National
Qualifications
2026

X819/77/11 Design and Manufacture

WEDNESDAY, 13 MAY
1:00 PM – 3:15 PM

Total marks — 80

SECTION 1 — 30 marks

Attempt ALL questions.

SECTION 2 — 50 marks

Attempt ALL questions.

Write your answers clearly in the answer booklet provided. In the answer booklet, you must clearly identify the question number you are attempting.

Use **blue** or **black** ink.

You must leave your answer booklet on your desk; if you do not, you could lose all the marks for this paper.

Qualifications Scotland
Teisteanasan Alba

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A/PB
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MARKS

SECTION 1 — 30 marks

Attempt ALL questions

1. During your course you will have analysed the manufacture and performance of a commercial product(s).

Identify a commercial product(s) you have analysed and:

(a) Describe the method(s) you used to evaluate the performance of the product(s) **and** the conclusions you reached. **6**

(b) Describe the features that allowed you to identify the manufacturing processes. **4**

(c) Describe the methods you used to identify the materials used to manufacture the components of the product(s). **4**

(d) Discuss the suitability of the assembly methods used in the product(s). **3**

2. During your course you will have researched the evolution of a commercial product(s).

Identify a commercial product(s) you have researched and:

(a) Describe significant changes to the product(s) and explain why these were a success or failure. **5**

(b) Explain the reasons for the significant changes to the product(s). **5**

(c) Describe the influence the product(s) may have had on society. **3**

MARKS

SECTION 2 — 50 marks

Attempt ALL questions

3. The DuraOcean chair, designed by LifestyleGarden, is manufactured using discarded fishing nets removed from the ocean.

The need to reduce ocean pollution provided a design opportunity.

(a) Explain other reasons why design opportunities occur. **4**

Reusing waste material allowed the designer to reduce the negative impact the DuraOcean chair had on the environment.

(b) Describe other ways the designer may have reduced the negative impact of the DuraOcean chair on the environment. **2**

(c) Discuss the challenges that are associated with designing products to be more environmentally friendly. **2**

[Turn over

MARKS

4. The Alinker Bike, designed by Barbara Alink, helps people with mobility issues to stay active.

It is important that safety is considered when designing products such as the Alinker Bike.

(a) Describe how consideration of safety would have influenced the design of the Alinker Bike. **4**

The Alinker Bike is an example of inclusive design. It is marketed towards adults with mobility issues but can be used by anyone.

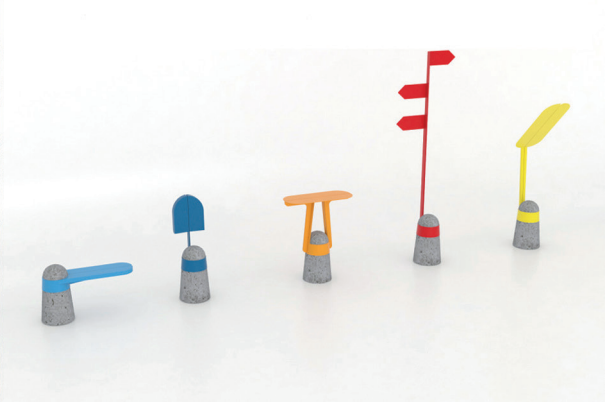
(b) Describe how other everyday products or spaces you are familiar with have been designed to be more inclusive. **4**

The Alinker Bike was designed to last as long as possible.

(c) Describe how the design of the Alinker Bike has been influenced by the requirement for it to last as long as possible. **3**

MARKS

5. The Boll Urban collection, designed by Adrian Blanc, creates comfortable and functional spaces using existing objects in busy city areas.



Morphological analysis or brainstorming could have been used when designing the Boll Urban collection.

(a) Describe how morphological analysis **or** brainstorming could be used to generate ideas for the Boll Urban collection. **4**

The Boll Urban collection considers function and aesthetics.

(b) Discuss how both function and aesthetics have influenced the design of the Boll Urban collection. **4**

The designer would have used a range of graphic types to communicate information to several people when designing the Boll Urban Furniture.

(c) Describe the types of graphics the designer would use to communicate and the purpose of the information. **4**

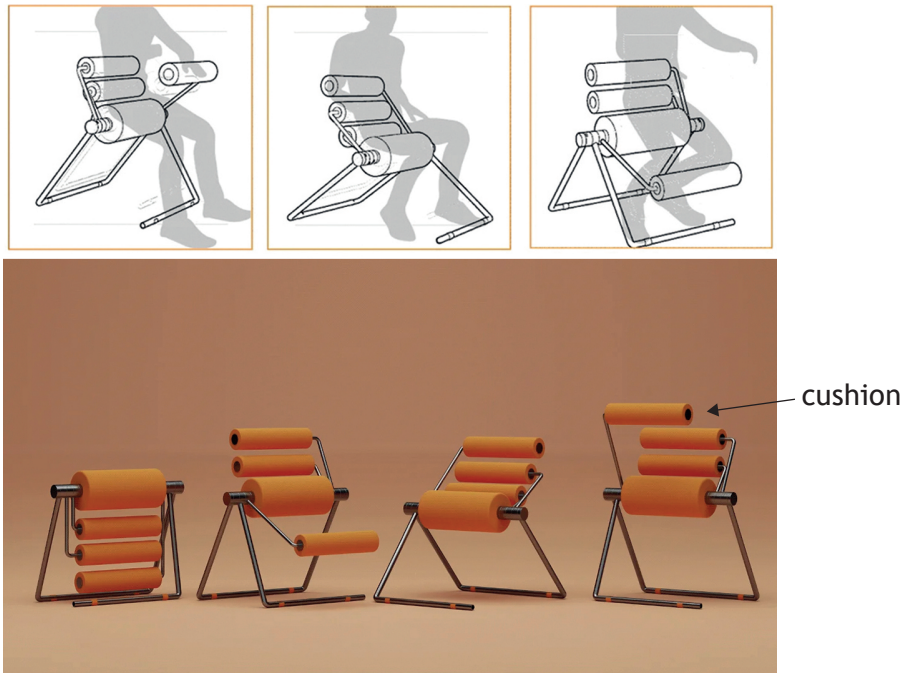
Designers may reduce the manufacturing costs of products by using different or less material.

(d) Describe **other** ways designers can reduce the manufacturing costs of products. **3**

[Turn over

MARKS

6. The Nebula chair, designed by Lorenzo Spanu, is a radical change in traditional chairs as it can be reconfigured for different purposes.



There are risks when launching radical products like the Nebula chair.

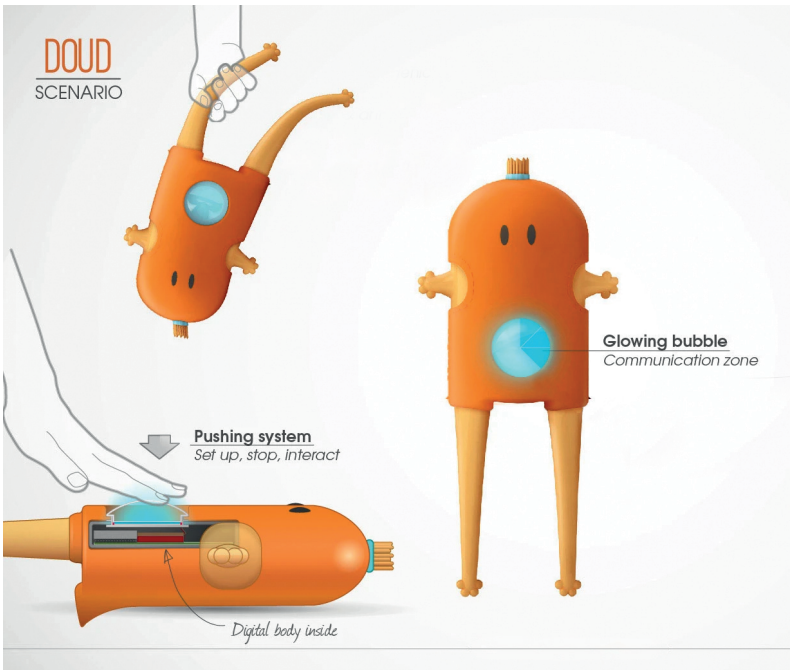
(a) Outline the potential risks to designers and manufacturers of launching a radical product, **and** explain how they may be overcome. **4**

The cushions for the Nebula chair are made from an elastomer.

(b) Explain why an elastomer is a suitable material for the cushions. **2**

MARKS

7. The DOUD support toy, designed by the CHRU team, is a comforter and communication aid for children requiring blood treatment.



The design team used different research techniques when working with medical professionals and child patients to develop a specification for the DOUD.

(a) Outline research techniques which could be used to gain information from each of the following groups **and** explain why they are appropriate:

- medical professionals
- child patients. **4**

Effective material selection is vital for products such as the DOUD.

(b) Discuss the issues that may have influenced the selection of materials for the DOUD. **4**

The designer considered manufacturing DOUD using two shot injection moulding or over-moulding.

(c) Outline issues that would be considered when choosing between two shot injection moulding and over-moulding for the manufacture of products. **2**

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