

CDT: DESIGN AND COMMUNICATION

Paper 7048/01

Structured

Key message

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

- the projection of sizes between views in orthographic projection;
- the knowledge of working foam board to make 3D articles;
- the alignment of surfaces to vanishing points in estimated perspective;
- the use of fold lines shown correctly as -- · · -- or -- -- --
- the correct use of flow chart symbols;
- the use of pictograms to convey information or a process;
- the rendering of solids to show a shape;
- the drawing of sectional views from items shown pictorially;
- the drawing of circles in planometric projection;
- the drawing of exploded sectors of a pie chart in isometric.

General Comments

Candidates were required to complete **one** question from **Section 1 (Question 1 or Question 2)** and **two** questions from **Section 2 (Question 3 - Question 6)**. This rubric instruction was followed by the majority of candidates but a small number answered more than three questions. It would be beneficial to candidates if they were made aware that all the questions were not to be attempted and to follow the rubric instructions.

Question 1 was the most popular of the **Section 1** questions and **Questions 4** and **6** were 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 candidates 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. Candidates' answer sheets should be 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 both working sheets.

Comments on specific questions

Question 1

This question had been formatted to give the candidate the working order of drawing the three views required. It was by far the most popular of the **Section 1** questions.

- (a) Candidates were required to complete a given parts list. Many candidates missed this part of the question.

- (b)(i) Candidates were required to produce a view in the direction of arrow **FE** of the assembled display stand. Some candidates drew this in line format whilst other candidates included the 20 mm thickness of foam board to a scale of 1:10. Both responses were accepted.
- (ii) A view in the direction **EE** was required to be drawn. Many candidates projected this view whilst a minority drew the view completely independently.
- (iii) A view of the assembled stand to scale was required to be drawn in the direction of arrow **P**. Again, many candidates drew this in projection above or below their **FE** view depending on their choice of 1st or 3rd angle projection.
- (c) Many candidates drew a 60 × 100 rectangle with triangular cut-outs at the top. Not all the triangles drawn were equilateral and to size. Many candidates drew a circle correctly to size with an ellipse correctly to size and touching the circle. Whilst a large majority of candidates drew a slot, not all candidates drew the slot to the correct size and scale.
- (d)(i) Many candidates did not show a sectional view that revealed the construction of foam board. Candidates who had previous practical experience of working with foam board drew a v-cut correctly.
- (ii) This part of the question required a one-piece development (net) of the support shown in part (d). Successful candidates drew three main parts to the same width with the middle part half the depth of the base, so that it could be folded 'back' with the vertical part appearing in the middle and in line with the apex of the two triangles. The two triangles were generally correctly drawn and attached to the base with fold lines drawn appropriately.

Question 2

- (a) Candidates attempted this estimated two-point perspective drawing by drawing in the remaining part of the front view correctly with lines projected to VP2. Successful candidates drew in the left hand vertical part of the window proportionately. The drawing of the gable end and its window required the candidates to align the drawing with VP1. The drawing of the gable apex required the 60 end to be divided and the centre line raised 20 mm on the front corner to determine the apex of the gable. A ridge line could then be drawn towards VP2. A line parallel to the left hand gable could then be drawn to determine the right hand end of the ridge. Successful candidates drew in the gable end window in line with the front window and centrally placed.
- (b) The question required candidates to interpret the two given orthographic views given, and draw the one-piece development (net) required to make the exhibition stand from card. Some candidates included the base. The question required all fold lines and glue tabs to be drawn. Glue tabs were to be shown as -- · · -- or - - - -
- (c) Many candidates drew a flow chart with four further process boxes correctly ordered and labelled and a finish box to the same design and style as the start box.
- (d) This part of the question proved to be difficult for some candidates.
- The question required a layout of the room with six exhibition stands drawn in the correct arrangement in planometric. The information tower was to be added by drawing two circles 20/30 vertically spaced and joined to show a cylinder. One stand was to be labelled 'Sun King'. The entrance and exit were to be shown in the correct positions on the planometric view.
- (e) Candidates were required to draw a 'mechanism' that would allow the words 'Sun King' to be changed to one of three different colours on the face of the card. The most successful solutions seen were rotating discs and sliding display cards that aligned with the window.

Question 3

- (a) The Process diagram required candidates to complete the missing pictograms. Whilst many candidates achieved the first pictogram, many candidates found the second and last pictogram more difficult.

- (b) Most candidates who attempted this question named the pentagon and the triangle and drew an octagon. Successful candidates included the word equilateral with the triangle name and also drew the octagon 'regular'. Very few candidates managed to draw a rhombus.
- (c) (i) Nearly all candidates who attempted this question drew the shape of the luggage label. Candidates were required to work out the length of the 5 mm slot from the fact that the 40 wide luggage label needed to thread through the slot including the Ø15 hole clearly. The ability to draw arcs to a given datum was needed for the label to be drawn with the R10 arcs in position and leaving a 5 mm solid portion.
- (ii) Candidates were required to show the luggage label wrapped around the luggage handle in a pictorial form. This required the candidate to show the luggage label with the rectangular end tucked through the 5 mm slot.

Question 4

- (a) (i) This part of **Question 4** required candidates to show how rendering could be applied to show that the pencil was round.
- (ii) Candidates were required to make crayon B hexagonal in shape and sharpened by a pencil sharpener. Successful candidates included arcs where the pencil sharpener cut a cone into the hexagonal shape.
- (b) Whilst many candidates drew vertical lines to show three equal spaces on the surface of the top flag, very few results exhibited a geometrical construction to divide the width into three. Successful candidates divided the second and third flags by joining the diagonals to get the respective shape correct to size.
- (c) (i) Many candidates sketched the outer wrapper and the tray. However, the tray was not always shown half way out. The best results showed the interior edges visible in the open tray.
- (ii) Candidates were required to complete a sketch of crayon ring 1 from the given orthographic views. Many candidates drew a ring with two slopes on the top but omitted the small cylinder. Crayon ring 2 was required to be drawn in orthographic views from the given pictorial. Many candidates drew a copy of the crayon ring 1 elevation without the small cylinder. Successful candidates drew the elevation of the ring with sloping edges to the top. The plan view was to be drawn as a rectangle with a triangle at either end and a line connecting the apexes.

Question 5

A small number of candidates attempted this question.

- (a) (i) Candidates were required to sketch the section of tray **X** and tray **Y**.
- (ii) Candidates were required to draw a similar tray to those already given in the part (i) but the section of tray **Z** showed a tray with three troughs or a row of three pockets. Both solutions were accepted.
- (b) The truth table proved very popular with candidates but it was not always correctly completed.
- (c) (i) This question required the candidate to sketch the sleeve on an outline of a plastic tray. Most candidates drew the sleeve with a window and a corner diagonal. The side band was not always drawn in the correct orientation or tapered.
- (ii) Many candidates omitted this part of the question. The candidate was required to render a given panel so that it looked like clear plastic sheet. The most successful responses showed grey or blue light rendering with light band reflections.
- (iii) Three features that exist as printed information on the sleeve were presented for the candidate. The uppermost was to show which way round the print was to be read from. The middle feature showed where the sleeve was to be folded and the lower feature showed the area where glue was to be applied.

Question 6

A large number of candidates attempted this question.

- (a) Most candidates managed to draw a bar chart. The chart was intended to show that Europe was the largest and Asia was the smallest. Most candidates used a scale 1:1000 people. Labels for the destinations and the number of people in 1000's needed to be evident for a complete answer.
- (b) Most candidates managed to draw a pie chart. The data given added up to 180. Candidates who realised this drew accurate sectors of 30°, 180°, 60° and 90° by doubling the values given. Most candidates used colour and a label/key to identify the chart sectors.
- (c) A silhouette of a train and a bus were given. Candidates were required to draw in appropriate boxes, silhouettes of an aeroplane and a boat. Many candidates drew a correct outline and not a silhouette.
- (d) This part of the question required a pie chart to be drawn on an isometric axis from information given by two orthographic views. To address this requirement, candidates needed to draw a quadrant or semi circle full size and divide up the diameter into vertical slices to get datum lines. Similarly spaced lines could then be drawn on the isometric axis to get the correct size arc of the isometric circle. Vertical lines from this circle could be used to step off the thickness.

A quadrant sector chosen by the candidate was to be exploded. The most common way with this type of drawing is to chose a sector at the side and 'move' it horizontally. All sizes can be taken from the complete pie chart.

It is important that when the exploded sector is drawn, the visible edges remaining on the main part are completed to give full reality.

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Coursework

General Comments

A good proportion of the candidates had used the assessment criteria headings to identify the different sections of their work and should be congratulated on the clear presentation of their folders. A number of candidates had made use of ICT and some good computer generated graphics work was seen. It is, however, important to maintain an appropriate balance between computer and hand generated work. As has been reported in previous years, some candidates still tend to spend too much time on the Research and Analysis section sometimes at the expense of other areas of their coursework folders. The mark allocation given in the assessment criteria provides a good guide as to the amount of time that should be spent on each section of the coursework.

Comments on Specific Assessment Headings

Problem identification

Many candidates scored high credit in this section. Candidates had obviously been able to select a design problem, from those given in the question paper, that that was of interest to them. It is at this stage that the intention of the project should 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.

Research and analysis

This section provides candidates with the opportunity to consider all aspects of the design problem they have chosen to base their project on. Before collecting and analysing information candidates should be 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 need to understand that the research they undertake needs to be focussed on, and 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. However, 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 need to understand that this approach is an unnecessary use of time and cannot be awarded credit.

Specification for a possible solution

The specification is worth 10% of the total marks available and, as such, should not be treated lightly. 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 need to understand that a detailed and meaningful design specification can 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.

Proposals for a solution

This is 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 is important that candidates annotate their design drawings and record their thoughts on each idea for possible future development. It is these notes that indicate to the reader how and why the candidate's ideas have been produced and developed.

A good number of candidates did not carry out any real design development. In these cases they simply selected an idea and made it.

Many candidates should be congratulated on the high quality of their drawing skills in this section of their design folders.

Realisation

It is important that candidates include a number of high quality drawings and photographs of their final outcome in their folder as this is the only evidence of the final product that is seen by the Moderator. Currently not all candidates are doing this. It is difficult to comment in detail about the products that had been made, but the work appeared to cover the intended range of appropriate materials and making skills and techniques. Many of the final outcomes were produced to a very high standard.

There needs to be evidence that a candidate has planned the making of the product or model that they have designed. This should include details such as sizes, the materials that will be used, the construction techniques that will be used and the tools and equipment that will be used.

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

Evaluation

The better evaluations were those where there was evidence to show that a candidate had carried out meaningful testing and considered the results against the original design specification.

Although some candidates continue to use 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 can be made.

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