

A-level DESIGN AND TECHNOLOGY (PRODUCT DESIGN)

Paper 2 Designing and Making Principles

Specimen 2016

Morning

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- · Normal writing and drawing instruments
- a scientific calculator

Instructions

- Use black ink or black ball-point pen. Use pencil only for drawing.
- Fill in the boxes at the bottom of this page.
- Answer all questions.
- You must answer the questions in the spaces provided/
- Do all rough work in this book. Cross through any work that you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.

Please write clearly, in block capitals, to allow character computer recognition.					
Centre number	Candidate number				
Surname					
Forename(s)					
Candidate signature					

Section A

Figure 1 and Figure 2 show two lemon juicers.



Figure 1 Aluminium Juicer

Figure 2
Polypropylene juicer

2	One million units of the juicer in Figure 2 on page 2 have been injection moulded.
	Suggest how this process could be monitored to reduce the risk of defective products being sold.
	[6 marks

3	Using an appropriate product example, explain how it conforms to the design theory of 'form follows function'. In your answer, you should reference a specific design movement. [4 marks]

Two vacuum cleaners are shown below.



Figure 4



Two vacuum cleaners are shown in **Figures 3** and **4.** Discuss the technological developments that have allowed the evolution of the product.

[9 marks]

5	Dieter Rams states that 'good design is understandable'. Use a specific product example to explain what is meant by this.		
		[3 marks]	
6	Define the terms 'quality assurance' and 'quality control'		
		[2 x 2 marks]	

The diameter of a drilled hole is specified as 25 +/- 0.5 mm. Calculate the percentage tolerance which would be acceptable of dimension. Shade the box with the correct answer.		e on this	
	A 1%	\bigcirc	
	B 2%	\bigcirc	
	C 4%	\bigcirc	
	D 8%	\bigcirc	
			[1 mark]

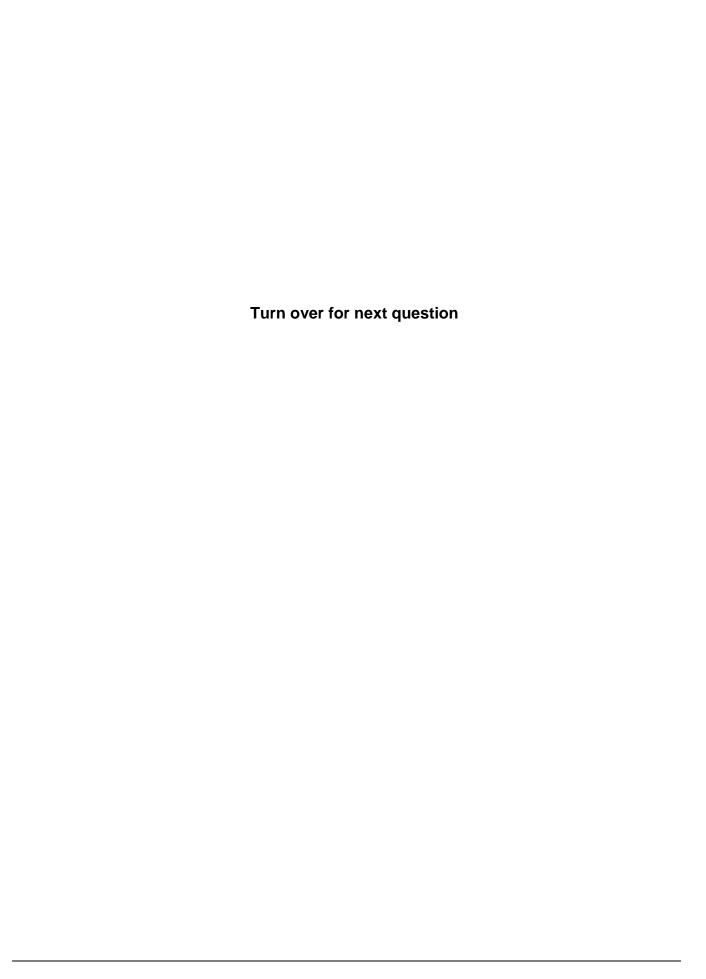
Using specific examples, evaluate the social, moral and ethical impact of mobon society over the last 30 years.		
		[12
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9	Using specific product examples, analyse the impact of legislation on the electronic products.	design of
		[10 marks]

10	Explain what is meant by the concept of 'upcycling'
	[3 marks]
1 1	With reference to a specific product, explain what is meant by the term 'eco labelling'
	[3 marks]
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1 2	With reference to food packaging, explain how designers are reducing the	
1 2	With reference to food packaging, explain how designers are reducing the environmental impact of their products	
		[4 marks]



1 3

Compare the use of the two materials shown below for packaging large electronic products

[4 marks]



Figure 5

Moulded paper pulp packaging

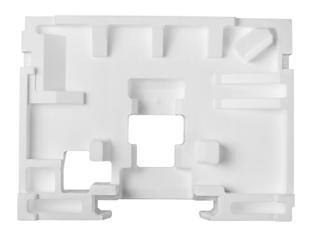
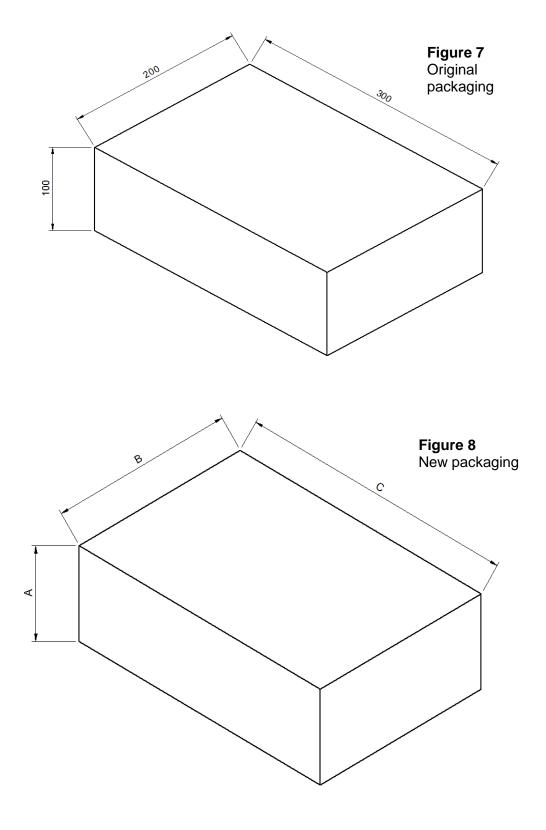


Figure 6

Expanded polystyrene packaging

1 4

A video games manufacturer wants to reduce the amount of packaging for one of their products. The packaging is to keep the same proportions, but has a volume reduction of 25%.



Calculate the new length of each side to 2 decimal places. Show y	our v	vorkina.
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[4 marks]

٨	mm
3	mm
C	mm

1 5 The photograph below shows an Eames chair.



A furniture maker is manufacturing a replica of the foot stool shown above, using a one-piece foam mould and vacuum bag.

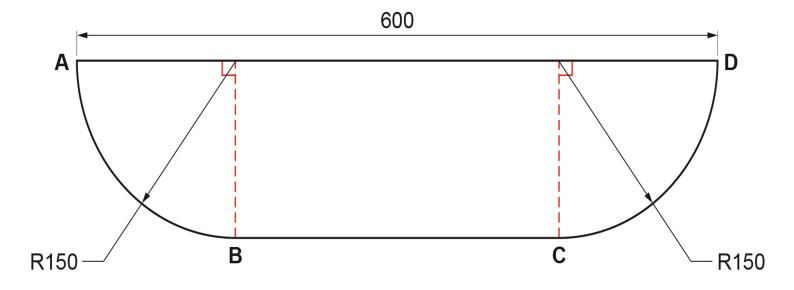


Figure 9 (foam mould)

Not drawn to scale All dimensions in mm

It is going to be manufactured from seven layers of 1.5mm plywood. Using the dimensioned drawing (**Figure 9**), calculate the length of plywood needed for the **outside** layer of the lamination along the length ABCD to the nearest millimetre.

[4 marks]

	21	
		mm