DESIGN AND TECHNOLOGY

Written examination

Friday 7 November 2003
Reading time: 11.45 am to 12.00 noon (15 minutes)
Writing time: 12.00 noon to 1.30 pm (1 hour 30 minutes)

QUESTION AND ANSWER BOOK

Structure of book

<table>
<thead>
<tr>
<th>Section</th>
<th>Number of questions</th>
<th>Number of questions to be answered</th>
<th>Number of marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>3</td>
<td>36</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>5</td>
<td>62</td>
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<td></td>
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<td>Total 98</td>
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• Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners and rulers, coloured pencils, markers, a shape template and a female human figure template and a male human figure template (fibres/yarn fabrics students).
• Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.
• No calculator is allowed in this examination.

Materials supplied
• Question and answer book of 15 pages with a detachable Design Brief Insert in the centrefold.

Instructions
• Detach the Design Brief Insert from the centre of this book during reading time.
• Write your student number in the space provided above on this page.
• You may use diagrams, notes or sketches to help explain your answers.
• All written responses must be in English.

At the end of the examination
• You may keep the detached Design Brief Insert.

Students are NOT permitted to bring mobile phones and/or any other electronic communication devices into the examination room.
Question 1
Select one of the following types of material and indicate your selection (A–F) in the box provided.
A. knitted cotton lycra
B. radiata pine
C. polystyrene
D. terracotta
E. soda-lime-silica glass
F. aluminium

a. i. Name a product that could be made from your selected material.

ii. Briefly describe the product’s intended use.

b. Name two properties of the selected material. Give reasons why each property is important for the named product.

<table>
<thead>
<tr>
<th>Properties of materials</th>
<th>Reasons for selection</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
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<tr>
<td>2</td>
<td>2</td>
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</table>
c. i. If your selected material was unavailable, what other material could you substitute to make your product?

____________________________________________________________________________________

ii. Explain the consequences of using the substitute material.

____________________________________________________________________________________

____________________________________________________________________________________

1 + 2 = 3 marks

d. The properties of a material and its availability are two factors a designer would need to consider if this product was to be manufactured. Name two other factors that may affect or influence the designer.

Factor 1 ________________________________________________________________

Factor 2 ________________________________________________________________

2 marks
Question 2
An outdoor leisure store is about to introduce a range of barbeques. The management has asked you, the marketing manager, to develop a marketing plan for the barbeques illustrated below.

A.  

B.  

C.  

D.  

E.  

$2000  

$1500  

$275  

$150  

$75  

$75
Select one of the barbeques (A–E) and indicate your selection in the box below.

Use the selected barbeque to answer the following questions.

Show how the barbeque you have selected addresses the following key marketing elements.

a.  i.  People
    Who is the potential target group for your selected barbeque? Explain your choice.

ii.  Product
    What is this potential target group looking for when buying a barbeque? Explain two of their needs/wants. Describe the design features of the selected barbeque that will satisfy their needs and wants.

<table>
<thead>
<tr>
<th>needs/wants</th>
<th>features of the barbeque</th>
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<td>1</td>
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<td>2</td>
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</table>

4 marks
b. Promotion
   i. Name one promotion method that would suit the potential target group.

   ii. Discuss the positive and negative aspects of this method of promotion.
       Positive aspects

       Negative aspects

   1 + 4 = 5 marks

c. After being on the market for 12 months, the sales for your selected barbeque are very low. Discuss two reasons which may be causing the low number of sales.

   2 marks
**Question 3**
Mobile phones have a ‘planned obsolescence’.

**a.** Explain what is meant by planned obsolescence.

**b.** Discuss some of the benefits and problems to **consumers** in the planned obsolescence of mobile phones.

**benefits**

**problems**

**c.** Discuss some of the benefits and problems to **companies** in the planned obsolescence of mobile phones.

**benefits**

**problems**

**d.** Discuss some of the **environmental** problems associated with planned obsolescence.

**END OF SECTION A**

**TURN OVER**
SECTION B

Instructions for Section B
Select one of the design briefs provided in the Design Brief Insert. Answer questions 4–7 for only one design brief.

Selected brief ____________________________________________

Selected material __________________________________________

Question 4
List two important specifications in the brief. For each specification develop an evaluation criteria (in question form). Justify the importance of each criterion. Explain how you would test or check the specification when the product is completed.

a. Specification one

   i. Evaluation criteria

   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________

   ii. Justification

   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________

   iii. Test or method of checking

   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________

1 + 2 + 2 = 5 marks
b. Specification two

   i. Evaluation criteria

   ii. Justification

   iii. Test or method of checking

   \[ 1 + 2 + 2 = 5 \text{ marks} \]
Question 5

Annotated Design Brief

Design your product in the space provided below. You must pay particular attention to the following.

- clarity and detail of drawing: 6 marks
- suitability for the product’s intended function: 3 marks
- clear annotation that satisfies the brief specifications: 3 marks
- aesthetic appeal: 3 marks
- innovation/creativity of design: 3 marks

18 marks
Question 6

Tick the material category used in your design.

- [ ] wood/metal/plastics
- [ ] fibres/yarn fabrics
- [ ] ceramics/glass

a. i. Name a specific material used in your design.

ii. Explain what makes this material suitable for the product you have designed.

b. Name and draw two complex processes that would be used in your design in the spaces provided. Explain where and why each process would be used.

| i. Drawing 1 | Name of complex process ____________________________ |
| | ii. Where you would use it ____________________________ |
| | iii. Why you would use it ____________________________ |

1 + 2 = 3 marks

2 + 1 + 1 = 4 marks
| i. Drawing 2 | Name of complex process ____________________________ |
| ii. Where you would use it __________________________ |
| ii. Where you would use it __________________________ |
| ii. Where you would use it __________________________ |
| iii. Why you would use it __________________________ |
| iii. Why you would use it __________________________ |
| iii. Why you would use it __________________________ |

$2 + 1 + 1 = 4$ marks
Question 7
Use the headings below to discuss the possible environmental impacts of the product you have designed for Question 5.

i. Sourcing and processing of the materials from which the product is made

ii. Manufacturing processes

iii. Transport

iv. Use of the product

v. Disposal of the product

2 + 2 + 2 + 2 + 2 = 10 marks
**Question 8**  
Before production of any product commences research and development should be conducted.

Name a product ____________________________

**a.** Discuss what type of research and development could be conducted prior to mass-producing this product.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

3 marks

**b.** For this product, **graphically** represent the stages of the product cycle. Indicate the processes involved for each stage.

6 marks
c. This product could be produced by the following production methods.
   - one off
   - mass

   Explain the advantages and disadvantages of using **one** of these production methods for the product you have named.

   Selected production method

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<th>Advantages</th>
<th>4 marks</th>
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<th>Disadvantages</th>
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Rock Bay Shire Council

Designs for the ‘Rock Bay Junior Games’

The Rock Bay Shire Council is to stage its first ‘Junior Games’ for April 2004. The Games will be an annual major sporting spectacular planned by the shire council to involve all local primary schools. The Games are to be staged outdoors in a park.

Submissions are invited from young designers for a variety of designs for the Rock Bay Games. In particular the submission requires the design of three distinct products.

- temporary seating
- uniforms for event officials
- a fountain as a symbol of unity

The design of the products must

- be suitable for their intended function
- be innovative in design
- capture the fun and light-hearted atmosphere of the event.

Rock Bay Shire Council is an equal opportunity employer
Wood/Metal/Plastics – Collapsible seating for spectators
Temporary outdoor seating is needed for spectators at the Rock Bay Junior Games. The image created by the seating will contribute to the atmosphere of the entire games.
Each unit of seating must
• be easily assembled and dismantled by one or two people
• utilise minimal storage when collapsed and stored
• comfortably seat at least 4 children or 3 adults. Size should not exceed 1800 mm length × 550 mm depth × 800 mm height (including any back rest)
• be suitable for all weather conditions with an easy care finish for cleaning
• be sturdy and stable when set up on uneven ground.

Fibres/Yarn fabrics – Uniform for event officials
A uniform is required for officials to be easily identified. The image created by the uniform will contribute to the atmosphere of the entire games.
• Events will be held outdoors, so uniforms will need to cater for and be adaptable to a wide range of climatic conditions.
• The officials need to look and be comfortable throughout a full day of activities. The garments will need to allow for a degree of flexibility of movement.
• Garments need to be made from easy care fabrics that can be laundered overnight and must withstand active wear and tear.
• Officials are required to carry with them a varied collection of whistles, pens, stopwatches and so on. The garments should include some method of containing these items.
• Uniforms are to display creative styling and use of fabrics and also show a thematic use of colour.

Ceramics/Glass – Fountain of unity
A design for the ceremonial fountain with a theme of unity is required. The fountain will be a highlight of the opening ceremony. The fountain will remain as a permanent fixture in the park.
• The structure will require a cavity 500 mm × 500 mm × 500 mm within the fountain to house the electrical pump and filtration equipment (you are not required to install this equipment).
• The council maintenance workers will require access to the electrical equipment, mains water and filtration system.
• The fountain base should occupy a space no larger than 1.2 m long × 1.2 m wide but there is no restriction on height.
• The fountain is to reflect the fun aspect of the event. It should also show how the event will bring the whole community together in friendly competition.
• The design should consider the finish of the materials to minimise any possibility of defacing the fountain.

END OF DESIGN BRIEF INSERT