

B O A R D O F S T U D I E S
NEW SOUTH WALES

2007

**HIGHER SCHOOL CERTIFICATE
EXAMINATION**

Design and Technology

General Instructions

- Reading time – 5 minutes
- Working time – $1\frac{1}{2}$ hours
- Write using black or blue 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 Question 11
- Allow about 35 minutes for this section

Section III Pages 9–10

15 marks

- Attempt ONE question from Questions 12–14
- 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** What is the best description of collaborative design?
 - (A) Design that is planned
 - (B) Teams competing against each other
 - (C) People working independently on the design
 - (D) Team members working towards a common goal

- 2** What factor would be the most important for a designer to consider while designing playground equipment?
 - (A) Manufacturing costs
 - (B) Safety and legal requirements
 - (C) Strength and quality of the materials
 - (D) Ergonomics of the playground equipment

- 3** Which form of communication would be most suitable in the early stages of the design process to demonstrate to a client how a new design idea would work?
 - (A) Quality sketches
 - (B) Quality renderings
 - (C) A working prototype
 - (D) Engineering drawings

- 4 Which of the following is the most ethical approach to the development of a new product?
- (A) Identify the best aspects of existing products and put them all directly into the new design
 - (B) Identify flaws in existing designs then develop a better overall product and protect the new intellectual property
 - (C) Ask an offshore manufacturer to copy the existing design after making a few minor design alterations
 - (D) Hire the designers from the other companies who developed the existing designs to repeat what they did previously
- 5 What would designers consider the most important factors in evaluating the long-term impact of their designs upon society?
- (A) Economic and environmental factors
 - (B) Price and recyclability factors
 - (C) Privacy and security factors
 - (D) Cost and ergonomic issues
- 6 Which will result in a higher quality product?
- (A) A highly skilled workforce
 - (B) Good management and high wages
 - (C) Inspecting the quality of the product after production
 - (D) Designing the product specification with good function and aesthetics
- 7 What factors must be considered in making an analysis of the short-term and long-term benefits of a product?
- (A) Resource availability and disposal
 - (B) Technological and economic aspects
 - (C) Economic, environmental and social aspects
 - (D) Manufacturing, sustainability and profit margins

- 8** What should be the first step considered by a design team extending a family of products?
- (A) Research other products from competing companies
 - (B) Wait for the marketing report on the projected market size
 - (C) Use a focus group of potential users to develop design ideas
 - (D) Identify and record the key features of the current family of products
- 9** What would be the primary criterion used when appraising the ecological implications of a new bio-technology?
- (A) Health impact
 - (B) Cost to the community
 - (C) Impact on all living things
 - (D) Long-term impact on society
- 10** Innovative technologies are needed to address emerging biological threats to society. Which of the following is the primary driver to stimulate these technologies?
- (A) Economic processes
 - (B) Environmental need
 - (C) Political processes
 - (D) Social trends

Design and Technology

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Centre Number

Section II

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Student Number

15 marks

Attempt Question 11

Allow about 35 minutes for this section

Answer the questions in the spaces provided.

Marks

Question 11 (15 marks)

During the development of design projects, designers draw upon research from a range of sources.

- (a) (i) Outline reasons for conducting research. **2**

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- (ii) Using examples, outline where qualitative research is appropriate. **2**

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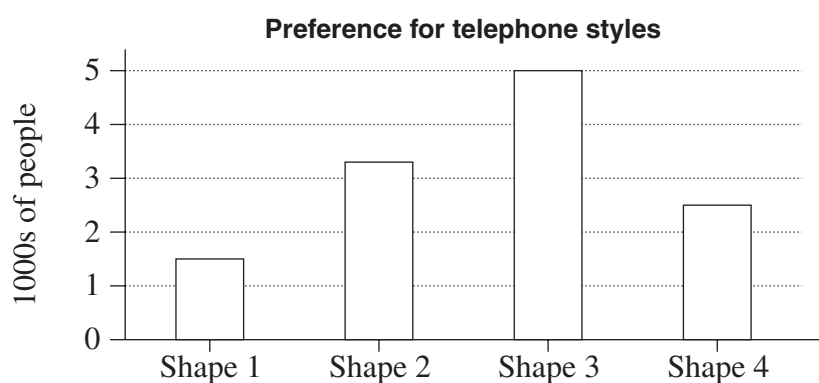
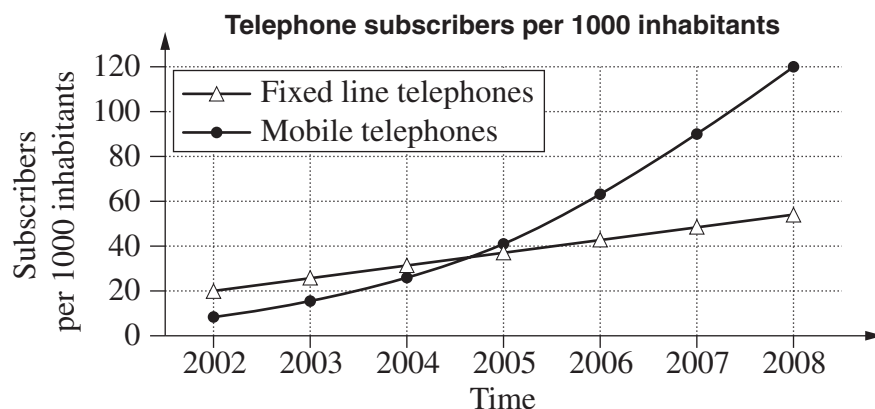
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Question 11 continues on page 6

Question 11 (continued)

(b)



- (i) Explain how a designer may use the data provided in the graphs to determine the direction of the development of new telephone products. 3

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Question 11 continues on page 7

Question 11 (continued)

- (ii) A prototype has been developed. Propose and explain one research method that could be used to further improve this product. **3**

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Question 11 continues on page 8

Question 11 (continued)

- (c) Discuss the impact of ethical issues when deciding upon research methods to collect data.

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End of Question 11

Design and Technology

Section III

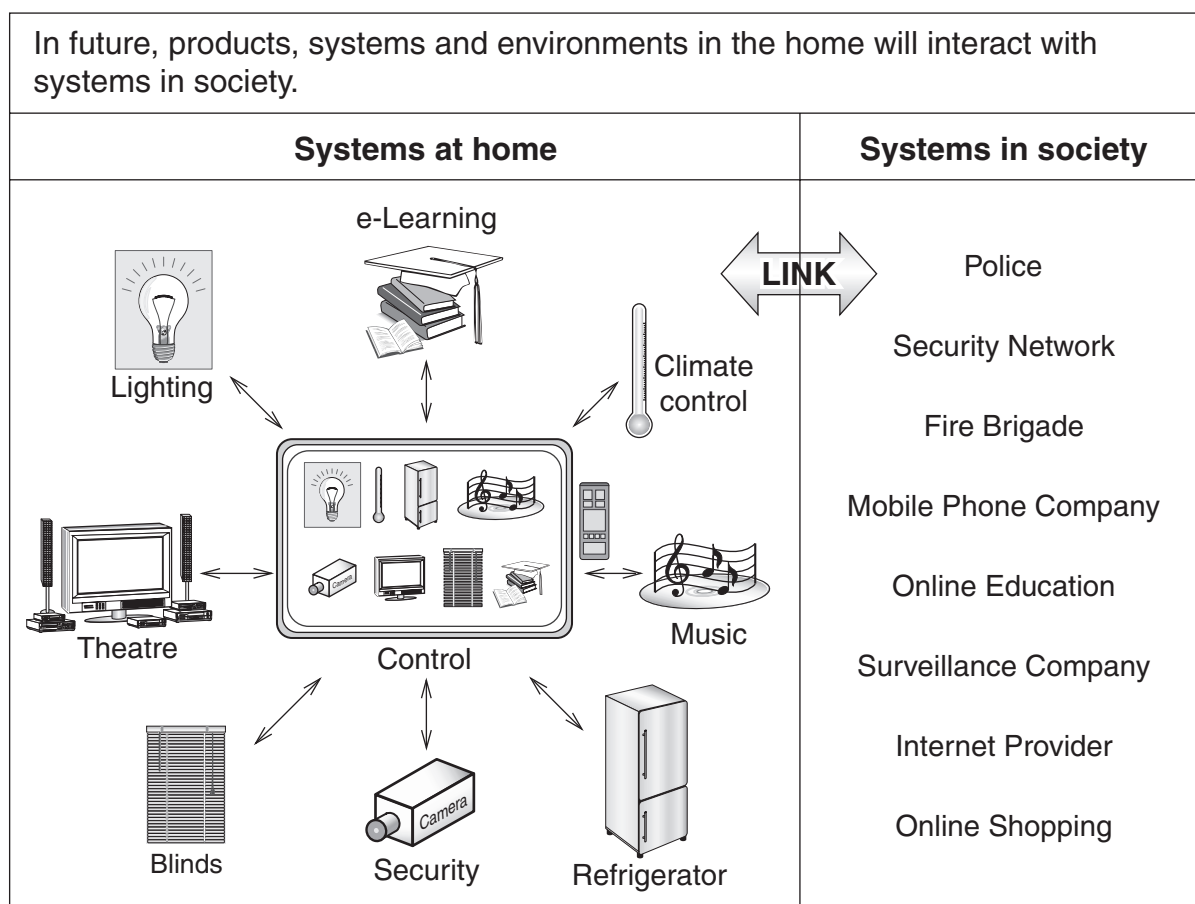
15 marks

Attempt ONE question from Questions 12–14

Allow about 40 minutes for this section

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

Question 12 (15 marks)



Marks

- | | |
|--|----------|
| (a) Using examples from the stimulus above, explain how future home and/or product design can be influenced by these or similar systems. | 6 |
| (b) Analyse the impact of innovations, such as those above, on society. | 9 |

OR

Please turn over

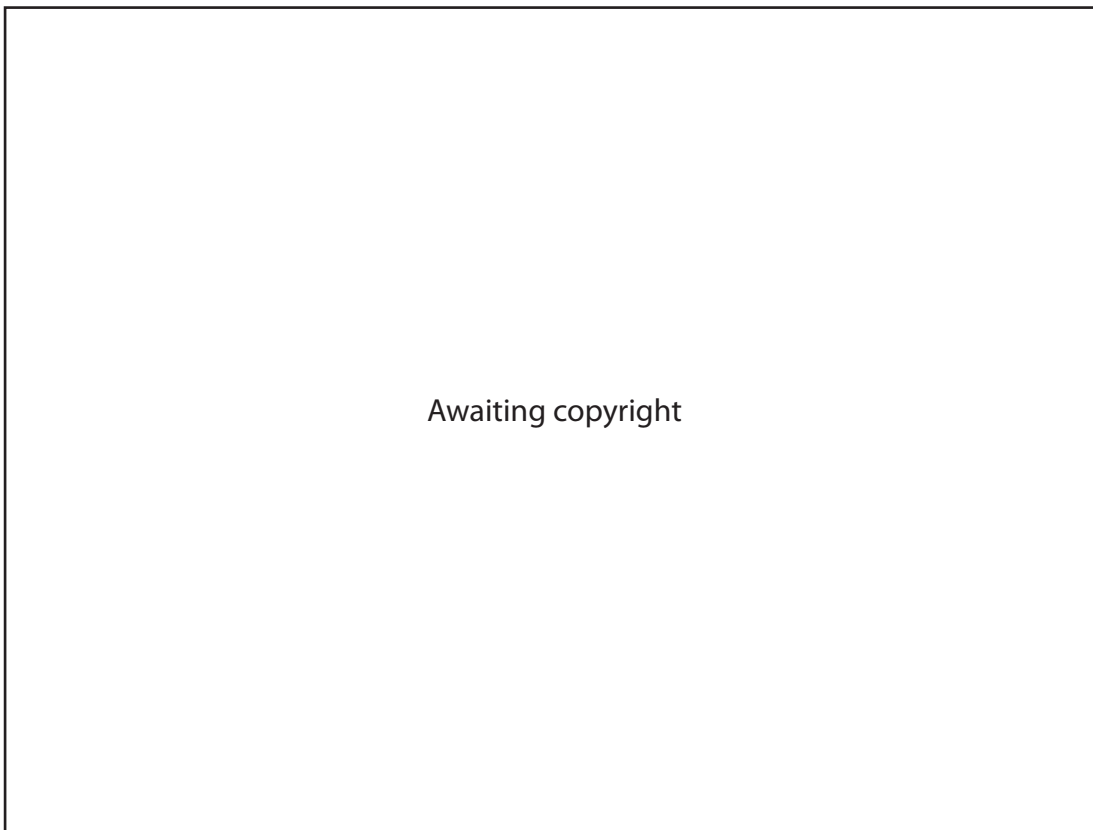
Question 13 (15 marks)

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|-----|---|----------|
| (a) | Using examples, explain methods that can be used to develop criteria to evaluate success. | 6 |
| (b) | Analyse the relationship between needs analysis, ongoing and final evaluation, and the success of products, systems and environments. | 9 |

OR

Question 14 (15 marks)

A wealth pyramid is shown.



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|-----|--|----------|
| (a) | Referring to the stimulus above, explain the relative importance of function and aesthetics in developing solutions for societies at the bottom of the wealth pyramid. | 6 |
| (b) | Analyse the impact of introducing top-of-the-pyramid technologies into societies at the bottom of the wealth pyramid. | 9 |

End of paper