

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

Wednesday 13 June 2012 – Afternoon

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** Designers need to consider key ergonomic factors when developing products for computer operators.



- (a) Describe how an adjustable chair can reduce back pain when working at a computer.

(2)

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(b) Complete the table below by:

- identifying **one** risk to the user when operating the piece of computer equipment
- explaining how the use of ergonomic design can overcome this risk.

Equipment	Risk	Use of ergonomic design
Keyboard	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p style="text-align: right;">(1)</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p style="text-align: right;">(2)</p>
Monitor	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p style="text-align: right;">(1)</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p style="text-align: right;">(2)</p>

(Total for Question 1 = 8 marks)



2 Manufacturers frequently ask designers to build obsolescence into their products.

(a) Explain the term 'built-in obsolescence'.

(2)

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5 Advanced manufacturing systems often include automated guided vehicles (AGVs).

(a) Name the type of feedback system used in automated guided vehicles (AGVs). (1)

(b) Describe **one** type of guidance system used in automated guided vehicles (AGVs). (3)

(c) Explain **two** ways in which concurrent manufacturing enables quick response manufacturing (QRM). (4)

1

2

(Total for Question 5 = 8 marks)



6 Life cycle assessment (LCA) is used to assess the impact of a product 'from the cradle to the grave'.

(a) Discuss the environmental impact of producing the polymer casing of a new mobile phone with specific reference to:

(i) Raw materials

(3)

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(ii) Manufacture

(3)

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(b) Explain, with reference to a mobile phone, how 'repair versus replacement' can have a positive environmental impact.

(2)

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(Total for Question 6 = 8 marks)



7 When designing a new product the question 'is it worth doing?' should be frequently asked.

(a) Outline the economic issues raised by this question for commercial designers and manufacturers.

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* (b) Discuss the **advantages** to the manufacturer of using the internet for marketing a product.

(4)

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(Total for Question 7 = 8 marks)



