GCSE

3603U10-1

WEDNESDAY, 18 JUNE 2025 – MORNING

DESIGN AND TECHNOLOGY

Unit 1

PRODUCT DESIGN

2 hours plus your additional time allowance

Surname _____

First name(s) _____

Centre Number _____

Candidate Number 0 _____

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For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	10	
2.	10	
3.	25	
4.	15	
5.	20	
6.	20	
Total	100	

ADDITIONAL MATERIALS

In addition to this examination paper, you will need a calculator.

INSTRUCTIONS TO CANDIDATES

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

You may use a pencil for graphs and diagrams only.

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.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question. You are advised to divide your time accordingly.

The total number of marks available is 100.

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 5(c).

CLEVER
LITTLE BAG

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LITTLE BAG
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CLEVER
LITTLE BAG

Answer ALL questions.

1. The images opposite show how a sports footwear manufacturer has changed the way trainers are packaged.

(a) Using TWO of the Six Rs of sustainability, identify how designers have made effective changes to previous methods of packaging trainers.

2 x [2 marks]

R _____

_____

_____

_____

_____

_____

_____

1 (a) R _____

1 (b) The logo shown opposite is part of the sports footwear manufacturer's policy for producing the new packaging.

(i) State what this logo represents:

_____

[1 mark]

(ii) Explain why this may be important to the consumer of the trainers. [2 marks]

_____

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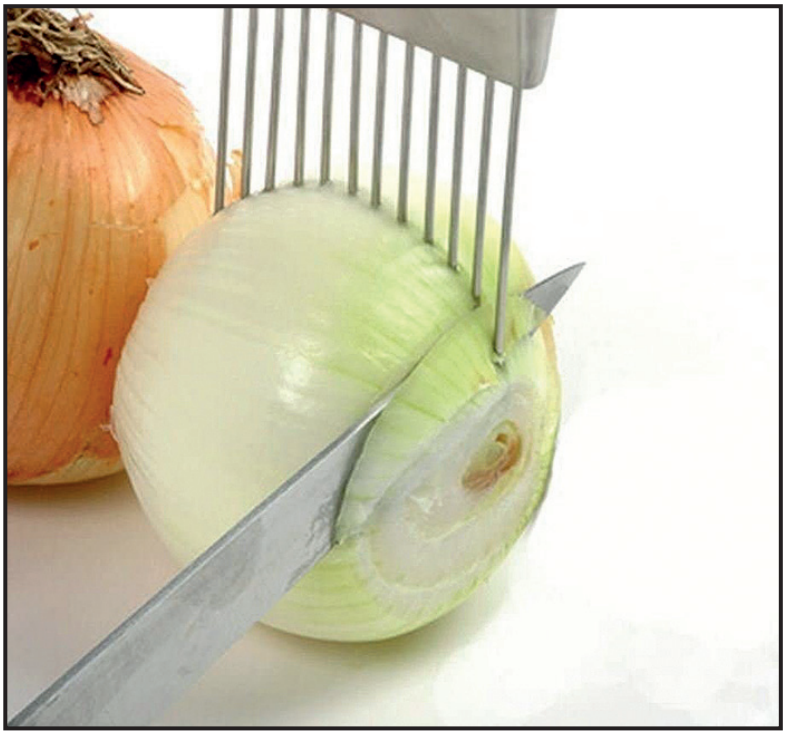
1 (c) Explain the effect the new packaging has on the manufacturer's ecological footprint. [3 marks]



2. The kitchen product pictured opposite has been developed to help cut vegetables during food preparation.

(a) Describe how the designer could use CAD (Computer Aided Design) when developing the kitchen product. [2 marks]

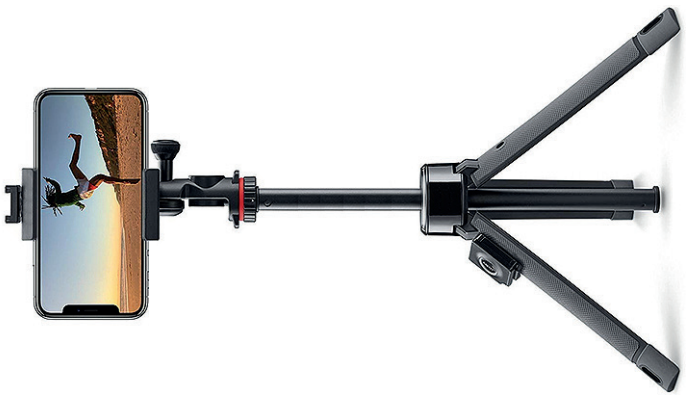
2 (b) A one-off prototype of the kitchen product is produced. Explain what the designer would do with this prototype prior to launching full-scale production. [3 marks]

Prior to selling the kitchen product in the UK, the manufacturer must achieve approval in the form of the CE mark.

2 (c) Explain what this means to the consumer of the kitchen products. [2 marks]

2 (d) Describe how the Consumer Rights Act protects the customer purchasing the kitchen product.

[3 marks]



3. The images opposite show a miniature smartphone tripod stick.

- **Three legs unfold as a stand from the handle**
- **Universally compatible smartphone holder**
- **Extendable selfie stick with bluetooth remote controller**

(a) (i) Explain why the tripod stick can be classed as miniature. [2 marks]

3 (a) (ii)

Give TWO different reasons why an aluminium alloy is a suitable material for the telescopic body of the tripod stick. 2 x [2 marks]

Reason 1: _____

_____

_____

_____

_____

_____

Reason 2: _____

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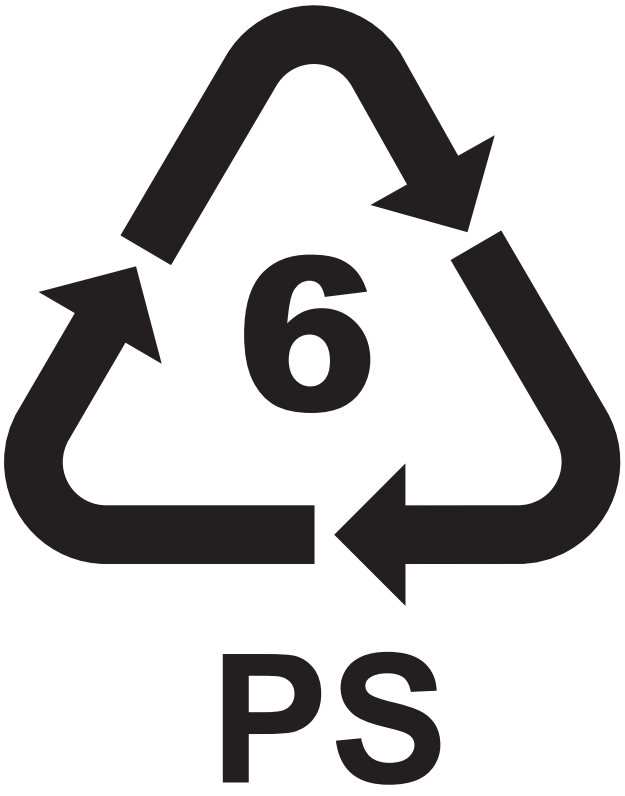
3 (a) (iii)

The aluminium alloy has been spray painted for a chrome effect. Describe why this is a suitable finish. [3 marks]


6
PS

3 (b) The symbol opposite is found on each of the three legs of the tripod stick.

State the name of the material that bears this symbol and describe the properties that make this material suitable for the three legs of the tripod stick. [4 marks]

3 (c) **The smartphone is held securely using a spring-loaded catch as shown opposite.**

Explain how the spring-loaded catch functions.

[3 marks]

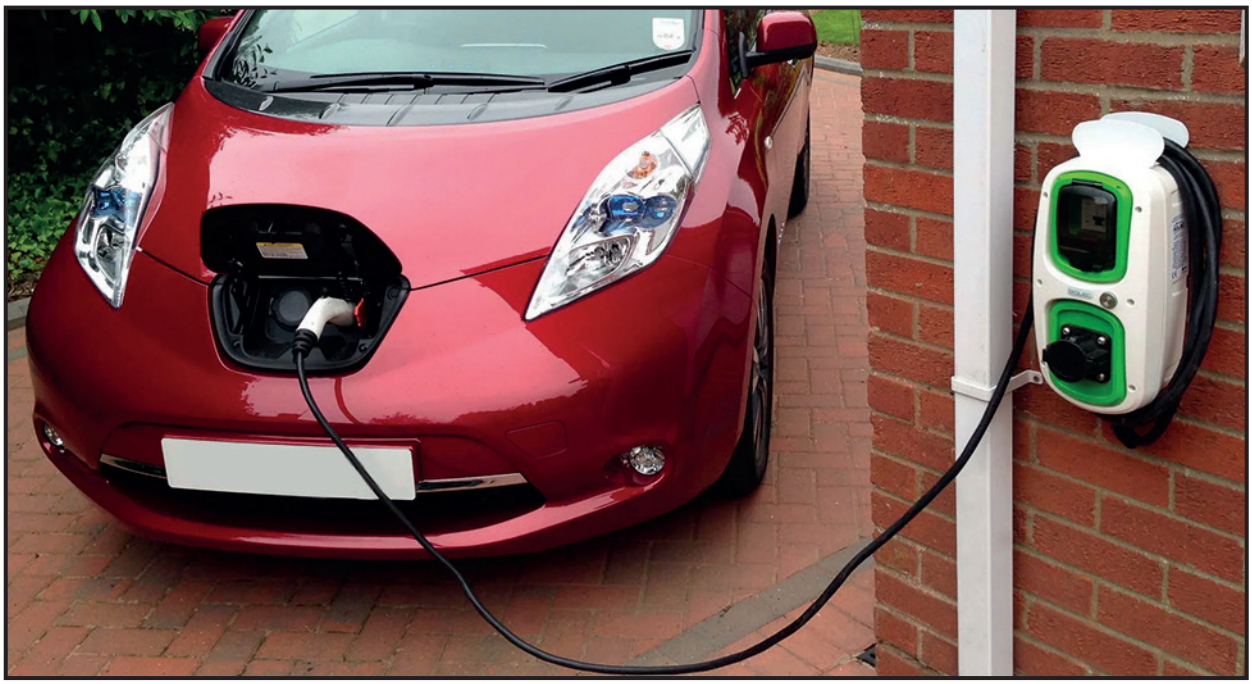
00:05

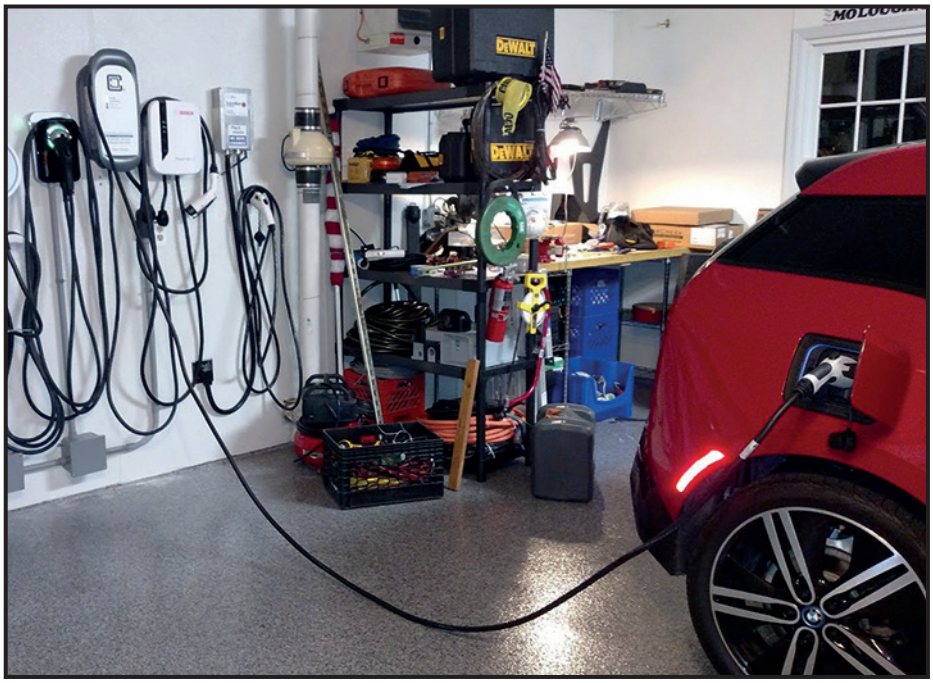
5X WIDE OPTICAL ZOOM
5.0 - 25.0mm 1:2.7 - 6.6

3 (d) **The tripod stick is supplied with standardised fittings as shown opposite.**

Explain the benefits that using standardised fittings brings to BOTH the manufacturer and end user of the tripod stick. [4 marks]

3 (e) The manufacturer uses a fully automated continuous production system to produce the tripod stick. Explain how this may create winners and losers. [5 marks]




DEWALT
DEWALT

4. **Many homeowners are now being encouraged to install electric car charging points as shown opposite.**

(a) **Explain TWO major problems that occur as a result of the high numbers of petrol and diesel powered vehicles on UK roads. 2 x [2 marks]**

Problem 1: _____

_____

_____

_____

_____

_____

Problem 2: _____

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4 (b) Most electric cars are able to travel at least 100 miles, with some of the more modern electric cars accessing a range of 250 miles per charge. Describe the effect this might have on consumers considering purchasing a 'greener' car. [4 marks]

4 (c) The UK Government will stop the production and sale of all petrol and diesel vehicles in the UK by 2035. Explain the pressures this places on most production car manufacturers. [4 marks]

4 (d) Describe how the charging of electric cars needs to be designed to ensure the National Grid can cope with the energy demand. [3 marks]

cervélo

5. Study the images of modern sports products shown opposite.

(a) Analyse how the performance of modern sports equipment has improved as a result of the use of composite materials. [5 marks]

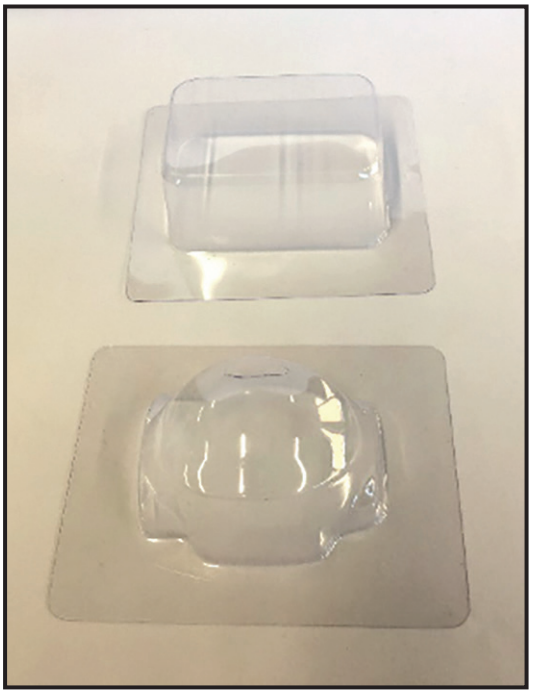
5 (b) Analyse the importance of Health and Safety practices when producing prototypes in a school workshop. [5 marks]

5 (c) Evaluate why user feedback is so critical when producing innovative and creative products such as the modern sports products shown. [10 marks]

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

TRY ME
3W HEAD LAMP
WITH STRAPS
ELASTIC HEAD STRAP
3 LIGHT MODE: FULL/HALF BEAM & FLASHING
ADJUSTABLE HEAD POSITION
BATTERY OPERATED
COB TECHNOLOGY
PROFESSIONAL SERIES

3W HEAD LAMP
PROFESSIONAL SERIES



6. The headlamp opposite has been produced to allow users to wear a light source for a range of activities.

(a) (i) The headlamp is sold as a blister pack. Describe the meaning of the term 'blister pack'. [2 marks]

6 (a) (ii)

Explain the role of the two card layers in the blister pack. [3 marks]

6 (a) (iii)

Describe TWO properties of PET (Polyethylene Terephthalate) that make it suitable for the two plastic components in the blister pack.

2 x [2 marks]

Property 1: _____

_____

_____

_____

_____

_____

Property 2: _____

_____

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_____

_____

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6 (b) **The blister pack has been designed to include a 'Try Me' feature as shown opposite.**

Explain how the 'Try Me' feature benefits both the manufacturer and the consumer of the headlamp. [4 marks]

6 (c) **The headlamp body has been designed with an adjustable hinge using an M4 nut and 30 mm long M4 bolt as shown opposite.**

(i) **Explain what is meant by the term M4. [2 marks]**

6 (c) (ii)

The M4 nut and bolt are counterbored into the hinge. Using notes and sketches below, explain how this has been achieved. [5 marks]

END OF PAPER

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

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