

Write your name here

Surname

Other names

Pearson
Edexcel GCE

Centre Number

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Candidate Number

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Design and Technology

Product Design: Graphic Products

Advanced

Unit 3: Designing for the Future

Friday 10 June 2016 – 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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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PEARSON

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

1 Automatic guided vehicles (AGVs) are often used within modern manufacturing systems.

(a) Name **two** types of AGV.

(2)

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(b) Outline the key features of AGV guidance systems.

(4)

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(Total for Question 1 = 6 marks)

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2 Ergonomics are an important consideration when designing products.

(a) Explain what is meant by the term 'ergonomics'.

(2)

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(b) Explain **two** ways that products can be designed ergonomically to suit a range of different users.

(4)

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Figure 1 shows the handset controller for a games console.

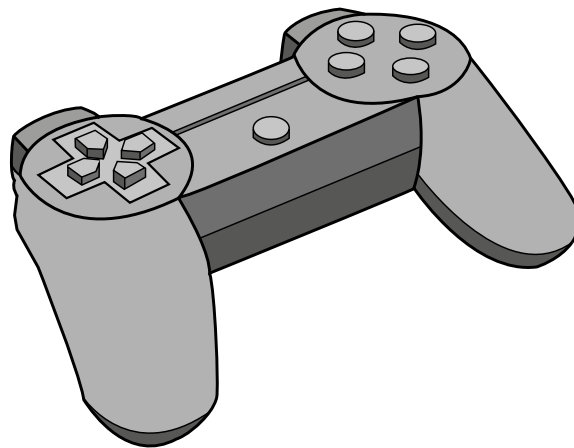


Figure 1

(c) Explain **three** ergonomic features of the handset controller shown in Figure 1.

(6)

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(Total for Question 2 = 12 marks)

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4 Information and communication technology (ICT) is widely used in design and manufacturing.

(a) Name **one** form of rapid prototyping.

(1)

(b) Describe **two** advantages of virtual modelling compared with rapid prototyping.

(4)

1

2

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5 Many developing countries host 'offshore' manufacturing facilities for multinational companies.

(a) Discuss the benefits to a developing country of hosting the manufacturing facilities of a multinational company.

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(b) Explain **two** disadvantages for a multinational company of having its manufacturing facilities in a developing country.

(4)

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(Total for Question 5 = 8 marks)



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QUESTION 6 BEGINS ON THE NEXT PAGE.



6 Figure 2 and Figure 3 show chairs by famous designers who were influential in their design movements.



Eileen Gray's 'Bibendum' chair
(Art Deco movement)

Figure 2



Marcel Breuer's 'Wassily' chair
(Bauhaus modernist movement)

Figure 3

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) Eileen Gray's 'Bibendum' chair (Figure 2).

(4)

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(b) Marcel Breuer's 'Wassily' chair (Figure 3).

(4)

(Total for Question 6 = 8 marks)



P 4 6 5 9 4 A 0 1 1 1 6

7 Genetic engineering is often used in the production of timber for the paper and board industry.

(a) Explain what is meant by genetic engineering in timber production.

(2)

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*(b) Evaluate the use of genetically modified wood in paper and board production.

(8)

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(Total for Question 7 = 10 marks)



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8 Energy is used by industry for all stages of production.

(a) Explain **one** way that a company could reduce energy wastage during the manufacturing process.

(2)

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*(b) Evaluate the use of nuclear power for the UK's future energy needs.

(8)

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(Total for Question 8 = 10 marks)

TOTAL FOR PAPER = 70 MARKS



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