

Write your name here	
Surname	Other names
Centre Number	Candidate Number
<input type="text"/>	<input type="text"/>
Edexcel GCE	
Design and Technology	
Product Design: Graphic Products	
Advanced	
Unit 3: Designing for the Future	
Thursday 23 June 2011 – Afternoon Time: 2 hours	Paper Reference 6GR03/01
You do not need any other materials.	Total Marks
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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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Answer ALL the questions. Write your answers in the spaces provided.

- 1** Carrier bags are a major concern to wildlife and the environment. The table indicates three types of carrier bag in common use.

Complete the table by identifying **one** environmental advantage and **one** environmental disadvantage for each carrier bag.

Type of Carrier bag	Advantage	Disadvantage
Paper carrier bag	(1)	(1)
Plastic carrier bag	(1)	(1)
Eco friendly plastic carrier bag	(1)	(1)

(Total for Question 1 = 6 marks)



2 (a) Discuss the **advantages** of biotechnology in the production of paper and board.

(4)

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(b) An important feature of timber production is sustainable forest management.

Outline the environmental impact that is caused by deforestation.

(6)

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(Total for Question 2 = 10 marks)



3 Renewable and non-renewable sources of energy are a major concern for a sustainable future.

(a) Discuss the **advantages** of using coal as a source of energy.

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(b) Discuss the **disadvantages** of using solar power as a source of energy.

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(c) Outline the role of the Non-Fossil Fuel Obligations (NFFO) in United Kingdom energy planning.

(2)

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(Total for Question 3 = 12 marks)



4 The use of computers in manufacturing systems has had a considerable impact upon manufacturing industries.

(a) Outline the impact on employment of computer integrated manufacturing (CIM) systems in manufacturing industries.

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* (b) Discuss how the just-in-time (JIT) system is used to achieve lean manufacturing in industry.

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(Total for Question 4 = 9 marks)





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5 The introduction of information and communication technology (ICT) has had considerable benefits for industrial and commercial practices.

(a) Discuss the **advantages** of using Electronic Data Interchange (EDI) for transmitting data between companies.

(3)

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(b) Rapid prototyping (RPT) is used in the development of new products.

Describe how a prototype would be made using **one** of the following rapid prototyping processes:

- Laser Object Modelling (LOM)
- Stereolithography
- Solid ground curing
- Selective Laser Sintering (SLS)

(5)

Chosen process

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(Total for Question 5 = 8 marks)



6 The development of products has been influenced by a range of design movements.

(a) Outline the main characteristics of **one** of the following design movements:

- Art Deco
- Art Nouveau

(4)

Chosen design movement

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(b) Discuss the ways in which the work of Raymond Loewy has contributed to modern industrial design.

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(Total for Question 6 = 9 marks)



7 The form of a product is often influenced by its function.

(a) Explain **one** reason why the streamlining of vehicles will make them more energy efficient.

(2)

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(b) Figure 1 and Figure 2 below show two different vehicles.



Figure 1



Figure 2

Using the two examples in Figure 1 and Figure 2, evaluate how the designers have considered form and function as part of their design criteria.

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(Total for Question 7 = 8 marks)



*8 Evaluate, using both advantages and disadvantages, the use of robotic arms in manufacturing industries.

(Total for Question 8 = 8 marks)

TOTAL FOR PAPER = 70 MARKS

