UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2006 question paper

0445 DESIGN AND TECHNOLOGY

0445/03 Paper 3, maximum raw mark 60

These mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. They show the basis on which Examiners were initially instructed to award marks. They do not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

The minimum marks in these components needed for various grades were previously published with these mark schemes, but are now instead included in the Report on the Examination for this session.

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1 **(a)** 3 criteria: suitable height, comfortable to sit at, durable 1
materials/construction, good storage space, no sharp edges, 1
stable in use etc. 1

(b) **(i)** wide range of suitable hardwoods: oak ash, beech, mahogany etc. 1

(ii) 2 reasons include durable, hardwearing, attractive 1
1

(c) variety of suitable joints include: half lap, dowel, dovetail, finger/comb; mitre not suitable 1
accuracy/quality of joint drawn 4

(d) two types of construction: mortice and tenon, bridle, dowel 1
1

(e) **(i)** marking out tools include: rule, marking, mortice and cutting gauges, 1
marking knife, dowel jig, try square etc. not dot/centre punch 1
1
1

(ii) cutting out/fitting tools inc. mallet, mortice/bevel edge chisels, drill, 1
tenon saw, G cramps etc. 1
1
1

(f) suitable adhesive: PVA, Evo-Stik Resin 'W', Cascamite, Aerolite etc. 1

(g) manufactured board named 1

practical idea of hingeing/pivoting desk top 0-3

notes to explain method 0-2

fittings listed 0-2 7

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2	**(a)**	**(i)**	ferrous metal: mild steel, stainless steel		1
		(ii)	non-ferrous metal: aluminium, brass		1
	(b)		rectangular shape in proportion	1	
			rounded corners	1	
			flap A marked	1	
			3 bend lines	1	
			title flap included	1	5
	(c)		marking out tools include: scriber, rule, odd legs, try square		1
			accuracy/quality of sketch	0-3	3
			repeated for second tool		1
					3
	(d)	**(i)**	cut shape: accuracy of technical detail-tin snips, guillotine	0-3	3
		(ii)	make edges safe: accuracy of technical detail- draw file, emery cloth	0-3	3
		(iii)	bending: accuracy of technical detail- vice, folding bars, soft faced mallet, hammer and scrapwood, anvil, sheet bender	0-3	3
	(e)		cut out flap A: drill hole in sheet, insert abra file saw blade	0-2	
			accuracy/quality of communication	0-2	4
	(f)		finish for non-ferrous: brief description of self-finishing process or finish for ferrous: brief description of applied painted finish by brush or spray, dipcoated plastic.		2

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3	**(a)**	**(i)**	suitable manufactured board: plywood, MDF Not blockboard, laminboard or chipboard.			1
		(ii)	2 advantages: stable, available in wide boards, cheaper than solid wood			1 1
	(b)		suitable thicknesses: top 15-21 mm legs 12-19mm			1 1
	(c)		to produce the slot: band saw, jig saw, Hegner saw, power router, mallet, chisels, G cramps Not rip, cross-cut, tenon or coping saws.			1
			accuracy/quality of sketch		0-3	3
			repeated for second tool			1
						3
	(d)	**(i)**	K-D fitting: modesty bloc, bloc-joint fitting			1
			accuracy/quality of sketch			3
		(ii)	4 blocks shown correct position added notes/details		1 1 1	3
	(e)	**(i)**	2 reasons for not finishing: increased manufacturing costs, quicker production, customer preferences			1 1
		(ii)	advantage for painting before assembly: better finish, less awkward, quicker			1
	(f)	**(i)**	Portable power tool: jig saw, router			1
		(ii)	2 safety precautions: correct blade, workpiece held securely, no trailing electrical leads			1 1
		(iii)	use of disc sander, spokeshave, glasspaper, power router		0-2	
			accuracy of technical detail/ communication		0-2	4

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4 **(a)** **(i)** wood: beech 1

(ii) metal: aluminium, stainless steel 1

(iii) plastic: nylon, polythene, polypropylene 1

(b) 2 reasons: more hygienic, self-finished, easiest to form 1
1

(c) 2 tools to mark out shape: permanent marker, chinagraph pencil, scriber, template, ruler, try square, odd-leg callipers, dividers, pencil and masking tape. 1
1

(d) **(i)** cutting plastic to shape: plastic held securely while saw cuts 3

(ii) edges made smooth: use of draw filing, scraper, wet or dry 4

(iii) heating and bending: use of strip heater, line bender, oven and the use of a bending jig/former 4

(e) 2 safety precautions related to operations in **(d)** 1
1

(f) quality of wooden handle/shape to grip 0-2

method of fitting to spatula 0-2

accuracy of technical detail 0-2

quality of communication 0-2 8

(g) advantages of recycled plastics: cheaper than using raw materials, 1
oil already used, uses renewable resource, environmentally friendly 1

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