



GCE AS/A LEVEL

2603U10-1

MONDAY, 12 MAY 2025 – AFTERNOON

DESIGN AND TECHNOLOGY – AS unit 1

Product Design

2 hours plus your additional time allowance

Surname _____

First name(s) _____

Centre Number _____

Candidate Number 2 _____

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

ADDITIONAL MATERIALS

A calculator, ruler, pencil and coloured pencils.

INSTRUCTIONS TO CANDIDATES

Use black ink, black ball-point pen or your usual method.

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

Answer ALL questions.

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.

(Turn over)

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.

(Turn over)



Razor 1

Handle material:

Self-finishing polymer
available in a range of
colours

Retail price: £4.00

Razor 2

Handle material:

Aluminium alloy with
clear lacquer finish

Retail price: £30.00

Answer ALL questions.

- 1. The images opposite 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 marks]**

(Turn over)

1 (b)

- (i) **Explain the benefits to the user of using an aluminium alloy for razor 2.**
[2 marks]

1 (b)

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

[4 marks]

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.

(Turn over)



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

Analyse how this partnership has benefitted both the designer and the manufacturer. [8 marks]

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



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

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

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

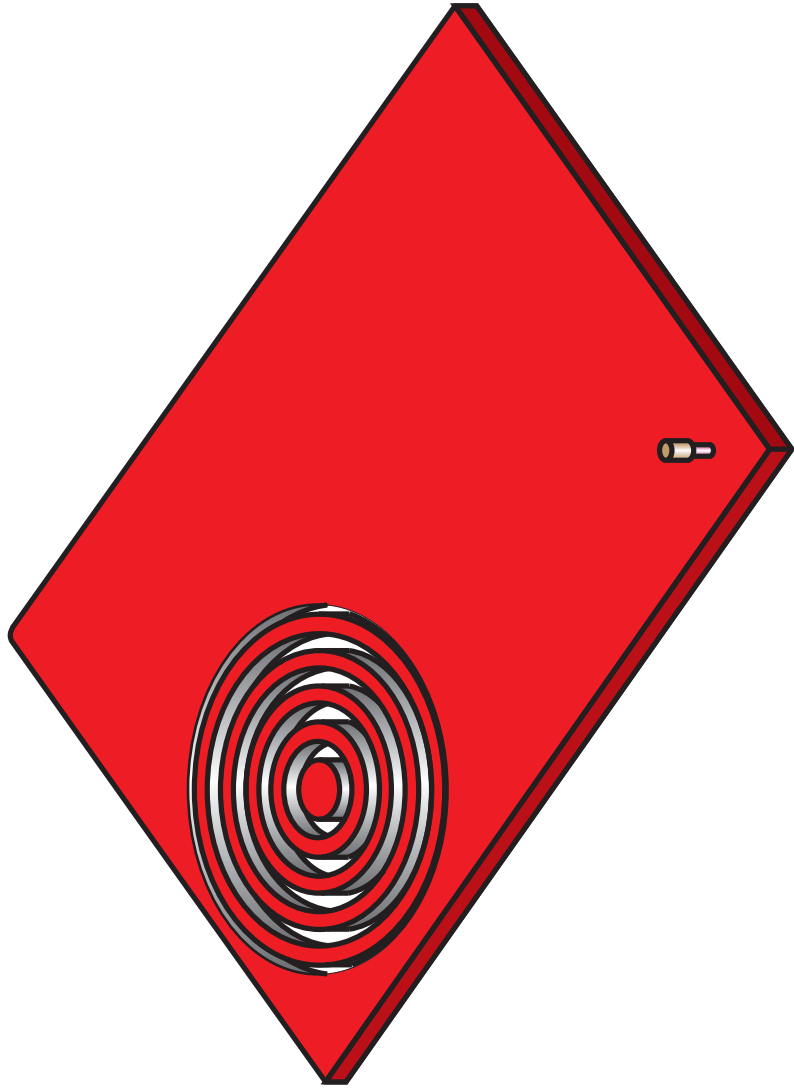
Explain the health and safety issues that should be considered when producing the foam model.

[5 marks]

(Turn over)

N	G	M	X	Y	Z	I	J	K	F	S	P	Q	R	T	Commands
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Program - Iestyn 2



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 opposite can run a simulation before using CAM.

Explain TWO benefits of this prior to manufacture. 2 marks × [2 marks]

Benefit 1:

(Turn over)

4 (a)

Benefit 2:

(Turn over)

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

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 marks]

15

(Turn over)



- 5. The products shown opposite 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 marks]

(Turn over)

17

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.

(Turn over)



- 6. Rentable e-bikes (image shown opposite) are becoming an important part of a ‘greener’ environmentally sustainable urban landscape.**
- (a) In the space on page 19, 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 marks]**
- a method of securely holding different sized smartphones
[5 marks]**

(Turn over)

19

- **a method of adjusting the angle of the smartphone to suit different users [5 marks]**

Space for design:

(Turn over)

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

[6 marks]

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.

(Turn over)

- 6 (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 marks]

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 marks]

(Turn over)

6 (d)

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

(Turn over)

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

(Turn over)

END OF PAPER

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

(Turn over)

[illegible]