Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

DESIGN AND TECHNOLOGY **0445/21**

Paper 2 Graphic Products **May/June 2019**

MARK SCHEME

Maximum Mark: 50

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

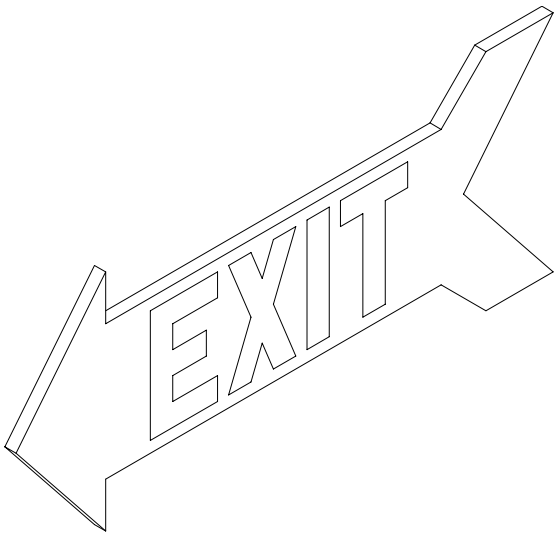
Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

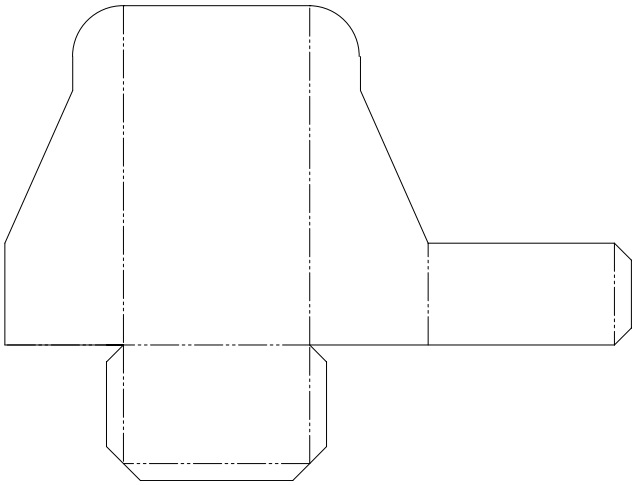
Question	Answer	Marks
	Section A	
A1(a)	 A Two horizontal top and bottom edges of back piece 30 mm long (1) B Top sloping edge of back piece (length of diagonal) (1) C Bottom sloping edge of back piece (20 · 20 diagonal) (1) D Two horizontal edges of central section 150 mm (1) E Two vertical back edges of front point 20 mm (1) F Top sloping edge of front point (40 · 50 diagonal) (1) G Bottom sloping edge of front point showing two lines (1)	**7**
A1(b)	H Five corner edges 6 mm long (1) J Rear thickness line to top (1)	**2**

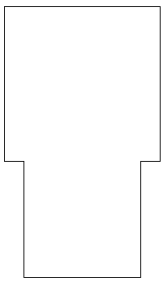
Question	Answer	Marks
A2	'X' drawn in isometric to sizes given on grid (1) 'T' drawn in isometric to sizes given on grid (1)	**2**

Question	Answer	Marks
A3(a)(i)	Octagon: Outside square 130 · 130 constructed (1) Any octagon drawn (1) Octagon drawn correct to overlay (1) Inner circle R55 (1) Diagonal bar at 45° (1) 15 mm width (1)	**6**
A3(a)(ii)	Rectangle 70 x 46 (1) Circle R20 (1) Circle R17 (1) Top detail mirrored along CL (1)	**4**

Question	Answer	Marks
A3(b)	Image of an item of food (1) Image of a drink (1) Image is a b/w silhouette (no shading) (1) Image does not have bar, cross or something showing it is not allowed as this is provided by Part A (1)	**4**

Question	Answer	Marks
	Section B	
B4(a)	Side view Height of body 90 mm (1) Width 43 mm (projected) (1) Height of point 20 mm with 3 lines to corners (1) Cutout positioned 10 mm from top 20 high (1) Cutout on L/H side (1) Cutout width comes to CL of side piece (1) Front view Correct height and width taken from projection lines on side and plan views (1) Two vertical front corner lines projected from plan view (1) Height of point 20 mm with 4 lines to corners (1) Cutout positioned 10 mm from top 20 mm high (1) Cutout width comes to CL of side piece (1) Internal lines visible through slot (1) Plan view Six lines from each corner to centre of hexagon (1)	**13**
B4(b)	Major axis 80 mm (1) Minor axis 40 mm (1) Evidence of construction (1) Clear construction (1) Six or fewer points plotted (1) Seven or more points plotted / projected from base (1) Ellipse profile correct to overlay (1)	**7**
B4(c)(i)	Any two from: Faster to draw / more accurate / easily scaled up or down / can be modified easily / can be saved electronically / can be sent via email Do not accept: one word answers such as easier / faster unless justified	**2**
B4(c)(ii)	Laser cutter / vinyl cutter / stika / Roland CAMM	**1**
B4(c)(iii)	Taken from pictorial view on (a) Dimension A – 250 mm (1) Dimension B – 600 mm (1)	**2**

Question	Answer	Marks
B5(a)	 A Backboard 100 · 55 (1) B Left side 35 mm wide / reflection of given side (1) C Quarter circle R15 (1) D Vertical line 10 mm (1) E Sloping edge (1) F Front 55 · 30 (1) G Base 55 · 35 (1) H Flaps: two on sides of base (1) I Flap on bottom edge of base (1) J Fold line to left side in convention (1)	**10**
B5(b)	<u>Marking out the development net on card:</u> Pencil, ruler, set square (1) *Any one item* <u>Scoring the fold lines:</u> Ruler, paper creaser, back of knife blade (1) *Any one item* <u>Cutting out the net:</u> Scissors, craft knife, Stanley knife, safety ruler, cutting mat (1) *Any one item*	**3**
B5(c)(i)	PVA, cool melt glue, hot glue, pattex, double sided tape	**1**
B5(c)(ii)	Quicker (1) because: Die cutter cuts all in one go / Can cut and crease at the same time / Can cut and crease more than one at a time. (1) Each net is exactly the same (1) so no quality checks needed / inaccuracy (1) Cheaper once die is set up (1) because: No skilled labour is required (1) Machine can run 24/7	**2**

Question	Answer	Marks
B5(d)	<u>Sides</u>  Outline drawn (1) Corner angle 10 · 10 top right (1) Bottom cut out 10 · 5 on R/H side (1) <u>Back</u>  Outline drawn (1) Outline 70 · 40 (1) Cut outs 30 · 5 (1) <u>Front</u>  Outline drawn (1) Outline 40 · 20 (1) Two cut outs 10 · 5 (1)	**9**