

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

General Certificate of Secondary Education

**D&T: Resistant Materials
Technology**



**D&T: Resistant Materials Technology
(Short Course)**

**1956/2
1056/2**

PAPER 2 HIGHER TIER

Thursday **25 MAY 2006** Morning 1 hour 15 minutes

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

Candidate Name

Centre Number

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Candidate Number

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TIME 1 hour 15 minutes

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.

- 1 Fig. 1 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.

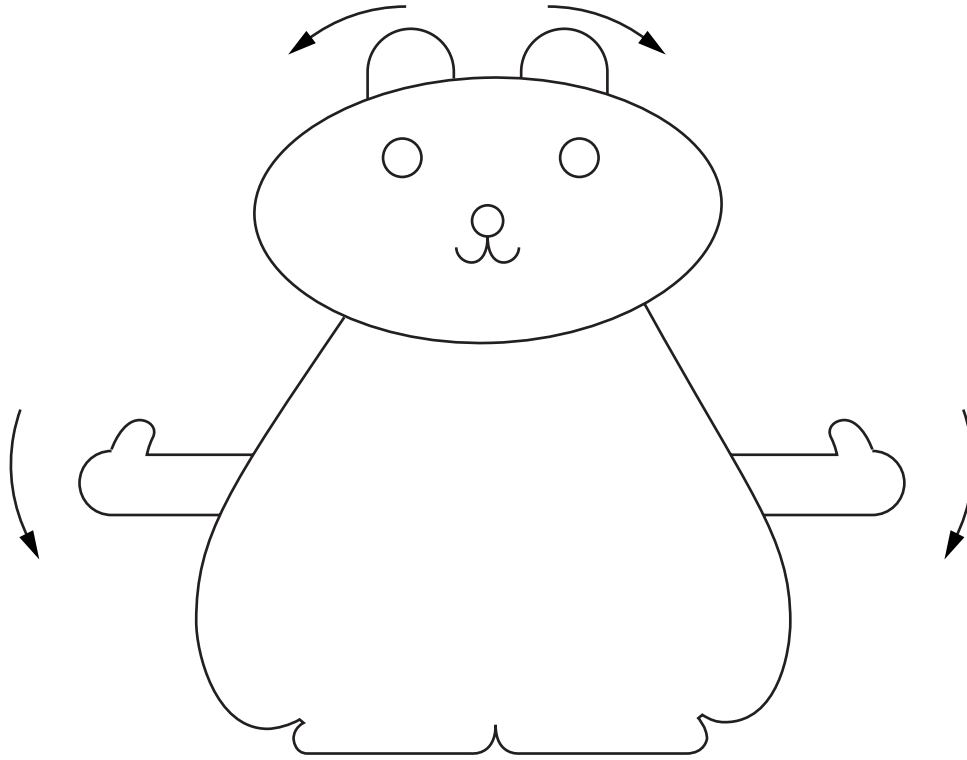


Fig. 1

- (a) Fig. 2 shows the back of the clothes hook. Add sketches and notes to Fig. 2 to show how the arms and ears could be made to move back to the position shown in Fig. 1 after the clothes have been removed.

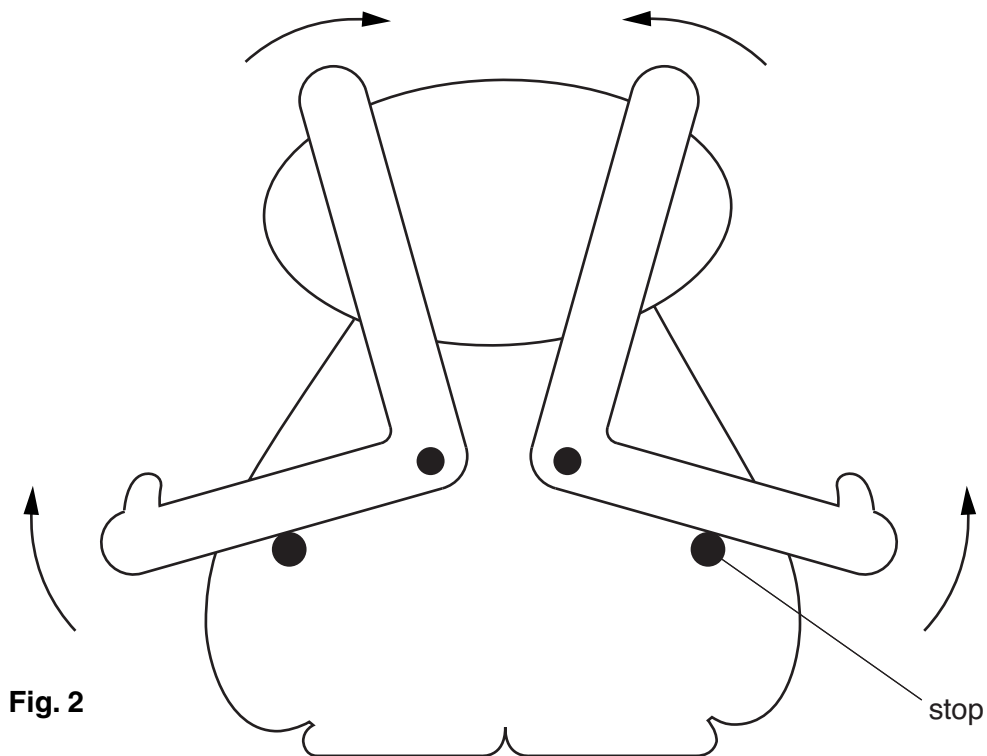


Fig. 2

- (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]

2 Fig. 3 shows views of **two** different shelf and bracket designs. Both designs are manufactured and sold as self-assembly products.

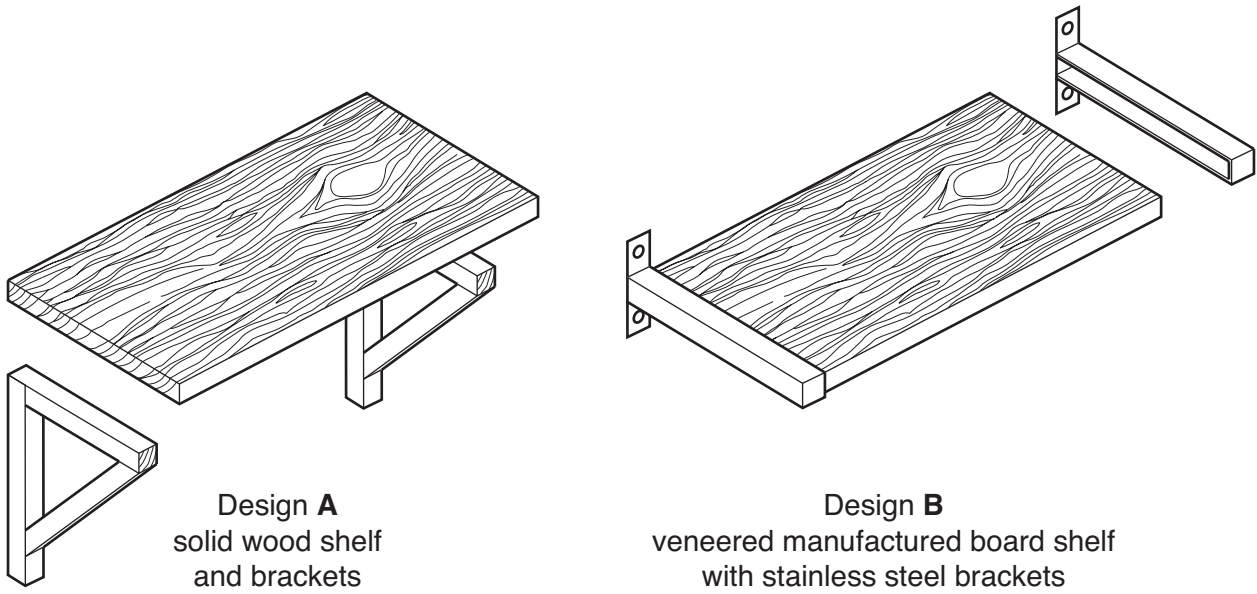


Fig. 3

(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]

[Turn over

- 3 Fig. 4 shows an incomplete drawing of a child's mechanical toy. When the handle is turned the face moves up and down and turns around as shown.

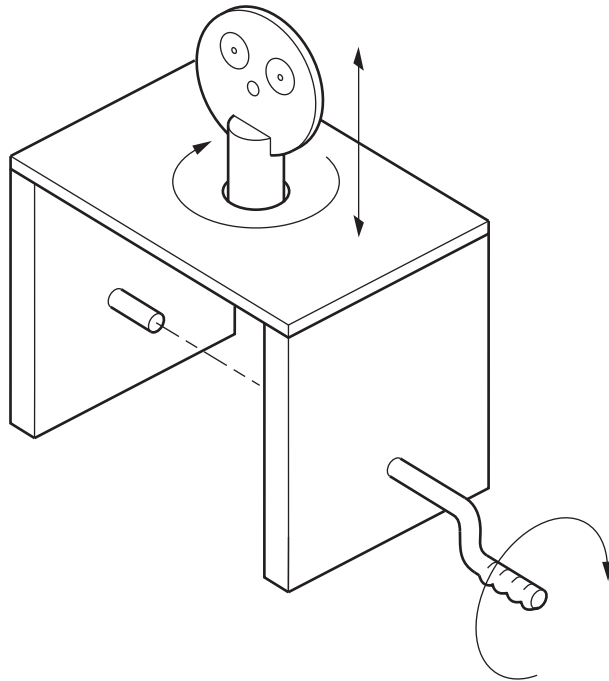


Fig. 4

- (a) Give the correct term for the type of movement shown by the arrows in Fig. 4:
- (i) up and down; _____ [1]
- (ii) turns around. _____ [1]
- (b) In the space below use sketches and notes to design a mechanical system that would enable the face to:
- move up and down; and
 - turn around.

(c) Give **one** reason why it would be unlikely for the toy shown in Fig. 4 to be sold commercially.

_____ [1]

(d) State **two** questions that a child could be asked when carrying out an evaluation of the completed toy.

1 _____
_____ [1]

2 _____
_____ [1]

4 Fig. 5 shows an incomplete design for a bathroom cabinet.

The completed cabinet will include:

- a glass shelf that can be adjusted to **three** different heights;
- two mirror doors.

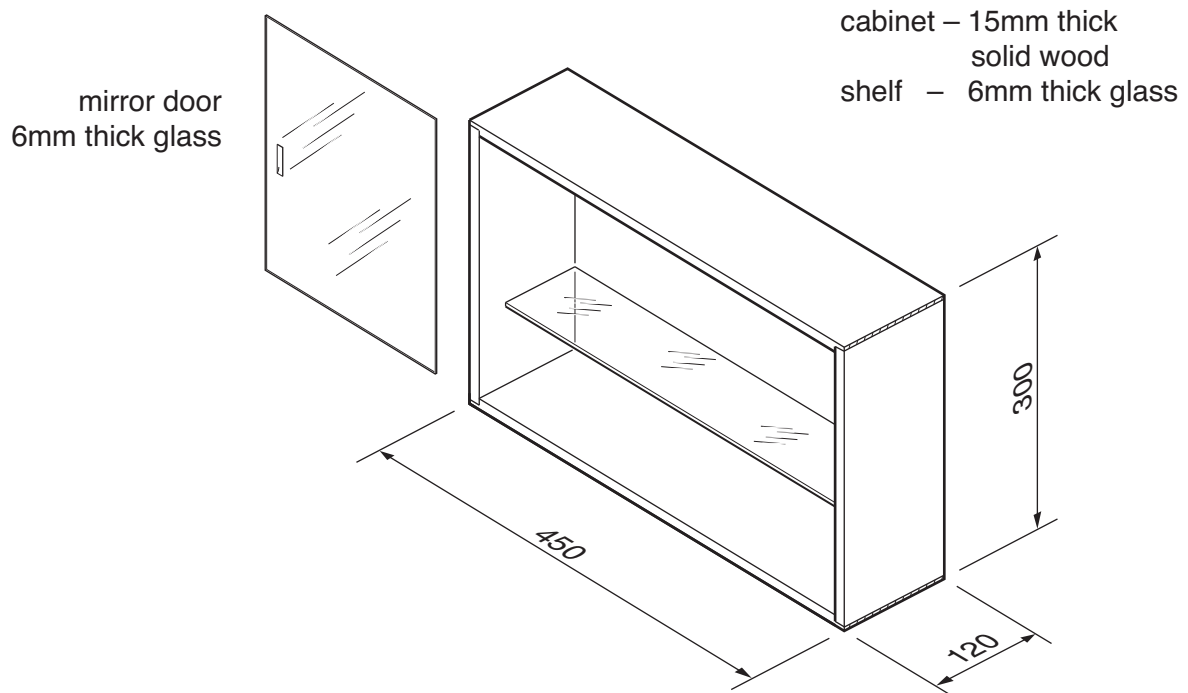


Fig. 5

(a) Use sketches and notes to show how the glass shelf could be made to adjust to three different heights. Include details of any materials and/or fittings used.

- (b) (i) Use sketches and notes to show how the **two** mirror doors could be:
- made to slide freely between the top and the bottom of the cabinet;
 - removed for cleaning.

[4]

- (ii) Many cabinets have hinged doors rather than sliding doors.
Give **one** advantage of using sliding doors.

_____ [1]

- (c) The mirror doors need to fit and slide freely.
State **one** stage during manufacture when this would be checked.

_____ [1]

- (d) Name a suitable finish for the bathroom cabinet.

_____ [1]

- 5 Fig. 6 shows a 'steady-hand' game that will be batch produced. A circuit board with electronic components and a battery are contained inside the plastic case. The plastic case will be vacuum-formed.

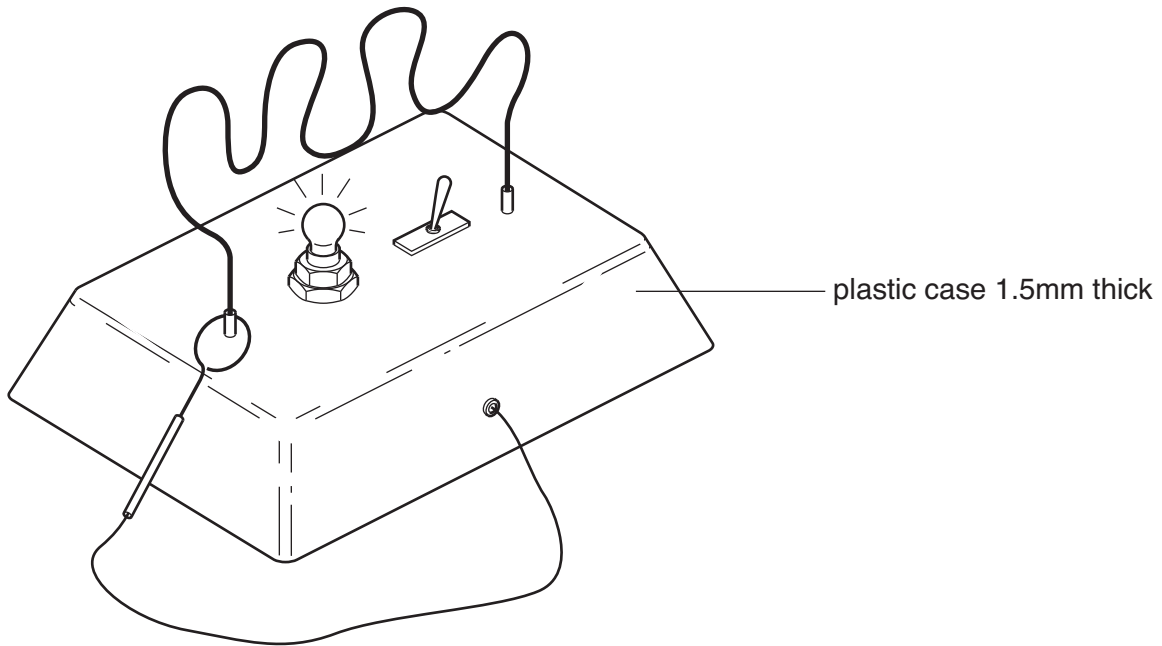


Fig. 6

- (a) Name a specific plastic suitable for vacuum forming the case.

_____ [1]

- (b) A former will be used to make the case. State **two** design features of the former that will allow the plastic case to be released after vacuum forming.

1 _____ [1]

2 _____ [1]

- (c) Describe **two** ergonomic features of the 'steady-hand' game.

1 _____ [1]

2 _____ [1]

- (d)** A base is needed for the plastic case to ensure that the circuit board, components and battery do not fall out when the game is moved.
Use sketches and notes to show a design for the base.
The design must allow for easy access.

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