and suggest modifications to improve the modelling and prototyping processes.

QUALITY OF WRITTEN COMMUNICATION

Centres applied this mark fairly and accurately. Candidates should be encouraged to use appropriate specialist terms throughout their portfolio and organise their portfolio in a structured and logical manner, following the process of the mark scheme. There were many instances of paper based candidate portfolios being in a very disorganised state, candidate work produced using ICT (such as PowerPoint) were mostly in the correct order. It should be noted that up to 3 marks for quality of written communication can be given even if there is no written evaluation.

REFERENCES

Centres must ensure that candidates reference or acknowledge their sources within the portfolio. Quotations must also be clearly marked and a reference provided wherever possible. Candidates should reference software and images used where possible, particularly when explaining the manipulation and development of surface graphics in the designing section.

A533 Making quality products

DESIGNING

Centres are reminded that there is no assessment requirement to include extensive **research** material in the portfolio for Unit A533.

Candidates should start this strand by stating, analysing and exploring their design brief. Candidates do not need to include product analysis or extensive research in this Unit. It is sufficient to add a personal analysis of aspects of the theme that has inspired the candidate, the use of the 5Wh's framework may be useful here. They then need to produce a suitable detailed specification for their product. Candidates are advised to make clear links between their analysis of the design brief and the Design Specification.

The design specifications produced by candidates varied in content and detail. Many were of mid-ability band and contained vague statements such as 'must be the right size.' Students should justify each specification point and include dimensions or measureable data to improve the quality of specifications. If a candidate is producing a package, they must ensure that they have measured the dimensions of the proposed **contents** so that they can design and make a functional product. Centres should advise candidates producing an **Architectural model** to develop their specification for the Architectural model rather than the actual building. Candidates may want to include some details of the actual building but the specification must detail the requirements needed for the model of the building.

Some candidates did provide uniquely detailed and individual specifications that clearly applied to the product they intended to make. A good specification forms an essential checklist that will guide the candidate through this controlled assessment.

Most candidates used freehand sketching to illustrate their initial design ideas, there were some excellent examples of very fluid and creative designs, although many centres were awarding high marks for one or two simple design ideas that were not developed or explored. Enhancement techniques were rarely used. Candidates should be encouraged to present ideas using a wide range of techniques to demonstrate their graphic skills. Techniques such as using thick and thin line technique, marker pen rendering, pencil crayons, fine liners, perspective and isometric drawing should be widely encouraged. Some candidates generated and developed detailed ideas showing a range of various styles, shapes and surface graphics solutions, which were fully explained with annotation whilst others provided little explanation of their ideas. Most candidates identified a chosen idea but a few failed to explain their choice of design solution or evaluated the design against the specification.

To illustrate their chosen final design, successful candidates produced an orthographic drawing and provided further details of the product, its construction and materials to be used, although it was noticed that many candidates failed to include important details such as dimensions or surface graphics on the final design. Many candidates used ICT to a very high standard to present their detailed drawings and surface graphics; this was very pleasing to see and should be encouraged by all centres. At this stage, some candidates explained, using print screens and detailed notes, how they generated their surface graphics using ICT. Centres should encourage all candidates to take responsibility for, and explain how they have created or manipulated their surface graphics.

Successful Candidates briefly analysed their design brief and drew conclusions from this work. This was then incorporated into a structured, detailed, bullet pointed design specification that included dimensions or measurable data. Successful candidates presented their design ideas using pencil sketches to generate a wide range of different, free-flowing ideas which were then fully explained with annotation. They then explained fully, with reasons, their choice of final product design. Successful candidates then produced a detailed scale drawing of the product giving full details of dimensions, possible materials, likely construction methods and processes, and of surface graphics. Candidates should communicate their designs using appropriate skills and techniques including ICT.

MAKING

Most candidates successfully produced a suitable product. Overall, this was the most successful aspect of the work seen. Most candidates appeared to have worked skilfully and safely to produce products of reasonable to high quality.

Planning consisted of a flow chart or table for most students. A detailed plan in a table format that shows each stage of the planned making, health & safety, tools, equipment and processes usually allows candidates to cover all the areas needed to meet the assessment strands.

It was disappointing to see that many candidates provided little evidence of modelling and testing in their folders. Modelling and testing is an important aspect in the development of the final product and must have taken place to determine whether the design selected for manufacture is suitable in terms of materials and construction methods. It is essential that candidates include evidence of modelling and testing in their folders in order to gain credit. Modelling evidence might include paper/card modelling, testing of printing, CAD/CAM modelling, material testing, tools and equipment selection. This can be presented as physical evidence in the folio, photographic images, or screenshots showing how their design was modelled and should also suggest modifications needed to prepare the final product for manufacture.

Surface graphics were successfully applied to most products seen using both traditional rendering methods and the extensive use of ICT. If there is insufficient rigour and depth to work produced for the surface graphics then the product can only attain the basic ability strand for the **making**. In order to achieve higher marks, candidates needed to show clear evidence that they had manipulated and developed their surface graphics rather than using simple cut and paste solutions in their application of these images for their final product. Candidates producing Architectural models must ensure they apply suitable surface graphics that allow them to demonstrate high competency to be awarded high marks. Centres should encourage candidates to think carefully about how they create and apply surface graphics to Architectural models.

Most candidates had chosen compliant materials for Graphics for their products and had made sound choices of tools and equipment. Furthermore, all candidates had chosen and used facilities appropriate to Graphics.

It is essential that candidates include in their portfolio, identification, annotation and explanations that provide evidence that they have effectively solved technical problems as they had arisen during the making of the product. This aspect of the assessment was often over marked by centres, with high marks awarded where little evidence was **present** in the portfolios, or was credited to the modelling section of the candidate's folder. Successful candidates used detailed

notes (often in a table format) to identify technical issues that occurred during the making of the final prototype product and then used photographs and detailed notes to explain how they overcame the issues. To obtain higher marks candidates should demonstrate that they overcame **complex issues, independently**.

Most candidates had included a record of the key stages in making their product using notes, sketches and photographic images. A photographic record with detailed annotations or even a scrapbook diary that is completed in each lesson would be useful in completing this section. Centres are reminded that for all aspects of the making process evidence must be provided in the portfolio and to achieve high marks the candidate must present comprehensive notes and photographs, which should cover the whole process involved in the making of the final product.

Successful Candidates used modelling and testing to identify problems and made appropriate modifications. They provided a clear plan of how they **intended** to make their product. They clearly assessed the suitability of the product considering in detail the needs of the user. Successful candidates made appropriate choices of materials, tools and equipment. They worked skilfully and safely to produce a high quality product suitable for the intended user which had surface graphics applied that demonstrated a high level of competency and creativity. Throughout their folder, they assessed and applied knowledge appropriate for Graphics. Successful candidates clearly demonstrated their ability to solve problems effectively and efficiently as they arose. Successful candidates recorded, in detail, the key stages in the designing and making of the product providing comprehensive notes and visual evidence.

CRITICAL EVALUATION

All candidates based their evaluation on their product and specification. Few candidates carried out detailed testing and were able to draw conclusions and propose modifications to the product. Most testing was superficial, questioning their peers on the suitability of the final product – this is only useful if the peer group forms part of the target audience. Moderators felt that centres may well have run short of time and this could have further contributed to very limited evaluations in many folders.

Successful Candidates produced a critical evaluation that evaluated the product in detail against the specification, evaluating and justifying any changes that were made to the final product. They undertook detailed testing such as interviewing the target audience or placing and evaluating the product in situ, then drew conclusions that led to modifications that would improve the product. Suggested modifications included detailed notes, diagrams, annotated photographs or designs.

QUALITY OF WRITTEN COMMUNICATION

Centres applied this mark fairly and accurately. Candidates should be encouraged to use appropriate specialist terms throughout their portfolio and organise their portfolio in a structured and logical manner, following the process of the mark scheme. There were many instances of paper based candidate portfolios being in a very disorganised state, candidate work produced using ICT (such as PowerPoint) were mostly in the correct order, It should be noted that up to 3 marks for quality of written communication can be given even if there is no written evaluation.

REFERENCES

Centres must ensure that candidates reference or acknowledge their sources within the portfolio. Quotations must also be clearly marked and a reference provided wherever possible. Candidates should reference software and images used where possible, particularly when explaining the manipulation and development of surface graphics in the designing section.

A535 Sustainability and technical aspects of designing and making

General Comments:

The paper performed generally as anticipated and was generally appropriate to all levels of ability. Most candidates attempted the majority of the questions. The paper was accessible by all candidates. There was no evidence to suggest that candidates did not have enough time to complete the questions.

There was a wide range of responses from the cohort which spanned the full ability range. Responses from the candidates were generally encouraging and demonstrated a good understanding of the technical aspects of designing, making and sustainability.

The quality of sketching on the designing questions was good on the whole. The quality of drawing on the graphical questions using grids was slightly better than previous years. Many candidates however, could improve their performance by using a ruler for these questions.

The quality of written communication was also extremely variable and on the whole showed a slight downturn on previous sessions with the levels of response generally being lower. Quality of handwriting was also an issue in some cases where it was extremely difficult or impossible to make sense of some candidate responses.

It was noticeable that many candidates lost marks on some of the questions by giving multiple answers. For example, on questions where candidates were asked to state **one** tool or item of equipment, many gave two answers. Often, one of the answers was correct, while the other was incorrect. Where two answers are given, unless they are both correct, the mark is not awarded. Centres are advised to make sure candidates are aware of this and read the questions carefully.

Comments on Individual Questions:

Question No. 1

This was generally well answered with the majority of candidates giving the correct response.

Question No. 2

This was generally well answered with the vast majority of candidates giving the correct response.

Question No. 3

This was generally well answered with the majority of candidates giving the correct response.

Question No. 4

This was generally well answered with the majority of candidates giving the correct response.

Question No. 5

This was generally well answered with the majority of candidates giving the correct response.

Question No. 6

This question was answered incorrectly by a large majority of candidates. Whilst many candidates knew it was referring to recycling, very few knew that it meant the company had **financially** contributed to recycling.

Question No. 7

This question was answered incorrectly by a large majority of candidates. Whilst many candidates gave answers relating to 'Health & Safety', few candidates knew the specific safety law. Some candidates gave incorrect acronyms such as COSSH.

Question No. 8

This was generally well answered with the majority of candidates giving the correct response.

Question No. 9

This was generally poorly answered, with only around 20% of candidates able to gain the mark. A wide range of incorrect responses were given. The most common reason for candidates not achieving the mark was answers which were too vague e.g. 'environmentally friendly', 'good for the environment' etc.

Question No. 10

This was generally well answered with the majority of candidates giving the correct response. Many of the incorrect candidate responses were answers such as 'touch' and 'texture'.

Question No. 11

This was well answered with the vast majority of candidates giving the correct response.

Question No. 12

This was well answered with the vast majority of candidates giving the correct response.

Question No.13

This was generally well answered with the majority of candidates giving the correct response.

Question No. 14

This was well answered with the vast majority of candidates giving the correct response.

Question No. 15

This was well answered with the vast majority of candidates giving the correct response.

Question No. 16(a)

The majority of candidates gave two functions of the poster and achieved both marks. Many candidates gave very similar or repeat answers and as a result only managed to achieve one mark on this question. Some candidates mis-read the question and gave 'features' of the poster such as 'clear images', 'large text' etc. rather than 'functions'.

Question No. 16(b)(i)

The majority of candidates did not achieve a mark on this question. The most common incorrect answers by far were 'card' or 'cardboard'. Very few candidates specified an actual weight or thickness of the card in their answer.

Question No. 16(b)(ii)

This was well answered with the majority of candidates giving a correct response. The most common incorrect answers were where candidates had given a benefit that was not environmental e.g. 'cheap'.

Question No. 16(c)

The majority of candidates managed to achieve at least one mark on this question. Most responses described the carbon emissions released by transportation of goods, but few candidates mentioned that this would be increased because of the extra distances or multiple transport methods from shipping to faraway places rather than nearby.

Question No. 16(d)

The majority of candidates managed to achieve at least one mark on this question. Most responses included three arrows of some sort and gained the first mark. Many responses showed the arrows in a circular arrangement or straight arrows in a triangular shape. Many responses showed the arrows facing the wrong way. Only around 40% of candidates achieved both marks.

Question No. 16(e)

Many candidates failed to understand that the question related to the poster's life span being linked with the length of time the film would be shown at the cinema. Many incorrect responses explained how the physical properties of the poster material would degrade due to weather and use. Only around 25% of candidates answered this correctly and achieved both marks.

Question No. 16(f)

The majority of candidates failed to achieve a mark on this question. The most common reason for this was a lack of understanding in the differences between primary, secondary and tertiary recycling. The majority of incorrect responses were secondary recycling methods such as cutting up the poster or drawing on the back of the poster.

Question No. 16(g)

Approximately half of candidates answered this correctly and achieved both marks. Many candidates stated one way that modern technology could be used to re-think the promotion of the film, but failed to describe how it would be used in sufficient enough detail for the second mark. A significant number of incorrect candidate responses focused on the use of CAD to create the poster.

Question No. 16(h)

This was generally answered well. Many candidates identified one issue caused by disposable products and described this at length. The most common issue identified was the filling up of landfill sites and the visual pollution caused by these. Many candidates focused on the disposal of rubbish in general rather than disposable products. Many candidates failed to mention how manufacturers and consumers could address the issues and only achieved level one.

Most candidates identified an issue and gave one or two suggestions of how these could be addressed by consumers and manufacturers. The higher achieving responses were well structured descriptions of the issues and how they could be addressed in detail using specialist terms.

There was less evidence of candidates using bullet points or lists than in previous sessions but some candidates' handwriting was still very difficult to decipher.

Question No. 17(a)

Few candidates were able to answer this completely correctly. Only around 15% achieved all five marks. Most candidates only achieved 3 or 4 marks for correctly drawing the end views of the backboard and styrofoam blocks but failing to include the top and/or end views of the circular recess. The quality of drawing varied, with the best responses being when candidates had used a straight edge to draw accurate lines. Many candidates drew parts incorrectly because of errors when counting the number of dots.

Question No. 17(b)

This was well answered with the majority of candidates giving a correct response. The most common incorrect answers related to the shopkeeper being able to arrange the pieces in a different way.

Question No. 17(c)

Only a small minority of candidates achieved full marks on this question. Most candidates were able to correctly identify a suitable tool for marking out and smoothing the finish of the blocks and achieved 2 marks. However, many gave incorrect tools for cutting the blocks and joining them together. The most common incorrect answers were 'laser cutter' for the cutting out of the blocks and 'hot glue gun' for the joining of the blocks.

Question No. 17(d)

There were a wide range of responses to this question but only a small minority of candidates answered this correctly. Common incorrect answers were 'lithography', 'flexography', 'laser printing' and answers relating to the use of stick on letters created on CAD and cut with a vinyl cutter.

Question No. 17(e)

The first part of this question on thermochromic inks was generally well answered with the majority of candidates giving a correct response and achieving both marks. However, only around 25% of candidates were able to explain how phosphorescent inks worked. Some candidates were able to explain how they 'glow in the dark' and achieved the third mark, but very few explained the light absorbing properties.

Question No. 18(a)

This question was generally well answered. The majority of candidates scored at least 4 marks for correctly completing base 'A', side 'B', flap 'C' and flap 'D'. The side 'B' was drawn incorrectly by a significant number of candidates because of errors when counting the number of dots. The most common error was not using dotted or dashed lines for part 'E'. The quality of drawing varied, with the best responses being when candidates had used a straight edge to draw accurate lines.

Question No. 18(b)

Only a small proportion of candidates achieved both marks on this question. Many candidates gave incorrect answers about opening the package easily. Other incorrect answers, such as 'lightweight' and 'cheap', were common. Many candidates achieved one mark for identifying that card could be recycled.

Question No. 18(c)

This was generally answered correctly with the majority of candidates giving the correct answer. However, a large proportion of candidates ticked 'laser cutter' which was incorrect.

Question No. 18(d)

This was generally answered correctly with the majority of candidates giving the correct answer. Common incorrect answers were often related to texture e.g. 'a rough finish' or 'a smooth finish'.

Question No. 18(e)

This was generally not answered well and very few candidates scored more than 3 marks. Many candidates touched on the manufacturing processes used for the two packages and identified that vacuum forming or blow moulding would be used for the manufacture of the plastic sandwich package. They often identified that the card package would be made from a flat, card net and stuck together. However, very few candidates went into any further detail.

Many candidate responses focused on suitability of materials, environmental issues and consumer convenience rather than manufacturing methods. Many candidates gave very similar responses to question 16(h).

Very few candidates appeared to have knowledge of mass production methods for either of the packages. Responses giving details of 'one off' prototype production were very common. Candidates must be aware of the differences between prototyping, where laser cutters and scalpels are appropriate, and mass production, where die cutting is suitable. Few candidates

were able to broaden or consolidate their discussion and their answers read more like a list than a structured discussion.

There was little use of specialist terms in all but the higher achieving candidate responses.

Question No. 19(a)

Only a very small proportion of candidates achieved all three marks on this question. The majority of candidates identified the feature was for hanging the blister pack and achieved one mark. However, only around 50% of candidates went on to explain its purpose. Only a very small minority of candidates could identify the euroslot correctly.

Question No. 19(b)

There were a wide range of responses to this question, but the majority of candidate answers were incorrect. It was clear that this area of the specification is not familiar to many candidates. Most common incorrect answers were 'acrylic' and 'plastic'.

Question No. 19(c)

Few candidates were able to answer this correctly. Only around 20% achieved both marks. It was evident that sectional drawing had not been covered by many centres.

Question No. 19(d)

Only a small proportion of candidates achieved all three marks on this question. The majority of candidates scored the first mark for 'heating the plastic sheet' but failed to correctly identify the other 2 missing stages.

Question No. 19(e)

There were some excellent responses to this question and candidates are clearly learning to look at the points given in the specification to ensure they achieve marks on these design questions. Very few candidates scored less than three marks and the majority of candidates achieved at least four of the six marks available. The majority of high level responses used a circular rotating mechanism or sliding tabs to select the battery type and size. A number of responses showed electronic methods rather than mechanical solutions to the design problem. The quality of graphical communication varied but most candidates produced clear, freehand sketches and appropriate notes to communicate their designs clearly.

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