

Write your name here

Surname

Other names

Centre Number

Candidate Number

Edexcel GCE

Design and Technology

Product Design: Graphic Products

Advanced

Unit 3: Designing For The Future

Tuesday 4 June 2013 – Morning

Time: 2 hours

Paper Reference

6GR03/01

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches it must be dark (HB or B). Coloured pens, pencils and highlighter pens must not be used.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*

Information

- The total mark for this paper is 70.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
– *you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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PEARSON

Answer ALL the questions. Write your answers in the spaces provided.

1 Sustainability is a major feature of modern packaging design and manufacture.

(a) State **four** ways in which packaging is designed with recycling in mind.

(4)

1

2

3

4



Figure 1 shows a reusable liquid detergent bottle.

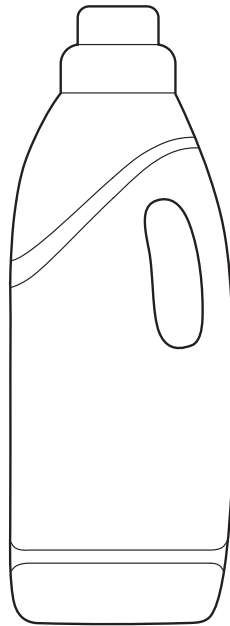


Figure 1

(b) Discuss the benefits of producing reusable packaging.

(4)

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(c) Explain **two** advantages and **one** disadvantage of using the biodegradable polymer Biopol® for the manufacture of the reusable liquid detergent bottle.

(6)

Advantage 1

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Advantage 2

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Disadvantage

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(Total for Question 1 = 14 marks)



2 Information and communication technology (ICT) is widely used in the design, manufacture and retail of products.

(a) Outline how computer aided design (CAD) could assist the designer during the creative and technical design of products.

(4)

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(b) Explain **two** ways electronic point of sale (EPOS) can assist the retailer.

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(c) Explain how motion capture is used to create digital special effects during film making.

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(Total for Question 2 = 12 marks)



3 (a) New technologies have transformed products in innovative ways.

Smart glass is often used in the glazing of buildings.

Discuss the benefits of using smart glass in this application.

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(b) Mass production has had an impact on employment.

Outline the negative effects of mass production on employees.

(3)

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(Total for Question 3 = 6 marks)



- 4 (a) Multinational companies often manufacture products 'offshore' in developing countries.

Outline the advantages and disadvantages, to developing countries, of multinationals using offshore manufacturing.

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- (b) Wind turbines are increasingly being used as a means of energy production.

Discuss the use of wind energy for producing electricity in the UK.

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- (c) In an attempt to reduce carbon emissions, transport and distribution companies are using alternative fuels.

Discuss the use of alternative fuels instead of traditional fossil fuels for distribution companies.

(6)

(Total for Question 4 = 14 marks)



- 5 Figure 2 and Figure 3 show interior designs by Charles Rennie Mackintosh (Art Nouveau) and Philippe Starck (post-modernism).



Figure 2
Charles Rennie Mackintosh interior



Figure 3
Philippe Starck interior



Discuss how the designers have been influenced by the style and design philosophy of their movements. You may refer to Figure 2 and Figure 3 as a starting point for your answers.

***(a) Charles Rennie Mackintosh interior (Figure 2)**

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(b) Philippe Starck interior (Figure 3)

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(Total for Question 5 = 8 marks)



6 (a) Figures 4 and 5 show open-loop and closed-loop control system flow charts.

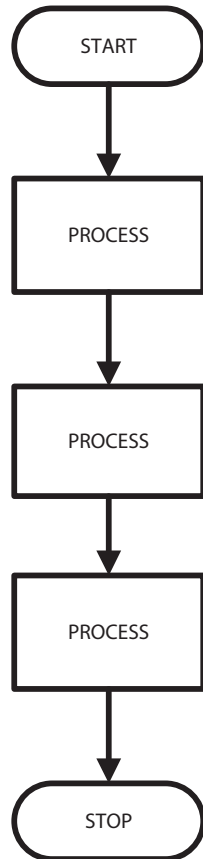


Figure 4
Open-loop control system

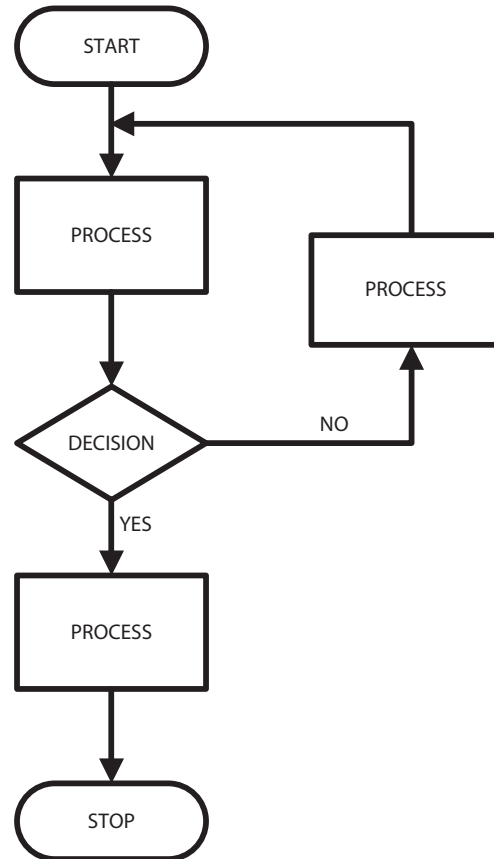


Figure 5
Closed-loop control system

Discuss the suitability of an open-loop system in the manufacture of products.

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(b) An aspect of computer integrated manufacture (CIM) is product data management (PDM).

Describe how PDM reduces the time to market of a product.

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* (c) Evaluate the use of flexible manufacturing systems (FMS) in the manufacture of products.

(8)

Dotted lines for answer writing.

(Total for Question 6 = 16 marks)

TOTAL FOR PAPER = 70 MARKS



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