

**GENERAL CERTIFICATE OF SECONDARY EDUCATION  
DESIGN AND TECHNOLOGY**

**1956/03**

**Resistant Materials Technology**

Paper 3 (Foundation Tier)

Candidates answer on the Question Paper

**OCR Supplied Materials:**

None

**Other Materials Required:**

None

**Tuesday 22 June 2010  
Morning**

**Duration: 1 hour**



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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**INSTRUCTIONS TO CANDIDATES**

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your Candidate Number, Centre Number and question number(s).

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **50**.
- Dimensions are given in millimetres unless otherwise stated.
- Question 5, product analysis, is based on the theme of '**stacking chairs**' printed in the specification.
- This document consists of **12** pages. Any blank pages are indicated.

- 1 Fig. 1 shows a spatula made from three separate pieces of hardwood.

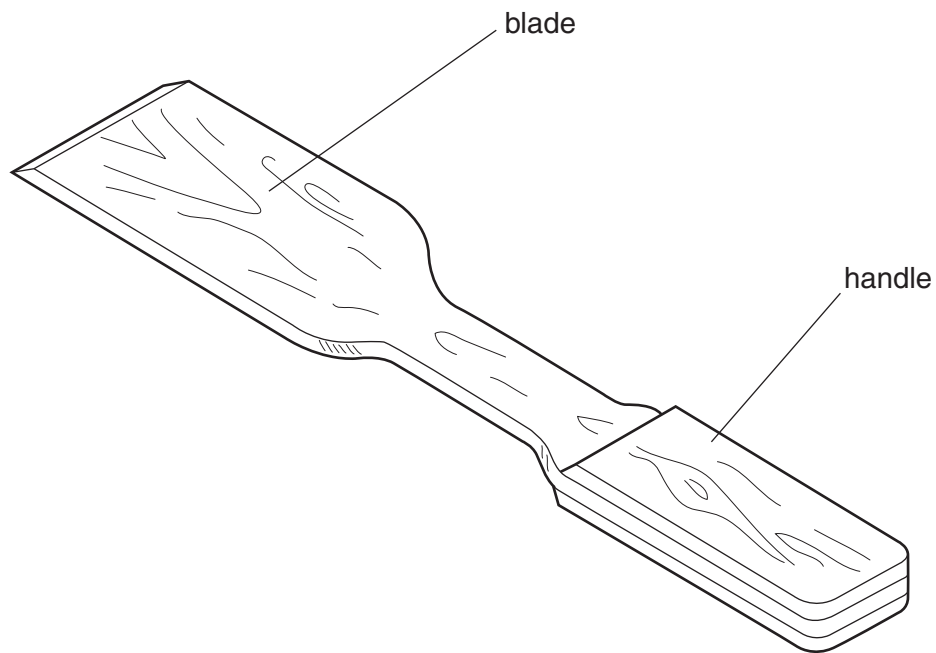


Fig. 1

- (a) (i) Name a suitable hardwood for making the spatula.

..... [1]

- (ii) Give **one** reason for your choice.

..... [1]

- (b) Name **two** tools or items of equipment that could be used when making the spatula.

1 ..... [1]

2 ..... [1]

- (c) Name a suitable glue for fixing the three pieces of hardwood together.

..... [1]

- (d) From the list below, underline the production method used to make 25 of the spatula shown in Fig. 1.

**Industrial Production**

**Batch Production**

**Mass Production**

**Plastic Production**

**One Off Production**

[1]

- (e) Use sketches and notes to show how you would ensure that all 25 of the spatulas are **marked out** identically.

[2]

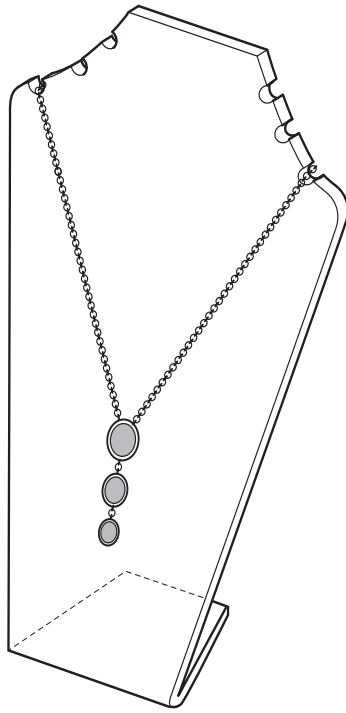
- (f) Use sketches and notes to show **one** improvement to the spatula.

[2]

[Total: 10]

Turn over

- 2 Fig. 2 shows an acrylic display stand used in a jeweller's shop.



**Fig. 2**

- (a) State whether acrylic is a thermoplastic or a thermosetting plastic.

Acrylic is a ..... plastic. [1]

- (b) State **two** reasons why acrylic is a suitable plastic for the display stand.

1 .....

2 ..... [2]

- (c) The display stand is to be cut out using CAM.  
Give **two** benefits of using CAM to make the display stand.

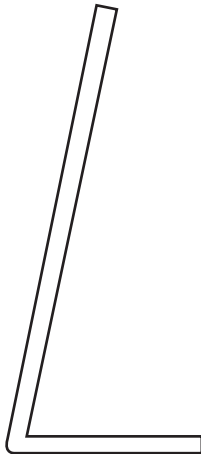
1 .....

2 ..... [2]

- (d) In use, the display stand slides around on the jeweller's shop counter. Use sketches and notes to show how the display stand could be modified to stop it sliding around when in use.

[2]

- (e) Fig. 3 shows a side view of one of the display stands. Use sketches and notes to design a jig to allow each of 50 display stands to be bent into the correct shape.



**Fig. 3**

[3]

[Total: 10]

Turn over

- 3 Fig. 4 shows views of a 'throw over' latch for a gate. The latch is made from 3 mm thick galvanised steel.

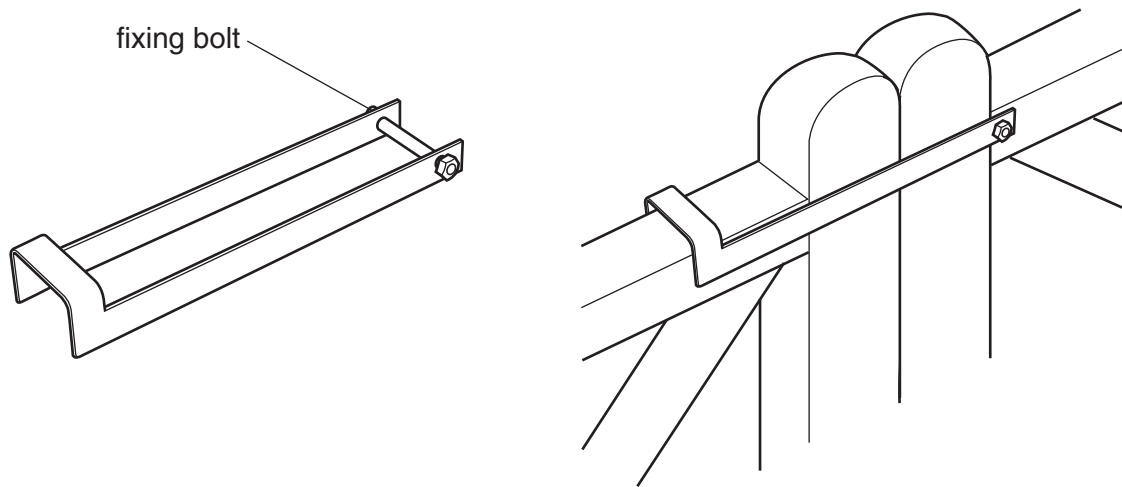


Fig. 4

- (a) Explain what galvanised means.

.....

.....

..... [2]

- (b) (i) The 'throw over' latch can be manufactured in two different ways.

It can be cut and bent to shape from one piece of sheet steel **or** fabricated from separate pieces joined together.

Explain why cutting out and bending to shape would be the more efficient method of manufacture.

.....

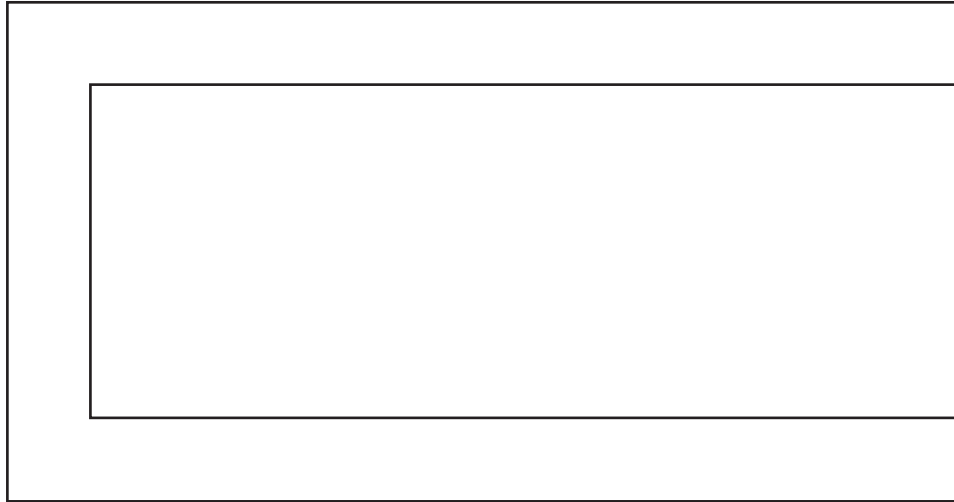
.....

..... [2]

- (ii) Complete the development (net) for the 'throw over' latch to show **two** bend lines and **two** drilling centres for the bolt holes.

bend lines - - - - -

drilling centres +



[2]

- (c) Use sketches and notes to show how the 'throw over' latch can be ergonomically improved for the user.

[2]

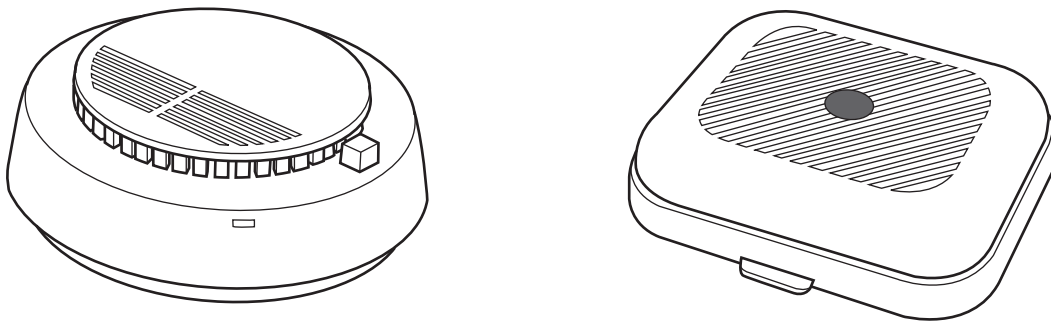
- (d) If the 'throw over' latch is to be fabricated state **two** different methods of joining the separate pieces together.

Method 1 .....

Method 2 ..... [2]

[Total: 10]

4 Fig. 5 shows two domestic smoke alarms.



**Fig. 5**

- (a) Smoke alarms are designed and manufactured to a specification.  
Give **three** specific specification points for a domestic smoke alarm.

1 .....

.....

2 .....

.....

3 .....

..... [3]

- (b) The smoke alarms are manufactured using a 'just in time' (JIT) production system.  
Give **two** benefits to the manufacturer of using a JIT production system.

1 .....

.....

2 .....

..... [2]

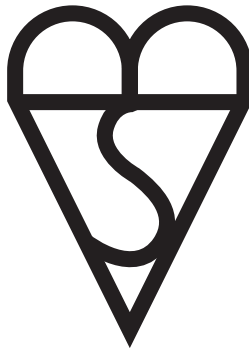
- (c) When being sold, smoke alarms have to be correctly packaged and labelled.  
Explain why the packaging and labelling of products is needed.

.....

.....

..... [2]

- (d) Many products display the following symbol.



State what the symbol actually stands for.

.....  
..... [1]

- (e) Quality control checks are made during manufacture of the smoke alarms.  
Give **two** reasons why manufacturers need to undertake quality control checks.

1 .....  
.....  
2 .....  
..... [2]

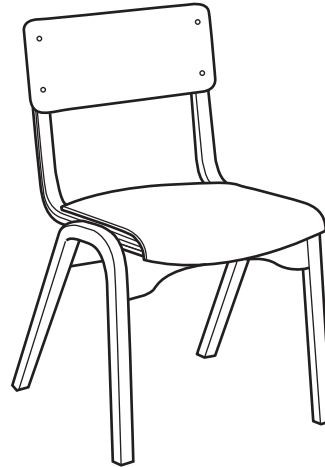
[Total: 10]

This question is based on the theme of 'stacking chairs'.

5 Fig. 6 shows two different styles of stacking chair.



chair **A** (plastic and metal)



chair **B** (wooden)

**Fig. 6**

(a) Give **two** reasons why the chairs are designed to stack.

Reason 1 ..... [1]

Reason 2 ..... [1]

(b) Name the plastic used in the manufacture of chair **A**.

..... [1]

(c) Name a suitable metal for the legs of chair **A**.

..... [1]

(d) The metal legs have a coating on them.  
Give **one** reason why they have been coated.

Reason ..... [1]

(e) Name the type of manufactured board used in the production of wooden chair **B**.

..... [1]

(f) Name the process used to produce the legs of wooden chair **B**.

..... [1]

**(g)** Use sketches and notes to show how **either** chair A **or** chair **B** can be:

- linked together when used side by side
- easily separated for stacking

**[3]**

**[Total: 10]**

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