



HIGHER SCHOOL CERTIFICATE EXAMINATION

1996

DESIGN AND TECHNOLOGY

2/3 UNIT (COMMON)

(40 Marks)

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

DIRECTIONS TO CANDIDATES

Section I (10 marks)

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

Section II (15 marks)

- The question in this Section is COMPULSORY.
- Answer the question in the spaces provided in this paper.
- Write your Student Number and Centre Number at the top right-hand corner of page 5.

Section III (15 marks)

- Attempt ONE question.
- Answer the question in a *separate* Writing Booklet.
- You may ask for extra Writing Booklets if you need them.
- Write your Student Number and Centre Number at the top right-hand corner of page 13.
- You MUST hand in the worksheet for Question 13, even if you do not use it.

SECTION I

(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. Design for disassembly means that more and more products are made so that they can be taken apart, reused, and/or recycled. This trend is primarily the result of
 - (A) changing manufacturing processes in moulded components.
 - (B) consumer demand for cheaper components.
 - (C) changing trends in design aesthetics.
 - (D) concerns about dwindling resources.

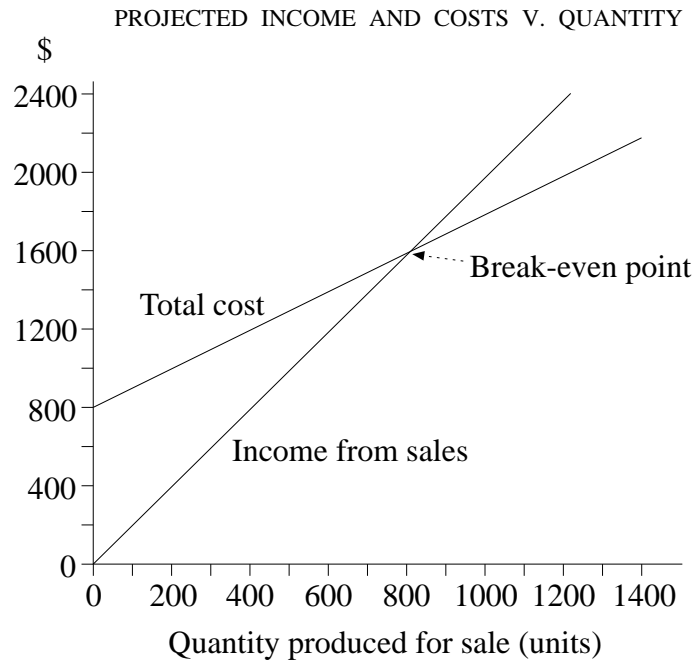
2. Designers require a thorough understanding of materials, tools, and techniques. This understanding is important because designers need to
 - (A) work effectively with relevant organisations.
 - (B) produce models for presentation to clients.
 - (C) innovate in design sketches.
 - (D) convert ideas into working models.

3. Several models and a prototype of a hot-beverage dispenser are developed by an industrial designer. The most likely purpose of the prototype is to
 - (A) allow aesthetic evaluation as part of market research.
 - (B) test the design for operation and reliability.
 - (C) assist companies that manufacture minor components.
 - (D) produce a finished version for use in television commercials.

4. The management of a design team is mainly concerned with
 - (A) improving efficiency and effectiveness.
 - (B) making sure that the recognised steps of a design process are used in the correct order.
 - (C) making sure that designers do not stray from the brief.
 - (D) developing the cheapest product possible.

5. The graph below shows projected sales income and projected costs for a product being developed.

The marketing division projects the sales at 800 units, based upon a competitive recommended price of \$2 per unit.

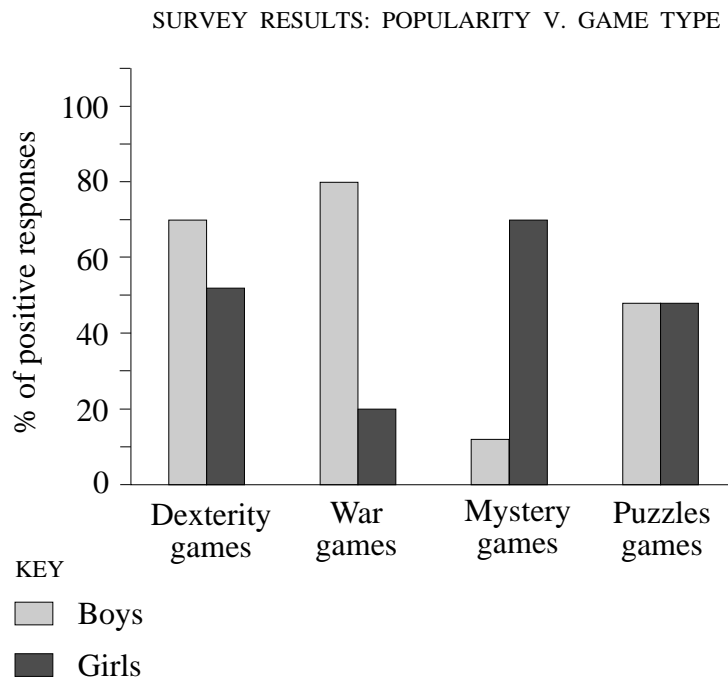


After considering the information above, the company is likely to

- (A) produce fewer than 800 units, in order to minimise losses.
 (B) increase the recommended price to \$2.50 per unit.
 (C) modify the design of the product to reduce production costs.
 (D) cancel the project.
6. Employees of a manufacturing company are complaining of breathing-difficulties when working with spray finishes. The best long-term solution for the company is to
- (A) develop a non-irritant finishing spray.
 (B) issue the employees with masks.
 (C) appoint a health and safety officer.
 (D) install a filtered ventilation system.
7. Product manufacturers can play an important role in recycling. Which option would be the most suitable action for the manufacturer to assist community-operated recycling centres?
- (A) Provide recycling bins at the point of sale.
 (B) Make sure all packaging is biodegradable.
 (C) Carry out life-cycle analysis of all products.
 (D) Accurately label components for recycling.

8. An agency designing an effective advertising strategy initially needs to
- decide on the key advertising slogan.
 - determine what is the most appropriate advertising medium to carry the message.
 - develop advertising objectives.
 - establish criteria to assess the success of the advertising campaign.
9. A large company producing component parts has evidence of inadequate operational standards resulting from worker boredom and carelessness. The Human Resources Department would most likely recommend
- increasing job specialisation.
 - shifting greater responsibility for performance to workplace teams.
 - decreasing the number of operators by increasing automation.
 - improving supervision by increasing the number of floor managers.
10. A commercial producer of computer games commissions a market survey of computer-game players. One hundred girls and one hundred boys are surveyed.

The results are presented in the graph below.



Based on the information presented in this graph, the producer should develop

- fewer war games, because they appeal less to girls.
- more dexterity games, because they have the greatest collective appeal.
- fewer mystery games, because they do not appeal to boys.
- more puzzle games, because they appeal equally to girls and boys.

EXAMINER'S USE ONLY

STUDENT NUMBER

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SECTION II

(15 Marks)

The question in this Section is **COMPULSORY**.
Answer the question in the spaces provided in this paper.

QUESTION 11. (15 marks)

Name **TWO** organisations with contrasting structures. State the location of each organisation and the products and/or services that each provides.

Organisation 1

Name

Location

Products and/or services

Organisation 2

Name

Location

Products and/or services

(a) Describe what impact the location of each organisation has on its operation.

Organisation 1

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Organisation 2

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QUESTION 11. (Continued)

- (b) (i) Compare the structure of the two organisations. Labelled diagrams may be used.

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- (ii) Explain how the structures of the two organisations relate to their levels of operation.

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- (c) Choose ONE organisation. Suggest THREE areas of policy that should be addressed to support the introduction of a new technology.

- (i)
- (ii)
- (iii)

- (d) Choose ONE of the organisations that you have nominated. Assess the impact of the work environment on the morale and comfort of personnel. Use examples in your answer.

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QUESTION 11. (Continued)

- (e) For the TWO organisations, compare the management practices that are used to maximise the safety of employees.

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- (f)
 - (i) For the TWO organisations identified, contrast how procedures are used to ensure quality.

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- (ii) For ONE of the organisations, suggest how quality procedures may be improved.

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SECTION III

(15 Marks)

Attempt ONE question.

Answer the question in a *separate* Writing Booklet.

EITHER

QUESTION 12

For any product, system, or environment, a range of factors influence the selection of production techniques or production process.

For a school project you have developed:

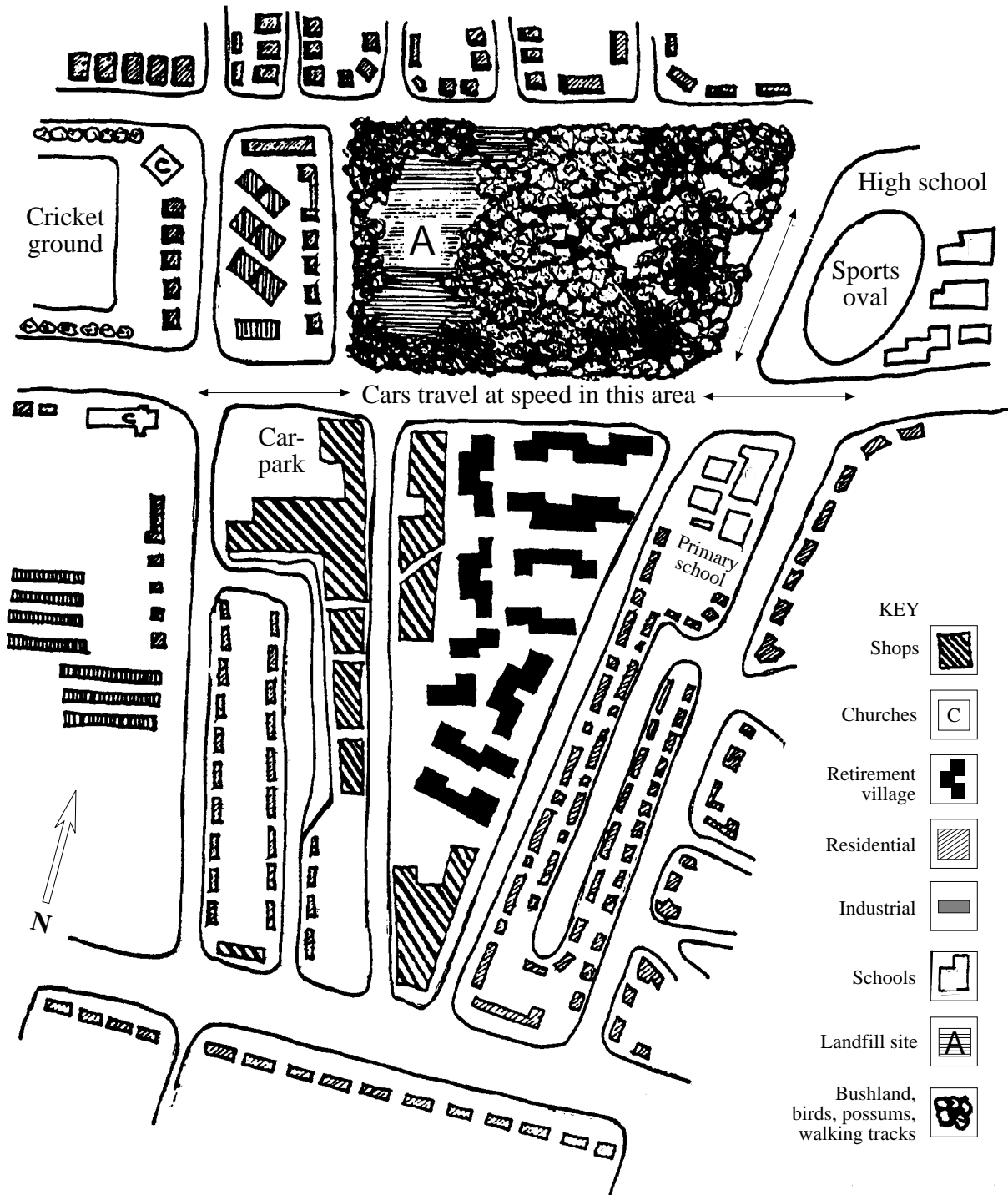
- (a)
 - (i) name the project, and identify a technique or process used during its production or realisation;
 - (ii) explain the factors that should be considered when selecting the technique or process nominated in part (i).
- (b) Assess how the commercial or industrial development of a similar project would influence the selection of this technique or process.
- (c) Discuss the ways in which the introduction of new technologies influences the skills required by workers in the production of products, systems, and/or environments.

OR

QUESTION 13

A local council has rezoned a landfill site (area A) and its surrounding bushland. It is the council's intention that area A and its surrounding bushland could be developed as a recreational facility for the community.

Below is a diagram of the intended site and surrounding area.



QUESTION 13. (Continued)

You are a project developer. You intend to submit a proposal to the council for the development of the area as an outdoor recreational facility for the community.

- (a) Study the diagram on page 10. List the issues and concerns that you would need to consider before planning the development.
- (b) Propose initial design ideas for the site, including bushland, landfill site, and traffic areas. Indicate how this layout, position of facilities, and landscaping of the area will facilitate use by different community groups.

You may use labelled sketches, flowcharts, graphs, and/or descriptions to answer this question. An optional worksheet is provided on page 13. Alternatively, you may use your Writing Booklet, or both. You **MUST** hand in the worksheet, clearly labelled with your Student Number and Centre Number, even if you do not use it.

- (c) Indicate how **THREE** key features of your design in part (b) address the issues and concerns you have identified in part (a).
- (d) Compare and contrast the methods of evaluation of your major design project with methods of evaluation appropriate to this design proposal.

OR

QUESTION 14

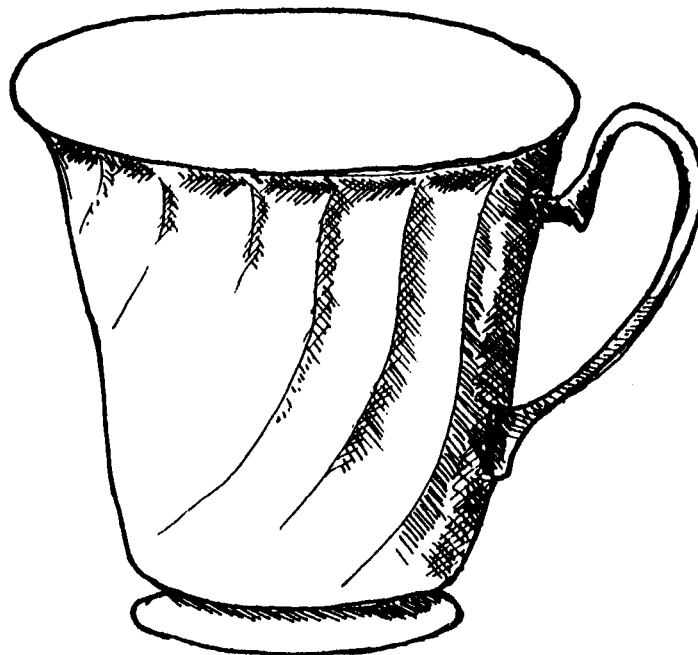
- (a) Communication is a process by which information is shared, transmitted, and recorded.
- (i) List **THREE** forms of communication used in design and production.
 - (ii) Suggest **THREE** criteria for evaluating the success of any method of communication.
 - (iii) Analyse communication forms used in the development of your own major design project, according to the three criteria listed in part (a) (ii).
- (b) A design consultant has been asked to modify the design of the following cup to enhance its use or function for

Either

- young children

Or

- visually impaired people.



Answer the following questions in relation to *EITHER* young children *OR* visually impaired people.

- (i) Identify the criteria to be considered when designing the modification.
- (ii) Describe and discuss at least **TWO** possible modifications.
- (iii) Sketch initial ideas for the new design.
- (iv) Devise and justify an advertising strategy for the new design.

EXAMINER'S USE ONLY

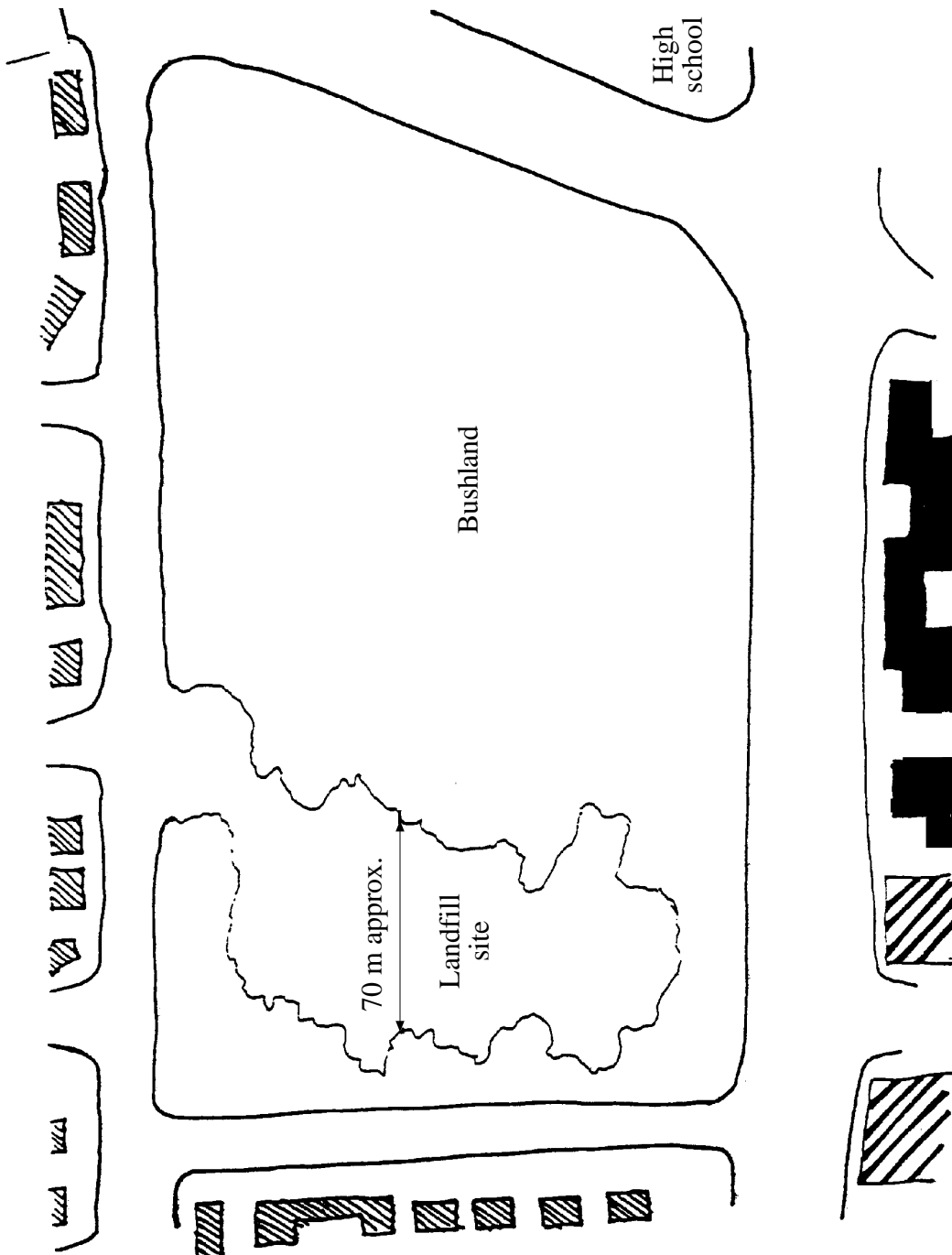
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This worksheet relates to Question 13. This page **MUST** be detached and tied to your Writing Booklet for Question 13, even if you do not use it.

WORKSHEET AREA 'A' AND BUSHLAND



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