

Design and Technology  
COMPONENT 1: Textiles

Total Marks
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Monday 19 June 2023 – Morning

Time: 1 hour 45 minutes

In the boxes below, write your name, centre number and candidate number.

Surname					
Other names					
Centre Number					
Candidate Number					

## **YOU MUST HAVE**

**Calculator, ruler, writing and drawing equipment, protractor, pair of compasses**

## **YOU WILL BE GIVEN**

**Diagram Booklet**

## **INSTRUCTIONS**

**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.**

**There may be spare copies of some diagrams.**

**Turn over**

**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.**

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## **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.**

**Look at Figure 1 for Question 1(a) in the Diagram Booklet. It 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.**

**(continued on the next page)**

**1 continued.**

**A printing company wants to use a new and emerging technology. It operates as a privately-owned business.**

- (b) (i) Explain ONE advantage for the company of operating as a privately-owned business.  
(2 marks)**

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**(continued on the next page)**

**1(b) continued.**

**The printing company has invested £150,000 of its own money to buy new and emerging technology but wants to raise an additional 30% by crowdfunding.**

- (ii) Calculate how much additional money it will raise by crowdfunding.  
(2 marks)**

**Answer £ \_\_\_\_\_**

**(Total for Question 1 = 8 marks)**

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**2 Look at Figure 2 for Question 2 in the Diagram Booklet. It shows a concrete candle holder.**

**(a) Name the drawing method that has been used to show the concrete candle holder in Figure 2.  
(1 mark)**

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**(b) Explain ONE reason for using concrete for the candle holder.  
(2 marks)**

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**(continued on the next page)**

**2 continued.**

**Look at Figure 3 for Question 2(c) in the Diagram Booklet. It shows a standardised size of candle.**

- (c) Explain ONE reason for manufacturing the concrete candle holder to hold a standardised size of candle.  
(2 marks)**

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**(continued on the next page)**



**2 continued.**

**Look at Figure 4 for Question 2(d) in the Diagram Booklet. It shows a dimensioned drawing of the concrete candle holder.**

**(d) Calculate the volume of concrete required to make the candle holder.**

**Give your answer in  $\text{cm}^3$  to the nearest whole  $\text{cm}^3$   
(4 marks)**

**Answer \_\_\_\_\_  $\text{cm}^3$**

**(Total for Question 2 = 9 marks)**

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**3 Look at Figure 5 for Question 3 in the Diagram Booklet. It shows a vegetable growing frame that is manufactured from a softwood.**

**(a) Name ONE softwood that can be used to manufacture the vegetable growing frame.  
(1 mark)**

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**(b) Explain ONE reason for manufacturing the vegetable growing frame from a softwood rather than a hardwood.  
(2 marks)**

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**(continued on the next page)**

**3 continued.**

**The original length of timber that is used to make the frame is 300 cm.**

**The combined length of one short side and one long side of the frame is 270 cm.**

- (c) Calculate how much timber is left when a short side and a long side have been cut to size, giving your answer as a fraction of the original length of timber.**

**Ignore the width of any saw cuts.  
(2 marks)**

**Answer \_\_\_\_\_**

**(continued on the next page)**

**Turn over**

**3 continued.**

**Look at Figure 6 for Question 3(d) in the Diagram Booklet. It shows a mild steel fixing that has been used to join the vegetable growing frame together at the corners.**

- (d) Explain ONE disadvantage of using mild steel for the fixing.  
(2 marks)**

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**(continued on the next page)**

**3 continued.**

**The vegetable growing frame is delivered in a box manufactured from corrugated board.**

**(e) Explain TWO benefits of using corrugated board to manufacture the box.  
(4 marks)**

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

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**(Total for Question 3 = 11 marks)**

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**Turn over**

**4 Look at Figure 7 for Question 4 in the Diagram Booklet. It shows a polyester laptop bag.**

- (a) Explain ONE working property of polyester that makes it an appropriate choice of material to make the laptop bag.  
(2 marks)**

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**(continued on the next page)**

**4 continued.**

- (b) The material for the laptop bag is 60% new polyester and the rest is recycled polyester.**

**The laptop bag requires 320 grams of polyester in total.**

**Calculate how many grams of recycled polyester are required for the laptop bag.**

**(2 marks)**

**Answer \_\_\_\_\_ grams**

**(continued on the next page)**

**4 continued.**

**The manufacturer carries out a life cycle analysis (LCA) to help reduce the environmental impact of the laptop bag.**

**(c) Explain ONE outcome of an LCA that can help to reduce the environmental impact of the laptop bag. (2 marks)**

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**(continued on the next page)**



**4 continued.**

- (d) Discuss how the features of modern laptops have contributed to remote working.  
(6 marks)**

**Answer space continues on the next 3 pages.**

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**4(d) continued.**

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**4(d) continued.**

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**(Total for Question 4 = 12 marks)**

**TOTAL FOR SECTION A = 40 MARKS**

**Turn over**

## **SECTION B**

### **Textiles**

**Answer ALL questions. Write your answers in the spaces provided.**

- 5 Look at Figure 8 for Question 5 in the Diagram Booklet. Figure 8 shows a design solution for a child's cotton painting apron together with some additional information.**

**(continued on the next page)**

**5 continued.**

- (a) The child's cotton painting apron needs to be improved to include the following specification points.**

**The child's cotton painting apron must:**

- be easy to keep clean and prevent more of the child's clothes from getting paint on them**
- be adjustable to fit a range of waist sizes and be able to be fastened by the child**
- be able to be hung up easily and include a visible method that identifies which child it belongs to.**

**Use notes and sketches to show how the child's cotton painting apron could be modified to include these three specification points.**

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

**Look at the diagram for Question 5(a) in the Diagram Booklet. Use the outline of the original design solution to show your modifications.**

**(6 marks)**

**(continued on the next page)**

**Turn over**

**5 continued.**

- (b) Look at Figure 9 for Question 5(b) in the Diagram Booklet. It shows a felt-lined wooden puzzle that is used to help develop hand–eye coordination in young children.**

**Explain TWO ways that the felt-lined wooden puzzle meets, or fails to meet, the criterion of providing a method to help develop hand–eye coordination in young children.**

**(4 marks)**

**Answer space continues on the next page.**

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**5 continued.**

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**(Total for Question 5 = 10 marks)**

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- 6 Look at Figure 10 for Question 6 in the Diagram Booklet. It shows a wedding dress.**

**The wedding dress is manufactured from white silk fabric.**

- (a) Explain TWO characteristics of silk that make it an ideal material from which to make the wedding dress.  
(4 marks)**

**Answer space continues on the next page.**

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**6(a) continued.**

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**(continued on the next page)**

**6 continued.**

- (b) The structure of the wedding dress bodice is shaped with boning.**

**Use notes and sketches, on this page and the next one, to show how you would add boning to shape the bodice.**

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

**(4 marks)**

**(continued on the next page)**

**6(b) continued.**

**6 continued.**

- (c) Explain ONE way that the wedding dress shown in Figure 10 may cause offence to potential buyers of a wedding dress in different countries.  
(2 marks)**

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**(continued on the next page)**

**6 continued.**

- (d) Give TWO different manufacturing methods that could be used to reduce fullness where the top of the skirt meets the bodice at the waist seam.**

**Explain ONE reason for using each manufacturing method.  
(6 marks)**

**Answer space continues on the next page.**

**Method 1**

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**Explanation**

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**6(d) continued.**

**Method 2**

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**Explanation**

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**(Total for Question 6 = 16 marks)**

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**7 Look at Figure 11 for Question 7(a) in the Diagram Booklet. It shows a handbag that is manufactured in a batch of 100.**

- (a) Name a specific type of fastening that could be used on the bag tab to keep the bag closed.  
(1 mark)**

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**Look at Figure 12 for Question 7(b) in the Diagram Booklet. It shows the bag tab which has been made from polyester using computer-aided manufacturing (CAM).**

- (b) Explain TWO advantages of using CAM to manufacture the bag tab.  
(4 marks)**

**Answer space continues on the next page.**

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7(b) continued.

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2

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(continued on the next page)

**7 continued.**

- (c) Look at Figure 13 for Question 7(c) in the Diagram Booklet. It shows a dimensioned drawing of a template for the bag handle.**

**The template will be used to mark out the bag handle and will be made from 5mm thick material.**

**Look at the grid for Question 7(c) in the Diagram Booklet. Produce an isometric drawing of the template on the grid provided.  
(5 marks)**

**(continued on the next page)**

**7 continued.**

- (d) Explain TWO disadvantages of using a template to mark out the bag handle.  
(6 marks)**

**Answer space continues on the next page.**

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7(d) continued.

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**(Total for Question 7 = 16 marks)**

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- 8 Look at Figure 14 for Question 8 in the Diagram Booklet. It shows a pair of swim shorts manufactured from a blended fabric of nylon and elastane.**

**Manufacturing swim shorts from nylon and elastane is cost effective.**

- (a) Explain ONE OTHER benefit of manufacturing the swim shorts from a blended fabric of nylon and elastane.  
(2 marks)**

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**(continued on the next page)**

**8 continued.**

- (b) Explain ONE cost factor that will have been considered when selecting a blended fabric of nylon and elastane as the material from which to manufacture the swim shorts.  
(3 marks)**

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**(continued on the next page)**

**8 continued.**

- (c) Explain TWO quality control checks that would be carried out on the swim shorts before they are allowed to leave the factory.  
(4 marks)**

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

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**Turn over**

**8 continued.**

- (d) The swim shorts are manufactured in China and sold around the world.**

**Look at Figure 15 for Question 8(d) in the Diagram Booklet. It shows some additional information about the swim shorts.**

**Analyse the information in Figure 15.**

**Evaluate the swim shorts with reference to social factors including:**

- use for different social groups**
  - trends / fashion**
  - popularity.**
- (9 marks)**

**Answer space continues on the next 3 pages.**

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**Turn over**



**8(d) continued.**

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**8(d) continued.**

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**(Total for Question 8 = 18 marks)**

**TOTAL FOR SECTION B = 60 MARKS**

**TOTAL FOR PAPER = 100 MARKS**

**END OF PAPER**