OCR
RECOGNISING ACHIEVEMENT

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

General Certificate of Secondary Education

D&T: Resistant Materials Technology

D&T: Resistant Materials Technology (Short Course)

1956/1
1056/1

PAPER 1 FOUNDATION TIER

Thursday **25 MAY 2006** Morning 1 hour

Candidates answer on the question paper.
No additional materials are required.

Candidate Name	

Centre Number						Candidate Number				

TIME 1 hour

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and candidate number in the spaces at the top of this page.
- Answer **all** questions.
- Write your answers in the spaces provided on the question paper.
- Do not write in the bar code. Do not write in the grey area between the pages.
- **DO NOT** WRITE IN THE AREA **OUTSIDE** THE BOX BORDERING EACH PAGE. ANY WRITING IN THIS AREA WILL NOT BE MARKED.

INFORMATION FOR CANDIDATES

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

Dimensions are given in millimetres unless stated otherwise.

Total marks for this paper is **50**.

FOR EXAMINER'S USE	
1	
2	
3	
4	
5	
TOTAL	

This question paper consists of 11 printed pages and 1 blank page.

[Turn over

1 Fig. 1 shows a toy boat made mainly from wood.

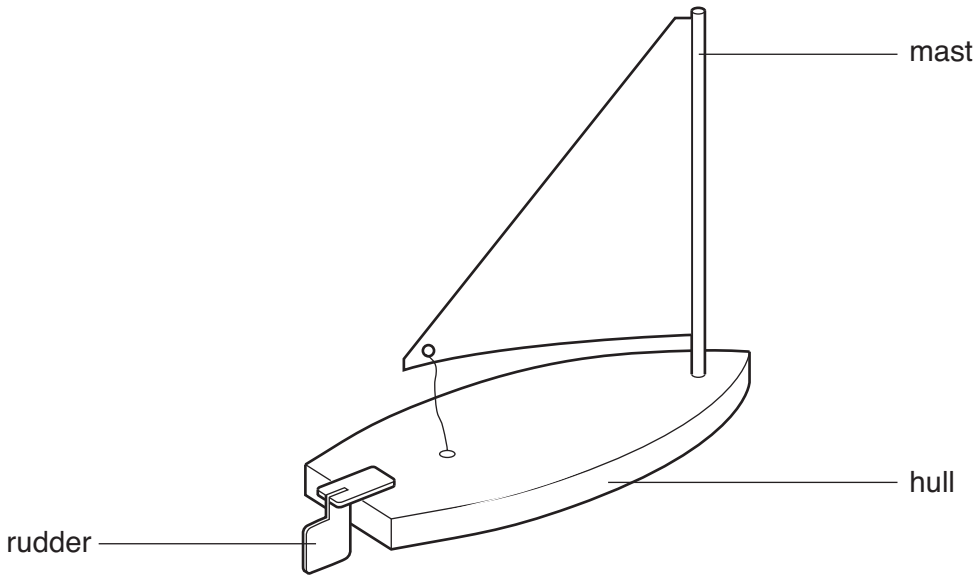


Fig. 1

(a) The mast is made from a length of round wood.
Give the correct name for round wood.

_____[1]

Fig. 2 shows the hull of the toy boat marked out on a piece of solid wood.

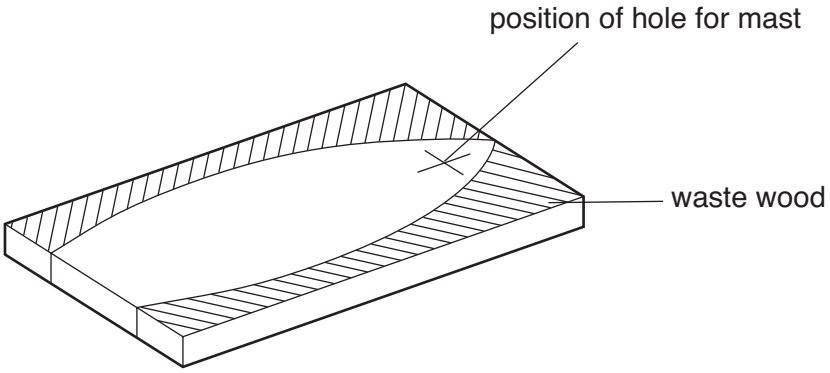


Fig. 2

(b) Complete the table by naming the tool or item of equipment used to make the hull.

Stage	Process	Name of tool or item of equipment
1	Cut off the waste wood	[1]
2	Make the hole for the mast	[1]
3	Smooth the sides of the hull	[1]

(c) In the space below draw a template that could be used to mark out the shape of the hull. Mark the position of the hole for the mast on the template.

[2]

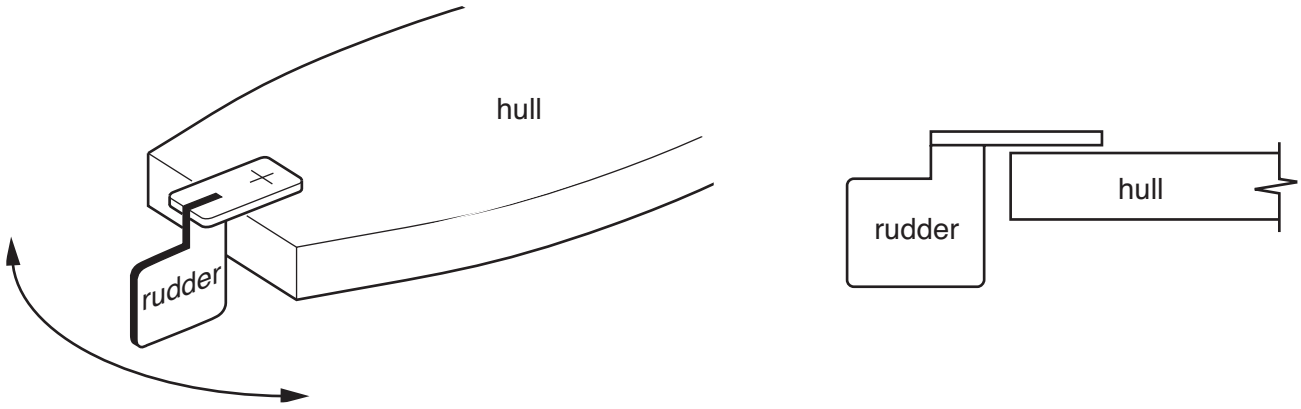
(d) Give **two** reasons why the toy boat is suitable for children.

1 _____[1]

2 _____[1]

(e) Fig. 3 shows part of the hull and the rudder.
Add sketches and notes to Fig. 3 to show how the rudder could:

- be attached to the hull; and
- be able to move from side to side.



[2]

Fig. 3

2 Cyclists often need to carry out maintenance to their bicycles.

(a) State **two** important items of information you would need to find out before designing a bicycle maintenance stand.

1 _____ [1]

2 _____ [1]

Fig. 4 shows views of an adjustable bicycle stand made from mild steel.
The stand is used when carrying out maintenance.

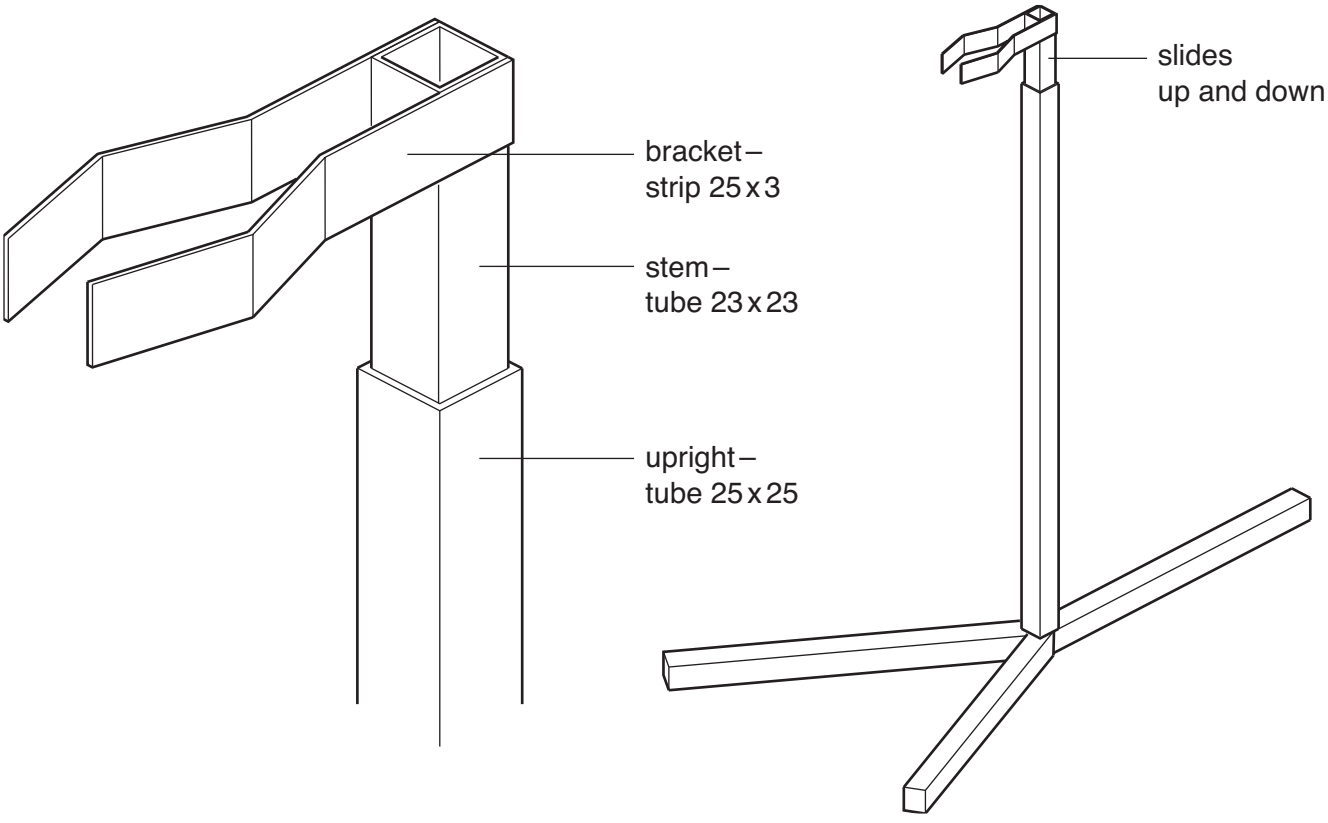


Fig. 4

(b) The brackets will be brazed to the stem.
State the purpose of the following when preparing and brazing the joint:

(i) emery cloth _____[1]

(ii) flux _____[1]

(iii) brazing rod _____[1]

(c) State **one** safety precaution that would need to be taken when brazing.

_____[1]

(d) Name a suitable finish that could be applied to the mild steel bicycle stand.

_____[1]

(e) The stem shown in Fig. 4 is able to move up and down.
Use sketches and notes to show how the stem could be adjusted and locked at three different heights.

[3]

3 Fig. 5 shows views of an **incomplete** design for a flower holder.
The back and base are made from 5 mm thick acrylic plastic. The flower is held in a test tube.

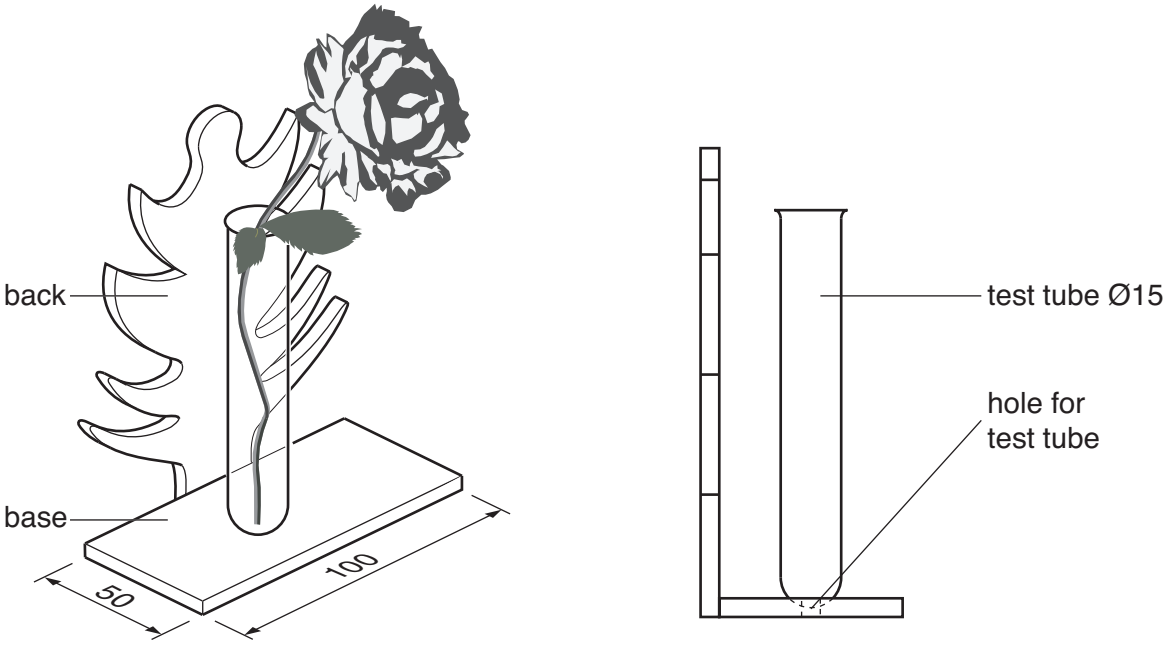


Fig. 5

(a) Fig. 6 shows the back of the flower holder marked out on a piece of acrylic sheet.

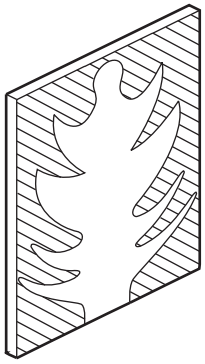


Fig. 6

Complete the table below by naming the tool or item of equipment used to make the back of the flower holder.

Stage	Process	Name of tool or item of equipment
1	Mark out the shape	[1]
2	Cut out the shape	[1]
3	Smooth the edges	[1]

(b) The test tube in Fig. 5 sits in a hole in the base.
Use sketches and notes to design a drilling jig for the hole.
The jig must:

- accurately locate the base;
- hold the base securely;
- accurately locate the hole.

[3]

(c) The test tube in Fig. 5 is shown without any means of support.
Use sketches and notes to show a method of supporting the test tube.

[4]

4 Fig. 7 shows the front view of a novelty clothes hook made from 6 mm thick plastic.
When clothes are hung over the hands, the ears move as shown.

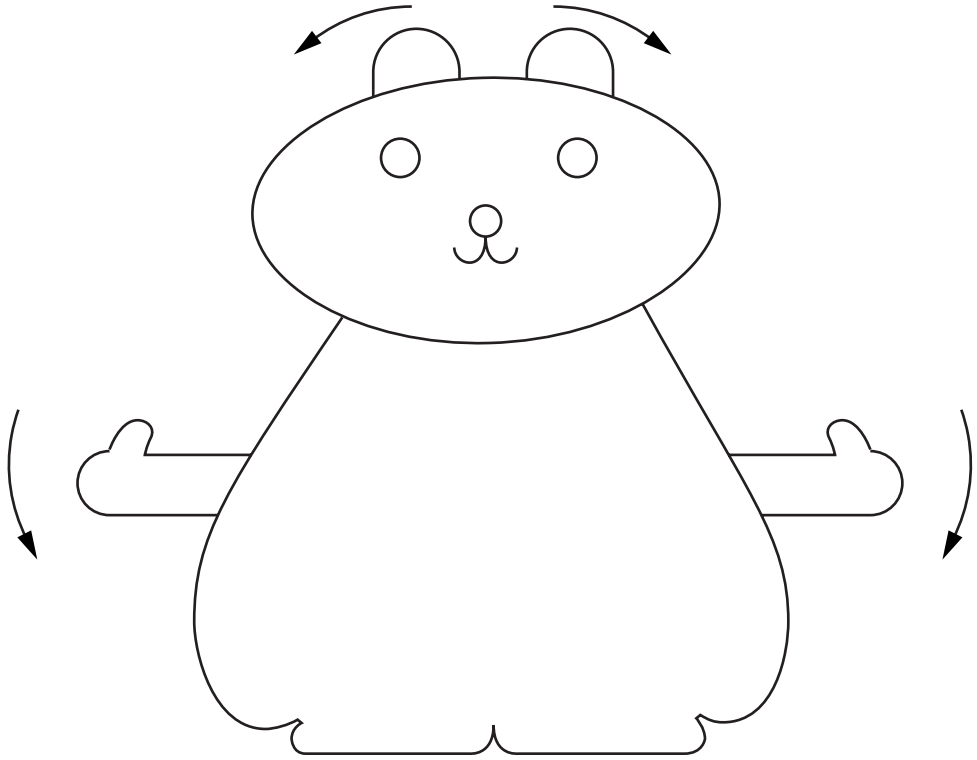


Fig. 7

(a) Fig. 8 shows the back of the clothes hook.
Add sketches and notes to Fig. 8 to show how the arms and ears could be made to move back to the position shown in Fig. 7 after the clothes have been removed.

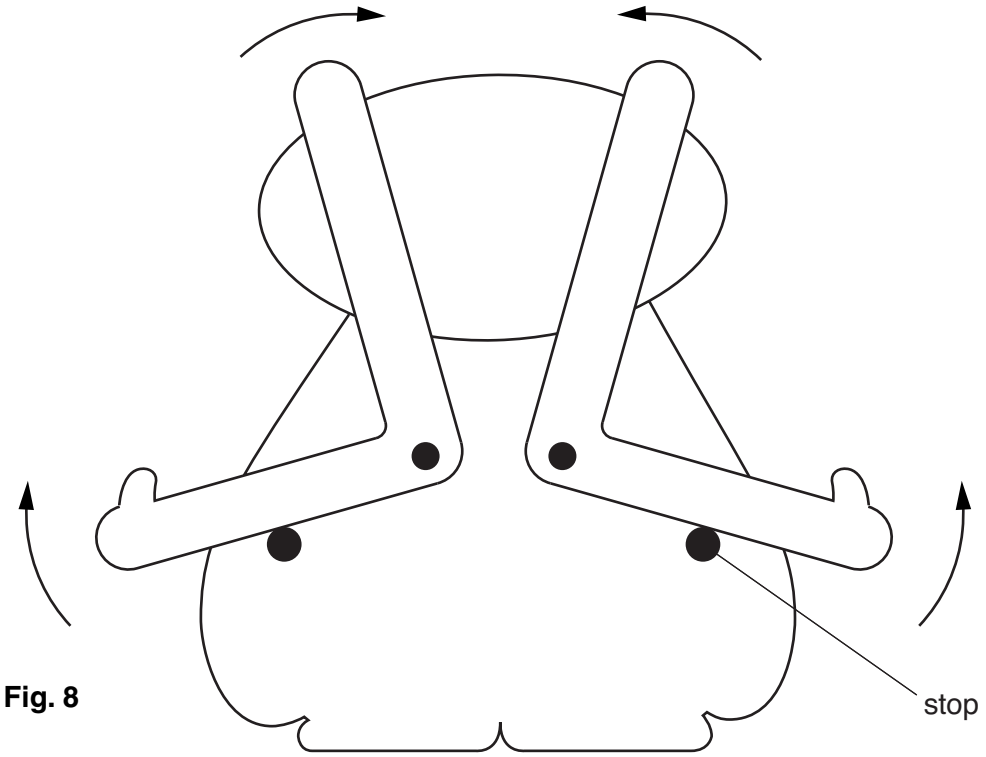


Fig. 8

[3]

(b) Explain how a computer program could be used to test the design of the mechanism used to make the arms and ears move.

_____

_____

_____[2]

(c) Parts of the clothes hook will be injection moulded.
State **one** reason why injection moulding can be an expensive manufacturing process.

_____[1]

(d) Give **two** quality control checks that could be carried out during manufacture of the clothes hooks.

1 _____[1]

2 _____[1]

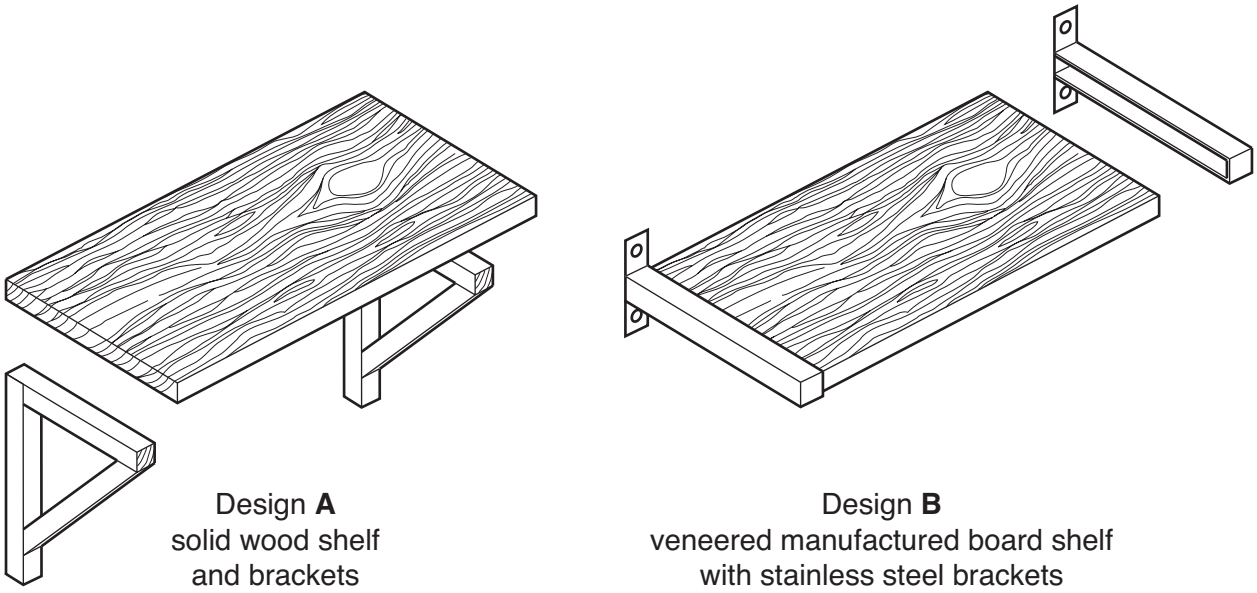
(e) The clothes hook has been designed to satisfy a specific market.
Identify the market for this product.

_____

_____

_____[2]

5 Fig. 9 shows views of **two** different shelf and bracket designs.
Both designs are manufactured and sold as self-assembly products.



Design **A**
solid wood shelf
and brackets

Design **B**
veneered manufactured board shelf
with stainless steel brackets

Fig. 9

(a) State **one** reason why a finish would be applied to the parts of Design **A before** they are assembled.

_____[1]

(b) State **two** advantages of using a manufactured board for the shelf in Design **B**.

1 _____[1]

2 _____[1]

(c) Explain which of the **two** designs would be more expensive to manufacture in quantity.

_____

_____

_____[2]

(d) **(i)** State **one** advantage to the consumer of buying self-assembly products.

_____ [1]

(ii) State **one** advantage to the manufacturer of producing self-assembly products

_____[1]

(e) Use sketches and notes to show **one** improvement that could be made to **either** Design **A or** Design **B**.

[3]

BLANK PAGE

PLEASE DO NOT WRITE ON THIS PAGE