

Surname	Centre Number	Candidate Number
First name(s)		2



GCE A LEVEL

1603U30-1



THURSDAY, 9 JUNE 2022 – AFTERNOON

DESIGN AND TECHNOLOGY – A2 unit 3

Product Design

2 hours 30 minutes

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	8	
2.	8	
3.	12	
4.	12	
5.	8	
6.	8	
7.	12	
8.	12	
9.	8	
10.	12	
Total	100	

ADDITIONAL MATERIALS

A calculator, ruler, pencils and coloured pencils.

INSTRUCTIONS TO CANDIDATES

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

You may use a pencil for graphs and diagrams only.

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 continuation page 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 **10**.

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Answer **all** questions.

1. Designers use a range of methods for exploring possible solutions to solve problems.

(a) Describe how a designer could use morphological analysis as a method of exploring possible solutions when designing products. [4]

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(b) Explain why it is important for the designer to consider the design specification during the development of a product. [4]

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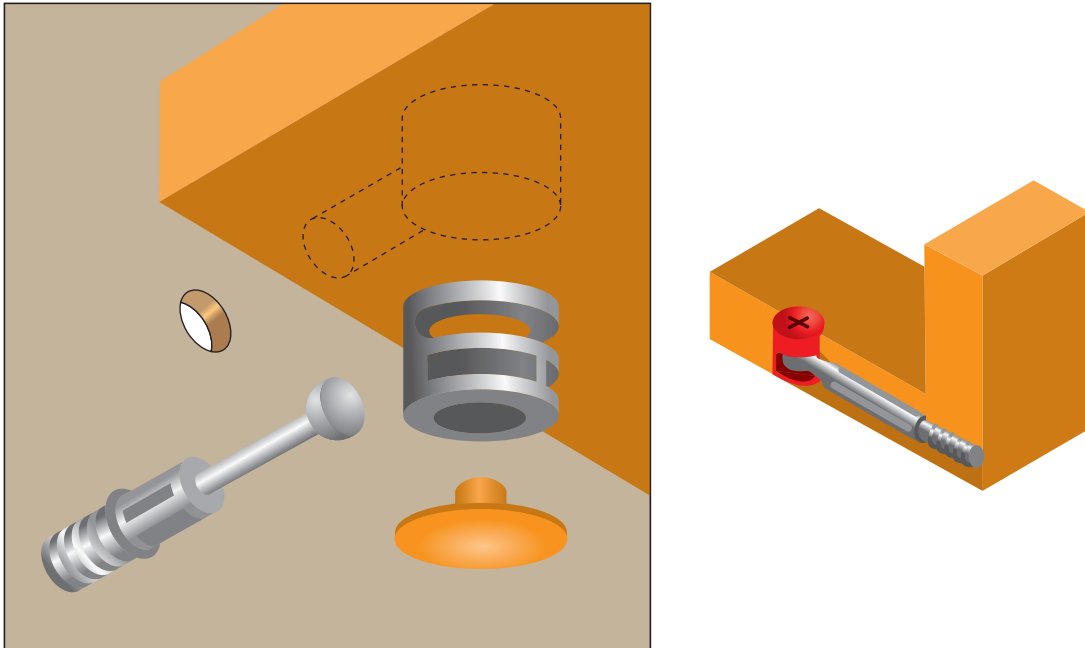
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2. Manufacturers use knock-down fittings in the production of flat packed products.



(a) Explain **one** factor that the manufacturer would need to consider when using temporary knock down fittings like the one shown above. [2]

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(b) Discuss the advantages and disadvantages of flat packed products to the consumer. [6]

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3. The aluminium chair shown below has been finished using the process of anodising.



(a) Explain the benefits of anodising the aluminium chair.

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(b) Using annotated sketches, explain the process of anodising the aluminium chair.

[8]

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4. The balance trike shown below is manufactured from a range of components and materials.



(a) Describe **one** reason why plywood has been used instead of natural wood for the frame of the balance trike. [2]

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(b) Explain the advantages to the manufacturer of using standard bought in components for parts of the balance trike. [4]

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(c) The manufacturer has decided to use batch production. Discuss the benefits of using batch production to manufacture the balance trike. [6]

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5. The logo shown below is the registered trademark of a watersports company.



(a) Describe the features of a registered trademark and explain how this benefits the company.

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(b) The company has developed an innovative product. Explain in detail how the innovative product is protected using a specific intellectual property right.

[4]

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- 6. The regulatory and legislative framework for health and safety has a big impact when manufacturing products in a workshop environment.



- (a) Describe **two** key features of the Health and Safety at Work Act that need to be adhered to in a workshop environment. [4]

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- (b) The British Standards Institute (BSI) kitemark has been awarded to a new product. Explain what this tells the consumer. [4]

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8. The role of marketing, enterprise and innovation can influence the development of products.

(a) Promotion is one of the four Ps of marketing. Explain the impact of effective promotion on a new product entering the market. [4]

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(b) Explain how the development of smartphones can be attributed to technology push. [4]

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(c) Explain how market pull is often the driving force behind revitalising products. [4]

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