

Write your name here

Surname					Other names				
Centre Number					Candidate Number				
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>					<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>				

Pearson Edexcel
Level 1/Level 2 GCSE (9–1)

Design and Technology

Component 1

Sample assessment material for first teaching September 2017 Time: 1 hour 45 minutes	Paper Reference 1DT0/1F
---	-----------------------------------

You must have: a calculator, ruler and pencil	Total Marks <input style="width: 100px; height: 30px;" type="text"/>
---	---

Instructions

- Use **black** ink or ball-point pen.
- **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.*
- 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.

Turn over ►

S59783A

©2018 Pearson Education Ltd.

1/1/1/1/1




Pearson

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 characteristics.

Figure 1 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.

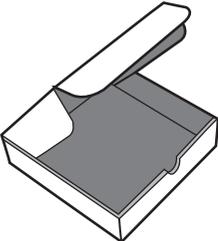
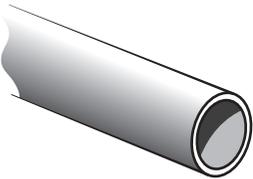
Picture of Product	Description of product	Property
	Urea formaldehyde mains voltage plug	Insulator of electricity
	A beech chopping board	(1) (i)
	Wool socks	(1) (ii)
	A corrugated board pizza box	(1) (iii)
	Copper plumbing pipe	(1) (iv)

Figure 1

DO NOT WRITE IN THIS AREA



(b) Mains electricity in the UK is supplied at 230 V.

Explain **one** disadvantage of mains electricity.

(2)

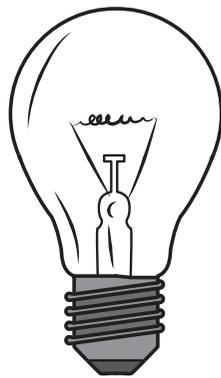
.....

.....

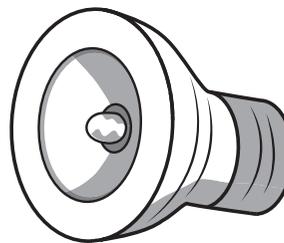
.....

.....

(c) Figure 2 shows a table of average daily costs related to running two types of light bulb.



Traditional filament bulb



LED Bulb

Bulb type	Average daily cost (Pence)
Traditional filament bulb	5.69 p
LED bulb	1.12 p

Figure 2

Calculate the percentage daily cost saving of using an LED bulb instead of a traditional filament bulb.

Give your answer to the nearest whole number.

(2)

Answer:

(Total for Question 1 = 8 marks)



2 Figure 3 shows a drawing of a mechanical toy that uses a cam.

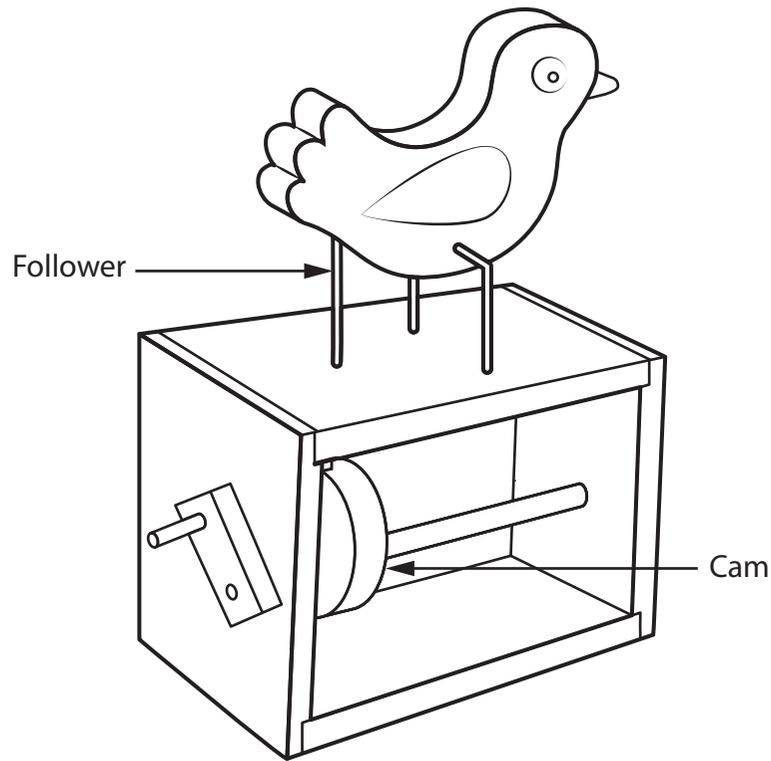


Figure 3

(a) (i) Name the type of cam shown in Figure 4.

(1)

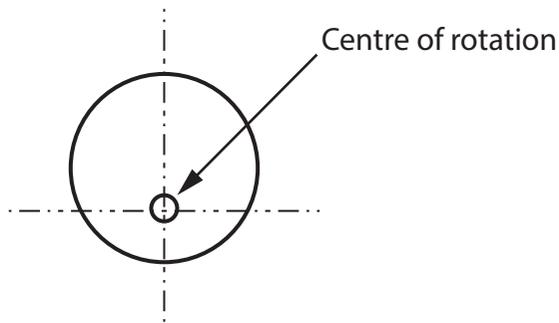


Figure 4

Type of cam:

(ii) Describe the movement of the bird in Figure 3 as the cam rotates.

(2)



(iii) Describe the effect on the movement of the bird if the cam shown in Figure 3 is replaced by a drop (snail) cam.

(2)

.....

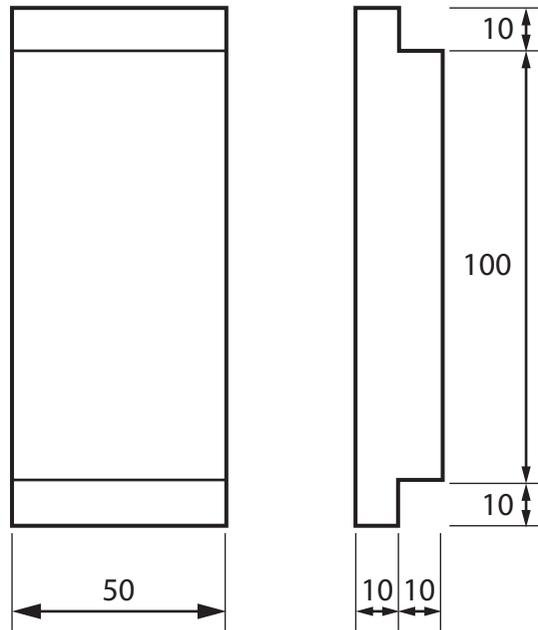
.....

.....

DO NOT WRITE IN THIS AREA



(b) Figure 5 shows an orthographic drawing of one of the pieces of the mechanical toy.



Not to scale
All dimensions in mm

Figure 5

Draw an accurate full-sized view of the piece shown in Figure 5.

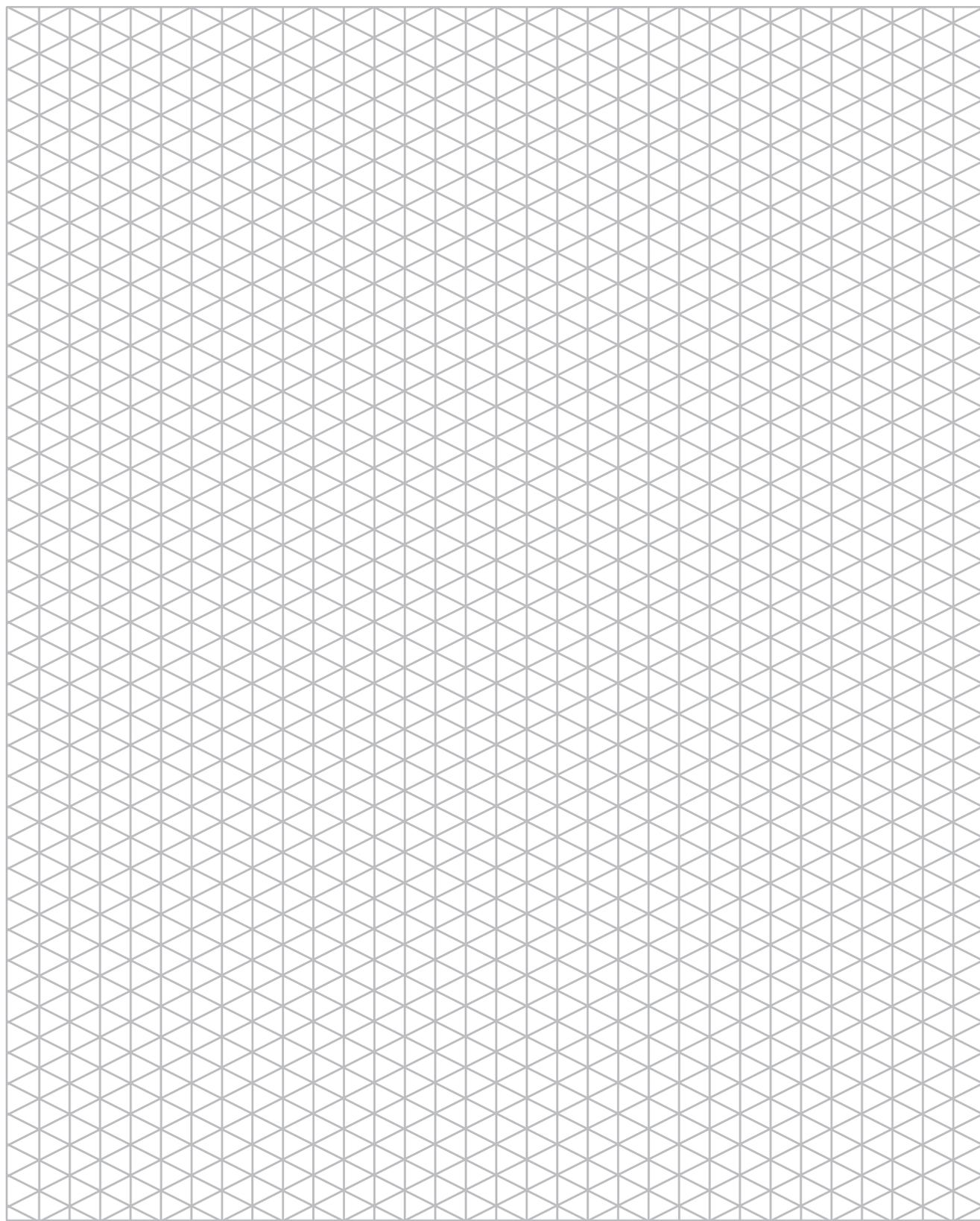
Use the grid provided on the opposite page.

(4)

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA



5 mm isometric grid

(Total for Question 2 = 9 marks)



3 Figure 6 shows a mobile phone pocket hanger made from recycled denim jeans.

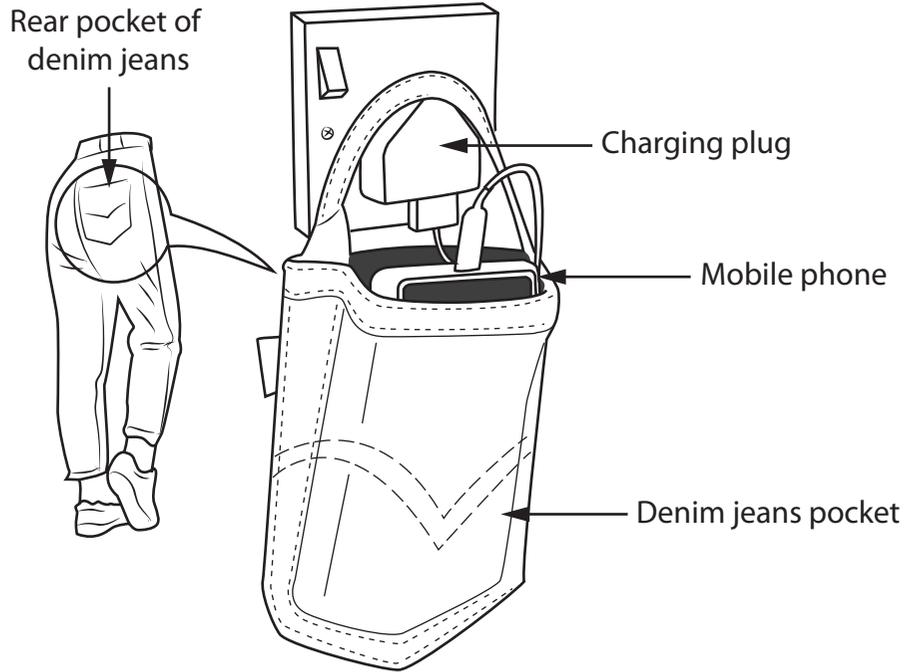


Figure 6

(a) Give **one** property of denim that makes it an appropriate material from which to make the jeans. (1)

(b) Explain **one** reason for manufacturing the mobile phone pocket hangers in small batches. (2)

(c) The company that makes the mobile phone pocket hangers was funded by a government start-up loan.

Explain **one** advantage of government funding for new business start-ups. (2)

DO NOT WRITE IN THIS AREA



(d) In 2014, the worldwide denim market was valued at £144 million with demand estimated to grow at 8% annually.

Calculate what the worldwide value of the denim market will be in 2016.

Give your answer to the nearest whole number.

(2)

£

(e) The factory where the mobile phone pocket hangers are manufactured uses only renewable energy sources such as tidal, wind, solar and hydroelectric power.

Explain **two** reasons why the factory might use renewable energy sources.

(4)

1

2

(Total for Question 3 = 11 marks)



4 Figure 7 shows an aluminium foil takeaway container with a solid white board lid.



Figure 7

- (a) (i) One reason why aluminium is used for the takeaway container is that it can be easily recycled.

Explain **one** other reason for using aluminium for the takeaway container.

(2)

.....

.....

.....

- (ii) Explain **one** advantage of using solid white board for the lid.

(2)

.....

.....

.....

DO NOT WRITE IN THIS AREA



(b) Figure 8 is a chart showing the use of aluminium in 2007.

Analyse the chart.

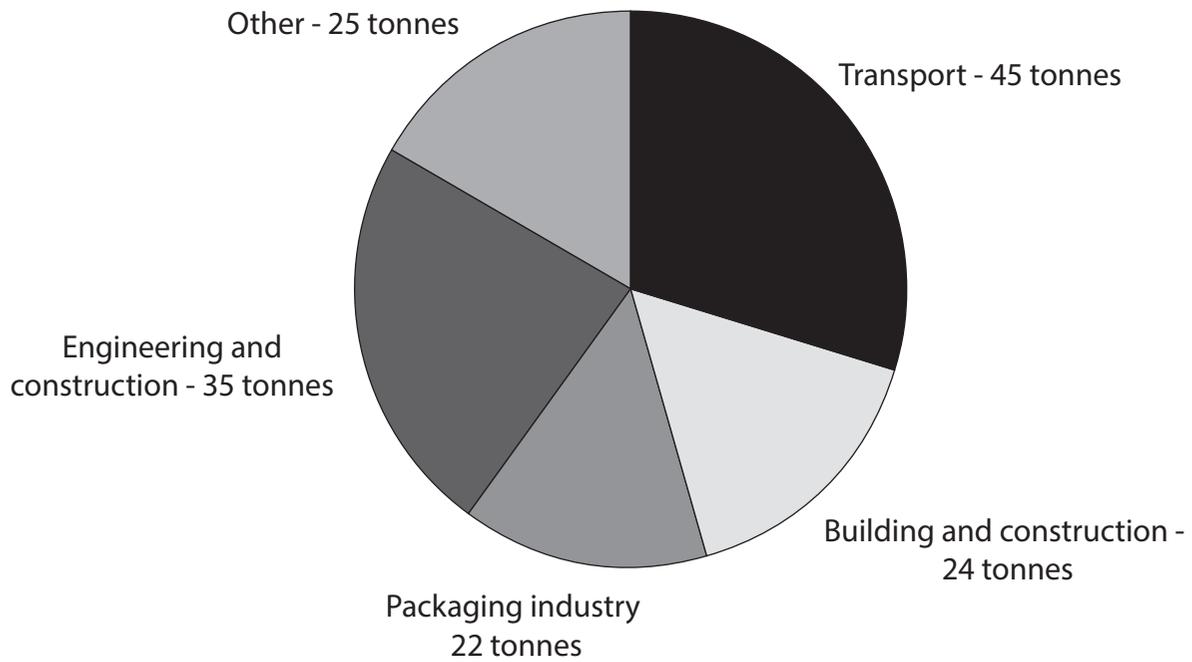


Figure 8

The aluminium used was sourced from recycled and new aluminium in the ratio of 18:38

Calculate how much recycled aluminium was used in the packaging industry.

Give your answer to two decimal places.

(2)

Answer = Million Tonnes



DO NOT WRITE IN THIS AREA

Handwriting practice area with 28 horizontal dotted lines.

(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 10 shows a design solution for a golf trophy that is primarily made from timbers.

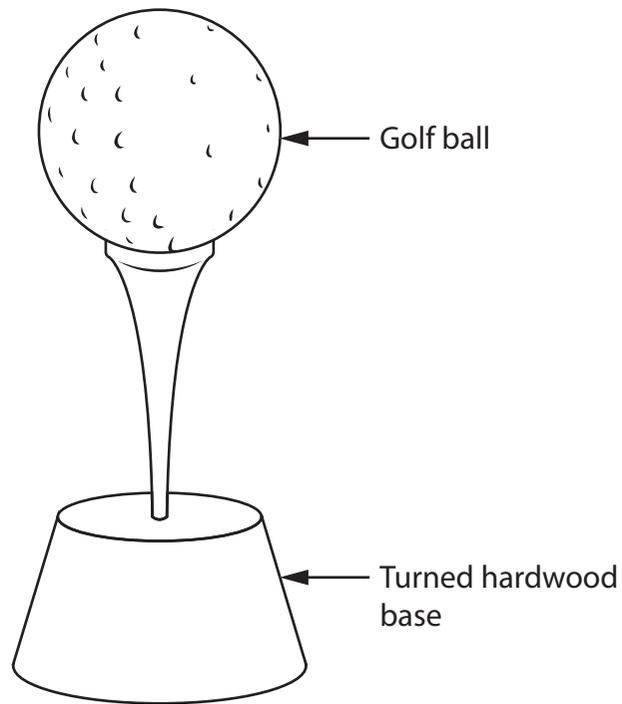


Figure 10

DO NOT WRITE IN THIS AREA



(a) The golf trophy needs to be improved to include the following specification points.

The golf trophy must:

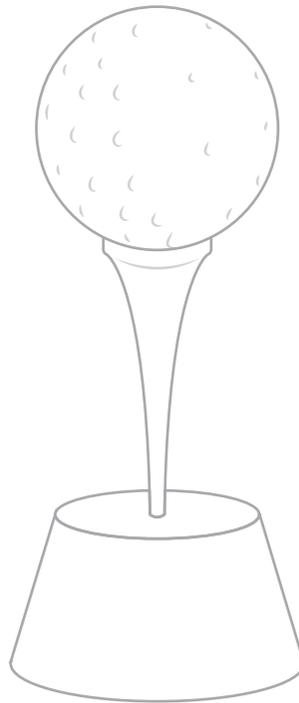
- provide a method to show that the trophy is for the winner
- protect the bottom of the wooden base when being placed on a hard surface
- allow for the winner's name to be updated every year.

Use notes and sketches to show how the golf trophy 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.

Use the outline of the original design solution to show your modifications.

(6)



(b) Figure 11 shows a never ending calendar.



Figure 11

Explain **two** ways by which the calendar meets or fails to meet the criteria of showing the correct date.

(4)

1

2

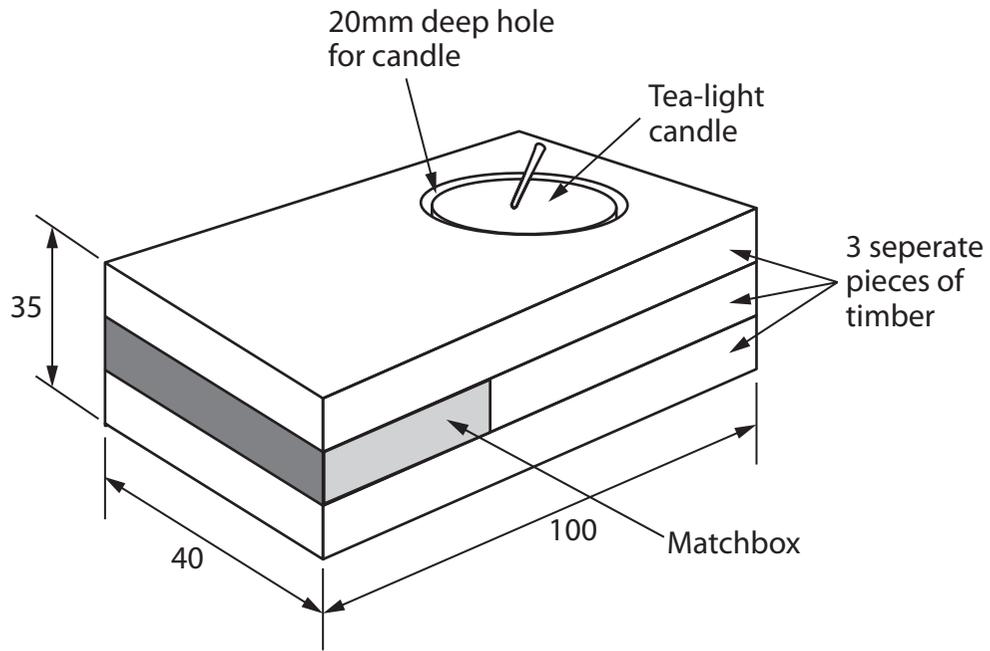
(Total for Question 5 = 10 marks)

DO NOT WRITE IN THIS AREA



6 Figure 12 shows a candle tea-light holder.

The candle tea-light holder is manufactured by gluing sections of timber together.



All dimensions in mm

Figure 12

(a) Explain **two** advantages of manufacturing the candle tea-light holder by gluing sections of timber together rather than making it from a solid block.

(4)

1

.....

.....

.....

.....

2

.....

.....

.....

.....



(b) Figure 13 shows a forstner bit which is used on a pillar drill to make the 20 mm deep hole for the candle.

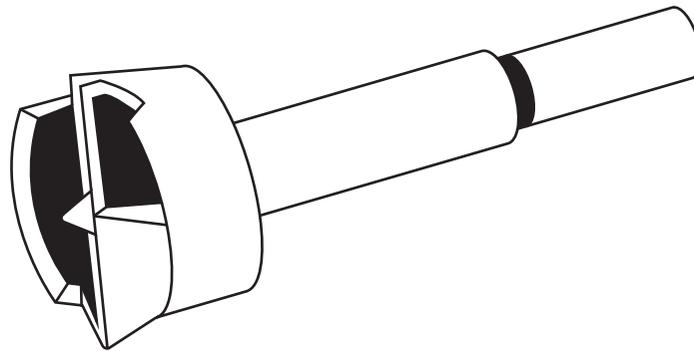


Figure 13

Use notes and sketches to show how you would set up the pillar drill to drill the hole for the candle when making a batch of 50 identical candle tea-light holders.

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

(4)

Blank area for student response.

DO NOT WRITE IN THIS AREA



(c) Explain **one** reason why PVA is used to glue the timber sections together for the candle tea-light holder.

(2)

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA



(d) Figure 14 shows an alternative candle tea-light holder.

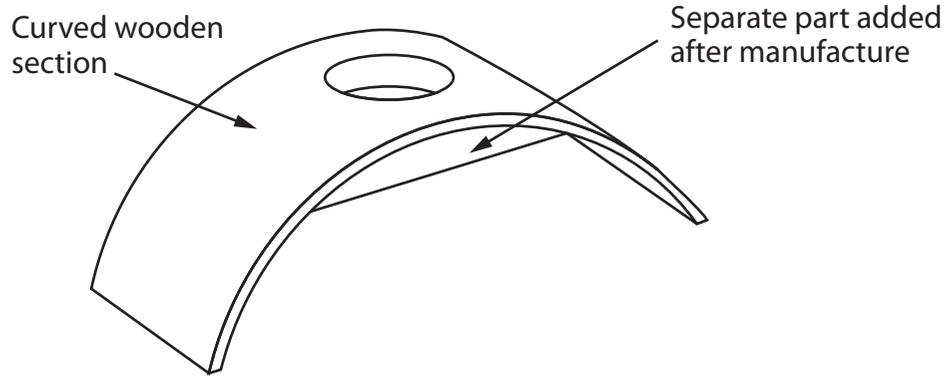


Figure 14

Name **two** different methods that can be used to batch produce the curved wooden section of the candle tea-light holder.

For each method, explain **one** advantage to the manufacturer of using this method.

(6)

Method 1

Explanation

Method 2

Explanation

(Total for Question 6 = 16 marks)

DO NOT WRITE IN THIS AREA



7 Figure 15 shows the rear view of a garden gate.

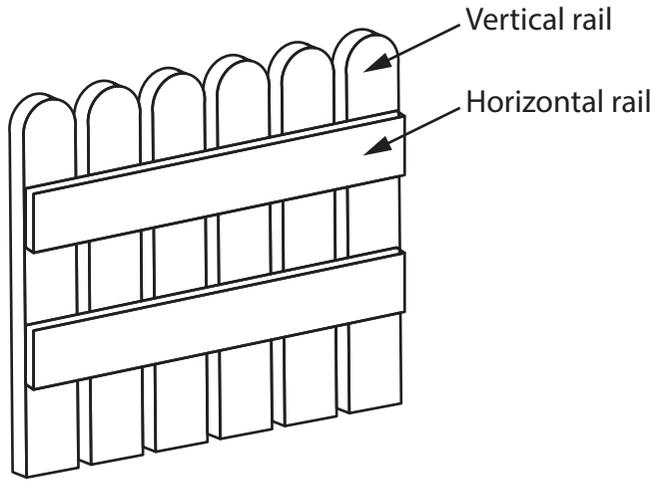


Figure 15

The garden gate is made from oak.

(a) Name **one** geographical forest region that oak can be sourced from.

(1)

The garden gate is finished with several coats of varnish.

(b) Explain **two** reasons for using varnish rather than paint to finish the garden gate.

(4)

1

.....

.....

2

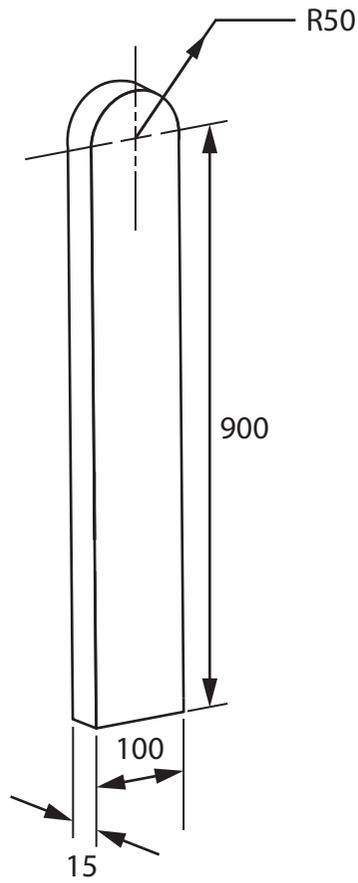
.....

.....

.....



(c) Figure 16 shows one of the six vertical rails that are used to make the garden gate.



All dimensions in mm

Figure 16

DO NOT WRITE IN THIS AREA



Calculate the volume of varnish required to coat the six vertical rails with one coat, in millilitres (ml).

Ignore any wastage that might occur due to drips and spillages.

Give your answer to two decimal places.

Area of a circle = πr^2

Circumference of a circle = $2 \pi r$

Use $\pi = 3.142$

1 litre of varnish covers 12 m^2

(5)

Answer = ml



(d) Explain **two** working properties of oak that make it an appropriate choice of material for the garden gate.

(6)

1

.....

.....

.....

.....

.....

2

.....

.....

.....

.....

.....

(Total for Question 7 = 16 marks)

DO NOT WRITE IN THIS AREA



8 Figure 17 shows a book shelf that has been assembled from a flat-pack.

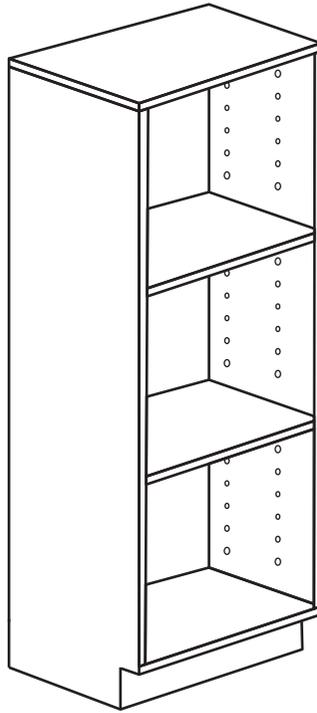


Figure 17

The book shelf is manufactured from veneered chipboard.

(a) (i) Explain **one** reason for applying a veneer to the surface of the chipboard.

(2)

.....

.....

.....

.....

(ii) Explain **one** working property of chipboard that makes it suitable for the flat-pack book shelf.

(3)

.....

.....

.....

.....



(b) Figure 18 shows one side panel of the flat-pack book shelf.

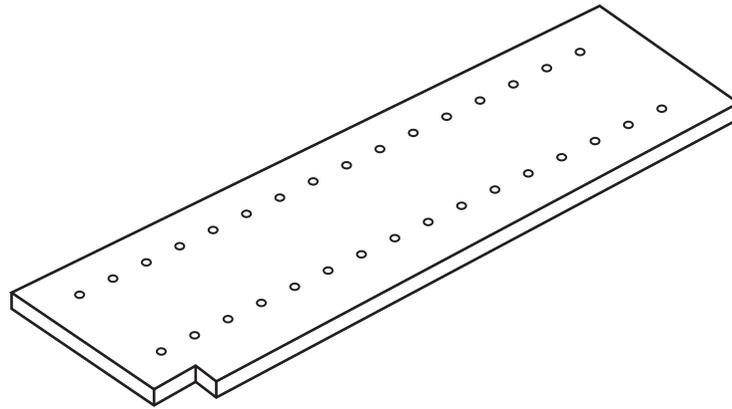


Figure 18

The side panels are mass produced using computer-aided manufacture (CAM).

Explain **two** advantages of using CAM to mass produce the side panels of the book shelf.

(4)

1

.....

.....

.....

.....

2

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 8 = 18 marks)

TOTAL FOR SECTION B = 60 MARKS
TOTAL FOR PAPER = 100 MARKS

