



General Certificate of Secondary Education

Design and Technology (Resistant Materials Technology) Higher Tier (3555/H) Short Course

For Publication

Mark Scheme

2007 examination - June series

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(3545/H Q1)

1 Any **five** correctly identified requirements.

Possible responses:

1. Must be stylish
2. Must be soundly constructed
3. Must be capable of being manufactured in quantity
4. Must be safe to use
5. Must hold computer games
6. Must be easy to access computer games
7. Must be stable
8. Must be durable

5 x 1 mark

Any **five** relevant explanations

Possible responses:

1. You are more likely to sell a stylised design
2. The storage system must be capable of robust use
3. This will ensure that the price is kept low and the quality kept high
4. No one should injure themselves when using the storage system
5. This is the basic function of the design
6. If it is difficult to use customers will not buy it
7. If it falls over it could injure some one or break the CD cases
8. The customer will want the product to last for a few years

5 x 1 mark

10 marks

(3545/H Q2)

2

Quality of sketches

Quality 3D rendered sketches with colour *5 - 6 marks*

Quality line sketches or an attempt at 3D sketches *3 - 4 marks*

Simple line sketching *1 - 2 marks*

Quality of notes

Detailed explanations *3 marks*

Simple explanations *2 marks*

Labelling *1 mark*

Design Ideas

Mark each idea separately against the following scheme:

An excellent idea which fulfils the design brief, specification and the given situation. *5 - 6 marks*

A good idea which fulfils most of the design brief, specification and the given situation. *3 - 4 marks*

A simple idea which fulfils some of the design brief, the specification and the given situation. *1 - 2 marks*

2 x 6 marks

Quality of Evaluation

Award up to **two** marks for **each** evaluation using the following scale:

Evidence of analytical thinking
2 or more points considered *2 marks*

1 point considered *1 mark*

2 x 2 marks

Give away product

A give away product which is themed to the computer magazine and shows originality *3 marks*

A give away product which shows originality *2 marks*

A simple give away product *1 mark*

A copy of the glider, dinosaur or hedgehog from the preparation sheet. *0 marks*

25 marks

(3545/H Q3)

3 Quality of sketches

- Quality 2D or 3D sketches *2 marks*
- Simple 2D sketches *1 mark*

Quality of notes

- Detailed notes *2 marks*
- Labelling *1 mark*

Method of manufacture

Batch production

Look for details relating to:

- Injection moulding
- Vacuum forming
- Blow moulding
- Jigs / Formers / Moulds
- CAM / CNC / CIM
- Printing, pressing/cutting of card solutions

A suitable and very detailed method of manufacture. *9 - 10 marks*

A suitable and detailed method of manufacture. *7 - 8 marks*

A suitable method of manufacture, some details given. *5 - 6 marks*

One off production

Look for details relating to:

A suitable and detailed method of construction. *4 marks*

A suitable method of construction, with some inaccuracies. *3 marks*

Incorrect method of construction, but would function. *2 marks*

Incorrect method of construction, little chance of success. *1 mark*

14 marks

(3545/H Q4)

- 4 (a) Award **one** mark for **three** correctly identified types of market research.
(i)

Possible responses:

- Asking consumers to complete a questionnaire
 - Carrying out an interview with potential customers
 - Having a telephone conversation with a potential customer
 - Emailing potential customers
- 3 x 1 mark*

- (a) Award up to **two** marks for a correct explanation.
(ii)

Possible responses:

- To find out the consumers' preferences
 - To find out if there is a demand for the product
- 2 x 1 mark*

- (b) Award **one** mark for **three** correctly identified methods of advertising.
(i)

Possible responses:

- On TV
 - On the radio
 - Via the newspaper
 - Via magazines
 - Via email
 - Via the telephone
 - Via a flier
- 3 x 1 mark*

- (b) Award up to **two** marks for a correct explanation.
(ii)

Possible responses:

- To make consumers aware of the product
 - To improve sales of the product
- 2 x 1 mark*

10 marks

(3545/H Q6)

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

Personal safety equipment	Name	Process	Hazard
A	<i>Ear defenders</i>	<i>Any process where there is excessive noise generated</i>	<i>The noise is too loud and could harm your hearing</i>
B	<i>Goggles</i>	<i>Any process where there is potential for damage to the eyes</i>	<i>Something could damage your eyes</i>

6 marks

(b) Award **one** mark each for details relating to:

- The use of CAM means less employees come into contact with machinery
- CAM can perform hazardous tasks
- CAM can work in dangerous environments
- CAM can work without becoming tired
- CAM eliminates human error

3 x 1 mark

9 marks

(3545/H Q7)

6 (a) Remote control holder A

Award **one** mark for a suitable specific wood / manufactured board.

Possible responses:

- pine
- beech
- oak
- ash
- mahogany
- plywood

1 mark

Award **one** mark each for **two** correct reasons.

Possible responses:

- Attractive
- Strong
- Durable
- Capable of being bent

2 x 1 mark

Remote control holder B

Award **one** mark for a suitable specific plastic

Possible responses:

- ABS
- Acrylic PMMA
- HIPS
- Polycarbonate PC
- Polypropylene PP
- HDPE
- PVC

1 mark

Award **one** mark **each** for **two** correct reasons.

Possible responses:

- Immaculate surface finish
- Self coloured
- Ideal for quantity production
- Durable

2 x 1 mark

(b) **Remote control holder A**

Award **one** mark for any suitable specific finish

Possible responses:

- Wax
- Polyurethane / acrylic varnish
- Stain
- Natural

1 mark

7 marks

(3545/H Q8)

7 Award **one** mark each for **three** improved features of the drill

Look for the following details:

- There is no cord
- There is no chuck key
- It can be used as a powered screwdriver
- It is battery powered
- It has a comfortable grip
- It is portable
- It will not electrocute you
- It is balanced

3 x 1 mark

Award up to **two** marks for details relating to the benefits of **each** improvement

3 x 2 marks

9 marks

(3545/H Q5(a))

- 8 (a) Award **one** mark **each** for **three** correct ways of using ICT to help research a design.

Possible responses:

- Interrogating a CD Rom database
- By using a word processing package
- By using the internet
- By using e-mail
- By using video conferencing
- By using a fax machine
- By using a mobile phone
- By using a digital camera
- By using a scanner

3 x 1 mark

- (b) Award **one** mark **each** for **three** advantages of using CAM (computer aided manufacture), rather than making products by traditional methods.

Possible responses:

- 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

3 x 1 mark

6 marks

(3545/H Q9)

- 9 (a) Award up to **two** marks for a suitable method of ensuring the shape remains the same.

Possible responses:

- Use of a template
- Use of a jig
- Use of CAM (laser cutter)

2 marks

- (b) Award up to **two** marks for a suitable method of ensuring the angle remains the same.

Possible responses:

- Use of a jig
- Use of a mould
- Use of a former
- Use of a press

2 marks

- (c) Award up to **six** marks for a suitable explanation of the importance of carrying out quality control checks.

Look for the following details:

- Higher quality product
- Greater consistency of product
- An assurance of quality
- Reduction in faulty products
- Cost effective
- Greater customer satisfaction

6 marks

10 marks