UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS **GCE Ordinary Level**

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for the guidance of teachers

6043 DESIGN AND TECHNOLOGY

6043/01

Paper 1 (Design and Technology), maximum raw mark 95

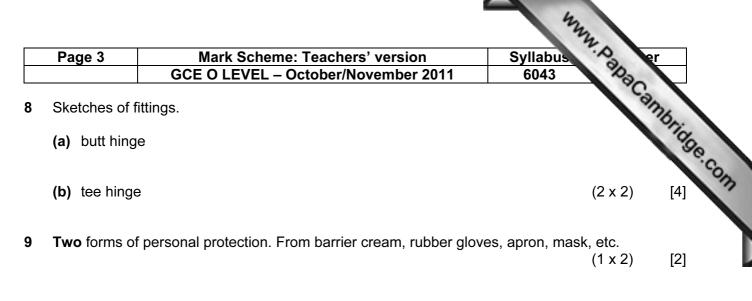
This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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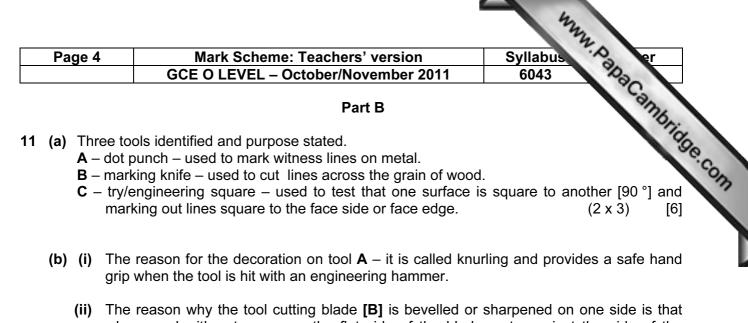
Cambridge is publishing the mark schemes for the October/November 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

Page 2	Mark Scheme: Teachers' version	Syllabus 2	er
	GCE O LEVEL – October/November 2011	6043 Pac	1
	Part A		mb
Any two of th	e following – will cause the timber to dry out, shrink, warp	Syllabus 6043 b, crack, split, etc. (1 x 2)	1
		· · · · ·	
Sketched de	vices.		
(a) counters	sunk rivet		
(b) round he	ead machine screw	(2 + 2)	[4
The plastic fo	orms stated.		
(a) powder			
(b) granules	5		
(c) sheet		(1 x 3)	[3
Most childre	n put <u>things in their mouths</u> so any surface finish must	not be poisonous or (cause
harm.		(1 x 2)	[2
When a desi and evaluate	gner has decided to build a full scale model of his or her i	idea, so that it can be t (1 x 2)	testeo [2
		(1 × 2)	Ľ
(a) steamed	I		
(b) anneale	d		
(c) softened		(1 x 3)	[3
(-)			L
Materials na	med.		
Materials nai (a) copper	ned.		



10 Piece named – face plate = 1.

Use explained – for irregular shaped work that can be held by bolting to face plate = 2. (1 + 2) [3]



- when used with a try square, the flat side of the blade rests against the side of the square, and the bevelled blade cuts in the waste material.
- (iii) The accuracy of the tool [C] be checked by placing it on a true edge and marking a 90° line. Then the tool is turned over and another line is marked. If accurate the lines should lap over each other, if not the tool is inaccurate.
 (3 x 3) [9]
- (c) When marking out acrylic, only lines that need to be cut are scribed, any lines that will form bends or curves are marked with a pencil or marker.
 (1 x 2)

		Mary .
Page 5	Mark Scheme: Teachers' version	Syllabus Syllabus
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12 (a) Copy of chart.

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Page 5	(Mark Scheme: Teachers' version GCE O LEVEL – October/November 2011		Syllabus er 6043
Page 5 Mark Scheme: Teachers' version Syllabus GCE 0 LEVEL – October/November 2011 6043 (a) Copy of chart. 6043 Material Process Reason for Use Soft Solder Joining together metals at low temperatures, and in small Because the joining takes place at very low temperatures, such things as				
Material	I	Process	Reason for Use	
Soft Solder		Joining together metals at low temperatures and in small areas.	Because the joining takes place at very low temperatures, such things as electrical components can be joined without damage.	
Acid		Used when cleaning non-ferrous metal.	Before metal can be shaped it is heated to soften. This causes oxides to form, only a diluted sulphuric acid can clean the surface.	
Plastics Cer	ment	Used when joining acrylic to acrylic.	The Plastics cement is in fact an acrylic solvent. When applied to both surfaces they can be bonded and left to harden.	
Wire Wool		Used when finishing the surface of wood.		wool acts as a very fine nd is mainly used in the final blishing.
Sand		Used in the casting of hot metals.	oil, sand ca	d with a degree of water or an be made to take up the n object into which hot metal red.

(3 x 5) [15]

Most insect attacks are caused by beetles that lay eggs in claops in times. In larvae which feed on the wood making bore holes which weaken the timber, etc (1×2) (b) Most insect attacks are caused by beetles that lay eggs in cracks in timber. These hatch into

[2]

Page 6	Mark Scheme: Teachers' version	Syllabus	
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- 13 (a) Two properties named from lightweight, flexible, easy to clean, colourful, hygid etc.
 - (b) Unsuitable materials explained.
- www.papaCambridge.com (a) expanded polystyrene – not flexible, very weak at this thickness, crumbles easily, burns easily, etc.
 - (b) mild steel heavy, sharp edges, rusts, needs added colour, etc.
 - (c) chipboard little strength, will be weak at this thickness, made from glued wooden chips which will break apart, difficult to colour, etc . (2×3) [6]
 - (c) Suitable material stated. (1 x 1) [1]
 - (d) Notes and sketches showing
 - (i) holding while drilling work on drill table, supported by waste wood, held by g-cramp, with waste protection under cramp.
 - (ii) work held in bench/engineering vice, work set level. With vice jaws, protection on both sides, etc. (1×6) [6]
 - (e) Simple design does it fit the surface, is it based on a flower. [2] (1 x 2)
- 14 (a) Material suggested and reason given. Such as teak, brass, nylon, with reason as lightweight, resistant to chemicals, easy to clean, tough, etc. (1×2) [2]
 - (b) Processes described.
 - (a) marking out ends ruler, scriber, square, compass, dividers-lines, centres, circles, angles, etc. [tools must relate to material].
 - (b) drilling process, support, holding, protection, drill size, speed, action, movement for other holes, etc.
 - (c) the joining process such as rebate, butt, tenon, dowel, cutting out, drilling, gluing, etc. Could be nailed or screwed but not the best solution. (1 x 5 x 3) [15]

Page 7	Mark Scheme: Teachers' version	Syllabus
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- 15 (a) Two properties for the ring game body – such as tough, lightweight, colourful, eas etc.
 - (b) Suitable material for.
- www.PapaCambridge.com (i) the body – such as polypropylene, aluminium, pine, etc. Plus reason – as in section (a).

- (ii) the rod beech, aluminium, acrylic, etc. Plus reason as in section (a). (1×4) [4]
- (c) Processes described
 - (i) making the body this may be cast, injection moulded or built up from pieces. [Must include stages, tools and materials.] (1×7) [7]
 - (ii) joining the rod to the body such as drilled hole, reduced diameter rod, shoulder, thread, glue, etc. (1×4) [4]
- **16** (a) Two safety features for toy such as nothing that can trap fingers, lightweight, no sharp corners, no loose parts, nearly unbreakable, etc. (1×2) [2]
 - (b) Processes of making the toy described
 - (i) forming the body shape this may be steam bending timber, strip heating plastic, annealing and bending metal. (1×6) [6]
 - (ii) forming the head this may be turning on the lathe or injection moulding. (1×6) [6] [All tools, equipment and materials should be included.]
 - (c) Turning system design should include, handle, crank, fixing system, etc. (1 x 3) [3]
- (a) Suitable material and reason. such as acrylic, brass, silver, timber veneers e.g. ash. Plus 17 reason such as decorative, colourful, easy to form shape, etc. (1×2) [2]
 - (b) Processes explained
 - (i) cutting the opening in the holder may be done before forming shape, drilling, cutting with saw, removing waste, smoothing, etc.
 - (ii) forming the shape, may be built up with veneers, softening and bending metal or plastic.
 - (iii) constructing the base may be built up from pieces, cast, moulded, etc.

[All stages, tools and materials to be included.] (1 x 15) [15]

		2.
Page 8	Mark Scheme: Teachers' version	Syllabus Syllabus
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- 18 (a) Two methods of construction for the support which may be sand casting meta moulding plastic, turning wood - reasons such as complex shape, less waste, s production, etc. (2 x 2)
- ambridge.com (b) Major stages of making the support - this would relate to chosen material - e.g. metal casting, boxes, sand, sieve, ramming, parting sand, sprue pins, runners, risers, etc. (1 x 10) [10]
 - (c) Marking the three centres on base using odd legs, compass, dividers, centre square, circle, divided into six with radius. (1 x 3) [3]