

Write your name here	
Surname	Other names
Centre Number	Candidate Number
Edexcel GCSE	
Design and Technology: Resistant Materials Technology Unit 2: Knowledge and Understanding of Resistant Materials Technology	
Wednesday 26 May 2010 – 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.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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Answer ALL the questions.

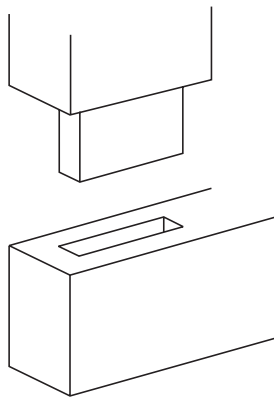
For each question 1 to 10, choose an answer A, B, C or D. Put a cross in the box indicating the answer you have chosen . If you change your mind about an answer, put a line through the box and then mark your new answer with a cross .

1 Which **one** of the following is a temporary method of joining?

- A Brazing
- B Welding
- C Screws
- D Soldering

(Total for Question 1 = 1 mark)

2 What kind of joint is shown below?



- A Butt
- B Mortise and tenon
- C Knock down fitting
- D Rebate

(Total for Question 2 = 1 mark)

3 A manufacturer makes 100,000 identical products.

This scale of manufacture is known as:

- A one-off
- B batch
- C mass
- D limited

(Total for Question 3 = 1 mark)



4 The best process to form a bottle from polythene is:

- A vacuum forming
- B injection moulding
- C blow moulding
- D line bending

(Total for Question 4 = 1 mark)

5 Which **one** of the following tools can be used for a wasting process?

- A Plane
- B Scriber
- C Micrometer
- D Paint brush

(Total for Question 5 = 1 mark)

6 Brass is an alloy of copper and which other metal?

- A Aluminium
- B Silver
- C Mild steel
- D Zinc

(Total for Question 6 = 1 mark)

7 CNC stands for:

- A Computer Numbered Cutters
- B Combined Numbers Controlled
- C Computer Numerically Controlled
- D Centrally Networked Computers

(Total for Question 7 = 1 mark)



8 Which **one** of the following is a smart material?

- A Reactive glass
- B ABS
- C Oak
- D High impact polystyrene

(Total for Question 8 = 1 mark)

9 The Kyoto Protocol agreement was established to:

- A reduce greenhouse gas emissions
- B reduce paper consumption
- C recycle more plastic
- D reuse materials and products where applicable

(Total for Question 9 = 1 mark)

10 Which **one** of the following is the correct definition of elasticity?

- A Ability to withstand sudden shock loading without fracture
- B Ability to withstand abrasive wear and indentation
- C Ability to be drawn or stretched
- D Ability to return to its original shape after the deforming force has been removed

(Total for Question 10 = 1 mark)



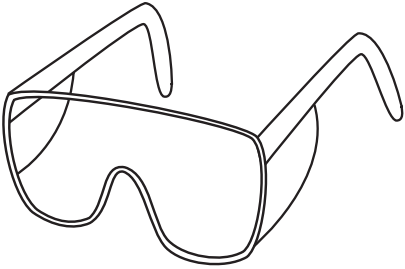
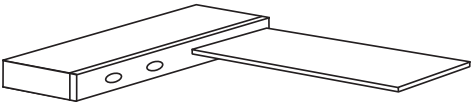
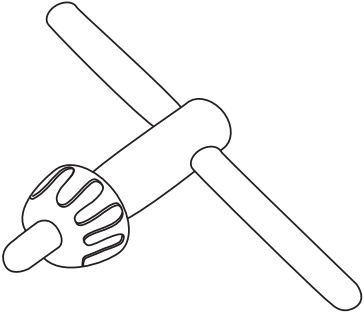
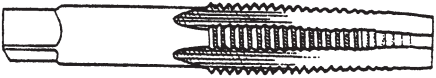
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TURN OVER FOR QUESTION 11



5
Turn over ▶

11 (a) The table below shows some tools and equipment.

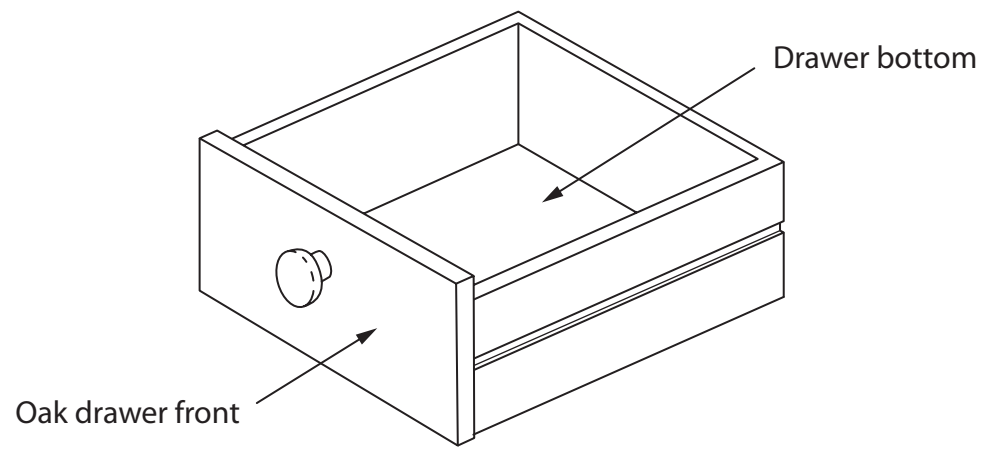
Complete the table below by giving the missing names and uses.

Tools / Equipment	Name	Use
	Safety goggles	(1)
	Try square	(1)
	(1)	Tightening up a drill bit into a pillar drilling machine
	(1)	Cutting an internal screw thread



(b) The drawing below shows a drawer from a desk.

The drawer front is made from oak.



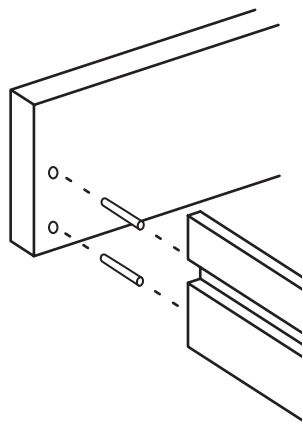
Give **two** properties of oak.

(2)

1

2

(c) The oak drawer front is joined to the side panel as shown below.



Name the type of joint used to join the drawer front to the side panel.

(1)

.....



(d) Name **two** finishes that could be applied to the oak drawer front.

(2)

1

2

(e) The drawer bottom is made from plywood.

Explain **two** advantages of making drawer bottoms from plywood rather than oak.

(4)

1

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2

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(f) The manufacturer of the drawers uses an EPOS system.

Give **two** pieces of information the manufacturer can store using an EPOS system.

(2)

1

2



(g) Describe **two** advantages, to the manufacturer of the desks, of using the internet to market its business.

(4)

1

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2

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(Total for Question 11 = 19 marks)



12 You have been asked to design a salt pot and a pepper pot.

The specification for the salt and pepper pots are that they must:

- identify which pot holds salt and which pot holds pepper
- be easy to clean
- be easy to refill
- be held together as a pair
- not slip out of the hand
- allow for the salt and pepper to come out
- 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 salt and pepper pots 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)

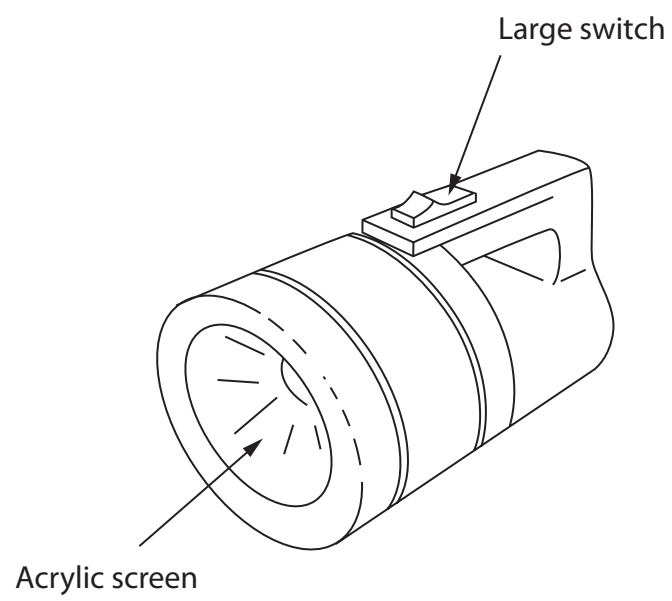
Design idea 2

(8)

(Total for Question 12 = 16 marks)



13 The drawing below shows a torch.



(a) Give **two** properties of acrylic which make it suitable for the torch screen.

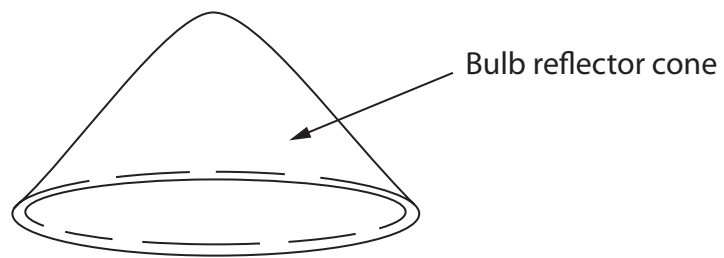
(2)

1

2



(b) The bulb reflector cone of the torch is mass produced by vacuum forming.



Describe **two** reasons why vacuum forming is a suitable process to manufacture the bulb reflector cone.

(4)

1

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2

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(c) Explain why the torch is successful in meeting the following specification points:

(i) easy to switch on and off.

(2)

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(ii) comfortable to carry.

(2)

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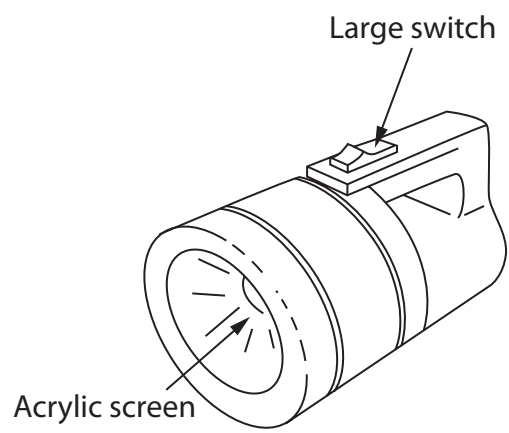
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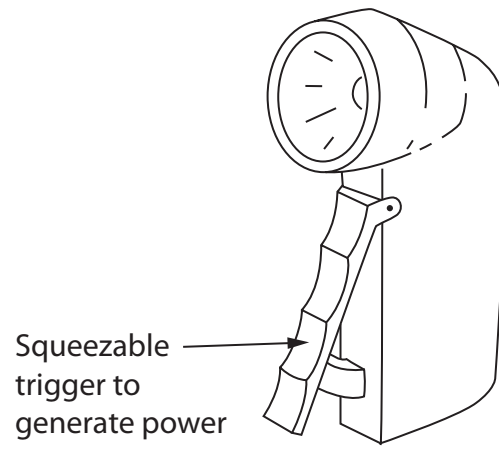
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*(d) The drawings below show two different types of torch.



Torch A



Torch B

Evaluate torch A compared with torch B.

(6)

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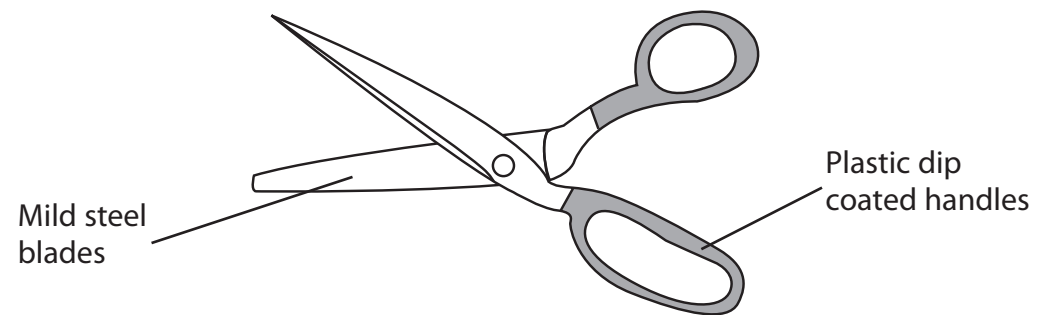
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(Total for Question 13 = 16 marks)



14 The drawing below shows a pair of scissors.



(a) Give **two** properties of mild steel that makes it suitable for making the scissors.

For each property, justify your answer.

(4)

Property 1

Justification

Property 2

Justification



(b) The handles of the scissors have been plastic dip coated.

Give **three** reasons for plastic dip coating the handles of the scissors.

(3)

1

2

3

(c) Describe **two** reasons for electroplating the blades of the mild steel scissors.

(4)

1

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2

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(d) The scissors are joined by a rivet.

Describe how a rivet joint is made.

(2)

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