



EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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DESIGN AND TECHNOLOGY

Paper 3 Resistant Materials

6902/03

October/November 2021

1 hour

Candidates answer on the Printed Question Paper.

Additional Materials: Standard Drawing Equipment.

To be taken together with Paper 1 in one session of 2 hours 15 minutes.

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name on the spaces provided at the top of the page.
Do **not** use staples, paper clips, glue or correction fluid.

Section A

Answer **all** questions in this section.

Section B

Answer **one** question in this section.

You may use an electronic calculator.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

For Examiner's Use	
Section A	
Section B	
Total	

This document consists of **15** printed pages and **1** blank page.

SECTION A

Answer **all** questions in this section.

- 1 **Figure 1** shows a measuring tool.

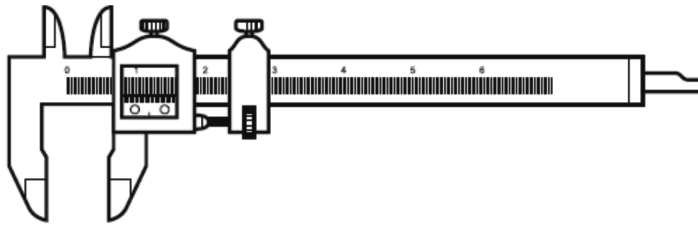


Fig. 1

Name the measuring tool.

..... [1]

- 2 **Figure 2** shows a marked rectangular hole to be chopped out of wood.

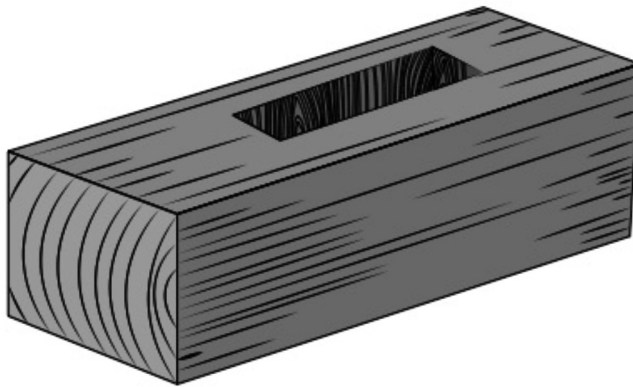


Fig. 2

- (a) Name **two** marking out tools used to mark the position of the hole.
(exclude a pencil)

1. [1]

2. [1]

- (b) State how the work piece could be held in position while chopping out the hole.

..... [1]

3

- 3 **Figure 3** shows a round metal bar to be drilled at the centre.

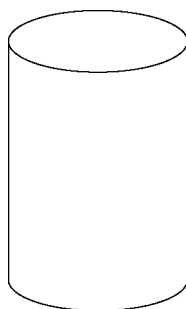


Fig. 3

Explain how an odd-leg callipers could be used to locate the centre.

.....

.....

..... [2]

- 4 Define the term plastic memory.

.....

..... [1]

- 5 **Figure 4** shows a curtain rail made of plastic.

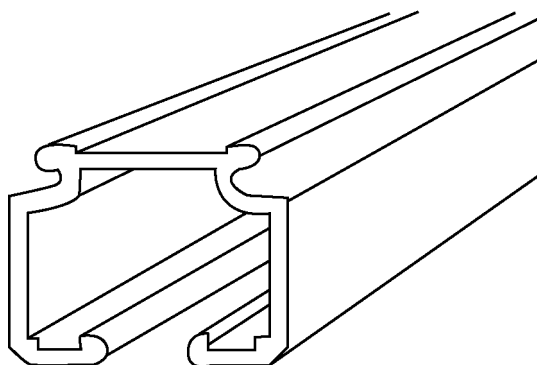


Fig. 4

- (a) Name the method that is used to produce the curtain rail.

..... [1]

- (b) Nylon is the best plastic for producing curtain rails.

Give **one** property of nylon that makes it best for such.

..... [1]

- 6 **Figure 5** shows a vacuum formed bowl made from ABS.



Fig. 5

Explain the process by which the bowl can be produced.

.....

.....

.....

..... [4]

- 7 Seasoning is the process of removing excess moisture from boards.

(a) Give **two** reasons why timber is seasoned before use.

1. [1]
2. [1]

(b) State **one** advantage of kiln seasoning.

..... [1]

- 8 Metals are obtained in various cross sections as shown in **Figure 8**.

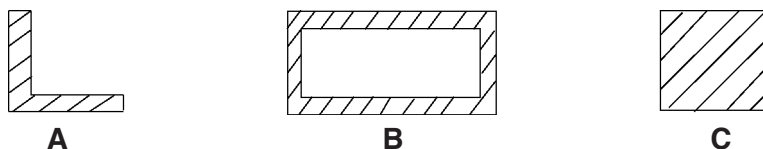


Fig. 8

Name the different forms of metals with the cross sections shown.

- A** [1]
- B** [1]
- C** [1]

9 **Figure 9** shows a wood turning lathe.

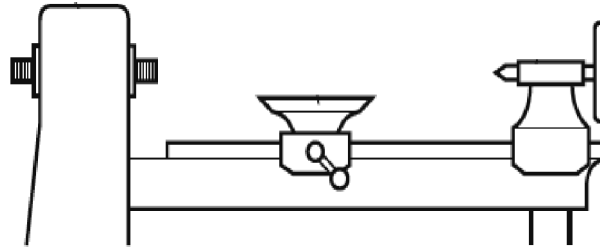


Fig. 9

List **two** safety precautions to observe before the machine is switched on.

1. [1]
2. [1]

10 **Figure 10** shows a saucepan.



Fig. 10

(a) Name **one** material from which the saucepan could be made and give a reason for your answer.

Material: [1]

Reason: [1]

(b) Name **one** suitable plastic that can be used to make the handle and give a reason for your answer.

Material: [1]

Reason: [1]

SECTION B

Answer **one** question in this section.

- 11** Figure 11 shows a lamp stool made from a hardwood.

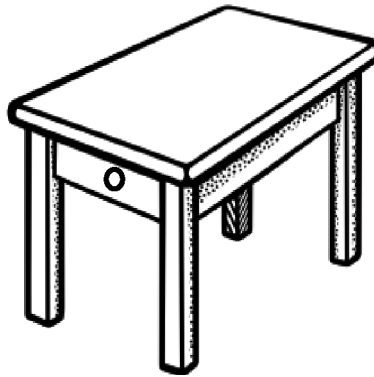
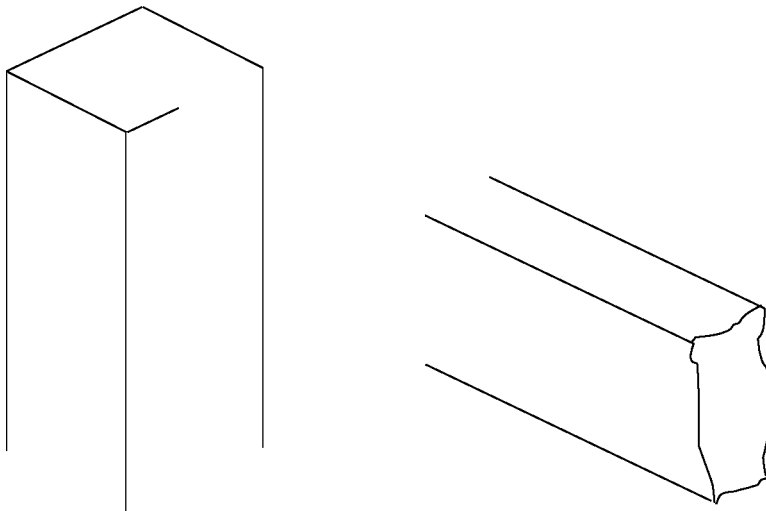


Fig. 11

- (a)** Name a locally available hardwood that can be used to make the lamp stool.

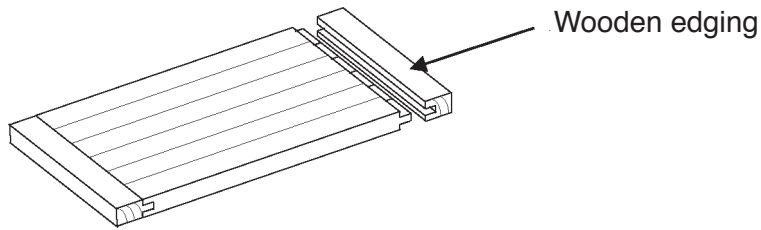
..... [1]

- (b)** Complete the drawing below to show a joint that can be used to join the leg to the rail.



[5]

- (c) The top is to be made of boards glued edge to edge with a wooden edging at both ends.



Give **two** purposes of the wooden edging.

1. [1]

2. [1]

- (d) The top could be made of chipboard coated with plastic.

(i) Name a suitable type of plastic that could be used.

..... [1]

(ii) State two purposes of coating the chipboard with plastic.

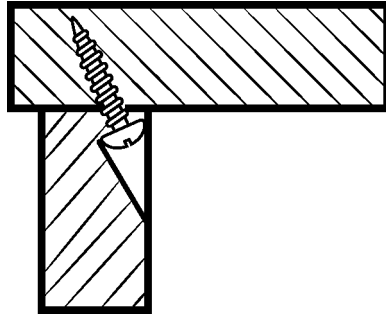
1. [1]

2. [1]

- (e) Using notes and sketches show how the groove on the wooden edging can be produced using hand tools.

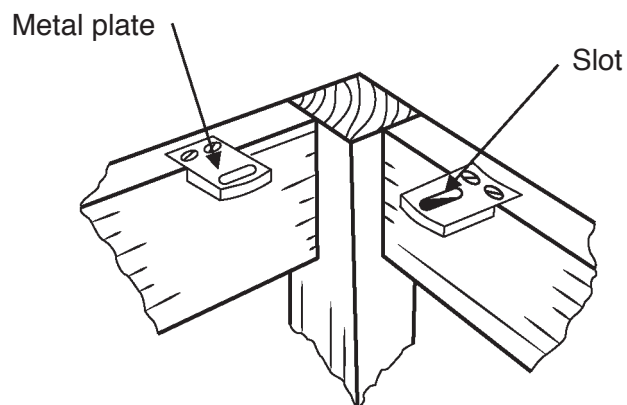
[5]

- (f) Name the method of securing the table top to the under frame shown below.



..... [1]

- (g) The top could be fitted using a metal plate as shown below.



- (i) Name **one** suitable metal for making the plate in a school workshop.

..... [1]

- (ii) Give a reason for choosing the metal named in (i) above.

..... [1]

- (iii) Use notes and sketches to illustrate how the slot on the metal plate could be produced on a 2 mm thick plate.

[5]

12 Figure 12 shows a letter rack for use in an office.

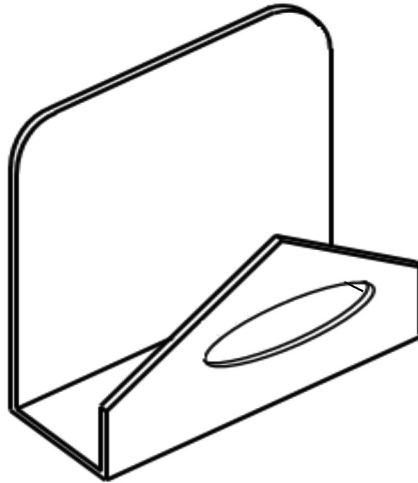


Fig. 12

(a) Name a suitable specific plastic that could be used to make the letter rack.

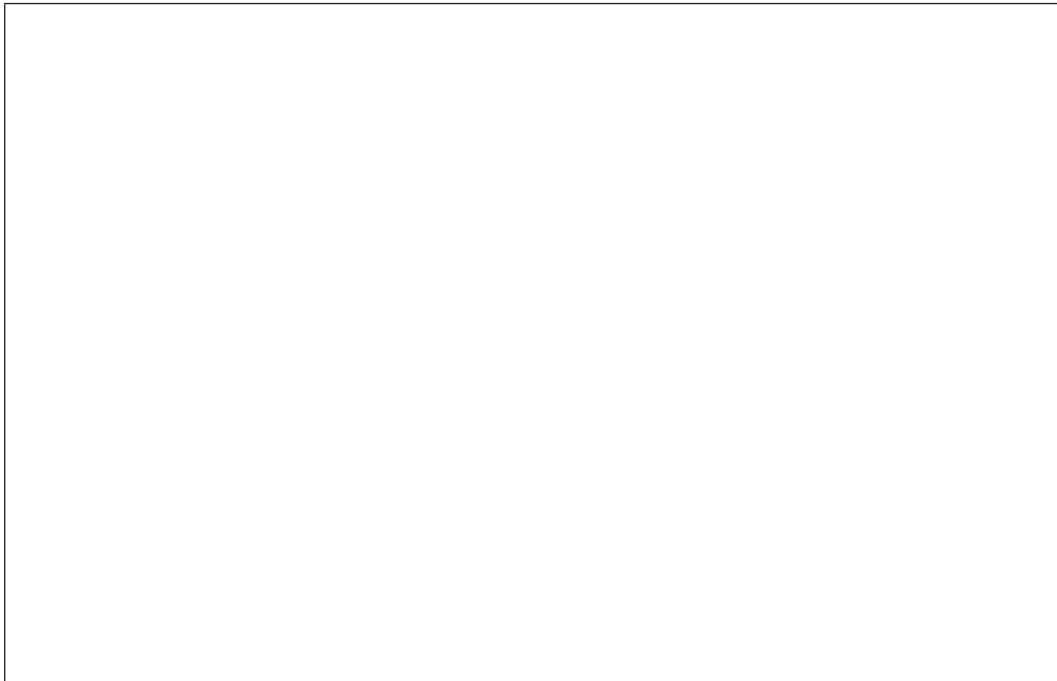
..... [1]

(b) Give a reason for the choice of plastic in **(a)** above.

..... [1]

(c) The letter rack is to be marked on a flat rectangular piece of plastic.

Show the marking out of the letter rack on the rectangle below.

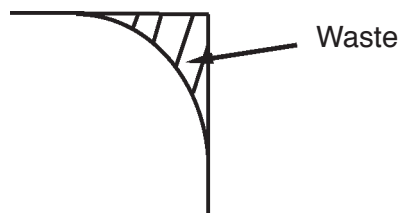


[4]

(d) Use notes and sketches to show how one bend of the letter rack could be made.

[5]

(e) Shown below is one corner of the letter rack marked.

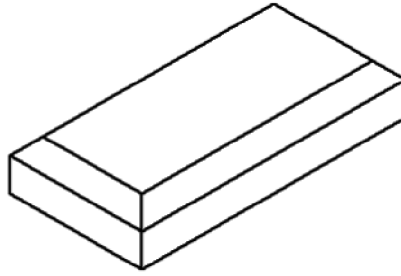


Use notes and sketches to show how the indicated waste can be removed.
In your illustration include the following:

- Cutting
- Smoothing of the curved edge

[5]

- (f) Shown below is a wooden base that could be fitted to the letter rack for stability.



- (i) The edges of the wooden base are chamfered.

State the purpose of the chamfers.

..... [1]

- (ii) Use notes and sketches to show how the chamfers can be produced.

Include marking out and cutting.

[3]

(g) The letter rack could be made of metal.

(i) Name a non-ferrous metal that could be used in making the letter rack.

..... [1]

(ii) Use notes and sketches to show how the circular hole could be cut out after marking.

[4]

13 Figure 13 shows a 2 mm mild steel wall hanging bracket.

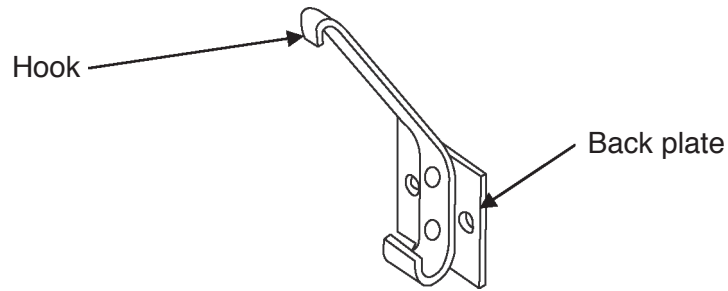
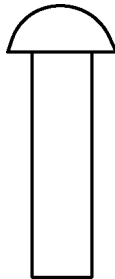


Fig. 13

(a) Name the joining method used to attach the hook to the back plate.

..... [1]

(b) Shown below is a fixing used to join the hook to the back plate.



Name the fixing.

..... [1]

(c) Use notes and sketches to show how the two holes on the back plate could be marked ready for drilling.

[3]

- (d) The hanger could be finished by plastic coating to make it water resistant

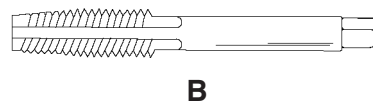
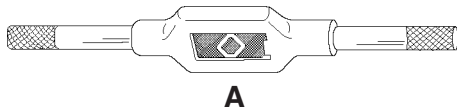
List **three** stages of plastic coating.

Do not include the cleaning of the metal.

1. [1]
2. [1]
3. [1]

- (e) Small bolts can be used to fix the hook to the back plate.

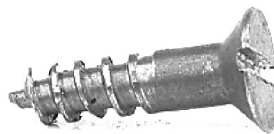
Name the tools that can be used to produce internal threads shown below.



Tool **A** [1]

Tool **B** [1]

- (f) The back plate can be made of wood. To fix the hook to the wooden back, the fixing below could be used.



- (i) Name the fixing shown above.

..... [1]

- (ii) The wooden back could be painted.

Outline the process of painting the back.

.....

.....

.....

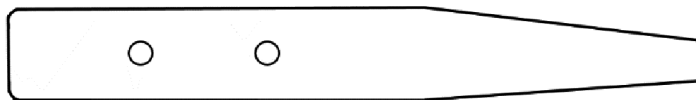
.....

..... [5]

- (g) Use notes and sketches to show how the holes on the hook can be produced to receive the fixing shown.

[4]

- (h) Shown below is the hook before bending.



Use notes and sketches to show how the hook can be bent at the narrow end.

[5]

