CAMBRIDGE
International Education

Cambridge IGCSE™

DESIGN & TECHNOLOGY **0445/53**

Paper 5 Graphic Products **October/November 2024**

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 October/November 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

PUBLISHED

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 descriptions 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**:

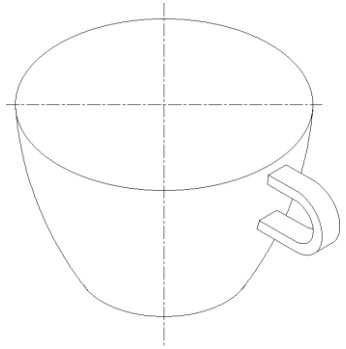
- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can 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:

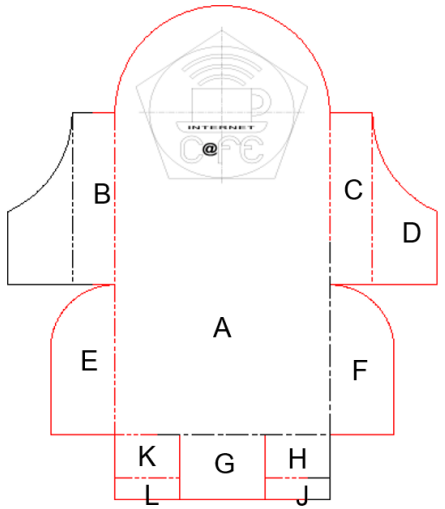
Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

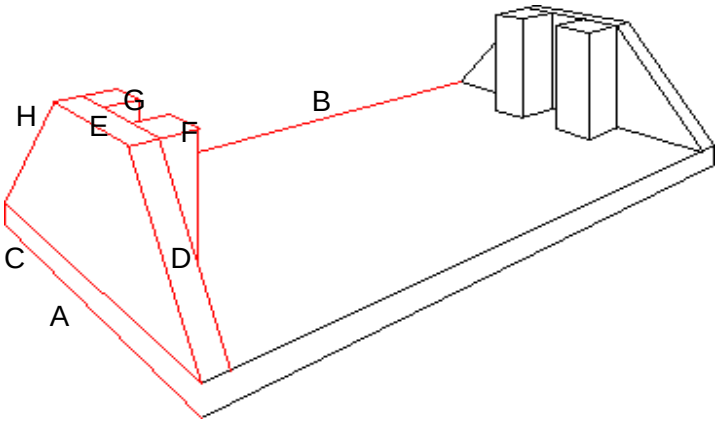
GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

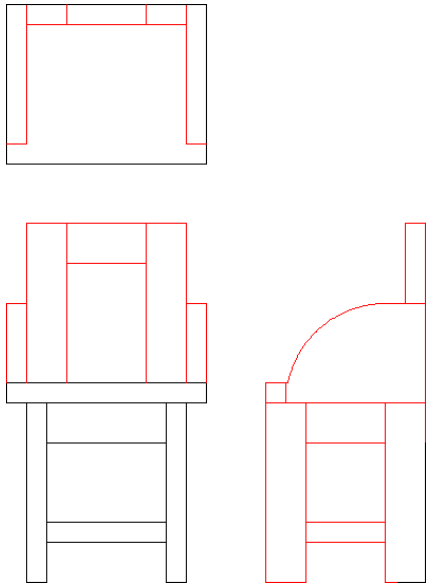
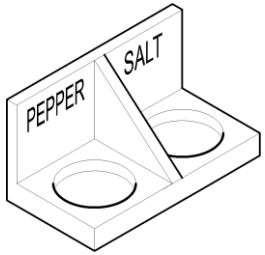
Question	Answer	Marks	Guidance
A1(a)	Saucer correct to overlay [1] Rectangle 80 × 50 in correct position [1] Outer semi-circle radius R20 [1] Inner semi-circle radius R10 [1] Handle curves joined to cup by horizontal lines [1]	**5**	
A1(b)	Two inner arcs drawn to correct radius [1] Two outer arcs drawn to correct radius [1] Ends drawn on all shown arcs [1] 45º angles to both sides in line (as overlay) [1]	**4**	
A1(c)	Circle ∅190 in centre position [1]	**1**	
A1(d)	Any pentagon [1] Any regular / symmetrical pentagon [1] Pentagon correct to overlay [1]	**3**	
A1(e)	C and F added [1] 5 mm thickness to letters [1] C follows same proportions and shape of the given ‘E’ [1] F follows same proportions and shape as given ‘E’ [1]	**4**	

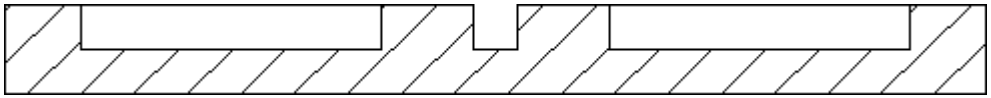
Question	Answer	Marks	Guidance
A2	Any ellipse [1] Major axis 150, Minor axis 78 [1] Some construction shown [1] 8 or more points plotted correctly [1] 12 or more points plotted correctly [1] Ellipse correct to overlay [1]	**6**	

Question	Answer	Marks	Guidance
A3(a)	Laser cutter, engraving machine, CNC Router, CAMM 2	**1**	Accept any other valid response. Accept trade names if they are one of the machines listed in answer column. Do not accept 3D Printer
A3(b)	Waterproof, lightweight, available in different colours, washable, easy to clean, durable	**1**	Accept any other valid response. Accept 'heat resistant' / heat insulating

Question	Answer	Marks	Guidance
B4(a)	Back face 50 wide [1] Semi-circle to top to candidate solution [1] Side face B correct to overlay [1] Side face C correct to overlay [1] Front face D same as given face (correct to overlay) [1] Side face E 35 × 15 [1] Radius added [1] Side face F mirror image of E [1] Base centre section G 40 × 30 [1] Base side H and J added to candidate solution [1] Base side K and L added to candidate solution [1] Correct fold line convention used [12]	**12**	
B4(b)(i)	Pencil, ruler [1] Craft knife, scissors, safety rule, cutting mat [1] Scoring tool, blunt knife / scissor blade, back of knife blade, empty biro, ruler [1]	**3**	Accept any other valid response. Do not accept pen Accept laser cutter, vinyl cutter – Do not accept ruler for cutting out

Question	Answer	Marks	Guidance
B4(b)(ii)	Use of a strip heater / line bender / heat gun /oven [1] and a former / mould [1]	**2**	
B4(c)	 Two base lines A to VP 1 [1] Line B projected from VP 2 and corner vertical line C [1] Edge face D added correct to overlay / candidate solution [1] Top face E correct to overlay / candidate solution [1] Back sloping edge H correct to candidate solution [1] Top face F added in proportion [1] Top face G added in proportion [1] Vertical edge of F and G correct to candidate solution [1]	**8**	

Question	Answer	Marks	Guidance
B5(a)	**Front View:** Backrest outer size correct to overlay [1] Two side and top inner lines correct to candidate solution (10mm inside outer backrest) [1] Two armrests 25 mm high × 5 mm thick [1] **<u>Side view:</u>** Back leg correct to overlay (45 × 10) [1] Front leg correct to overlay [1] Top apron projected from front view between legs [1] Side rail projected from front view between legs [1] Side armrest correct to candidate solution (R20 arc + topline) [1] Front part of seat (5 mm × 5 mm lip) correct to overlay / candidate solution [1] Backrest 5 mm thick to candidate solution (same height as front view) [1] **Plan:** Both armrests projected correctly with 5 mm thickness [1] Back rest projected correctly to candidate solution (same thickness as side view) [1]	**12**	
B5(b)(i)	Thick lines to outer edges with inner edges of base and upstand thin [1] Back edge of sloped divider thick and other edges of divider thin [1] Bottom half of PEPPER and SALT circles thick only [1]	**3**	
B5(b)(ii)	Siver / grey shading added [1] Shading shaded to show cylindrical shape [1] High quality shading [1]	**3**	

Question	Answer	Marks	Guidance
B5(c)	 Outer shape 126 × 12 [1] Two recesses 40 × 6 [1] Recesses in correct positions (correct to overlay) [1] Centre slot recess correct to overlay [1] Hatching added correctly [1]	**5**	
B5(d)	Irritant, harmful, avoid contact with skin / eyes [1]	**1**	Do not accept toxic / poison / dangerous
B5(e)	Computer can cut more accurately / neater than by hand [1] Safer than cutting with a knife [1]	**1**	Accept any other valid response. Do not accept ‘easier’