

# **Design and Technology**

General Certificate of Secondary Education **1056/01 & 1956/01**

Resistant Materials Technology

## **Mark Scheme for June 2010**

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

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 should be read in conjunction with the published question papers and the Report on the Examination.

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**General advice to Assistant Examiners on the procedures to be used**

YOU WILL BE REQUIRED TO UNDERTAKE PRACTICE AND STANDARDISATION SCRIPTS BEFORE The schedule of dates for the marking of this paper is very important. It is vital that you meet these requirements. If you experience problems then you must contact your Team Leader (Supervisor) without delay.

- 1 An element of professional judgement is required in the marking of any written paper. Candidates often do not use the exact words which appear in the detailed sheets which follow. If you are in doubt about the validity of any answer then consult your Team Leader (Supervisor) by phone, the messaging system within SCORIS or e-mail.
- 2 Some questions may have a 'Level of Response' mark scheme. Any details about these will be in the rationale.
- 3 If an answer has been crossed out and no alternative answer has been written then mark the answer crossed out.
- 4 In addition to the award of 0 marks, there is a NR (No Response) option on SCORIS.

Award 0 marks

- if there is any attempt that earns no credit (including copying out the question or some crossed out working)

Award NR (No Response)

- if there is nothing written at all in the answer space  
OR
  - if there is any comment which does not in any way relate to the question being asked (eg 'can't do', 'don't know')  
OR
  - if there is any sort of mark which is not an attempt at the question (eg a dash, a question mark)
- 5 Abbreviations, annotations and conventions used in the detailed Mark Scheme. These vary from paper to paper, you will be advised in advance of the correct abbreviations, annotations and conventions to be used.

Highlighting is also available to highlight any particular points on the script.

- 6 The Comments box  
The comments box will be used by your PE to explain their marking of the practice scripts for your information. Please refer to these comments when checking your practice scripts. You should only type in the comments box yourself when you have an additional object of the type described in Appendix B of the Handbook for Assistant Examiners and Subject Markers.  
Please do not use the comments box for any other reason.  
Any questions or comments you have for your team leader should be communicated by phone, SCORIS messaging system or e-mail.

- 7 Abbreviations, annotations and conventions that are used in this Mark Scheme vary from paper to paper. The following annotations are available for this paper.

**(SO to add any others)**

✓ and ✕

**BOD** – Benefit of doubt

**NBOD** – No benefit of doubt

**TV** – Too Vague

Highlighting is also available to highlight any particular points on the script.

<b>Question</b>			<b>Expected Answers</b>	<b>Marks</b>	<b>Rationale</b>
<b>1</b>	<b>(a)</b>		Coping saw      to cut the curved shape / handhold Drill                to drill a hole File                  to smooth the sawn edges. Glasspaper –     to clean up before varnishing. [4x1]	<b>[4]</b>	Award 1 mark if use is correct even if not linked directly to tray.
<b>1</b>	<b>(b)</b>		Plywood, hardboard, MDF.	<b>[1]</b>	Do not accept laminboard or chipboard.
<b>1</b>	<b>(c)</b>		To allow the grain of the wood to be seen, attractive, preserve, protect.	<b>[1]</b>	Accept answers relating to “varnish”, not necessarily clear varnish.
<b>1</b>	<b>(d)</b>	<b>(i)</b>	Suitable joint includes: lapped, dowel, m&t, dovetail, mitre, finger. Do not accept biscuit joint. Must be suitable or 0 marks. Accuracy of sketch. [0-2]	<b>[2]</b>	For maximum marks joint drawn must be in good proportion.
<b>1</b>	<b>(d)</b>	<b>(ii)</b>	Pencil, rule, try square, marking, cutting, mortise gauge , tape measure, carpenters square, marking knife, Engineers Square [as appropriate] [2x1]	<b>[2]</b>	Do not accept Pen, Square, Tee square, Stanley knife or Scriber
			<b>Total</b>	<b>[10]</b>	

Question			Expected Answers	Marks	Rationale
2	(a)		Number of tools to be stored, sizes of tools, shapes of tools, weight of tools, location, existing products [2x1]	[2]	
2	(b)		Round bar, former or anvil [1] Hammer/mallet [1] Vice or tongs [1]	[3]	
2	(c)	(i)	Emery cloth to clean the joint [1]		Do not accept “to make smooth” or “shine”
2	(c)	(ii)	Flux-applied to the joint to keep it clean/allow brazing rod to flow [1]	[3]	
2	(c)	(iii)	Brazing rod applied to joint when red hot to join steel together [1]		
2	(d)		For protection, resist corrosion, attractive. Hide scratches / marks, to attract customers. [2x1]	[2]	
Total				[10]	

Question			Expected Answers	Marks	Rationale
3	(a)		A template would be quicker than having to measure each rack individually. Repetitive accuracy. Template can be used to check the size of key rack	[2]	'Quicker'/'faster' must be justified as they are comparative terms.
3	(b)		Hacksaw, coping saw, abra file, Hegner, Scroll Saw, vibro saw, band saw or equivalent machine saw, Tenon saw.	[2]	Do not accept: Bow saw or jig saw. Accept either hacksaw <b>or</b> Junior hacksaw.
3	(c)	(i)	Low position to reduce vibration, vice cheeks to protect surfaces from scratches.	[1]	2 types of damage possible: cracking when too high in the vice and scratching when there is no backing paper.
3	(c)	(ii)	Clamp plastic down firmly on drilling table/bench, Backing with scrap wood, Reference to [140°] point angle on drill. Do not drill close to end or edge of material	[1]	
3	(d)		Practical modification: some form of bracket or bends to existing rack. [0-2] Notes to describe how it would be made. [0-2] Hooks=0 marks	[4]	2 parts to this answer: <ul style="list-style-type: none"> <li>the accuracy &amp; practicality of the modification</li> <li>The technical detail to support the modification.</li> </ul>
<b>Total</b>				<b>[10]</b>	

Question			Expected Answers	Marks	Rationale
4	(a)		Tough, hardwearing/long lasting/durable, less likely to splinter, good surface finish, close grain, hard,	[2]	
	(b)		Smoother finish, colour will not chip, hygienic, easy to clean, rounded edges, weight, self-coloured, wider range of colours, does not splinter, water resistant.	[2]	Safe/safer must be qualified
	(c)		Ease of editing, sizes set by program, repeat shapes easier, on-screen modelling, 3D evaluation possible can be easily be transferred to CAM, accurate or precise, can be sent by email.	[2]	
	(d)		Location by means of end stop or mark. [1] Accommodate 2 widths of beech strips [1] Method of achieving length. [1] Method of holding the beech strip <b>must be explicit.</b> [1]	[4]	Accept end/edge of jig as end stop  Allow hand held if properly supported
			<b>Total</b>	<b>[10]</b>	



Question			Expected Answers	Marks	Rationale
5	(a)		Modern design, able to store/change numerous photos, easy to change photos, stable, free standing, protects photos, economic use of materials, can be a range of colours.	[2]	Must be specific features. Do not accept vague 'aesthetically pleasing'. Do not accept features that are shown in the question
	(b)		Attractive, corrosion resistant, springy, fashionable, natural finish.	[2]	
	(c)	(i)	Look for any stages in the process that could be used to <b>batch produce</b> including:- Marking out/development(net) Cutting to shape, include use of laser cutter, miller/router Cutting holes Use of jigs or templates Method of heating (must be explicit): strip heater/line bender/oven. Use of mould/former. CAM must be explicit Finishing, polishing edges	[4]	There are numerous stages in batch production. Candidates can achieve the maximum 4 marks by either: Details of several processes or Extended details of one process  Do not allow vacuum forming or injection moulding, but allow 1 mark for an appropriate mould for vac forming.  For maximum mark answers must include at least one sketch.  Do not allow marks for production of the rings,
	(c)	(ii)	Award 1 mark for identifying check to be carried out <b>during</b> production. Include checks on sizes, correct heat of plastic before bending, correct shape, quality of surface finish, stability.  Award 1 mark for describing how the check would be carried out.	[2]	Essentially 2 parts to this question. Maximum mark can only be awarded if both are answered correctly.
Total				[10]	

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