



**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 2 February 2010
Morning**

Duration: 1 hour



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

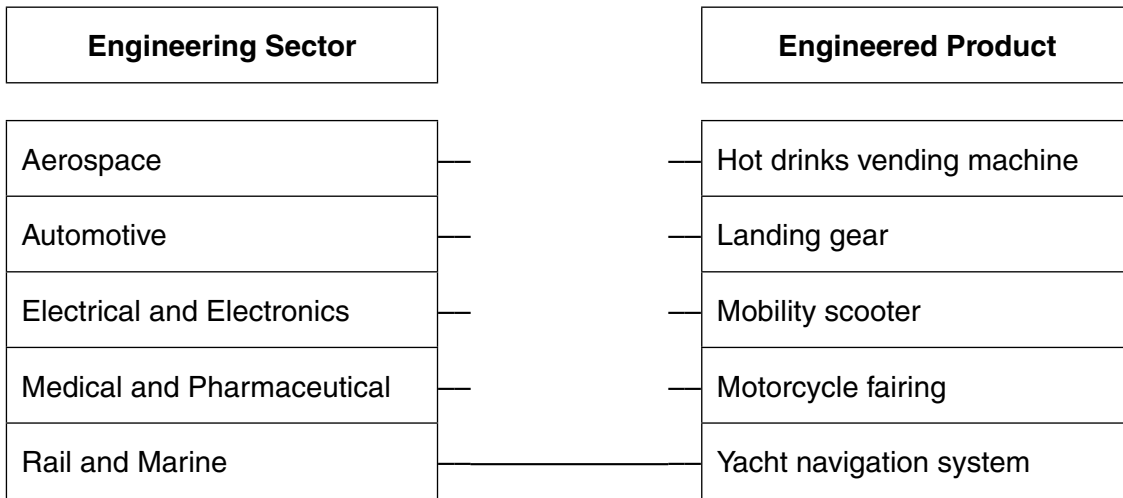
- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the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

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** modern **or** smart material used in your chosen product; and
- **one** benefit of using that material.

Product 1

Material [1]

Benefit [1]

Product 2

Material [1]

Benefit [1]

2 (a) Describe **two** benefits to **designers** of engineered products when Computer Aided Design (CAD) is used.

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

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

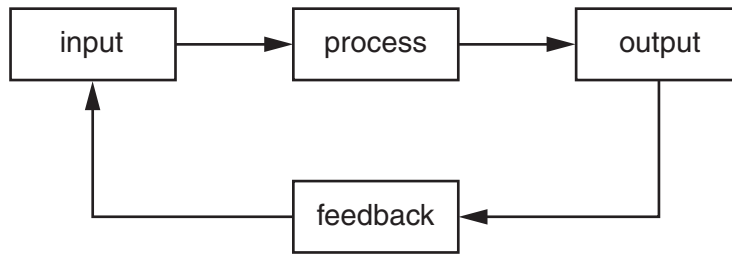
(b) Describe how Computer Aided Manufacturing (CAM) is used to make **customised** products.

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

(c) Describe **one** benefit to **end users** of engineered products when CAM is used.

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

3 Systems and control technology is used to control production.



Complete the table below to show details of a system used to control production of an engineered product.

System used to control production of an engineered product	
Engineered Product	
Production process	[1]
Input	[2]
Output	[1]
Explanation of how the control system works	[4]

4 (a) Describe how a product you have studied has the following features of 'Design for the Environment':

- Use of non-hazardous recyclable materials;
- Design for ease of disassembly;
- Reduced product energy consumption.

Product:

Use of non-hazardous recyclable materials.

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

Design for ease of disassembly.

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

Reduced product energy consumption.

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

(b) Describe how an engineering company could manufacture without producing hazardous waste.

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

5 Describe **one** different Health and Safety consideration for each engineering process shown below.

Material removal

Health and Safety consideration 1
.....
..... [2]

Heat treatment

Health and Safety consideration 2
.....
..... [2]

Shaping and Manipulation

Health and Safety consideration 3
.....
..... [2]

6 (a) (i) Describe **one** benefit of using modern technology when marketing an engineered product.

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

(ii) Describe **one** benefit of using modern technology when packaging an engineered product.

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

(iii) Describe **one** benefit of using modern technology when dispatching a completed engineered product.

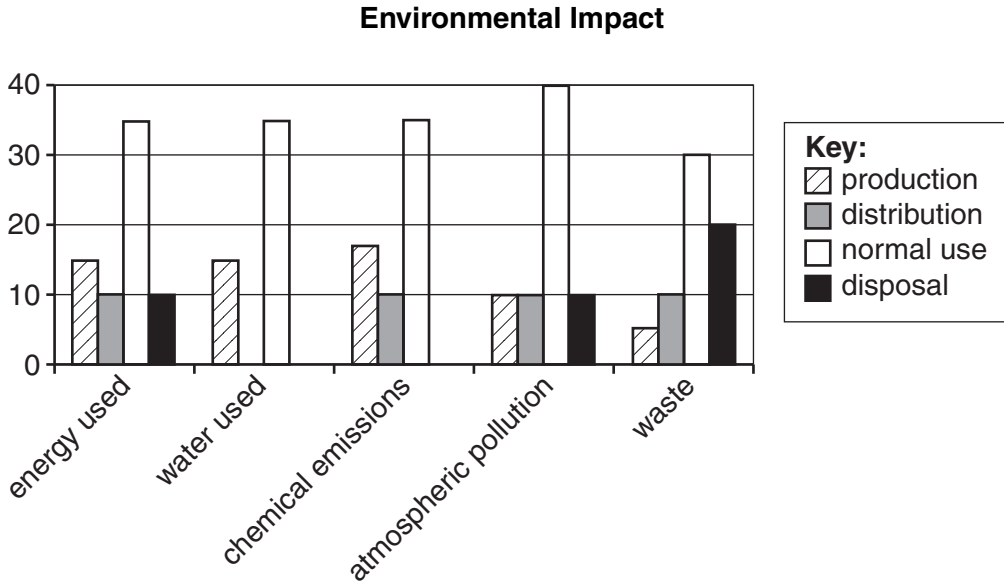
.....
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..... [2]

(b) Describe **one** issue to be considered when introducing modern technology in an engineering company.

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

7 The chart below shows how much of the total environmental impact of an engineered product comes from its:

- production;
- distribution;
- normal use; and
- disposal.



(a) Tick (✓) below to show whether each of the following statements is true or false.

	true	false
More waste came from distribution than disposal		
Most of the environmental impact of the product came from its normal use		
Most of the environmental impact came from water used		
More energy was used in distribution than production		

[4]

(b) (i) Describe **one** example of chemical emissions that come from a product's distribution.

.....

.....

..... [2]

(ii) Describe **one** different example of chemical emissions that come from a product in normal use.

.....

.....

..... [2]

8* Discuss the implications of using bought-in components in engineered products.

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

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