

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 – 40

Section I Pages 2–4

10 marks

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

Section II Pages 5–8

15 marks

- Attempt Questions 11–13
- Allow about 35 minutes for this section

Section III Pages 9–10

15 marks

- Attempt Question 14
- 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 A furniture designer is to develop a cabinet.

Which factor should be considered first?

- (A) The tools available
- (B) The needs of the client
- (C) The time frame of the project
- (D) The selling price of the cabinet

2 An architect has been contracted to design a beach resort.

Which of the following would be the most appropriate method for the architect to communicate their initial design ideas to the client?

- (A) A prototype
- (B) A written report
- (C) A rendered sketch
- (D) A technical diagram

3 A project team is conducting a needs analysis for a design project.

During the needs analysis, the team will

- (A) identify opportunities.
- (B) develop financial plans.
- (C) formulate a time and action plan.
- (D) establish criteria for material selection.

4 A designer has created an integrated home security system.

Which strategy would best evaluate its ease of use?

- (A) Trial the system in different households
- (B) Analyse the choice of manufacturing materials
- (C) Seek feedback from a large group of technicians
- (D) Conduct market research on its likely acceptance

5 A manufacturer wishes to decrease the long-term environmental impact of the washing machine it produces.

Which of the following strategies would be the most effective?

- (A) Replace plastic parts with metal where possible
- (B) Reduce the power and water usage requirements
- (C) Reduce the size of the washing bowl and detergent container
- (D) Manufacture the washing machine using only new technologies

6 A design company acts ethically when it

- (A) ensures that entrepreneurs invest in their designs.
- (B) enables the user to purchase goods for their intended use.
- (C) enables the consumer to enjoy the product and know it will minimise harm.
- (D) uses technologically advanced production processes and renewable resources.

7 A web design company has introduced a collaborative design approach.

Which of the following is likely to take place?

- (A) Team members multi-task in each project.
- (B) A project manager directs the development of ideas.
- (C) Each design project is allocated to all team members.
- (D) Team members work together to discuss and share ideas.

- 8** Life cycle analysis is a process that is most commonly used to
- (A) predict the duration of the different stages in a product's life.
 - (B) determine the sustainability of a product once it is manufactured.
 - (C) evaluate the environmental impacts at different stages of a product's life.
 - (D) establish the sustainability of a product compared with similar products in the market.
- 9** Why do many manufacturing companies incorporate built-in obsolescence into their products?
- (A) To increase the probability of consistent sales
 - (B) To ensure that the product is sustainable in the market place
 - (C) To extend the product's life span beyond the warranty period
 - (D) To make the product safe to use for an extended period of time
- 10** How can designers best achieve sustainable design?
- (A) Create designs that follow the latest trends.
 - (B) Ensure that a product will be durable and competitive in the marketplace.
 - (C) Seek to reduce both the negative impact of the design on the environment and the cost to the consumer.
 - (D) Provide the consumer with products that are environmentally friendly and use the minimum amount of resources.

Design and Technology

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Centre Number

Section II

15 marks

Attempt Questions 11–13

Allow about 35 minutes for this section

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Student Number

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

Question 11 (4 marks)

Please turn over

Question 11 (4 marks)

The images show two chairs that have been developed for different uses.

4



Office chair

<http://cormsquare.com/Furniture/Office-Chairs/26197/-Mesh-Office-Chairs>



Kitchen bench stool

<http://www.thinkstockphotos.com.au/image/stock-photo-steel-bar-stool/101497479/popup?sq=steel%20bar%20stool/f=CPIHVX/s=DynamicRank>

How have design factors been applied differently in the development of the two chairs? Support your answer with examples.

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Question 12 (6 marks)

(a) Why is ongoing evaluation important to a designer? **2**

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(b) Discuss the use of technology to conduct an evaluation of a product. **4**

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Design and Technology

Section III

15 marks

Attempt Question 14

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 sustained, logical and cohesive response
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Question 14 (15 marks)

Please turn over

Question 14 (15 marks)

The images show some examples of the application of emerging technologies.

Analyse the potential impact of emerging technologies on society.



Image 1:
3D printing
Medical – Prosthetic leg

<http://www.trueactivist.com/3d-printed-innovations-that-can-heal-improve-or-save-lives/>



Image 2:
Biometrics
Security – Finger print scan

<https://www.hidglobal.com/products/biometrics/lumidigm/lumidigm-v-series-fingerprint-sensor>



Image 3:
Nanotechnology
Health – Smart watch

<http://www.trustedreviews.com/news/samsung-galaxy-gear-smartwatch-nfc-menu-and-specs-leak>



Image 4:
Smart Card
Travel – Opal card

Transport for NSW

End of paper