

Surname	Centre Number	Candidate Number
Other Names		0



GCSE

4101/01

DESIGN & TECHNOLOGY

UNIT 1

FOCUS AREA: GRAPHIC PRODUCTS

A.M. FRIDAY, 25 May 2012

2 hours

	Leave Blank
Question 1	
Question 2	
Question 3	
Question 4	
Question 5	
Question 6	
Question 7	
Question 8	
TOTAL MARK	

ADDITIONAL MATERIALS

You will need basic drawing equipment, coloured pencils and a calculator for this examination.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. Where the space is not sufficient for your answer, continue at the back of the book, taking care to number the continuation correctly.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

Section A*Marked out of 60 60 minutes*

1. This question is about Product Analysis. It is worth a total of 15 marks.

The photographs show a box for a children's craft kit that is to be sold by a chain of department stores.

The questions that follow are about the box.



- (a) The box is made from 500 micron duplex folding boxboard.
Describe **one** physical property of this material that makes it the most suitable material for the package. [2]

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(b) State **one** quality issue relating to the box. [1]

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(c) The box has been designed to appeal to the target market and the duplex folding boxboard has been used in a particular way. Describe in detail the target market that would find this product appealing. [2]

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(d) Thousands of boxes are to be made using batch production.
Explain why this is the most suitable scale of production for the thousands of boxes. [2]

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(e) Explain in as much detail as you can, why the information panels would be glued on to the front and back of the box. [2]

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(f) The box has been made so that it folds up and stays together without the use of glue.
Explain why this has been done. [2]

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- (g) The table below shows a breakdown of the cost of designing and die cutting a batch of boxes.

<i>Stage in Making</i>	<i>Percentage of the Cost</i>
Designing the box	20%
Designing the die	30%
Making the die	30%
Setting up the die cutter	10%
Cutting out the boxes	10%

Use the information in the table to answer the question that follows.

- (i) Making the die costs £165. Calculate the total cost of designing the box and die cutting the batch of boxes.
Show all your workings. [2]

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- (ii) The card to make a batch of 1000 boxes costs £195. Calculate the total cost of designing and making **one** box.
Show all your workings. [2]

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2. This question is about the general issues of Design and Technology. It is worth a total of 10 marks.

(a) Place a **tick (✓)** alongside the correct statement of what the British Standards Institution (BSI) does. [1]

The BSI checks that all products are of good quality.

The BSI sets standards for products and services.

(b) Complete the full number of the British Standard for Drawing Practice. [2]

BS

(c) State the full name of the ISO. [2]

I S O

(d) Designers think about the SIX 'Rs': Rethink, Reuse, Recycle, Repair, Reduce, Refuse.

(i) Below are the meanings of two of the 'Rs'. State the 'R' that matches each of the meanings.

<i>Meaning</i>	<i>'R'</i>
Don't buy a product if you don't need it.
Take an existing product that is no longer wanted and make use of it for another purpose without reprocessing it.

[1]

[1]

(ii) A yogurt package is shown below.



Explain the environmental reasons why the manufacturer makes the package in this way. [3]

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4. This question is about the Design Process and how it is used. It is worth a total of 25 marks.

(a) The design and make process used in Design and Technology includes the stages listed below.

Two have been missed out. Insert the names of the missing stages. [2]

<i>Design Process Stages</i>	
1	Analysis of the task
2	Design specification
3
4	Development and modelling
5	Final solution – graphical presentation
6	Final solution – technical details
7
8	Making
9	Evaluation
10	Improvements

(b) Development is part of the design process. Explain why developing the construction of the final product is important. [2]

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(c) Explain how the Design Specification helps when evaluating the product at the end of the design process. [3]

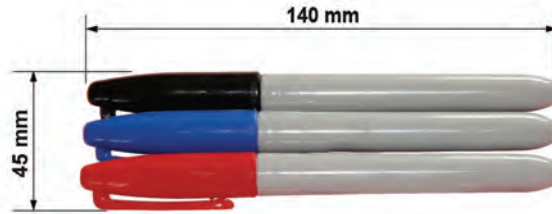
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- (d) A manufacturer of felt tip pens plans to sell pens in sets of three as shown below. The length and width of the three pens is shown. The diameter of each of the pens is 13mm. The manufacturer needs a package for the three pens.



Design a package that:

- uses sustainable and recycled materials;
- is as small as possible but holds the three pens shown;
- allows the colours of the pens to be seen;
- is easy to open and can securely close;
- is able to be made from a one piece net.

Draw and annotate your design for the box in the spaces below.

Marks will be awarded for:

- | | |
|--|-----|
| (i) showing the sizes of the package; | [3] |
| (ii) allowing the colours of the pens to be seen; | [2] |
| (iii) showing a method of easily opening and securely closing the package; | [3] |
| (iv) stating the sustainable materials to be used to make the package; | [2] |
| (v) showing a useable one piece net for the package; | [5] |
| (vi) the quality of the communication. | [3] |

Draw the complete package, show its size and how the colours of the pens can be seen.

Draw the method of easily opening and securely closing the package.

State the names of the materials that would be used to make the package.

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Draw a fully detailed and useable **one** piece net for the package.




Section B

Marked out of 60 60 minutes

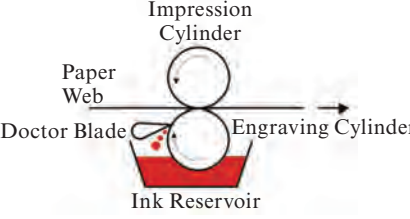
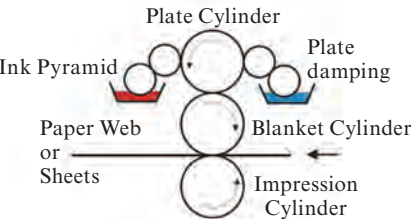
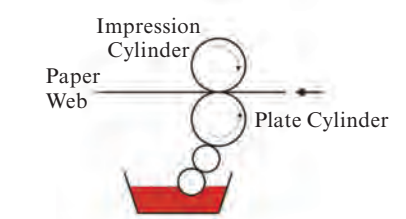
5. This question is about Commercial Manufacturing Processes. It is worth a total of 10 marks.

(a) Three printing principles and three printing processes are shown below.

Printing Principles

 <p>RELIEF PRINTING</p>	 <p>INTAGLIO PRINTING</p>	 <p>PLANOGRAPHIC PRINTING</p>
<p>1</p>	<p>2</p>	<p>3</p>

Printing Processes

		
<p>A</p>	<p>B</p>	<p>C</p>

A table has been made that matches the principle to the process and gives an example of what the process is used to make. From the list below select the correct words to complete the table.

Offset Lithography Screen Printing Flexography Wallpaper Paper bags [3]

<i>Principle</i>	<i>Process</i>	<i>Use</i>
<p>1 Relief</p>	<p>C</p>	<p>Plastic Bags</p>
<p>2 Intaglio</p>	<p>A Roto Gravure</p>	<p>.....</p>
<p>3 Planographic</p>	<p>B</p>	<p>Newspapers</p>

(b) Lamination is a finishing process where a plastic film is fixed to printed paper.

(i) State how the plastic layer is fixed to the printed paper. [1]

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(ii) State the name of the plastic used to laminate maps to make them waterproof. [1]

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(c) Describe what Spot UV Varnish does when used as a finishing process for printed paper. [2]

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(d) Pre-Press is the first part of commercial printing. Explain what is done in the Pre-Press part of the process. [3]

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6. This question is about Materials and Components. It is worth a total of 15 marks.

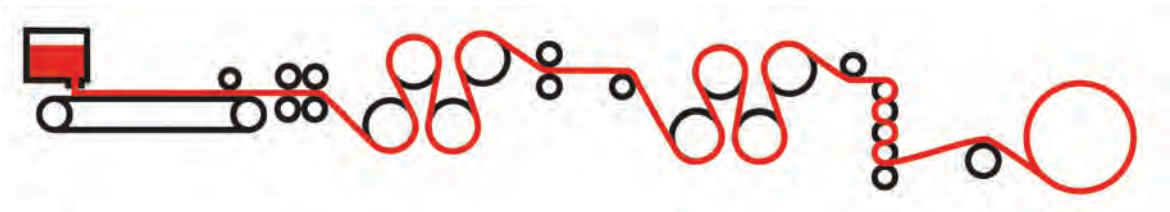
(a) State the size of paper that is twice the size of A5. [1]

A

(b) Describe a use in Graphic Products for Cartridge Paper. [2]

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(c) The diagram represents a papermaking machine. The paper being made is shown as the red line.



(i) Underline the correct name of the papermaking machine. [1]

Fourdrainer Fourdrinier Fouldrainer

(ii) Paper is made from wood pulp. State the three main stages in changing a tree into pulp.

Stage 1: [1]

Stage 2: [1]

Stage 3: [1]

(d) Some fonts can be grouped as Oldstyle, Modern, Script or Decorative. State the name of the font group alongside the photograph of the text.



..... [1]



..... [1]

(e) A sign that is placed alongside a footpath is shown below.



Explain why the designer has chosen a Sans Serif font for this sign. [2]

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(f) A vector image is shown. Place a **tick (✓)** in the box alongside the type of website where you would be most likely to find such an image. [1]



	Photo Library
	Clip Art Library
	Video Library

(g) Pressure Sensitive Copying Paper is a product that makes use of micro technology. Explain how Pressure Sensitive Copying Paper works and how micro technology enables the process to work. [3]

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7. This question is about Tools, Equipment and Making. It is worth a total of 20 marks.

(a) The drawing shows a curve drawn with a vector drawing package.



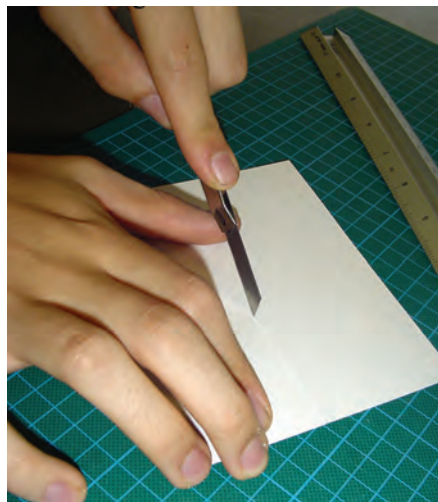
(i) State the name of this type of curve. [1]

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(ii) State what the blue handles allow you to do. [1]

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(b) The photograph shows a pupil cutting a piece of white card using a retractable blade craft knife. Consider the risks in what is being done.



Identify **two** major risks and explain how the risk can be reduced.

Risk 1: [1]

Explain in detail how to reduce the risk: [3]

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Risk 2: [1]

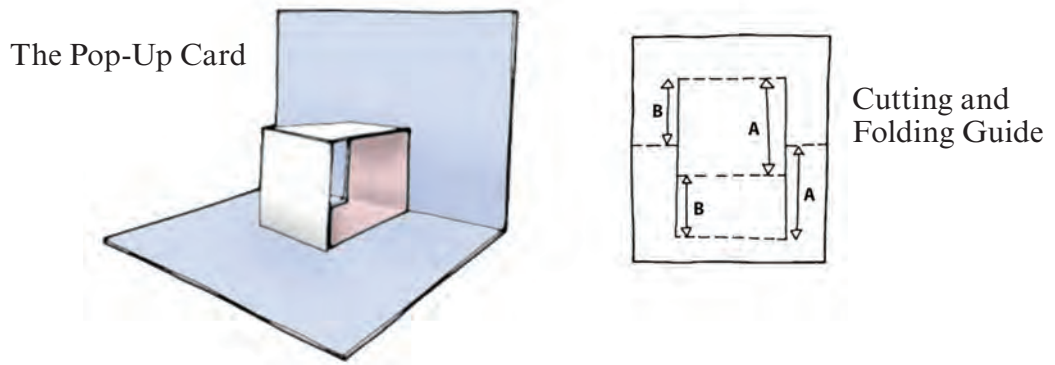
Explain in detail how to reduce the risk: [3]

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- (c) You are to make a simple pop-up card in school. The design is shown in the picture. The pop-up card is made from two pieces of card A5 in size. One piece of card is cut out as shown in the cutting and folding guide. The second piece of card makes the outside of the pop-up card.



- (i) The main stages in making the card are set out below. Describe the steps you would take to complete **each** stage.

Mark out the Pop-Up. [2]

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Cut the Pop-Up. [2]

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Score all the folds. [2]

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Assemble the Pop-Up card. [2]

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- (ii) You have to make ten (10) of the Pop-Up cards. Explain how a template would help you. [2]

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8. This question is about ICT, CAD, CAM, Systems and Processes. It is worth a total of 15 marks.

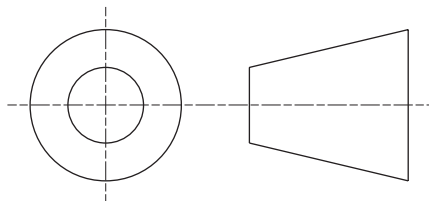
(a) An inkjet printer is to be set up to print a colour photograph on glossy paper. The image below shows a printer control window and the options available. Place a tick (✓) in the box alongside the correct choices. [3]

<input type="checkbox"/>	Plain paper
<input type="checkbox"/>	Photo Quality Glossy
<input type="checkbox"/>	Matte
<input type="checkbox"/>	CD/DVD

<input type="checkbox"/>	Colour
<input type="checkbox"/>	Greyscale

<input type="checkbox"/>	Economy
<input type="checkbox"/>	Fine
<input type="checkbox"/>	Photo

(b) The symbol shown is used in Orthographic Drawing.



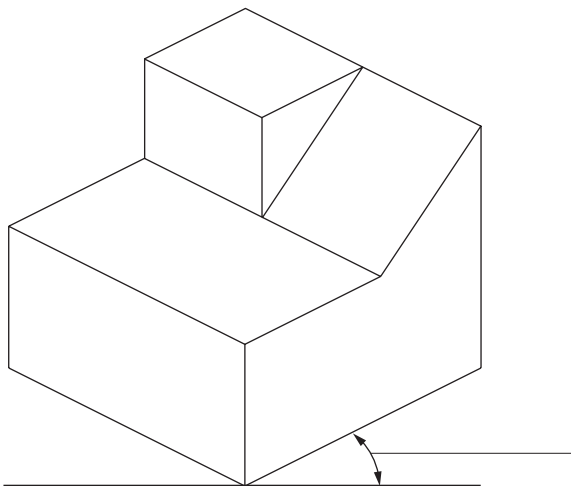
Explain what the symbol means.

[2]

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(c) State the name of the type of pictorial drawing shown below and state the size of the angle indicated.



Name of the type of pictorial drawing.

..... [1]

The size of the indicated angle.

..... [1]

- (e) A photograph of an advertising flag is shown. A pole that is the shape shown in the drawing holds up the flag. The pole shape is made up of two straight lines and a quarter of a circle as shown.

Use geometry and drawing instruments to draw the other side of the **pole** 10mm away from the given lines.

DO NOT REMOVE YOUR CONSTRUCTION LINES.

Freehand drawing will not be awarded any marks.

[4]

