

# DESIGN AND TECHNOLOGY

Paper 0445/01

Design

## General comments

Candidates generally responded as intended to all three optional questions and there was a better balance across the questions than in previous years. **Question 1** was the most popular and in the majority of cases candidates obviously answered the question that was based on their syllabus option choice. There is no requirement for candidates to do this but candidates clearly choose the one with which they feel most comfortable.

## Comments on specific questions

### Question 1

Candidates appeared to understand the design requirements of this question and most went on to propose designs that would be appropriate to some degree. There was sometimes a tendency to produce designs that were rather heavy and cumbersome although these were often identified as such in the evaluation of sketched design ideas.

- (a) Functional aspects of the eating surface suggested by candidates included: stable in use; lightweight; easy to move; quick to position; hygienic; easy to clean; room for crockery and utensils; easy to store; correct height above bed etc.
- (b) It was hoped that candidates would draw joining methods that were particularly appropriate for lightweight constructions but the Examiner was happy to accept any sensible suggestions such as: halving joints; mortice and tenon joints; welding; bolts; rivets; screws; nails; hinges etc.
- (c) Responses to this part of the design questions have improved over recent examinations and the majority of candidates were able to suggest three or four different ideas. Candidates are expected to produce clear drawings using appropriate techniques so that design detail is clear to the viewer. Drawings can be enhanced in this respect through the use of shading or colour. Drawings should be more than just simple outlines if the general layout and form of the design concept is to be clear. Many candidates used annotation to good effect to provide more information. Marks are awarded for the quality of communication skills and the suitability of designs.
- (d) Most candidates evaluated each of their design ideas in turn and then identified the chosen idea, with reasons, at the end. Candidates are expected to evaluate at least three design ideas for the award of up to six marks and then to identify the chosen idea, giving reasons, for the final two marks.
- (e) This part of the design questions is still answered least successfully. Many candidates overlook the need to provide construction details and therefore reduce the marks available to them. Candidates are not restricted to any particular type of drawing method so long as they can provide the required detail. Many do so through the use of good pictorial views. It is a requirement of this part of the question that important dimensions are also given.
- (f) Most candidates were able to suggest some of the materials that might be used to construct their final product. It is vital that candidates suggest specific materials and the use of generic terms such as wood, metal and plastics cannot be awarded marks. Reasons for the choice of material must obviously be relevant to the suggested design.

- (g) Candidates were generally able to outline the manufacture of one part of their suggested design, but, unfortunately, some practical techniques were too general in description and not specific to the suggested design. The Examiner is looking for simple step by step procedures with processes and tools identified in a meaningful way.

### Question 2

This question was intended for candidates following the Graphics Products option and it was anticipated that semi-resistant materials would be used in most cases. Candidates generally realised that the carrier would need to be lightweight but some overlooked the requirement that it be in flat-pack form.

- (a) Most candidates seemed to be familiar with the requirements for a carrier of this nature and suggested acceptable functional points such as: stable when opened; lightweight; hygienic; easy to carry; keep food hot; keep content apart etc.
- (b) Candidates seemed to appreciate the need for simple lightweight handles and acceptable drawings included: string/cord; twisted card; reinforced card; cut-outs; different plastic shapes etc.
- (c) Responses to this part of the design questions have improved over recent examinations and the majority of candidates were able to suggest three or four different ideas. Candidates are expected to produce clear drawings using appropriate techniques so that design detail is clear to the viewer. Drawings can be enhanced in this respect through the use of shading or colour. Drawings should be more than just simple outlines if the general layout and form of the design concept is to be clear. Many candidates used annotation to good effect to provide more information. Marks are awarded for the quality of communication skills and the suitability of designs.
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- (g) The majority of candidates designed an appropriate logo that represented take-away food in some way and stated how this would be produced on or fixed to the carrier. Marks were awarded for the quality of communication skills in this part question and the use of colour or shading was expected for the award of full marks.

### Question 3

The requirement for the toy was such that candidates could make use of their knowledge and experience of systems and control in some way. It was hoped that they would use different types of mechanism so that some form of additional interest could be included in the design of the toy.

- (a) Points about the function of the toy that were highlighted by candidates included: colourful; not too heavy for a child; safe to use; easy to clean; no small parts that could be swallowed; maintain interest; be educational etc.
- (b) Candidates were required to state four ways of providing movement or noise in the toy and suggested methods included: cams; cranks; gears; levers; electric motor; wind up motor; clicking on wheel/gear; make/break switch etc.

- (c) Responses to this part of the design questions have improved over recent examinations. The majority of candidates were able to suggest three or four different ideas. Candidates are expected to produce clear drawings using appropriate techniques so that design detail is clear to the examiner. Drawings can be enhanced in this respect through the use of shading or colour. Drawings should not be more than just simple outlines if the general layout and form of the design concept is to be clear. Many candidates used annotation to good effect to provide more information. Marks are awarded for the quality of communication skills and the suitability of designs.
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# DESIGN AND TECHNOLOGY

Paper 0445/02  
Graphic Products

## General comments

This was the first June examination paper for the new syllabus. The A3 format proved to be popular. Candidates were required to complete all questions in **Section A** (A1, A2 and A3) and then go on to answer *either* B4 or B5 from **Section B**. This instruction was not followed by all candidates. **Question B5** was the most popular of the option questions for candidates.

The standard of work was comparable to that of the previous year.

There are areas of the syllabus however, in which further improvements are needed. These include in particular, geometrical constructions for plotting curves in Isometric and the correct method for projecting views in orthographic projection. The drawing of regular polygons and ellipses are also areas for improvement. With the syllabus change to 'Graphic Products' from 'Communication', Centres must focus their activities within the scope of the application of this subject area to Graphic Products.

Centres are advised not to secure the papers together with string or the use of a treasury tag. Candidate's sheets should be placed in the folder provided for despatch.

## Comments on specific questions

### **Question A1**

*Road and Information signs*

Of those who attempted this compulsory question, many scored high marks. Many candidates drew the circle, rectangle and triangle correctly. The octagon of 22 side and the hexagon of 30 side proved challenging for many candidates. The naming of the six sided polygon provided many interesting incorrect names including 'pentagon' and 'heptagon'. One mark was awarded for each correctly drawn shape and one mark for each correct name.

### **Question A2**

*Direction sign 'TOILETS'*

This question was attempted by all candidates giving many the opportunity to show their expertise at lettering. The letter 'S' proved to be difficult for candidates who did not 'crate' the available space. One mark was awarded for each correctly shaped letter and one mark each for spacing and height alignment. Many candidates scored between 3 and 6 marks

### **Question A3**

*Clock Tower*

Unfortunately not all candidates attempted this compulsory question losing the 10 marks available.

- (a) Drawing the 600 square tower the correct height on the plinth gained 1 mark. Plotting the regular octagon and the corner cuts from the orthographic view scored a further 2 marks. Many candidates failed to divide up the clock face and plot these in position on one face of the isometric view for a further 2 marks. The slopes on the base appeared to be very difficult for many candidates.

- (b) Applying pencil shading was completely missed out by many candidates. Marks were awarded for shadow (1) graduation (1) and reality of application (1)

#### Question B4

##### *Self Assembly Rocket*

This was by far the least popular of the two choice questions. Few candidates scored more than half marks for their answers.

This question was derived from an actual 'Graphic Product'.

With the syllabus change to Graphic Products from 'Communication', Centres must focus their activities within the scope of the application of this subject area to Graphic Products.

- (a)(i) Many candidates drew the nose cone, the  $\text{Ø}20$  tube, the  $45^\circ$  bevel and the  $\text{Ø}30$  tube for 5 marks. The correct orientation of the half ellipse and the angle cuts to form the fins for a further 5 marks proved difficult for most candidates who attempted this question.
- (ii) A few candidates managed to draw two circles and four fins in plan view to score the full 5 marks
- (iii) Very few candidates managed to construct the pentagon within a  $\text{Ø}100$  circle to score the full 5 marks
- (b) Many candidates produced a sketch showing four fins glued onto the  $\text{Ø}30$  tube. With a 'foamboard' graphic product, a pair of fins would be produced as shown in the detail drawing and these would be 'cross-halved' together before being inserted into slots cut into the  $\text{Ø}30$  tube. The activity of disassembling graphic products within classroom activity would have given candidates this knowledge.

#### Question B5

##### *Promotional 'Desk Tidy'*

This question was attempted by a large number of candidates. The wording and order of the instructions in the question should lead the candidate to the correct response. Where candidates followed these instructions, a correct solution was drawn for the Plan and Elevation and this could be projected to form the basis of the development. Where this requirement was followed, the candidate scored high marks. Overall, candidates gained a wide range of marks for their answers.

This question was also derived from a real 'Graphic Product'. A cut-out and make activity using this question would benefit many candidates in the future.

- (a) A plan showing a regular hexagon with a  $\text{Ø}60$  hole scored 3 marks. A front elevation in projection to the plan to the correct height, showing the inset top and bottom in hidden detail scored a further 7 marks. Few candidates managed to indicate the hole in the top of the elevation. Many candidates failed to ignore the thickness of the card.
- (b) Many candidates managed to roll out six sides of the development. Most candidates managed to draw a hexagon top or bottom but not always both. The inclusion of two 20 mm spacers to get the bottom and top to 'inset' was only achieved by a few candidates. Most candidates included sufficient glue tabs for their development to be assembled.

A wide range of marks were scored on this part of the question from the 15 available.

# DESIGN AND TECHNOLOGY

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**Paper 0445/03**  
**Resistant Materials**

## General comments

**Section A** tests candidates' knowledge and understanding of the whole width of the syllabus, requiring them to give short written answers and/or clear sketches. Only a minority of candidates achieved high marks for this section.

**Section B** gives candidates the opportunity to answer questions of a more specialised nature: i.e. a working knowledge of wood, metal and/or plastics. Candidates generally performed better in this section. The best answers provided concise, accurate technical information with clear, well communicated sketches.

In questions with large mark allocations it is essential that candidates give detailed answers with clear sketches. Bullet points in the question are used to help candidates to focus on the most important issues to address.

## Comments on specific questions

### **Section A**

#### **Question 1**

- (a) The most common correct answer was rivet.
- (b) Many answers involved the use of screws, nuts and bolts.

Many candidates did not understand the difference between permanent and temporary and did use heat or an adhesive, contrary to what was asked for in the question.

#### **Question 2**

The most accurate property of copper when used for water pipes is that it does not corrode.

The most accurate property of blockboard when used for a table top is its stability or that it is available as a wide board.

The most suitable material for saucepan handles needs to be one that is non-conductive of heat: phenol formaldehyde or a specific hardwood.

Stainless steel is the best choice of material for a kitchen sink.

Very few candidates achieved maximum marks for this question. Stainless steel was the most common correct answer followed by the correct property for copper.

#### **Question 3**

- (a) The vast majority of candidates described a sensible situation for using a face mask; the most common being sanding disc or drilling machine.
- (b) There were many correct answers for the use of ear defenders but some candidates simply stated that they would be used when using noisy machinery without actually specifying the precise situation.

#### Question 4

There were many correct K-D fittings drawn; the most common being the two-piece modesty block. Some candidates drew a non-standard fitting that would work, some credit was given.

#### Question 5

The best answers for the purpose of the chamfer on the end of the dowel was to allow it to fit into the hole more easily. Many candidates recognised this. The purpose of the saw-cuts proved to be more difficult. Only a minority understood that it could allow glue/air to escape making entry easier. Increasing the gluing area was also a correct answer.

#### Question 6

Some candidates confused the butt hinge with a piano hinge. There were many answers given that were not recognised hinges.

#### Question 7

Many candidates named a countersink drill or bit correctly for part (a) while fewer candidates named a tap in part (b).

#### Question 8

Only a minority of candidates drew an accurate sketch of dovetail nailing. Some candidates drew nails entering the wood but without the required angle, while others incorrectly produced sketches of a dovetail joint.

#### Question 9

The most appropriate finish for copper was a clear lacquer such as 'Ercolene' that would prevent tarnishing, [not corrosion] or that would allow the natural colour of the copper to be visible. Enamelling the copper was also an acceptable finish.

Many candidates recognised that a finish would be applied to the electrician's pliers to provide electrical insulation. The answer 'insulation' was not rewarded without the additional word 'electrical'. A plastic coated finish was the most appropriate. Candidates were able to achieve a mark for the reason even if their chosen finish was incorrect.

#### Question 10

In part (a) the majority of candidates knew that the acrylic would be heated by means of an oven or strip heater/line bender. However, for maximum marks some information about a bending jig was required.

In part (b) there were fewer correct answers. Steel 1 mm thick does not need to be heated. The best answers gave details about holding the steel in a vice, use of folding bars or a wooden block and the application of force by means of a hammer. Those candidates who described the use of a sheet metal bending machine were rewarded.

### Section B

#### Question 11

- (a)(i) The majority of correct answers involved the use of plywood and MDF.
- (ii) Many candidates knew that manufactured boards are generally cheaper than solid wood but the second reason proved more difficult. The best reasons included its availability as wide boards and its stability.
- (iii) The most appropriate thickness was between 15 – 21 mm.

- (b)(i) There were 3 parts to a successful answer: some form of pin, bolt or dowel; some form of retention and some form of 'spacer' or washer for free rotation. Only a minority of candidates achieved maximum marks.
- (ii) Many candidates gave details about marking out and cutting while finishing to an accurate round shape was less common. Many candidates did not achieve maximum marks because their answers lacked technical accuracy; for example, when 'cutting' wood it is essential to add that it would be done using a jig saw or a band saw.
- (c) Many candidates drew an acceptable shaped handlebar with some form of grip. Often the method by which it would be fixed to the steering column was inappropriate. The best answers usually involved the use of a glued dowel joint.
- (d)(i) Many candidates gave good reasons for a gloss paint finish: durability, protection and appearance being the most popular.
- (ii) Many candidates understood that it would be better to paint before assembly because it would be easier to do, a better finish could be applied and that paint could make moving parts stick together.
- (iii) Stages in preparing the wooden parts for the gloss paint were very poorly answered.

Basic stages involve the use of finer grades of glasspaper, wiping the dust off, applying primer then undercoat. Only a minority of candidates were familiar with these operations.

Some candidates did provide an excellent stage where areas not to be painted were masked off.

#### Question 12

- (a) The most common correct answers referred to acrylic being 'easy' to bend or shape and its colour.
- (b)(i) The vast majority of candidates named two correct marking out tools; the most common being a scribe, wax pencil, felt marker, rule or try square.
- (ii) The majority of candidates gained marks for this part and gave details about sawing off the waste, cleaning it up and making it smooth. However, for maximum marks, candidates needed to give details about how the acrylic would be secured while sawing, recognise that only outside edges could be finished on a disc sander and that a file would be used to finish sawn edges on the inside. Many candidates incorrectly named sandpaper to finish the edges when silicon carbide or wet and dry paper was the correct term.
- (c) There were many excellent answers to this part. Many candidates addressed the bullet points by providing details about heating the plastic using a strip heater or oven, the use of some type of former or jig and often showed a method whereby the plastic could be held in position while it cooled.
- (d)(i) The most appropriate solvent was Tensol.
- (ii) Many candidates recognised the need to protect eyes and skin as well as to provide good ventilation.
- (e) Most candidates recognised the need to make the desk lid from a single piece of acrylic and include some form of hinge or pivot mechanism. The latter proved difficult for many candidates who simply used a traditional hinge suitable only with thicker material such as wood. A minority of candidates produced excellent designs showing sides to the desk lid, bent over, allowing for some form of pin to be inserted.



**Question 13**

- (a)** The best answers for the property of mild steel are its durability and toughness.
- (b)(i)** Most candidates named two correct marking out tools; the most popular being scribe, try square and centre punch.

**(ii)** Only a minority of candidates named dividers. There were many 'metal compasses' incorrectly named.
- (c)(i)** Most candidates named a hacksaw to saw the mild steel.

**(ii)** Most candidates named a file to square the end of the mild steel.
- (d)(i)** This part gave candidates the opportunity to demonstrate their knowledge and understanding of the brazing process. It was disappointing that the majority of answers lacked accurate detail. There were numerous stages that could have been provided including: wire the joint together, apply the flux, position on the hearth/bricks, apply heat to bright red, apply brazing rod/spelter.

**(ii)** Safety precautions were provided by the vast majority of candidates with most recognising the inherent dangers involved with this type of heat process.
- (e)(i)** For maximum marks candidates needed to provide details of two processes involved in cleaning the mild steel before painting. Most candidates named one process; filing and emery cloth being the most popular.

**(ii)** Many candidates incorrectly stated that spraying would be quicker than brush finishing. Spray painting requires preparation and provides a potentially better finish while brushing is faster.
- (f)** For maximum marks to this part candidates needed to address the bullet points carefully and provide details of materials, constructions, fittings and fixings used in their design solutions. The vast majority of candidates locked the adjustable arm by means of a pin through a hole. This method would only allow for a limited number of positions while the question stated '...locked in any position.' The second part, requiring candidates to show how the speaker could be secured to the arm, was very poorly answered with sketches generally not clear enough to show the essential details. There were some excellent designs involving the use of a plate brazed onto the arm and the use of threaded bolts to tighten and lock the arm in any position.

# DESIGN AND TECHNOLOGY

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**Paper 0445/04**  
**Systems and Control**

## General comments

Good responses were characterised by the use of appropriate technological terminology and were supported by examples drawn from candidates' hands on experience of processes, components and project work. The use of annotated sketches was indicative of good responses. There was evidence too of good preparation of candidates for this paper in the way in which questions were selected and approached. One area of very good practice was in 'Mechanisms' where there was clear evidence of good teaching, preparation and practical application of knowledge. Though only a small number of candidates attempted the Electronics question many responses were characterised by good levels of knowledge and understanding. Candidates' knowledge and understanding of structures was less satisfactory.

## Comments on specific questions

### Section A

#### **Question 1**

Many candidates correctly completed the statement by adding the word "distance".

#### **Question 2**

Most candidates were able to identify the energy conversions as "electricity" and "heat".

#### **Question 3**

- (a) Most candidates were able to give examples of man-made shell structures.
- (b) Most candidates were able to give examples of natural frame structures, the most common being animal skeletons.

#### **Question 4**

Most candidates were able to give an example of a third order lever such as a shovel or a fishing rod.

#### **Question 5**

- (a) Most candidates were able to give the motion types as "Rotary" and "Linear", though some candidates specified "Reciprocating" for the second motion type, which was incorrect.
- (b) Most candidates were able to give an example of the application of rack and pinion gearing.

#### **Question 6**

- (a) Most candidates were able to give the colour bands as: orange, orange, brown.
- (b) Fewer candidates were able to fully explain the purpose of the tolerance band in terms of the accuracy of the resistor and the limits +/- of the resistor values as a consequence of the tolerance band colour code.

**Question 7**

Few candidates were able to show a full understanding of the polarity of an electrolytic capacitor. There were few candidates who could correctly draw the circuit symbol for this component.

**Question 8**

Most candidates were able to give a good definition of a strut as a member experiencing compressive loading.

**Question 9**

- (a) Most candidates were able to sketch and label a toothed belt. A significant number of candidates confused a toothed belt with a chain and sprocket.
- (b) Most candidates were able to give an example of a toothed belt – a timing belt was a common example.
- (c) Most candidates were able to identify the reduction in slip and therefore increased efficiency for the toothed belt.

**Question 10**

Most candidates were able to identify the “Thermistor”.

**Section B****Question 11**

- (a) Most candidates were able to complete the circuit diagram.
- (b) Few candidates were able to fully explain the interfacing function of the relay but most were able to show some understanding of the relay and gained marks accordingly.
- (c) A significant number of candidates were able to draw a solenoid and label at least two parts correctly. A smaller number gained full marks by showing a full knowledge and understanding of the device.
- (d) Most candidates were able to sketch an appropriate arrangement of sensors to detect the water level in the pet feeder.
- (e) (i) Most candidates were able to identify the use of the variable resistor as a way of adjusting the sensitivity of the circuit.  
(ii) Most candidates were able to explain the use of a clamping diode to protect the Transistor from back e.m.f. generated by the relay coil.
- (f) Few candidates demonstrated significant knowledge and understanding of the logic gate arrangement to achieve the desired control system for the pet feeding trainer.

**Question 12**

- (a) Few candidates were able to explain how the ‘L’ section beam is more rigid and at the same time being cost effective in terms of materials usage.
- (b) Few candidates were able to name the types of structure (frame construction and shell construction), nor were they able to give an appropriate example of each type for the given product shown in Fig.4.
- (c) Most candidates were able to identify the lack of cross bracing in the frame structure and were able to offer appropriate solutions to this design fault.

- (d) There were some excellent diagrams showing the shearing effect on a member. Some candidates confused torsion with shear.
- (e) (i) Few candidates identified the need to have a 'lip' to improve the rigidity of the cover.  
(ii) Few candidates identified the need to curve the cover to aid in stress distribution and reduce the chances of fracture either during manufacture or in use.  
(iii) Surprisingly, very few candidates identified the use of a Dial Test Indicator to measure expansion.
- (f) (i) Most candidates were able to give draw an appropriate graph and to annotate the key features specified in the question.  
(ii) Though most candidates were able to perform the calculation, many wrongly identified the change in length. The change in length was specified in the question as 0.01 mm. Most candidates subtracted this from the original length, thus their arithmetical answer was incorrect.

**Question 13**

- (a) Most candidates were able to give examples of levers used in Fig.6.
- (b) (i) The wheelbarrow was identified as a second order lever by most candidates.  
(ii) Most candidates were able identify the 'Load'.  
(iii) Most candidates were able identify the fulcrum.
- (c) (i) Most candidates were able to determine the value of the effort for the conditions specified.  
(ii) Many candidates were able to identify the motion conversions as rotary and linear, but there was a significant number of responses where candidates gave energy conversions.
- (d) (i) Few candidates were able to identify that the system has a M.A. of four.  
(ii) Though many candidates were able to show the method for determining the load by transposing the formula for M.A. few were able to perform the calculation successfully due to incorrect specification of the M.A. Marks were awarded accordingly.  
(iii) Few candidates were able to identify that for a pulley system it takes a long time to move the load through a small distance for a long distance travelled by the rope / chain being pulled through the system.
- (e) (i) Most candidates were able to correctly annotate the gear motion direction.  
(ii) Most candidates were able to correctly identify 'X' as the driver and 'Y' as the driven gears.  
(iii) Most candidates were able to correctly calculate the Velocity Ratio for the system.
- (f) Most candidates were able to explain how the cranked handle made turning the shaft easier due to the increased turning moment produced by the crank.

# DESIGN AND TECHNOLOGY

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**Paper 0445/05**  
**School Based Assessment**

## General comments

The Moderator would like to thank the majority of Centres who submitted their coursework sample on time and in line with CIE's requirements. The work was well presented and appropriately labelled for identification purposes. A very small minority of Centres are reminded of the need to include the Coursework Assessment Summary Form 0445/05/CW/S/07 and the Moderator copy of MS1 with the sample of work.

The Moderator is also pleased to report that only two Centres failed to use the new assessment criteria and, in these cases, marks were adjusted to make allowance for the revised mark scheme and total marks awarded.

Most candidates had obviously chosen to solve design tasks linked to their own areas of interest or local needs. There was a wide range of outcomes and some of the more unusual included: activity packs for children; air freshener; mechanical pencil; cooler box; golf ball cleaner; boat jetty; space saving furniture; smart card lock; car park barrier; drawing aid and a range of teaching aids.

## Comments on specific assessment headings

### **Identification of a need or opportunity with a brief analysis leading to a Design Brief**

The vast majority of candidates were able to describe clearly the context of the design problem and how this affected the user. This was followed by a Design Brief stating in simple terms what the candidate was going to do. After reading this section of the folder there should be no doubt as to what will follow in terms of the context for the design process.

### **Research into the Design Brief resulting in a Specification**

Candidates used this section to consider the requirements of the design brief and to collect relevant information and other data. The majority also considered existing products and solutions to help inform them of the issues to be considered. Where candidates use the 'paste up' method to exemplify existing solutions it is important to annotate these and make qualified comment.

Unfortunately some Centres are still allowing their candidates to reproduce pages of information, often taken directly from textbooks, on materials, constructions, fittings, etc. at a stage when they have not even started to develop design ideas. The Moderator has brought this to the attention of Centres in the past and reminds them that content of this type cannot be marked positively at this stage of a design process.

Candidates are generally being quite specific in listing specification points and this is reassuring. However, it is important that they do not start to solve the design problem. For example, a candidate might identify the need for a product to be weatherproof as it will be outside but they should not state that: 'it will be varnished'. This would follow later in the Development when alternative finishes are considered.

### **Generation and Exploration of Design Ideas**

The Moderator never fails to be impressed by the range of design ideas presented by some candidates who allow their minds to flow freely and record their thoughts through clear drawings and relevant annotation linking back to the Specification points. There are no 'good' or 'bad' designs at this stage and everything should be recorded, however practical it appears at the time.

Candidates are free to use a range of drawing techniques in this section, although successful candidates sensibly make use of pictorial sketches enhanced with colour and/or shading.

Unfortunately some candidates already have an idea of what they are going to produce and focus on one or two ideas rather than thinking in an imaginative way. This approach cannot be awarded marks in the lowest mark range.

### **Development of Proposed Solution**

Candidates' developments tended to be based on one complete design idea identified from the previous section although there is no reason why this should not be an amalgam of different aspects from a range of ideas.

The purpose of this section is for candidates to consider alternatives and make decisions about form, materials, construction, finishes and all other detail relating to the design. It is important that they give reasons for all decisions made.

It was pleasing to see that many candidates had carried out some form of testing or trialling, a requirement of the new assessment scheme. This often took the form of modelling so that the candidate could get some idea of form or proportion. Where modelling has taken place it is important that design folders include photographic evidence of the outcomes.

### **Planning for Production**

It is always obvious to the reader if this section is evidence of genuine planning and forethought or a record of what has already taken place. It is the former that is obviously required and the latter can only be awarded marks if there is evidence of some form of construction/working drawings. Centres are advised not to waste resources showing pages of photographic evidence of the candidate making the product.

Successful candidates had given an effective order for the stages in making the product together with detailed drawings giving all dimensions and information on layout, form and construction.

### **Product Realisation**

Many candidates had clearly taken a great amount of care in the production of their final solution to the design problem and outcomes were such that they should be proud of their efforts. It is important that candidates are given some guidance so that they do not attempt artefacts that are too large or complex and cannot be finished in the time available.

The majority of design folders included clear photographic evidence of made products and the Moderator would like to thank Centres for taking the time to give overall views together with close up detail of different aspects of the artefacts.

### **Testing and Evaluating**

Testing has been given more emphasis in this section of the new assessment scheme and the Moderator is pleased to report that many folders included clear evidence that this had taken place. Meaningful evaluation can really only take place when a product is tested against the original specification and the outcome recorded in an objective way. In most cases there will be one or two areas where it will be possible to make recommendations for improvement or modification.

Many candidates used a questionnaire to seek the views of others, but unfortunately the outcomes were often wasted by simply recording the results in a tabular form with ticks and crosses. This was often as a result of inappropriate questions which should have focused in a more objective way on particular points of the Specification.