



ASSESSMENT and  
QUALIFICATIONS  
ALLIANCE

# Mark scheme

# June 2003

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## GCSE

### Design and Technology

### Resistant Materials Technology

3555 (Short Course)

## Foundation

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**Design and Technology: Resistant Materials Technology****Short Course Foundation Tier**Question 1

Any **three** correctly identified checks.

Possible responses:

- Any relevant customer checks made before buying
- Sit at the workstation
- Use the keyboard
- Use the mouse
- Access the printer
- Access the scanner
- Check the colour is suitable for the environment it will be used in.
- Check it is the correct size for the environment it will be used in (check size of equipment it will house)
- Any quality related check (quality assurance e.g. finished paintwork)

(3 x 1 mark)

**Three** correct explanations

(3 x 1 mark)

**Total 6 marks**

**Question 2**

Any **two** correct ways of using ICT to help design the workstation

Possible responses:

- (xii) Interrogating a CD Rom database.
- (xiii) By using a word processing package.
- (xiv) By using the internet
- (xv) By using a graphics software package.
- (xvi) By using e-mail
- (xvii) By using video conferencing
- (xviii) By using a fax machine
- (xix) By using a mobile phone
- (xx) By using a digital camera
- (xxi) By using a scanner

(2 x 1 mark)

**Two** correct explanations

Possible responses:

- (xxii) To gain information about materials
- (xxiii) To produce a letter requesting information from someone
- (xxiv) To contact other relevant companies
- (xxv) To draft out ideas
- (xxvi) To communicate with a manufacturer
- (xxvii) To communicate with a group of people
- (xxviii) To send a letter quickly to someone
- (xxix) To telephone someone for information
- (xxx) To photograph the manufacture of a project
- (xxxi) To copy an image for use in a design folder

(2 x 1 mark)

**Total 4 marks**

**Question 3**

Any **three** correctly identified requirements.

Possible responses:

- Must securely hold the computer and all the accessories
- Must be comfortable to sit at
- Must be soundly constructed
- Must be capable of being manufactured in quantity
- Must be safe to use
- Must fit into the home environment
- Must allow easy access to the computer and its accessories
- Must be capable of home assembly – easy assembly
- Must be an interesting design
- Must have a flat work area
- Environmental issues e.g. recyclable

(3 x 1 mark)

Three correct explanations

(3 x 1 mark)

**Total 6 marks**

Question 4

## Variety of ideas

Mark each idea separately against the following scheme

- A very good idea which differs in approach or principle, fulfils the design brief, specification and shows originality. (6 marks)
- A good idea which differs in approach or principle, fulfils most of the design brief, specification (5 marks)
- A good idea which differs in approach or principle, fulfils some of the design brief and specification. (4 marks)
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- A good idea which fulfils the design brief and specification but is similar to the other ideas (3 marks)
- An idea which fulfils some of the design brief and specification but is similar to the other ideas. (2 marks)
- A simple idea (1 mark)

## Quality of sketches

- Quality 3D sketches appropriately rendered (4 - 5 marks)
- Quality line sketches or an attempt at 3D sketches (2 - 3 marks)
- Simple line sketching (1 mark)

## Quality of notes

- Detailed explanations (3 - 4 marks)
- Simple notes (2 marks)
- Labelling (1 mark)

**Total 21 marks**

Question 5

- (a) Good analytical thinking against  
2 or more points on the specification (2 marks)  
Simple analytical thinking against  
One point on the specification (1 mark)
- (b) Method of construction
- A suitable method of construction,  
correct in detail and proportion. (4 marks)  
A suitable method of construction,  
with inaccuracies. (3 marks)  
Incorrect method of construction,  
but would function. (2 marks)  
Incorrect method of construction,  
little chance of success. (1 mark)
- Quality of drawing
- Quality line drawing (2 marks)
  - Simple line drawings (1 mark)
- Quality of notes
- Detailed notes (2 marks)
  - labelling (1 mark)
- Total 10 marks**

**Question 6**

- (a) Any **two** correctly identified safety precautions.

Possible responses:

- Ensure you have dust extraction / masks / ventilation
- Ensure you are wearing goggles / glasses
- Ensure you are wearing an apron / overall
- Ensure you have the work securely clamped down
- Ensure you have the cord / flex away from the blade
- Do not place the jigsaw onto a workbench before it has come to a stop
- Supervision / permission
- Ear protection
- Keep hands away from cutting edge (blade)

(2 x 1 mark)

**Two** correct explanations

(2 x 1 mark)

- (b) **Figure 3** This substance is flammable  
Do not expose to a naked light.

(1 mark)

(1 mark)

**Total 6 marks**

Question 7

(a) Possible responses:

- Managed forest – sustainable resources
- Biodegradable
- Recyclable
- Converts CO<sup>2</sup> into O<sup>2</sup>
- Is a renewable resource
- Provides a habitat for flora and fauna
- Does not pollute the atmosphere
- Harmless to health

(2 x 1 mark)

Good explanation

(2 marks)

Simple explanation

(1 mark)

(2 x 2 marks)

(b) Possible responses:

- Is made from a non renewable resource
- Is non biodegradable
- Pollutes the atmosphere during its manufacture

(2 x 1 mark)

Simple explanation - developed

(2 marks)

Simple explanation

(1 mark)

(2 x 2 marks)

**Total 12 marks**



**Question 8****(a) Part A**

Specific material: Any suitable **light** coloured hard / softwood.

Generic term : wood (MDF / Plywood) (1 x 1 mark)

Possible responses:

- Birch
- Beech
- Ash
- Oak
- Pine
- Sycamore
- Ramin (1 x 2 marks)

Reasons

Possible responses:

- Attractive
- Strong
- Capable of being cut to shape
- Capable of being joined
- Relatively lightweight
- Durable
- Cost (expensive / inexpensive) (1 x 1 mark)

**Part B**

Specific material:

Generic term : glass / plastic (1 x 1 mark)

Possible responses:

- Toughened Glass
- Acrylic
- Polycarbonate (1 x 2 marks)

Reasons

Possible responses:

- Clear
- Immaculate surface finish
- Capable of being cut to length
- Rigid (1 x 1 mark)

(b) **Part A** – Any suitable finish.

Possible responses:

- Natural
- Wax
- Varnish / polyurethane
- Stain
- French polish / shellac
- Lacquer

(1 x 1 mark)

**Part B**

Possible responses

- Frosted
- No finish required
- Polish / buff
- Flame finish

(1 x 1 mark)

(c) **Two** reasons required.

Possible responses:

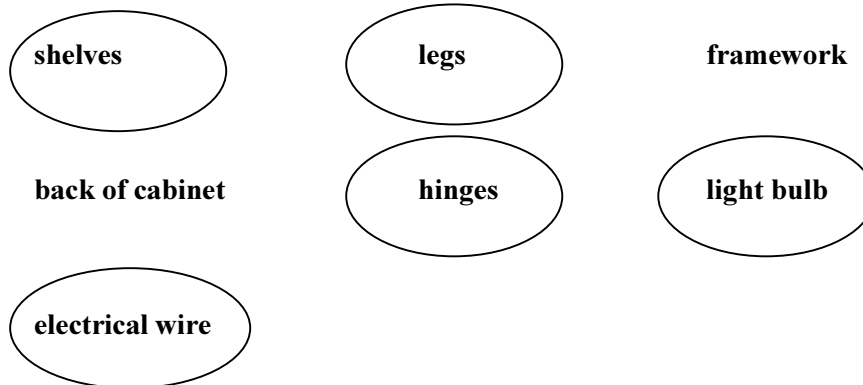
- For protection
- To enhance the appearance of the frame

(2 x 1 mark)

**Total 10 marks**

**Question 9**

(a) Award **one** mark for each correctly circled part.



(4 x 1 mark)

(b) Reason

It would be more cost effective to purchase components rather than manufacture them themselves

(1 x 1 mark)

Explanation

- They do not need to employ workers to manufacture the components
- They do not need to purchase expensive machinery
- They could purchase them from countries where labour charges are low
- They do not need to buy / rent additional workshop space
- They do not need to train a workforce to produce the components
- They do not need to purchase raw materials to manufacture the component

(1 x 1 mark)

**Total 6 marks**

Question 10

(a) Award **one** mark for correctly identified any of the tools indicated for each process.

Possible responses:

<b>Process</b>	<b>Tools</b>
<b>Marking out</b>	Ruler, pencil, felt tip pen chinagraph pencil combination square, template. (1 mark)
<b>Cutting</b>	Hack saw, junior hacksaw, jigsaw, hegner saw, coping saw, bandsaw. (1 mark)
<b>Shaping</b>	Coarse file, smooth file. (1 mark)
<b>Drilling</b>	Pillar drill, hand drill, cordless drill, drill bit, clamp (1 mark)
<b>Bending</b>	Strip heater (line bender) (1 mark)
<b>Cleaning and finishing</b>	Smooth file, wet/dry paper, brasso, buffing machine (1 mark)

(6 marks)

(b) Possible responses:

Look for details such as;

- To speed up the manufacturing process
- To reduce the unit cost of manufacturing the display cabinet
- To produce a higher quality product
- To improve the consistency of each product. a less skilled process
- To employ less skilled labour

Award **one** mark for each point

(4 x 1 mark)

**Total 10 marks**

Question 11

Possible responses:

Award 2 marks for detailed explanation of the process

Award 1 mark for a correct process with limited detail

(3 x 2 marks)

Award 1 mark for a correctly identified tool.

(3 x 1 mark)

<b>Process</b>	<b>Tools and equipment</b>
<p><b>Marking out</b></p> <ul style="list-style-type: none"> <li>invert tabletop and place frame onto it.</li> <li>centralise frame by measuring</li> <li>mark position of screws</li> </ul> <p>(2 marks)</p>	<p>Pencil, tape/rule</p> <p>(1 mark)</p>
<p><b>Preparation</b></p> <ul style="list-style-type: none"> <li>make a pilot hole by a relevant method</li> </ul> <p>(2 marks)</p>	<p>Pilot drill, bradawl</p> <p>(1 mark)</p>
<p><b>Fixing</b></p> <ul style="list-style-type: none"> <li>Use a relevant wood screw and matching driver to fix the top to the table</li> </ul> <p>(2 marks)</p>	<p>Wood screw, matching driver</p> <p>(1 mark)</p>

**Total 9 marks****Total Paper 100 Marks**