

Candidate Name	Centre Number	Candidate Number



OXFORD CAMBRIDGE AND RSA EXAMINATIONS
General Certificate of Secondary Education

DESIGN & TECHNOLOGY:
INDUSTRIAL TECHNOLOGY

1959/1

PAPER 1 Foundation Tier

T h u r s d a y 26 M A Y 2005 M o r n i n g 1 h o u r

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

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.

INFORMATION FOR CANDIDATES

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

All dimensions are in millimetres.

Assume any mechanical system to be 100% efficient.

FOR EXAMINER'S USE	
1	
2	
3	
4	
5	
TOTAL	

This question paper consists of 15 printed pages and 1 blank page.

1 Fig. 1 shows some measuring and marking out tools.

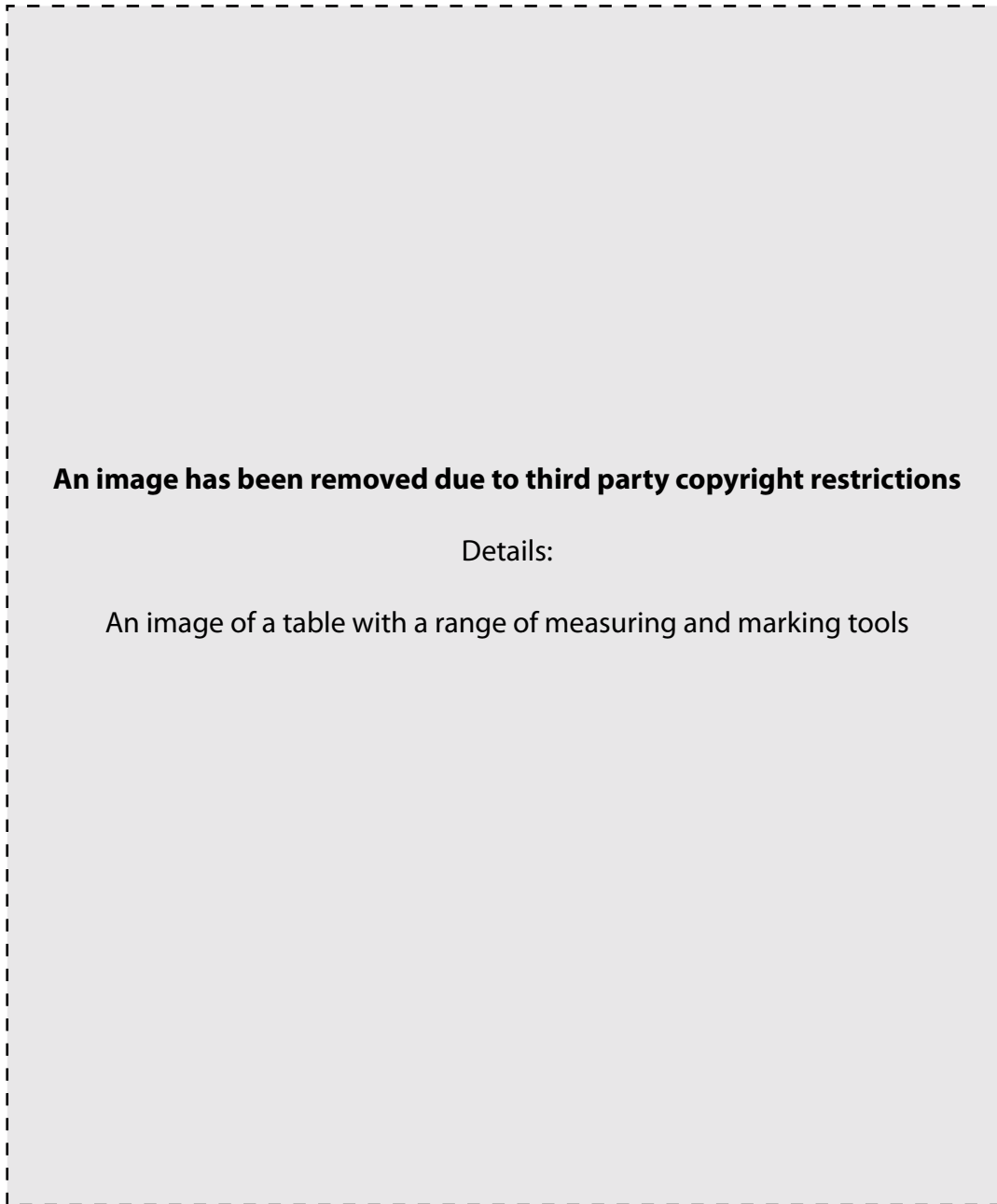


Fig. 1

Complete the table below by matching the letters to each of the measuring and marking out tools shown in Fig. 1.

The first one has been done for you.

B	Scriber
	Angle Plate
	Vee Block
	Rule
	Odd Leg Calipers
	Dividers
	Surface Plate
	Outside Calipers
	Micrometer
	Surface Gauge
	Engineer's Square

[10]

- 2 Fig. 2 shows a garden lantern.



Fig. 2

- Fig. 3 shows the net of the top of the lantern n.

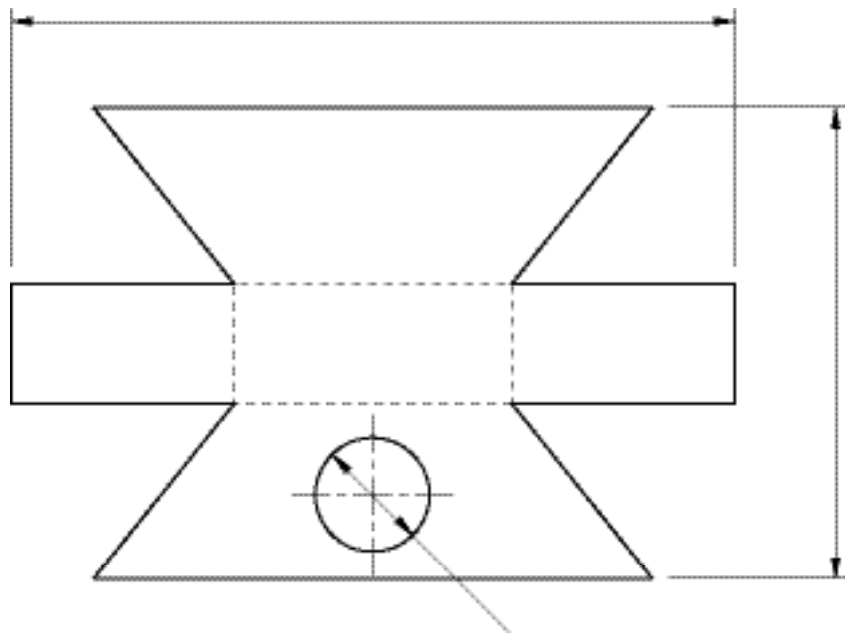


Fig. 3

- (a) (i) Using the information given in Fig. 2 complete the net of the top of the lantern by adding the following dimensions:
- the length of the net;
 - the width of the net;
 - the diameter of the air vent.
- [3]
- (ii) State the thickness of the material used for the top of the lantern.

[1]

Fig. 4 shows the net of the top of the lantern.

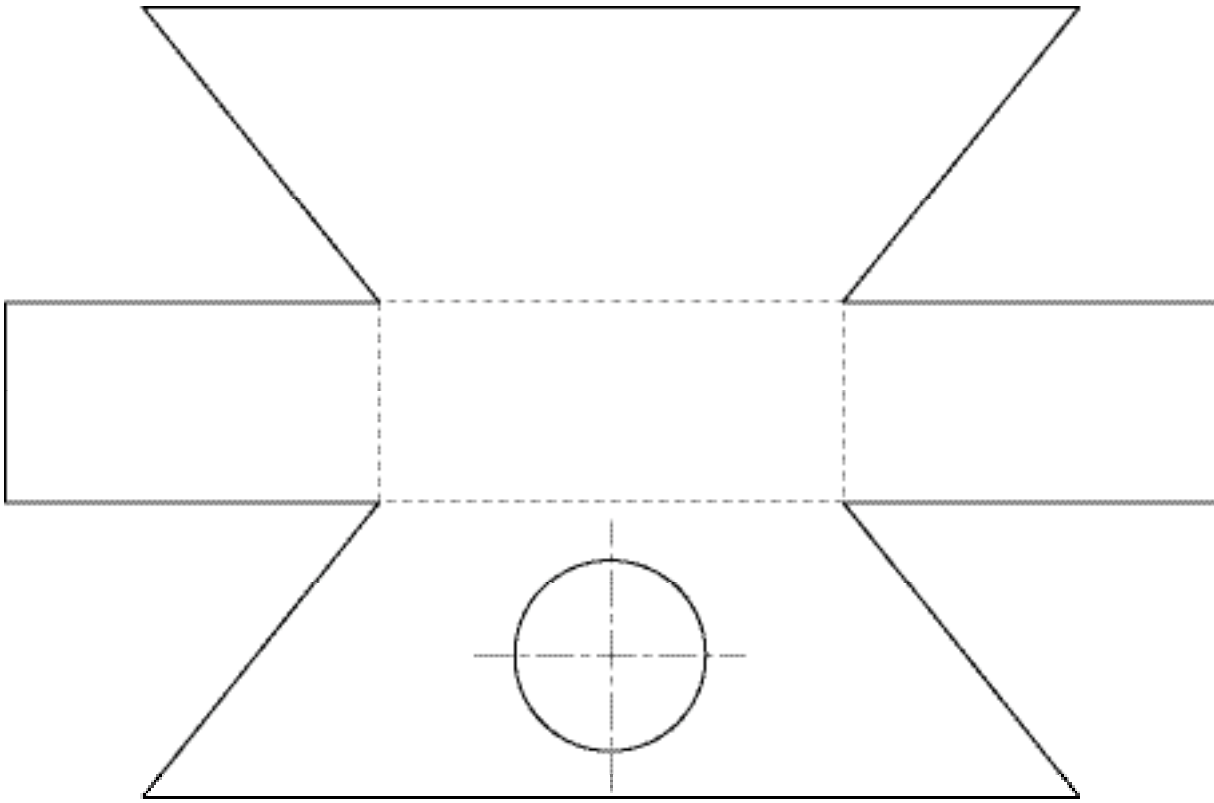


Fig. 4

(b) (i) Tabs need to be added to the net to allow the top to be joined together. Complete the net in Fig. 4 by adding the tabs. [2]

(ii) Describe how a template could be used to aid manufacture.

_____ [2]

(c) The lantern top is to be made from thin sheet steel. Name **two** suitable surface finishes for the lantern top.

1 _____

2 _____ [2]

- 3 Fig. 5 shows a wall bracket designed to hold a flag pole.

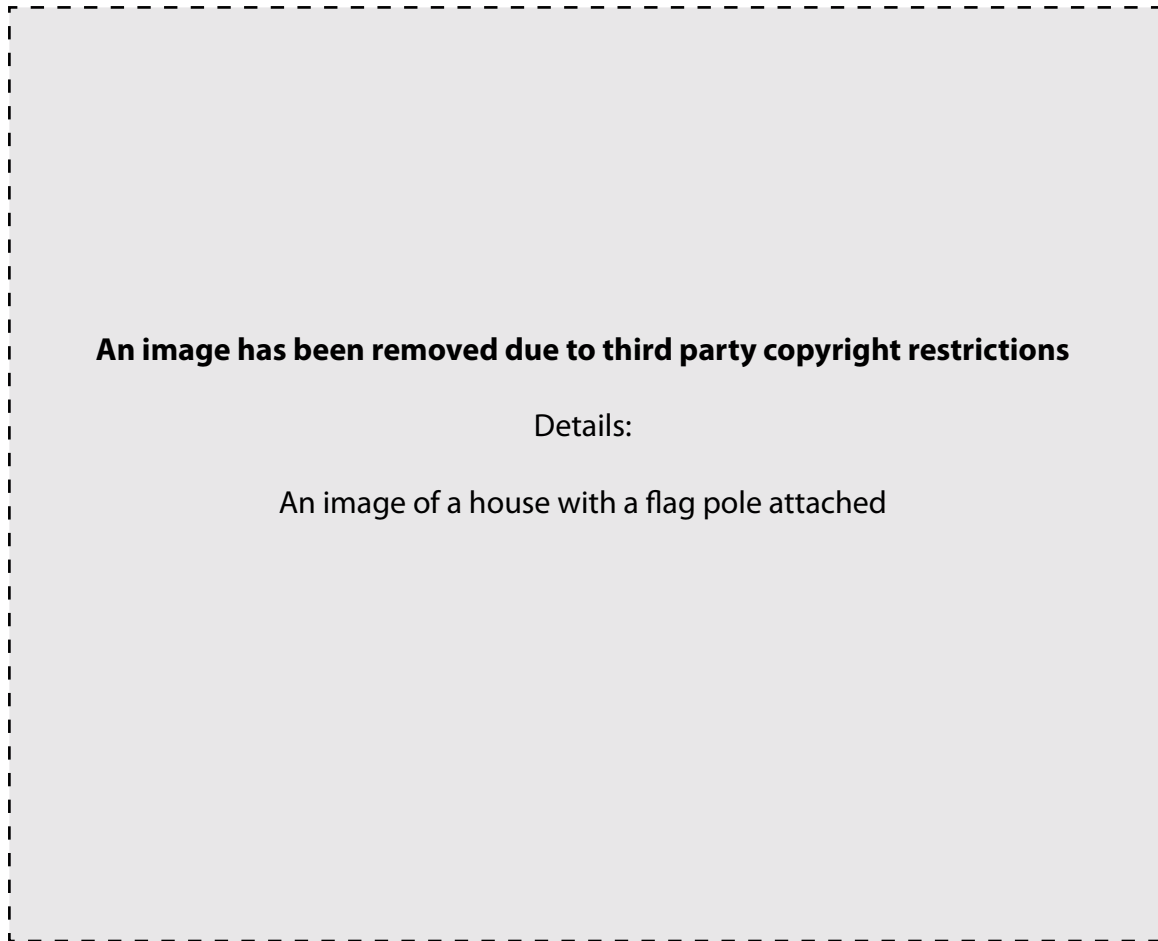


Fig. 5

The two parts are to be joined by brazing. This process requires the use of a flux.

- (a) State one reason why a flux is needed.

_____ [1]

- (b) The brazing process uses an alloy to form the joint.

- (i) Explain the meaning of the term alloy.

_____ [1]

- (ii) Give an example of an alloy, other than a brazing rod.

_____ [1]

Fig. 6 shows details of part **A**.

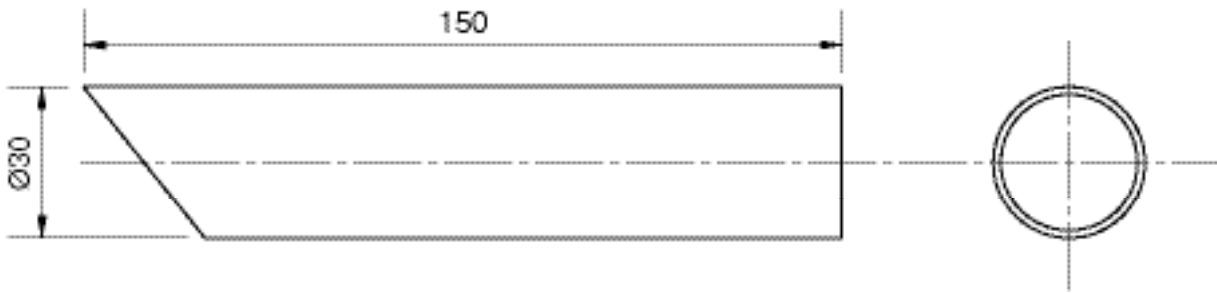


Fig. 6

(c) Part **A** is to be cut from a length of tube.
A batch of 50 is to be produced.
Using sketches and notes, design a jig to produce part **A**.
The jig must:

- be held in a vice;
- locate the tube;
- allow the correct angle to be cut each time;
- hold the work safely and securely.

[4]

Fig. 7 shows an area of weakness in the wall bracket.

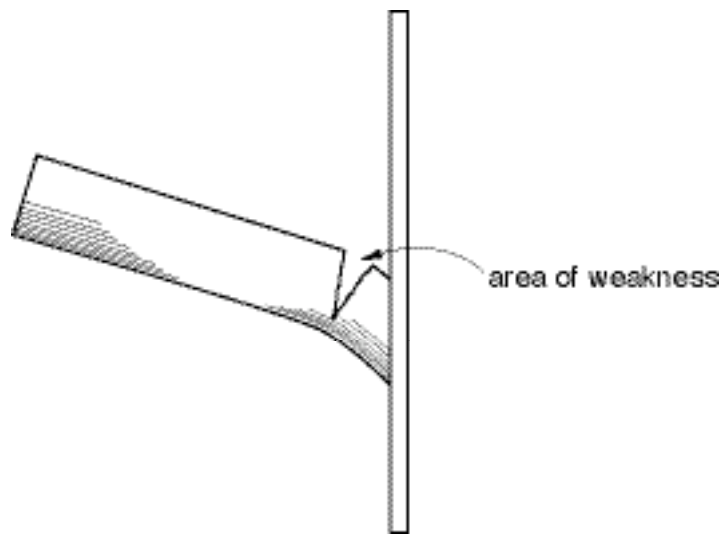


Fig. 7

- (d) Using sketches and notes, show a modification to improve the strength of the wall bracket.

- 4 Fig. 8 shows a student carrying a bag and a tennis racket while cycling.



Fig. 8

- (a) Give two safety issues .

1 _____

2 _____

[2]

Fig. 9 shows a clip to hold the tennis racket to the bicycle frame .



Fig. 9

(b) Complete the design specification for the tennis racket clip.

1 Fits most bicycle frames.

2 _____

3 _____

4 _____

5 _____

[4]

Fig. 10 shows a hook to carry a bag. The hook is made of plastic and designed to fit the frame of most bikes.



Fig. 10

The design of the clip has been tested using computer simulation.

(c) State **two** reasons for using computer simulation for testing designs.

1 _____

2 _____ [2]

In order for the hook to fit most bikes the designer has had to find out certain information.

(d) State **two** pieces of information the designer would need, to design the clip.

1 _____

2 _____ [2]

- 5 A manufacturer produces a batch of 'T' Squares. The 'T' square has two parts joined using a fitting that requires a $\text{Ø}6$ hole. Fig. 11 shows a simple jig used when drilling holes for the fittings.

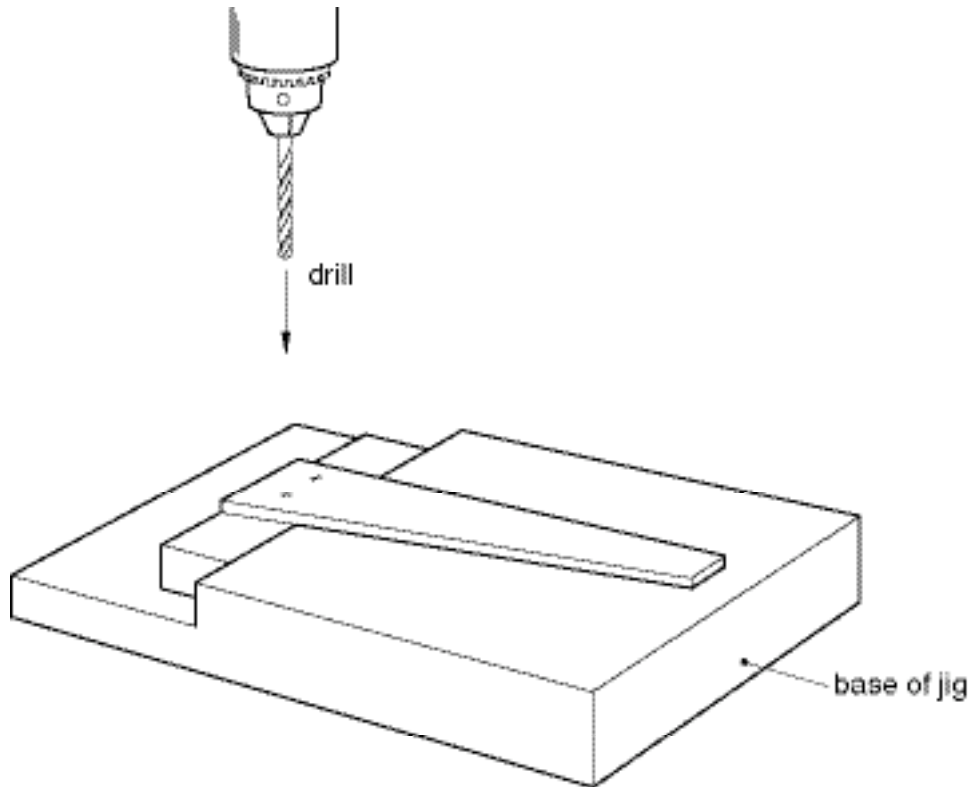


Fig. 11

- (a) Use sketches and notes to show how the jig could be improved.

The jig must:

- hold the 'T' square securely;
- have a quick release mechanism;
- be adjustable to allow for different sizes of 'T' square;
- allow accurate location on the table of the drilling machine;
- help drill holes to a certain depth.

SPACE FOR ANSWERS TO QUESTION 5(a)

[5]

The jig is used to produce a batch of 500 'T' squares.

(b) (i) Name **one** suitable metal for the base of the jig.

[1]

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

[1]

Fig. 12 shows a new design for a 'T' square.
It is made from **clear** acrylic.

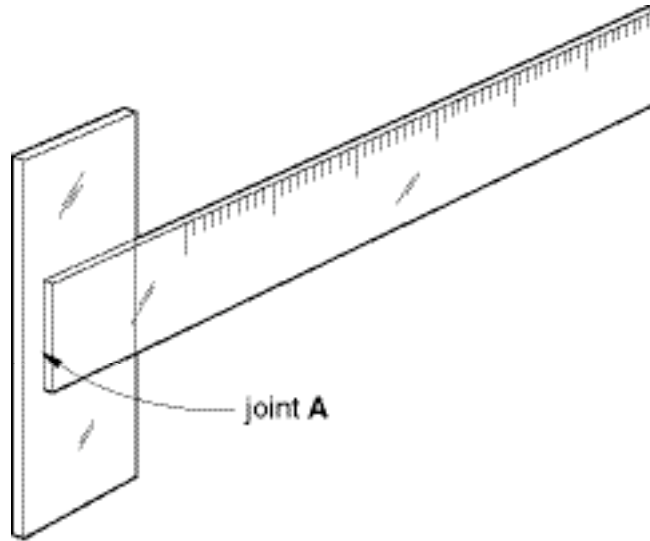


Fig. 12

(c) Give **two** features of the new design.

1 _____

2 _____ [2]

(d) Name a suitable permanent fixing for joint **A**.

_____ [1]

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