

Wednesday 23 January 2013 – Afternoon

GCSE DESIGN AND TECHNOLOGY Industrial Technology

A544/01 Technical Aspects of Designing and Making

Candidates answer on the Question Paper.

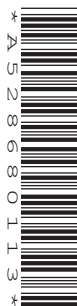
OCR supplied materials:

None

Other materials required:

None

Duration: 1 hour 15 minutes



Candidate forename		Candidate surname	
Centre number		Candidate number	

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions in Section A **and** Section B.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- All dimensions are in millimetres.
- The quality of your written communication will be taken into account in marking your answers to the questions marked with an asterisk (*).
- This document consists of **12** pages. Any blank pages are indicated.

2

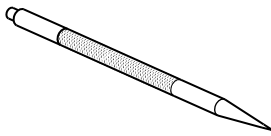
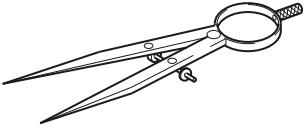
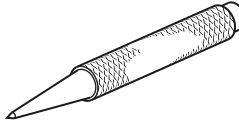
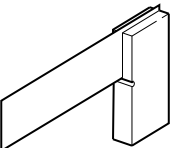
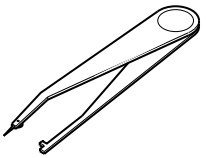
SECTION A

Answer **all** questions.

1 The table below shows tools used for marking out on metal.

(a) Complete the table by stating the correct name and use for each of the tools shown.

The first one has been done for you.

Tool	Correct Name	Use
	Scriber	Marking lines on metal
		
		
		
		

[8]

3

(b) A link from a simple mechanism is shown in Fig. 1.

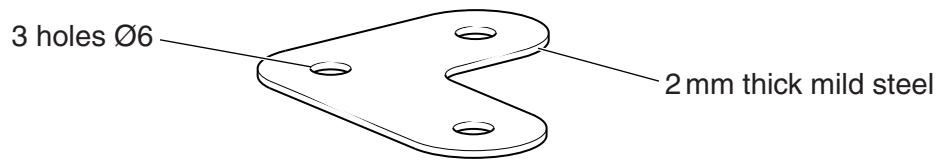


Fig. 1

Name **one** device that could be made to help mark out a batch of the mechanism link quickly and accurately.

..... [1]

(c) The three holes in the link are drilled on a drilling machine.

Give **three** safety precautions that should be taken when using a drilling machine.

1

2

3

[3]

[Total: 12]

4

- 2 Fig. 2 shows a clock body made in a school workshop from 5 mm thick acrylic sheet.

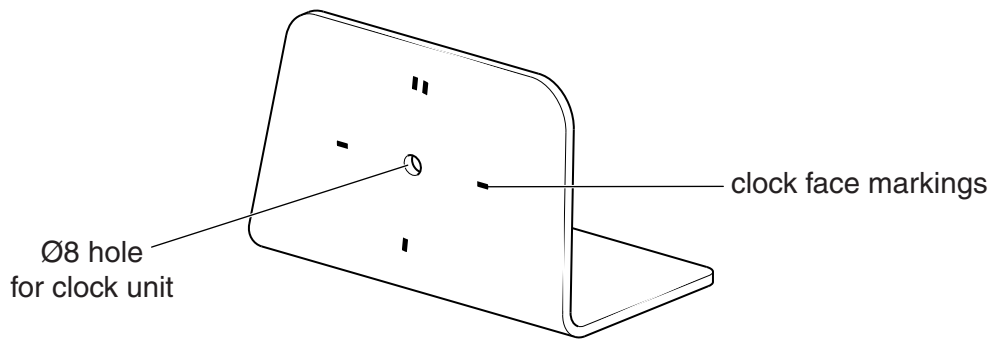


Fig. 2

- (a) Give **two** reasons why acrylic sheet is a suitable material for the clock body shown in Fig. 2.

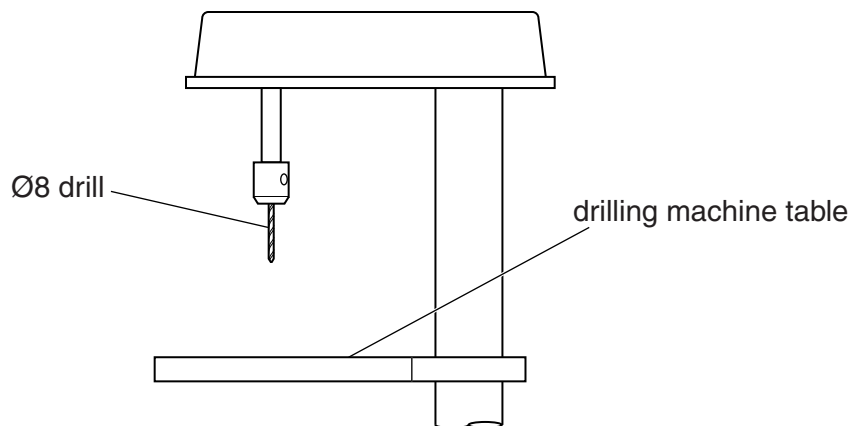
1

2

[2]

- (b) The Ø8 hole for the clock unit is drilled on a drilling machine before the clock body is bent into shape.

Complete the diagram below to show how the acrylic sheet should be held for drilling the hole.



[3]

5

(c) Complete the table below to give the stages needed to bend the clock body into shape.

Name the tools or equipment used at each stage.

	Stage	Tools or Equipment
1	Mark the position of the bend	Steel rule and marker
2		
3		
4		
5	Smooth off finished body	Polishing machine

[6]

(d) Give **one** method of producing the markings on the front of the clock body.

..... [1]

[Total: 12]

6

- 3 Fig. 3 shows a handle made from aluminium alloy.

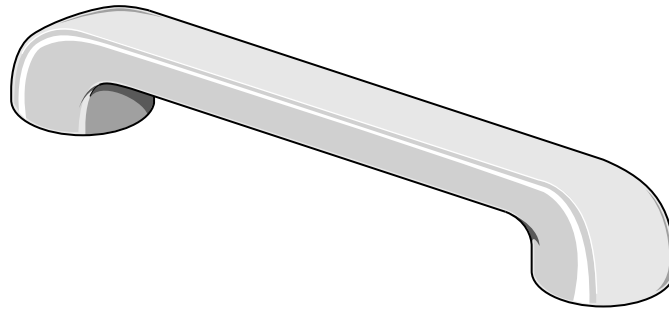


Fig. 3

- (a) Give **one** suitable finish for the handle shown in Fig. 3.

..... [1]

- (b) Describe **two** ways in which ergonomics has been considered in the design of the handle shown in Fig. 3.

1

.....

2

.....

[4]

- (c) Tick (✓) the industrial process most suitable for manufacturing aluminium alloy products in large quantities.

Injection Moulding	Fabrication	Die Casting

[1]

(d)* Explain why aluminium alloys are widely used for manufacturing products.

Marks will be awarded for the quality of written communication in your answer.

[6]

[Total: 12]

8

SECTION B

Answer **all** questions.

- 4 Fig. 4 shows a barbecue made from mild steel.

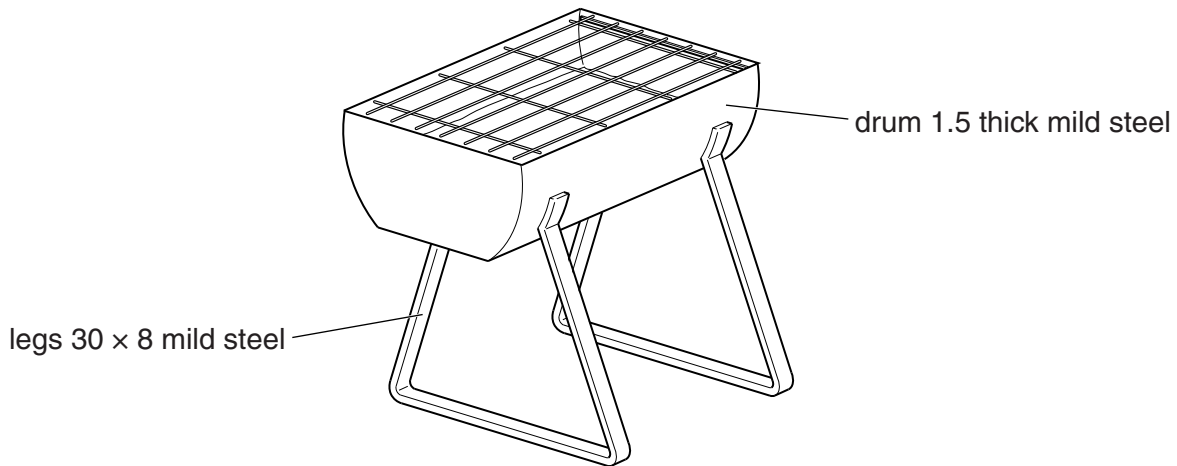


Fig. 4

- (a) Give **three** reasons why mild steel is a suitable material for the barbecue shown in Fig. 4.

- 1
- 2
- 3 [3]

- (b) (i) Give **two** ways that the legs could be fixed to the drum of the barbecue permanently.

- 1
- 2 [2]

- (ii) Give **one** way that the legs could be fixed to the drum of the barbecue temporarily.

..... [1]

(c) The barbecue shown in Fig. 4 is unstable when used on uneven ground.

Use sketches and notes to show how the legs of the barbecue could be modified so that:

- the barbecue is stable in use
- any adjustments can be made without using tools.

Give details of components and processes used.

[6]

[Total: 12]

5 CAD/CAM is widely used in the design and manufacture of products.

(a) Give **three** benefits of using CAD when designing products.

- 1
-
- 2
-
- 3
-
- [3]

(b) Computer controlled machines are used in the manufacture of products.

(i) Give **one** example of the use of robots in manufacturing.

-
- [1]

(ii) Name **two** other computer controlled machines.

- 1
- 2
- [2]

(c)* Explain the advantages and disadvantages of using computer controlled machines in manufacturing.

Marks will be awarded for the quality of written communication in your answer.

[6]

[Total: 12]

END OF QUESTION PAPER

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