Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						5	3	1	8	/	0	6	Signature	

Paper Reference(s)

5318/06

Edexcel GCSE

Manufacturing (Double Award) (2351)
Engineering (Double Award) (2316)

Unit 3: Application of Technology

Sector 06: Mechanical, Automotive

Monday 2 June 2008 – Morning

Time: 1 hour 30 minutes

Examiner's use only

Team Leader's use only

Question Number	Leave Blank
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
Total	

Materials required for examination
Notes and sketches collected during your Pre-release research.
Ruler, pen, pencil, rubber.

Items included with question papers
Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature.
Check that you have the correct question paper.
You should attempt **ALL** questions in Section A, and **ALL** questions in Section B, using the spaces provided in this paper.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. **(2)**.
There are 13 questions in this question paper. The total mark for this paper is 100.
The total mark for Section A is 45, and the total mark for Section B is 55.
There are 20 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

You are reminded of the importance of clear English and careful presentation in your answers.
You may take your researched notes and sketches into the examination room and use these as reference material. **NONE** of this material should be sent to Edexcel and Pre-release work will **not** be marked.

Do not attach your notes and sketches collected during your Pre-release research.

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Answer ALL the questions in Section A and Section B.

SECTION A

Answer ALL the questions in this section. Write your answers in the spaces provided.

1. All of the products listed below belong to a manufacturing sector.

(a) Tick the **two** boxes below where the products belong to the **mechanical** sector.

Products	Tick **two** boxes below
Headache tablet	
Computer monitor	
Metal step ladder	
Chilli powder	
Neoprene glove	
Pillar drill	

(2)

(b) Tick the **two** boxes below where the products belong to the **automotive** sector.

Products	Tick **two** boxes below
Mobile phone	
Walking boots	
Safety overalls	
Hydraulic pump	
Olive oil	
Steering wheel	

(2)

Q1

(Total 4 marks)

Leave blank

2. The two tables below show some components used in the manufacture of products.

(a) Complete **Table 1** by naming each component.

Table 1

Component	Component name	Use
		Used to reduce friction between a rotating component and a stationary component.
		Used to transfer and reverse rotary motion from one shaft to another, may change the speed.

(2)

(b) Complete **Table 2** by explaining what each component is used for.

Table 2

Component	Component name	Use
	Split pin	
	Compression spring	

(4)

Q2

(Total 6 marks)

Leave blank

3. Draw a straight line to link each term listed below to the correct key area.

Each key area can be used more than once.

Term	Key area
Assembly robot	Information and Communications Technology (ICT)
Ceramics	Control technology
Spreadsheet	Modern materials
Acrylic	
Programmable logic controllers (PLCs)	
Word processing	

(1) **(1)** **(1)** **(1)** **(1)** **(1)**

Q3

(Total 6 marks)

Leave blank

4. Lazy tong riveters belong to the mechanical, automotive sector.

(a) (i) Name **one** other product from this sector, apart from a **lazy tong riveter**, that utilises in its manufacture a modern material and process control.

.....

(1)

(ii) Explain the purpose of this product.

.....

.....

.....

(2)

(b) (i) State **one** stage in the manufacture of the product you named in 4(a)(i) where control technology is used.

.....

(1)

(ii) Explain **one** advantage to the **manufacturer** of using control technology at this stage.

.....

.....

.....

(2)

(c) (i) State **one** modern material used in the manufacture of the product you named in 4(a)(i).

.....

(1)

(ii) Describe how this modern material improves the key features of the product.

.....

.....

.....

.....

(2) **Q4**

(Total 9 marks)

Leave blank

5. Information and Communications Technology (ICT) is used by manufacturers of mechanical, automotive products.

(a) (i) Give **one** example of **where** a database could be used by a manufacturer.

.....

(1)

(ii) Explain **one** benefit to the manufacturer of using a database relating to this example.

.....

.....

.....

(2)

(b) (i) Give **one** example of communications technology as used by a manufacturer.

.....

(1)

(ii) Explain **one** benefit to the manufacturer of using communications technology relating to this example.

.....

.....

.....

(2)

(c) Explain **one** benefit to the **distributor** of the manufacturer using ICT.

.....

.....

.....

(2)

Q5

(Total 8 marks)

Leave blank

6. Systems and control technology is now used by manufacturers to organise, monitor and control production.

(a) Name **two** different examples of systems and control technology.

(b) Describe the traditional method each has replaced.

(c) Explain **one** benefit to the manufacturer of using each replacement systems and control technology.

Example 1

Systems and control technology 1 .....

.....

(1)

Method it has replaced .....

.....

(1)

Benefit of replacement .....

.....

.....

(2)

Example 2

Systems and control technology 2 .....

.....

(1)

Method it has replaced .....

.....

(1)

Benefit of replacement .....

.....

.....

(2) **Q6**

(Total 8 marks)

Leave blank

7. Computer-aided manufacture (CAM) is an essential feature in mechanical, automotive manufacturing companies.

Explain **one** benefit that CAM has for the:

(a) Manufacturer .....

.....

.....

.....

.....

(2)

(b) Consumer .....

.....

.....

.....

.....

(2) **Q7**

(Total 4 marks)

TOTAL FOR SECTION A: 45 MARKS

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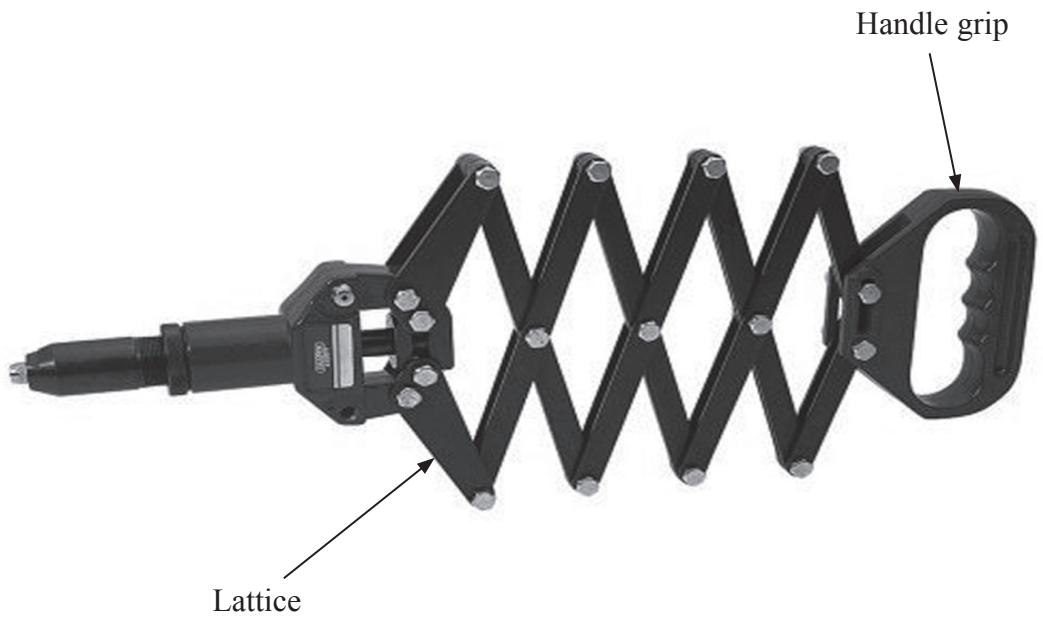
SECTION B

Answer ALL the questions in this section with reference to the manufacture of mass produced lazy tong riveters. Write your answers in the spaces provided.

The diagram below shows a lazy tong riveter.



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8. In the boxes below, explain, using notes and sketches:

(a) the function of the handle grip

Handle grip

(3)

(b) the function of the lattice.

Lattice

(3)

Q8

(Total 6 marks)

Leave blank

9. (a) The following table shows some of the main stages in manufacturing lazy tong riveters.

(i) Complete the table below by giving the **two** missing stages in manufacturing lazy tong riveters.

Stages in manufacturing	
1	
2	Marketing
3	Production planning
4	
5	Production
6	Assembly
7	Packaging and dispatch

(2)

(ii) State the stage in manufacturing where the lazy tong riveters would be advertised.

Stage .....

(1)

(b) Describe the following **two** stages in the manufacture of lazy tong riveters.

(i) Production .....

.....

.....

.....

.....

(3)

(ii) Assembly .....

.....

.....

.....

.....

(3)

Q9

(Total 9 marks)

Leave blank

10. Mass produced lazy tong riveters are manufactured using modern materials and processes.

(a) (i) Name **one** specific material commonly used in the production of the handle grip of the lazy tong riveters.

.....

(1)

(ii) Explain how this material has helped to improve the characteristics of the handle grip.

.....

.....

(2)

(b) Hardening is a production process and is used in the manufacture of lazy tong riveters.

(i) Explain why hardening is used.

.....

.....

.....

(2)

(ii) State **two** production processes, other than hardening, used in the manufacture of lazy tong riveters.

Process 1 .....

Process 2 .....

(2)

(c) Explain how the use of modern materials has helped the **manufacturer** of lazy tong riveters to increase sales.

.....

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.....

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.....

(3)

Q10

(Total 10 marks)

Leave blank

11. Automation is used in the manufacture of lazy tong riveters.

(a) Describe **two** examples of automation used at the **production** stage of the manufacture of lazy tong riveters.

(b) Explain **one** benefit to the **manufacturer** of applying each type of automation.

(c) Explain **one** benefit to the **consumer** of applying each type of automation.

Example 1

Automation Example 1 .....

.....

.....

.....

(2)

Benefit to manufacturer .....

.....

.....

.....

(2)

Benefit to consumer .....

.....

.....

.....

(2)

Example 2

Automation Example 2 .....

.....

.....

.....

(2)

Benefit to manufacturer .....

.....

.....

.....

(2)

Benefit to consumer .....

.....

.....

.....

(2)

(Total 12 marks)

Q11

Leave blank

12. The use of computer-aided manufacture (CAM) and control technology in the manufacture of lazy tong riveters has brought changes.

(a) (i) State **one** change CAM has had on the type and size of the workforce.

Change .....

(1)

(ii) Explain **two** different effects this change has had on the type and size of the workforce.

Effect 1 .....

.....

(2)

Effect 2 .....

.....

(2)

(b) (i) State **one** change control technology has had on the global environment.

Change .....

(1)

(ii) Explain **two** different effects this change has had on the global environment.

Effect 1 .....

.....

(2)

Effect 2 .....

.....

(2)

Q12

(Total 10 marks)

Leave blank

13. Modern materials are used in the manufacture of lazy tong riveters.

(a) Explain how modern materials have impacted environmentally in terms of product disposal.

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(4)

Leave blank

(b) Explain how the use of modern materials and components has impacted on development costs and product costs.

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.....

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.....

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(4) **Q13**

(Total 8 marks)

TOTAL FOR SECTION B: 55 MARKS

TOTAL FOR PAPER: 100 MARKS

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