You do not need any other materials.

Design and Technology: Graphic Products
Unit 2: Knowledge and Understanding of Graphic Products

Wednesday 17 June 2015 – Afternoon
Time: 1 hour 30 minutes

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.
• Try to answer every question.
• Check your answers if you have time at the end.
Answer ALL questions.
Some questions must be answered with a cross in a box ✗. If you change your mind about an answer, put a line through the box ✗ and then mark your new answer with a cross ✗.

1 Which material is most suitable for a drinks container?
   - A folding boxboard
   - B corrugated board
   - C foil-lined board
   - D solid whiteboard

(Total for Question 1 = 1 mark)

2 The sign below means:
   - A start the machine
   - B emergency stop button
   - C hand cleanser
   - D light dimmer

(Total for Question 2 = 1 mark)

3 Aluminium is used for drinks cans because:
   - A it resists corrosion
   - B it biodegrades
   - C it is a ferrous metal
   - D it can be resealed

(Total for Question 3 = 1 mark)
4 Which one of the following wireless systems is used to connect several digital devices together?

- A  Cosmic waves
- B  Bluetooth
- C  Microwaves
- D  X-rays

(Total for Question 4 = 1 mark)

5 Which one of the following statements describes mass production?

- A  many thousands of products are made
- B  only one product is made
- C  up to 100 products are made
- D  one product with many components is made

(Total for Question 5 = 1 mark)

6 Which one of the following energy sources is renewable?

- A  Coal
- B  Natural gas
- C  Solar
- D  Crude oil

(Total for Question 6 = 1 mark)

7 A company is classed as a multinational when it has:

- A  employees from different countries
- B  offices and factories in one country
- C  offices and factories in more than one country
- D  large offices and factories with many floors

(Total for Question 7 = 1 mark)
Which one of the following statements is true?

- A  most used glass bottles cannot be recycled
- B  very few used glass bottles can be recycled
- C  about 50% of all used glass bottles could be recycled
- D  almost 100% of used glass bottles could be recycled

(Total for Question 8 = 1 mark)

A transdermal patch is used as:

- A  a method of applying medication
- B  a hand warming device
- C  an electrical solar device
- D  a method of repairing torn vinyl

(Total for Question 9 = 1 mark)

Built-in obsolescence means products:

- A  will need constant maintenance
- B  will never break down
- C  are designed to wear out
- D  are designed to look old fashioned

(Total for Question 10 = 1 mark)
11 (a) The table below shows some equipment and components.

Complete the table by giving the missing names and uses.

<table>
<thead>
<tr>
<th>Equipment/Component</th>
<th>Name</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scroll saw</td>
<td></td>
<td>(1) Used for drawing curves</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1) Used to cut/slice/burn through foam to make shapes</td>
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<tr>
<td></td>
<td></td>
<td>(1) Uses a beam of light to accurately cut and engrave non-metallic material</td>
</tr>
</tbody>
</table>
(b) The drawing below shows some pieces of a jigsaw puzzle made from medium density fibreboard (MDF).

(i) Give two properties that make MDF suitable for jigsaw puzzles.

1

2

(ii) Give two reasons why a laser cutter could be used to produce wooden jigsaw puzzles.

1

2

(iii) Describe one disadvantage of using a laser cutter when making wooden jigsaw puzzles.

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(iv) One method of transferring a single colour image onto the MDF jigsaw puzzle is screenprinting.

Describe the process of screenprinting.

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(c) Using CAD when designing products can be quick and accurate.

Describe two other benefits of using CAD for design work.

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(d) Many products are now mass produced using CAM technology.

Explain one effect on the workforce of using CAM to manufacture products.

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(Total for Question 11 = 19 marks)
A new wildlife film is being released on standard DVD and Blu-ray formats. Examples are shown below.

A point of sale (POS) display stand is required to promote the sale of the film. The specification for the display stand is that it must:

- hold six DVD cases and four Blu-ray cases
- display the front cover for both formats clearly
- allow easy removal and replacement of the cases
- be stable
- be easy to assemble
- have a wildlife theme
- use a commercial method of manufacture
- be made from materials appropriate to this manufacturing method

In the spaces opposite, use sketches and, where appropriate, brief notes to show two different design ideas for the display stand 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

(Total for Question 12 = 16 marks)

Design idea 2

(Total for Question 12 = 16 marks)
The drawing below shows a burger box made from solid white board.

(a) Solid white board is easy to cut and fold.

Give **two** other properties of solid white board that make it a suitable material for a burger box.

For each property, justify your answer.

Property 1

Justification

Property 2

Justification
(b) Explain one reason why mass production is appropriate for producing burger boxes. (2)

(c) Explain why the solid white board burger box is successful at meeting the following specification points.

(i) Keeps the lid securely closed (2)

(ii) Gives information to the customer (2)
*(d) The drawings below show two burger boxes.

Polystyrene box  
Box A

Cardboard box  
Box B

Evaluate Box A and Box B in terms of user requirements and environmental impact.
A mass-produced DVD case with a full-colour printed paper insert is shown below.

(a) Offset lithography is to be used for the colour printing of the DVD paper insert.

(i) Explain one advantage of using offset lithography for printing.

(ii) Name one quality control measure that is used in printing DVD paper inserts.
(iii) Describe **one** situation where photocopying is a more suitable method for producing DVD paper inserts.

(b) The DVD case is made from polypropylene

Explain **one** aesthetic property and **one** functional property of polypropylene when used for a DVD case.
The symbol below is embossed on the DVD case.

(c) Explain how this symbol can help to protect the environment.

(d) Explain one disadvantage to the consumer of purchasing DVDs using the internet.
*(e)* Large wind farm installations are designed to help meet energy demand in the UK.

Discuss the advantages and disadvantages of these installations.

(Total for Question 14 = 19 marks)

TOTAL FOR PAPER = 80 MARKS