OCR
RECOGNISING ACHIEVEMENT

GCSE

Design and Technology

General Certificate of Secondary Education **1959/03**

Industrial Technology Paper 3

Mark Scheme for June 2010

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Question			Expected Answer	Mark	Rationale/Additional Guidance
1	(a)		2 (Hex Headed) Bolt 3 Spring / locking washer 4 Self locking / Nyloc Nut 5 Self tapping screw 6 Split Pin / cotter 7 Pop / blind rivet 8 (Socket Headed) Cap (head) Screw/Allen screw (7 x 1)		Accept basic component name for: Washer Nut Screw Rivet
	(b)		Spanner Component 2 or 4 Pop riveting pliers Component 7 Allen Key Component 8 (3 x 1)	[10]	
2	(a)	(i)	Mixture of metals (1)		
	(a)	(ii)	Bronze; aluminium alloy; steel; gunmetal; pewter (1)		Any other metal alloy
	(b)		2. Cut off corners with hacksaw (or junior hacksaw) 3. File to shape 4. Draw file or linish (3 x 1)		Accept clamping as initial stage (1) Accept use of bench (not hand) shear (1)
	(c)		Rivetting / screws / nut and bolt/silver soldering/brazing (1)		Accept epoxy /superglue NOT welding
	(d)		One mark for each specification point Location; clamping; held in machine vice; easy to use (4 x 1)	[10]	

Question			Expected Answer	Mark	Rationale/Additional Guidance
3	(a)	(i)	Good process for making shaped parts; All parts made will be identical and accurate; Makes stronger part than fabricating; Gives a good finish to the part. (1)		
	(a)	(ii)	Lacquering; plastic coating; galvanising; plating; oil blacking (1)		Not polishing Accept varnishing
	(a)	(iii)	Easy to cast into any shape; Heavy for a stable base; Not too expensive / cheaper than other metals Durability (2 x 1)		
	(b)		Clamp for drilling / Fix to faceplate Drill small (pilot) hole / Centre drill Drill tapping size hole Clear swarf from hole Make sure taper tap is vertical in hole Tap with taper tap Clear swarf from hole Tap with plug (bottoming) tap (6 x 1)	**[10]**	Stages in feasible order ECF if diameter 16 drill used
4	(a)	(i)	Stainless steel; Brass; Aluminium alloy (1)		Accept copper
	(a)	(ii)	Presswork; Stamping/punching (1)		
	(a)	(iii)	Keeps body firm / holds body sides in; Stops body sides scratching surface (table); Rack is easier to carry; Catches crumbs off toast. (2 x 1)		Not stability unless referring to stiffening the body

Question			Expected Answer	Mark	Rationale/Additional Guidance
4	(b)	(i)	Design can be done anywhere; Easy to make changes/edit to design; Importing designs/details from elsewhere; Can show 3D modelling; Can send designs electronically; Can save designs without needing paper. (3 x 1)		NOT quicker; easier; more accurate No mark for reference to CAM
	(b)	(ii)	CNC router / milling machine / machining centre / laser cutter/ HP water jet (1)		Accept if CNC not specifically referenced
	(b)	(iii)	Less labour needed to operate machines; All parts are identical/accurate; Good for batch production; Easy to set up machines. (2 x 1)	**[10]**	Reference to speed of production not accepted
5	(a)		Plastic is easy to form into shape; Insulator for electronics; Easy to clean; Can be made in any colour / self coloured; Light and safe to handle. (2 x 1)		No simplistic one word answers
	(b)		Description to include shape and size to fit hand / positioning of buttons to make them easy to reach and use. Feature (1) Description (1) (1 + 1)		Two features equals two marks
	(c)	(i)	1. Hopper 2. Heater 3. Feed screw / ram (3x1)		

Question			Expected Answer	Mark	Rationale/Additional Guidance
	(c)	(ii)	Explanation to include reference to feed screw taking plastic granules through heating chamber to melt plastic(1) and injection by ram into mould.(1) (1+1)		Must have reference to heating for any marks
	(d)		Vacuum forming; extrusion; blow moulding; rotational moulding; compression moulding; press moulding. (1)	[10]	Allow line bending
			Total	**[50]**	

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