Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

DESIGN AND TECHNOLOGY **0445/21**

Paper 2 Graphic Products **May/June 2016**

MARK SCHEME

Maximum Mark: 50

Published

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Section A

A1 (a) Side and bottom added (any size) (1) **[7]**

Bottom and side of the correct size (matches given) (1)
Glue tab added to the top or bottom edge (1)
Three ends added of the correct shape and position (regardless of size) (1)
Three ends added of the correct size (max 25mm) (1)
Three further glue tabs added in the correct positions (1)
All fold and cut lines to a recognised convention (1)

A2 (a) Major axis 120mm (1) **[6]**

Minor axis 70mm (1)
Some construction (1)
Clear construction (trammel must be evident) (1)
Six or more points plotted (1)
Ellipse profile correct to overlay (1)

(b) Sketch shows a dotted or dashed line (1) **[2]**

Notes or labels indicate that the dashes are cut (1)

A3 (a) Some tonal variation in shading (any colour) (1) **[3]**

Reasonable attempt to show a shiny surface through highlights/reflections (1)
Excellent rendering ⟶ (1)

(b) Right half added (1) **[4]**

Right half to overlay (matches left side) (1)
Some hatching (1)
Correct hatching to both halves / centre not hatched

(c) Specific thermo plastic named. Acrylic, polypropylene (p.p), polystyrene, ABS, HDPE etc. (1) **[1]**

Reasons why the plastic is suitable include…
Can be coloured (1) to offer customers a choice of colour (1)
Can be recycled (1) and used to make another product (1)
Softens with heat (1) so can be vacuum formed or injection moulded (1) shiny surface (1) **[2]**
Do NOT accept 'easy' to shape or lightweight

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Section B

B4 (a) (i) Plan **[6]**

Outer square of base completed (1)
Top edge of upper foam board to O/L (1)
Upper foam board same thickness as given (1)
Left hand plastic sheet to O/L (1)
Right hand plastic sheet to O/L (1)
Plastic sheet penetrates foam board (1)

(ii) Side or front view **[2]**

Horizontal line (top of foam board) (1)
Vertical line (side of foam board) (1)

(iii) View A – Plan (1) **[2]**

View B – Front or side view (1)

(b) Sketch of base completed (1) **[8]**

Proportions of base (square) (1)
Left foam board side in proportion (1)
Right foam board side in proportion (1)
Slots for plastic sheet shown in both foam boards (1)
R/H plastic sheet in proportion (1)
L/H plastic sheet in proportion (1)
Exploded positions in alignment with base (1)

(c) (i) A and D added (1) **[2]**

Manufacture or Making added (1)

(ii) Tick to identify award of marks (any 5 from the following) **[5]**

1 Prepare CAD design for CAM use (1)
2 Download info to cutter (1)
3 Load roll or piece of vinyl into cutter (1)
4 Knife cuts out design (1)
5 Weed (remove waste pieces) (1)
6 Pick design up on transfer film (1)
7 Stick to clean surface (1)

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B5 (a) (i) Base **[5]**

Base drawn in isometric (any size)	(1)
Width 30mm	(1)
Depth 30mm	(1)
Height 35mm (accept 30+)	(1)
Drawing lined into overlay	(1)

(ii) Shade **[7]**

Shade drawn in isometric (any size)	(1)
Width 60mm	(1)
Depth 60mm	(1)
Height 50mm to O/L	(1)
40mm square to top	(1)
Sloping sides added to candidate's solution	(1)
Drawing lined in to overlay	(1)

(b) Base **[6]**

Foam/expanded polystyrene (1) or Styrofoam (2)

Shade
Acceptable answers include:
Clear understanding that laminated paper is more rigid than non-laminated (1) and can be folded (1) and is stronger/will last longer than paper (1) will keep its shape (1) lightweight (1)
Clear understanding that laminated paper is easy to cut (1) and can be folded to shape (1)
Printed design can be added (1) translucent (1)

Frame

Wire, pipe cleaner…	(1)
Specific type of wire (copper wire)	(2)

(c) Tick to identify the award of marks **[7]**

Polymorph granules soften with heat	(1)
Source of heat (boiling water)	(1)
Mould into shape (1) in a person's fingers	(1)
Understanding of safety issues with polymorph	(1)
Granules harden when they cool	(1)
Switch is ergonomically designed because it fits the fingers	(1)

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