DESIGN AND TECHNOLOGY

Paper 0445/01

Common Core

General comments

Candidates responded quite well to the question paper and Part **A**, in particular, proved to be a good test of candidates' overall knowledge of Design and Technology at this level. It was reassuring to see that many candidates had studied the Core content thoroughly and had a good understanding of some of the more technological aspects of the subject.

As has been the case over recent examinations, candidates' responses to the Part **B** design questions were well structured and many candidates were able to provide a considerable amount of both graphic and written information about the design solution to their chosen problem.

Centres are reminded that this will be the last examination in its current format. The syllabus has been revised for first examination in June 2007 and, in Paper 1, candidates will be required to respond to a design question only, on the A3 pre-printed design sheets provided with the question paper.

Comments on specific questions

Part A

Question 1

This proved to be a good introduction to the question paper and most candidates were able to add bristles to the toothbrush outline and render the handle to give the impression of shiny plastic. Many candidates used colour in their response but those who used pencil shading only were still able to achieve full marks.

Question 2

The majority of candidates were able to list four specification points for a two to four year old child's toy and those such as: no small parts; rounded shape; not too heavy; educational; colourful etc. were very popular.

Question 3

Candidates are clearly well versed in safety aspects of workshop practice and very few indeed were unable to identify hazards associated with liquids and adhesives and to suggest the associated precaution that need to be taken.

Question 4

Again, candidates seemed fairly familiar with alternative energy sources, identifying benefits of solar energy such as: infinite supply; environmentally friendly; low running costs and drawbacks such as: not always sunny; cannot be controlled easily; expensive installation; large panels an eyesore etc.

Question 5

Candidates' knowledge of tools and their uses was reasonable although they needed to be specific in their answers to gain full marks. Common errors were: not referring the engineer's/try square to right angles/90°/perpendicular etc. and calling the spring dividers a compass.

Question 6

(a) There were two or three examples of members in tension and compression on the child and most candidates were able to identify at least one correctly.

(b) This question was not answered as well as some others. The Examiner was expecting candidates to add the words 'rigid' and 'flexible' in that order, to complete the sentence.

Question 7

The Examiner was looking for the addition of some form of cam or crank to the toy car's mechanism so that the driver would move up and down as the car moved along the floor. Candidates were awarded the full three marks only where it was absolutely clear how the addition to the existing mechanism would work. Candidates who drew the addition correctly but not on Fig. 4 were awarded two marks only.

Question 8

Very few candidates indeed were able to give two advantages of a sprocket and chain over a pulley and belt drive system. Correct answers included: no slipping; better power transfer; carry higher load etc.

Question 9

Candidates tended to gain the full four marks for this question or none at all. Common correct responses were often linked to heat sensing such as on a cooker or fridge. So answers along this concept would be a cooker where the temperature needs to be kept at a preset level using a thermistor as the sensor.

Question 10

Many candidates seemed to have some understanding of the significance of ergonomics in the design of an electric bench drill but they did not always draw a direct link between an aspect of the drill and a part of the human body or the working environment.

Part B

Question 11

This was, by far, the most popular question with more candidates choosing this than all the others combined. It was obviously directed at those candidates following the Realisation option and was set in scenario familiar to most. Candidates realised the necessity to store the tools and equipment in an organised way and to make sure that those such as the brushes were not damaged in any way.

(a) This part of all the design question is intended to get candidates into the problem and start thinking about possible ideas as soon as possible and the Examiner is prepared to accept a very wide range of specification points so long as they do not repeat or are so generic that they could apply to absolutely any design situation. Points such as: stable in use; keeps brushes clean; keeps bottles upright; easily portable; accessible handle etc. were accepted.

(b) Candidates were able to identify and draw two ways of locating and holding items in a storage situation with appropriate responses including: shelves; drawers; slots; tubes; pockets; clips; straps etc.

(c) Most candidates were able to draw at least three different design ideas and these were often supported by meaningful notes and annotations giving more information on the application of the idea to the design problem. Most drawings were of an appropriate size so that the Examiner could see the detail of the ideas being suggested. Centres are reminded that marks are awarded for the quality of communication skills and the suitability of the ideas being offered. There are obviously no right or wrong answers to design ideas but candidates should be encouraged to look as widely as possible in this section of the question.

(d) Many candidates carry out an ongoing evaluation as they develop their ideas a[illegible] acceptable approach. However, the Examiner is always looking for different points fr[illegible] the ideas so candidates should not fall into the trap of simply commenting on two or three aspects of their design ideas. Some candidates are now evaluating ideas in a tabular form[illegible] Centres are reminded that this approach cannot be awarded high marks when judgements based simply on ticks, crosses or the award of marks.

(e) As has been reported before, this is still the weakest part of many responses with candidates simply redrawing ideas from the previous section. Marks are awarded for the quality of drawings, which should be in good proportion and use appropriate graphic techniques, details on the construction of the final idea and the addition of dimensions. The Examiner is amazed at how many candidates ignore any reference to sizes and this simple omission loses them two marks.

(f) Most candidates are able to specify the materials from which they intend to make their product but there are still cases where generic term such as wood, metal and plastic are used. Candidates need to be specific about materials and give sound reasons for choice if they are to gain full marks in this part.

(g) It is reassuring to see that, in most cases, candidates are no longer attempting to describe the making of the whole product. Successful candidates tend to answer this final section of the question through a series of drawings showing the stages of manufacture from the raw material to the finished part.

Question 12

This question was intended for those candidates following the Graphics option and since the desk tidy was intended to fold flat and be given away free of charge, it was likely to be made from semi resistant materials. The Examiner was disappointed that many designs were not very imaginative and often tended to be based on the calendar shown on the desk at the start of the question. This did not necessarily affect the mark awarded but it did reduce the range of ideas suggested and the opportunity for sound evaluation of ideas.

(a) Specification points for the desk tidy included: pencils easily selected; matches most desks; name seen clearly; calendar visible; pencils upright etc.

(b) Any sensible materials were accepted but these tended to be card, paper and sheet plastics with adhesive patches, tabs, flaps, staples and fixing rings as the joining methods.

(c))

(d)) See **Question 11 (c)** – **(e)**

(e))

(f) Most candidates were able to describe two benefits of using CAD in the design of the desk tidy with correct responses including: changes easy to make; easy application of colour; designs straight to machines (CAM); view from several directions etc.

(g) Practical gifts that the company might give away included pens, note pads, key rings, rules and these items were described through the use of simple sketches and annotations as required.

Question 13

This was by far the least popular question in Part **B** and intended for those candidates following the Technology option. However, most candidates tackling the question did so quite successfully and produced good ideas for the secure storage of bicycles. Most picked up on the fact that this was for use at a school so any form of security device would need to be for a large number of bicycles.

(a) Appropriate specification points suggested by candidates included: must not damage bicycles; easy to operate; take up minimal space, be fixed to the ground; take several bicycles etc.

(b) This part was intended to help candidates start thinking about locking devices and most drew standard keyed locks, that would be used with a staple or chain, and combination locks although any locking device was accepted.

(c))

(d))

(e)) See **Question 11 (c)** – **(g)**

(f))

(g))

Question 14

This question was just slightly more popular than **Question 12** and was answered by some candidates who clearly had good knowledge of the use of textile materials. Although these and many other materials are not specified in the syllabus document, candidates are free to suggest any appropriate construction materials in response to these design based questions. The question obviously appealed to a certain group of candidates but they often found it difficult to suggest a wide range of different design ideas.

(a) Suggested points about the function of the headrest included: simple to fold/erect; easy to store; comfortable; portable; lightweight materials etc.

(b) Few candidates had any difficulty listing four items designed to be portable and these included: folding chairs/tables; laptop computer; briefcase; tent; umbrella; rucksack; cameras etc.

(c))

(d))

(e)) See **Question 11 (c)** – **(g)**

(f))

(g))

DESIGN AND TECHNOLOGY

Paper 0445/02
Communication

General comments

The standard of work was comparable to that of the previous November session. **Questions 1** and **4** were the two most popular questions for candidates.

There are areas of the syllabus however, in which further improvements are needed. These include in particular, the representation of data in a graphical form. Drawing views in orthographic projection and sectioning of views are also areas for improvement.

Comments on specific questions

Question 1

Promotional hat

This was the most popular question. Most candidates gained marks for their answers to all sections of this question.

(a) Up to two marks were given for the drawing of 40 × 60 sides. Most candidates scored the 2 marks for the R40 centres and arc. Some candidates failed to draw in the centre line at 80, which prevented them from drawing the 200 arc for 3 marks. A few candidates showed evidence of a circles touching construction for the R60 arc. Only a few correct semi-ellipses were evident. Some candidates had a curve with no construction evident. Please note where candidates have used a trammel to construct the semi-ellipse, this should be drawn or fixed to the examination paper to allow the marks for construction to be awarded.

(b) (i) The drawing of the company badge was not evident from very many candidates. Of those who drew a hexagonal shape, many solutions were not concentric or full size and failed to score the full 6 marks available.

(ii) A large number of candidates sketched the words TUBE and failed to draw guidelines or space out the letters to fill the available space.

(c) Marks were awarded for an effective method of joining the 40 wide strips at two different length settings. A simple cross halving set of slots that would work scored the full 3 marks. Candidates who drew Velcro or paper studs were awarded full marks.

Question 2

U-DRIVE advertising postcard

This was not a very popular question. Of the candidates who attempted it, many were attracted to the question by the drawing of the logo. Very few graphs representing the data supplied were seen.

(a) Most candidates divided the line by calculation. Very few used a constructional method.

(b) (i) All candidates attempted the drawing of the company logo. Many managed to g… rectangle, the head and the body correct for 5 marks. Some candidates found the dra… arm to the right size and at the correct angle difficult. Most candidates scored the full 4 m… the steering wheel and shaft.

(ii) A large number of candidates sketched the words U-DRIVE and failed to draw guidelines or space… out the letters to fill the available space.

(c) Many candidates failed to represent the data in a graphical format. The total vehicles for rent made a perfect pie chart and the rental periods gave data very suitable for a bar chart.

(d) Many candidates showed a method of slot and tab (or similar) for 2 marks.

Question 3

Computer disk storage rack

This was the least popular question on the paper. Of those who attempted it, many failed to gain high marks. Candidates had the choice of using 1st or 3rd angle projection. Many drew two or more unconnected views

(a) (i) When assembled the overall height should be 140 with a width viewed from 'S' of 80. In section the top and bottom will be 10 deep with the top 60 long and showing the full diameter gap of the Ø30 hole. Two rods will be shown as Ø8 circles. The two rods, top and bottom will have section lines. All this needs to be evident to score 12 marks.

(ii) The end view will be in projection from the above and be 60 wide. Two rebates in both the top and the bottom should be evident. The side panels should be 5 thick. One rod should be shown with a 1 mm gap above the base. Hidden detail should show the rod inside both the side panels. All this needs to be evident for 8 marks.

(iii) In the plan, the top must be 60SQ with a Ø30 hole centrally placed. One rod should be visible inside the hole and one outside the top. Hidden detail of both rods should be evident. All this needs to be evident for 8 marks.

(b) An orthographic symbol matching the projection used scored the full 2 marks.

Question 4

Children's party sweet box

This question was the second most popular. For those candidates who attempted this question, a wide range of marks was gained by their answers.

(a) Many candidates scored marks for two idea sketches.

(b) Most candidates managed to draw two sides and two ends to the correct size. Only a few candidates managed to take the true length from the ends to give the length of the sloping lid pieces. All sides drawn to the correct size scored 8 marks. Most candidates drew sufficient glue and fold flaps of a sufficient size to gain full marks.

(c) The position for the logo and the correct orientation proved quite difficult for some candidates.

(d) Many candidates drew only one handle. Only a few candidates managed to draw a two-part handle that would keep the box closed when carried.

(e) A range of colouring styles and rendering was evident in candidate answers.

DESIGN AND TECHNOLOGY

Paper 0445/03
Realisation

General comments

Many candidates failed to achieve maximum marks for questions because their answers lacked detail, clarity or accuracy. Sometimes candidates provided information that was irrelevant to the question being asked.

Many questions have large mark allocations where candidates are required to use notes and sketches to show how a variety of processes or constructions may be carried out. It is essential that candidates understand that to gain maximum marks for these types of questions they must provide good quality, clear sketches supported by notes that are both detailed and technically accurate. There is a direct relationship between the number of marks available and the depth and detail of answer required.

Comments on specific questions

Question 1

(a) Only a minority of candidates showed the base and uprights marked out within the length of hardwood shown. For maximum marks candidates needed to show waste wood between the parts to be cut.

(b) (i) Many candidates gave answers that were advantages of man made boards over solid wood but few referred to its stability and that it was less likely to warp.

(ii) Many answers referred incorrectly to PVA. The best answers were “Araldite” or generically, epoxy resin.

(c) (i) Many candidates named one correct method of joining but not two. The most suitable joints were dowel, housings and mortise and tenon.

(ii) If the joints named in **(i)** were incorrect then candidates could not achieve the 4 marks available for this part.

(iii) Candidates, however, were able to access the 8 marks for this question even if the initial joint was incorrect. Candidates who included details of marking out received no marks as the question specifically asked for details when **making**. There were many good answers showing a good understanding of the techniques involved in making dowelled joints, housings and mortise and tenon joints.

(d) This question was very poorly answered by the majority of candidates. In most good answers, candidates showed a dowel or metal pin to allow the mirror to pivot and the use of nuts and bolts or screws to lock it in position.

Question 2

(a) The best answers referred to properties such as attractive colours available, easy to work, easy to bend and self-coloured.

(b) Many excellent answers for making a model of the clock included: to check the design, to check if the number of bends could be achieved, to check the appearance and to avoid wasting acrylic later.

(c) Many candidates achieved good marks for showing clearly a net with the bend lines and sides drawn in proportion.

(d) While some answers referred to rule and try square the best answers were chinagraph pencil, marker pen and scriber to actually mark the surface of the acrylic.

(e) (i) The majority of candidates gave details about a strip heater, line bender or oven. The use of oxy-acetylene welding equipment is not appropriate to bend acrylic.

(ii) Many candidates demonstrated a good understanding of the need for a former over which the acrylic could be shaped and the need for some form of clamping to retain the shape while it was cooling.

(f) Only a minority of candidates were able to describe 3 main finishing stages with many simply giving filing. The best answers referred to draw filing, scraping, the use of wet and dry paper [not glasspaper] and a polishing mop/buffing wheel/acrylic polish.

(g) The best answers referred to the need for the acrylic to be clamped down securely onto scrap wood to minimise the risk of it cracking.

(h) (i) Only a minority of candidates named Tensol Cement or the equivalent. There were many incorrectly named adhesives suitable for wood or metal.

(ii) There were many sensible safety precautions given; the best included use of gloves and use of a well-ventilated area in which to use the solvent.

Question 3

(a) The vast majority of candidates named MDF, plywood or blockboard correctly as a suitable board for the table top.

(b) (i) There were many correct answers stating an appropriate finish for the table top and sensible reasons. The most common answers were varnish and the need to preserve/protect.

(ii) There were many good answers showing how the table top would be glasspapered, wiped down, glasspapered again with a finer grade, then a varnish or paint hand painted or sprayed on.

(c) The majority of candidates showed how the table top could be fixed to the frame of the table by means of screws or nuts and bolts. However, the best answers fixed the top in position from underneath rather than have screw or bolt heads showing on the top surface.

(d) There were many excellent answers showing how the frame could be adjusted to 3 different heights. The best answers showed a metal pin, attached to the frame that locked the frame in position.

(e) The most popular improvements to the table top included an additional lipping to prevent items from being knocked off and the rounding of corners for appearance and safety.

(f) The most common correct methods of joining the steel tube were welding, brazing and soldering.

(g) All 3 parts of this question were generally answered very well. Candidates showed a sound understanding of how steel tube would be marked out, cut to length and filed square.

Question 4

(a) The best answers related to the colour of hardwoods and their figure or prominent grain.

(b) Many candidates supplied sensible specification points for the storage unit. The best answers related to ease of access, attractive appearance, easily identifiable DVDs and the stability of the whole unit.

(c) Many candidates were able to name one tool used to prepare the wood to the requ[illegible]t only a few demonstrated any understanding of this process using a rule to test for flat, a[illegible] to test for squareness, a Jack plane to remove waste and use of a marking gauge to [illegible] wood to width.

(d) (i) Many candidates correctly showed strips of wood or blocks of wood to separate the DVDs. The best answers supplied details of attachment and sizes of materials used.

(ii) Many candidates added strips, rods or a complete back to prevent the DVDs from falling through. As in part **(i)** those candidates who supplied details of attachment and sizes of materials used were rewarded with maximum marks.

(e) (i) Many candidates named a protractor as the tool to mark out the 45° mitre joint. The correct answer was a mitre square or sliding bevel.

(ii) While many candidates named an appropriate tenon saw to cut the mitre, very few showed a mitre box that would enable the mitres to be cut accurately.

(iii) The vast majority of candidates used G or sash cramps to clamp the sides together. This would not work and only mitre cramps or string cramps were a practical solution.

(iv) Many candidates chose a try square to check the squareness of the plinth but the majority failed to achieve the maximum 3 marks because the try square was shown on the outside of the plinth rather than the inside.

DESIGN AND TECHNOLOGY

Paper 0445/04

Technology

General comments

Good responses were characterised by the use of correct and 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 a crucial aspect 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. Areas of very good practice were in electronics and mechanisms and control where there was clear evidence of good teaching, preparation and practical application of knowledge.

Comments on specific questions

Section A

Question 1

This was the third most popular choice by candidates and a wide range of responses were seen across the full range of ability levels.

(a) (i) The majority of candidates were able to successfully identify the fixed resistor and the LED.

(ii) Most candidates were able to explain the need for a current limiting resistor to protect the LED from current overload and subsequent failure.

(iii) Fewer candidates were able to explain that this circuit could be permanently 'on'.

(iv) Few candidates identified that the addition of an on/off switch would overcome the fault stated in **(a). (iii)**.

(b) (i) Some candidates were able to explain that the addition of the TR would afford a greater degree of sensitivity to the moisture alarm.

(ii) The majority of candidates were able to accurately draw a diagram of the TR connections.

(iii) Fewer candidates were able to identify the resistor as a biasing resistor.

(c)(i) Though many candidates could identify the relay, fewer were able to explain how the relay acted as an interface between a low current circuit (sensor) and the higher current circuit (pump).

(ii) Again many candidates identified the diode but fewer explained how it protected the TR from back EMF.

(d) (i) Many candidates could sketch and label the toggle switch and there was evidence of good graphical skills in many responses here.

(ii) Very few candidates were able to sketch the toggle switch symbol correctly with the majority omitting the second output connection which shows how the switch toggles from one connection to another affording it the ability to switch from one function to another.

(iii) Many candidates were able to sketch accurately and clearly a slider switch. Most candidates identified the push to make/break switch but fewer were able to accurately describe how its action is momentary (i.e. no latching capability).

Question 2.

This was the second most popular selection and showed a good range of scores across the full spe ability range.

(a) (i) Many candidates correctly identified “Shear” as the force acting on the pins.

(ii) Very few candidates were able to explain that by increasing the c/s area of the pins that the shear force would be reduced.

(iii) There were many excellent responses describing the effects of torsion on a member. Here good graphical skills were in evidence.

(b) (i) Some candidates were able to sketch the beam under load to show the hogging effect. Few candidates showed the loads on the beam and lost marks accordingly.

(ii) Very few candidates were able to show the use of strain gauges and there was a considerable amount of confusion over the application of strain gauges. There were several excellent sketches that clearly showed the extent of the knowledge of some candidates and the power of the use of graphical communication in this sort of question part.

(iii) Many candidates were able to calculate the strain on the tube. There was some confusion over the decimal placement but understanding of the principles underpinning this area was clearly evident in the majority of responses.

(c) There were many very good annotated sketches that showed a good understanding of the use of reinforced concrete beams. Again, evidence of very good graphical skills was paramount.

(d) Fewer candidates were able to explain how when folded sheet material becomes much more rigid and thus able to withstand bending forces more effectively. Some candidates were sidetracked into practical concerns over the way in which the shelf would be fitted to brackets.

(e) (i) Few candidates were able to calculate the values of the reactions at the end supports of the shelf arrangement shown in this question element. There was, in some cases, little understanding of the principle of equilibrium, nor in the application of a recognised calculation method underpinned by this principle.

(ii) There was good general understanding of the shear force diagram system with many candidates able to show the outline shape of the shear force diagram for this shelf loading arrangement. Fewer candidates were able to accurately draw the diagram with corresponding values of force and a suitable scale applied.

Question 3.

This was the most popular choice of question and it yielded a wide range of responses from the whole ability range.

(a) Few candidates were able to identify the use of a rack and pinion gear system to effect accurate control of the height of the reflector head.

(b) (i) The majority of candidates were able to identify the screw mechanism.

(ii) Many candidates understood that the motion conversion was rotary to linear, but few were able describe the conversion well, either by the use of sketching or annotation.

(iii) Many candidates were able to give an appropriate example of use for this mechanism.

(c) There were some excellent diagrams of the ratchet and pawl mechanism that showed candidates knowledge and understanding of this mechanism to the full.

(d) (i) Many candidates were able to show their knowledge and understanding of fixed and moving pivots and of the lever arm in the pantograph mechanism.

(ii) Few candidates were able to fully explain the term linkage as a system of levers connected to perform a given task.

(iii) Few candidates were able to explain how the long arm magnifies the movements of the short arm and thus effects enlargement of the reproduced image.

(e) (i) Many candidates identified the lever as a first order/class 1 lever.

(ii) Most candidates were able to calculate the length of the lever for the conditions set in the question.

(iii) Most candidates were able to complete the statement by adding the word, “distance”.

(f) Most candidates were able to show the positions of the load, effort and fulcrum for the hole punch.

Question 4.

This was the least popular choice and elicited only a narrow range of responses across a small section of ability range. This question looked to explore candidates’ knowledge and understanding of a systems approach to technological products and problem solving. Candidates could gain much from analytical exploration of existing technological products by way of preparation for this type of question. Similarly practical modelling of mechanisms and testing of forces applied to, and resultant from, mechanisms would also be beneficial to developing candidates’ technological understanding.

(a) (i) Few candidates were able to demonstrate a good grasp of the energy conversions of chemical to electrical to mechanical and sound energy forms in the operation of the stapler.

(ii) Most candidates could describe the use of a battery as a storage device for electrical energy.

(iii) Few candidates grasped the importance of safety and portability for such an electrically powered device.

(b) Few candidates were able to answer the elements of this question part concerning the crank and slider and the cam and follower mechanisms. More were able to show knowledge and understanding of the spur gear mechanism.

(c) (i) Few candidates were able to recognise the use of the spring as a store of mechanical energy.

(ii) Most candidates were able to show the positions of effort, load and fulcrum for the stapler.

(iii) Very few candidates showed any knowledge or understanding of the use of construction kits, card mock-ups or CAD systems for modelling of mechanical systems prior to manufacture from resistant materials.

(d) There were no correct responses to this question element where a testing rig to determine applied force for various paper thicknesses was required. There was no evidence of knowledge of force meters nor of test bench set ups.

DESIGN AND TECHNOLOGY

Paper 0445/05

Coursework

General comments

The coursework samples were generally presented well for moderation, and the Moderator was able to follow the order of design folders in considering the marks awarded by centres. Centres are reminded of the need to include both the Coursework Assessment Summary Form 0445/05/CW/06 and the Moderator copy of form MS1 with the sample of work sent to CIE. Without these two documents moderation cannot proceed. There were very few cases of arithmetical errors on coursework documents so centres are clearly taking the trouble to have this and the transcription of total marks checked by a second person.

In addition to expected items of furniture and household equipment some interesting projects were presented. These included: a dog kennel; camera carrying case; basketball net; adjustable chalk board; drawing board; meat cutter; chicken feeding system; aviary; musical instruments; rubbish compactor; toilet cleaner; clothes drier; automatic curtain opener; well water drawing system and a range of architectural models.

Comments on specific assessment headings

Analysis of Problem and Design Brief

Most candidates described their chosen problem clearly and presented a Design Brief that left the reader in no doubt as to what was to be made. Unfortunately many centres still allow their candidates to include much irrelevant material in this section at the expense of that required. As has been said many times before, this section should deal with an analysis of the design problem. It should not be an opportunity for candidates to write a history of the likely product outcome or to repeat information on materials, constructions and finishes that has simply been taken from textbooks. There is little point in doing any of this before design ideas have even been put forward and considered.

Preparation and precision of Specification

The majority of candidates were able to identify specification points pertinent to the likely product outcome. The Moderator is pleased to report that fewer generic points are given and, in most cases, candidates are able to qualify the specification point that are linked to general areas such as safety, appearance etc.

Exploration of Ideas

Many candidates should be congratulated on the range and quality of design ideas presented in this section of their design folders. The quality of graphic skills is often high and this helps the reader to understand ideas being considered. For the award of marks from the high band it is important that candidates examine the ideas presented and annotate clearly to show how aspects of the specification are being addressed. It is important that candidates show a wide range of different ideas and not allow themselves to focus on just one or two concepts.

When candidates design products that include electronics it is not sufficient for them to focus solely on the circuits at the expense of consideration of other aspects of the product. The circuit is just one part of the design and equal consideration should also be given to the product's housing and methods by which the components will be secured in place.

Development of Proposed Solution

It is obvious that most candidates have made some choices in the step from initial ideas to final pro unfortunately, these decisions are not always recorded and, if they are, reasons for decisions a included. Candidates are required to indicate alternative forms, materials, constructions, components finishes that have been considered and give reasons for decisions made. Again, for example, a table of a materials existing is of little point when they would not be appropriate for the design idea being developed. It is often this section, above all others, that gives an indication as to whether or not a candidate has really come to grips with the design process.

Planning for Production

Most candidates presented a clear sequence of the manufacturing process for their developed design. As has been mentioned in the past, candidates are not required to detail or describe basic preparation and making techniques but an overall plan is required together with more information on any complicated or unusual processes. This plan together with clear working drawings and a list on materials should provide enough information for the final design to be made by a skilled person.

Quality of Production

Photographic evidence indicated that many artefacts had been produced to a high standard and there were many cases where candidates had clearly put the products to good use. It was pleasing to see that candidates had gained much satisfaction from the production of the solution to their chosen design problem.

Unfortunately, a few centres still fail to meet CIE's requirements regarding photographs of made artefacts. The syllabus states that photographs should include an overall view of the finished article together with detailed views of evidence that supports the marks awarded.

Evaluation

This has, in the past, been a very weak area in many design folders but it is pleasing to see that there has been a continued improvement and many evaluations have more meaning to them. This can only be so where genuine testing of the product has taken place and the outcome of this has then been referenced to the original design specification.

Fitness for Purpose

It is difficult for the Moderator to make a judgement on this section of the marking as it is necessary to see products in actual use. However, it is important that teachers use the full mark range when carrying out this part of the assessment so that there is a meaningful level of discrimination between candidates.