

Surname	Centre Number	Candidate Number
First name(s)		2



GCE AS/A LEVEL

2603U10-1



S25-2603U10-1

MONDAY, 12 MAY 2025 – AFTERNOON

DESIGN AND TECHNOLOGY – AS unit 1

Product Design

2 hours

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	8	
2.	8	
3.	8	
4.	8	
5.	8	
6.	40	
Total	80	

2603U101
01

ADDITIONAL MATERIALS

A calculator, ruler, pencil and coloured pencils.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

A pencil may be used to draw sketches or diagrams.

Answer **all** questions.

Write your name, centre number and candidate number in the spaces at the top of this page.

Write your answers in the spaces provided in this booklet. If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

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

The total number of marks available is 80.

You are reminded of the need for good English and orderly, clear presentation in your answers.

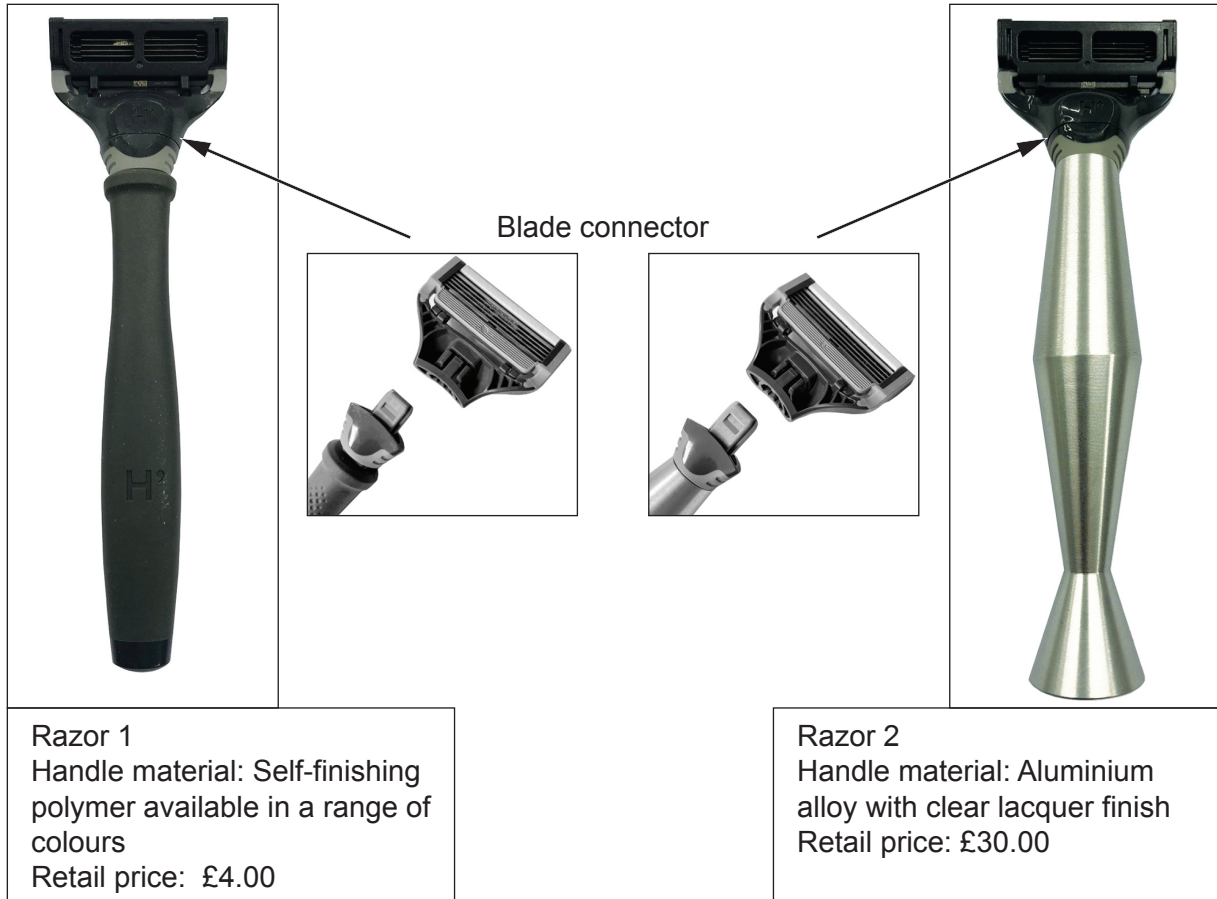
The quality of your written communication, including appropriate use of punctuation and grammar, will be assessed in your answer to question 2.



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Answer **all** questions.

1. The images below show two different razors manufactured by the same company.



- (a) Explain why the designer has chosen to use the same blade connector in both razors.

[2]

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- (b) (i) Explain the benefits to the user of using an aluminium alloy for razor 2.

[2]

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- (ii) Discuss the impact for the manufacturer of using an aluminium alloy when producing razor 2.

[4]

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2. Bethan Gray collaborated with an exclusive watch manufacturer to revitalise an existing watch into the one shown below.



Analyse how this partnership has benefitted both the designer and the manufacturer.

[8]

Marks will be awarded for the content of the answer and the quality of written communication.

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3. As part of the iterative design process, a student has produced the foam model of a possible lamp shown below.



- (a) Describe the useful information the designer will gain from the foam model. [3]

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- (b) The foam model is produced in a multi-purpose school workshop using a range of tools and equipment.

Explain the health and safety issues that should be considered when producing the foam model.

[5]

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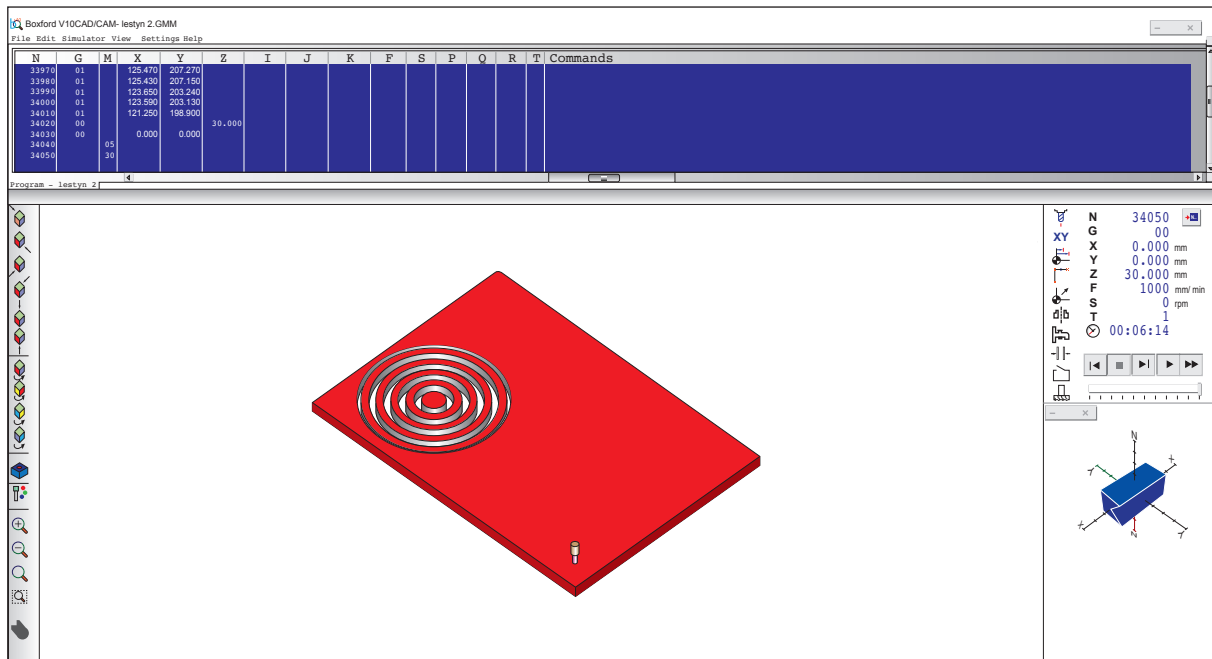
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4. Computer Aided Design (CAD) and Computer Aided Manufacture (CAM) has an impact on designers and the way they work.



- (a) The CAD software shown above can run a simulation before using CAM. Explain **two** benefits of this prior to manufacture.

2 × [2]

Benefit 1:

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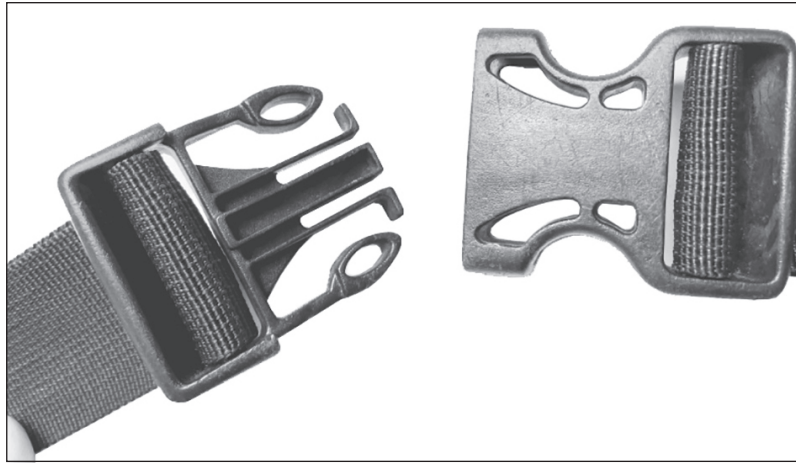
Benefit 2:

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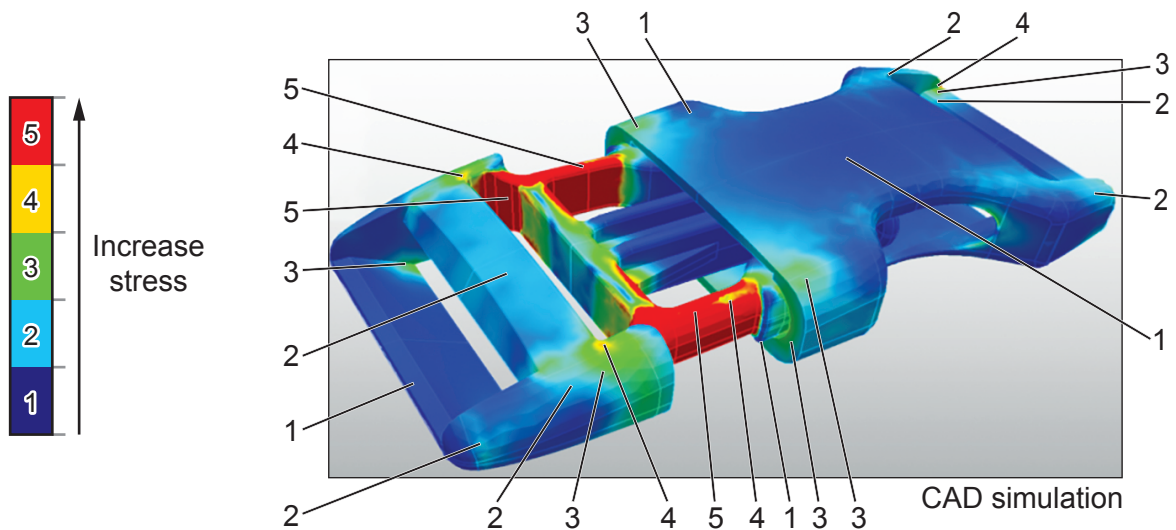
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- (b) The image below shows the polymer clip design being tested using CAD simulation software.



Polymer clip



Describe the information provided for the designer by the CAD simulation and explain how this could be used in the development of the clip. [4]

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5. The products shown below are manufactured from stainless steel using stamping and press forming processes.



Evaluate the suitability of the materials and processes used to manufacture these products. [8]

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6. Rentable e-bikes are becoming an important part of a 'greener' environmentally sustainable urban landscape.



- (a) In the space below, design an innovative holder that will attach to the e-bike handlebar. The holder should allow users to safely use their smartphone whilst cycling in order to navigate to their destination using mapping 'Apps'.

Marks will be awarded for:

- a method of securely attaching the holder to the e-bike handlebar [5]
- a method of securely holding different sized smartphones [5]
- a method of adjusting the angle of the smartphone to suit different users [5]



- (b) Discuss the social, moral and environmental issues of introducing rentable e-bikes in urban locations. [6]

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- (c) For users of different heights to safely ride the e-bikes, the seat will require quick and easy adjustment.

Using notes and sketches, design a method of easily adjusting the seat.

[6]



(d) The hand grips are the point of contact and control for the user of the e-bikes.

- (i) Explain the properties required for a material that could be used to manufacture the hand grips. [4]

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- (ii) Describe a suitable manufacturing process that could be used to manufacture hand grips in high volume. [3]

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(e) Discuss how the performance and aesthetics of the e-bike could be improved through the use of modern materials. [6]

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END OF PAPER



[illegible]

Examiner
only

