

GENERAL CERTIFICATE OF SECONDARY EDUCATION

DESIGN & TECHNOLOGY

Industrial Technology

Paper 3 (Foundation Tier)

MONDAY 9 JUNE 2008

Afternoon
 Time: 1 hour

Candidates answer on the question paper

Additional materials: No additional materials are required



Candidate
Forename

Candidate
Surname

Centre
Number

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Candidate
Number

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INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

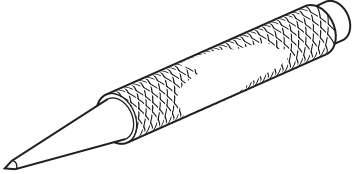
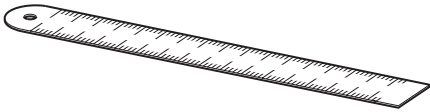
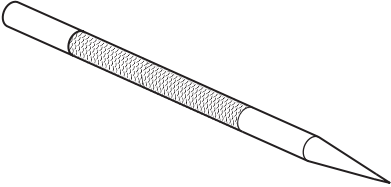
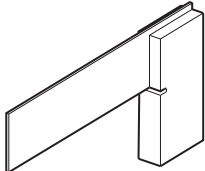
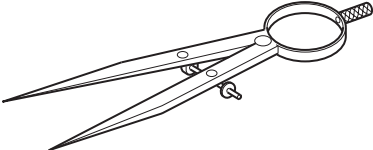
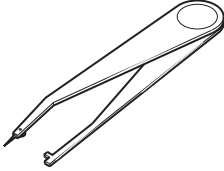
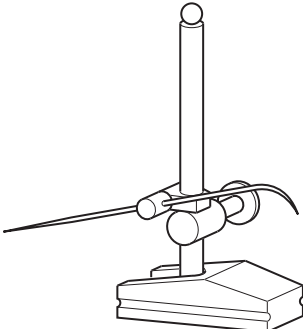
- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **50**.
- All dimensions are in millimetres.
- Assume any mechanical system to be 100% efficient.

FOR EXAMINER'S USE	
1	
2	
3	
4	
5	
TOTAL	

This document consists of **12** printed pages.

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

(a) Complete the table by adding the correct name for each tool shown.
The first one has been done for you.

	Centre Punch
	
	
	
	
	
	

[6]

(b) Give **one** reason why a centre punch must be used to mark the centre of a hole before drilling.

.....
.....[1]

(c) Give **two** ways of making lines stand out more clearly when marking out metal.

- 1[1]
- 2[1]

(d) Fig. 1 shows a steel fixing plate that is needed in batches of 10.

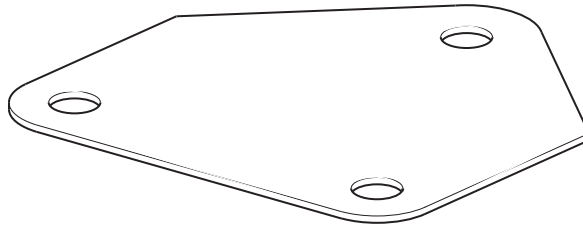


Fig. 1

Name a device that could be used to mark out the fixing plates quickly and accurately.

.....[1]

[Total: 10]

- 2 Fig. 2 shows a screw from a clamping device.
The screw is to be made on a centre lathe.

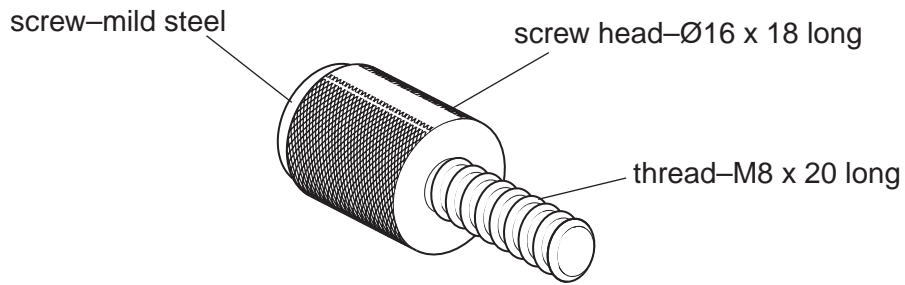

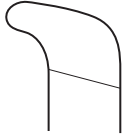

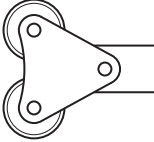
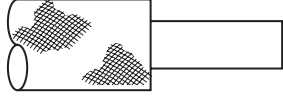
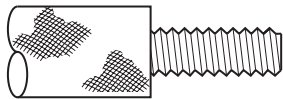
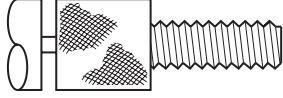


Fig. 2

- (a) Complete the process chart below to show the correct order of operations to make the screw shown in Fig. 2.

	Stage	Tool Used	Process
1			Face off bar
2			
3			
4			Cut thread
5			

[6]

(b) Use sketches and notes to show how the design of the screw head shown in Fig. 2 could be changed to make it easier to tighten or unscrew.

[2]

(c) Give **two** safety precautions that must be taken when using a centre lathe.

Precaution 1

.....[1]

Precaution 2

.....[1]

[Total: 10]

3 Fig. 3 shows a rack for holding files.

The rack is made from mild steel sheet.

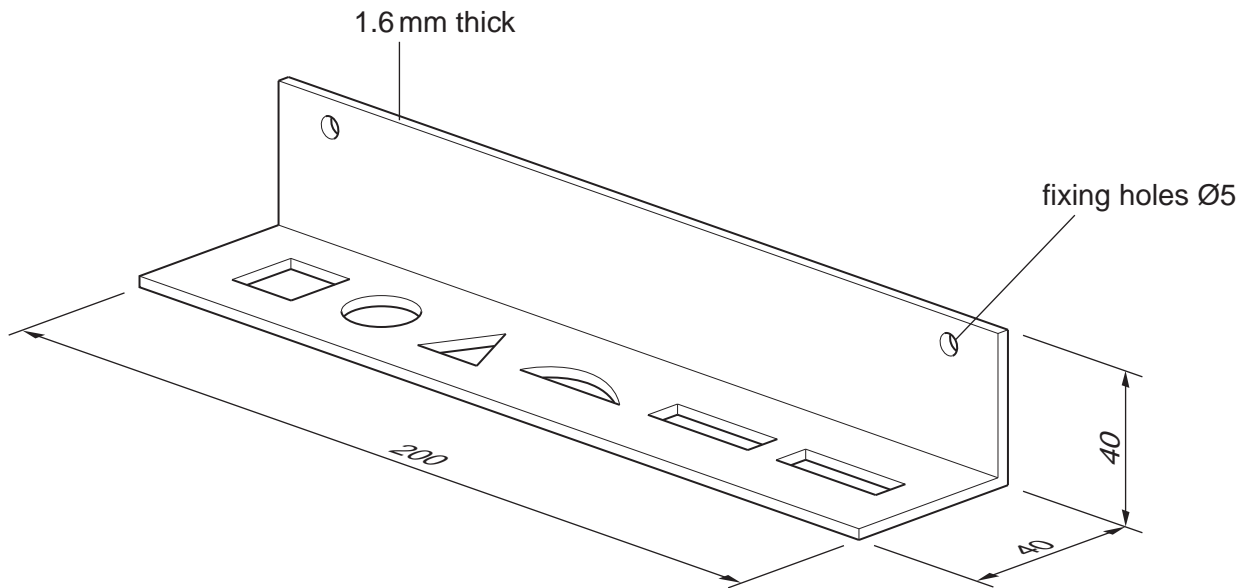


Fig. 3

(a) Use sketches and notes to show how the rack could be bent to shape from a sheet of mild steel.

[3]

(b) The rack will be fixed to a tool cupboard door using nuts and bolts.

Give **three** pieces of information needed when buying nuts and bolts.

1[1]

2[1]

3[1]

(c) In use it was found that:

- the rack bends when all the files are put in it; and
- the files are difficult to get out.

Use sketches and notes to show how these two problems could be overcome.

You must use the same thickness steel as shown in Fig. 3.

[4]

[Total: 10]

4 The car shown in Fig. 4 has been designed using CAD.

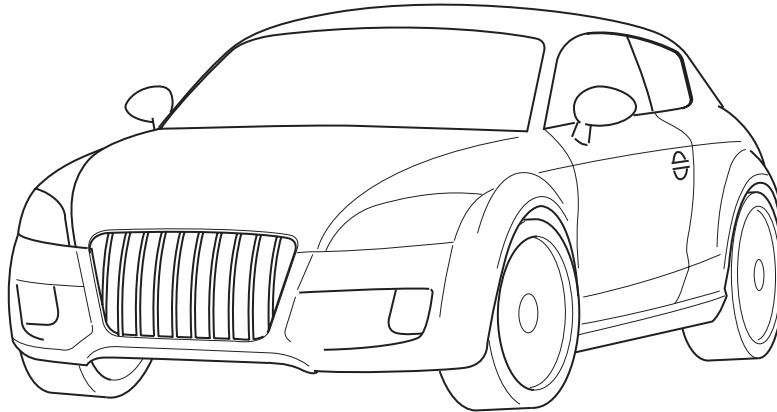


Fig. 4

(a) Give **three** benefits to the designer of using CAD.

Benefit 1.....[1]

Benefit 2.....[1]

Benefit 3.....[1]

(b) State **three** ways in which computer generated designs may be stored electronically.

1[1]

2[1]

3[1]

(c) Give **two** benefits to manufacturers of using CAM systems in production.

Benefit 1.....[1]

Benefit 2.....[1]

(d) State **two** ways a manufacturer could use computer technology to **control** production.

1
.....[1]

2
.....[1]

[Total: 10]

5 Fig. 5 shows two electric drills.

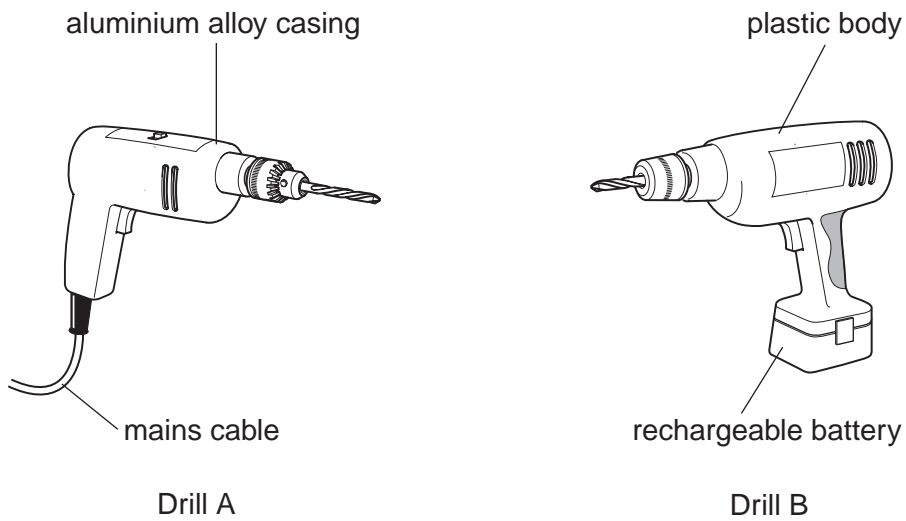


Fig. 5

(a) Name the industrial process used to produce the aluminium alloy casing for drill A.

.....[1]

(b) Give **three** advantages of using drill B compared to using drill A.

Advantage 1.....[1]

Advantage 2.....[1]

Advantage 3.....[1]

(c) Describe how ergonomics has been considered in the design of drill B.

.....
.....
.....[2]

(d) Many products are made from plastics.

Explain **two** effects this could have on the environment.

1.....
.....
.....[2]

2.....
.....
.....[2]

[Total: 10]

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