



FOR OFFICIAL USE

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National
Qualifications

Mark

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S861/75/01

Practical Metalworking

Date – Not applicable

Duration – 1 hour

* S 8 6 1 7 5 0 1 *

Fill in these boxes and read what is printed

Full name of centre

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Town

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Forename(s)

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Surname

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Number of seat

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Date of birth

Day

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Month

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Year

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Scottish candidate number

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Total marks — 60

Attempt ALL questions.

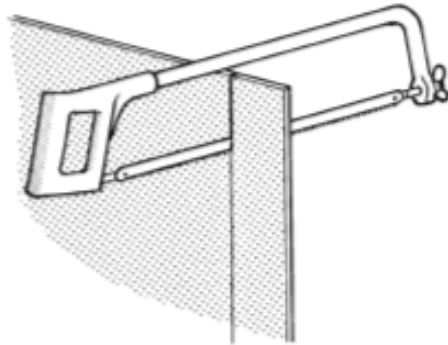
Write your answers clearly in the spaces provided in this booklet. Additional space for answers is provided at the end of this booklet. If you use this space you must clearly identify the question number you are attempting.

Use blue or black ink.

Before leaving the examination room you must give this booklet to the Invigilator; if you do

Total marks — 60 Attempt ALL questions

1. A hacksaw is being used to make the cut shown below. The handle of the hacksaw has reached the top edge of the metal and can go no further.



- (a) Describe how the cut would be completed.

(2)

- (b) Explain how the hacksaw blade may be damaged by:

- (i) Sawing too quickly.

(1)

- (ii) Applying too much pressure.

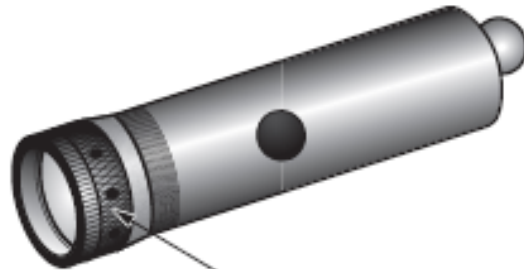
(1)

- (c) After the metal was cut, it needed to be filed to remove the jagged edge.

Explain the purpose of the 'safe edge' on a hand file.

(1)

2. A torch is shown below:



Textured finish

(a) The torch body is made from aluminium.

State **two** properties of aluminium that makes it a suitable material.

1. _____

(2)

2. _____

(b) (i) State the name of the process used to create the textured finish.

(1)

(ii) State the *functional* reason for this textured finish.

(1)

(c) The torch body was manufactured using a metal lathe.

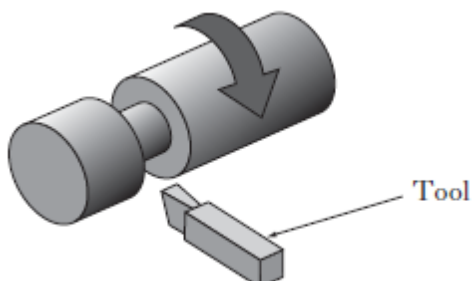
State **two** procedures or adjustments that ensure a high quality finish is achieved when parallel turning metal.

1. _____

(2)

2. _____

(d) The lathe tool shown below was used in the manufacture of the torch body.

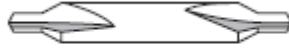


State the name of this tool.

(1)

2. (continued)

(e) The drill bit shown below was used in the manufacture of the torch body.



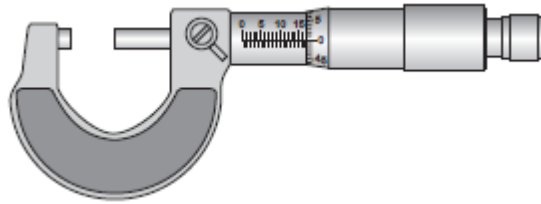
(i) State the name of this drill bit.

(1)

(ii) State the function of this drill bit.

(1)

(f) The tool below was used in the manufacture of the torch body.



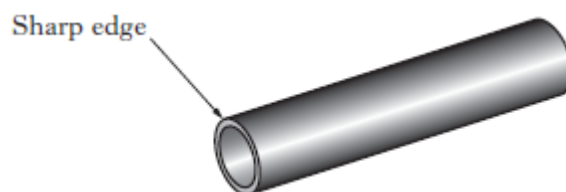
(i) State the name of this tool.

(1)

(ii) State one reason why this tool was preferable to **outside callipers**.

(1)

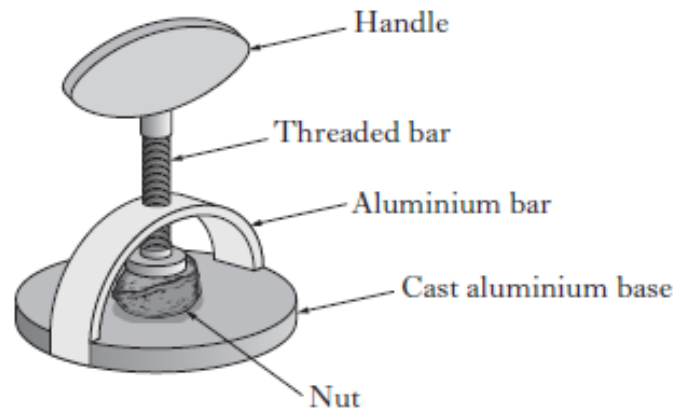
(g) During testing it was found that the torch body had a sharp edge.



State a metal lathe process that would remove this sharp edge.

(1)

3. A nut cracker is shown below.



(a) State a reason why the base was made from aluminium rather than pine.

(1)

(b) During the manufacture of the nut cracker it was necessary to anneal the aluminium bar before bending.

(i) State the reason for annealing aluminium.

(1)

(ii) State the reason for using soap during the annealing process.

(1)

(c) The process of *sand casting* was used to manufacture the base.

A wooden pattern was used in this process.

State **two features** of the pattern that would allow it to be easily removed from the moulding sand.

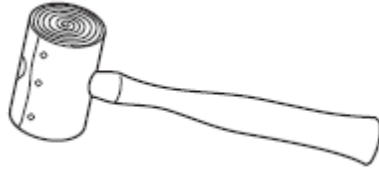
1. _____

2. _____

(2)

3. (continued)

(d) The tool shown below was used to shape the aluminium bar.



(i) State the name of this tool.

(1)

(ii) State a reason why this tool preferred to a *ball pein hammer*.

(1)

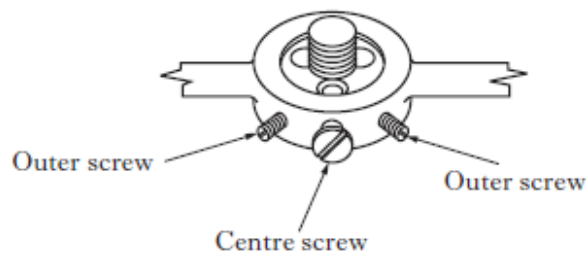
(e) The aluminium bar was threaded.

(i) State **two** procedures that ensure a high quality thread is cut on the bar.

1. _____

(2)

2. _____

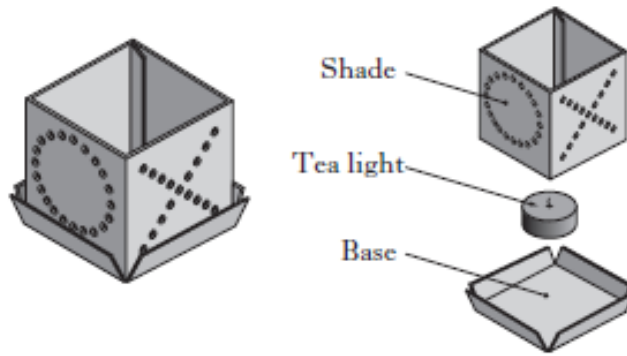


(ii) The thread was cut and found to be a tight fit.

Describe how to adjust the tool so that the thread is an "easy running fit".

(2)

4. A tea light holder made from sheet aluminium is shown below.



(a) A circle was scribed during the marking out of the aluminium shade.

(i) State the name of the metal working tool used to create the circle.

(1)

(ii) A line was drawn parallel to an edge during the marking out of the aluminium base.

State the name of the metal working tool used.

(1)

(b) Holes were drilled in the aluminium shade.

(i) State the name of a suitable drill bit.

(1)

(ii) The drill slipped on the aluminium.

State a method of preventing the drill from slipping.

(1)

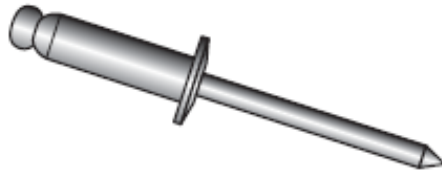
(iii) During drilling a ragged edge formed on the under edge of the aluminium.

State how this edge could be removed.

(1)

4. (continued)

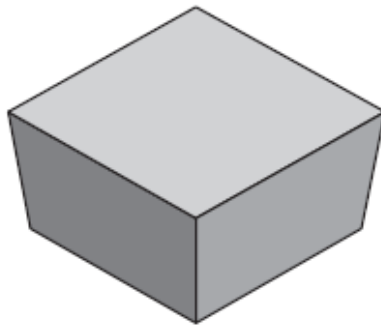
(c) The fixing shown below was used in the manufacture of the tea light holder.



(i) State the name of this fixing.

(1)

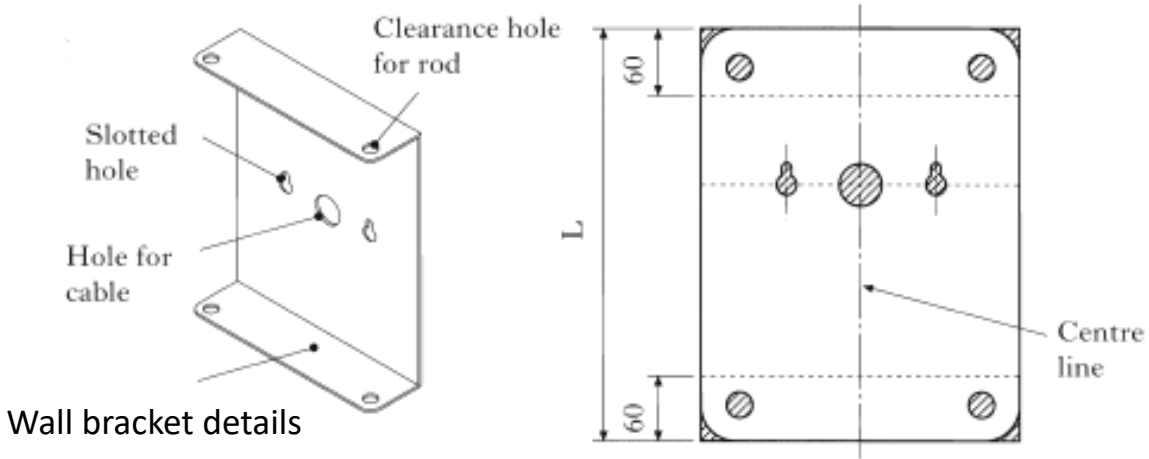
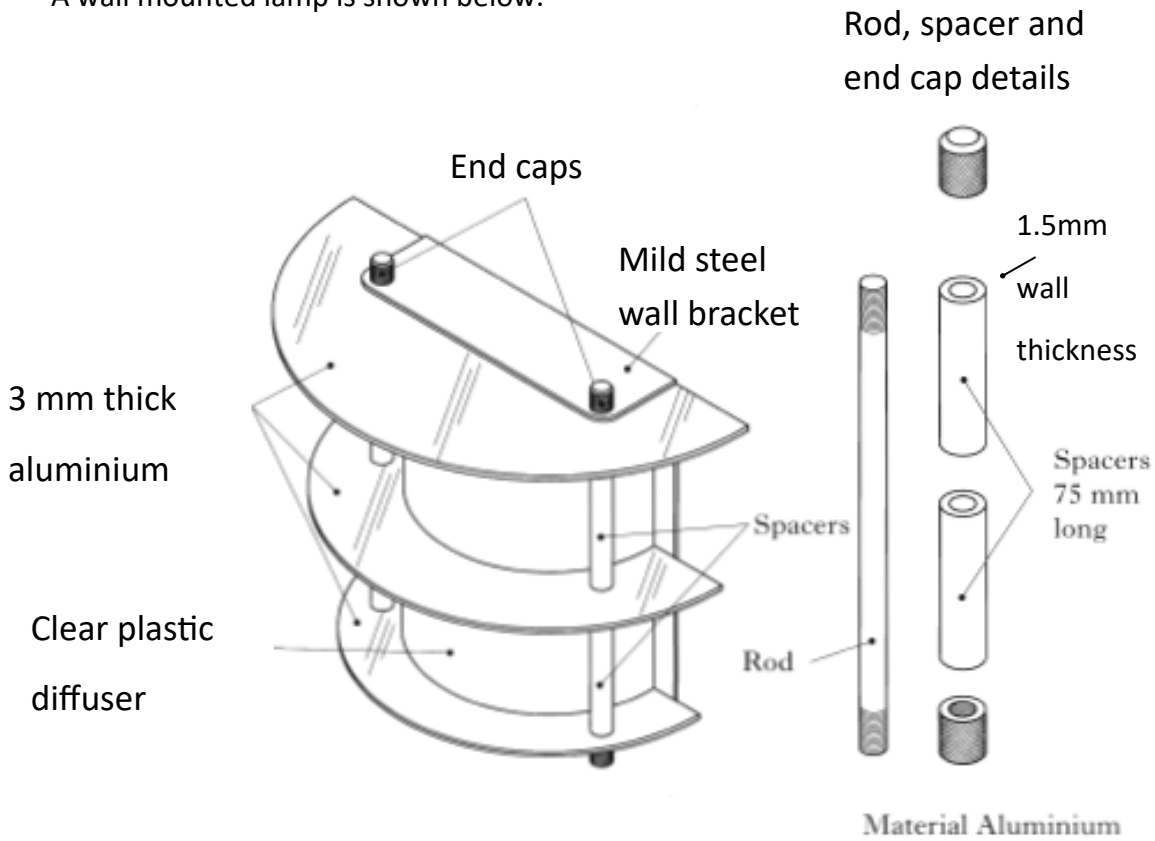
(d) The hardwood former shown below was used during the manufacture of the base.



State the purpose of the former.

(1)

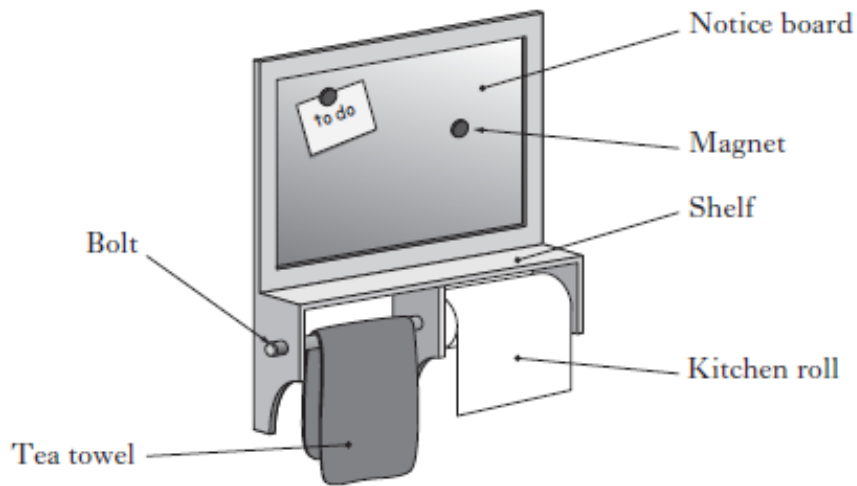
5. A wall mounted lamp is shown below.



(a) Complete the cutting list shown below:

Part	Material	L	B	Th	No. Off
Reflectors	Aluminium	300mm	150mm		3
End Caps	Aluminium	20mm	Ø15		4
Rods	Aluminium	300mm			2
Spacers	Aluminium	75mm	Ø15		
Wall Bracket			200mm	3mm	1

6. A kitchen unit is shown below.



(a) The notice board is magnetic.

State the name of a metal that could be used for the notice board.

(1)

(b) The parts shown below were manufactured using the metalwork lathe.

A change of speed can be required when using the lathe.

State three general reasons why a change of speed may be necessary.

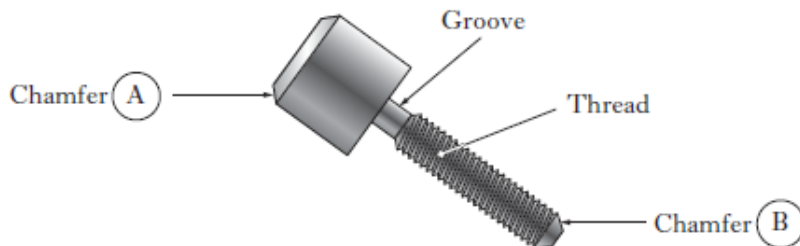
1.

2.

3.

(3)

(c) A bolt is shown below.



(i) Both ends of the bolt have been chamfered. State the name of the **slide** on the lathe that should be adjusted to 45° to allow the chamfer to be cut.

(1)

6. (continued)

(d) State the reason for:

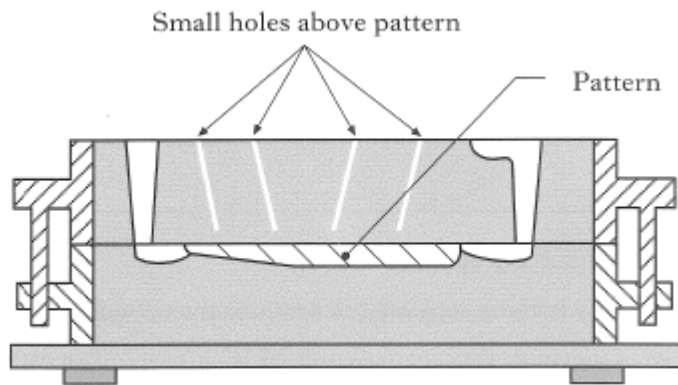
(i) Chamfer A

(1)

(ii) Chamfer B

(1)

7. A metal stand was made using sand casting.



(a) State the purpose of the small holes above the pattern.

(1)

(b) Write a description of each of the following casting terms:

(i) Crucible

(ii) Runner

(iii) Riser

(iv) Cope and Drag

(4)

8. (a) Finishes are often applied to metal at the end of manufacturing.

State **two reasons** why a finish may be applied.

1.

2.

(2)

(b) (i) Plastic dip coating was chosen as the finish on a metal trowel.

State **two reasons** why plastic dip coating is a suitable finish.

1.

2.

(2)

(ii) The plastic had a dull, gritty appearance after dipping.

State **one** possible cause for this.

(1)

(c) State two other methods of applying a coloured finish to metal.

1.

2.

(2)

(d) State **one reason** why lacquer may be chosen as a finish for a metal item.

(1)

END OF QUESTION PAPER