DESIGN AND TECHNOLOGY

Paper 9705/11
Written 1

There were too few candidates for a meaningful report to be produced.

DESIGN AND TECHNOLOGY

Paper 9705/12
Written 1

Key messages

To do well, it is vital that candidates cover the full content of the specification.

In ***Section B*** **Part (d)** analysis questions, candidates did not always identify the key phrases/requirements within the question or include relevant examples to evidence their understanding or extend their answers to justify full understanding of a relevant point.

General comments

Sections A and ***B*** were generally accessible when candidates had prepared well. Process knowledge was good with all three questions in ***Section A*** attempted with a clear understanding of the basic knowledge. Candidates generally found the three questions in ***Section C*** accessible with some good answers seen. Candidates should be reminded that the terms 'develop' and 'range' mean that they should give several different ideas, which they then evaluate to allow further development into a final proposal for each part of the question. Components, mechanisms, and construction techniques were particularly helpful. Having a coherent layout of page with designated areas for a range of designs, evaluation, and development helped candidates to focus their attention and time. Evaluation of initial ideas was often limited in detail and sometimes did not include any of the aspects that were very clearly requested in the question.

Comments on specific questions

Section A

Question 1

(a) This was generally answered well and most candidates stated that a melamine finish gave a smooth surface and was hardwearing.

(b) (i) Stronger answers clearly detailed both marking out the position of a corner connector/block and then drilling of the material to accept screws. Many candidates used technical terms for the tools and equipment used. Safety precautions were not always included. Some candidates incorrectly stated joining methods that did not use knock down fittings.

(ii) Candidates gave a wide variety of answers to this question. Detailed answers included the use of grooves or rebates to accept the plywood base as well as the more standard use of screws/pins.

(c) Candidates often gave good detail in their answers with many responses having sensible processes for attaching the handle. However, some candidates gave answers that were permanent fixings for the handle rather than temporary, as the question required.

Question 2

(a) Most candidates were able to correctly explain why polypropylene was a suitable material for the stencil. Popular answers included being mouldable, flexible and nontoxic.

(b) (i) This was generally answered well with marking out and cutting out being very well detailed. Candidates used technical terms for the tools and equipment that were being used but safety precautions were not always included.

(ii) Candidates generally had a thorough understanding of how to join the card closure to the plastic bag with various low-tac adhesives given. The ability to be opened and closed was not always answered. Candidates should ensure that they always check they have answered all aspects of a question.

(c) All candidates were able to demonstrate how to add text to the card closure but some found it challenging to communicate how to reproduce this to be scaled to a batch of 1000.

Question 3

(a) Only stronger candidates answered this question well. Most candidates gave two reasons why the handle had a plastic coating.

(b) There were some clear explanations of either forging or casting metal, depending on the choice of process. Safety precautions were not always included.

(c) Candidates found it very challenging to use notes and sketches to describe the mechanisms.

Section B

Question 4

(a) Candidates usually scored at least one mark and clearly understood the function of **X**.

(b) Many candidates answered this question correctly, identifying several different problems with the design of the wheelbarrow.

(c) Most candidates were able to respond to the two problems identified in **(b)** and used notes and sketches to show how the problems could be overcome. Most answers focused on the back of the wheelbarrow being open, the lack of grips on the handles and the frame not being structurally sound. Those candidates who correctly identified problems and subsequently followed the instructions gave some excellent fully detailed answers that scored full marks.

(d) Candidates gave a broad range of answers relating to the importance of comparing materials through destructive testing. Thorough explanations and examples were not always given.

Question 5

(a) Most candidates understood the function of **X**.

(b) Many candidates answered this question correctly, identifying several different problems with the design of the portable display stand.

(c) Most candidates were able to respond to the two problems identified in **(b)** and used notes and sketches to show how the problems could be overcome. Most answers focused on the size of the base and the related issues this caused, the lack of back support and carry bag. Those candidates who correctly identified problems and subsequently followed the instructions gave some excellent fully detailed answers that scored full marks.

(d) Candidates did not always understand how advertising could have both positive and negative effects on society. Candidates who discussed issues such as advertising health related activities answered well. Examples were not always given.

Question 6

(a) Candidates were able to demonstrate an understanding of feature **X**.

(b) Many candidates answered this question correctly, identifying several different problems with the design of the electric fan. The blade not having a cover for safety, no switches or a plug for powering the fan were clearly communicated by candidates.

(c) Candidates found this section straightforward if **(b)** had been answered well, often with good diagrams included.

(d) Candidates had some understanding of built-in obsolescence and communicated the benefits to the manufacturer and consumer. Some candidates found this question challenging and did not extend their answers or give many examples.

Section C

Question 7

(a) Most well-structured answers showed some ideas for a spice jar holder for six jars. Often ideas were very similar and occasionally development was a little limited. The final solution was often realistic with good detail. Evaluation ranged from generic commentary through to some good comments on positive and negative points.

(b) Candidates offered some good ideas for how a visually impaired person could identify each spice jar.

(c) Candidates offered some good answers but many found it challenging to come up with a range of ideas for a height adjustable fixing for inside the kitchen cupboard door. Technical detail of how the holder attached was sometimes limited.

(d) This question was generally well answered with a variety of rendering styles and quality. However, some candidates did not apply any render at all. There were some outstanding responses with excellent three-dimensional drawings.

Question 8

(a) Candidates produced a range of ideas for an instruction leaflet. Three ideas were frequently produced with some candidates showing development. Evaluation ranged from generic commentary through to some excellent annotation of positive and negative points. Pictures were used well instead of words in some cases.

(b) Candidates did not always offer a range of different ideas for the package, often with many similar outcomes. However, there were still some outstanding examples of different ideas for the item. Many candidates did not include detail of how their ideas were environmentally friendly.

(c) Candidates offered a range of colour schemes but did not show the creativity required to communicate a range of different brand names. Often candidates did not respond to the question in terms of creating the brand name.

(d) This question was generally answered well with a variety of rendering styles and quality. However, some candidates did not apply any render at all. There were some outstanding responses with excellent three-dimensional drawings.

Question 9

(a) Candidates were generally successful on this question. Three ideas were frequently produced with some candidates showing development. Evaluation ranged from generic commentary through to some excellent annotation of positive and negative points.

(b) Candidates were able to detail one or more solution for a temporary method of fixing the frame to the ground. Some excellent answers offered suggestions across differing ground types too. Candidates occasionally found the technical concepts a challenge to communicate.

(c) Candidates found this question challenging, often only offering a single idea or very similar ones. More detailed answers demonstrated a connector for the frame and also a system of adjustment, such as the use of pulleys.

(d) This question was generally answered well with a variety of rendering styles and quality. However, some candidates did not apply any render at all. There were some outstanding responses with excellent three-dimensional drawings.

DESIGN AND TECHNOLOGY

Paper 9705/13
Written 1

Key messages

To do well, it is vital that candidates cover the full content of the specification.

In ***Section B*** **Part (d)** analysis questions candidates did not always identify the key phrases/requirements within the question or include relevant examples to evidence their understanding or extend their answers to justify full understanding of a relevant point.

General comments

Sections A and ***B*** were generally accessible when candidates had prepared well. Process knowledge was good with all three questions in ***Section A*** attempted with a clear understanding of the basic knowledge. Candidates generally found the three questions in ***Section C*** accessible with some good answers seen. Candidates should be reminded that the terms 'develop' and 'range' mean that they should give several different ideas, which they then evaluate to allow further development into a final proposal for each part of the question. Components, mechanisms, and construction techniques were particularly helpful. Having a coherent layout of page with designated areas for a range of designs, evaluation, and development helped candidates to focus their attention and time. Evaluation of initial ideas was often limited in detail and sometimes did not include any of the aspects that were very clearly requested in the question.

Comments on specific questions

Section A

Question 1

(a) This was generally answered well and most candidates achieved one mark as they correctly named a specific metal. Finishes mostly matched the specific metal detailed with chromium-plated a common response, but some candidates did not give a finish at all.

(b) (i) Stronger answers clearly detailed both marking out the position of the hole and then drilling of the material. Many candidates used technical terms for the tools and equipment that were used. Safety precautions were not always included. When it was included, clamping the acrylic before drilling and the use of eye protection were correctly given.

(ii) Candidates gave a wide variety of answers to this question. Detailed answers included hand tools, machinery, and CAD/CAM, with some excellent technical details on tools and equipment and how to use them correctly.

(c) Candidates often gave good detail within their answers with many responses having sensible processes for personalising the key fob. CAD/CAM and hand techniques were clearly detailed.

Question 2

(a) Most candidates were able to correctly sketch and label corrugated cardboard.

(b) (i) This was generally answered well, with marking out and cutting out being very well detailed. Joining Part **A** and Part **B** brought some excellent answers, from the more structural tabs through

to double-sided tape. Candidates used technical terms for the tools and equipment that were being used and safety precautions were usually included.

(ii) Candidates generally had a thorough understanding of how to make a label on a computer and then print onto a self-adhesive label.

(c) When candidates understood how the one-piece development net should function allowing some structural integrity, they answered very well. However, some candidates were unable to give such levels of detail and found the question challenging.

Question 3

(a) Most candidates were able to correctly state or label the tension on the string.

(b) (i) There was a significant amount of detail included in lots of responses with clear explanations of how the triangles would be marked out, an access hole drilled and then either a jig or similar type of saw used to cut out the internal shapes. Finishing of the edges was not always clear. Safety precautions were not always included and sometimes generic responses simply added in the wearing of gloves when it was not actually necessary or helpful to the process or safety of the user.

(ii) Candidates showed a good understanding of how to match up the aligning slots to ensure the parts were joined.

(c) There were some well described designs for locking the mechanism used to raise Part **C** in the raised position.

Section B

Question 4

(a) Candidates often scored full marks and clearly understood the function of **X**

(b) Many candidates answered this question correctly, identifying several different problems with the design of the bathroom rack.

(c) Most candidates were able to respond to the two problems identified in **(b)** and used notes and sketches to show how the problems could be overcome. Many answers focused on a lack of structural support for the shelves, poor stability with only a single hanging point and items falling off the shelves due to a lack of sides. Those candidates who had correctly identified problems and subsequently followed the instructions, gave some excellent fully detailed answers that scored full marks.

(d) Candidates gave a broad range of outstanding answers relating directly to the positive impacts of the flatpack industry on home assembly and often included well-known companies as useful examples.

Question 5

(a) Most candidates understood the function of **X**.

(b) Many candidates answered this question correctly, identifying several different problems with the design of the desk tidy.

(c) Most candidates were able to respond to the two problems identified in **(b)** and used notes and sketches to show how the problems could be overcome. Many answers focused on the base shape being incorrect and therefore misaligned with the sides and the flower design not having a place to fit. Those candidates who correctly identified problems and subsequently followed the instructions, gave some excellent fully detailed answers that scored full marks.

(d) Candidates did not always understand the key phrases in this question relating to fashion and style. Candidates who discussed issues such as trends and the impact on sales and demand answered well. Examples were not always given.

Question 6

(a) Candidates were able to demonstrate an understanding of feature **X**.

(b) There were many correct answers here, identifying several different problems with the design of the scissor lift trolley with missing pivot points on the legs and a lack of bracing being common answers.

(c) Candidates found this section straightforward if **(b)** had been answered well. Answers often included good diagrams.

(d) Candidates had some understanding of the need to know the number of scissor lift trolleys to be made before deciding on the method of production. However, many candidates found this question challenging and did not extend their answers or give many examples.

Section C

Question 7

(a) There were many well-structured answers showing some ideas for a notice board that attached to Part **A**. Often ideas were very similar and occasionally development was a little limited. The final solution was often realistic with good detail. Evaluation ranged from generic commentary through to some good comments on positive and negative points.

(b) Candidates offered some good ideas for a cover to protect the notice board from the weather. Technical detail of how the cover attached was sometimes limited.

(c) Candidates offered some good answers but found it challenging to produce a range of different ideas for a water bottle holder that attaches to the back of the notice board.

(d) This question was generally answered well with a variety of rendering styles and quality. However, some candidates did not apply any render at all. There were some outstanding responses with excellent three-dimensional drawings.

Question 8

(a) Candidates produced a range of ideas for a flat pack teaching aid. Candidates showed development and evaluation ranged from generic commentary through to some excellent annotation of positive and negative points.

(b) Candidates did not always offer a range of different ideas for a novelty item, often with many similar outcomes given. However, there were still some outstanding examples of different ideas for such an item.

(c) Candidates did not always offer a range of different ideas for different styles of sustainable packaging. It was often the case that candidates did not respond to the sustainable aspect at all.

(d) This question was generally answered well with a variety of rendering styles and quality. However, some candidates did not apply any render at all. There were some outstanding responses with excellent three-dimensional drawings.

Question 9

(a) Some candidates found this question challenging. They produced a range of ideas for viable solutions, but they did not always show the required technical detail needed to demonstrate how the bracket could allow both the height of the arm and position on the cot to be adjusted. Candidates showed development and evaluation ranged from generic commentary through to some excellent annotation of positive and negative points.

(b) Candidates were able to detail one or more solution for a mechanism that slowly rotated the geometric shapes. They occasionally found the technical concepts a challenge to communicate.

(c) Candidates offered numerous different ideas for an animal-shaped case. More detailed answers demonstrated how the case would be manufactured in two halves as a hollow shell to house the mechanism.

(d) This question was generally answered well with a variety of rendering styles and quality. However, some candidates did not apply any render at all. There were some outstanding responses with excellent three-dimensional drawings.

DESIGN AND TECHNOLOGY

Paper 9705/02
Project 1

Key messages

- Candidates are advised to focus on their design need and brief throughout the analysis and research stages of the project rather than on any preconceived idea of a product outcome. The product Specification should evolve from this analysis and research and be used in the next stage of the design process.
- The Specification should be referred to throughout the Generation and Appraisal of Design Ideas so that a comparison can be made between design ideas and then the reason for final choice of idea can be justified.

General comments

The school-based assessment for this syllabus can be offered either as two discrete components, Project 1 and Project 2 or as one larger piece of work combining the two projects in an holistic way. This report acknowledges the overall design process where the two are combined.

Centres introduce this important part of the Design and Technology course to their candidates in slightly different ways, but it is important that evidence produced matches the requirements of the assessment scheme. Some centres set a common theme or topic to which candidates respond in their own way while others encourage each candidate to identify their own design problem which may be derived from hobbies, interests or life at home and in the community.

Many interesting Project outcomes resulted from a wide variety of design problems, and it was obvious that candidates had developed a keen interest in the area being studied. In addition to the usual range of household items or architectural models, interesting outcomes of either modelling or final products included: mobile workbench, chess table, small golf putting green, folding stool, barbeque food preparation area, laptop stand, sanitiser stand, menu card and brochure, product dispensing machine, cable tidy, portable homeless shelter, water bucket cart, adjustable lamp on stand, laptop cooler, rabbit hutch, restaurant umbrella, desk organiser, mountain bike storage, portable speaker, cycle led light bar, stationery storage, basketball rack, bicycle power generator, solar lights, water filter system, phone security strap, packaging for chips, fountain lamp, laboratory storage, clean energy signage, dog's bed, games storage, door opener, model bus terminal, library trolley, duster for window blinds, tool station, hydroponics, fish tackle storage, playground swing, trophy stand, book page folder, pond water feature.

Centres are reminded of the requirement to include detailed photographic evidence of the model for Project 1 and the final realised product for Project 2.

Centres continue to prepare candidates well for the Project in that candidates presented design folders neatly, in such a way that the design process could be followed easily.

Comments on Individual Assessment Criteria

Question 1

Identification of a Need or Opportunity leading to a Design Brief

Most candidates made it very clear how their chosen design problem linked to both the user and the situation. This was then supported by a precise design brief leaving the reader in no doubt as to the intended design route being followed.

Question 2

Analysis of and Research into the Design Brief which results in a Specification

It is essential that there is a thorough analysis of the actual design problem being undertaken so as to give direction to the identification and collection of relevant data. This is a very important part at this stage of a design process as it provides information from which an accurate and meaningful Specification can be formulated.

Most candidates considered a wide range of existing products and commented on these in relation to their own design brief.

Specifications were generally well formulated and included many specific requirements of the product to be designed. It is important to exclude generic statements here.

Question 3

Generation and Appraisal of Design Ideas

Many candidates showed a high degree of flair in the creation of ideas. However, a few candidates presented a range of drawings not linked to the Specification or not commented upon regarding their possible suitability for the problem being considered. In these cases, it is not possible to award marks above the lowest band set out in the assessment scheme.

The importance of presenting a wide range of different ideas, however practical they may appear at the time, cannot be understated and these should then be considered against the Specification with some form of written appraisal alongside each. Where ideas have touched on aspects of the Specification then these should be commented on or highlighted in some way.

Many candidates used a good range and high standard of communication techniques in the presentation of their design proposals. This approach helped to identify how a candidate's thought process had developed.

Question 4

Modelling of Ideas

Modelling should be seen as one stage of the consideration, testing and evaluation of design ideas so that a final design can be presented and subsequently developed, perhaps in Project 2. Many candidates produced high quality and meaningful models that formed part of this process whereas others simply produced a mock-up of the chosen design idea and it was sometimes difficult to identify how it made a contribution to the design process.

More candidates were found to be modelling different aspects of their design ideas and using these to test for suitability and practicality in the production of a complete solution to their design problem. In this way the modelling stage plays a more meaningful part in designing.

DESIGN AND TECHNOLOGY

Paper 9705/32
Written 2

Key messages

- On questions including the instruction to discuss, candidates must introduce appropriate evidence to support conclusions of their arguments to access the full range of marks.
- The use of sketches and notes to answer questions was of a very good standard. Some candidates spent too long producing detail of the marking out process when describing a manufacturing process or the manufacture of an item. Candidates must ensure that all or most of the key stages are included in their answer.
- When answering ***Section B*** questions, candidates should leave sufficient time to fully complete a proposed solution and an evaluation.

General comments

Most candidates made full attempts at both questions in ***Section A*** and at the selected question in ***Section B***. There were very few rubric errors. Some candidates appeared to spend too much of their allocated time on ***Section B*** which resulted in a lack of detail in their responses in ***Section A.***

Candidates generally made good use of appropriate sketching and annotation to support their answers to questions in ***Section A***. Despite the instruction to use sketches and notes in the question, some candidates responded with text only and did not access the full mark range.

Candidates generally responded well to questions including the instruction to discuss. Some did not introduce appropriate evidence to support conclusions of their arguments and consequently did not access the full range of marks.

Most candidates fully completed all the requirements for ***Section B***. Some candidates seemed to run out of time and did not complete the proposed solution or include an evaluation.

Comments on specific questions

Section A

Part A

Question 1

Candidates made very good use of annotated sketches in their response to **(b)** and **(c)**.

(a) Most candidates stated a suitable material for the candle holder and gave two valid reasons for use. Acrylic, aluminium and beech were the most popular responses. Single word responses for a reason were not appropriate,

(b) Thermoforming acrylic was the most popular manufacturing method outlined. Some candidates spent a considerable amount of time describing the marking out stages and produced limited descriptions of creating the top hole, the 2 mm recess and the forming of the shape.

(c) Most candidates gave details of simple jigs and templates to manufacture a batch of 100 identical candle holders. A few candidates described an injection moulding process which would be inappropriate for a batch of 100 candle holders.

Question 2

Relatively few candidates attempted this question. Some answers were well structured and focused on one of the items given. Outdoor seating was the most popular option. It is important that candidates read the question carefully. A number of candidates incorrectly referred to all three given items, and a significant number made limited or no reference to public opinion. Some responses were very brief, with few issues raised and limited detail given. Few candidates provided any evidence or examples to support their answers.

Question 3

This was the second most popular question with dip coating and the cross halving joint the most popular choices of process.

(a) Some candidates used sketches and notes to produce well detailed descriptions of the processes listed. Most had a clear understanding of the chosen process. Some candidates gave a simplified process of dipping the plate rack into a liquid and did not give detail of the heating of the plate rack before immersion into a fluidised bed of polymer powder. Most candidates clearly described the process of making a cross halving joint in detail. A few candidates gave full details of the process of drawing wire but some candidates incorrectly described an extrusion process to produce copper wire.

(b) Candidates generally answered this part of the question well. Most candidates gave valid explanations about why the process was suitable for the specific item and achieved high marks. Some candidates produced very brief responses with limited detail and did not access the higher mark range.

Part B

Question 4

Some responses were fully detailed, demonstrating a good knowledge of alloys and their benefits and that of new materials. Carbon fibre was included in many answers. Candidates generally demonstrated a good awareness of new manufacturing processes.

(a) This part was answered well by most candidates. There were many well-structured and detailed responses.

(b) 3D printing and laser cutting were the most popular examples of new processes. Most responses were fully detailed but a number of candidates gave very brief or no response to this part.

Question 5

(a) Most candidates correctly identified two input and two output devices.

(b) Very few candidates explained the functions of the device in any detail and many gave limited detail of how the devices assist in the process of design and making products.

Question 6

Some candidates made reference to both the manufacturer and consumer, but most responses were very brief and raised very few issues with limited or no use of evidence or examples to support the answer. The strongest responses included discussion around the convenience and cost benefits for the consumer, and no requirement to assemble products resulting in reduced storage for manufacturers.

Part C

Question 7

There were many excellent responses to this question. Most candidates correctly drew one-point perspective views of the wetroom but a number of candidates incorrectly produced planometric drawings. Most candidates included all details of the wetroom. The bath, sink unit and shower tray were carefully and accurately drawn. Overall line quality was generally excellent.

Question 8

(a) Most candidates produced a drawing of the layout of the room, but very few considered the movement and flow visitors and the positioning on the entrance and exit. The strongest responses included the positioning of display stands and tables with respect to the entrance, exit and walls and highlighting the circulation of visitors.

(b) Most candidates produced very good quality graphic symbols but not all were clear in representing the possible dangers of using computers online.

(c) There were some high standard responses to this part. Candidates produced full and detailed descriptions of an appropriate method to manufacture 500 monochrome A4 tri-fold leaflets.

Question 9

The strongest responses were full and well-structured. Candidates clearly described the specific roles of the architect and engineer and used appropriate examples to explain the impact of both professions upon our environment.

Section B

The overall performance of candidates on ***Section B*** was generally good. Most candidates used their time effectively and fully completed all requirements of the questions attempted. However, a significant number of candidates did not leave sufficient time to complete a proposed solution or an evaluation.

Most candidates carefully considered their chosen question and generated initial thoughts relating specifically to the given problem/situation for their analysis. This helped candidates to provide the key points to develop a specification.

Some candidates produced generic charts for the analysis that had limited or no specific reference to the problem and receive little credit.

Design ideas were generally well presented and detailed. Annotation was good, with many candidates explaining design details relating to the specification and proposing appropriate specific materials and construction methods. Evaluation was evident for many candidates in the exploration of ideas section.

Some candidates included very limited evaluative comment on their ideas and limited reasoning for selection for further development. Evaluating when designing helps when making a reasoned judgment on the best solution or design features to take forward. Some candidates used a tick list to evaluate their ideas and identify a chosen solution. Tick lists are not appropriate unless they are adequately qualified. Higher marks are achieved when candidates give evaluative comments on their ideas and can make a reasoned judgment on the best solution or features to take forward for further development.

The development of ideas section was completed well by most candidates. Most included good design decision making. Some candidates focused only on manufacturing detail and did not consider the reasoning and composition of ideas that leads to a single final design proposal.

Most proposed solutions were feasible and well presented. Many candidates included detail such as key dimensions, material selected and possible finishes. A significant number of proposed solutions were not included or were incomplete.

Many candidates produced valid evaluations of their proposal and described the positive features and functional details of their solution. Not all candidates gave details of possible improvements or modifications.

A significant number of candidates did not produce an evaluation or produced a basic tick chart with limited or no evaluative comment.

Question 10

There were some very high-quality responses to this question. Most candidates focused on a play area that could be arranged to provide two or three activities. Many ideas produced were of existing play equipment, but some candidates produced imaginative and creative adaptations.

Acceptable specifications included:

- The area must have soft base areas around the activities in case a child falls.
- Materials used must be robust to handle misuse and not break in use.
- Materials used must be suitable for use in outdoor weather conditions.
- Activities should have appropriate safety features such as harnesses on swinging or moving activities for younger children.
- The play area should include seating for adults to supervise their children.

Question 11

Most candidates followed the instructions given but a significant number ignored the requirement to be easily assembled or disassembled.

Many responses were imaginative and considered ease of access and the security of items.

Acceptable specifications included:

- The product must include wheels for ease of movement so that it can be locked when in the required position.
- The product should have an attachable mirror for customers to see how the clothes look when they try on them.
- The product should have protection against different weather conditions.
- The product should have a wide base when erected to prevent falling over.
- The product could have an adult's and children's section to enable all customers to find items and access them.

Question 12

Some of the responses were very imaginative and included a wide range of different and innovative ideas. Most candidates followed the instructions to produce the product to hold the device as flat pack. Ideas for the company name and logo were particularly impressive.

Acceptable specifications included:

- The product should be able to hold the device at varying angles to suit the user.
- The logo for the company should include images that are easily recognised by the target group of workers and candidates.
- The product should be stable and hold the device reasonably securely in use to prevent the device from falling off.
- The product must be quick and easy to use as it will be assembled and disassembled regularly.
- The product must have a stable base and possibly rubber pads to prevent movement as the devices are touch operated.

DESIGN AND TECHNOLOGY

Paper 9705/33
Written 2

Key messages

- Candidates are reminded to read the questions carefully. Some candidates missed out on the full mark range by missing out key requirements of the question, particularly in ***Section B*** **Question 10**.
- Some candidates used single word responses when answering **Question 3(b)** which meant they could not receive credit. The question required candidates to explain why the process selected is particularly suitable for the chosen items.
- When exploring designs, candidates should ensure that there is clear evidence of evaluation with reasons for selection of features or an idea to take forward. Some candidates use a basic tick chart. This must be qualified for marks to be awarded.

General comments

The overall standard of candidate performance was good with a number of outstanding scripts achieving very high marks.

Candidates used sketches and notes well to describe the stages of particular processes and support their answers to questions in ***Section A***.

There were a wide range of responses to questions which included the instruction to discuss. Some responses were well structured and clear, introducing appropriate evidence to support the conclusions of their arguments. A significant number of responses were very brief and lacking relevant detail.

Most candidates fully completed all the requirements for ***Section B*** but some did not produce an evaluation.

In ***Section A***, **Part A** was the most popular option followed by **Part C**. Very few candidates made attempts at questions in **Part B**.

Comments on specific questions

Section A

Part A

Question 1

Candidates generally responded well to the question, producing passionate and informed answers. Some were of a very high standard, well-structured and clear, introducing appropriate evidence to support the conclusions of their arguments. Ecological considerations were prominent in answers.

Some candidates did not consider the implications for consumers.

Question 2

(a) Most candidates selected an appropriate material for the component part of the lampshade and gave valid reasons for their choice. Aluminium, acrylic and a range of appropriate hardwoods were the most popular choices.

(b) Candidates produced a range of ways in which the component part could be made and steam bending and laminating hardwood was a common option. Thermoforming acrylic and bending aluminium using a former were also well described. The use of notes and sketches was mostly of a very good standard.

(c) Most candidates chose a change in material and injection moulding as the process. Most candidates described the process of injection moulding. To achieve the highest marks, candidates would be expected to give clear details of the mould required.

Question 3

(a) There were many correct descriptions of the brazing of the mild steel tube joint and the rotational moulding of the chair. Few candidates correctly described the process of making a bridle joint.

(b) Relatively few candidates gave full explanations about why the process was particularly suitable for the production of the chosen item. Many offered single or limited word answers which did not allow access to the full mark range.

Part B

Question 4

(a) (i) and (ii) Most candidates correctly stated the meaning of AC and DC.

(b) (i) and (ii) Most candidates correctly calculated the current flowing through both resistors and the voltage across the 20Ω resistor.

(c) Candidates had a knowledge of pneumatics and hydraulics and gave details of the benefits and drawbacks of each.

Question 5

(a) Most candidates had good knowledge of each of the properties listed. Not all candidates gave an example of a specific material used in a product to explain the significance of the property.

(b) Reinforcing concrete was the most popular response.

Question 6

(a) Candidates correctly stated the rotation as clockwise.

(b) Most candidates correctly calculated the gear ratio of the compound drive.

(c) Rack and pinion and crank and slider were the most popular correct responses. Some candidates did not give examples.

(d) Responses were generally very brief and lacking detail. Lubrication was the most common method of improving efficiency in a mechanism.

Part C

Question 7

(a) There were a number of high quality two-point perspective drawings. Some drawings were fully detailed and accurate with good quality rendering. A number of candidates produced very quick sketches, not in perspective and consequently did not access the full mark range.

(b) Many responses were very brief and did not fully answer the question. The strongest responses included a good use of notes and sketches with consideration of access and security.

Question 8

Packaging for take-away meals was the most popular option. Most candidates made very good reference to cost and aesthetic considerations but very few referred in any detail, to manufacturing processes.

The strongest answers were carefully planned and very well structured. Some candidates made very brief notes to plan the structure before commencing their answer which is to be encouraged.

A number of candidates misread the question and included all three listed products in their response.

Question 9 (a) and (b)

Some candidates presented their answer in the lined A4 answer booklet. This lowered the level of accuracy required and the detail of response. Candidates are advised to use A3 drawing paper for graphic responses.

Section B

Most candidates started ***Section B*** well. Candidates prepared an analysis of the given situation, featuring key points to consider, and wrote a detailed specification. Some candidates produce a generic scatter chart with limited or no reference to the situation and could not access the full range of marks.

Most candidates produced an adequate range of annotated and different design ideas. Some focused on one or two initial concepts which restricted access to the higher mark ranges.

When exploring designs, candidates should ensure that there is clear evidence of evaluation of ideas with reasons for selection of features or one idea to take forward. Some candidates use a very basic tick chart. This must be qualified for marks to be awarded.

There was evidence of good design decision making from most candidates in the development of ideas section. Some candidates focused mostly on constructional detail and produced limited reasoning and composition of ideas that would lead to a single final design proposal.

Proposed solutions were generally feasible and clearly presented. Some candidates produced limited detail of the proposal. Key dimensions, materials used, constructional detail and possible finishes ensured access to higher marks for this section. A significant number of proposed solutions were not included or incomplete.

Some candidates produced good evaluations of their proposal, describing strengths and weaknesses of their solution. Not all candidates gave details of possible improvements or modifications.

Some candidates did not produce an evaluation or produced a basic tick chart with limited or no evaluative comment.

Question 10

Some responses were of a very good standard with candidates producing well-presented work, demonstrating imagination and a good understanding of appropriate materials and constructional methods. Some candidates did not consider the requirement of the product to be provide a dual purpose. The most common dual purpose ideas were the product could be used as a lounger or a table.

Acceptable specifications included:

- The product must have broad wheels or runners so as not to sink into sand.
- The environment in which the product will be used must be considered, e.g. sea water is hostile, so materials or finishes should be able to protect the product.
- The product could include a holder for a parasol to protect users from the sun.
- The product could include a refrigerated section for drinks and snacks.
- The product should have a comfortable handle grip as the product may be heavy and have to be transported over difficult surfaces.

Question 11

There were no complete attempts at this question.

Question 12

There was a wide range of responses to this question. Some candidates produced well-presented and creative work covering all of the required headings. A significant number of candidates did not consider an interactive feature in their designs.

Acceptable specifications included:

- The display must be stable to withstand possible windy conditions at the entrance of school.
- The message on the display must be concise and easy to read by all students.
- The display should be easy to disassemble for storage when not required.
- It should be easy to understand how to use the interactive feature to prevent queues or frustration.
- The display and interactive feature should be of robust construction to withstand regular use by school children.

DESIGN AND TECHNOLOGY

Paper 9705/04
Project 2

Key messages

- It is important that candidates understand fully the requirements of the Product Development criterion at the start of Project 2. This is a substantial and important stage in the development of the selected design idea and should be presented as evidence of practical design thinking rather than a collection of information on materials, constructions, finishes and other items, as is often the case.
- Product Planning should include all practical information from which a skilled person could make the proposed product. This should include a detailed working drawing, list of materials required and an effective order for the sequence of operations.

General comments

The school-based assessment for this syllabus can be offered either as two discrete components, Project 1 and Project 2 or as one larger piece of work combining the two projects in an holistic way. This report acknowledges the overall design process where the two are combined.

Centres introduce this important part of the Design and Technology course to their candidates in slightly different ways, but it is important that evidence produced matches the requirements of the assessment scheme. Some centres set a common theme or topic to which candidates respond in their own way while others encourage each candidate to identify their own design problem which may be derived from hobbies, interests or life at home and in the community.

Many interesting Project outcomes resulted from a wide variety of design problems and it was obvious that candidates had developed a keen interest in the area being studied. In addition to the usual range of household items or architectural models, interesting outcomes of either modelling or final products included: mobile workbench, chess table, small golf putting green, folding stool, barbeque food preparation area, laptop stand, sanitiser stand, menu card and brochure, product dispensing machine, cable tidy, portable homeless shelter, water bucket cart, adjustable lamp on stand, laptop cooler, rabbit hutch, restaurant umbrella, desk organiser, mountain bike storage, portable speaker, cycle led light bar, stationery storage, basketball rack, bicycle power generator, solar lights, water filter system, phone security strap, packaging for chips, fountain lamp, laboratory storage, clean energy signage, dog's bed, games storage, door opener, model bus terminal, library trolley, duster for window blinds, tool station, hydroponics, fish tackle storage, playground swing, trophy stand, book page folder, pond water feature.

Centres are reminded of the requirement to include detailed photographic evidence of the model for Project 1 and the final realised product for Project 2.

Centres continue to prepare candidates well for the Project in that candidates presented design folders neatly, in such a way that the design process could be followed easily.

Comments on Individual Assessment Criteria

Question 5

Product Development

Successful candidates took the final design idea(s) from Project 1 and then considered all aspects of form, materials, components, constructions, finish and production methods in detail. All information was linked to

the chosen idea and where alternatives had been considered, and choices made, reasons for these were given.

This section of the assessment scheme also requires candidates to carry out some form of testing. This can be of materials, constructions, form, etc. but it should be obvious how this links to the design idea being developed. Candidates need to include written or photographic evidence that this has been carried out.

In some projects it is not always clear why selections of materials, components, constructions, finishes and production methods have been made and there is often a big gap between the chosen design idea and the final product. Once these decisions have been made, the final part of the development should include details of the final solution, mainly in the form of drawings, from which a skilled person could make the product.

Question 6

Product Planning

Most candidates set out the sequence for the main stages of production, often produced in flow chart or tabular form linked to some form of time plan. There is no requirement for candidates to show how basic techniques will be carried out but many candidates included details of the more complex methods of manufacture.

Technical information should include a clear working drawing and a list of all materials and components required.

Candidates are not required to include lengthy photographic evidence of all stages of manufacture although some photographs can be helpful when highlighting certain aspects of the manufacturing process.

Question 7

Product Realisation

Many candidates produced high quality products that could clearly be put to their intended use. Candidates showed care and enthusiasm in the making of their design outcomes in terms of construction methods and finishing techniques and there are still many well-developed practical skills being applied.

Centres are reminded of the need to include clear and detailed photographic evidence of made products in line with the guidance set out in the syllabus document. These must be submitted as part of or with the project folio for moderation purposes.

Question 8

Testing and Evaluation

There continues to be an improvement in the number of candidates carrying out meaningful testing and evaluation. This can only be achieved if the product is shown to be put to the use intended and the results compared to the original design specification. It is always helpful when candidates include photographs of the product being used and tested, in the intended environment, in this way.

The completion of questionnaires and the recording of views of others are only of use where the results can be collated and compared to the intended use of the product and some form of qualified judgement made and recorded.