

Please check the examination details below before entering your candidate information

Candidate surname					
Other names					
Centre Number					
Candidate Number					

Pearson Edexcel

Level 1/Level 2 GCSE (9-1)

Friday 24 May 2019

Afternoon (Time: 1 hour 45 minutes plus your additional time allowance)

Paper Reference 1DT0/1F

Design and Technology

Component 1: Timbers

<b>YOU MUST HAVE:</b> Calculator, ruler, HB pencil, protractor, compass A diagram booklet	<b>Total Marks</b>
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## **INSTRUCTIONS**

- **Use BLACK ink, ball-point pen or your usual method.**
- **FILL IN THE BOXES** at the top of the previous 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.**
- **Calculators may be used.**
- **Any diagrams may NOT be accurately drawn, unless otherwise indicated.**
- **You must SHOW ALL YOUR WORKING OUT with YOUR ANSWER CLEARLY IDENTIFIED at the END OF YOUR SOLUTION.**

## **INFORMATION**

- **The total mark for this paper is 100.**
- **The marks for EACH question are shown in brackets**  
**– use this as a guide as to how much time to spend on each question.**

## **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.**

**SECTION A – CORE**

**ANSWER ALL QUESTIONS. WRITE YOUR ANSWERS IN THE SPACES PROVIDED.**

- 1 (a)     The materials that products are made from are chosen because of their properties.**

**Figure 1 in the diagram booklet shows a table of products.**

**For each of the products shown, give a property of the material it is made from that makes the material suitable for the product.**

**The first one has been done for you.**

- 1 (b) Figure 2 shows a table with the number of plastic bags given away in England.

**FIGURE 2**

<b>YEAR</b>	<b>NUMBER OF BAGS GIVEN AWAY (BILLIONS)</b>
<b>2014</b>	<b>7.6</b>
<b>2015</b>	<b>5.4</b>

**Calculate the percentage reduction in the number of plastic bags given away between 2014 and 2015.**

**Give your answer to the nearest whole number.**  
**(2)**

**Percentage reduction** \_\_\_\_\_

- 1 (c) In 2015 charging for carrier bags was introduced resulting in a reduction in the number of bags being manufactured.**

**Explain ONE negative effect of this reduction for the manufacturer. (2)**

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**(TOTAL FOR QUESTION 1 = 8 MARKS)**

- 2 Figure 3 in the diagram booklet shows a drawing of a fabric play cube for young children.**

**The fabric play cube has a side length of 60 mm.**

- (a) Name the communication technique that has been used to produce the drawing shown in Figure 3. (1)**

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- (b) A prototype play cube was made from calico.**

**Explain ONE reason for using calico for the prototype play cube. (2)**

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- 2 (c) The pattern for the prototype play cube was made from a single net.**

**Draw a net for the play cube on the grid provided in the diagram booklet.**

**Do not include any seam allowance.**

**Use a thick dashed line – – – – to show where the net would be folded. (4)**

- (d) Tracing paper was used to design the prototype play cube.**

**Explain ONE reason why designers use tracing paper. (2)**

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**(TOTAL FOR QUESTION 2 = 9 MARKS)**



- 3 Figure 4 in the diagram booklet shows part of a solar powered garden light.**

**The outer case is made from acrylic.**

- (a) Give ONE property of acrylic that makes it an appropriate material from which to make the outer case. (1)**

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- (b) The solar powered garden light is held off the ground by a stainless steel support.**

**Explain ONE reason for using stainless steel for the support. (2)**

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**3 (c)      The manufacturer of the solar powered garden light wants to reduce its carbon footprint.**

**Explain ONE way new and emerging technologies could be used to reduce the manufacturer's carbon footprint.    (2)**

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- 3 (d) The solar cell used in the solar powered garden light costs  $\frac{1}{12}$ th of the total cost of the product.**

**Calculate the cost of the solar cell if each light costs £4.97 to make.**

**Give your answer to two significant figures.**

**(2)**

**£**

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- 3 (e) The manufacturer of the solar powered garden light employs different groups of people including apprentices.**

**Explain TWO ways that the use of new and emerging technologies could affect the apprentices. (4)**

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**2. \_\_\_\_\_**

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**(TOTAL FOR QUESTION 3 = 11 MARKS)**

- 4 Figure 5 in the diagram booklet shows a drawing of a jewellery box made from mahogany.**

**The electronic component shown in Figure 6 in the diagram booklet is used in the jewellery box.**

- (a)(i) Name the electronic component shown in Figure 6. (1)**

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**4 (a)(ii)**

**The jewellery box uses a programmable component to turn on a musical tune when the lid is opened, that stays on until the lid is closed.**

**Figure 7 in the diagram booklet shows a partly completed flowchart for the programmable component.**

**Correctly label the DECISION OUTPUTS and add the remaining LINES and ARROWS on the flowchart to show how the programmable component:**

- **turns on the musical tune when the lid is opened**
- **turns off the musical tune when the lid is closed.**

**(3)**

- 4 (b) Analyse the information in Figure 8 about the sources of mahogany.

Figure 8

SOURCES OF MAHOGANY	PERCENTAGE GROWN IN EACH AREA (%)
Native forests	7
National parks	30
Other	63

Complete the bar chart in the diagram booklet to show the percentage grown in each area.

The first one has been done for you. (2)

**4 (c) A film company is considering launching a range of musical jewellery boxes based on its animated characters.**

**Discuss the different design strategies the company could use to generate initial ideas and to avoid design fixation. (6)**

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**(TOTAL FOR QUESTION 4 = 12 MARKS)**

**TOTAL FOR SECTION A = 40 MARKS**

## **SECTION B – TIMBERS**

**ANSWER ALL QUESTIONS. WRITE YOUR ANSWERS IN THE SPACES PROVIDED.**

- 5 Figure 9 in the diagram booklet shows a design solution for a laptop tray unit together with some additional information.**

**Study the diagram in the diagram booklet.**

- (a) The laptop tray unit needs to be improved to include the following specification points.  
The laptop tray unit must:**

- fold away flat but still provide a rigid platform to work on**
- provide a method to hold the coffee cup without the risk of it being tipped over**
- provide an additional writing surface that is flat and wipe clean.**

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**Use notes and sketches, on the outline for Question 5 (a) in the diagram booklet to show how the laptop tray unit could be modified to include these specification points.**

**You will be marked on how you apply your understanding of design and technology, not your graphical skills. (6)**

**5 (b) Figure 10 in the diagram booklet shows a medium density fibreboard (MDF) retail display unit for a pair of glasses.**

**Explain TWO ways that the retail display unit meets, or fails to meet, the criteria of providing a secure way to display the glasses. (4)**

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(TOTAL FOR QUESTION 5 = 10 MARKS)

**6 Figure 11 in the diagram booklet shows a toy creature made from sustainable timber.**

**(a) Explain TWO advantages of manufacturing the toy creature from sustainable timber. (4)**

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- 6 (b) Figure 12 in the diagram booklet shows a side view of the head section of the toy creature separated from the main body.**

**Use notes and sketches, in the space below, to show how the head section would be joined to the main body using a screw.**

**You will be marked on how you apply your understanding of design and technology, not your graphical skills. (4)**

- 6 (c) Explain ONE reason for using different natural timbers for different parts of the toy creature. (2)**

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**6 (d) Figure 13 in the diagram booklet shows the main body for the toy creature.**

**The bodies are to be manufactured from pine in a batch of 1000.**

**Name TWO different techniques that could be used to batch produce the main body.**

**Explain ONE advantage of using each technique. (6)**

**Technique 1**

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**Explanation**

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**Technique 2**

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**Explanation**

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**(TOTAL FOR QUESTION 6 = 16 MARKS)**

**7 Figure 14 in the diagram booklet shows a child's wooden toy made from pine and beech.**

**(a) Name ONE surface finish or surface treatment that could be applied to the pine back. (1)**

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**7 (b)     The wooden pegs have been cut from 600 mm lengths of stock material.**

**The stock material is 6 mm diameter wooden dowel.**

**Explain TWO reasons for using a stock-sized wooden dowel.   (4)**

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**7(c) Figure 15 in the diagram booklet shows the dimensions for the body of the tumbling figure.**

**Calculate the maximum number of whole bodies that could be cut from a length of timber measuring 181 cm long by 4 cm wide.**

**Ignore the width of any cuts. (5)**

**Answer \_\_\_\_\_ whole bodies**

**7 (d) Explain TWO working properties of beech that make it an appropriate choice of material for the body of the tumbling figure. (6)**

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**(TOTAL FOR QUESTION 7 = 16 MARKS)**

**8 Figure 16 in the diagram booklet shows a pine roof truss for a house.**

**(a)(i) Explain ONE reason for applying a fireproof treatment to the roof truss. (2)**

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8 (a)(ii)

**Explain ONE working property of pine that makes it suitable for the roof truss. (3)**

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**8 (b) Explain TWO advantages of genetically engineering timber for use in the house building industry. (4)**

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**2.** \_\_\_\_\_

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**8 (c) The roof trusses are manufactured in Europe and transported worldwide.**

**Figure 17 in the diagram booklet shows a table with information about the roof truss.**

**Analyse the information in Figure 17 in the diagram booklet.**

**Evaluate the roof trusses with reference to their social footprint including:**

- trend forecasting**
- impact of logging on communities**
- ease and difficulty of recycling and disposal. (9)**

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**(TOTAL FOR QUESTION 8 = 18 MARKS)**

**TOTAL FOR SECTION B = 60 MARKS**

**TOTAL FOR PAPER = 100 MARKS**