

Cambridge International Examinations Cambridge International General Certificate of Secondary Education

## **DESIGN AND TECHNOLOGY**

0445/33 October/November 2016

Paper 3 Resistant Materials MARK SCHEME Maximum Mark: 50

Published

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Page 2     Mark Scheme     Syllabus     Paper							
	J-	Cambridge IGCSE – October/November 2016	0445	33			
	Section A						
1	Metal can: tin[plate], [mild]steel, aluminium (1) Plastic gears: nylon (1)						
	Outdoor hinge: brass, aluminium, stainless steel (1)						
2	Award 0-2 dependent upon accuracy of sketch (0–2)						
3	<b>(a)</b> B	ench hook, sawing board (1)			[1]		
	• •	aw shown cutting wood held up against the bench hook ward 0–2 dependent upon accuracy of sketch (0–2)			[2]		
4	Awaro	d 0–2 dependent upon accuracy of sketch (0–2)			[2]		
5	(a) E	xtrusion			[1]		
	<b>(b)</b> A	nodise, paint, lacquer, powder coat/dip coat, electroplating (2×1)			[2]		
6	Copin	n saw: small scale general woodworking processes (1) g saw: cutting curves in thin wood (1) saw: cutting metal sections (1)			[3]		
7	2 stag	ges include: set distance between spurs [with chisel], set distance from stock to first spur/pin lock stock	(2	? × 1)	[2]		
8	<b>(a)</b> P	lastic: injection moulding (1)					
	<b>(b)</b> №	letal: die-casting, pressed (1)			[2]		
9	2 faul	ts: end splits, splits/cracks along the grain, warping, shrinkage	(2	! × 1)	[2]		
10	(a) L	aminating			[1]		
	. ,	:: former, mould :: [sash/F] cramp	(2	2 × 1)	[2]		

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Section B							
11	(a)	2 benefits: cheaper than pre-assembled products, can be transported home, compact, satisfaction of self-assembly. $(2 \times 1)$					
	(b)	Drill hole for saw blade, insert saw blade and reconnect, saw out waste, file edge smooth and flat. Power router. $(3 \times 1)$					
		Technical accuracy (0–1)					
	(c)	<ul> <li>Methods include use of added strips or blocks [above or below] (0–2)</li> <li>Appropriate method of permanent fixing (0–2)</li> </ul>				[4]	
	(d)	(i)	Min. 6mm–12mm max.(1)			[1]	
		(ii)	Spacing must not set dowels closer than 15mm from ends and be centrally positioned (0–2)			[2]	
	(e)	Material: steel or brass (1) Length: minimum 19mm – maximum 35mm (1) Type of head: countersunk (1) Number required: minimum 2 – maximum 4 (1) Technical accuracy of sketch (0–2)					
	(f)		Explanation: <b>B</b> is made from 2 pieces of wood joined together and is stronger (1 <b>A</b> is made from a single piece with the grain weaker (1)	1)		[2]	
		(ii)	Explanation: <b>A</b> would be made from a single piece of wood that would need to be cut out to shape (1) The piece cut out would produce waste. (1)			[2]	
	(g)	2 p	roperties: must be hardwearing, attractive, stainproof, heatproof, wa	iterproof (	(2 × 1)	[2]	
12	(a)	-	roperties: range of colours, inherent colour, easily formed, easily wo aned easily, self-finished, attractive		[2 × 1)	[2]	
	(b)	2 it	ems of research: sizes of items to be stored, number of items, locati	ion (	(2 × 1)	[2]	
	(c)	c) 2 reasons: easier to drill while flat, quicker, more accurate, safer (2			[2 × 1)	[2]	
	(d)	<ul> <li>(d) Use of saw to cut shape (1)</li> <li>Use of file to make smooth (1)</li> <li>Correct names of appropriate saw and file (1)</li> </ul>					

Page	4	Mark Scheme	Syllabus	Pap	er
		Cambridge IGCSE – October/November 2016	0445	33	
(e)	Арр Ме	e of strip heater or line bender (1) propriate former (1) thod of retention (1) chnical accuracy (1)			[4]
(f)	she	ncils prevented from sliding: use of holes in base or additional If added with holes drilled for pencils to locate (0–2) thod of storing paper clips: some form of container (0–2)			[4]
	inio				1.1
(g)	(i)	1 benefit: hardwood is hardwearing, attractive, gives base weight/s	tability		[1]
	(ii)	Suitable thickness: minimum 10mm – maximum 20mm			[1]
	(iii)	Hardwood held in vice (1)			
		Use of plane to remove waste (1)			
		Technical accuracy of sketch/named tools and equipment (1) Power router (0–3)			[3]
	(iv)	Method of joining must include use of screws <b>not</b> adhesive Award 0–3 dependent on accuracy of spacing, number of screws a notes	ind added e	explana	atory [3]
(a)	2 re	easons: aluminium can be shaped easily, does not corrode, lightwei	ght (2	2 × 1)	[2]
(b)	(i)	2 marking out tools: scriber, rule, try square, odd legs	(2	2 × 1)	[2]
	(ii)	Shape cut out using combination of: tinsnips, guillotine, hacksaw Award 0–3 dependent on appropriately named tools and their use.			[3]
	(iii)				
		Appropriate use of former (1) Method of force: mallet or hammer and scrap wood (1)			
		Technical accuracy (1)			[4]
(c)	(i)	•			
		Rivet is pushed into rivet gun (1) Rivet is pushed into pre-drilled holes and trigger squeezed (1)			[3]
	(ii)		'n		[1]
	()				r.1

Page 5	Mark Scheme	Syllabus	Paper
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(d) (i)	Award 0–3 for a practical container: appropriate size (1) appropriate shape (1) suitable method of attachment to feeder (1)		[3]
(ii)	Mould must conform to design in previous part. Draft angles (1) Rounded corners/edges (1) Appropriate depth (1)		[3]
(iii)	polystyrene, ABS, acrylic		[1]
<b>(e)</b> Pra	actical solution includes the use of some form of 'hook' (1)		
Ма	aterials and fittings used (0–2)		[3]