

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
General Certificate of Secondary Education

DESIGN & TECHNOLOGY
INDUSTRIAL TECHNOLOGY



1959/1

PAPER 1 Foundation Tier
 Thursday **25 MAY 2006**
 Candidates answer on the question paper.
 No additional materials are required.

Morning

1 hour

Candidate
Name

--

Centre
Number

--	--	--	--	--

Candidate
Number

--	--	--	--

TIME 1 hour

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and candidate number in the boxes above.
- Answer **all** questions.
- Write your answers in the spaces provided on the question paper.
- Use blue or black ink. Pencil may be used for diagrams only.
- 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

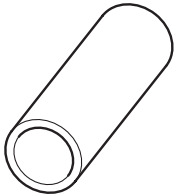
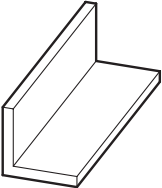
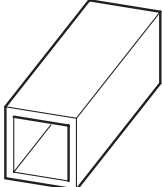
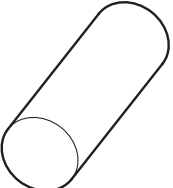
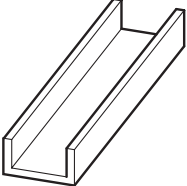
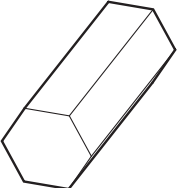
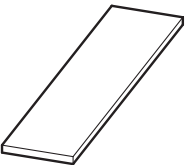
- The number of marks is given in brackets [] at the end of each question or part question.
- All dimensions are in millimetres.
- Assume any mechanical system to be 100% efficient.

FOR EXAMINER'S USE	
1	
2	
3	
4	
5	
TOTAL	

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

- 1 (a) The table below shows materials that may be found in a school workshop. **Complete** the table by using the descriptions from the following list. The first one has been done for you.

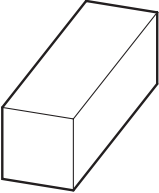
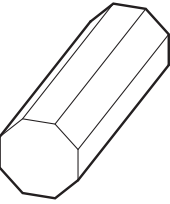
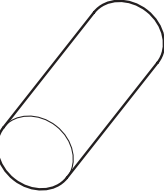
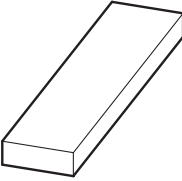
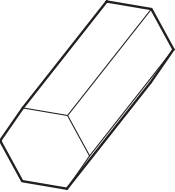
Square tube, round rod, angle, hexagonal rod, strip, round tube, channel, square rod, 'T' section.

	Round tube
	
	
	
	
	
	

(b) The material shown in the table below can be turned in a lathe using a three jaw or a four jaw chuck.

State the correct chuck type required.

The first one has been done for you.

	4 Jaw
	
	
	
	

[4]

[Total: 10]

- 2 During a work experience placement at an engineering company a student has been given the cutting list in Fig. 1

PART	L	W	T	MATERIAL	No OFF
Frame	600	12 A/F		Mild Steel	1
Thumb Wheel	45	Ø30		Brass	6
Water Feed Pipe	4000	Ø22		Copper	1
Locking Key	80	10	6	Silver Steel	4

Fig. 1

Fig. 2 shows the layout of the storeroom bays from where the materials are to be collected.

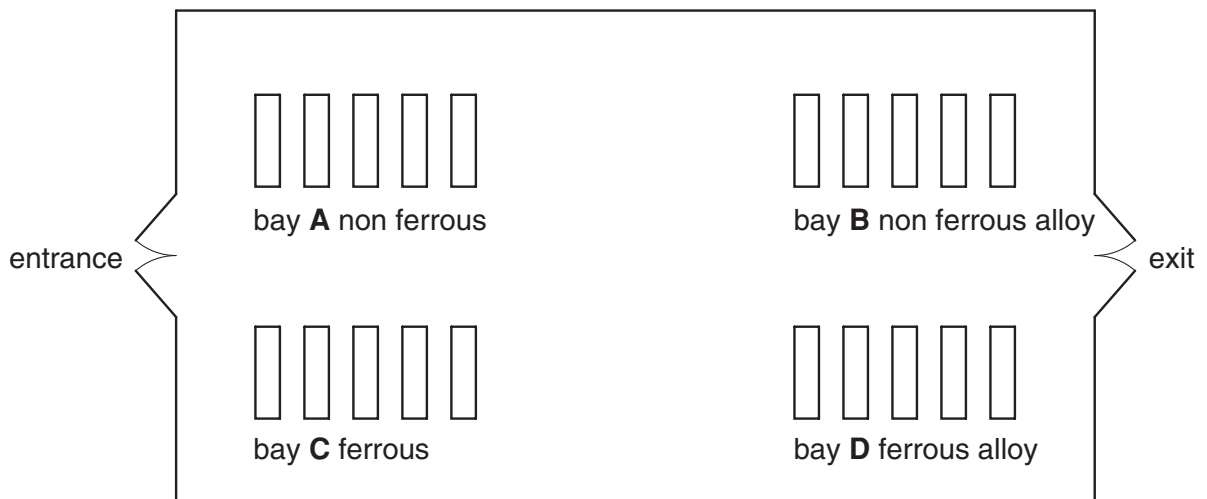


Fig. 2

- (a) Complete the table below by stating the bay where each of the four parts can be found.

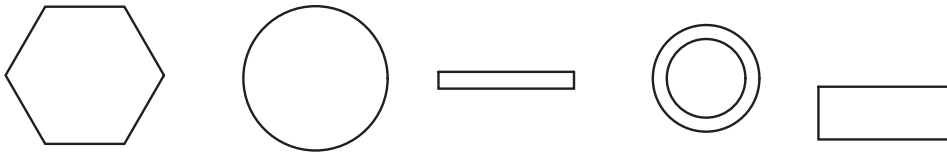
PART	BAY
Frame	
Thumb Wheel	
Water Feed Pipe	
Locking Key	

[4]

[Turn over

PART	L	W	T	MATERIAL	No OFF
Frame	600	12 A/F		Mild Steel	1
Thumb Wheel	45	Ø30		Brass	6
Water Feed Pipe	4000	Ø22		Copper	1
Locking Key	80	10	6	Silver Steel	4

(b) Each bay has a number of racks labelled with the following symbols:



Complete the table below by drawing the symbol shown on the rack where the material can be found.

One has been done for you.


PART	SYMBOL
Frame	
Thumb Wheel	
Water Feed Pipe	
Locking Key	

Fig. 3 shows two signs found in the engineering workshop.



Sign A _____



Sign B _____

Fig. 3

(c) Complete Fig. 3 by stating what each sign means. [2]

(d) **Complete** the following sentence.
The signs in Fig. 3 are normally coloured **white** and _____ . [1]

[Total: 10]

[Turn over

- 3 Fig.4 shows an incomplete view of a high street security camera.



Fig.4

- (a) State a suitable method of manufacturing the tubular steel.

[1]

- (b) In the space below, use sketches and notes, to show how the post and arm can be joined at point A.
The joint must come apart for maintenance.

[4]

- (c) Fig. 5 shows details of the base of the post.



Fig. 5

State the purpose of the two nuts at point B.

[1]

[Turn over

(d) Fig. 6 shows the completed scroll.

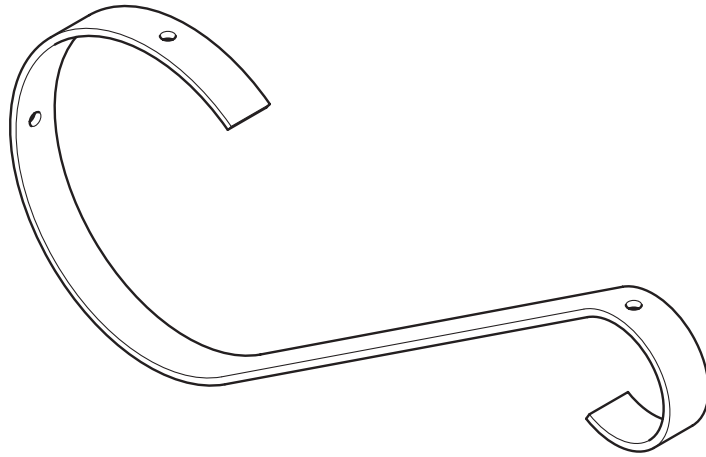


Fig. 6

Using sketches and notes design a jig to make the scroll.

The jig must:

- securely locate one end of the material;
- enable one bend at a time to be completed;
- be held in an engineer's vice.

ANSWER part (d)

[4]

[Total: 10]

[Turn over

- 4 A software designer is developing a new product for CNC machining. Fig. 7 shows the tool bar symbols to describe the machining operations.

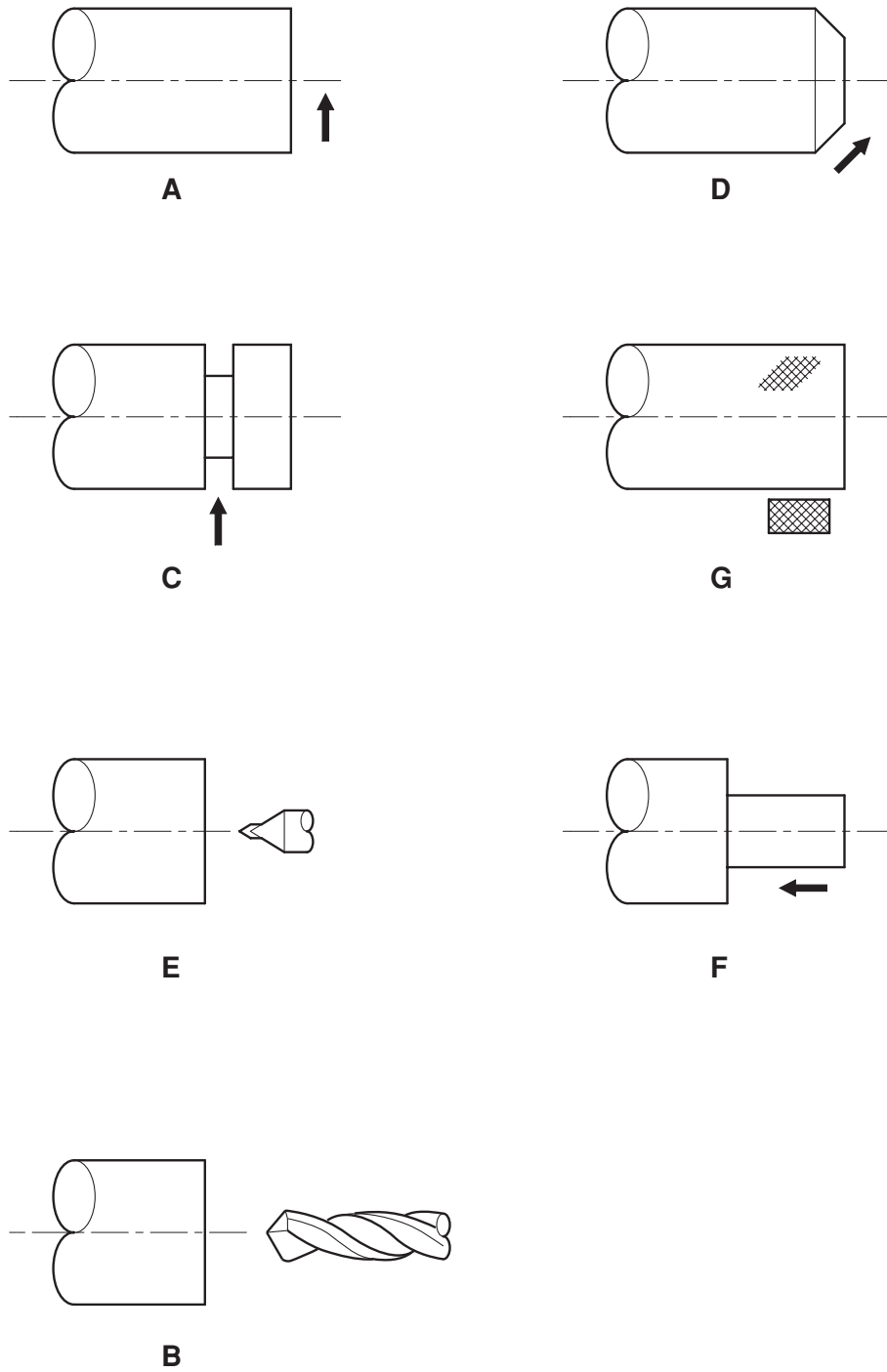
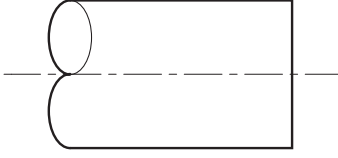
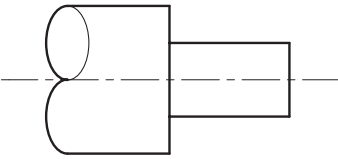
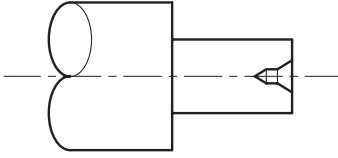
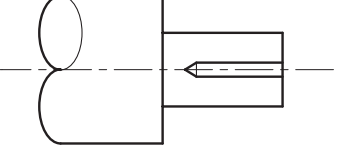
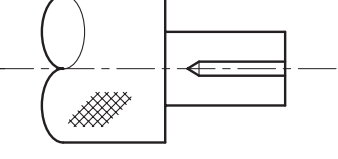
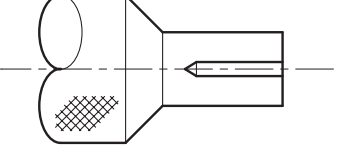
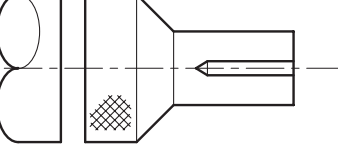


Fig. 7

(a) **Complete** the table below. The first one has been done for you.

Operation	Description	Tool bar symbol
	Facing off	A
	Parallel Turning	
		E
	Drilling	
		G
	Taper Turning	
		C

(b) Fig. 8 shows the label on a box of fastenings.

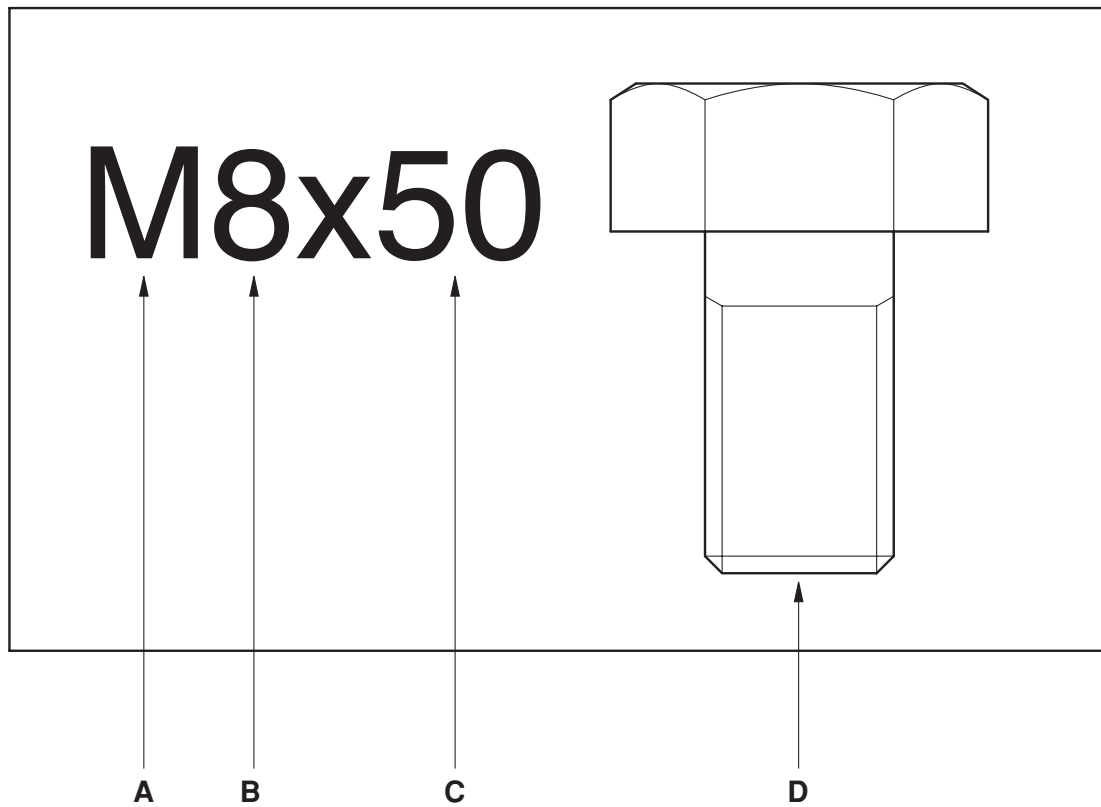


Fig. 8

State what each item of information means.

A _____

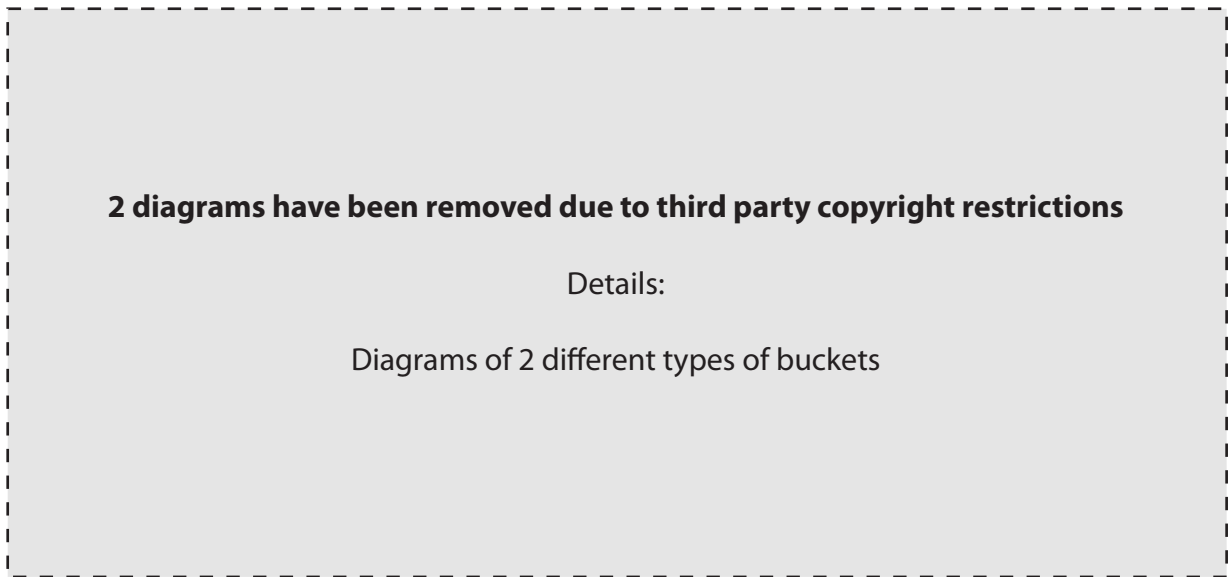
B _____

C _____

D _____ [4]

[Total: 10]

5 Fig. 9 shows two buckets.



bucket A
(polypropylene)

bucket B
(mild steel)

Fig. 9

- (a) (i) State a suitable method of manufacture for the body of bucket A.
- _____ [1]
- (ii) State a suitable method of manufacture for the body of bucket B.
- _____ [1]
- (b) State which of the buckets is likely to be the cheaper to mass produce.
- _____ [1]
- (c) State a suitable finishing process for bucket B other than painting.
- _____ [1]
- (d) State the reason for the shape of bucket B at point X.
- _____ [1]
- (e) (i) Explain how the graduations are manufactured in bucket A.
- _____ [1]
- (ii) Explain how the graduations are manufactured in bucket B.
- _____ [1]

[Turn over

In use, bucket A shown in Fig. 9 is found to be unsatisfactory.
The following weaknesses were identified:

- the bucket is unstable;
- the shape deforms when filled with water;
- over time the handle splits the plastic body.

(f) Use sketches and notes to show how these faults can be overcome.

[3]

[Total: 10]