

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**  
International General Certificate of Secondary Education

**MARK SCHEME for the May/June 2013 series**

**0445 DESIGN AND TECHNOLOGY**

**0445/33**

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.

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- 1 Material, length, type of head, gauge, diameter, quantity, type of slot [Phillips or posidrive].  
Accept 'thickness', 'diameter'.

(3)

2

Tool	Name	Use
	Tinsnips/snips	Cutting sheet metal
	Mallet	To strike a chisel, with scrap wood

(4 × 1) [4]

- 3 (a) Scriber, odd legs. [1]

(b) Centre / dot punch. [1]

- 4 (a) B [1]

(b) A has short grain, grain is shorter and therefore will snap more easily. [1]

- 5 (a) Bookcase is carcass construction. [1]

(b) Table is stool or frame construction. [1]

- 6 To mark out a line to be sawn or chiselled. [1]

- 7 Hardwood chair requires many separate pieces that have to be constructed and assembled  
Increasing labour costs, whereas the plastic chair can be moulded as one piece.

For maximum 2 marks answers must contain references to both chairs. [2]

- 8 (a) Chuck. (1)

(b) Knurling tool. (1) [2]

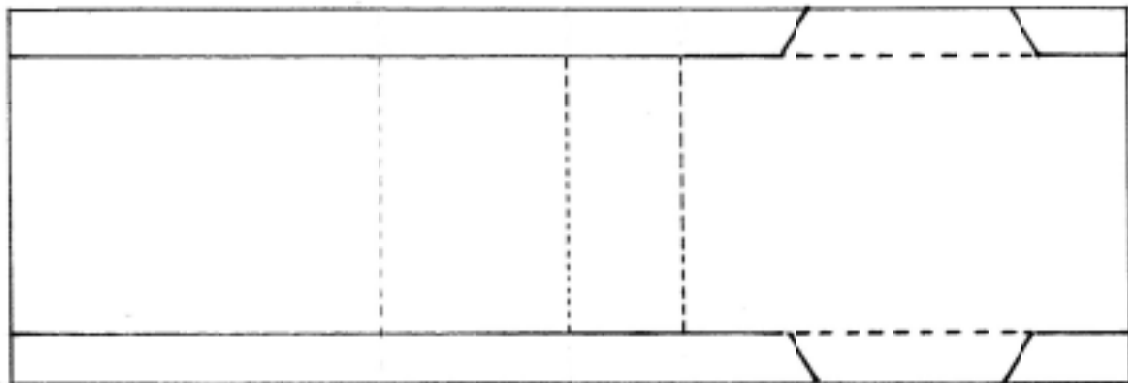
- 9 3 ways includes: smooth and rounded shape, comfortable handle, efficient spout to pour, easy to open lid, stable base, see-through sides to check water level. (3 × 1) [3]

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- 10 (a) (i) Hardwearing, insulates from heat, easy to clean.  
(ii) Will not corrode, attractive metal.
- (b) 2 methods include: epoxy resin and rivet. (2 × 1) [2]

### Section B

- 11 (a) Easily moulded/shaped, attractive colours, easily joined, impact resistant, self-finished. (2 × 1) [2]
- (b) Retain plastic/paper covering, make sure surfaces are covered when holding in vice or on bench. [1]
- (c) (i)



bend 1      bend 1    bend 1      repeat flap 1  
correct cut and bend lines 1

- [5]
- (ii) Marker pen can be erased but a scribe will provide a permanent scratch in the surface. For maximum 2 marks reference to both required. [2]
- (d) (i) Coping saw, machine saws including vibro, Hegner or equivalent, band saw. (2 × 1) [2]
- (ii) Two precautions: support underneath when drilling, clamp down securely, drill speed, cutting angle on drill. (2 × 1) [2]
- (e) Two advantages include: see if it works, check sizes, appearance, cheaper if mistakes are made. (2 × 1) [2]
- (f) Main stages include:
- scrape or file (1)
  - wet and dry paper (1)
  - polishing mop and compound (1)

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additional detail relating to any of the former stages

(g) Main stages include:

heat plastic using oven, strip heater, line bender	(1)	
use of mould/former	(1)	
retention of plastic while cooling	(1)	
technical accuracy / quality of communication	(0 – 2)	[5]

12 (a) (a) Hardwearing, close-grained, attractive, tough, durable. (2 × 1) [2]

(b) Lightweight, easily bent to shape, corrosion resistant, self-finished. (2 × 1) [2]

(c) Polyurethane / varnish, white / French polish, variety of oils and preservatives, wax, lacquer. [1]

(d) (i) Tenon saw, cross-cut saw, band saw, Hegner or equivalent saw, jig saw, coping saw. [1]

(ii) Sketch must show:

Use of 'G' clamp	(1)	
Use of scrap wood	(1)	
Added notes	(1)	
<b>or</b>		
Bench hook	(1)	
Held in vice	(1)	
Added notes	(1)	[3]
Award max. 1 mark if shown in vice.		

(e) (i) Sanding disc shown. (1)  
Table or platform with wood positioned. (1)  
Added notes to show correct part of disc and operation. (1) [3]

(ii) Jack plane shown. (1)  
Vice shown. (1)  
Method: (1)  
plane across to middle and stop/repeat from other end  
**or**  
use of scrap wood allows to plane across end  
**or**  
use of shooting board. (0 – 2) method (1) [3]

(f) Method of securing one end of rod. (1)  
Method of forming 30 mm radius: use of former. (0 – 2)  
Method of force: hammer. (1) [4]  
Use of vice award max. 2 marks.

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- (g) Some form of bracket, tube, cup for rod. (1)  
 Appropriate method of fixing bracket to back. (1)  
 Support for rod to prevent dropping and jamming. (1)  
 Allowed to rotate securely. (1)  
 Details of materials, fittings and fixings. (0 – 2) [6]
- 13 (a)** Sizes of drawing paper, equipment to be stored [sizes and quantity], target market. (2 × 1) [2]
- (b) Piano hinge. (1)  
 Accuracy / quality of sketch of hinge. (0 – 2) [3]
- (c) Finger [comb] joint, dovetail, lapped joint, butt joint with panel pins and glue, mitre joint, dowel joint. Correct name: (1)  
 Accuracy / quality of sketch of joint. (0 – 3) [4]
- (d) Use of rebate, groove or applied beads. (1)  
 Award max. 2 marks for glued only or nails through sides. (1)  
 Award 0–3 dependent upon quality/accuracy of construction. [3]
- (e) Use of components such as hasp and staple and variety of clasps, clips and locks. (1)  
 Method must fix to both board and case. (1)  
 Accept use of straps, Velcro, magnets maximum 2 marks. (1)  
 Award 0 – 3 dependent upon quality/accuracy. [3]
- (f) Main stages include: (1)  
 Drill a hole for a saw blade to fit through. (1)  
 Insert blade of coping saw Hegner saw or equivalent. (1)  
 Saw out shape. (1)  
 File / glasspaper shape smooth. (1) [4]
- (g) Board set to 3 positions. (1)  
 Board supported on both sides of case. (1)  
 Board is secure and will not collapse when worked against. (1)  
 Ease of use – can be set with one hand. (1)  
 Name of one appropriate material. (1)  
 Detail of one fitting **or** fixing **or** construction. (1) [6]