



**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

**Thursday 20 May 2010
Afternoon**

Duration: 1 hour



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

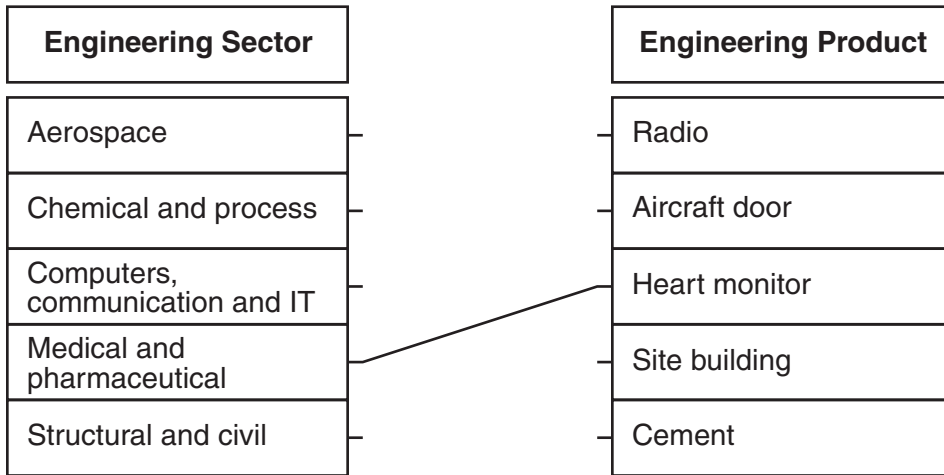
- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- 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).

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. One has been done for you.



[4]

(b) Select **two** products from those shown above and, for each, state:

- **one** technology used in your chosen product;
- **one** benefit of using that technology.

Product 1

Technology..... [1]

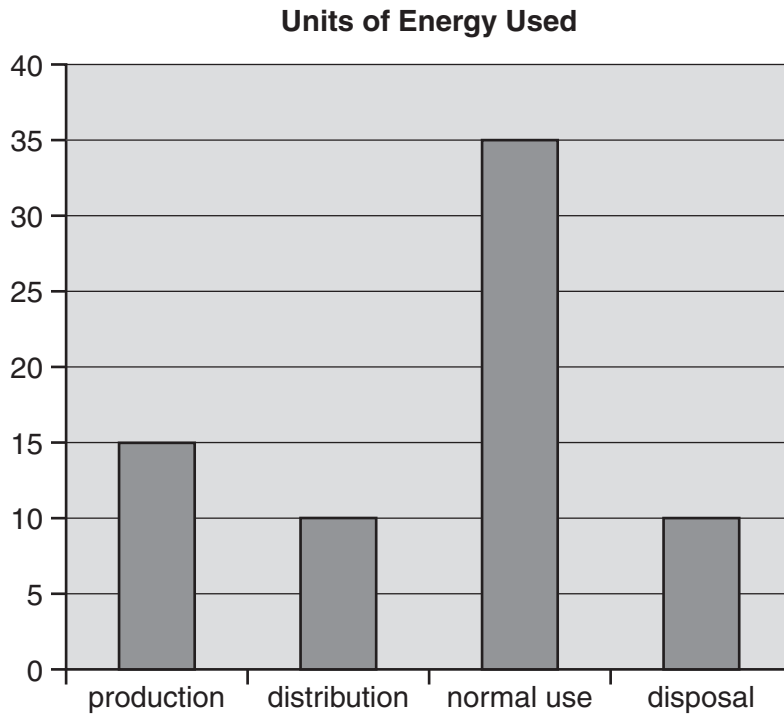
Benefit..... [1]

Product 2

Technology..... [1]

Benefit..... [1]

2 The bar chart below shows units of energy used in the life of a product.



(a) Use the information shown in the chart to identify:

(i) How many units of energy are used in producing the product [1]

(ii) When most energy is used in the life of the product [1]

(b) Describe 'normal use of energy' in a product, including the type of energy used.

.....

.....

.....

.....

.....

..... [2]

- (c) Explain how new technology can reduce the energy used in production and distribution of an engineered product.

Production

.....

.....

..... [3]

Distribution

.....

.....

..... [3]

- (d) Describe **one** way that engineered products can be modified to reduce the energy needed for disposal.

.....

.....

..... [2]

- 3 The table below gives details of the stages in a quality control procedure.
Complete the table by describing each stage for an engineered product you have studied.

Engineered Product	
Sampling	[2]
Comparing	[2]
Action	[2]

4 Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) are examples of new technologies used in the design and production of engineered products.

(a) Describe how CAD is used in an engineering company when:

- designing new products;
- modifying existing product designs.

Designing new products.

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

Modifying existing product designs.

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

(b) Describe how CAM is used in an engineering company when meeting an urgent order for a small batch of a high quality product.

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.....
.....
.....
.....
..... [4]

5 Describe how a product you have studied has the following features:

- use of non-hazardous recyclable materials;
- design for disassembly;
- reduced product energy consumption.

Product:.....

Use of non-hazardous recyclable materials

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

Design for disassembly

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

Reduced product energy consumption

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

6 Describe **one** different environmental consideration for **each** engineering process shown below.

Chemical treatment

Environmental consideration 1

.....

.....

..... [2]

Joining and assembly

Environmental consideration 2

.....

.....

..... [2]

Shaping and manipulation

Environmental consideration 3

.....

.....

..... [2]

7 (a) Describe **one** benefit of “design for the environment” to an engineering company.

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

(b) Describe **one** disadvantage of “design for the environment” to an engineering company.

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

(c) Explain how a designer can address the issue of “manufacture without producing hazardous waste” when designing engineered products.

.....
.....
.....
.....
..... [4]

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