BOARD OF STUDIES
NEW SOUTH WALES

HIGHER SCHOOL CERTIFICATE EXAMINATION

1995

DESIGN AND TECHNOLOGY

2/3 UNIT (COMMON)

SECTION I—WRITTEN PAPER

(40 Marks)

Time allowed—One hour and a half
(Plus 5 minutes' reading time)

DIRECTIONS TO CANDIDATES

Part A (10 marks)

- Attempt ALL questions.
- Mark your answers in pencil on the Answer Sheet provided.

Part B (15 marks)

- Question 11 is COMPULSORY.
- Answer the questions in Part B in the spaces provided in this paper.
- Write your Student Number and Centre Number at the top right-hand corner of the first page of each question.

Part C (15 marks)

- Attempt ONE question.
- Answer Part C in a *separate* Writing Booklet.
- You may ask for extra Writing Booklets if you need them.

PART A
(10 Marks)

Attempt ALL questions.

Each question is worth 1 mark.

Select the alternative A, B, C, or D that best answers the question.

Mark your answers in pencil on the Answer Sheet provided.

1.   A medical centre is considering the introduction of a new data storage and retrieval system to improve efficiency.

   In designing the system, the most important issue to consider is

   (A)   open access to patient information by hospitals.

   (B)   the patient's right to privacy.

   (C)   the commercial value of patient information, e.g. value to insurance companies.

   (D)   the capacity to transfer medical information quickly to other centres.

2.   Total quality management (TQM) is achieved by

   (A)   introducing an efficient system of checking before products are distributed.

   (B)   valuing the views of all members of the organization with regard to improvements in efficiency.

   (C)   ensuring that customer complaints are directed to management.

   (D)   implementing quality-testing at all stages of production.

3.   A manufacturer wants to minimize the environmental impact of a new product. Which of the following actions would be most important?

   (A)   Ensure that material waste is minimized during the production process.

   (B)   Adopt a system for recycling production waste.

   (C)   Budget for a media campaign focusing on the use of green technology.

   (D)   Undertake a life-cycle analysis to evaluate environmental issues.

4.   The size of a company influences the types of production processes it uses, because

   (A)   large companies generally have greater access to resources for plant and equipment.

   (B)   there is less technical expertise in small companies.

   (C)   large companies have more-effective marketing strategies.

   (D)   large companies can generally target their market more effectively than small companies.

5.   A person is establishing a business that restores and sells second-hand goods.

The first step in planning the venture would involve

(A)   research to determine the market for particular types of second-hand goods.

(B)   the location of a suitable high-exposure outlet.

(C)   the identification of subcontractors to undertake the work of restoring the goods and equipment.

(D)   developing a financial plan that can be used when negotiating a loan for equipment.

6.   An office employs many computer operators. Absenteeism is growing, with the operators complaining of headaches, backaches, and sore arms and hands.

Which of the following responses is the most appropriate in this situation?

(A)   Employees have discussions with their union and negotiate higher wages to compensate for the obvious health hazard.

(B)   The management engages the services of a doctor who comes on regular visits.

(C)   The issue is raised with the Occupational Health and Safety officer.

(D)   Staff who show most absenteeism are offered part-time positions.

7.   A restaurant is installing a new kitchen. The criteria that would be most important when selecting a material for the surface of food-preparation areas are

(A)   ease of manufacture, e.g. capacity to form and join the material.

(B)   service requirements relating to hygiene and wear.

(C)   costs of supply and construction.

(D)   aesthetic compatibility with surrounding materials and equipment.

8.   An Australian production company has identified a gap in the market for a television program targeting children from six to nine years old.

Which of the following research methods would be most desirable in determining the content of the program?

(A)   Interview a sample of parents to determine children's interests.

(B)   Review programs from other countries to identify ideas.

(C)   Undertake a literature review of issues related to children's television programs.

(D)   Interview a sample of children from the six- to nine-year-old age-group to determine their interests.

9. Growing community concern about damage to the environment has increased the awareness of sustainable development.

Sustainable development ensures that

(A) people can sustain their current lifestyles.

(B) new products are always produced from recycled materials.

(C) pollution is eliminated.

(D) the use of resources can be maintained into the future.

10. Many Australian innovations have been produced commercially in other countries. This is most likely the result of

(A) Australia's being considered to be a small market with limited access to development resources.

(B) the eagerness of overseas managers to take financial risks.

(C) the high costs of labour in Australia.

(D) unstable currency exchange rates.

PART B

The question in this Part is COMPULSORY.

Answer all parts in the spaces provided in this paper.

QUESTION 11. (15 marks)

Name TWO organizations with contrasting structures. State the location of each organization and the nature of the goods and/or services that each provides.

Organization 1

Name ....

Location ....

Goods and services ....

Organization 2

Name ....

Location ....

Goods and services ....

(a)   Describe how the two organizations identified above differ in size and structure.

....

....

....

....

....

....

....

....

QUESTION 11. (Continued)

(b)   (i)   Select a technology that has recently been introduced into ONE of the organizations identified.

....

   (ii)   Describe TWO ways in which this technology has benefited the *organization*.

1. ....

....

....

2. ....

....

....

   (iii)   Describe the impact of the introduction of this technology on the *workplace*.

....

....

....

....

(c)   There are processes in place to assess the possible introduction of new technologies in BOTH organizations. Compare these processes.

....

....

....

....

....

....

....

....

....

....

QUESTION 11. (Continued)

(d)   For each organization, describe the management processes used in the areas listed below.

Production

Organization 1

....

....

Organization 2

....

....

Marketing

Organization 1

....

....

Organization 2

....

....

(e)   Compare and contrast how each organization ensures the customers' needs are being met. Use at least THREE examples for each organization.

....

....

....

....

....

....

....

....

....

....

....

QUESTION 11. (Continued)

(f)   From your experience of these organizations, complete the table below. Use the example provided in the table as a guide.

	Input resource	→	Process used	→	Output goods and services
	e.g. Water		Irrigation		Vegetables
(i)					
(ii)					
(iii)					

(g)   Refer to the outputs listed in part (f) (i), (ii), and (iii). Analyse the ecological consequences of the process used for TWO of these outputs.

Output 1

....

....

....

....

....

Output 2

....

....

....

....

....

1995
HIGHER SCHOOL CERTIFICATE EXAMINATION
DESIGN AND TECHNOLOGY
2/3 UNIT

PART C

Attempt ONE question.

Each question is worth 15 marks.

Answer the question in a *separate* Writing Booklet.

EITHER

QUESTION 12

There are many examples of design in our environment where functional criteria have been considered more important than aesthetic criteria.

(a)   Identify THREE examples of designs where function has been a major consideration. Justify your selections.

(b)   Discuss the importance of aesthetic considerations in design.

(c)   Some products are designed with built-in obsolescence. Using an example, explain the term 'built-in obsolescence'.

(d)   When developing designs such as city expressways, airports, harbour tunnels, country road systems, rail systems, irrigation systems, and shopping centres, environmental problems are created and must be addressed.

    (i)   Use *either* one of the above examples *or* an example from your own experience to explain how environmental considerations impact on design.

    (ii)   Explain the long-term costs and benefits considered by designers.

OR

QUESTION 13

(a)   A company has developed a new board-game, suitable for ages twelve to adult.

      (i)   Describe the market-research processes to be conducted to get the design to prototype stage.

     (ii)   How could the company ensure that the idea for the game was not copied before production and distribution?

    (iii)   Describe the entrepreneurial procedures necessary to develop the large-scale production of the board-game.

(b)   For your major design project:

      (i)   briefly describe the realization processes used;

     (ii)   compare and contrast these processes with those that may be used in large-scale production.

OR

QUESTION 14

You have been invited by a project developer to submit your designs for ONE of the following:

* a workstation for physically handicapped persons;
* a people-mover system in a theme park;
* a viewing area for observing Uluru (formerly referred to as Ayers Rock).

Select ONE of the above, and answer the following questions.

(a)   State your selection.

(b)   Outline and justify FOUR important criteria the designer needs to consider.

(c)   Explain how these criteria will influence the development of the design.

(d)   Provide initial design ideas for your selection. Labelled sketches, flowcharts, graphs, and/or descriptions may be used.

(e)   Evaluate your design in terms of the criteria identified in part (b).

(f)   Suggest and justify a strategy for promoting your design submission to the project developer.