

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

1956/04

Resistant Materials Technology

Paper 4 (Higher Tier)

Candidates answer on the Question Paper

OCR Supplied Materials:

None

Other Materials Required:

None

**Tuesday 22 June 2010
Morning**

Duration: 1 hour 15 minutes



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 2, 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 two domestic smoke alarms.

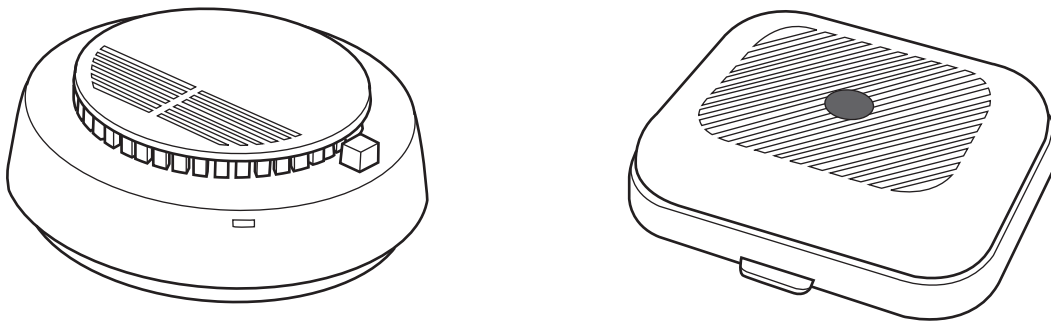


Fig. 1

- (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]

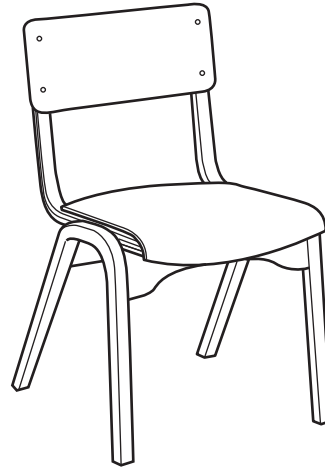
[Total: 10]

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

2 Fig. 2 shows two different styles of stacking chair.



chair **A** (plastic and metal)



chair **B** (wooden)

Fig. 2

(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]

3 Fig. 3 shows views of a display unit.

It is made from two separate pieces of acrylic which clip together using lugs.

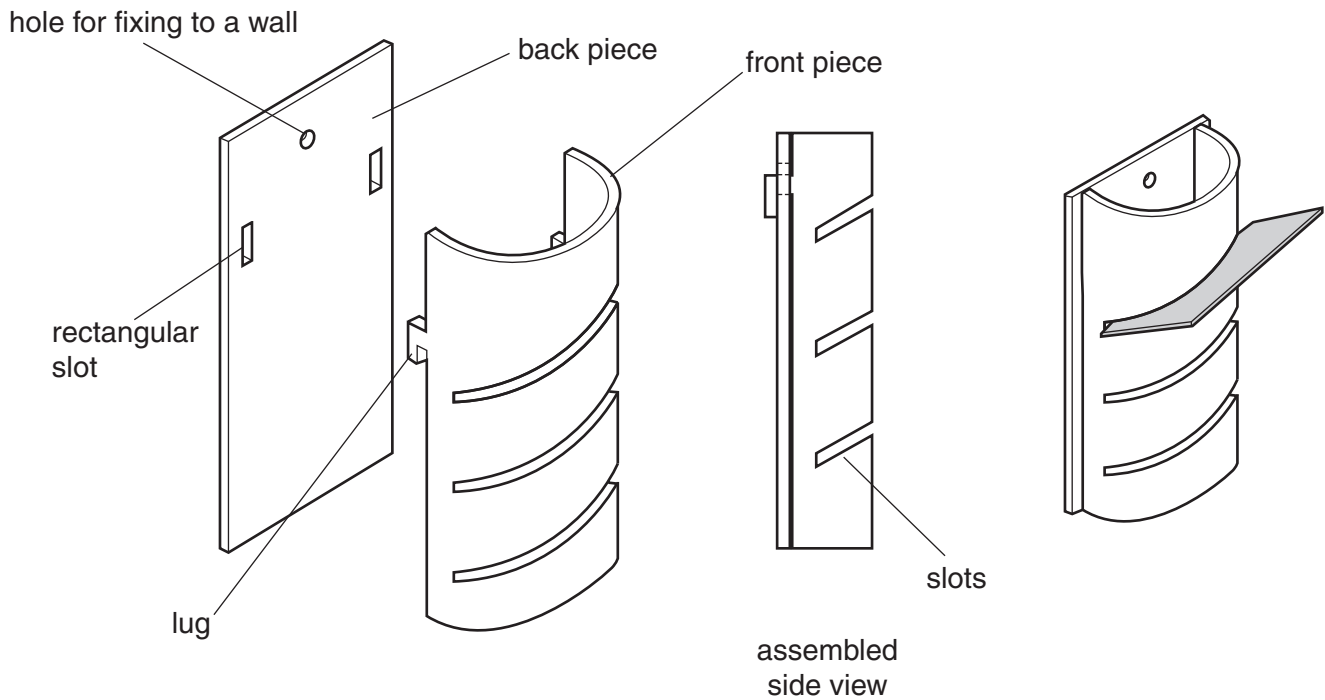


Fig. 3

(a) Describe how the rectangular slot in the back piece of the display unit would be produced.

.....

.....

.....

..... **[3]**

(b) Draw the development (net) for the front piece of the display unit.

- (c) When assembled, the lugs prevent the display unit from fitting flat against the wall.

Use sketches and notes to show how this problem could be overcome.

[3]

[Total: 10]

- 4 Fig. 4 shows a view of an incomplete child's toy.
It is made mainly of beech.
The handle is to be inserted into the slot and is a loose fit.

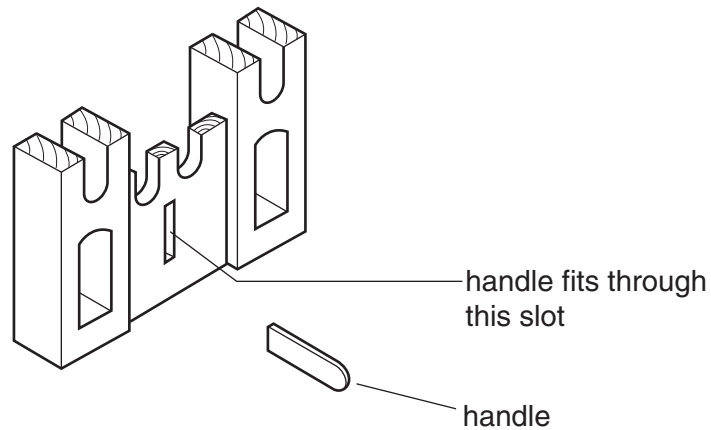


Fig. 4

- (a) State why a finish would be applied to the toy.

..... [1]

- (b) Fig. 5 shows one part of the castle shape.

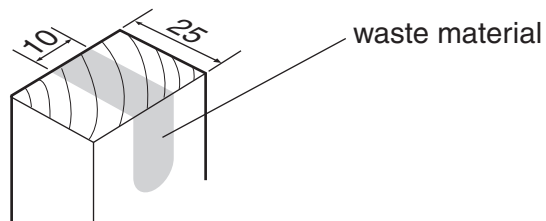
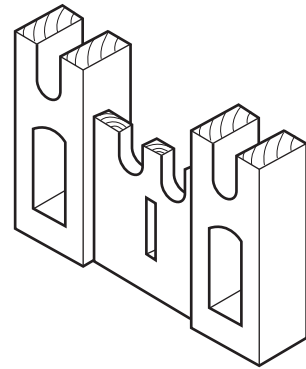


Fig. 5

Use sketches and notes to show how you would remove the waste material.

(c) An interesting feature is required when the handle is operated.
Use sketches and notes to show:

- details of an interesting feature;
- how the handle is attached to main part of the toy;
- how the handle operates the feature.



[6]

[Total: 10]

Turn over

- 5 Fig. 6 shows an incomplete design for a music stand. The music stand is made of mild steel. There is **no** welding or brazing equipment available for its manufacture.

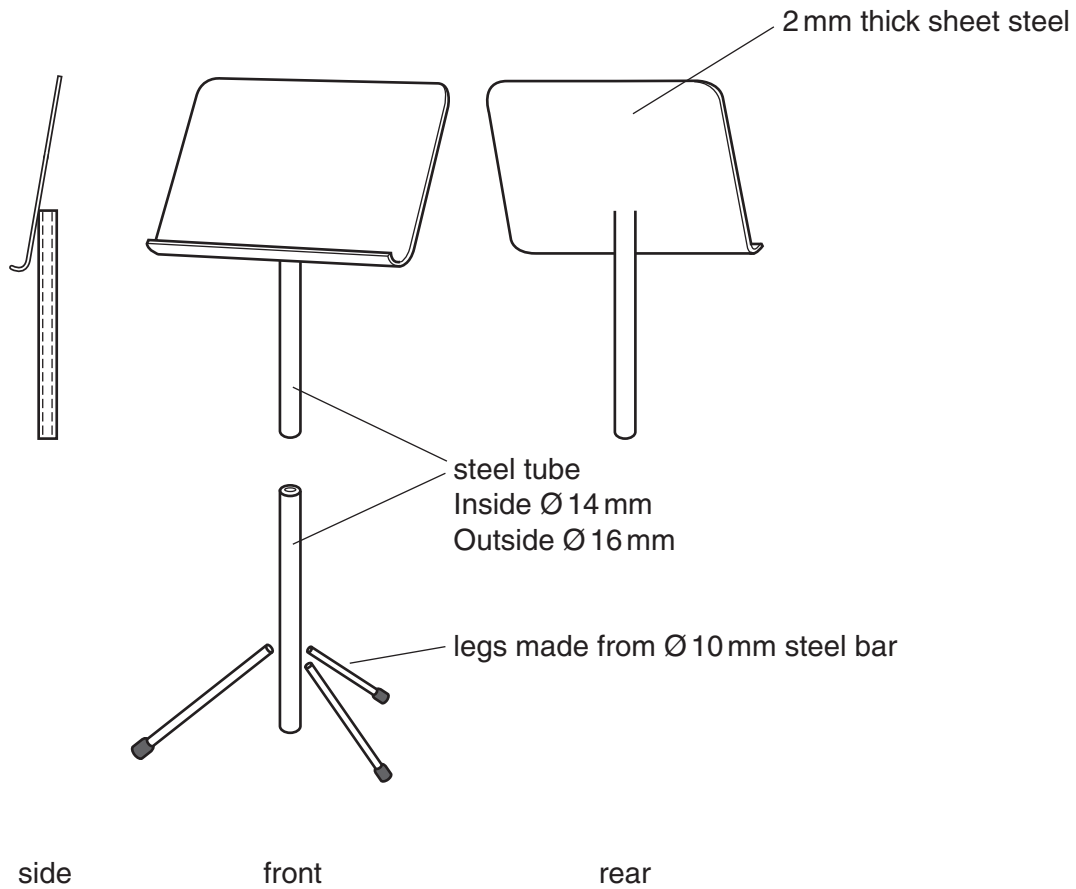


Fig. 6

- (a) Use sketches and notes to show how the top steel tube could be attached to the sheet steel.

- (b) The stand needs to be height adjustable.
Use sketches and notes to show how the two pieces of steel tube could be fixed to each other so that:

- the stand is height adjustable
- they could be locked at different heights
- the stand is easy to adjust without the use of tools

[4]

- (c) Use sketches and notes to show how the legs could be attached to the lower steel tube and be removed **or** folded for transportation.

[3]

[Total: 10]

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