

**Tuesday 31 January 2012 – Afternoon**

**GCSE ENGINEERING**

**A624/02** Impact of Modern Technologies on Engineering

Candidates answer on the Question Paper.

**OCR supplied materials:**

None

**Other materials required:**

None

**Duration:** 1 hour



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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**INSTRUCTIONS TO CANDIDATES**

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- Your Quality of Written Communication will be assessed in questions marked with an asterisk (\*).
- This document consists of **12** pages. Any blank pages are indicated.

1 Engineering sectors produce different products.

(a) Complete the links below to identify which engineering sector makes the products listed.

Engineering Sector	Product
Aerospace	Life raft
Rail and Marine	Pedestrian bridge
Automotive	Satellite solar panel
Structural and Civil	Dishwasher powder
Computers, Communication and IT	Parking sensors
Chemical and Process	Infra red mouse

[6]

(b) Select **one** product from those listed above and state:

- **one** modern technology used in its production
- **one** benefit of using that modern technology

Product .....

Modern technology ..... [1]

Benefit ..... [1]

2 (a) Describe **two** ways in which the use of modern technology has increased the volume of production in the engineering industry.

1 .....  
.....  
..... [2]

2 .....  
.....  
..... [2]

(b) Modern technology has resulted in a number of disadvantages to engineering companies.

Describe **two** disadvantages of the introduction and use of modern technology to engineering companies.

Disadvantage 1 .....  
.....  
..... [2]

Disadvantage 2 .....  
.....  
..... [2]

3 (a) State what the letters **CAM** stand for in the context of engineering.

**C** ..... **A** ..... **M** ..... [1]

(b) Explain how computer control is used in **two** different engineering processes.

1 .....  
.....  
..... [3]

2 .....  
.....  
..... [3]

4 Engineered products could go through the following stages during production.

- material removal**
- shaping and manipulation**
- joining and assembly**
- surface finishing**

(a) State **two** different machines that could be used in the 'material removal' stage.

1 ..... [1]

2 ..... [1]

(b) State **two** different hazards that are present during the 'shaping and manipulation' stage.

1 ..... [1]

2 ..... [1]

(c) State **two** different hand tools that could be used in the 'joining and assembly' stage.

1 ..... [1]

2 ..... [1]

(d) State **two** different surface finishing processes used on engineered products.

1 ..... [1]

2 ..... [1]

5 Modern factories are designed to have less impact on the environment than in the past.

(a) Describe **two** ways older factories can cause damage to the environment.

1 .....  
.....  
..... [2]

2 .....  
.....  
..... [2]

(b) Describe **two** ways in which damage to the environment caused by factories can be reduced.

1 .....  
.....  
..... [2]

2 .....  
.....  
..... [2]

6 Describe **one** different health and safety consideration for each of the following engineering processes.

(i) Drilling .....  
.....  
..... [2]

(ii) Soldering .....  
.....  
..... [2]

(iii) Vacuum forming .....  
.....  
..... [2]

7 Engineered products are often made using materials from the groups listed below.

- non-ferrous metals
- polymers
- ferrous metals

(a) Explain, using **one** example, why low carbon (mild) steel is used rather than a non-ferrous metal.

.....

.....

.....

..... [3]

(b) Explain, using **one** example, what is meant by the term 'polymers'.

.....

.....

.....

..... [3]

(c) Explain, using **one** example, why a polymer has replaced a metal material in an engineered product.

.....

.....

.....

..... [3]





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