

GCSE 2004  
*June Series*



## Mark Scheme

### Design and Technology: Resistant Materials Technology *(3555/Short Course Foundation)*

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*The answers given in the following mark schemes are neither exhaustive nor exclusive. Candidates whose answers do not appear directly on the mark scheme, but who have demonstrated knowledge, understanding, or skills relevant to the question will receive appropriate credit for their answers.*

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**ASSESSMENT AND QUALIFICATIONS ALLIANCE**  
**GENERAL CERTIFICATE OF SECONDARY EDUCATION**

June Examination 2004

**Design and Technology: Resistant Material Technology**

**Short Course Foundation Tier**

**Question 1**

Any **four** correctly identified requirements.

Possible responses:

- Must securely hold the garden tools and equipment
- Must be soundly constructed
- Must be capable of being manufactured in quantity
- Must be safe to use
- Must fit into the garden environment
- Must allow easy movement around the garden – easy to store.
- Must be weather proof
- Durable/robust/sturdy – soundly constructed
- Protection of tools
- Reference to ergonomics – eg persons height

(4 x 1 mark)

**Four** correct explanations

(4 x 1 mark)

**Total 8 marks**

**Question 2**

Variety of ideas

Mark each idea separately against the following scheme

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

(2 x 6 marks)

Quality of sketches

- Quality 3D rendered sketches (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)
- Labelling (1 – 2 marks)

**Total 21 marks**

**Question 3**

- (a) Any **two** correct reasons required which relate to the performance of the design (2 x 1 mark)
- (b) Method of construction
- A suitable method of construction, correct in detail and proportion. (5 – 6 marks)  
 A suitable detailed process, with inaccuracies. (3 – 4 marks)  
 Sketch of process (1 mark)  
 Named Process (1 mark)
- Assembly only:
- Complete assembly details given (3 marks)  
 Some assembly details given (2 marks)  
 Simple assembly details given (1 mark)
- Quality of sketches
- Quality sketches (2 marks)
  - Simple sketching (1 mark)
- Quality of notes
- Detailed notes (2 marks)
  - labelling (1 mark)

**Total 12 marks****Question 4**

- (a) Any two correctly identified reasons
- Possible responses:
- It is weather proof
  - It is easy to keep clean
  - It is colourful
  - It has a shiny attractive finish
  - It does not need gluing
  - Price and qualified (2 x 1 mark)
- Two** correct explanations (2 x 1 mark)
- (b) Any **two** correctly identified changes
- Possible responses:
- text has been enlarged
  - font has been changed
  - text has been emboldened
  - text has been made italic (2 x 1 mark)

(c) Any **Two** correctly identified advantages required

Possible responses:

- Safety
- Quicker to manufacture
- Increased accuracy
- Increased consistency
- Professional quality
- Less labour required
- Editing
- Cost related statement

(2 x 1 mark)

**Two** relevant explanations required

(2 x 1 mark)

**Total 10 marks**

**Question 5**

(a) **Two** reasons required

Possible responses:

- The tools will be very difficult to use
- The tools will be dangerous to use (2 x 1 mark)

**Two** relevant explanations required (2 x 1 mark)

Award **one** mark **each** for any of the following ergonomic features:

- Rounded edges (1 mark)
- Simple shaping (1 or 2 marks)
- Complex shaping (finger/thumb grooves) (2 marks)
- Textured surface (2 marks)

(5 x 1 mark)

Quality sketch (2 marks)

Simple sketch (1 mark)

(c) Award **one** mark **each** for naming **two** ergonomic features. (2 x 1 mark)

Award **one** mark each for explaining **each** ergonomic feature.

Possible responses:

- It improves the comfort of using the tool
- It improves the grip when using the tool
- It makes the tool easier to use
- It makes the tool safer to use
- Colour = 0 (2 x 1 mark)

**Total 15 marks**

**Question 6**

(a) **Garden furniture A** Award **one** mark for the generic term wood

Award **two** marks for any suitable hardwood.

Possible responses:

- Beech
- Ash
- Oak
- Teak
- Mahogany

(2 x 1 mark)

Reasons

Possible responses:

- Weight related
- Attractive
- Strong
- Durable
- Weather proof
- Environment related (recyclable)

(1 x 1 mark)

**Garden furniture B** Award **one** mark for the generic term plastic

Award **two** marks for any suitable specific plastic.

Possible responses:

- ABS
- GRP
- HIPS
- Polycarbonate
- Polypropylene
- HDPE
- PVC

(2 x 1 mark)

Reasons

Possible responses:

- Cheaper
- Immaculate surface finish
- Self coloured
- Ideal for quantity production
- Durable
- Weatherproof
- Lightweight

(1 x 1 mark)



**(b) Garden furniture A**

Award **one** mark for a low level response:

Possible responses:

- Paint
- Varnish
- Oil

Award **two** marks for any suitable specific finish.

Possible responses:

- Natural
- Wax
- Polyurethane Varnish (Trade names acceptable)
- Stain
- Teak Oil

(2 x 1 mark)

**Total 10 marks**

**Question 7**

(a) Award **one** mark for each feasible question

Possible responses:

Do you have a patio?

Do you sit outside?

Do you eat outside in summer?

Do you prefer wood, metal or plastic garden furniture?

How much would you be prepared to pay for a set of patio furniture?

(2 x 1 mark)

(b) Award **one** mark a correct advantage

Possible responses:

- Less expensive
- More colourful
- Waterproof
- Easier to keep clean
- Easier to store
- Weight related

(1 x 1 mark)

**One** relevant explanation required

(1 x 1 mark)

**Total 6 marks**

**Question 8**

- (a) Award
- one**
- mark each for
- three**
- advantages

Possible responses: - Can relate to home use

- They take up less space
- They are easier to handle
- They are easier to stack
- They are easier to transport
- The manufacturer does not have to employ people to assemble the furniture
- Easier to assemble

(3 x 1 mark)

- (b) Award up to
- two**
- marks depending upon the quality of each explanation

Weight	<p>Explanation: The box weighs 25 kg.</p> <p>Importance: The box is heavy and care should be taken when lifting it.</p>
Umbrella	<p>Explanation: The box should be protected from the rain.</p> <p>Importance: If the box is not protected the box and its contents may suffer</p>

(4 x 1 mark)

**Total 7 marks**

**Question 9**

(a) Award **one** mark for **each** correctly entered cell

<b>Situation</b>	<b>Risk</b>	<b>Precaution</b>
<i>Adhesive comes into contact with skin</i>	<i>Adhesive irritates/burns skin</i>	<i>Wear disposable gloves/use a spatula</i>
<i>Adhesive catches fire</i>	Fire burns someone/sets building on fire/gives off toxic fumes	Do not use near a flame
<i>Adhesive comes into contact with eyes</i>	Adhesive irritates eyes	Wear safety glasses

(4 x 1 mark)

**Total 7 marks**

**Question 10**

- (a) Award **one** mark each for each correctly identified feature or description

Feature A: Rounded corners

Feature B: Draft / tapered side / sloping sides

Feature C: Air extraction holes or to blow off tray

(3 x 1 mark)

- (b) Award **one** mark for the generic term wood / metal

Award **two** marks for any suitable specific wood / metal

Possible responses:

- MDF
- Any suitable close grain hardwood
- Aluminium
- Steel
- Resin mould

(2 x 1 mark)

- (c) Award **one** mark each for any part of the process which is in the correct sequence

<b>Place the former/mould in the machine</b>
<b>Lower the former/mould</b>
<b>Heat the plastic sheet</b>
<b>Raise the former/mould</b>
<b>Switch on to vacuum</b>
<b>Cool and remove the former/mould</b>

(6 x 1 mark)

**Total 11 marks**