

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 series

0445 DESIGN AND TECHNOLOGY

0445/21

Paper 2 (Graphic Products), maximum raw mark 50

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Section A

- A1 (a) (i)** Side view
 Left side upright (correct to overlay) [1]
 Top line [1]
 Two horizontal lines of square (correct to overlay) [1]
 Outer upright of handle (correct to overlay) [1]
 Inner lines of handle added in good proportion [1] **[5]**
- (ii)** One dimension added correctly (limit lines, dimension line, arrows...) [1]
 Ø108 or SQ108 or Ø90 or 20 handle
 Dimension correct to a scale of 1 : 2 (actual size) [1] **[2]**
- (iii)** Two concentric circles added [1]
 Truncated cone matches the concentric circles [1]
 Circles and truncated cone in correct positions and orientation for first angle projection
 (cone on left of circle) [1] **[3]**
- A2 (a)** Hatching added to concentric circles at 45° [1]
 Arc completes the outer of the two concentric circles and 'space' part of handle not hatched
 [1] **[2]**
- (b)** The colour will change [1] due to the heat of the coffee [1]
(there can be many different versions of this answer but award one mark for the colour of the design will change and one mark for identifying that it is the heat that causes the change in colour) **[2]**
- A3 (a)** Base circle Ø36 (to overlay) [1]
 Top circle Ø46 (to overlay) [1]
 Distance between top and bottom circle 80 mm (to overlay) [1]
 Two sloping sides added (to overlay or candidate solution) [1] **[4]**
- (b)** Any three steps in the vacuum forming process described **(3 × 1)**
 Tick (✓) to identify each stage. Steps include:
- Mould or former construction [1]
 - Positioning former [1]
 - Clamping plastic sheet in position [1]
 - Heat to soften plastic sheet [1]
 - Suction to form shape [1]
 - Plastic removed from former
 - Trimming [1] **[3]**
- (c) (i)** Top or bottom layer of card [1]
 Corrugation drawn  [1] **[2]**
- (c) (ii)** Airspace / insulator / corrugation [1]
 Heat not transferred [1] **[2]**

[Total: 25]

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Section B

- B4 (a) (i)** Any hexagon drawn [1]
Regular hexagon correct to overlay ± 2 mm [1] **[2]**
- (ii)** Three lines drawn from the corners of the hexagon that divide it into six parts
(correct to overlay or candidate solution) (3 \times 1) **[3]**
- (iii)** *Clear evidence of the bisection of two angles to find the centre of
one triangle (2 \times 1) **[2]**
Centre transferred to the other five triangles (PCD or repeat bisection) [1]
Six centres of triangles correct to overlay [1]
*At least one circle drawn (regardless of position or size) [1]
Six circles drawn $\varnothing 20$ –
one in each triangle (regardless of position) [1]
Six $\varnothing 20$ mm circles correct position [1]
*Candidates who draw an octagon could score a maximum of 3 marks **[7]**
- (b)** One mark for each process stage: (1 \times 4)
- Collect sticker
 - Attach sticker to card
 - Repeat five times / decision box Y/N loop
 - Collect free drink
- Correct shape boxes used for processes [1]
End stage added [1]
Correct shape box used for end [1]
All boxes consistent width [1]
Lettering similar to given example and of a high quality [1] **[9]**
- (c) (i)** Die cutting / Stamping [1] **[1]**
- (c) (ii)** One mark for each way in which ICT has been used in the design or manufacture of the
loyalty card. (3 \times 1) **[3]**
For example:
- Research
 - Copying and pasting images
 - Design (CAD)
 - CAM (plotter cutter)
- (Do not accept laser cutter) **[3]**

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Section B

- B5 (a) (i)** Major axis 70 mm [1]
 Minor axis 30 mm [1]
 Some construction [1] or clear construction [2]
 Six or less points plotted (1) or seven or more points plotted [2]
 Ellipse profile correct to overlay [1] [7]
- (ii)** Five more surfaces added to the given top [1]
 Each surface correct in size and position to overlay (5 × 1)
 Ends added to the base [1]
 Four glue tabs added to the ends [1]
 All fold lines indicated by dashed lines or labels [1] [9]
- (b)** Sketches and notes (or arrows) show a modification to the fold in flap [1]
 The modification will hold the top in place but pull apart [1]
 The modification locks the top in place (cannot easily be pulled apart) [1] [3]
- (c)**  Triangular shape [1]
 Arrows added to the triangular shape [1]
- The product is best eaten [1] before the given date [1]
(used/eaten and date)
- The weight of the product [1] is estimated* [1] to be 200g
(weight and estimate) [6]

[Total: 25]