DESIGN AND TECHNOLOGY

Paper 9705/11
Written

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 for candidates who had prepared well. Process knowledge was good with all three questions in ***Section A*** being attempted with a clear understanding of the basic knowledge. Occasionally health and safety points that candidates added were irrelevant to the process and were simply generic.

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 are 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) Generally, this was answered well and most candidates could give two reasons why stainless steel had been used for the figure.

(b) (i) Stronger answers clearly described drilling the hole and tapping out with the use of lubricant. Many candidates used technical terms for the tools and equipment used. Safety precautions were not always included. Some candidates misunderstood the question and explained how to cut a thread on part **B** with a die stock.

(ii) This was generally answered well with candidates understanding the steps necessary to prepare and apply a finish to the mild steel parts.

(c) This was a very well answered question with candidates demonstrating a good knowledge of how to mark out, cut out, sand and then drill the central hole in the beech base.

Question 2

(a) Most candidates were able to correctly explain at least one reason why MDF had been used for the base of the architectural model, with providing a smooth, rigid surface and being easily cut as popular answers.

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(b) Most candidates answered this well and understood how to mark out, cut, glue, clamp and sand part **A**. Technical terms for tools and equipment were often clearly identified.

(c) (i) Candidates had a good understanding of how to make fourteen identical stick-on paper windows with CAD/CAM often used. Occasionally candidates did not design the graphic on the windowpanes.

(ii) Candidates gave a wide variety of answers to this question. Stronger candidates either made a stencil or clearly explained how to measure and mark out the even spacing of the fourteen windows. However, some candidates did not give such levels of detail and found the question challenging.

Question 3

(a) Most candidates gave at least one reason for using aluminium for the parts of the model wind turbine, with 'lightweight' being a very popular answer.

(b) (i) Candidates found it challenging to explain how to make part **A**. Very few candidates were able to communicate in detail how the lathe, with both parallel and taper turning, could be used. Safety precautions were not always included or were generic.

(ii) Candidates gave a very wide range of different explanations of how to join part **B** to part **C**. However, there were some creative responses that included drilling holes in part **C** to allow part **B** to pass through and be fastened beneath.

(c) Candidates found it very challenging to explain how the model of the wind turbine would generate an electric current. Some candidates understood the use of rotary motion being utilised form the rotor blades.

Section B

Question 4

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

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

(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 focussed on the mild steel bar being too heavy and rusting, the tension system not working and feature **X** not being secured to the mild steel bars. Many 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 answers relating to their understanding of why many products are designed to be assembled by the customer. Difficulties with transporting large items and saving the manufacturer time and money to assemble products were often communicated well. Thorough explanations and examples were not always given.

Question 5

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

(b) Many candidates answered this correctly, identifying several different problems with the design of the point-of-sale display.

(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 missing side panel, incorrect or missing fold lines and limited surface detail. Most candidates who had correctly identified problems and subsequently followed the instructions gave some excellent fully detailed answers that scored full marks.

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(d) Candidates often found it challenging to explain why packaging is produced in one factory and then the product inserted into the packaging in another factory. Candidates who discussed issues such as designing and printed packaging being a specialist process, that packaging can be transported flat packed and the need for food hygiene and avoiding contamination answered well. Examples were not always given.

Question 6

(a) Most candidates were able to explain feature **X**.

(b) Most candidates managed to identify several different problems with the design of the hydraulic lifting device.

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

(d) Candidates often had a good understanding of why designers test products such as the hydraulic lifting device at regular intervals. The health and safety of those using the device was the most popular response.

Section C

Question 7

(a) There were many well-structured answers showing ideas for toy storage. Often ideas were very similar and occasionally the need for a flat-pack item was a little limited, but the opening lid was very well communicated throughout. Three ideas were usually produced with some candidates showing development. The final solution was often realistic with good detail. Evaluation ranged from generic commentary through to some good comments on positive and negative points of their designs.

(b) Candidates offered a wide variety of answers on the design for a device that prevents the opening surface from being accidentally closed. Whilst there were many chains, struts, bars and wedges within the responses, there were also some very creative ideas as well.

(c) Candidates offered some good answers and often gave a wide range of different ideas for accessorising the toy storage. Whiteboards, magnetic letters, paint and organisation within the storage were often included.

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

Question 8

(a) Candidates often produced a range of ideas for a vacuum formed tray. Three ideas were usually produced but some ideas were very similar. Stronger candidates demonstrated a full understanding of both vacuum forming and the need to protect the bottle in detailed and technical responses. Evaluation ranged from generic commentary through to some excellent annotation of positive and negative points.

(b) Candidates found this question accessible and often presented a good range of different ideas for the packaging to hold the vacuum formed tray. Three ideas were usually produced but some candidates did not show development nets and just focused on the three-dimensional shape of the packaging.

(c) Candidates generally produced a very good range of ideas for a name and colour scheme for the packaging. Stronger candidates gave some excellent ideas that were both realistic and creative and linked the olive oil to good health. There were some outstanding responses to this question.

(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 superb three-dimensional drawings.

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Question 9

(a) Candidates appeared to find the technical aspects of this question a challenge, often communicating a simple blade style design only. Three ideas were sometimes produced with some candidates showing development. Evaluation ranged from generic commentary through to some excellent annotation of positive and negative points.

(b) Some candidates found it challenging to offer a range of different ideas for an attachment for the devise designed in **(a)**.

(c) Candidates were able to offer a range of different ideas for a device that would allow it to be easily located. Fluorescent colouring and LED lighting were popular responses.

(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.

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DESIGN AND TECHNOLOGY

Paper 9705/12
Written

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 for candidates who had prepared well. Process knowledge was good with all three questions in ***Section A*** being attempted with a clear understanding of the basic knowledge. Occasionally health and safety points that candidates added were irrelevant to the process and were simply generic.

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 are 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) Generally, this was answered well and most candidates could give two reasons why stainless steel had been used for the figure.

(b) (i) Stronger answers clearly described drilling the hole and tapping out with the use of lubricant. Many candidates used technical terms for the tools and equipment used. Safety precautions were not always included. Some candidates misunderstood the question and explained how to cut a thread on part **B** with a die stock.

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Section B

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Question 7

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DESIGN AND TECHNOLOGY

Paper 9705/02
Project 1

Key messages

- Most projects provided very good evidence of designing and modelling, arranged in a sequential order. All candidates are advised to number the pages of their project, use section headings, and securely fasten all pages together.
- Candidates should focus on relevant information to include in their projects, which contributes to the design process.
- Candidates are advised to focus on the design need and brief throughout the analysis and research stages of the project.
- Careful consideration needs to be given to the design of questionnaires, both in terms of the types of question used and who is asked to complete the questionnaire.
- Research should be fully analysed, and conclusions drawn that will impact upon the design specification. The inclusion of photographs of a large number of existing products is of little value unless they are analysed, and conclusions drawn.
- The design specification should be presented as a list of points, with references made to the research undertaken.
- A range of appropriate ideas should be proposed and appraised in terms of fitness for purpose. Most candidates used freehand sketching to show their initial ideas and then developed these using computer-aided design (CAD) or accurate drawing methods.
- The modelling of ideas should be fully recorded using high-quality photographic evidence and explanatory notes. Computer generated images can be used to enhance, but not replace, the physical modelling.

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 a holistic way. This report identifies each of the components separately but also acknowledges the overall design process where the two are combined.

Centres introduce the coursework in different ways. Some centres set a common theme or topic, from which each candidate identifies a design need, while others allow candidates the freedom to independently identify a design need. It is important that the evidence produced matches the requirements of the assessment criteria.

Most projects were A3 in size, which allows adequate space for drawings. Some projects were A4 in size and a small number were in an electronic format. All candidates should make the best use of every page to avoid the projects becoming unnecessarily large.

Comments on specific assessment criteria

Question 1

Identification of a need or opportunity leading to a design brief

This section of the project was generally completed to a very good standard, with many candidates scoring maximum marks.

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Most candidates made it very clear how their chosen design problem linked to both the situation and the users. Both the situation and the users were usually described in detail, with photographic evidence often used to support the description. This was then usually followed by a clear 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

This section of the project was generally completed to a good standard, with almost all candidates considering an appropriate range of research material and formulating a design specification.

The analysis of the research is a very important stage in the design process as it provides information from which an accurate and meaningful specification can be formulated. Many candidates produced a research plan to help them focus on the areas they needed to research. In their research most candidates considered a wide range of existing products and analysed these using headings such as function, materials, cost and aesthetics. Research on ergonomics, materials, tools and equipment and the environment where the product would be used was also commonly seen.

Specifications were generally well formulated and often included fully justified requirements of the product to be designed. Generic points, which could apply to almost any product, should not be included in the specification.

Successful candidates clearly demonstrated how the analysis of their research led to the formulation of a detailed design specification.

Question 3

Generation and appraisal of design Ideas

Many candidates demonstrated a high degree of flair in the creation of ideas.

A good range and high standard of communication techniques were used in the presentation of design ideas. Freehand sketching, with annotations, was the most seen communication technique used to show design ideas. This communication technique allowed candidates to demonstrate how their thought process had developed.

Some candidates chose to use only computer-aided design (CAD) to show design ideas, which in a few cases appeared to restrict the flow of the design thinking. Candidates are advised to use freehand sketching for their initial ideas and then, if appropriate, progress to CAD or more accurate drawings.

A few candidates presented a range of drawings not linked to the specification or did not comment on their possible suitability for the problem being considered. The importance of presenting a wide range of different ideas, however impractical they may appear at the time, cannot be understated. All ideas should then be considered against the specification, with some form of written appraisal alongside each.

Question 4

Modelling of ideas

This section of the project provided evidence of a wide range of modelling techniques, with most candidates appearing to have access to the appropriate materials, tools and equipment.

Modelling should be seen as one stage in the process of the testing and evaluation of design ideas so that a final design can be presented and subsequently developed, perhaps in Project 2. Some candidates produced several high-quality models that formed part of this process, whereas others simply produced a mock-up of the chosen design idea. The use of computer modelling, alongside physical models made from cardboard or resistant materials, was seen in many projects.

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The quality of evidence used to record the modelling process and the outcomes was variable. In many cases photographic evidence and notes clearly demonstrated the design thinking, with conclusions highlighting what each model had contributed to the development of the design. In some cases, the photographic evidence was simply a photograph of the final model.

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DESIGN AND TECHNOLOGY

Paper 9705/31
Written

Key messages

- Candidates must ensure that they read the instructions carefully and answer the required number of questions. A significant number of candidates answered fewer than the three questions required and some candidates answered more than three questions. Practicing timed examinations or questions may be helpful.
- Whilst some responses to the design question were full and complied with all of the assessment requirements, a number of candidates produced very limited work. Some candidates used only one side of an A3 sheet for their responses. The question is worth 80 marks and time management is critical.
- Some questions, such as **Question 7** in **Part C**: Graphic Products, required drawing equipment and additional A3 sheets to produce a full response. Some candidates produced their drawing on a sheet in the A4 lined answer booklet and were unable to create a drawing of the required detail and accuracy.

General comments

Questions requiring the candidate to 'discuss' were mostly answered well with many candidates producing full and detailed responses. However, some responses to questions were very brief and lacking in detail. It is important that candidates use the full amount of time available to access the full mark range.

Comments on specific questions

Section A

Part A – Product Design

Question 1

(a) Aluminium, brass and appropriate hardwoods, such as beech, were the most common correct responses. Most candidates gave two valid reasons for selection but some responses were very brief and did not state clearly why the material was appropriate.

(b) There was a wide range of responses to this question. Many candidates correctly described the turning processes required to manufacture the spinning die. A number of alternative methods of manufacturing were proposed and credit was awarded where responses had technical merit.

(c) Some candidates correctly identified the use of jigs and templates to manufacture a batch of 100 spinning dice. Many candidates described the process of injection moulding which would be inappropriate for such a low production run.

Question 2

There were relatively few attempts at this question. Some responses were detailed, with candidates examining a range of appropriate issues supported with relevant examples. Most candidates focussed on specific issues related to the question but a significant number of candidates did not consider the key element of meeting the needs and demands of consumers.

Question 3

Most candidates selected the beaker and furniture joint from the items given.

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(a) Candidates generally made good use of sketches and notes to describe the process used. Almost all candidates had a good understanding of compression moulding but not all candidates provided sufficient detail in their answer to access the full mark range. Similarly, dowelling was understood by most candidates but some candidates missed out on the full mark range by omitting key details, such as the need for the accurate marking out and positioning of holes to be drilled. Most candidates correctly described the process of hardening, but very few candidates had a clear understanding of the process of tempering.

(b) Most candidates explained reasons why the process would be suitable for the item selected. A few responses were very limited with some single word responses. Such answers did not have enough detail to access the full mark range.

Part B – Practical Technology

Question 4

There were no completed attempts at this question.

Question 5

There were no attempts at this question.

Question 6

There were no attempts at this question.

Part C – Graphic Products

Question 7

There were some excellent responses to this question. Some candidates generated very accurate, fully detailed isometric drawings of the camera. Some attempted to answer the question in the A4 lined answer booklets. It is important that sufficient A3 paper and appropriate drawing equipment is available for candidates to use on Graphic Products questions.

Question 8

Some candidates produced very good quality responses to this question, focussing on the importance of visual impact to enhance graphic products and attract attention. Most responses were cogent and well-structured. Most candidates included well-explained appropriate issues and had good supporting examples to support conclusions of arguments.

Question 9

(a) Most candidates stated a suitable material for the outer packaging for the smart bulb, with a range of appropriate specific card types proposed.

(b) Many responses showing how a prototype of the outer packaging and the inner support could be made were fully detailed and candidates generally used well annotated sketches to present their answers. Some responses were short and lacked sufficient detail to achieve the higher mark range.

(c) Many candidates proposed appropriate design changes to help in the production of a very large batch. Relatively few candidates produced full and correct responses, involving tools such as press forms and die cutters, to explain how 10 000 identical packages would be produced.

Section B

There were some outstanding responses to questions in ***Section B***. Candidates fully covered the guidance on how to approach the design question, demonstrating high quality presentation skills and a good knowledge of appropriate materials and construction techniques.

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However, a significant number of responses to ***Section B*** questions were very limited and several candidates did not cover the full range of headings outlined in the guidance. This question is worth 80 marks and candidates should allocate an appropriate amount of time to produce a full response.

Most candidates generated an analysis focused on the problem/situation given. A number of candidates produced generic scatter charts with little or no specific reference to the problem given.

Specifications were generally clear and justified but some candidates produced generic statements with no specific reference to the problem. Some candidates copied the specifications given in the question only and did not expand further resulting in no credit awarded.

Candidates are reminded that if they use ACCESSFM to generate a specification, they should generate specification points stating the criteria that the product needs to address.

Most candidates generated two or three single-concept sketches and a number of candidates included the exploration of sub-problems. To achieve higher marks when designing, candidates would benefit from exploring and evaluating their ideas in more detail, and include aesthetic considerations, experimentation with construction, iterations for example, before going onto the next concept.

Some candidates annotated their work exceptionally well and many included detailed evaluative comments. A significant number of candidates showed very limited reasoning for selection for further development in their work. Evaluating when designing is of key importance when making judgments on the best features to take forward.

Not all candidates produced a development section to show the improvements or modifications to their ideas leading to a final design. Some made very good use of sketches and notes to show amendments and details of material choice and method of construction. Several candidates did not access the full range of marks by focusing solely on the manufacture of the product.

The majority of proposed solutions were feasible. Dimensioning and the inclusion of appropriate detail of the proposed solution was generally very good.

Some evaluations were detailed, highlighting positive features and identifying areas for improvement. However, many evaluations were very brief, often in the form of a tick chart with limited or no explanation. This method of evaluation will not access the full range of marks available.

Question 10

This was a very popular question with several high-quality responses. Most candidates generated a good range of feasible responses. A few candidates produced innovative and creative proposals.

Most responses had good evidence of appropriate material selection and construction methods and some candidates developed imaginative solutions with modular options.

Some candidates did not pay enough attention to the dimensions given in **Fig. 10.1** and generated proposals that could not be fitted into the accommodation.

Acceptable specification points included:

- the unit should be modular and able to be assembled into different configurations
- a lighting system should be included for studying and when reading in bed
- a facility for storing clothing could be attached or designed into the unit.

Question 11

Relatively few candidates attempted this question. Most candidates developed good ideas for the shape of an obstacle but very few gave sufficient details of the systems required to make a sound or produce a lighting effect.

Acceptable specification points included:

- the obstacle should be stable and not be easily blown over or moved by wind

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- the obstacle sound must be clear but not too loud so as not to alarm a child who touches the obstacle with their bicycle
- the obstacle should be constructed bearing in mind the outdoor environment in which it is to be used and ensuring the inner workings are protected.

Question 12

There were some exceptionally good responses to this question. Many candidates produced innovative proposals for the packaging and imaginative ideas for the name and logo.

Almost all candidates produced responses that could be manufactured for flat pack. However, some candidates ignored this specification and generated large holders constructed from resistant materials.

Presentation of work by most candidates on this question was of a good standard.

Acceptable specification points included:

- the material used for the packaging must be resistant to damage from spillage
- the packaging must include a handle to enable easy transportation
- the packaging should be constructed from a material that is easily recyclable and has clear graphics explaining what the purchaser should do to dispose of it responsibly.

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DESIGN AND TECHNOLOGY

Paper 9705/32
Written

Key messages

- Candidates must ensure that they read the instructions carefully and answer the required number of questions. A significant number of candidates answered fewer than the three questions required and some candidates answered more than three questions. Practicing timed examinations or questions may be helpful.
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- Some questions, such as **Question 7** in **Part C**: Graphic Products, required drawing equipment and additional A3 sheets to produce a full response. Some candidates produced their drawing on a sheet in the A4 lined answer booklet and were unable to create a drawing of the required detail and accuracy.

General comments

Questions requiring the candidate to 'discuss' were mostly answered well with many candidates producing full and detailed responses. However, some responses to questions were very brief and lacking in detail. It is important that candidates use the full amount of time available to access the full mark range.

Comments on specific questions

Section A

Part A – Product Design

Question 1

(a) Aluminium, brass and appropriate hardwoods, such as beech, were the most common correct responses. Most candidates gave two valid reasons for selection but some responses were very brief and did not state clearly why the material was appropriate.

(b) There was a wide range of responses to this question. Many candidates correctly described the turning processes required to manufacture the spinning die. A number of alternative methods of manufacturing were proposed and credit was awarded where responses had technical merit.

(c) Some candidates correctly identified the use of jigs and templates to manufacture a batch of 100 spinning dice. Many candidates described the process of injection moulding which would be inappropriate for such a low production run.

Question 2

There were relatively few attempts at this question. Some responses were detailed, with candidates examining a range of appropriate issues supported with relevant examples. Most candidates focussed on specific issues related to the question but a significant number of candidates did not consider the key element of meeting the needs and demands of consumers.

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(a) Most candidates stated a suitable material for the outer packaging for the smart bulb, with a range of appropriate specific card types proposed.

(b) Many responses showing how a prototype of the outer packaging and the inner support could be made were fully detailed and candidates generally used well annotated sketches to present their answers. Some responses were short and lacked sufficient detail to achieve the higher mark range.

(c) Many candidates proposed appropriate design changes to help in the production of a very large batch. Relatively few candidates produced full and correct responses, involving tools such as press forms and die cutters, to explain how 10 000 identical packages would be produced.

Section B

There were some outstanding responses to questions in ***Section B***. Candidates fully covered the guidance on how to approach the design question, demonstrating high quality presentation skills and a good knowledge of appropriate materials and construction techniques.

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However, a significant number of responses to ***Section B*** questions were very limited and several candidates did not cover the full range of headings outlined in the guidance. This question is worth 80 marks and candidates should allocate an appropriate amount of time to produce a full response.

Most candidates generated an analysis focused on the problem/situation given. A number of candidates produced generic scatter charts with little or no specific reference to the problem given.

Specifications were generally clear and justified but some candidates produced generic statements with no specific reference to the problem. Some candidates copied the specifications given in the question only and did not expand further resulting in no credit awarded.

Candidates are reminded that if they use ACCESSFM to generate a specification, they should generate specification points stating the criteria that the product needs to address.

Most candidates generated two or three single-concept sketches and a number of candidates included the exploration of sub-problems. To achieve higher marks when designing, candidates would benefit from exploring and evaluating their ideas in more detail, and include aesthetic considerations, experimentation with construction, iterations for example, before going onto the next concept.

Some candidates annotated their work exceptionally well and many included detailed evaluative comments. A significant number of candidates showed very limited reasoning for selection for further development in their work. Evaluating when designing is of key importance when making judgments on the best features to take forward.

Not all candidates produced a development section to show the improvements or modifications to their ideas leading to a final design. Some made very good use of sketches and notes to show amendments and details of material choice and method of construction. Several candidates did not access the full range of marks by focusing solely on the manufacture of the product.

The majority of proposed solutions were feasible. Dimensioning and the inclusion of appropriate detail of the proposed solution was generally very good.

Some evaluations were detailed, highlighting positive features and identifying areas for improvement. However, many evaluations were very brief, often in the form of a tick chart with limited or no explanation. This method of evaluation will not access the full range of marks available.

Question 10

This was a very popular question with several high-quality responses. Most candidates generated a good range of feasible responses. A few candidates produced innovative and creative proposals.

Most responses had good evidence of appropriate material selection and construction methods and some candidates developed imaginative solutions with modular options.

Some candidates did not pay enough attention to the dimensions given in **Fig. 10.1** and generated proposals that could not be fitted into the accommodation.

Acceptable specification points included:

- the unit should be modular and able to be assembled into different configurations
- a lighting system should be included for studying and when reading in bed
- a facility for storing clothing could be attached or designed into the unit.

Question 11

Relatively few candidates attempted this question. Most candidates developed good ideas for the shape of an obstacle but very few gave sufficient details of the systems required to make a sound or produce a lighting effect.

Acceptable specification points included:

- the obstacle should be stable and not be easily blown over or moved by wind

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- the obstacle sound must be clear but not too loud so as not to alarm a child who touches the obstacle with their bicycle
- the obstacle should be constructed bearing in mind the outdoor environment in which it is to be used and ensuring the inner workings are protected.

Question 12

There were some exceptionally good responses to this question. Many candidates produced innovative proposals for the packaging and imaginative ideas for the name and logo.

Almost all candidates produced responses that could be manufactured for flat pack. However, some candidates ignored this specification and generated large holders constructed from resistant materials.

Presentation of work by most candidates on this question was of a good standard.

Acceptable specification points included:

- the material used for the packaging must be resistant to damage from spillage
- the packaging must include a handle to enable easy transportation
- the packaging should be constructed from a material that is easily recyclable and has clear graphics explaining what the purchaser should do to dispose of it responsibly.

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DESIGN AND TECHNOLOGY

Paper 9705/04
Project 2

Key messages

- Most projects provided very good evidence of product development and realisation in a sequential order. All candidates are advised to number the pages of their project, use section headings, and securely fasten all pages together.
- If the submission is only for Project 2, Component 4, consideration needs to be given as to whether it is necessary to include all the work from Project 1, Component 2. A copy of the design brief, specification and chosen idea may be sufficient.
- Product development 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.
- Product planning should show, using drawings and diagrams, all the information required to make the product and the sequence of operations.
- High-quality photographic evidence should be used to show both the making processes and the completed product.
- Conclusions should be drawn from the testing and evaluation and used to make proposals for further development of the product.

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 a holistic way. This report identifies each of the components separately but also acknowledges the overall design process where the two are combined.

The realised products were solutions to a wide variety of design problems, and it was obvious that many candidates had developed a keen interest in the area being studied. In addition to the usual range of household items and architectural models, there were also products that were based on local initiatives, developments or priorities.

Comments on specific assessment criteria

Question 5

Product development

This section of the project was generally completed to a good standard, with most candidates developing their chosen idea by making reasoned decisions about form, materials, and construction methods.

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 criteria also requires candidates to carry out some form of testing. This can be used to determine such things as materials or construction methods, but it should be obvious how this links to the design idea being developed. Candidates need to include written or photographic evidence that demonstrates that this has been carried out.

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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. Orthographic drawings and exploded views were commonly used to show details of the final solution.

Question 6

Product planning

This section of the project was generally completed to a very good standard, with many candidates scoring maximum marks.

Most candidates set out the sequence for the main stages of production and often produced a flow chart, Gantt chart or table showing the main stages and time required for each stage. Planning involving the use of workshop hand tools and equipment was commonly seen, but in an increasing number of cases the production centred around the use of computer-aided manufacturing (CAM) equipment.

Materials lists, or cutting lists, were used to show the materials required to make the product.

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

Question 7

Product realisation

Some very impressive photographic evidence was seen in this section of the project, with candidates clearly having access to appropriate materials, tools, and equipment to realise their design.

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

The use of a laser cutter was commonly seen but traditional construction methods were also evident in many folders.

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 the project folio for moderation purposes.

Question 8

Testing and evaluation

This section of the project was generally completed to a very good standard, with candidates clearly demonstrating the testing of their product followed by proposals for further development.

Many candidates carried 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 brief and specification. It is always helpful when candidates include photographs of the product being used and tested in the intended environment.

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.

Successful candidates clearly showed, using sketches and notes, proposals for further development of the product.

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