CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0445 DESIGN AND TECHNOLOGY

0445/21 Paper 2 (Graphic Products), maximum raw mark 50

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A1 (a) Some thick lines added to outside of part A (1)
Thick lines added to upright and header of rectangular hole (1)

* thin if both surfaces that make up a corner can be seen, thick if only one surface can be seen [2]

A1 (b) Top corner removed from part B (either side) (1)
Thickness of material shown correctly (1)
Slope added to part C (1)
Slope added in good proportion and in isometric (1) [4]

A2 Front view
Part A added in correct position (rectangle regardless of size) (1)
Part A correct to overlay (1)
Part B correct to overlay (1)
Horizontal line added 30 from top of part C (1) [4]

Plan
Part A correct to overlay (1)
Hidden detail shown correct (1)
Part B correct to overlay including horizontal line (1)
Part C Horizontal line 20 from top (1) [4]

A3 (a) One mark for each line added that matches the overlay
Left upright (1)
Line between wall and roof (1)
Roofline to length (1)
Left hand angle of roof (1) [4]

(b) Suitable methods of adding colour by hand include:
- crayons
- felt tipped pens
- brush paint
- spray paint

One mark for each correct answer (1 × 2) [2]

(c) Sketch shows a partly cut line (typically a series of lozenges) (1)
Notes (or label) clearly indicate part of the line is cut (1) [2]

e.g. series of holes all the way though the card with a small gap between each hole
Do **not** award marks for scoring.

(d) **Reasons** might include:
- *too much space around the design*
- *no recycling instructions/symbol*
- *uses 'virgin' card*
- *does not tessellate…* [1]

(Do not accept 'uneconomical')

Problems might be **overcome** by:
- *print the design on a smaller piece of card (1) <u>or</u> redesign the net (1) so that more than one can fit on a sheet of card with minimum space between each design (1)*
- *put a recycling symbol on the design (1) so that people will know to put it in the recycling bin (1)* [max 2]

[Total 25]

B4 **(a)** Any circle drawn on the given centre lines (1)
Circle of correct size (50 mm) (1)
Drawing in planometric (45° × 45° or 60° × 30°) (1)
Top strip 25 mm (1) × 80 mm (1)
Front 25 mm or to width of top (1) × 30 mm high (1)
Bottom strip to overlay or matches candidate top (1)
Back strip to overlay or matches candidate front (1)
Shape correctly lined in (1) [10]

(b) Two more sides added similar to those given (1) + (1)
End glue tab (1)
Second top flap added (1) in the correct position (1)
Bottom drawn to size (SQ) (1) (or with two half surfaces to size)
Bottom in position (1)
with glue tabs or closing method (1)
All fold lines correctly shown (1) [9]

(c) **(i)** Lithography or digital printing
Not Laser, photocopying or screen [1]

(ii) Acceptable answers include:
- ABS
- HIPS
- PET
- Polystyrene
- Polypropylene
- PVC…

Accept other thermoplastics but **not** acrylic [1]

(iii) Sketches and notes show:
Concept of a **former** (1)
Flat sheet being **heated** (1)
Suction forces the softened sheet to take on the shape of the former (1)
Very well explained (notes and sketches) (1) [4]

[Total 25]

B5 (a) Outer surface shaded with some different tones (1) or outer surface shaded with graduated tones to appear round/shiny (2)
Inner surface shaded with some different tones (1) or inner surface shaded with graduated tones to appear round/shiny (2)
Rendering enhances tube producing a high quality outcome (1) [max 5]

*award the last mark for really high quality work

(b) Break line added to top of name board (1)
Horizontal line added to top of tube (1)
Inner part of tube added to the right (1)
Hatching (45/60 degrees) added to the name board (1)
Hatching (45/60 degrees) added to only the walls of the tube (1)
Hatching of adjacent parts in opposite directions (1)
Spacing between hatching consistent (1) [7]

(c) Major axis 100 mm (1)
Minor axis 70 mm (1)
Some construction (1) or clear construction (2)
Six or less points plotted (1) or seven or more points plotted (2)
(Trammel method (2) if trammel evident or attached)
(4 arcs method (1) mark only)
Ellipse profile correct to overlay (1) [max 7]

(d) (i) Circle drawn of any size (1)
Two sectors the correct size (160, 80 and 120 degrees) (1 × 2)
Colour added to enhance the pie chart (1)
Labels correctly identify the sectors (1) [5]

(ii) Acceptable answers include:
- *can reach a wider group of customers*
- *data can be entered directly into a database*
- *data can be manipulated and printed in different forms*
- *data can be stored and transferred electronically*
- *saves time/money over manually sorting data* [1]

[Total 25]