

# Cambridge IGCSE™

---

**DESIGN AND TECHNOLOGY****0445/51**

Paper 5 Graphic Products

**May/June 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 May/June 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

---

This document consists of **9** printed pages.

**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).

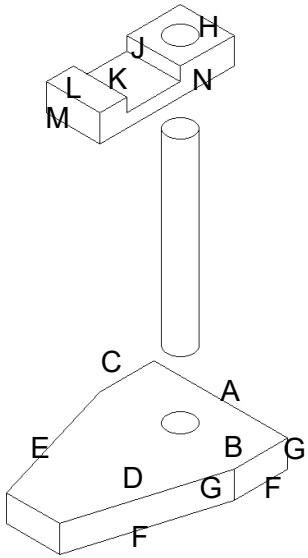
**GENERIC MARKING PRINCIPLE 6:**

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.

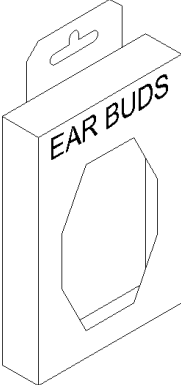
Question	Answer	Marks	Guidance
A1(a)(i)	Any hexagon [1] Any regular hexagon [1] Hexagon correct to overlay [1]	3	
A1(a)(ii)	Rectangle $40 \times 20$ [1] Two $45^\circ$ lines from corners [1] Vertical long edge of speaker 25 mm from rectangle [1] Speaker in correct position (on horizontal centre lines) [1]	4	
A1(a)(iii)	Arc radius 30 mm [1] Arc radius 45mm [1] Arc ends all in line [1]	3	
A1(b)(i)	Rectangle correct height to overlay [1] Rectangle correct width to overlay / candidate solution (projected from plan) [1] Two inner vertical corner lines correct to overlay / candidate solution (projected from plan) [1]	3	
A1(b)(ii)	Any equilateral triangle [1] Equilateral triangle correct to overlay [1]	2	
A1(c)	Sides and centre projected vertically from plan [1] height correct to overlay / candidate solution [1]	2	

Question	Answer	Marks	Guidance
A2(d)	Left hand outer rectangle 40 mm wide correct to overlay [1] Centre dividing line added [1] Right hand outer rectangle and centre dividing line mirrored from right hand side [1] Right hand rectangle 20 mm from right hand edge [1] Hatching added correctly [1]	5	

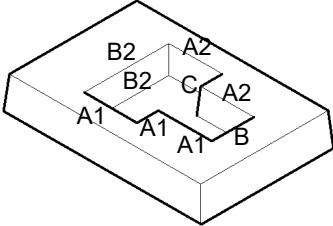
Question	Answer	Marks	Guidance
A3(a)	Impact resistant, easy to cut shape, supports the headphones, lightweight [1]	1	Do not accept generic answers such as 'cheap', 'strong', 'soft' unless qualified  Accept any other valid response.
A3(b)	CNC router / milling machine / laser cutter [1]	1	
A3(c)	PVA glue [1] Double sided tape [1]	1	Accept trade names e.g. Gorilla glue Do not accept any solvent based adhesive, hot glue

Question	Answer	Marks	Guidance
B4(a)	 <p>Base:                      Back top edge A correct to overlay [1]                      Top side edges B and C added 20 mm long from A [1]                      Top sloping edge D to candidate solution [1]                      Top sloping edge E to candidate solution [1]                      Bottom edges F corresponding to B and D correctly / candidate solution [1]                      Vertical edges G added [1]</p> <p>Top:                      Square top face H central around hole 20 × 20 [1]                      Vertical face J 5 mm deep [1]                      Horizontal face K 20 mm long [1]                      Horizontal face L 10 mm long [1]                      Vertical face M 10 mm deep [1]                      Side profile N completed to candidate solution [1]</p>	12	

Question	Answer	Marks	Guidance
B4(b)(i)	Rectangle drawn $70 \times 35$ [1] Cut out on top edge $10 \times 5$ in correct position [1] Semi-circle cut-out R20 [1] Centre of Semi – circle in correct position [1] Two slots shown in bottom edge [1] Slots 7 or 8 mm $\times$ 3 mm [1] Slots correct to overlay [1]	<b>7</b>	
B4(b)(ii)	Foamboard, corrugated cardboard, styrofoam, corriflute [1]	<b>1</b>	Do not accept 'card' or 'cardboard'  Accept any other valid response. (Graphic material available in 3 mm thick sheets)
B4(c)(i)	Missing letters A and N added to correct height with some thickness [1] 30° angle to letters [1] High quality lettering matching the existing style [1]	<b>3</b>	
B4(c)(ii)	The ink changes colour / reacts [1] When temperature changes [1]	<b>2</b>	

Question	Answer	Marks	Guidance
B5(a)	 <p>Top tab <math>40 \times 20</math> [1]  Right side chamfer to corner correct to overlay [1]  Top face of package <math>60 \times 15</math> [1]  Left hand side of package <math>90 \times 15</math> [1]  Front face of package <math>90 \times 60</math> [1]</p> <p>Octagon cut-out 60 mm high [1]  Octagon cut-out 40 mm wide [1]  Two sloping edges correct to overlay [1]  Four sloping sides correct to overlay [1]  Internal edges inside cut-out [1]</p>	10	
B5(b)	<p>Any regular ellipse on correct centre [1]  Major axis 70, Minor axis 50 [1]  Some construction [1]  4 or more points plotted correctly [1]  8 or more points plotted correctly [1]  Ellipse correct to overlay [1]</p>	6	



Question	Answer	Marks	Guidance
B5(c)(i)	 <p>Outer edges drawn thick + 3 inners thin [1] Three lines A1 thick + A2 thin [1] Line B1 thick + two Lines B2 thin [1] Two lines C thick + three remaining inner lines thin [1]</p>	<b>4</b>	
B5(c)(ii)	Polystyrene, HIPS [1]	<b>1</b>	Accept any other valid response.
B5(d)	<p>From top to bottom</p> <p>Heater [1]</p> <p>Plastic sheet [1]</p> <p>Mould / former [1]</p> <p>Bed / platen [1]</p>	<b>4</b>	