CDT: DESIGN AND COMMUNICATION

Paper 7048/01
Structured

Key messages

Whilst many excellent answers were seen, the following were considered to be areas where improvement could be made:

the correct positioning of views in 1st angle orthographic projection;
the use of thick and thin lines to enhance a pictorial view;
the knowledge of using Styrofoam layers to make concept models;
the development of a standard packaging carton;
the method required to draw polygons of different size concentrically;
the method of drawing an ellipse given the major and minor axis;
the drawing of a regular polygon given the length of side;
the knowledge of making concept design models using foam board;
the ability to draw the section of foam board and corrugated plastic sheet;
the manufacture and application of self-adhesive vinyl letters;
the ability to draw in two point perspective given VP1 and VP2;
the ability to draw three dimensional charts from given data.

General comments

Candidates were required to complete **all** questions from Section **A** and any **two** questions from Section **B** (B2, B3 or B4). This rubric instruction was followed by the majority of candidates. A number of candidates answered only the first page of question **A1** omitting parts **(e)** and **(f)** on the reverse side of sheet 1. Some candidates answered all three questions from Section **B**. It would be beneficial to candidates if they were reminded to follow the rubric instructions on the cover sheet. Some Centres issued extra sheets of A3 paper. This was not in the instructions for the examination as the candidates were required to respond on the question paper.

Question **B2** was the most popular of the Section **B** questions.

The standard of work was comparable to that of the previous year. It was clear from the responses that there are many able students who were well prepared for the examination.

Centres are reminded **not** to secure the papers together with string, staple, paper clip or a treasury tag. Candidate's answer sheets should be returned to the cover and placed in the despatch envelope in the order listed on the attendance register. It is however, very important that the candidate completes his/her own details on **all** working sheets and the A3 cover.

Comments on specific questions

Question A1

This question had been formatted to give the candidate the position of the views so that the required information could be added to the view required.

(a) (i) Candidates were required to complete the letter P on the given side view.

(ii) Candidates were asked to add the handle to the side view. This involved projecting lines from the side view and using hidden detail to the correct convention.

(iii) The addition of the handle to the plan view also needed projection lines from the side and end view to show the width of the handle in outline and the depth of penetration of the handle in hidden detail.

(b) Two pieces of equipment used to accurately draw the letter P include: Try square, set square, Rule, stencil, template, marker pen, felt tip pen.

(c) Candidates were asked add to the sketch of the handle, thick and thin line technique. Thick lines are only used for edges where only one side producing the edge is visible. Other corner lines are left thin.

(d) This question required candidates to complete the drawing of the six 10mm thick pieces that would be required to make the mug. The mark scheme allowed for alternative methods of arranging the parts (with an external or internal base).

(e) This question asked for an isometric assembly view to be drawn from the given development (net). Marks were awarded for the correct size and orientation with holes **A** and **B** correctly positioned.

(f) (i) The purpose of hole **A** is for the handle to stick out and retain the mug in the packaging.

(ii) The purpose of hole **B** is to provide a hanging slot for the packaging to hang on a point of sale (P.O.S.) rack.

Question B2

A pictorial view of the design model of a coffee table was shown.

Candidates were asked to complete the table for three different designs for the top of the coffee table by drawing:

(a) (i) A 100 · 60 rectangle with an 80 · 40 rectangle placed in the middle;

This required the second rectangle to be drawn concentrically and to the correct size.

(ii) an ellipse with major axis 100 and minor axis 60;

This required the candidate to draw the major and minor axis and then draw the construction of the ellipse. Candidates who used a trammel were awarded full marks if the trammel was attached or drawn on the exam paper.

(iii) A hexagon with length of side 30.

The hexagon could be drawn from a circumscribing circle or from a carefully positioned length of one side. The tolerance for awarding marks for this construction was ±2 mm.

(b) The question required candidates to use sketches and notes to show how a strip of foam board could be folded to make the base. The technique of cutting 90° 'V' slots that do not penetrate the second surface with appropriate notes was required. Suitable tools included the use of a Stanley knife/scalpel/craft knife, steel rule and cutting mat.

(c) (i),(ii) The question required the candidates to give **two** justified specification points for the coffee table.

Specification points **(i)** and *justifications* **(ii)** included:

The model must stand on a flat surface *so that it does not wobble in use.*
The model must have a flat top *so cups and ornaments can sit on it.*
The top must be firmly joined to the base *so that they do not fall apart in use.*

Question B3

A small number of candidates attempted this optional question.

A sign with a wheel that revealed six drawings when rotated was shown.

(a) Candidates were asked to complete a sectional view of corrugated plastic sheet used for the backboard. The infill required was either square wave shape or sine wave shape.

(b) This part of the question required candidates to complete the backboard by:

(i) adding the missing letters N, T and H to the signboard;

(ii) adding five more equally spaced squares.

Many candidates completed the lettering to the same height and style as that given. The squares drawn by some candidates were not the correct size, or on the correct PCD. Many responses showed squares that were not in an hexagonal arrangement.

(c) This question required candidates to use sketches and notes to show a method of fastening the wheel to the backboard. Sectional drawings and pictorial drawings were both accepted as correct answers. The use of a fastener, rivet or lightweight nut and bolt were the most common fastening devices used.

(d) This question was not attempted by many candidates. A description was required of the method of making lettering from self-adhesive sheet and applying it to the backboard of the sign. The mark scheme looked for the following stages:

Letters drawn out on the self-adhesive vinyl or on a computer screen;
Letters cut out by hand or a cutter plotter;
Letters weeded (middle of letters removed);
Letters peeled off the sheet (either individually or on a transfer sheet);
Letters applied to the backboard of the sign by pressing in place.

(e) Sketches and notes were required to show how the sign could be supported in an upright position. Many workable answers from candidates were seen.

Question B4

An open card box for a trophy was shown in a pictorial image.

(a) Candidates were required to complete the two point perspective given the outline of the front of the box and one fold in flap.

The front right face of the box needed to be completed first with lines to VP2. By projecting lines to VP1, the front left could be firmed in. A line to VP2 would complete the top edge of the back and define the back vertical internal edge of the box. The top flaps could now be drawn in outline and then their respective shapes added in perspective to the two vanishing points.

(b) A three dimensional bar chart was required to be drawn for the cost of three different coloured boxes. The vertical scale normally has the cost in bar charts such as this and the three columns are drawn in isometric. For clarity, the columns are drawn from left to right in ascending value to prevent a smaller column hiding behind a column of larger value.

(c) (i) Two reasons why the cost of making the boxes is different was required. Suitable answers are:
More material used and materials are expensive
Different materials are used with varying costs
Different construction methods are used and this might involve expensive adhesives or jointing devices.

(c)(ii) The question asked the candidate to explain the importance of colour in packaging design. Suitable examples with explanations are:

Red – to signify a warning or Fragile/This way up
Green – for plants or fruit/vegetable content
Bright (day-glow) yellow or orange – to signify hazardous substances.

CDT: DESIGN AND COMMUNICATION

Paper 7048/02
Coursework

Key messages

Candidates should be encouraged to plan their time effectively to ensure that they fully complete all aspects of the assessment criteria in the time allowed.
Candidates should be encouraged to make full use of each page in their folder. The use of large font, over size headings and elaborate boarders should be avoided.
Candidates should be encouraged to produce a clear and concise design brief derived from the design situation they have chosen to explore. It is not sufficient to just present a copy of one of the design situations given in the question paper.
Candidates should be encouraged not to spend too much time collecting often irrelevant research. The research requirements outlined in the question paper need to be fully investigated.
Candidates should be encouraged to produce specification points which are specific to the product/s that they are designing.
Candidates should be encouraged to use a range of media to produce design proposals which consider all aspects of the product/s they are designing.
Candidates should be encouraged to give full details about the construction and joining methods, materials and dimensions required to make a model or prototype of the product/s they have designed.
Candidates should be encouraged to include high quality photographs of the product/s they have made in their folder.
Candidates should be encouraged to provide details of all of the stages involved in making the product/s that they have designed.
Candidates should be encouraged to consider the comments of potential users when evaluating the product/s that they have designed and made.

General comments

This year was the first time that the updated assessment scheme was used for this component.
The more successful candidates showed evidence of having used the assessment scheme headings to identify the different sections of their work and provided clearly presented folders. Some candidates had made use of ICT and in a number of cases good computer generated graphics work was seen. It is, however, important to maintain an appropriate balance between computer and hand generated work. Some candidates spent too much time on the Research and Analysis section, sometimes at the expense of other areas of their design project folders. The mark allocation given in the assessment scheme provides a good guide as to the amount of time that should be spent on each section of the design project.

Comments on specific tasks

Problem Identification

Candidates who accessed the higher marks showed a good understanding of the design need and user requirements. They produced a clear design brief which had been derived from the design situation and frequently used evidence in the form of photographs. Candidates who accessed the lower mark range produced only a simple design brief.

Many candidates scored high marks in this section. Candidates had obviously been able to select a design problem, from those given in the question paper, which was of interest to them. It was at this stage that the intention of the project needed to be identified and set out clearly. The majority of candidates had successfully done this by sensibly basing their work in a local context and on a situation that they were

familiar with. In the majority of cases a clear Design Brief had been written although in some cases design briefs were not specific enough.

Research and Analysis

Some candidates spent too much time on this section of their folder. Candidates need to plan their research if they are going to produce appropriate work. Candidates should include evidence of primary research as well as secondary research and would benefit from guidance as to whether work is relevant to this section or would be better suited to the Development and Planning section of their folder.

At the highest level, the research involved identifying the key areas of investigation that needed to be undertaken for the chosen task and then collecting and analysing data which would influence the design activity. At the lowest level, the research largely consisted of collecting irrelevant images or information.

This section provided candidates with the opportunity to consider all aspects of the design problem they had chosen to base their project on. Before collecting and analysing information, candidates should have been encouraged to ask themselves the following questions, ‘What do I need to know?’ ‘Why do I need to know this?’ ‘Where will I find the information I need?’ ‘How will I use what I have found out?’ Candidates needed to understand that the research they undertook needed to be focused on, and be relevant to their chosen design problem.

A fair number of candidates looked, in an appropriate way, at existing situations or solutions so that they could draw on this experience when producing their own solutions to the design problem. It is important that candidates should focus on how existing products meet the needs of the user. There was evidence of candidates labelling surface detail rather than investigating and analysing aspects such as size, materials, construction, production techniques, and target market for product, etc. Candidates should be encouraged to make more use of analytical and evaluative comments. Candidates should be guided towards evaluating two or three appropriate products in depth rather than identifying a large number of products and providing limited analysis. Many candidates gathered general information on materials, construction techniques and other aspects which had little or no relevance at this stage of the design process. This type of information was often taken directly from the internet or textbooks. Candidates needed to understand that this approach simply wasted time and would not be awarded marks.

The majority of the work undertaken in this section needed to be based around the research requirements outlined on the question paper. It was important that all research was analysed, it was not sufficient to just collect and describe a series of photographs.

Specification

Candidates are advised to make clear links between their research and their specification by analysing all of their findings as a result of the research they have undertaken and drawing conclusions that will subsequently form part of their specification.

At the highest level the specification points were specific, based upon the research undertaken and completely defined the proposed product/s. At the lowest level the specification points were general and could have been applied to almost any product.

The more successful specifications were those where candidates had drawn on the results of their research and analysis to produce a list of specific requirements that their design solution must meet. Candidates needed to understand that a detailed and meaningful design specification would form a useful aid for both producing their design ideas and for the evaluation of the final solution. In a good number of cases, specifications were far too general in their content. The better specifications justified why particular features needed to be included. For example, ‘The product needs to be made from a waterproof material because ...’

A good specification is essential to scoring highly in all the remaining objectives.

Proposals for a Solution

At the highest level candidates design thinking was original and based on exploring ideas through on-going evaluation and further research. At the lowest level candidates focused on a single or very limited number of ideas.

This section provided the opportunity for candidates to be really creative and to record and consider a range of different ideas for a solution to their chosen design problem. Successful candidates did not restrict themselves to one or two basic ideas but produced a range of distinctly different design proposals which were well communicated using a variety of graphic techniques.

It was important that candidates annotated their design drawings and recorded their thoughts on each idea for possible future development. It was these notes that indicated to the reader how and why the candidate's ideas have been produced and developed. However, in some cases candidates used too much text to describe their design rather than using drawing to communicate it.

Some candidates did not consider all aspects of the product they were designing. For example, when designing a piece of packing, the lettering and other surface detail was frequently not considered with a good number of candidates focusing their work on just the shape of the packaging.

To score high marks in this section, candidates must demonstrate that they have used their specification in the generation and evaluation of design solutions.

Many candidates demonstrated high quality drawing skills in this section of their design folders. The use of free flowing sketches rather than formal, instrument drawn illustrations should have been used at this stage of the work.

Development and planning

This was the weakest section in many candidates' folders.

This section should be concerned about how a chosen design proposal could be turned into a prototype product.

In order to gain high marks, candidates needed to have devised and used a testing and trialling strategy in order to make reasoned decisions about their chosen design solution. Folders needed to contain a complete and accurate set of working drawings and a detailed plan showing the correct sequence for making the product.

Many folders did not contain sufficient evidence of two and three-dimensional model making and testing to justify high marks being awarded. Working drawings and plans for making need to be sufficiently detailed to enable a third party to produce the product. Information must be given about the materials, joining methods and sizes required to make the final product. Many candidates did not include this information in their folders.

Only a limited number of candidates produced a range of full or part models to test their design proposal. Details about sizes, joining methods and materials were, in general, limited. Work plans for making the product were very variable and frequently totally absent.

In many folders there needed to be more evidence that a candidate had planned the making of the product that they had designed.

Realisation

Outcomes in this section were very variable. At the highest level the making was complete and of an excellent standard resulting in products that functioned as intended. At the lowest level the making was incomplete and of a low standard resulting in products that did not function as intended.

Candidates need to include a number of high quality photographs of their final outcome in their folder as this is the only evidence of the final product that was seen by the Moderator. Not all candidates did this. It is difficult to comment in detail about the products that had been made but the majority of the work appeared to cover an appropriate range of appropriate materials and making skills.

It was important that photographs showing the candidate making their product were annotated to explain what was going on in the photograph.

Record of making process

It is important that that good quality annotated photographs showing the candidate making their product are included in the folder.

While many folders included photographs, the quality was very variable. Frequently, the level of detail shown in the photograph or given in the annotation did not justify high marks being awarded in this section.

Very few folders included a record of making that gave details of all of the required stages in the correct order. In general, only limited use was made of technical terms in any annotations that were included.

Evaluation

At the highest level the product/s had been fully tested against the specification and by gaining the opinions of potential users. As a result of this testing, detailed proposals for justified improvements had been given. At the lowest level a few subjective comments were made about the product/s.

While some candidates used simple ticked boxes against specification points, many others gave sound objective comments to indicate the success, or failure, of their solution. Candidates need to understand that as a result of objective testing, meaningful recommendations for improvement and modification could be made.

Some candidates did not attempt this section of the Assessment Criteria.