CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0445 DESIGN AND TECHNOLOGY

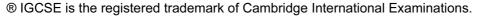
0445/32 Paper 3 (Resistant Materials), maximum raw mark 50

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 Three pieces of information: length, thread diameter, type of head, quantity, material
 (3 × 1)
 - $(3\times 1) \qquad [3]$

2 Completed drawing of coping saw Award (0–2) dependent on technical accuracy

[2]

- 3 (a) Sash cramp/F cramp (1)
 - **(b)** To protect, apply even pressure (1)

[2]

4 Polymorph, nitinol (2×1)

[2]

5

Tool	Specific name	Specific use
8	Outside calipers	Measuring outside diameters
	Brace	Drilling/boring holes

[4]

- **6 (a)** Allows cheaper manufactured boards to appear as solid wood (1)
 - **(b)** Less durable, can be damaged easily (1)

Award (0–2) dependent on technical accuracy

[2]

7 Corner strengthened: triangular plates, corrugated fastener, dowel, metal pins, feather, wooden block, modesty block Use of nails: award 1 mark only if 2 nails are shown Do not accept use of screws or bolts through end

[2]

- **8** (a) [sand] Casting, die-casting (1)
 - **(b)** Self-finished, anodised, spray paint, dip coat, lacquer (1)

[2]

Pa	age 3	3	Mark Scheme	Syllabus	Раре	
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9			any 3 from: drill hole, insert blade of coping or scroll saw and cut out sel, glasspaper		3 × 1)	[3]
10	(a)	Lar	mination, steam bending (1)			
	(b)	Мо	rtise and tenon, dowel (1)			
	(c)		es constructions to produce, stronger overall form, erent flexibility in chair, more stable, more comfortable (1)			[3]
			Section B			
11	(a)	(i)	Lower costs than ready assembled furniture, ready collected, satisfa assembling at home		2 × 1)	[2]
		(ii)	Less storage space required, fewer manufacturing processes mean production, competitive costs	•	2 × 1)	[2]
	(b)	Add	cognised KD fitting: corner/modesty block (0–2) ded notes (0–2) e of dowel or screws award 1 mark max.			[4]
	(c)	Aw	curate sketch of pre-manufactured component runner or use of groov ard (0–2) dependent on technical accuracy (0–2) ditional notes (0–2)	es [cut or a	applied] [4]
	(d)	.,	Two advantages: even application possible, no brush strokes, faste		r 2 × 1)	[2]
		(ii)	Well ventilated room, face mask, safety glasses (2 × 1)			[2]
	(e)		cept any sensible positive or negative evaluative comments about co sks generic	mputer		
		(i)	Safety: corners are rounded, the desk is stable in use			[2]
		(ii)	Good space for keyboard monitor etc. attractive painted finish, clea form	n simple		[2]
	((iii)	Use of manufactured board is economical, minimal constructions/se reduces cost of product	elf-assembl	У	[2]

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((f)	Limited lifetime issues include:			
		materials such as manufactured board may not be as long lasting as	solid wood	I	
		constructions such as KD fittings dependent on strength of screw thr be considered long lasting; over time, in use, KD fittings may become	•	ot	
		fashion can dictate the change for furniture of this type			
		technological developments means that tables to accommodate commay become obsolete	nputers etc.		
		Award (0-3) dependent on quality of explanation			[3]
12 ((a)	Durable metal, relatively cheap, easily worked/shaped, resist high temp		2 × 1)	[2]
((b)	Steel will rust if not protected, improved appearance			[1]
((c)	Cutting: mild steel sheet cut using bench shears or tinsnips (0–2) partial success using hacksaw or cold chisel (1 maximum) Award 1 mark for sketch of correct tool Award 1 mark for correctly named tool			
		Holding: mild steel sheet held by hand or clamped to a bench (0–2)			[4]
	(d)	Mild steel sheet held in vice (1)			
'	(ω)	Use of former/block of wood (1) Method of force: hammer and scrapwood or mallet (1)			[3]
((e)	Sketch showing use of: riveting, weld, braze (0-2)			[2]
((f)	Practical idea for support (0–2)			
		Named materials (0–2)			
		Two important sizes [500 mm height given] (0–2)			
		Method of joining temporarily (0–2)			[8]
((g)	Practical idea: three tools safely held allowing for ease of access (0–3) Details of materials and constructions (0–2) Use of wood joined to barbecue body inappropriate			[5]

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Syllabus

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13	(a)	(i)	Polystyrene, acrylic, polypropylene, ABS, HIPS		[1]
		(ii)	No grain marks, stable, will not warp, smooth surface, easy to shape, no splinters	(2 × 1)	[2]
		(iii)	Draft angle, rounded corners, no undercuts, smooth finish, air vents	(2 × 1)	[2]
	(b)	Pla Cla Brir Che Brir Tur Rei	ard 0–5 for specific stages: ce mould in machine [on platen] imp plastic in place ing heater across to soften plastic eck flexibility of plastic ing up mould into soft plastic in pump on to remove air move from moulded plastic iver mould [on platen] and leave to cool	(0–5)	
	Award (0–3) for technical quality of sketches (0–3)				
	(c)	(i)	Injection moulding		[1]
		(ii)	Manufactured board top needs to be clamped down on drilling machine tab or to a workbench (1) Use of scrap wood under work piece (1) Method of clamping (1)	le	[3]
		(iii)	Appropriate method: pin or screw (1) glue top to sides (1) Added details	(0–2)	[3]
	(d)		actical idea showing 3 paintbrushes safely stored with ease of access (0–3) tails of materials, constructions, sizes (0–2)		[5]

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