

**DESIGN AND APPLIED TECHNOLOGY PAPER 1**  
**Technology, Design and Society**

**SAMPLE PAPER**

Time allowed: 2 hours  
This paper must be answered in English

**Section A** (60 marks)  
Compulsory question.

**Section B** (40 marks)  
Attempt any **TWO** questions in this section.

Write all answers in the answer book.

Not to be taken away before the  
end of the examination session

**Section A - Compulsory question.**

1. **Design Problem – Vehicle Access Control and Toll Collection Facilities**

**ABC** Company operates over 40 open-air and indoor car parks in Hong Kong. The company proposes to update and upgrade the vehicle access control and toll collection facilities in all its car parks.

The company requests your help as a designer to tackle the design problem with particular consideration of the following aspects:

- energy and resources conservation
- promotion of corporate identity and brand building
- improvement of service quality
- construction, installation and maintenance costs



Open-air Car Park



Indoor Car Park

**Figure 1**

You are required to:

- |     |   |            |
|-----|---|------------|
| (a) | analyse the design problem and state the user needs;  | (6 marks)  |
| (b) | consider appropriate constraints, and draw up a design specification;                                   | (6 marks)  |
| (c) | generate and evaluate a range of design ideas;  | (8 marks)  |
| (d) | develop, describe and justify a final solution, and identify appropriate materials and components;      | (8 marks)  |
| (e) | represent and illustrate your final solution using annotated colour sketches;                           | (20 marks) |
| (f) | evaluate your final solution against the design specification and suggest ways for further improvement. | (6 marks)  |

[A total of 6 marks will be awarded for effective communication in this question.]

**Section B - Attempt any two questions in this section.**

2. Figure 2 shows four telephones designed at different times.



Telephone 'A'



Telephone 'B'



Telephone 'C'



Telephone 'D'

**Figure 2**

- (a) Identify one technology-push design feature for each telephone shown in Figure 2. (4 marks)
- (b) With regard to the evolution of telephone design and technology as shown above, identify three ways in which telephones have changed. (6 marks)
- (c) Suggest two technologies that could be incorporated in mobile phone design. (2 marks)
- (d) Suggest one design or technology feature / device that could be used to reduce the impact of each of the following issues relating to mobile phones:
  - (i) personal effects of electro-magnetic waves from a mobile phone;
  - (ii) environmental disposal of toxic components at the end of the life cycle of the mobile phone. (4 marks)
- (e) Describe briefly two ways in which mobile phones have changed the social habits of teenagers. (4 marks)

3. Figure 3 shows four chairs.



Chair 'P'

Gerrit Rietveld, 1917.  
Material: Solid Wood (strip and plank)



Chair 'Q'

Gerald Summers, 1933.  
Material: Plywood (one-piece)



Chair 'R'

Verner Panton, 1960.  
Material: Thermoplastic (one-piece)



Chair 'S'

Philippe Starck, 1984.  
Material: Stainless Steel (tube and sheet)

**Figure 3**

- (a) Chair 'P' represents one of the first explorations by the 'De Stijl' movement in three dimensions.
- (i) List two characteristics of 'De Stijl' designs. (2 marks)
  - (ii) With the aid of annotated sketches, identify two design features of chair 'P'. (4 marks)
- (b) Analyse the materials used and the manufacturing processes with respect to the design of chairs 'Q', 'R' and 'S'. (12 marks)
- (c) With the aid of annotated sketches, state one ergonomic factor related to the design of chair 'Q'. (2 marks)

4. (a) Figure 4 shows two symbols usually found on toys and their packaging.



CE Marking

Figure 4(a)



Age Warning Symbol

Figure 4(b)

- (i) 'CE' is an abbreviation of a French phrase 'Conformité Européene', meaning 'European Conformance/Conformity'. All toys sold within the European Community (EC) must bear the CE marking [Figure 4(a)] to show that they comply with the requirements of the European Safety of Toys Directive.

State three impacts that such legislation would have on Hong Kong companies which want to export their products to the EC. (6 marks)

- (ii) Explain the meaning of the age warning symbol shown in Figure 4(b). Discuss the use of the symbol for age warning labelling on toys in terms of consumer rights protection. (5 marks)

- (b) 'Green design' involves proactively addressing environmental considerations in the earliest stages of the product development process in order to minimise negative environmental impacts throughout the product's life cycle.

Discuss how the practice of green design can affect a manufacturer in terms of:

- (i) product development;
- (ii) customer satisfaction and retention;
- (iii) social responsibility.

(9 marks)

**END OF PAPER**