



EXAMINATIONS COUNCIL OF ESWATINI
Eswatini Prevocational Certificate of Secondary Education

CANDIDATE
NAME

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NUMBER

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TECHNICAL STUDIES

5925/02

Paper 2 Theory

October/November 2022

2 hours

Additional Materials: Standard Drawing Equipment

Total Marks: 100

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name 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 **16** printed pages and **4** blank pages.

SECTION A

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

- 1 Complete Table 1 to show the conventional symbols.

[5]

Table 1

	Conventional symbol
(a) Diameter	
(b) Centre line	
(c) 3rd angle projection	
(d) Across corners	
(e) Internal thread	

- 2 Fig. 1 shows two views of a plate in first angle projection.

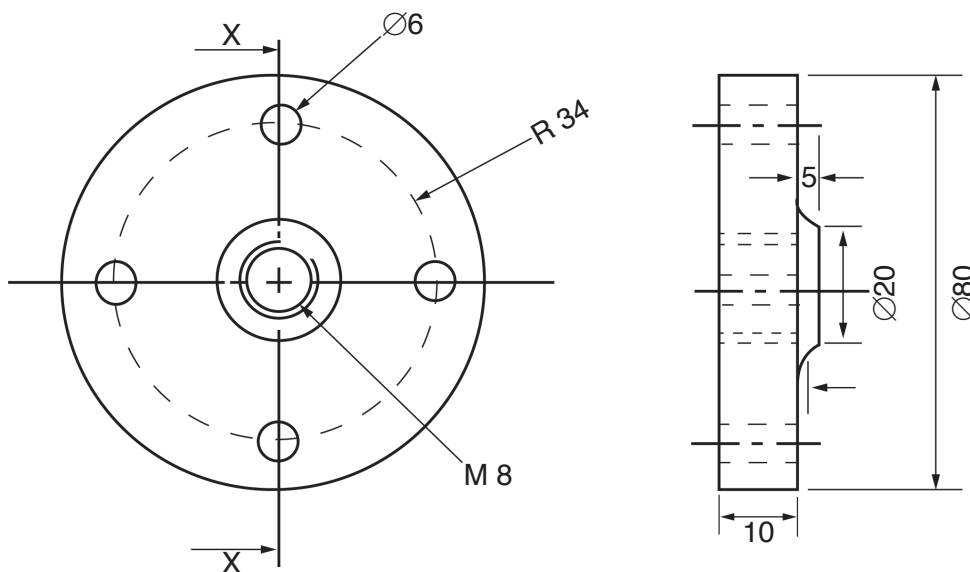


Fig. 1

In the space below, sketch the sectional view **X-X** of the plate.

[5]

3 Fig. 2 shows full size orthographic views of a block.

Draw a one-point perspective view of the block. Corner T is given.

[5]

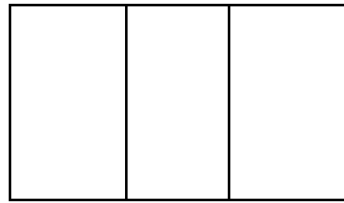
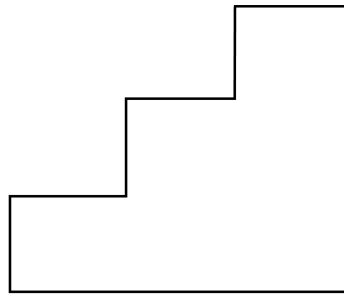


Fig. 2

⊕ VP

⊖

- 4 Fig. 3 shows a polygon **ABCD**.

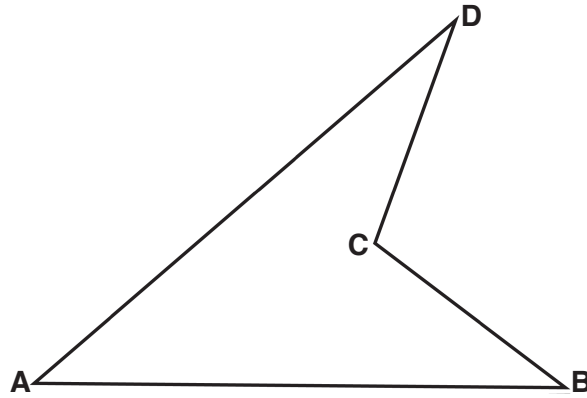


Fig. 3

In the space provided below, reproduce the polygon given that $AB = 60$, angle $ABC = 45^\circ$, C is 20 mm from AB, angle $BCD = 120^\circ$ and $AD = 70$.

Show all construction lines.

[5]

5 Fig. 4 shows a toy in first angle projection.

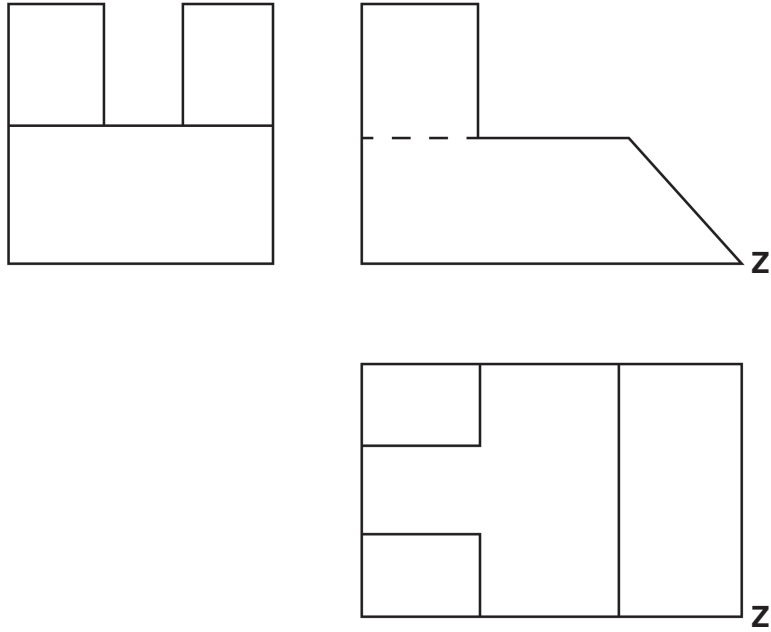


Fig. 4

In the space below, make a freehand isometric sketch of the toy. Corner **Z** should be on the foreground.

[5]

- 6 Fig. 5 shows the front and incomplete plan view of a truncated square based pyramid.

Draw the development of the pyramid with the seam at **A–A**. Include the base but do not show folding flaps. [5]

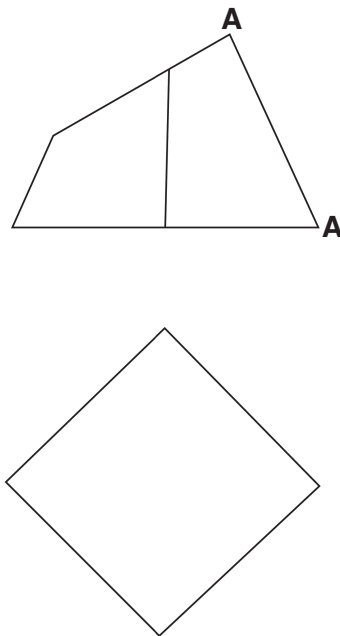


Fig. 5

Section B

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

1 (a) Ferrous metals are widely used in metal fabrication.

(i) State what is meant by the term *ferrous metal*.

..... [1]

(ii) Give **two** examples of ferrous metals.

1

2 [2]

(b) Fig. 6 shows two metal plates being joined together.

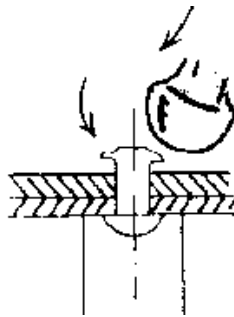


Fig. 6

(i) Name the type of rivet used in joining the two plates.

..... [1]

(ii) State the name of the hammer shown in Fig. 6.

..... [1]

(c) Explain the dangers that might occur in the following situations.

(i) not removing the chuck key before starting a pillar drill.

..... [1]

(ii) spilt oil on floor.

..... [1]

(d) Fig. 7 shows a tool used for marking metal.

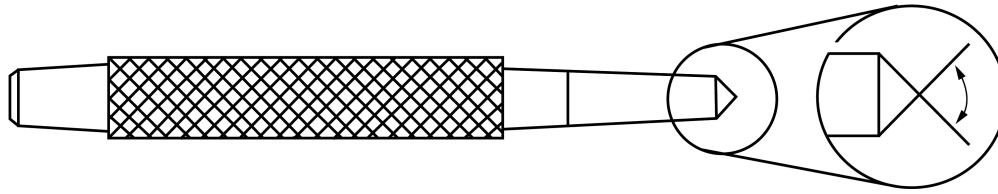


Fig. 7

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

..... [1]

(ii) What process is used to produce the feature shown by arrow X?

..... [1]

(iii) Explain why feature X is included on the tool?

..... [1]

2 (a) The food container shown in Fig. 8 is made out of Polystyrene.



Fig. 8

(i) Why is Polystyrene suitable for making the food container?

..... [1]

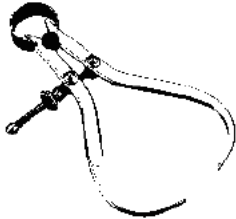


(ii) Explain the process of producing the container.

.....
.....
..... [3]

(b) Table 2 shows some of the tools commonly used in a school workshop.

Complete Table 2 by giving the use of each tool.

Table 2

Tool	Use
(i) 	
(ii) 	
(iii) 	

[3]

(c) Use sketches to show how you would achieve a smooth finish on the edge of a piece of 3 mm mild steel using a hand file.

[3]

3 (a) Understanding turning tools is very crucial for effective and safe lathe work.

(i) Explain why turning tools should have a clearance angle.

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

(ii) Explain how one would differentiate between a right hand and left hand cutting tool.

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

(iii) Explain why long work should always be supported by a steady.

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

(b) Fig. 9 shows two pieces of metal being joined together.

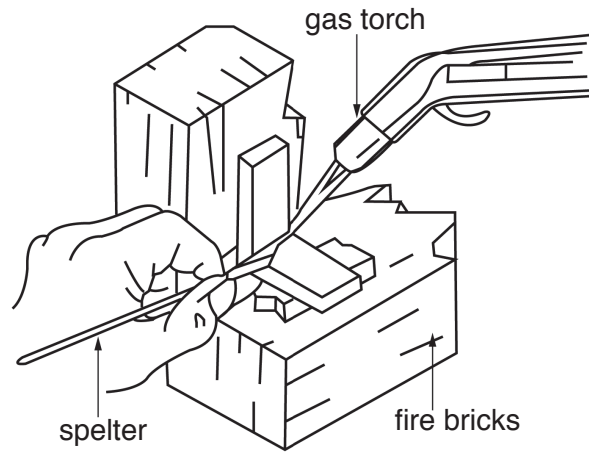


Fig. 9

(i) Name the method being used to join the two metals.

..... [1]

(ii) Explain the function of the fire bricks in Fig. 9.

..... [1]

(iii) State **one** reason for applying a flux on the joint.

..... [1]

(iv) State a purpose of wearing the equipment shown in Fig. 10 when joining the metals.



Apron



Goggles

Fig. 10

Apron [1]

Goggles [1]

4 Fig. 11 shows a sketch of a small cabinet made from a manufactured board.

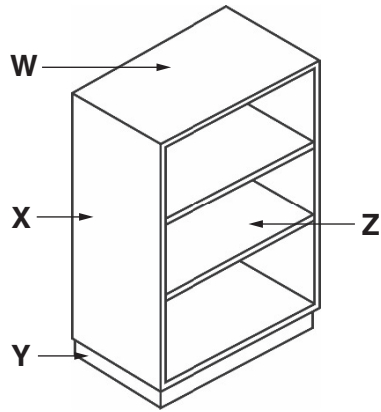


Fig. 11

(a) Name the parts of the cabinet.

- W
- X
- Y
- Z [4]

(b) Make a neat sketch of a joint suitable to join part Z to part X.

[2]

(c) Name **two** manufactured boards that could be used to make the cabinet.

- 1
- 2 [2]

(d) State and justify **one** safety precaution that should be observed when spray painting the cabinet.

-
-
- [2]

5 Fig. 12 shows two types of door, D1 and D2.

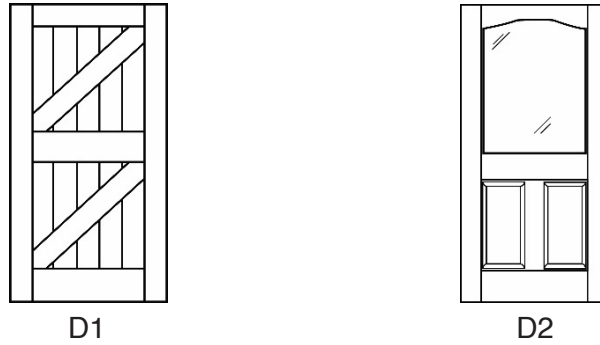


Fig. 12

(a) Identify the **two** types of door in Fig. 12.

D1 [1]

D2 [1]

(b) List any **three** purposes of a door in a building.

1

2

3 [3]

(c) Fig. 13 shows four pieces of timber glued together to make a board.

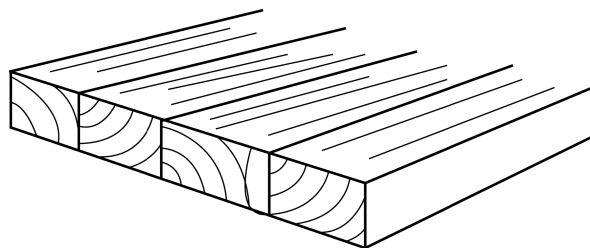


Fig. 13

(i) Explain why the pieces of timber are arranged in this manner.

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

(ii) State **two** advantages of manufactured boards over the board shown in Fig. 13?

1

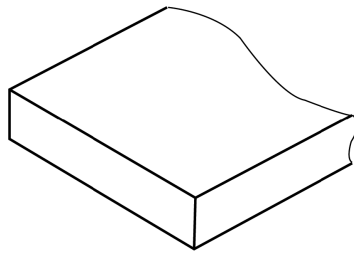
2

..... [2]

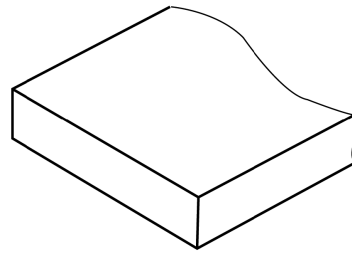
(d) Fig. 14 shows incomplete sketches of two manufactured boards.

Complete the sketches in Fig. 14 to represent the manufactured boards.

[2]



laminboard



blockboard

Fig. 14

6 Fig. 15 shows a stationary machine used in the workshop.

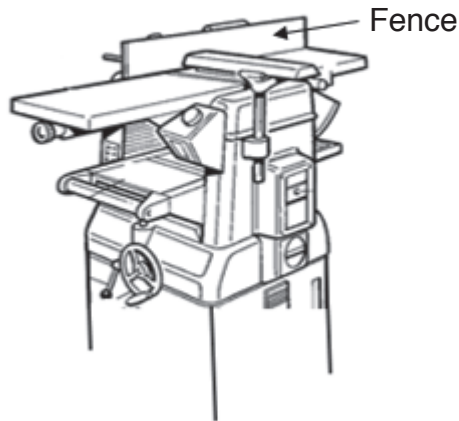


Fig. 15

(a) Name the machine shown in Fig. 15.

..... [2]

(b) Explain why it is good practice that learners should always use this machine under the supervision of a teacher.

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

(c) Explain why the fence should be always square to the table.

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

(d) State any **two** safety precautions that should be observed when operating this machine.

1

2 [2]

- (e) The machine shown in Fig. 15 can be used to produce a number of shapes like chamfers and rebates.

Use sketches to show:

- (i) a chamfer

[1]

- (ii) a rebate

[1]

7 Fig. 16 shows a tray made from a 3 mm acrylic sheet.

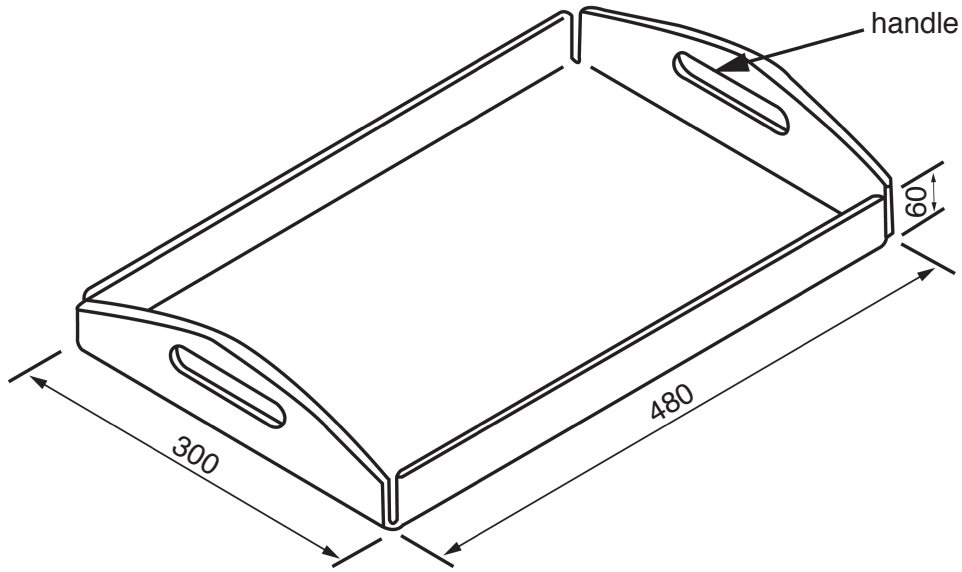


Fig. 16

- (a) State **two** properties of acrylic.
1
2 [2]
- (b) Give **one** reason why a felt tipped pen is used when marking out lines on acrylic.
..... [1]
- (c) State the purpose of the plastic cover often found on acrylic sheets.
.....
..... [2]
- (d) Draw the development (net) of the tray before bending. Include all fold lines and cut outs.

[5]

