OCR
RECOGNISING ACHIEVEMENT

GENERAL CERTIFICATE OF SECONDARY EDUCATION

ENGINEERING

A624

Impact of Modern Technologies on Engineering

Candidates answer on the question paper.

OCR supplied materials:
None

Other materials required:
None

Tuesday 1 February 2011
Morning

Duration: 1 hour

Candidate forename		Candidate surname	

Centre number						Candidate number				

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. Pencil may be used for graphs and diagrams only.
- 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).
- Answer **all** the questions.
- 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 is 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	Cruise liner
Rail and Marine	Motorway service station
Automotive	Landing gear
Structural and Civil	Dishwasher powder
Computers, Communications and IT	Automatic headlight levelling system
Chemical and Process	Laser printer

[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 The introduction of modern technology has brought a number of advantages and disadvantages to the engineering industry.

(a) Describe **two** ways in which the use of modern technology has improved working conditions.

1 .....

.....

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

2 .....

.....

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

(b) Describe **two** negative effects of the use of modern technology in engineering companies.

1 .....

.....

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

2 .....

.....

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

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

C ..... **I** ..... **E** ..... **[1]**

(b) Describe **three** benefits to an engineering company of using computer controlled processes.

1 .....

.....

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

2 .....

.....

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

3 .....

.....

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

4 Engineered products normally go through the following stages of production.

joining and assembly
material removal
shaping and manipulation
surface finishing

(a) (i) State **two** activities that could be carried out on an engineered product at the material removal stage.

1 ..... **[1]**

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

(ii) State **two** different activities that could be carried out on an engineered product at the shaping and manipulation stage.

1 ..... **[1]**

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

(iii) State **two** different activities that would be carried out on an engineered product at the joining and assembly stage.

1 ..... **[1]**

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

(iv) State **two** different activities that could be carried out on an engineered product at the surface finishing stage.

1 ..... **[1]**

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

5 Modern motor vehicles are designed to have less impact on the environment than earlier models.

(a) Describe **two** ways in which motor vehicles cause damage to the environment.

1 .....

.....

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

2 .....

.....

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

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

1 .....

.....

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

2 .....

.....

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

6 **(a)** Describe **one** different Health and Safety consideration for each of the following engineering processes.

(i) Milling .....

.....

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

(ii) Welding .....

.....

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

(iii) Spray painting .....

.....

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

7 Engineered products are often made using some of the modern materials listed below.

alloys
ceramics
composites
non-ferrous metals
polymers

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

.....

.....

.....

..... **[3]**

(b) Explain, using **one** example, of why a non ferrous metal might be preferred to a ferrous metal.

.....

.....

.....

..... **[3]**

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

.....

.....

.....

..... **[3]**

8* Discuss the implications that the introduction of modern technologies have had on the **processing** and **production** of engineered products.

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.....

.....

..... **[6]**

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