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I declare this is my own work.

A-level

**DESIGN AND TECHNOLOGY:
PRODUCT DESIGN**

Paper 2 Designing and Making Principles

7552/2

Wednesday 12 June 2024 Morning

Time allowed: 1 hour 30 minutes

At the top of the page, write your surname and forename(s), your centre number, your candidate number and add your signature.

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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.
- Answer ALL questions.
- You must answer the questions in the spaces provided. Do not write 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 80.
- There are 30 marks for SECTION A and 50 marks for SECTION B.

DO NOT TURN OVER UNTIL TOLD TO DO SO



SECTION A – PRODUCT ANALYSIS

Answer ALL questions in this section.

0 1

FIGURES 1 and 2 show two chairs.

FIGURE 1



FIGURE 2



	FIGURE 1	FIGURE 2
Materials	Polypropylene, powder-coated low carbon steel, beech	Beech
Joining methods	Allen key bolts and locking nuts	Traditional wood joints
Applied finish	Self-finishing thermoplastics, powder-coated steel and clear varnished timber	Acrylic paint



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6

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6

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Answer £

3

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State THREE ways manufacturers can reduce the environmental impact of the packaging they use.
[3 marks]

1 _____

2 _____

3 _____

3



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SECTION B – COMMERCIAL MANUFACTURE

Answer ALL questions in this section.

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FIGURE 3 shows an initial Styrofoam prototype model of a hairdryer.

FIGURE 3



Analyse and evaluate the suitability of **DIFFERENT** prototyping methods for further development of the hairdryer prototype model shown in **FIGURE 3** for production.

In your answer you should refer to:

- modelling materials
- virtual prototyping
- physical prototyping.

[12 marks]



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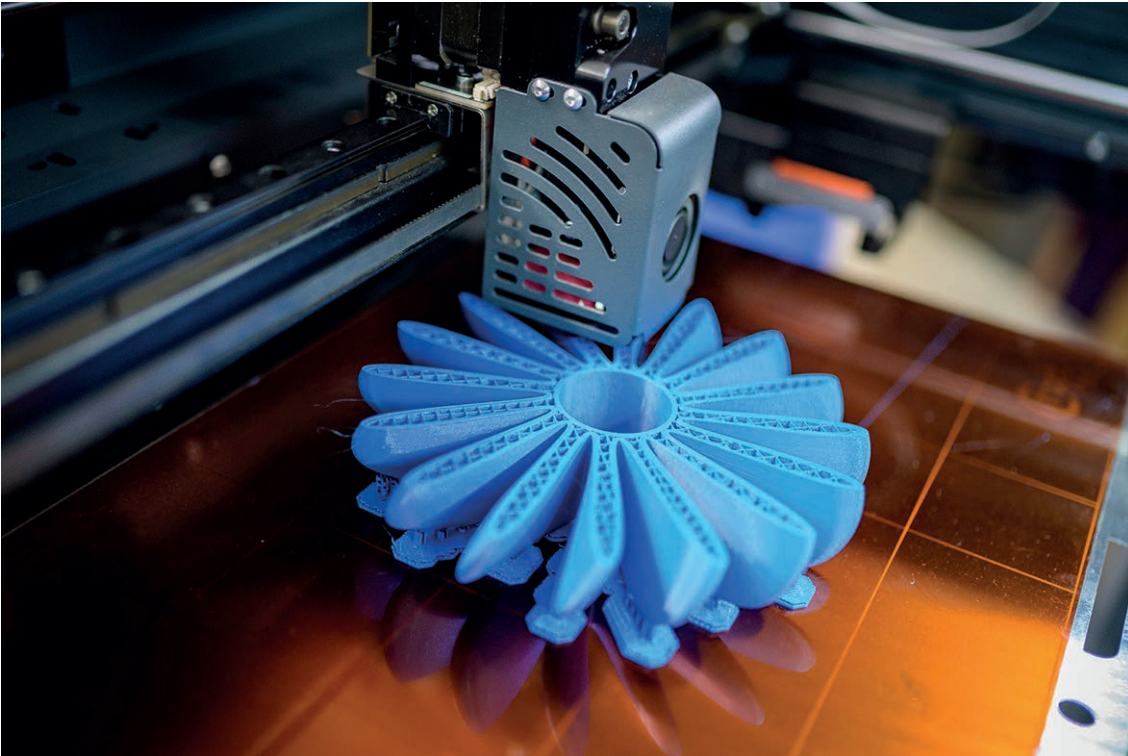
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07

Describe how a 3D component would be designed and produced using the 3D printing process shown in FIGURE 4. [6 marks]

FIGURE 4





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Describe a quality control check that may be performed on a production line to ensure all products conform to acceptable tolerances. [2 marks]

2

[Turn over]



6

[Turn over]



6

[Turn over]



1 2

State TWO methods used when evaluating a prototype product. [2 marks]

1 _____

2 _____

1 3

Screws are supplied in bags of 200 g (+/-2%)

Each screw has a mass of exactly 3 g

Calculate the maximum and minimum number of whole screws in a bag.

Show your working. [3 marks]



Maximum number of screws = _____

Minimum number of screws = _____

5

[Turn over]



1 4

Name TWO specific eco labels relating to energy use AND describe their use. [2 × 3 marks]

Eco label 1 _____

Description of use _____

Eco label 2 _____

Description of use _____

6



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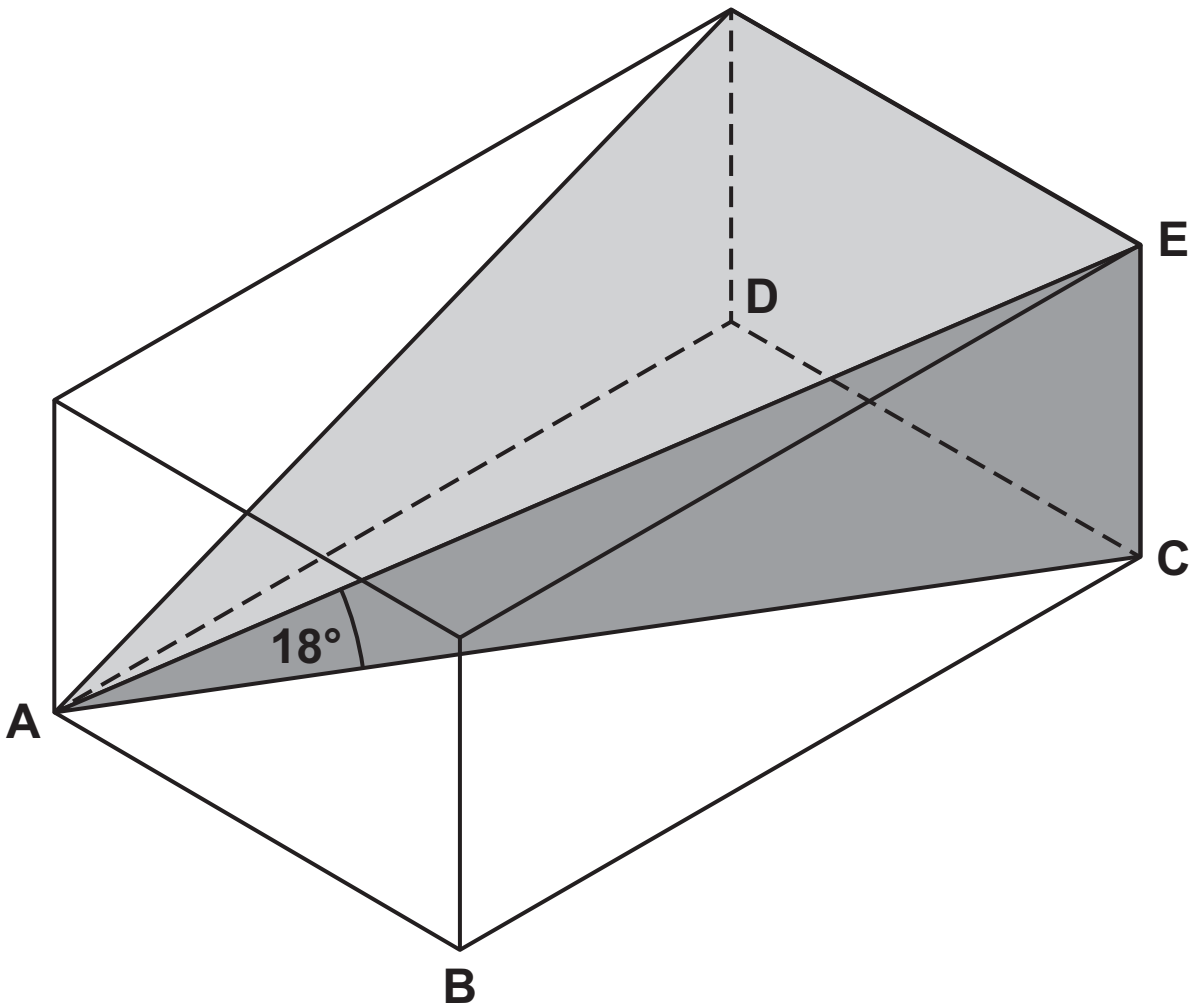
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FIGURE 5 shows a Styrofoam block.

FIGURE 5



The Styrofoam block is cut from a cuboid.

The length (AE) is 25 cm

(AE) makes an angle of 18 degrees with the base of the cuboid (ABCD)

The area of the base of the cuboid is 215 cm^2

The volume of the Styrofoam block model is $\frac{1}{3}$ of the cuboid volume.



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For Examiner's Use	
Question	Mark
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TOTAL	

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