



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

I declare this is my own work.

A-level

DESIGN AND TECHNOLOGY: PRODUCT DESIGN

Paper 1 Technical Principles

Monday 2 June 2025

Morning

Time allowed: 2 hours 30 minutes

Materials

For this paper you must have:

- normal writing and drawing instruments
- a scientific calculator.

Instructions

- Use black ink or black ball-point pen. Use pencil only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 120.

For Examiner's Use	
Question	Mark
1	
2	
3–4	
5	
6	
7	
8	
9	
10	
11–12	
13	
14	
15	
16	
17–18	
19	
20–21	
22–23	
24	
TOTAL	



J U N 2 5 7 5 5 2 1 0 1

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7552/1

Answer **all** questions in the spaces provided.

0 1 . 1 Identify the specific material classification of nylon.

[1 mark]

0 1 . 2 State **two** specific properties of nylon.

[2 marks]

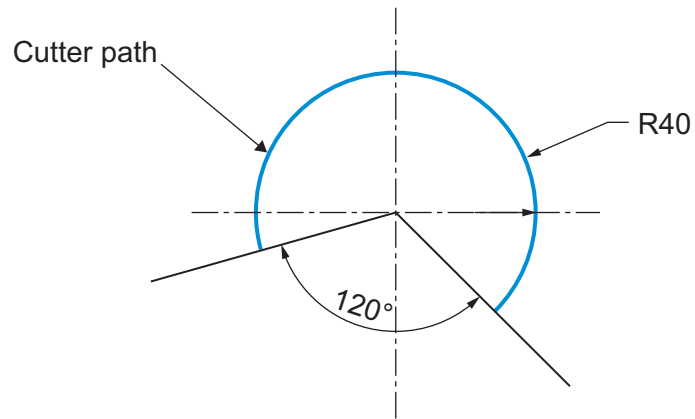
Property 1 _____

Property 2 _____

3



0 2

Use the information in **Figure 1** to calculate the length of the cutter path shown.**Figure 1**

Not drawn to scale.
All dimensions in mm

Show your working out.

[3 marks]

Length of cutter path _____ mm

3

Turn over for the next question**Turn over ►**

0	3
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Explain why natural rubber is an appropriate material for the body of the hot water bottle shown in **Figure 2**.

[6 marks]

Figure 2



0	4
---	---

State **two** requirements of the Sale of Goods Act (1979).

[2 marks]

Requirement 1 _____

Requirement 2 _____

8

Turn over for the next question

Turn over ►



[6 marks]

[illegible]

6



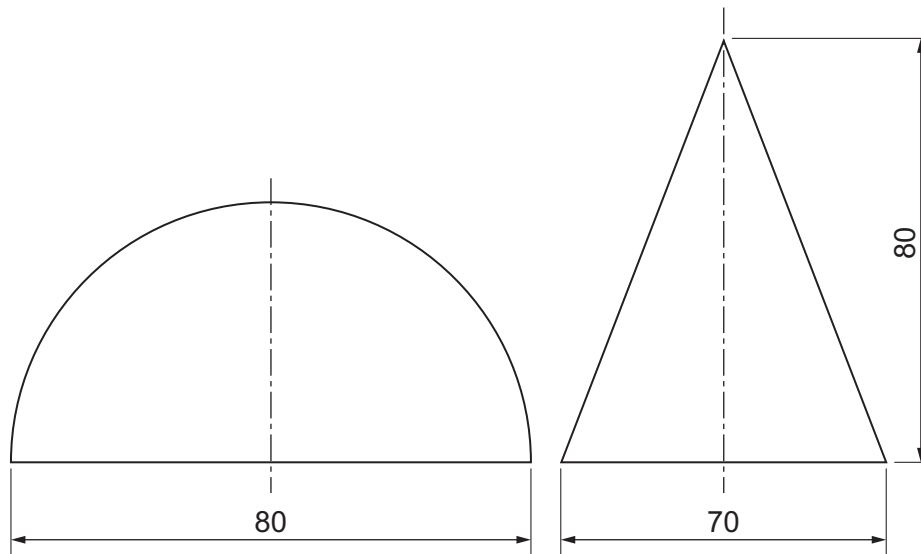
[6 marks]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

6

0 9 . 1 **Figure 5** shows the dimensions of a triangle and semicircle that are to be cut from a piece of softwood.

Figure 5



Not drawn to scale
All dimensions in mm

Show that, to the nearest whole number, the total surface area of one triangle and one semicircle is 5313 mm^2

Show your working out.

[3 marks]

_____ mm^2



0 9 . 2 The dimensions of the softwood are 80 mm × 150 mm

Calculate the percentage of waste generated when the triangle and semicircle have been cut from the piece of softwood.

Show your working out.

[3 marks]

Answer _____ %

6

Turn over for the next question

Turn over ►



1 0

Figure 6 shows a children's stool designed to represent an elephant. It is available in a timber version or a polymer version.

Figure 6



	Timber version	Polymer version
Material	Birch veneers	Acrylonitrile Butadiene Styrene (ABS) sheet
Method of forming	Lamination	Polymer deformation
Method of assembly	Produced in two parts with the head and body joined by a mechanical fixing.	Produced in two parts with the head and body joined by a mechanical fixing.

Analyse **and** evaluate the suitability of the materials and manufacturing methods used for **each** version of the children's stool.

[12 marks]



[illegible]

12

1 1

Give **two** reasons why photochromic lenses are used in glasses.

[2 marks]

Reason 1 _____

Reason 2 _____

1 2

A component takes 7 minutes to machine from high density modelling foam.

The same component takes 5 minutes 20 seconds to machine from Styrofoam™.

Calculate the percentage of time saved when machining from Styrofoam™.

Show your working out.

[3 marks]

Answer _____ %

5



[9 marks]

[illegible]

9

1	5
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Outline the factors that a manufacturer needs to consider before choosing a surface finish for a product.

[6 marks]

6

Turn over for the next question

Turn over ►



[6 marks]

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on its right side, suggesting it's resting on a surface.

6



1	7
---	---

State **two** ways that a UV stabiliser prolongs the life of a polymer.

[2 marks]

Answer 1 _____

Answer 2 _____

1	8
---	---

Give **three** reasons why sub-assemblies are used when manufacturing a complex product.

[3 marks]

Reason 1 _____

Reason 2 _____

Reason 3 _____

5

Turn over for the next question

Turn over ►



Explain why flexographic printing is a suitable method for applying a company logo to a low density polyethylene (LDPE) carrier bag.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

6



[1 mark]

[6 marks]

[illegible]

7



2	3
---	---

Explain how the implementation of Control of Substances Hazardous to Health (COSHH) regulations can protect workers from exposure to hazardous substances in a manufacturing environment.

You should refer to hazards **and** control measures in your response.

[6 marks]

12

Turn over ►



Describe the process of manufacturing an aluminium component using sand casting in a school workshop environment.

[6 marks]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

6

END OF QUESTIONS



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*Do not write
outside the
box*

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**



[illegible]

