

Write your name here

Surname

Other names

Centre Number

Candidate Number

Edexcel GCSE

Design and Technology: Graphic Products

Unit 2: Knowledge and Understanding of Graphic Products

Friday 10 June 2011 – Afternoon
Time: 1 hour 30 minutes

Paper Reference

5GR02/01

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 80.
- 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.

For each question 1 to 10, choose an answer A, B, C or D. Put a cross in the box indicating the answer you have chosen . If you change your mind about an answer, put a line through the box and then mark your new answer with a cross .

1 A model of a new house is to be made by an architect.

The appropriate scale of production would be:

- A one-off
- B batch
- C mass
- D continuous

(Total for Question 1 = 1 mark)

2 A limited edition version of a computer games console is to be produced.

The appropriate scale of production would be:

- A one-off
- B batch
- C mass
- D continuous

(Total for Question 2 = 1 mark)

3 Which **one** of the following is extremely brittle and can be easily cracked?

- A Expanded polystyrene (EPS)
- B Acrylic
- C Polypropylene (PP)
- D Polyvinyl chloride (PVC)

(Total for Question 3 = 1 mark)

4 Which **one** of the following is classified as a composite material?

- A Jelutong
- B Balsa
- C Medium density fibreboard (MDF)
- D Pine

(Total for Question 4 = 1 mark)



5 Which **one** of the following processes would be suitable for printing a promotional T-shirt?

- A Photocopying
- B Flexography
- C Gravure
- D Screenprinting

(Total for Question 5 = 1 mark)

6 Which **one** of the following adhesives would be the most suitable for joining 'unlike' materials such as pine and acrylic?

- A Epoxy resin
- B Polystyrene cement
- C Tensol® cement
- D Polyvinyl acetate (PVA)

(Total for Question 6 = 1 mark)

7 A relatively inexpensive and easy to fold board is needed to package frozen foods.

The most suitable type of board would be:

- A solid white board
- B corrugated board
- C folding boxboard
- D foil-lined board

(Total for Question 7 = 1 mark)

8 Which **one** of the following statements best describes the 'performance' of a product?

- A The scale of production
- B The technical considerations that must be achieved within the product
- C The qualities that make the product attractive to potential users
- D The shape and style of the product

(Total for Question 8 = 1 mark)



9 Thermochromic liquid crystals react to changes in temperature.

What type of materials are they?

- A Polymorph
- B Composite
- C Smart
- D Polymers

(Total for Question 9 = 1 mark)

10 The '4Rs' are concerned with minimising waste production. Which one of the '4Rs' has the most significant impact on the conservation of the earth's finite resources?

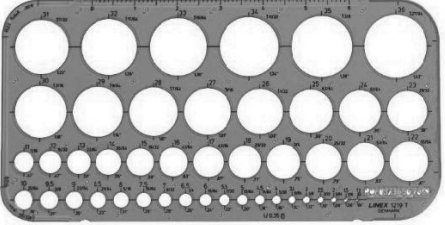
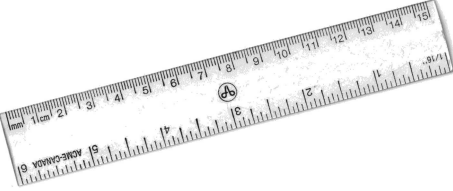


- A Recycling materials
- B Reducing the use of materials and energy
- C Recovering energy from waste
- D Reusing materials where applicable

(Total for Question 10 = 1 mark)



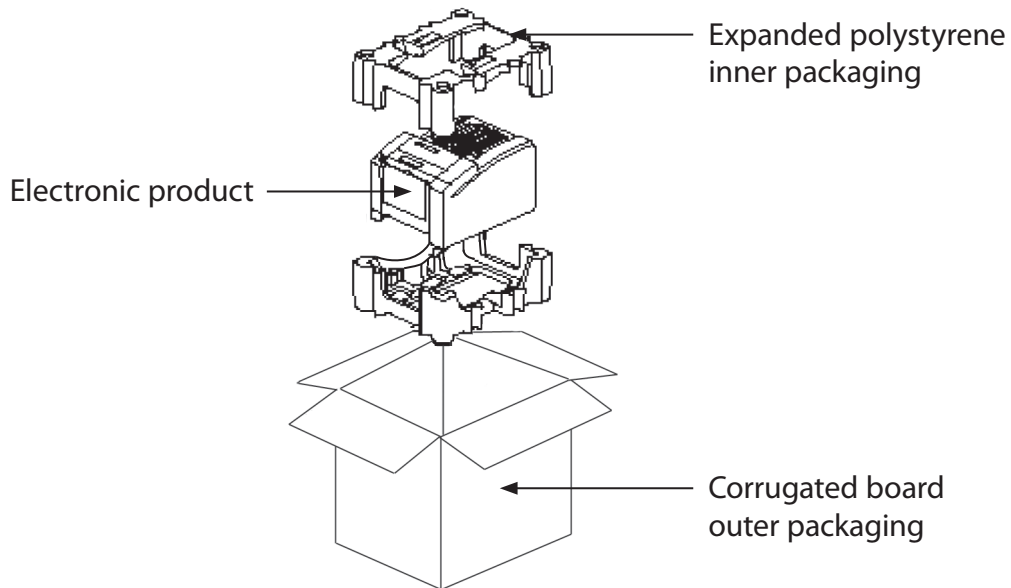
11 (a) The table below shows some tools and equipment.

Complete the table below by giving the missing names and uses.

Tools/Equipment	Name	Use
	Circle template	(1)
	Ruler	(1)
		To apply a layer of polyethylene to paper and card (1)
		To hand-draw images on a computer (1)



(b) The drawing below shows the packaging for an electrical product.



The packaging consists of expanded polystyrene and corrugated board.

- (i) Give **one** property of expanded polystyrene that makes it suitable for packaging electrical products.

For your property, give **one** reason for your answer.

(2)

Property

Reason

- (ii) Give **one** property of corrugated board that makes it suitable for packaging electrical products.

For your property, give **one** reason for your answer.

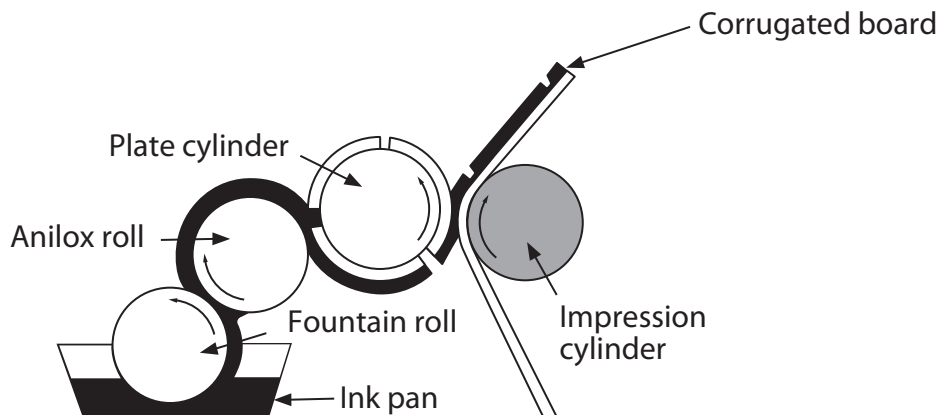
(2)

Property

Reason



(c) The diagram below shows the flexography printing process.



(i) The flexography process is to be used to print graphics onto the corrugated board.

Give **three** reasons for the use of flexography for printing the graphics.

(3)

- 1
- 2
- 3

(ii) Explain **one** reason why gravure is **not** used for printing the graphics onto the corrugated board.

(2)

-
-
-



(d) The picture below shows a Tetra Pak™ juice carton.



The juice carton is made from a packaging laminate consisting of paperboard, aluminium foil and polyethylene.

For each material, explain **one** reason why it is part of the laminate in the juice carton.

(i) Paperboard

(2)

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(ii) Aluminium foil

(2)

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(iii) Polyethylene

(2)

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(Total for Question 11 = 19 marks)



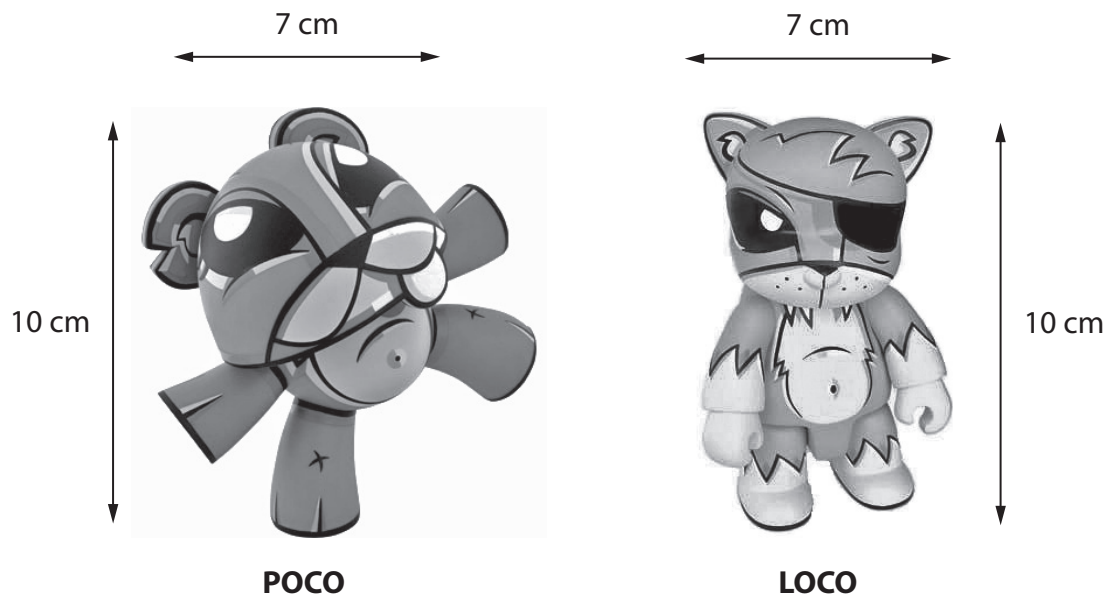
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Turn over for question 12



12 A manufacturer requires a commercial package suitable for two cartoon action figures.

The pictures below show the two cartoon action figures called POCO and LOCO.



The specification for the commercial package is that it must:

- contain two cartoon action figures
- hold both figures securely whilst in transit
- allow both figures to be clearly visible within the package
- display the names of the two cartoon figures
- allow the package to either hang on racks or stack on shelves for display
- allow customers to easily remove the figures from the package
- be manufactured using appropriate materials
- be manufactured using processes suitable for mass production.

In the spaces opposite, use sketches and, where appropriate, brief notes to show **two different** design ideas for the commercial package that meet the specification points above.

Candidates are reminded that if a pencil is used for diagrams/sketches it must be dark (HB or B).

Coloured pens, pencils and highlighter pens must **not** be used.

PLEASE DO NOT WRITE OR DRAW IN THIS SPACE.

PLEASE USE THE SPACES OPPOSITE FOR YOUR DESIGNS.



Design idea 1

(8)

Design idea 2

(8)

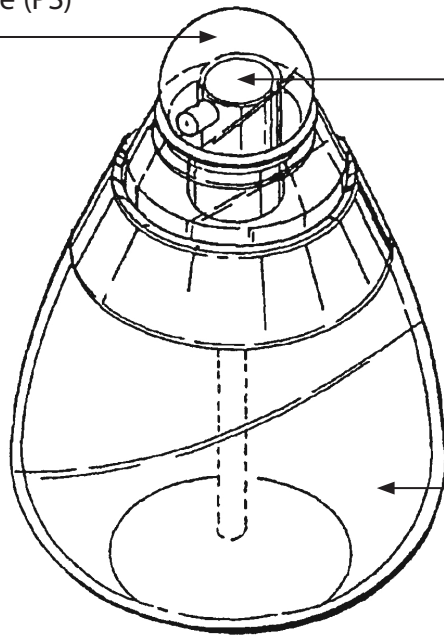
(Total for Question 12 = 16 marks)



13 The drawing below shows a perfume bottle.

Transparent polystyrene (PS)
injection moulded lid

Atomiser system



Glass bottle



(a) Give **two** properties of glass that make it a suitable material for perfume bottles.

For each property, justify your answer.

(4)

Property 1

Justification

Property 2

Justification

(b) Explain **one** reason why injection moulding is suitable for manufacturing the polystyrene (PS) lid.

(2)



(c) Explain why the perfume bottle is successful at meeting the following specification points:

(i) containing the perfume.

(2)

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(ii) dispensing the perfume.

(2)

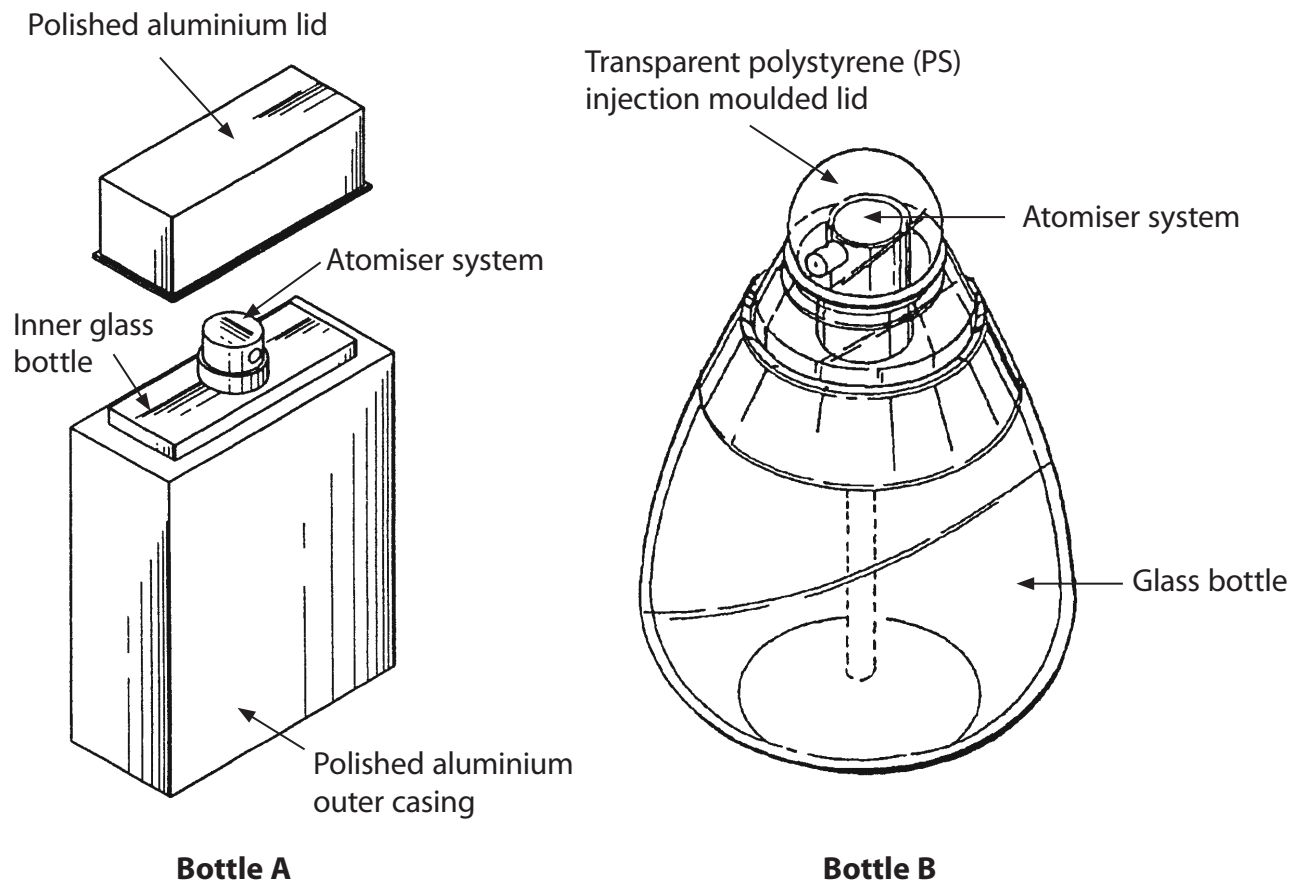
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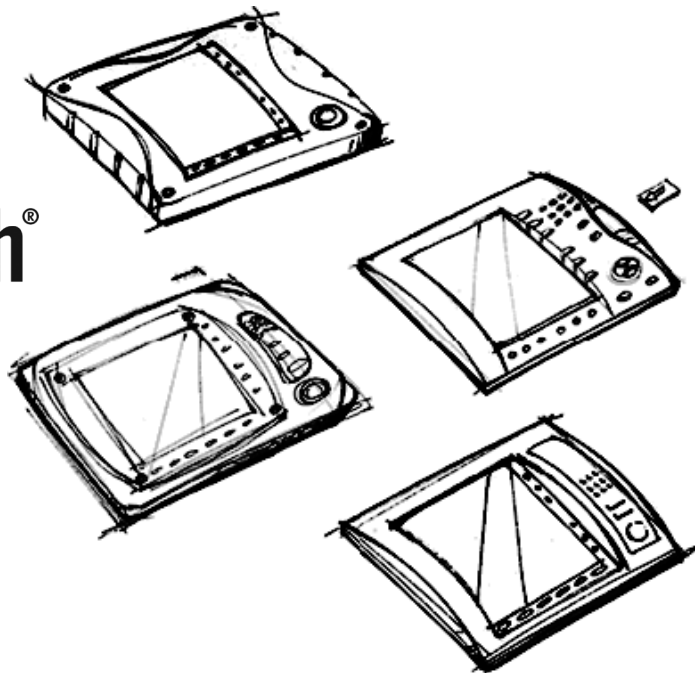
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*(d) Bottles A and B below show two different designs for perfume bottles.



14 (a) The drawings below show a student's development sketches for a Bluetooth® device.



(i) The sketches were drawn on tracing paper.

Give **one** benefit of using tracing paper when developing designs.

(1)

(ii) The final presentation drawing was drawn on cartridge paper.

Give **two** reasons for producing the final drawing on cartridge paper.

(2)

1

2



(b) Bluetooth® devices make use of wireless personal-area networks (PAN) or piconets.

Describe **four** features of a Bluetooth® wireless personal-area network.

(4)

1

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2

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3

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4

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(c) The picture below shows a flat-screen liquid crystal display (LCD) television.



(i) Explain **two** benefits to the environment of an LCD television.

(4)

1

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2

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(ii) The LCD television is capable of receiving and playing high definition (HD) TV.
Explain **one** advantage of HD TV compared with standard digital television.

(2)

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* (d) Transdermal prescription drug patches are becoming a more popular way of taking medication.

Discuss the benefits of using transdermal patches rather than other methods of giving patients a prescribed medication.

(6)

(Total for Question 14 = 19 marks)

TOTAL FOR PAPER = 80 MARKS



P 3 8 3 8 9 A 0 1 9 2 0

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