



Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2025

Centre Number

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Candidate Number

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Technology and Design

Assessment Unit AS 1

assessing

Design and Materials



[STE11]

STE11

MONDAY 12 MAY, AFTERNOON

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Questions which require drawing or sketching should be completed using an H.B. pencil.

All other questions must be completed in black ink only.

Do not write in pencil or with a gel pen.

Answer **all seven** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 40.

Quality of written communication will be assessed in Question 6.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

14810.05R



16STE1101

Design and Materials

Answer **all** questions.

- 1 Physical and mechanical properties need to be considered when selecting a material for a product.

(a) State **one** specific example of a physical property.

_____ [1]

(b) State **one** specific example of a mechanical property.

_____ [1]

The selection of a material for a component or product can also be influenced by the scale of production.

(c) Explain how the selection of a material can be influenced by the scale of production.

_____ [2]



2 Ferrous and non-ferrous metals such as stainless steel and copper are commonly used in everyday products.

(a) Briefly explain the difference between ferrous and non-ferrous metals.

_____ [1]

(b) Give **two** main properties of stainless steel which make it suitable for cutlery.

1. _____ [1]

2. _____ [1]

(c) Give **one** specific application for copper and outline **one** main property of copper which makes it suitable for your chosen application.

Application: _____ [1]

Property: _____ [1]

[Turn over

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16STE1103

3 Wood-based products may be manufactured in school workshops.

- (a)** For a specific workshop machine manufacturing process, outline **one** main associated risk and **one** method used to minimise the risk.

Risk:

[1]

Method used to minimise the risk:

[1]

- (b)** Many wood-based products use synthetic resins as a finish. Explain the main purpose of using a synthetic resin as a finish on wood-based products.

[2]





4 Injection moulding is a process which may be used to manufacture children's toys.

(a) Briefly outline **one** main reason why the injection moulding process may be used to manufacture children's toys.

[1]

(b) In the space below, draw a detailed annotated sketch of the injection moulding process.

[4]

[Turn over

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16STE1105

5 Computer-integrated manufacture (CIM) is widely used in the manufacture of products. With reference to a product of your choice, explain how CIM may be used in stock control and quality control in the manufacture of your chosen product.

Stock control _____

_____ [2]

Quality control _____

_____ [2]





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(Questions continue overleaf)

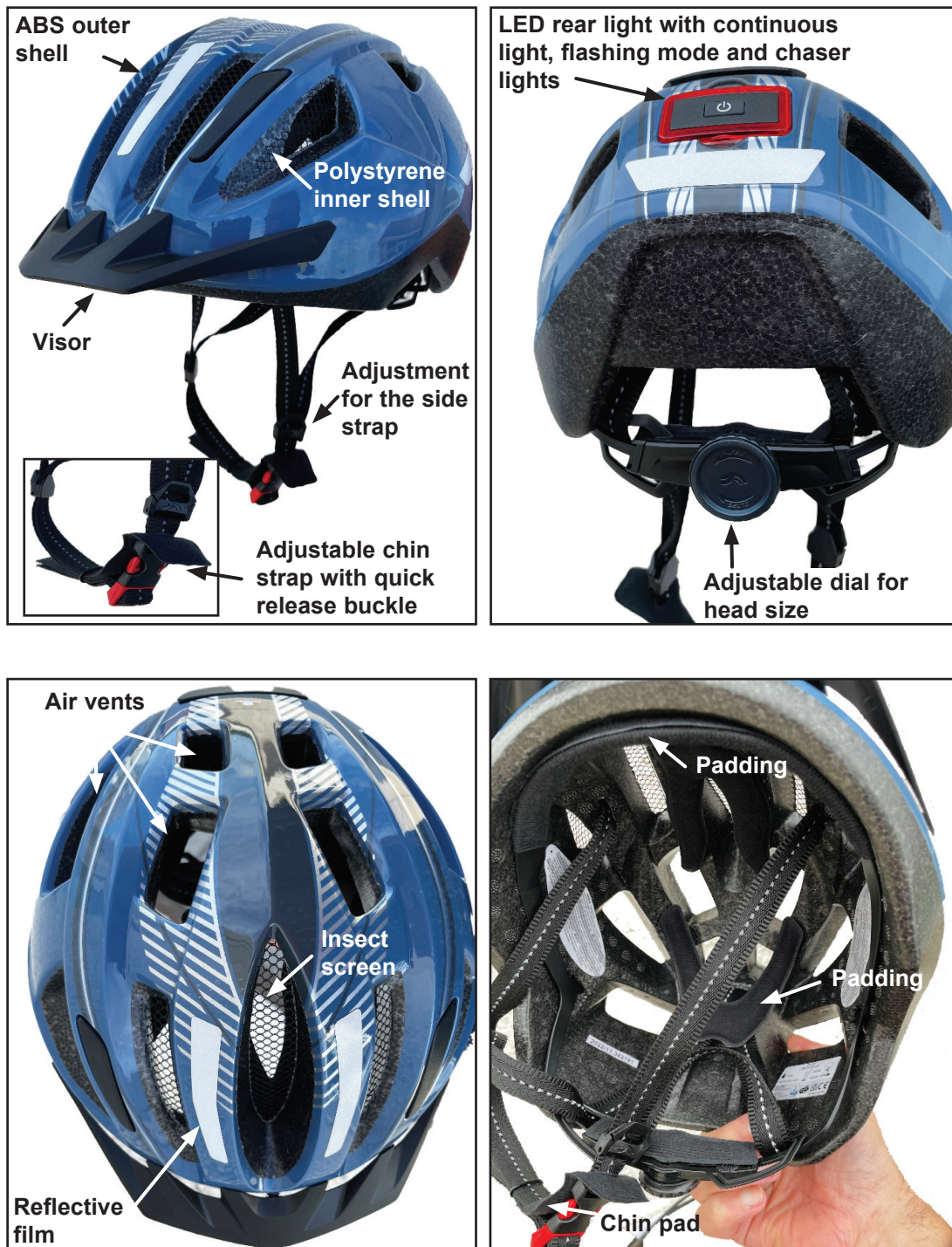
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16STE1107

6 The bicycle helmet shown in **Fig.1** is marketed by the designers as a product which not only considers the safety of the user but has ergonomic features incorporated.



Source: CCEA

Fig. 1

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16STE1108



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16STE1111

- 7 **Fig. 2** shows a 250 ml bottle of hand soap which is often placed in bathrooms and en-suites in guest houses and hotels for customer use.



Source: CCEA

Fig. 2

For the convenience of the user, the bottle of hand soap should be located on a wall-mounted bracket.

On the next **two** pages, produce an appropriate design with dimensions for **both** of the following:

- (a) A metal wall-mounted bracket which minimises the use of materials to securely hold the bottle of hand soap to allow the user to dispense the contents. Show how your bracket would be securely attached to the wall, suggest a suitable metal for the bracket and briefly explain how it would be manufactured. [6]
- (b) A way to prevent customers from removing the bottle of hand soap from the wall-mounted bracket, whilst ensuring that staff (with the use of a hand tool) can quickly remove and replace the bottle for new guests arriving. [4]



Show your response to Question 7(a) in the space below.

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Show your response to Question 7(b) in the space below.

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16STE1114





THIS IS THE END OF THE QUESTION PAPER

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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	

Total Marks	
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Examiner Number

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