CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0445 DESIGN AND TECHNOLOGY

0445/31 Paper 3 (Resistant Materials), maximum raw mark 50

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 will not enter into discussions about these mark schemes.

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Section A

1	(a)	aluminium, steel			[1]
	(b)	polypropylene			[1]
	(c)	paint, electroplating such as chrome, dip coated plastic, powder coating, anodised			
	(d)	protect, make appearance more attractive		[1]	
2	-				
		Tool	Name	Specific use	
			Rip, Cross-cut, Sheet, Hand, Panel saw	Cutting wood, plastic, metal	

Inside calipers

4 × 1 **[4]**

Measuring the internal diameter of

tube

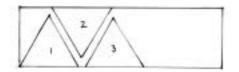
3 (a) benefit of cordless electric drill: versatile use in wide variety of situations, portable

[1]

- (b) benefit of bench drill: guaranteed vertical drilling, more robust, stable, secure, more drilling power [1]
- 4 (a) tenon saw, dovetail saw [1]
 - (b) bench hook or cutting board [1]
- 5 A scriber 1
 B centre square 1 [2]
- 6 casting / sand casting [1]

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Award 1 mark for 3 triangles marked out as above
Award 2 marks showing waste between

[2]

8 (a) bench stop [1]

(b) planing wood

[1]

- 9 Main issue is that candidates understand the importance of grain direction
 - (a) Award 0-2 dependent on technical accuracy

[2]

(b) Award 0-2 dependent on technical accuracy

[2]

10 (a) acetate, polystyrene, polythene

[1]

(b) can be moulded to specific shape, very secure packaging, transparent, protects product

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Section B

11	(a)		pes of garment, methods of suspending garments, door measurements: ght, width and thickness, number of coats, sizes / weights of coats,	2 × 1	[2]
	(b)	(i)	scriber, rule, try square	2 × 1	[2]
		(ii)	to make the marking out stand out / become clearer		[1]
	(c)	use use	rages: of vice or clamped in position of former / folding bars thod of force: hammer and scrap wood or mallet	1 1 1	[3]
	(d)	(i)	Accept any 2 from: to bend / shape the metal metal being worked can become work hardened need to soften the metal for further working	2 × 1	[2]
		(ii)	3 stages: heat metal to dull red [correct temperature] leave to cool	1 1 1	[3]
	(e)	paiı	nt, electroplated, lacquer		[1]
	(f)	Accept any 3 from: file / filing, use of emery cloth, wet and dry [silicon carbide paper], polishing mop and compound		and	[3]
	(g)	(i)	Appropriate 'bracket' or peg Appropriate material Appropriate sizes	0–1 0–1 0–1	[3]
		(ii)	method of joining must correspond to named materials: appropriate use of brazing, silver / hard soldering, riveting. Award marks for relevant individual stages in the process	5 × 1	[5]

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12 (a) 2 advantages include: cheaper than solid wood, no grain direction problems, more stable as it is less likely to shrink or expand, large sheet size available 2×1 [2] (b) (i) jig saw, router [1] (ii) safety precautions include: no trailing leads, wear eye protection, follow manufacturers' instructions, make sure work is secured, ear defenders, tie hair back [2] (c) (i) Saw down outside of slot [tenon saw] 1 Remove waste [chisel, coping saw] 1 1 Make slot level [chisel, file] Suitability / technical accuracy of tools and equipment named 1 [4] No reward for marking out details. (ii) use of strips of wood pinned and glued or screwed and glued under slot 0-2details of materials, sizes and fittings used 0-2 [4] (d) Use of rod, dowel only 0 - 10-1 Pedal secure Adjustable and fixed to 3 positions 0 - 1Details of materials, sizes and fittings 0-2 [5] (e) Award 1 mark for general understanding of anthropometrics i.e. human measurements Award 2 marks for specific reference to height of child, length of legs, width of back, arm reach 2×1 [2] [1] (f) (i) injection moulding, blow moulding 0-1 (ii) use of rod / axle method of retaining rod / axle 0-1 secured to toy 0-1 details of materials, sizes and fittings 0–1 [4]

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; (а		3 main parts: marking out using pencil, rule, compass cutting the shape using a tenon saw and G cramp or use of a vibro / He making the edges flat and smooth using a plane, sanding disc, glasspar			
		Award 0–2 marks for each part dependent on accuracy of technical deta	ail		[6]
(b		use of 2 sash cramps cramps shown over edges of top and bottom use of scrap wood to distribute pressure		1 1 1	[3]
(c	-	use of metal rod [minimum Ø 25mm], marbles or ball bearings fitted in a ball race details of materials and fittings used	a groove,	0–2 0–2	[4]
(d	•	methods include the use of strips, guides, recesses onto / into the botto column	m and / or	the cer	ntral
		Practical solution Details of materials, constructions and fittings		0–2 0–3	[5]
(e	e)	(i) white / French polish, Danish oil, wax			[1]
	(ii) Award 0–2 dependent on quality of answer to include as much of the surfaces would be glasspapered using a cork rubber / block various grades used getting finer through process wipe off dust and dampen surface after each grade	ne following	:	[2]
(f)	template could be used when marking out the shape of the top, bottom	or base		
		iig could be used when drilling holes in the top and bottom, or when saw and base to shape	•	, botto 2 × 1	m [2]
(9	J)	hardwood needs to be seasoned properly so that it does not shrink or e	xpand exce	essivel	y
		understanding of seasoning evident consequences of not seasoned properly		1 1	[2]

Mark Scheme

Syllabus

Paper

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