

Design and Technology

General
Instructions

- Reading time – 5 minutes
- Working time – $1\frac{1}{2}$ hours
- Write using black pen
- Write your Centre Number and Student Number at the top of page 5

Total marks: **Section I – 10 marks** (pages 2–4)
40

- Attempt Questions 1–10
- Allow about 15 minutes for this section

Section II – 15 marks (pages 5–7)

- Attempt Questions 11–14
- Allow about 35 minutes for this section

Section III – 15 marks (page 9)

- Attempt Question 15
- Allow about 40 minutes for this section

Section I

10 marks

Attempt Questions 1–10

Allow about 15 minutes for this section

Use the multiple-choice answer sheet for Questions 1–10.

- 1 Which term refers to a product's ability to remain functional in its environment?
 - A. Durability
 - B. Portability
 - C. Recyclability
 - D. Sustainability

- 2 What is the best way to evaluate a product's feasibility after design and prior to production?
 - A. Determine the price of the product
 - B. Make a prototype to test the product
 - C. Complete market research on the product
 - D. Examine the materials that are available for the product

- 3 A company designs a new logo for their product.
What must the company do to protect their design?
 - A. Register a patent
 - B. Register a copyright
 - C. Register a trademark
 - D. Register a licence agreement

- 4 The use of environmentally sustainable materials means that the materials are
 - A. biodegradable and affordable.
 - B. easy to be replaced and repaired.
 - C. re-useable or able to be recycled.
 - D. easily able to be renewed and replaced.

- 5 What would be a designer's first step towards reducing the energy needs of a household?
- A. Gather information on the cost of energy
 - B. Swap electrical devices for battery-powered devices
 - C. Explore the use of sustainable materials in developing user-friendly devices
 - D. Conduct research into the amount and timing of the household's energy consumption
- 6 Why would an organisation authorise its research and development team to develop various 'concept' designs?
- A. To redesign an existing good idea
 - B. To develop new and exciting future products
 - C. To rejuvenate an old idea that was never put into production
 - D. To ensure the research and development team maximise their use of new technology
- 7 Why is it important for a designer and the end user to communicate with each other?
- A. To modify design ideas
 - B. To enhance brand recognition
 - C. To improve customer satisfaction
 - D. To collect feedback to promote further sales
- 8 As new technologies are developed and released, existing products may rapidly become obsolete.

What can designers do to address the waste caused by this cycle of obsolescence?

- A. Use cheaper materials to reduce the price
- B. Limit the functions of the existing products
- C. Design products with components that are easily replaced
- D. Restyle existing products to help maintain their market share

9 Which of the following would be a key action when designing for social acceptance?

- A. Review all processes and stages of a product's development
- B. Use materials that are biodegradable or able to be reused
- C. Consider environmental issues and production processes
- D. Use innovative designs that are able to be disassembled and recycled

10 How do entrepreneurs support the work of designers and generate value?

- A. They create or expand economic activity by promoting new products.
- B. They manage costs and gather research data for production of new products.
- C. They take financial risks to promote social acceptance of innovative products.
- D. They accept responsibility for design refinement and establishment costs of innovative products.

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Centre Number

Design and Technology

Section II

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Student Number

15 marks

Attempt Questions 11–14

Allow about 35 minutes for this section

Answer the questions in the spaces provided. These spaces provide guidance for the expected length of response.

Question 11 (2 marks)

Why are some innovative products more successful than others?

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Question 12 (3 marks)

Describe how communication between members of a design team is supported by technology.

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Question 13 (4 marks)

How does the use of sustainable materials and practices stimulate the development of innovative technologies?

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Design and Technology

Section III

15 marks

Attempt Question 15

Allow about 40 minutes for this section

Answer the question in a writing booklet. Extra writing booklets are available.

Your answer will be assessed on how well you:

- demonstrate knowledge and understanding relevant to the question
- communicate ideas and information using relevant examples
- present a logical and cohesive response

Question 15 (15 marks)

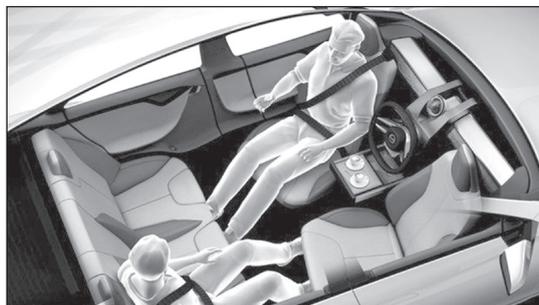
The images illustrate a range of innovative products.

This material cannot be displayed,
due to copyright issues.

Hoverboard

This material cannot be displayed,
due to copyright issues.

Drone



Driverless car

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Analyse the legal and ethical issues that need to be considered in the development of innovative products.

In your answer, you may refer to the images shown and/or other examples of innovative design.

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