Write your name here

Surname	Other names

Edexcel GCE

Centre Number	Candidate Number

Design and Technology

Product Design: Resistant Materials Technology
Advanced Subsidiary
Unit 2: Design and Technology in Practice

Friday 28 May 2010 – Morning
Time: 1 hour 30 minutes

Paper Reference
6RM02/01

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 70.
- 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. Write your answers in the spaces provided.

1 Figure 1 shows a mould which is used for vacuum forming.

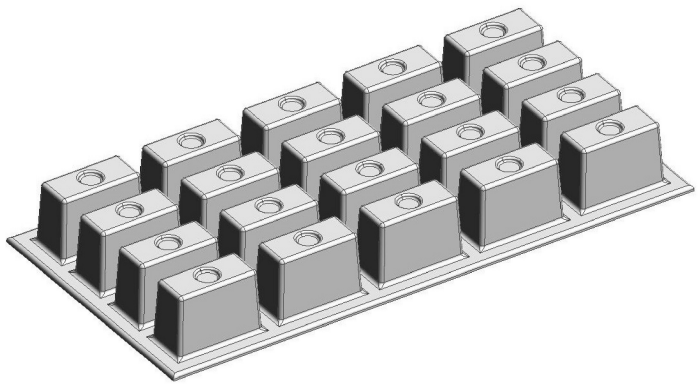

Figure 1

(a) Give **four** features of a mould which must be considered in order to create a successful vacuum forming.

(4)

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2 .....

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3 .....

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4 .....

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(b) Describe, using notes and/or sketches, the vacuum forming process.

(6)

(Total for Question 1 = 10 marks)

2 Figure 2 shows two mild steel tubes which have been brazed together.

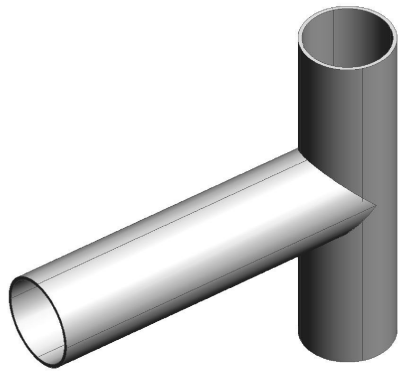

Figure 2

(a) Describe the process of brazing the two tubes together.

(4)

(b) Figure 3 shows a plywood seat for a chair which requires a decorative veneered finish. The veneer is a thin wooden layer (laminate) that is to be bonded to the surface of the plywood seat using contact adhesive.

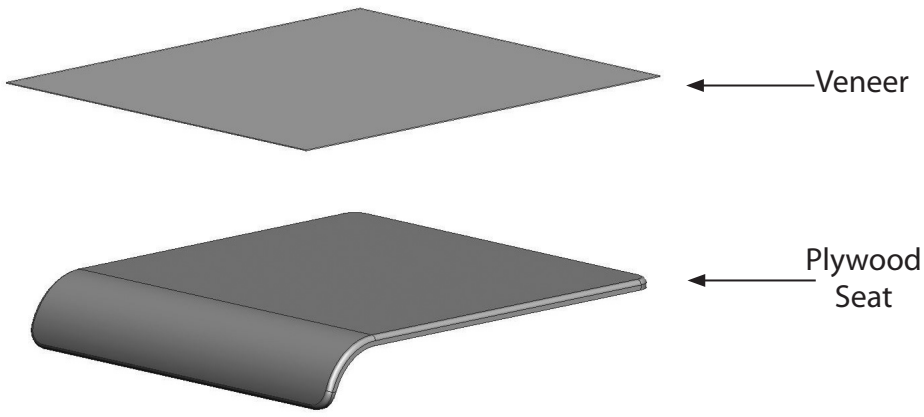

Figure 3

(i) Explain **two** reasons why contact adhesive is suitable for this purpose.

(4)

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(ii) Describe the process of using contact adhesive to bond the veneer to the chair seat.

(2)

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(Total for Question 2 = 10 marks)

3 (a) It is necessary for companies to carry out risk assessments for all processes.

Identify **one** hazard and **one** control measure for each of the following processes

(i) Wood turning

(2)

Hazard

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Control measure

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(ii) Metal casting

(2)

Hazard

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Control measure

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(iii) Computer Aided Designing

(2)

Hazard

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Control measure

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(b) The properties of metal can be altered by using heat treatments.

(i) Explain why the blade of a saw is hardened.

(2)

(ii) Explain why the blade of a saw is tempered.

(2)

(iii) Describe the process of tempering steel.

(2)

(Total for Question 3 = 12 marks)

4 Figure 4 shows a steel box which has been riveted at the seams using snap (head) rivets.

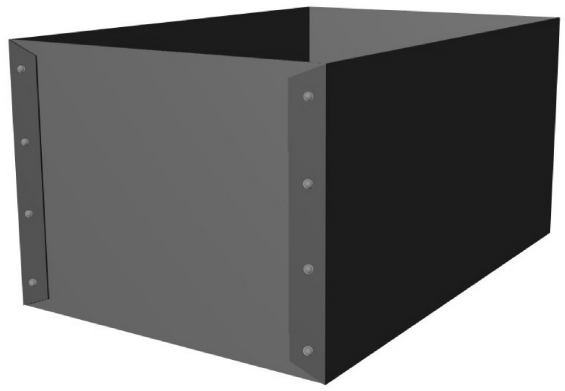

Figure 4

(a) Describe, using notes and/or sketches, the process of riveting using snap (head) rivets.

(4)

(b) Pop rivets could be used as an alternative to the snap (head) rivets.

Explain **two** reasons why pop rivets might be used in sheet metalwork.

(4)

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2 .....

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(Total for Question 4 = 8 marks)

5 Figure 5 shows a large table. The table top is made from veneered chipboard.

Figure 5

(a) Name **two** alternative manufactured boards which could be used instead of chipboard for the table top.

(2)

1 .....

2 .....

(b) Explain **three** reasons why a veneered chipboard top is more suited to this design than a solid timber top.

(6)

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(c) Sheets of veneered chipboard are often supplied with their edges left exposed.

Draw an annotated diagram of **one** suitable edge treatment a manufacturer could use to cover the exposed edges of the chipboard table top.

(2)

(Total for Question 5 = 10 marks)

***6** Figure 6 shows a wooden block model of a simple television remote control.

Figure 6

(a) Explain **two** reasons why it is important to produce a block model of the television remote control before going to the production stage.

(4)

1 .....

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(b) Explain **three** benefits of using rapid prototyping using CAD/CAM as an alternative method to block modelling.

(6)

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(Total for Question 6 = 10 marks)

***7** It is essential for businesses to have Quality Assurance (QA) systems in place.

(a) Explain what is meant by the term 'Quality Assurance'.

(2)

(b) Describe how Total Quality Management (TQM) systems can be used to enhance company performance.

(8)

(Total for Question 7 = 10 marks)

TOTAL FOR PAPER = 70 MARKS

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