



EXAMINATIONS COUNCIL OF ESWATINI
Eswatini Prevocational Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

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CANDIDATE
NUMBER

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TECHNICAL STUDIES

5925/02

Paper 2 Theory

October/November 2023

2 hours

Additional Materials: Standard Drawing Equipment

Total Marks: 100

READ THESE INSTRUCTIONS FIRST

Write your name, centre number and candidate number in the spaces provided.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, glue or correction fluid.

Answer **all** questions.

You may use an electronic calculator.

All dimensions in millimetres unless otherwise stated.

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

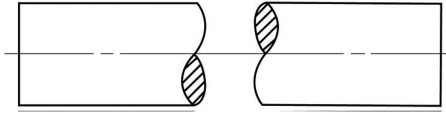
For Examiner's Use	
Section A	
Section B	
Total	

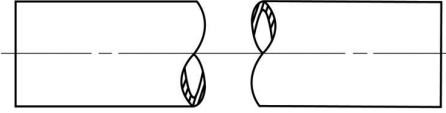
This document consists of **19** printed pages and **1** blank page.

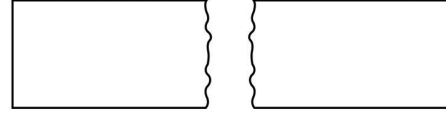
SECTION A

Answer all **six** questions in this section in the spaces provided. Each question carries **five** marks.

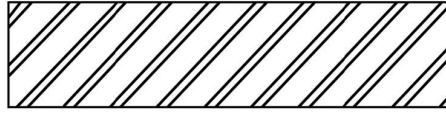
1 State what each of the conventions shown below represent.

(a)  [1]

(b)  [1]

(c)  [1]

(d)  [1]

(e)  [1]

- 2 Fig. 1 shows two orthographic views of a block.
Produce a two-point perspective view of the block.
Top side edge **AB** has been drawn for you.
Use VP1 and VP2 as your vanishing points.

[5]

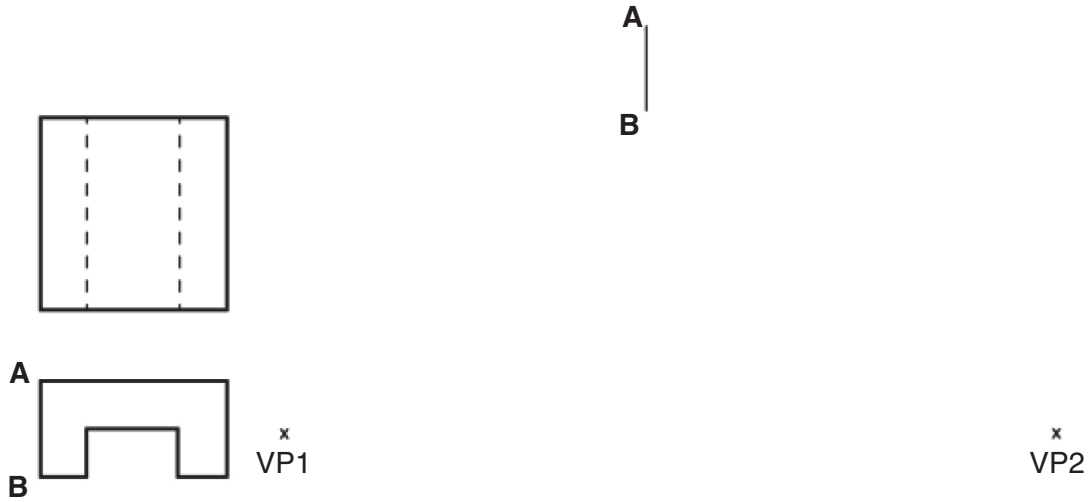


Fig. 1

- 3 Fig. 2 shows an isometric view of a V-block.

In the space provided below, draw a full-size orthographic view of the V-block in the direction of arrow **F**. Include hidden detail. [5]

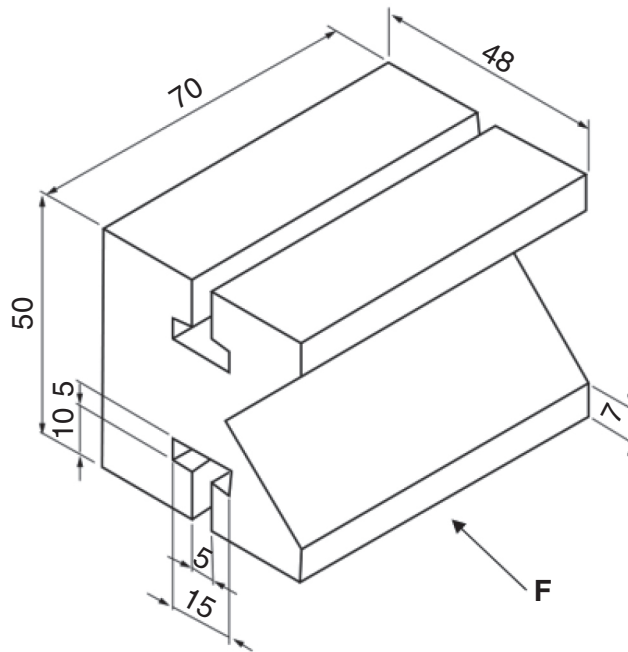


Fig. 2

- 4 Fig. 3 shows two views of a truncated hexagonal duct.

Produce the development of the duct with the seam at **A–A**.

[5]

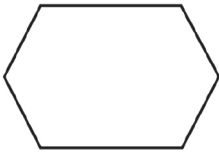
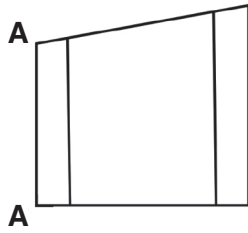


Fig. 3

5 Fig. 4 shows two views of an angle bracket.

Draw a sectional plan taken from **X-X**.

[5]

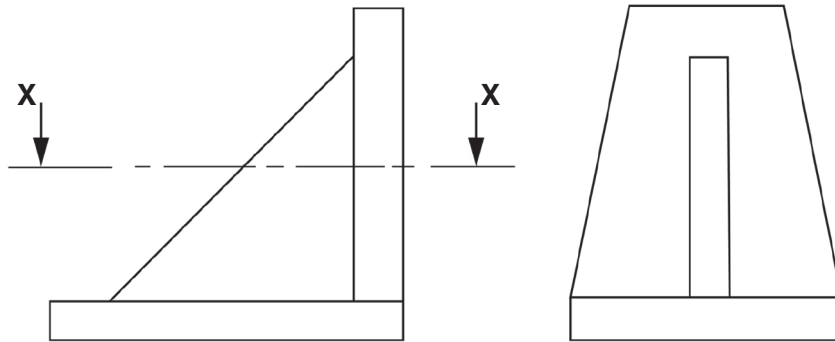


Fig. 4

- 6 Reproduce the orthographic view of the engineer's centre square shown in Fig. 5.

[5]

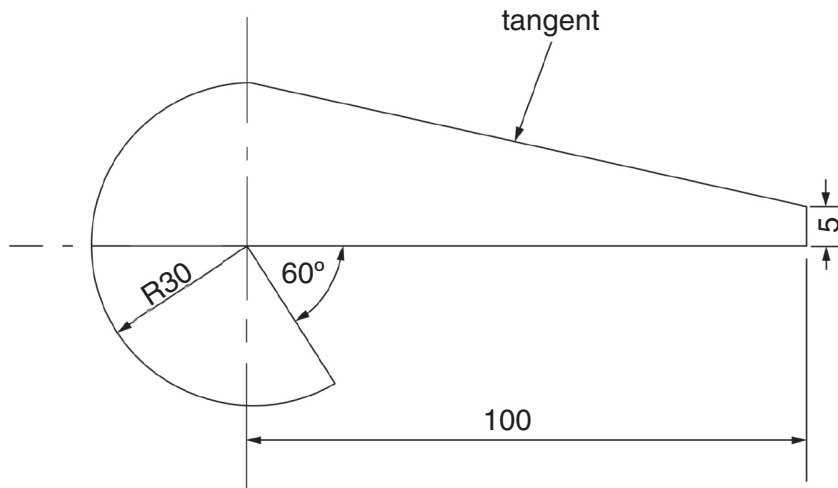


Fig. 5

SECTION B

Answer all **seven** questions in this section in the spaces provided. Each question carries **ten** marks.

1 (a) Safety symbols are very important in any workshop.

State what is meant by the following safety symbols.

(i)



..... [1]

(ii)



..... [1]

(b) Name the following workshop protective clothing (PPE).

(i)



..... [1]

(ii)


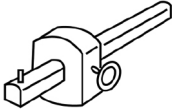
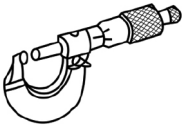


..... [1]

(c) Table 1 shows some hand tools.

Complete Table 1 by naming each tool.

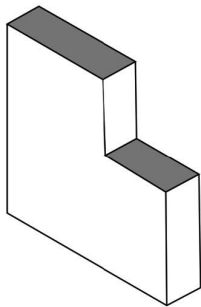
Table 1

Tool	Name
	<p>.....</p>
	<p>.....</p>
	<p>.....</p>

[3]

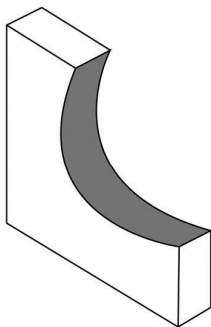
(d) Name an appropriate file that could be used to file the shaded surfaces.

(i)



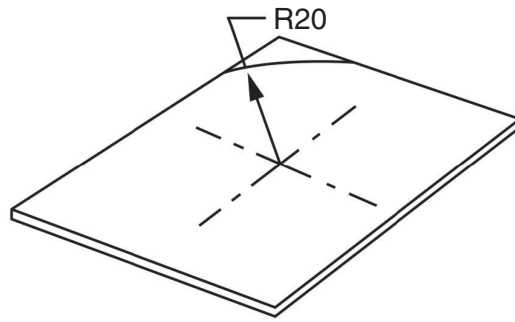
..... [1]

(ii)



..... [1]

- (e) Name the tool that could be used to locate the centre of a wing compass to prevent it slipping when scribing the arc on a piece of mild steel.



..... [1]

- 2 (a) Fig. 6 shows a piece of wood with the waste material marked.

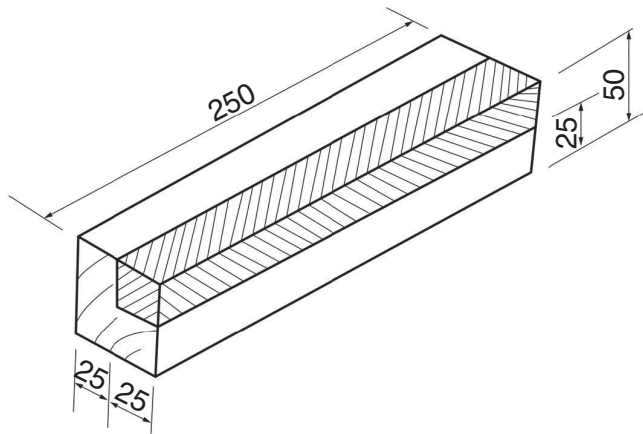


Fig. 6

- (i) Explain how the waste could be marked out.

.....

 [2]

- (ii) Explain how the waste could be removed using a table saw.

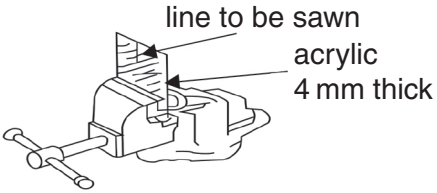
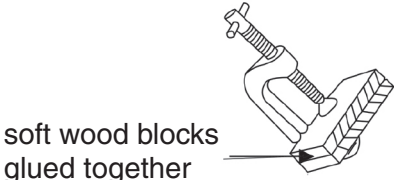
.....

 [4]

(b) Table 2 shows two different ways of holding materials.

Complete Table 2 by stating the possible damage that may occur to the material and how it could be prevented.

Table 2

Operation	Damage	Prevention
		
		

[4]

3 (a) Fig. 7 shows a machine found in a school workshop.

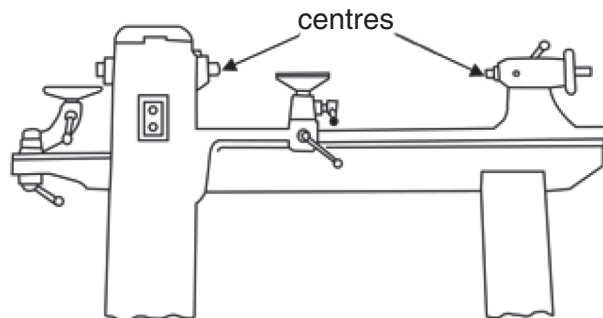


Fig. 7

(i) Name the machine shown in Fig. 7.

..... [1]

(ii) Explain why one of the centres on the machine is said to be a live centre.

..... [1]

(iii) Fig. 8 shows a piece of wood to be turned between centres on the machine shown in Fig. 7.

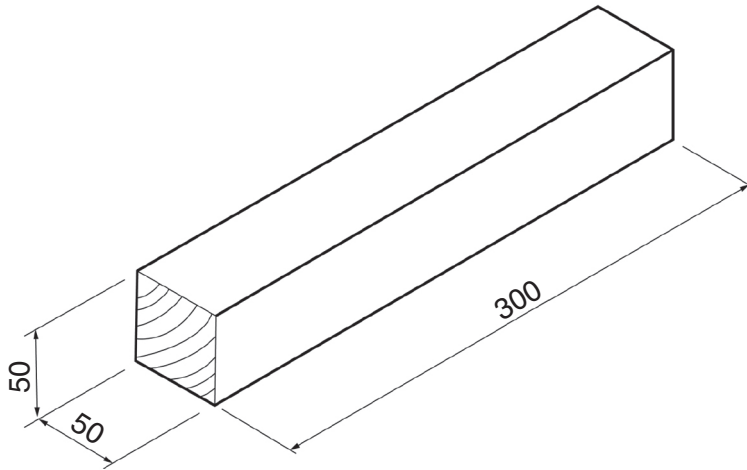


Fig. 8

Explain how to prepare the square section piece of wood for turning.

.....

.....

.....

..... [3]

(b) Fig. 9 shows an incomplete drawing of a firmer chisel.

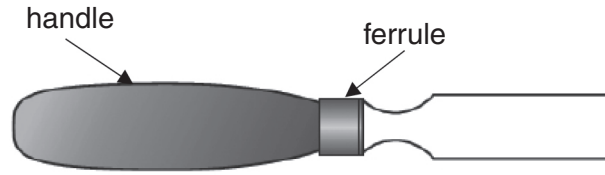


Fig. 9

(i) Complete Fig. 9 by adding the missing detail of the blade. [2]

(ii) State a reason why a hammer is **not** used to drive a chisel.
..... [1]

(iii) State the purpose of the ferrule on a chisel.
..... [1]

(iv) Name a material that could be used to make the chisel handle.
..... [1]

4 Fig. 10 shows a product that has a wooden base and an acrylic (perspex) top.

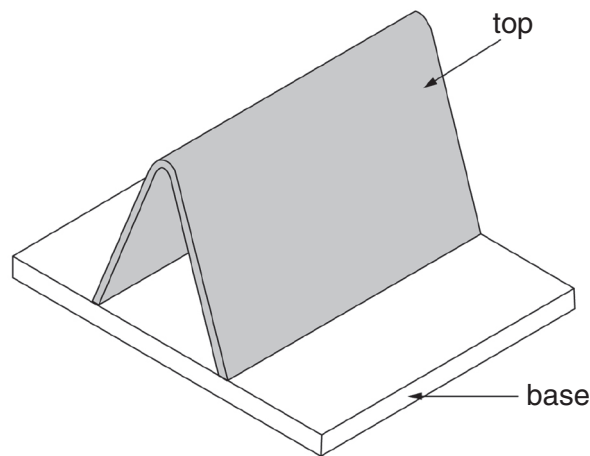


Fig. 10

(a) What type of plastic is acrylic?
..... [1]

(b) State **two** properties of acrylic.
1
2 [2]

(c) In the space provided below, sketch a mould that could be used to produce the acrylic part of the product in Fig. 10.

[3]

(d) Explain how to mark out the acrylic top shown in Fig. 10 before shaping.

Include the names of the tools used.

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

(e) Use sketches and notes to show how the acrylic top shown in Fig. 10 is folded to shape.

[2]

5 (a) Fig. 11 shows a polystyrene tray that is to be made in a workshop.



Fig. 11

(i) Name a suitable machine that could be used to make the tray.

..... [1]

(ii) In the space provided below, sketch an appropriate mould for producing the tray.

[5]

(b) Fig. 12 shows two metal components that are to be joined.

Complete the sketch by adding an appropriate temporary fastener on the centre line given that would hold the two components together.

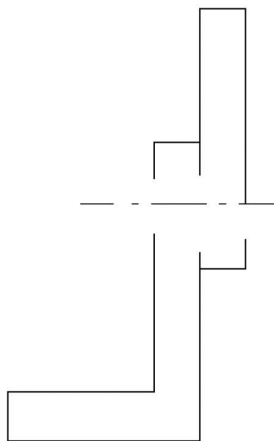


Fig. 12

[4]

6 (a) Fig. 13 shows a vice.

Use a sketch to show how the vice jaws could be modified to improve gripping of round bars.

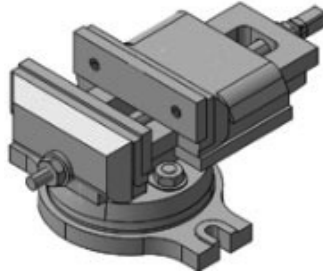


Fig. 13

[3]

(b) Fig. 14 shows a bench drilling machine without the guards.

Draw the V-belt in position for drilling a 2 mm diameter hole.

[2]

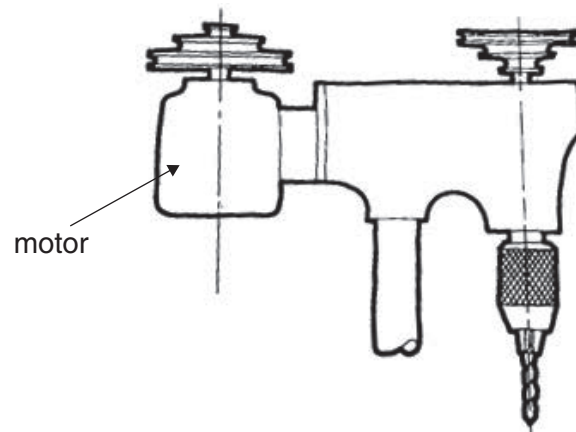


Fig. 14

(c) Fig. 15 shows a piece of 3 mm thick mild steel with a slot cut in it.

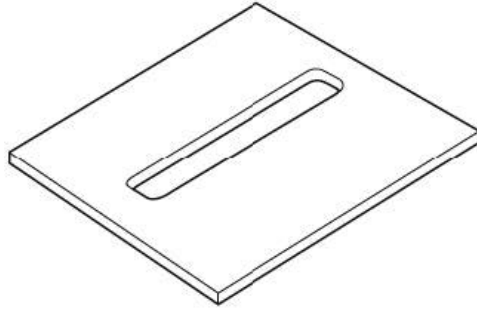


Fig. 15

Outline the stages to be followed to produce the slot shown in Fig. 15.

[5]

7 (a) A window is an opening formed in a wall or roof.

(i) What is the primary (main) function of a window in a building?

..... [1]

(ii) Use a sketch and notes to explain what is meant by a casement window.

[2]

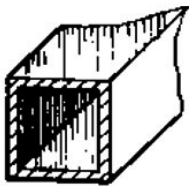
(b) Identify the following sections of mild steel.

(i)



..... [1]

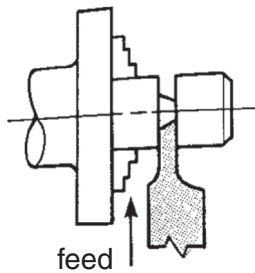
(ii)



..... [1]

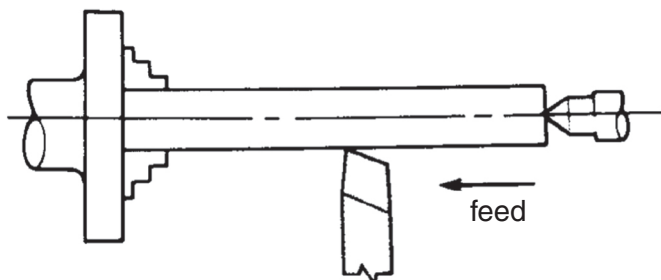
(c) Name the operations shown below that can be carried out on a centre lathe.

(i)



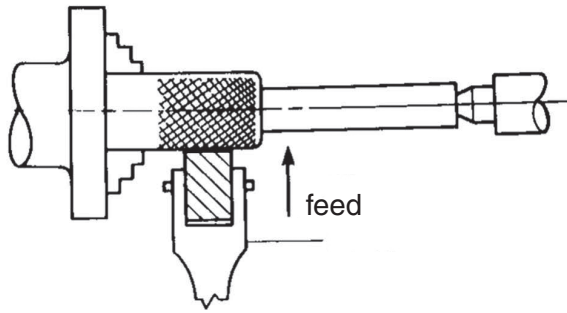
..... [1]

(ii)



..... [1]

(iii)



..... [1]

(d) Fig. 16 shows the three jaw chuck of a centre lathe and a work piece.

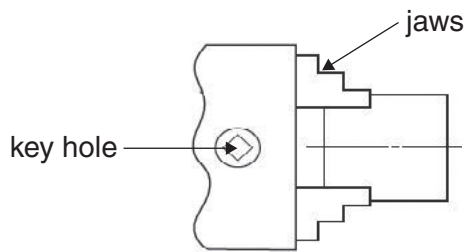


Fig. 16

Show a lathe tool correctly positioned for facing off.

[2]

