

Write your name here

Surname

Other names

Pearson
Edexcel GCSE

Centre Number

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Candidate Number

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Design and Technology:
Resistant Materials Technology
Unit 2: Knowledge and Understanding of
Resistant Materials Technology

Monday 8 June 2015 – Afternoon
Time: 1 hour 30 minutes

Paper Reference

5RM02/01

You do not need any other materials.

Total Marks

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.

Turn over ►

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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 piece of safety equipment should be worn when using a pillar-drilling machine?

- A** Ear defenders
- B** A high visibility jacket
- C** Heat protective gloves
- D** Goggles

(Total for Question 1 = 1 mark)

2 Which **one** of the following is a permanent method of joining?

- A** Welding
- B** Screws
- C** Knock down fittings
- D** Nuts and bolts

(Total for Question 2 = 1 mark)

3 Which **one** of the tools listed below is used to mark out a line at right angles to an edge?

- A** Mitre square
- B** Marking gauge
- C** Cutting gauge
- D** Try square

(Total for Question 3 = 1 mark)

4 Which **one** of the following materials needs to have a surface finish applied if it is to be used outside?

- A** Acrylic
- B** Copper
- C** Aluminium
- D** Oak

(Total for Question 4 = 1 mark)



5 Which type of saw would be used to cut curves in 12mm plywood?

- A Tenon saw
- B Hacksaw
- C Coping saw
- D Dovetail saw

(Total for Question 5 = 1 mark)

6 Which **one** of the following is a form of renewable energy?

- A Biomass
- B Oil
- C Gas
- D Coal

(Total for Question 6 = 1 mark)

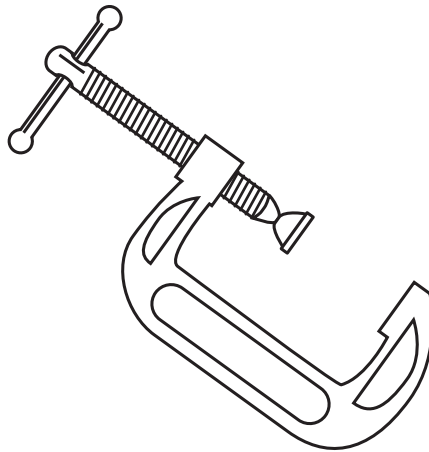
7 A material that can be drawn into a long thin wire is said to have what property?

- A Hardness
- B Elasticity
- C Ductility
- D Toughness

(Total for Question 7 = 1 mark)



8 Which process would have been used to make the metal frame of the g-clamp shown below?



- A Injection moulding
- B Casting
- C Blow moulding
- D Laminating

(Total for Question 8 = 1 mark)

9 What is the name of the process used to control the brittleness caused as a result of hardening?

- A Annealing
- B Tempering
- C Normalising
- D Case hardening

(Total for Question 9 = 1 mark)

10 A screw thread M8 x 1.2 is to be cut in a metal block.

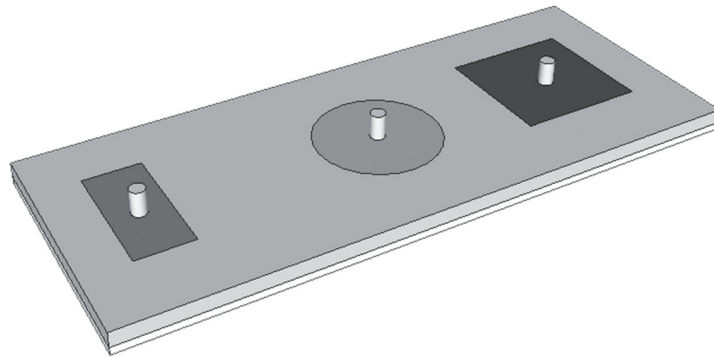
What size hole must be drilled before the thread can be cut?

- A 8.0mm
- B 9.2mm
- C 6.8mm
- D 7.8mm

(Total for Question 10 = 1 mark)



(b) The drawing below shows a child's wooden puzzle.



Two different manufactured boards were used to make the child's puzzle.

Complete the table below by naming the two manufactured boards described.

Description	Name of manufactured board
It has a shiny surface on one side and the other side is textured.	(i) (1)
It is made up from an odd number of layers stuck together at right angles to each other.	(ii) (1)

(iii) The two manufactured boards were glued together in the school workshop using an adhesive.

Name the most appropriate adhesive to use to permanently join the two manufactured boards.

(1)

(c) The wooden shapes for the puzzle were cut out using a laser cutter.

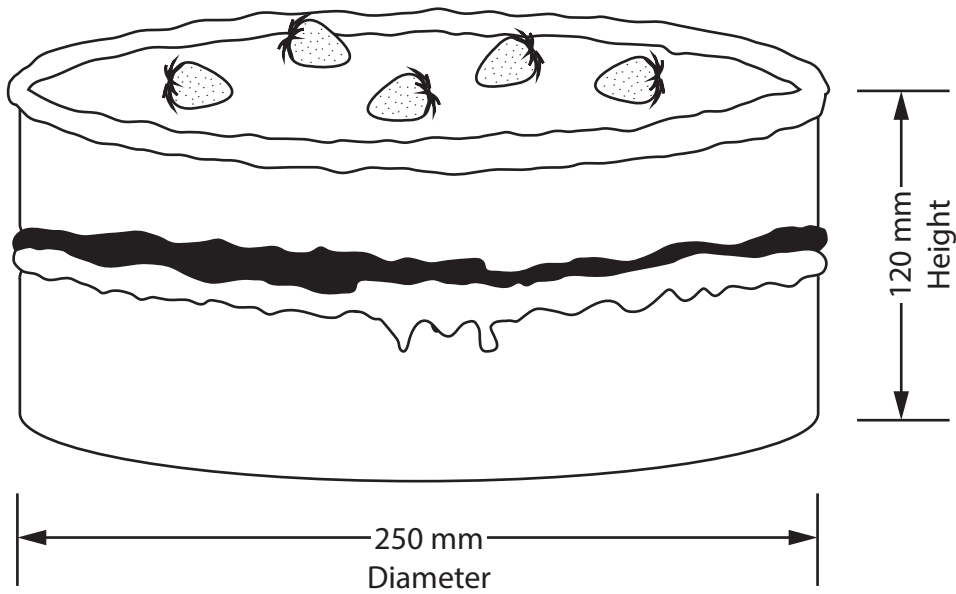
(i) Give **two** health and safety issues associated with using a laser cutter.

(2)

- 1
- 2



12 You have been asked to design a cake display unit for a coffee shop.



The specification for the cake display unit is that it must:

- hold two cakes
- allow the cakes to be seen by the customers
- allow coffee shop staff to access the cakes
- protect the cakes from flies
- have a stable base
- allow any crumbs to be removed easily
- be made from materials available in a school workshop
- be manufactured using processes available in a school workshop

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

(8)

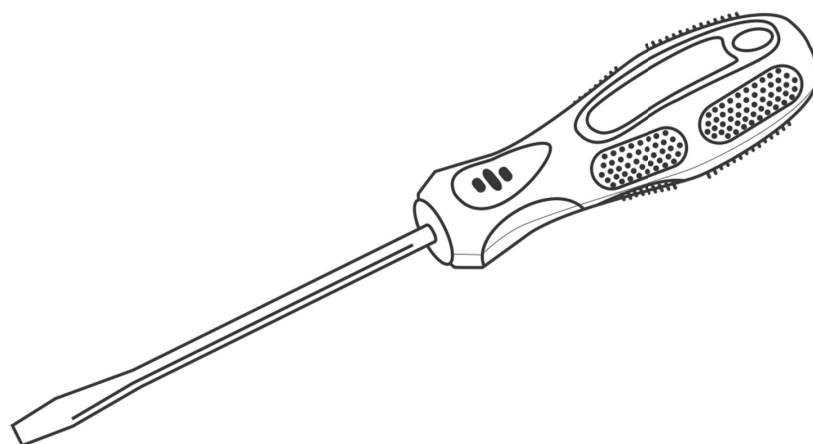
Design idea 2

(8)

(Total for Question 12 = 16 marks)



13 The drawing below shows a screwdriver.



(a) Give **two** properties of polyethene that make it suitable for the screwdriver handle.

For each property, justify your answer.

(4)

Property 1

Justification

Property 2

Justification

(b) The blade of the screwdriver must be hard.

Describe what is meant by the term 'hardness'.

(2)



(c) Explain why the screwdriver is successful in meeting the following specification points.

(i) Be safe to use

(2)

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(ii) Be easy to grip

(2)

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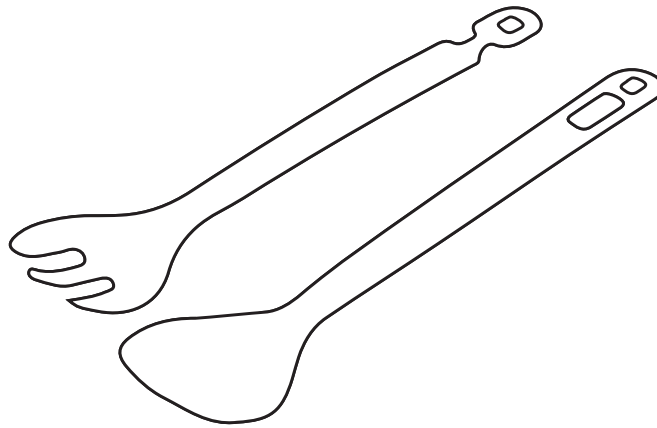
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(Total for Question 13 = 16 marks)



14 A batch of 50 identical plastic salad servers is to be produced as shown below.



(a) (i) A template is used to mark out the salad servers before cutting out.

Give **two** advantages of using a template to mark out the salad servers.

(2)

1

2

(ii) Name **two** thermoplastics that could be used to make the salad servers.

(2)

1

2



(iii) The salad servers are heated in an oven and then shaped over a former.

Explain **two** advantages of using a thermoplastic for the salad servers rather than a thermosetting plastic.

(4)

1

.....

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2

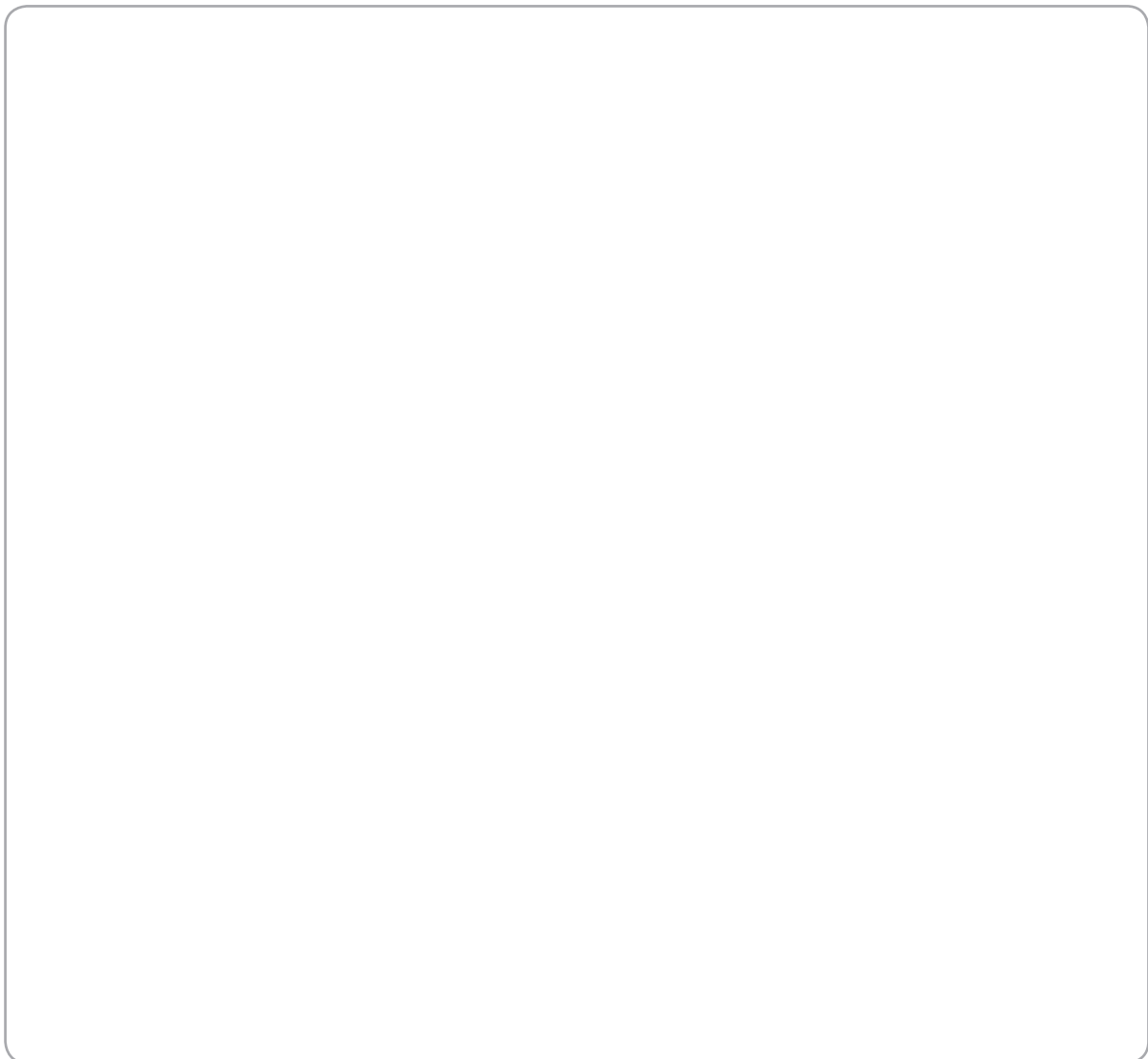
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(b) The salad servers can be laminated from thin layers of wood.

Use notes and sketches in the space below to show the laminating process.

(3)



(c) Explain **one** advantage for the environment of making the salad servers from wood rather than from plastic.

(2)

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