



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

CANDIDATE  
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**DESIGN AND TECHNOLOGY**

**0445/33**

Paper 3 Resistant Materials

**October/November 2013**

**1 hour**

Candidates answer on the Question Paper.

No Additional Materials are required.

**To be taken together with Paper 1 in one session of 2 hours 15 minutes.**

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO **NOT** WRITE IN ANY BARCODES.

**Section A**

Answer **all** questions in this section.

**Section B**

Answer **one** question in this section.

You may use a calculator.

The total of the marks for this paper is 50.

The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
Section A	
Section B	
Total	

This document consists of **14** printed pages and **2** blank pages.



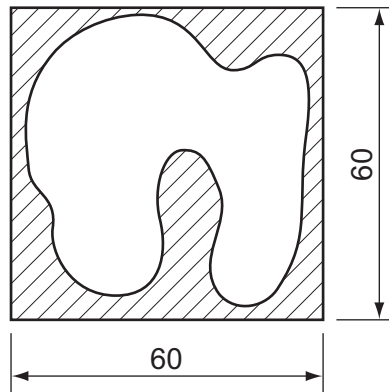
Section A

Answer **all** questions in this section.

1 Give **two** properties of balsa wood that make it suitable for model making.

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

2



Name the type of saw used to cut the curved shape shown above when the sheet material is:

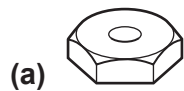
(a) 4 mm thick MDF;

..... [1]

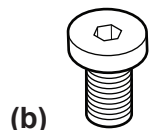
(b) 1 mm thick brass.

..... [1]

3 State the tool used to tighten each of the fastenings shown below.



..... [1]



..... [1]

3

4 Fig. 1 shows a drinks can.

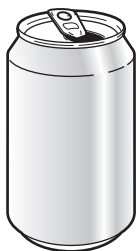


Fig. 1

(a) Name the non-ferrous metal used to make the drinks can shown in Fig. 1.

..... [1]

(b) Give **one** reason for using a non-ferrous metal for the drinks can.

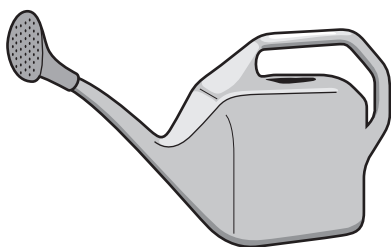
..... [1]

5 Describe **two** drawbacks of working with chipboard when making furniture.

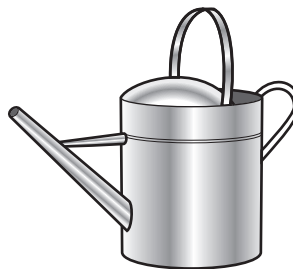
1 .....

2 ..... [2]

6 Fig. 2 shows two watering cans made from different materials.



plastic



metal

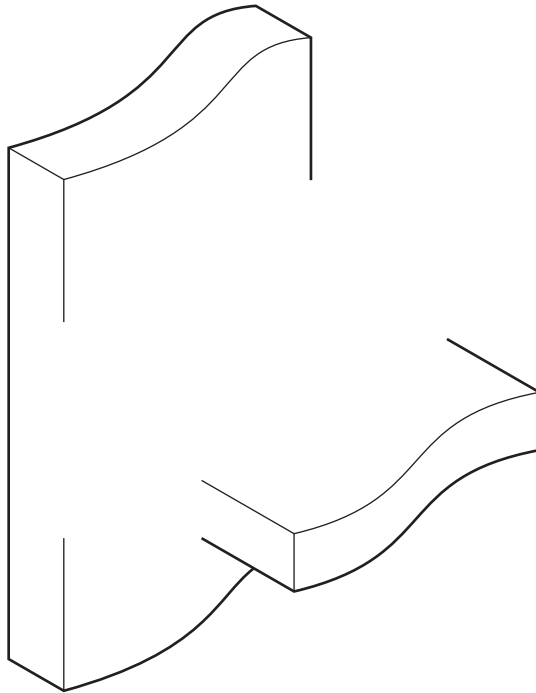
Fig. 2

Give **two** advantages of using a plastic watering can rather than a metal watering can.

1 .....

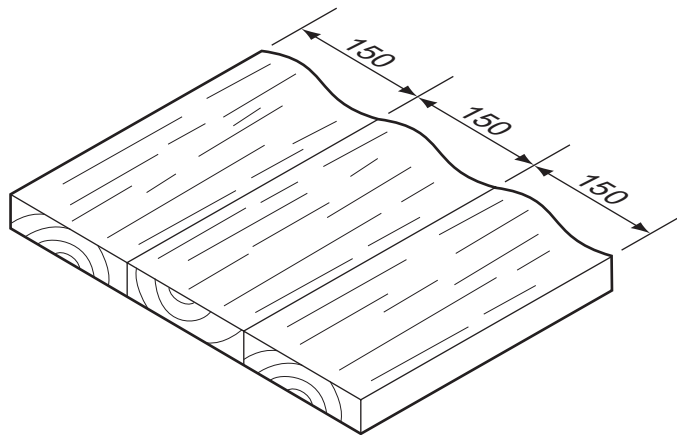
2 ..... [2]

7 Complete the sketch below to show an **exploded** view of a through housing joint.



[3]

8 Fig. 3 shows part of three solid wood boards joined together to make a table top.



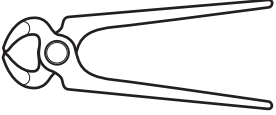
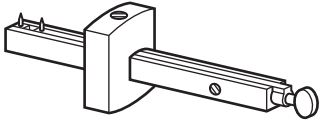
**Fig. 3**

Give **two** reasons why the table top has been constructed as shown in Fig. 3.

1 .....

2 ..... [2]

9 Complete the table below by naming each tool and giving a specific use.

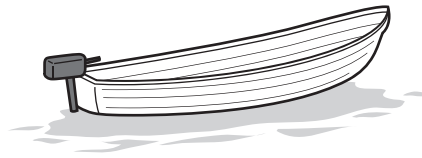
Tool	Name	Specific use
		
		

[4]

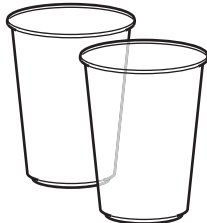
10 Fig. 4 shows four products made from plastic.



washing-up liquid bottle



boat hull



disposable cups



comb

**Fig. 4**

Name a specific plastic that could be used to make each of the products.

washing-up liquid bottle .....

boat hull .....

disposable cups .....

comb..... [4]

## Section B

Answer **one** question in this section.

- 11 Fig. 5 shows an incomplete design for a holder that will allow students to carry four paint bottles.

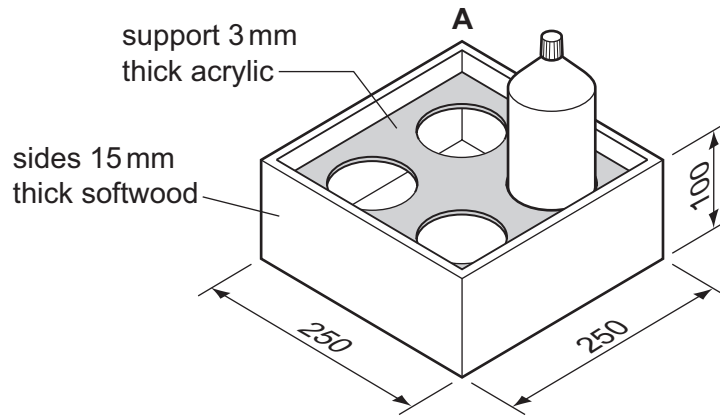


Fig. 5

- (a) Fig. 6 shows a finger (comb) joint used at corner A.

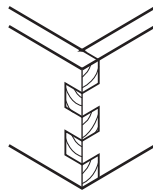


Fig. 6

Use sketches and notes to show how the finger (comb) joint could be marked out and cut out, ready to be fitted together. Include names of all the tools used.

- (b) Use sketches and notes to show how the four sides of the holder could be glued together.  
 Include:
- the name of a suitable adhesive;
  - the method of holding the sides together.

[5]

- (c) Fig. 7 shows the acrylic support with the holes marked out ready to be cut out.

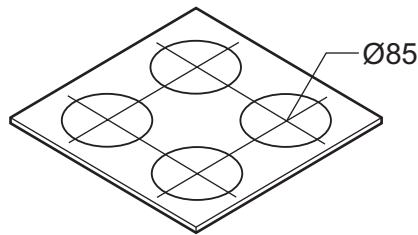


Fig. 7

- (i) Use sketches and notes to show how **one** hole could be cut out and the edges made smooth.

[4]

- (ii) Give **one** safety precaution you would take when working with acrylic.

..... [1]

- (d) Use sketches and notes to show how the 3 mm thick acrylic could be supported by the holder.

[3]

- (e) Use sketches and notes to show a modification to the holder so that students could carry the four paint bottles safely.  
Include details of materials, constructions and fittings used.

[6]



12 Fig. 8 shows an incomplete design for a holder to support a roll of wire. The stand and the arm are made from mild steel.

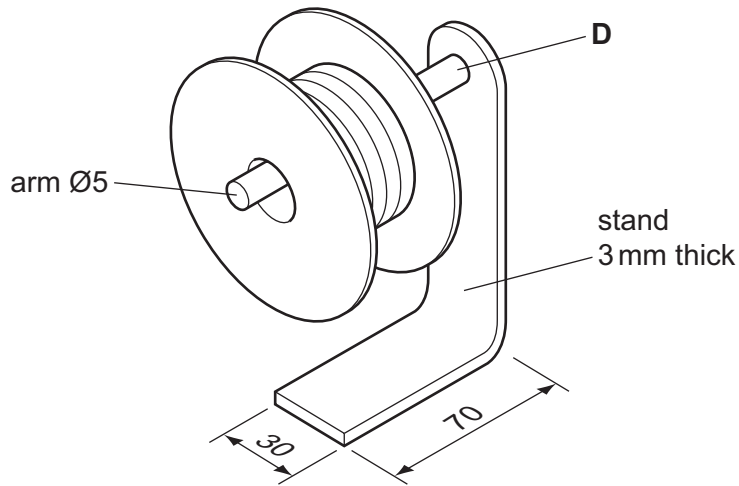


Fig. 8

(a) Give **two** reasons why mild steel is a suitable material for the holder.

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

(b) Fig. 9 shows the stand of the holder marked out before it is bent to shape.

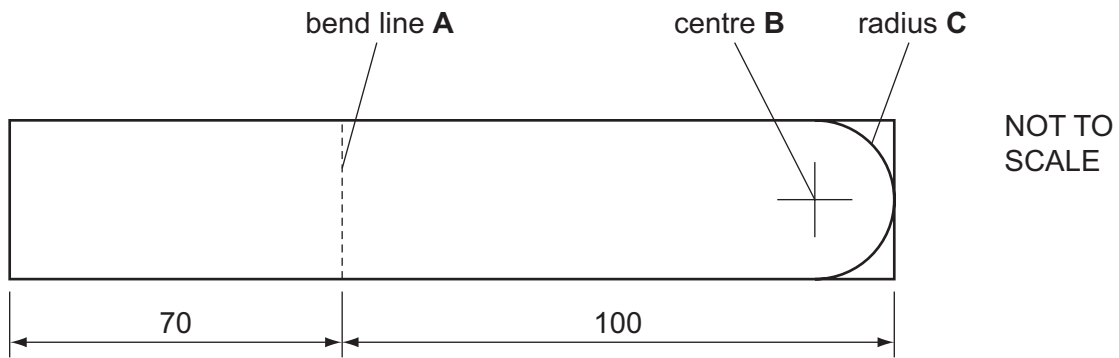


Fig. 9

Name the tools used to mark out:

- bend line **A** .....
- centre **B** .....
- radius **C** ..... [3]

(c) Use sketches and notes to show how the mild steel stand could be bent to shape

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[3]

(d) Use sketches and notes to show how the arm could be joined to the stand at **D** by means of brazing. Name all equipment used and give details describing how the metal would be prepared.

[6]

- (e) Use sketches and notes to show how the arm could be joined to the stand at **D** by means of screw threads. Name all equipment used to cut the screw threads.

[6]

- (f) Use sketches and notes to show how a roll of wire could be prevented from sliding off the arm.

[2]

- (g) Use sketches and notes to show how the design of the holder could be modified to prevent it from falling over. Additional materials may be used.

[3]

- 13 Fig. 10 shows views of an incomplete design for a DVD holder. The body of the DVD holder is made by laminating three layers of 2 mm thick plywood.

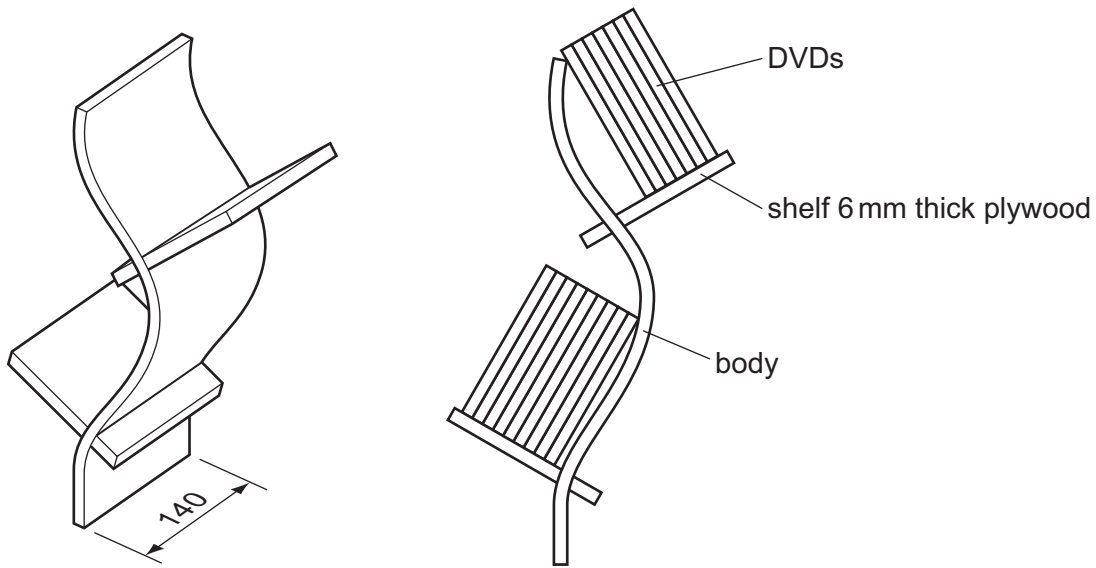


Fig. 10

- (a) Give **two** properties of plywood that make it suitable for the DVD holder.

1 .....

2 ..... [2]

- (b) Give **two** reasons why it could be helpful to make a model of the DVD holder before making it from plywood.

1 .....

2 ..... [2]

- (c) Use sketches and notes to show how the body of the DVD holder could be made by laminating three layers of 2 mm thick plywood.



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- (d) (i) The shelf is made from 6 mm thick plywood.  
Use sketches and notes to show how **one** shelf could be joined to the body of the DVD holder.

[3]

- (ii) Name a suitable adhesive that could be used for the joint in (d)(i).

..... [1]

- (e) (i) Describe how the surfaces of the body could be prepared to take an applied finish.

.....

.....

.....

..... [3]

- (ii) Name a suitable finish for the DVD holder and give a reason for your choice.

Finish .....

Reason for choice ..... [2]

- (f) Use sketches and notes to design a stable base for the DVD holder.  
Include:
- names of materials used;
  - methods of construction;
  - **two** important sizes.

[6]



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