

Cambridge International Examinations Cambridge International General Certificate of Secondary Education

## **DESIGN AND TECHNOLOGY**

0445/32 October/November 2016

Paper 3 Resistant Materials 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 will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2016 series for most Cambridge IGCSE<sup>®</sup>, Cambridge International A and AS Level components and some Cambridge O Level components.

 $\ensuremath{\textcircled{B}}$  IGCSE is the registered trademark of Cambridge International Examinations.

[Turn over

Pa	age 2		Syllabus	Pap	
		Cambridge IGCSE – October/November 2016	0445	32	
		Section A			
1	A B C	rip saw, cross cut saw, panel saw (1) tenon saw, dovetail saw [not backsaw] (1) coping saw (1)			[3]
2	Met	al spoon: stainless steel (1) al wire: copper, aluminium (1) stic bowl: polypropylene, PP, HDPE (1)			[3]
3	Awa	ard 0–2 dependent upon accuracy of sketch		0–2	[2]
4	Scr	king gauge (1) iber (1) d legs, odd leg calipers [not calipers] (1)			[3]
5	(a)	Lines to be sawn down use a marking knife. Wood fibres are cut			[1]
	(b)	Sliding bevel, mitre square, combination square			[1]
6		annel: extrusion (1) ntainer: blow moulding (1)			[2]
7	(a)	Sketch shows tenon (1) Sketch shows haunch (1) Must be shown in correct orientation			[2]
	(b)	To lock the tenon to prevent it from moving/twisting stability/ more gluing area/increased strength			[1]
8	A B	Countersink drill (1) Flat bit (1)			[2]
9	Gui	ld] chisel (1) llotine (1) snips (1)			[3]
10	(a)	Pine: wide range of adhesives. Accept generic and trade names such a Resin W, Cascamite, synthetic resin, Gorilla glue, contact/impact adhese		Evo St	ik
	(b)	Epoxy resin, Araldite (1)			[2]

Page 3			Syllabus	Рар	er		
		Cambridge IGCSE – October/November 2016	0445	32			
	Section B						
11	(a)	2 specification points: must be large enough to be seen at distance, must have clear and easy to read numbers, must be able to move hand must be freestanding/wall-mounted Accept any sensible spec. points	ds freely,	2×1	[2]		
	(b)	<ul> <li>(i) 2 safety precautions include: wear safety glasses, mask, secure work, no trai leads, tie hair/clothing out of the way, no obstructions below work piece</li> </ul>					
				2×1	[2]		
		(ii) Award 0–2 on quality of description: for example, use of sanding d with plywood rotated against the disc to ensure smooth finish. Accept use of files.	isc fully des	cribed	[2]		
	(C)	Use of: coping saw, Hegner saw or equivalent, junior hacksaw saw to cut out waste (1) files to achieve shape (1) wet and dry paper to achieve smooth surface (1) polishing mop/compound to produce high quality finish (1)					
	(d)	Benefit: range of colours, inherent colours/self-finished, attractive			[4] [1]		
	(e)	Some form of screw, bolt, pin or dowel (1) Hands retained at back and front (1) Spacers/washers to allow for movement (1)			[3]		
	(f)	CAD to design numbers: easy to change design, wide variety of fonts to CAM to make numbers: extremely accurate, more professional appears produce than alternative methods, identical quality. Not faster/quicker without qualification.		uicker t	[1] ° [1]		
	(g)	Some form of practical stand or support For maximum marks the stand/support must be clearly drawn showing Materials, fittings and constructions	how it funct	0–3 ions 0–2	[5]		
	(h)	Some form of practical bracket attached to the back of the clock with pr to wall. Alternative method: plate with keyhole slot. Award 0–2 dependent upon accuracy of drawing. Materials, fittings and constructions	rovision for t	fixing 0–2 0–2	[4]		

Page 4		4	Mark Scheme		Paper	
			Cambridge IGCSE – October/November 2016	0445	32	
12	(a)	2 a	dvantages: cheaper, does not warp/shrink, more readily available.		2×1	[2]
	(b)	(i)	Use of blocks and pegs to position the mild steel rod against forme Retention of end of rod (1)	r	0–2	[3]
		(ii)	Work hardened: metal is shaped by hammering (1) as a result metal becomes harder (1)			[2]
	(c)	Pre	paration of ends before brazing: degreasing, filing, emery cloth		0–2	
		Cla Se Ap Ap Ap	cept 4 stages in brazing process: imp ends together t up on hearth oly flux oly heat oly brazing rod/spelter ow to cool		4×1	
	(d)	Me of s Fix Fix	ard 0–2 for technical accuracy of sketches thod of fixing allows for use of brackets, modifications to length and/ shelves. Practical idea to shelf to end frame tails of materials, fittings and fixings	or width	0–2 0–2 0–1 0–1 0–2	[8]
	(e)		easons about aesthetics: for example, different appearance is more i nbination of materials, lighter appearance	nteresting,	prefers 2×1	[ <b>2</b> ]
	(f)	mil	vironmentally friendly materials: d steel can be melted down and recycled neered chipboard uses waste materials not requiring trees to be chop	oped down		[1] [1]

Pa	ige (	5	Mark Scheme	Syllabus	Раре	
			Cambridge IGCSE – October/November 2016	0445	32	
13	(a)	2 p	roperties: very hardwearing, tough, water resistant, attractive, gives	a good finis	sh 2×1	[2]
	(b)	Use Use Use	thod of support: vice or bench stop shown (1) e of saw (1) e of plane to remove waste (1) e of glasspaper to make smooth (1) chnical accuracy: for example, named plane, saw, different grades o	f glasspape		
					0–1	[5]
	(c)	Use Me	ne sort of bracket to which the rails can be attached e of pin, rod or dowel through rails to allow them to rotate thod to keep rails apart: some form of spacer ails of materials and fittings used		0–2 0–2 0–2 0–2	[8]
		Dei			0-2	[o]
	(d)	Hol Sor	ctical idea. For maximum marks the method must be clear der must not rotate ne form of bracket attached to the back of the towel holder n provision for fixing to wall.		0–2 0–1	
		Alte	ernative method: plate with keyhole slot. terials, fittings and constructions		0–2	[5]
	(e)	(i)	2 reasons: hardwearing, attractive, allows natural colour/grain of waterproof, protects wood	ood to be s	een, 2×1	[2]
		(ii)	3 stages include: use of glasspaper [medium grade] wipe down surface/ remove dust use of glasspaper [fine grade] use of cork rubber/block stated		3×1	[3]