

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
General Certificate of Secondary Education

DESIGN & TECHNOLOGY
INDUSTRIAL TECHNOLOGY



1959/3

PAPER 3 Foundation Tier
 Wednesday **14 JUNE 2006** Afternoon 1 hour
 Candidates answer on the question paper.
 No additional materials are required.

Candidate
Name

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Centre
Number

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Candidate
Number

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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 12 printed pages.

- 1 Many toys for children are made of plastic.

Fig. 1 shows a plastic toy truck.

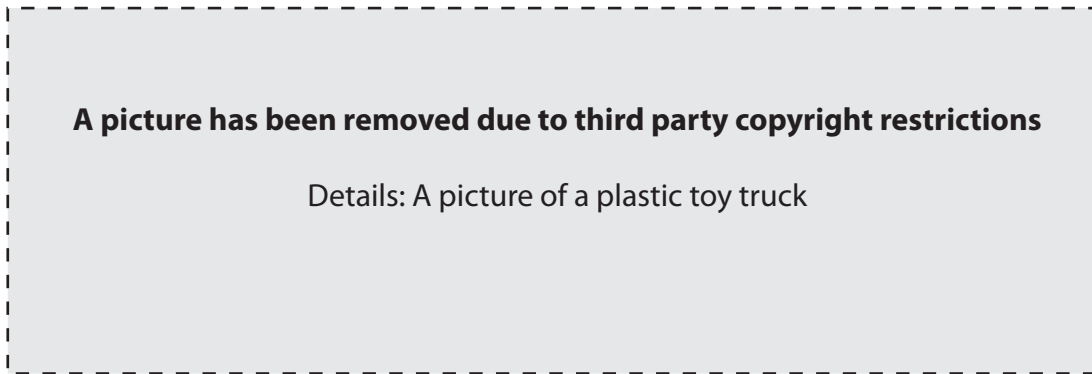


Fig. 1

- (a) (i) Give three reasons why plastic can be the best material for children's toys.

Reason 1 _____

Reason 2 _____


Reason 3 _____ [3]

- (ii) Name a plastic.

_____ [1]

Some products are made from two or more different materials.

- (b) Complete the table below by sketching the plastic part and the reasons for using plastic. The first one has been done for you.

product	sketch of plastic part	different reasons
umbrella		waterproof
electric plug		
packaging for batteries		
kitchen knife		

[6]

[Total: 10]

[Turn over

2 Gold, Silver and Platinum are non-ferrous metals.

(a) (i) State what is meant by the term non-ferrous.

_____ [1]

(ii) Give the names of two ferrous metals.

1 _____ [1]

2 _____ [1]

Some products are made from expensive metals, such as Silver, Gold and Platinum.

(b) Give one reason why some metals are expensive.

_____ [1]

Fig. 2 shows a gold watch strap.



Fig. 2

(c) Complete the specification list for the watch strap. The first one has been done for you.

The watch strap must:

be made of metal

_____ [1]

_____ [1]

_____ [1]

_____ [1]

(d) Some expensive products are made as a 'one off'.

State **two** benefits of 'one off' production.

Benefit 1 _____

Benefit 2 _____ [2]

[Total: 10]

- 3 Fig. 3 shows a view of a component made from a strip of aluminium.

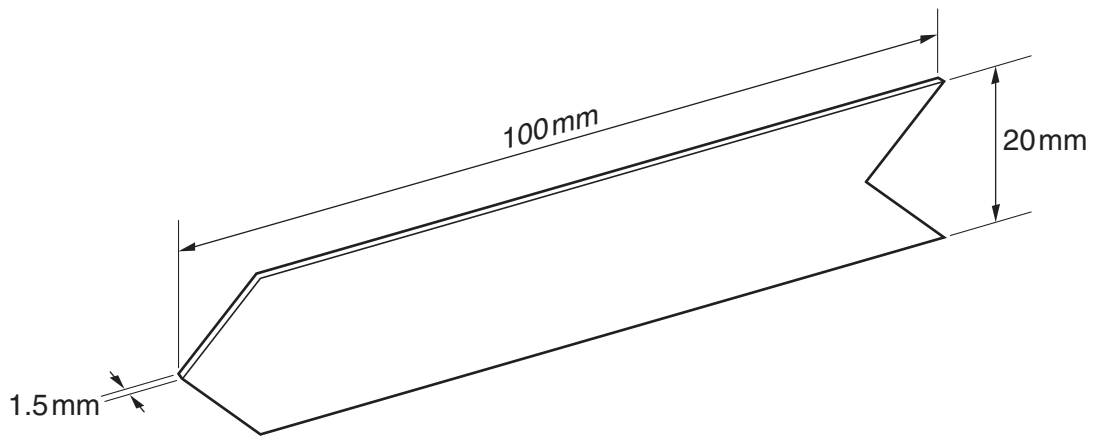


Fig. 3

It has been decided that the components should be made using a hand operated device. A batch of 50 is required.

- (a) Using sketches and notes, show a design for a hand operated device that meets the specification below.

The device must:

- be hand operated;
- be able to shape each component accurately to the same size;
- be safe to use;
- be easy to use and maintain;
- be mounted on a workbench.

A second batch of 50 components requires two holes as shown in Fig. 4.

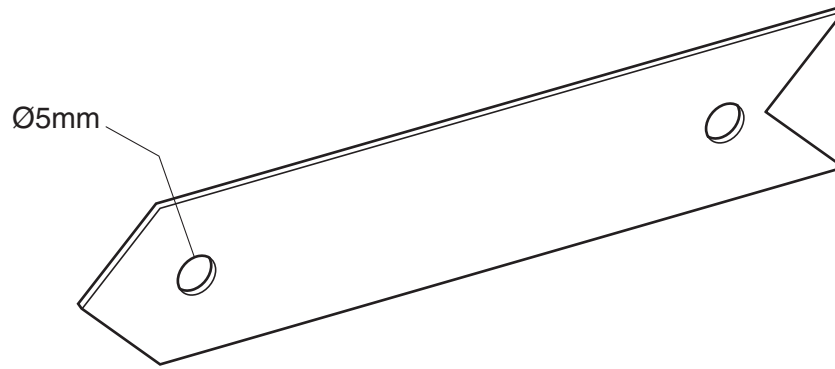


Fig. 4

(b) Using sketches and notes, show a design for another device.

The device must:

- Locate the component securely;
- Produce the holes.

[4]

[Total: 10]

[Turn over

- 4 Fig. 5 shows a nameplate for an office door. It has been made using a computer controlled router.



Fig. 5

- (a) (i) Give **two** reasons why a computer controlled machine would be suitable for making the nameplate.

Reason 1 _____[1]

Reason 2 _____[1]

- (ii) Give the name of **two** other workshop machines that can be computer controlled.

Machine 1 _____[1]

Machine 2 _____[1]

- (b) The manufacturers have noticed that the quality of the finished nameplates has deteriorated during batch production.

Give **two** quality control checks that could be carried out to help prevent any deterioration during manufacture.

Check 1 _____[1]

Check 2 _____[1]

(c) Another company is about to install CAM equipment in their manufacturing plant.

Explain **two** issues that the company must consider before installing the CAM equipment.

Issue 1 _____

_____ [2]

Issue 2 _____

_____ [2]

[Total: 10]

- 5 Fig. 6 shows a thin polystyrene knife made for fast food restaurants. Due to the quantities required it must be very cheap to produce.

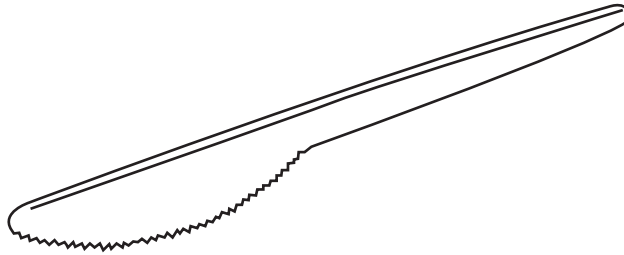


Fig. 6

Fig. 7 shows that during use the knife bends and is hard to control.

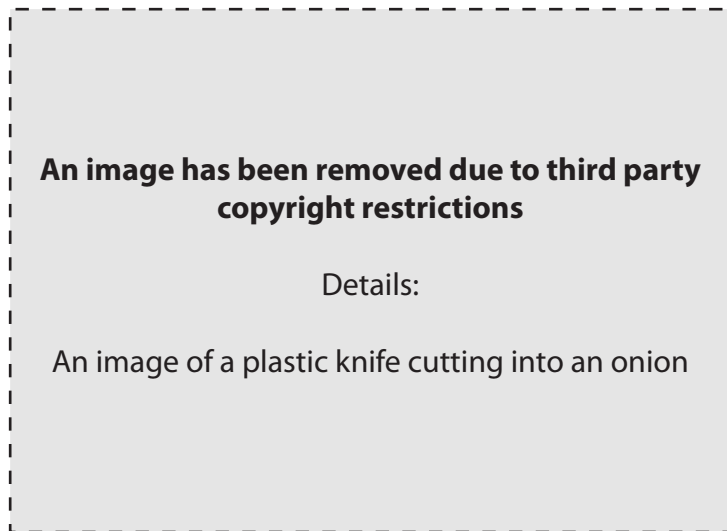


Fig. 7

- (a) Using sketches and notes, show how the knife can be improved.

The knife must:

- be more rigid;
- be very cheap to produce;
- be made out of polystyrene.

Fig. 8 shows three disposable plastic cups designed for the same fast food restaurants.

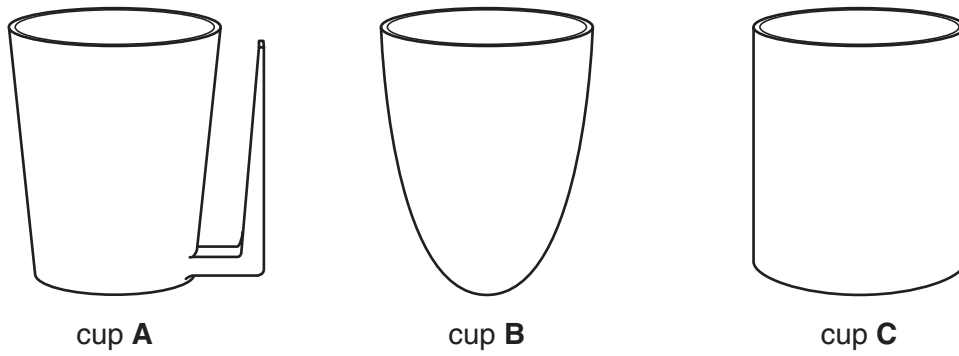


Fig. 8

Each of the cups has a design fault.

(b) State a design fault on each of the cups.

Cup A _____ [1]

Cup B _____ [1]

Cup C _____ [1]

(c) Using sketches and notes, show how the design of cup C can be improved.

[2]

The company has a reputation for being 'environmentally friendly'.

(d) Explain how disposable cups may affect this reputation.

_____ [2]

[Total: 10]

