



**GENERAL CERTIFICATE OF SECONDARY EDUCATION**  
**ENGINEERING**  
 Engineering Processes

**A622**

Candidates answer on the Question Paper

**OCR Supplied Materials:**  
None

**Other Materials Required:**  
None

**Monday 25 January 2010**  
**Morning**

**Duration: 1 hour**



Candidate Forename		Candidate Surname	
--------------------	--	-------------------	--

Centre Number						Candidate Number				
---------------	--	--	--	--	--	------------------	--	--	--	--

**INSTRUCTIONS TO CANDIDATES**

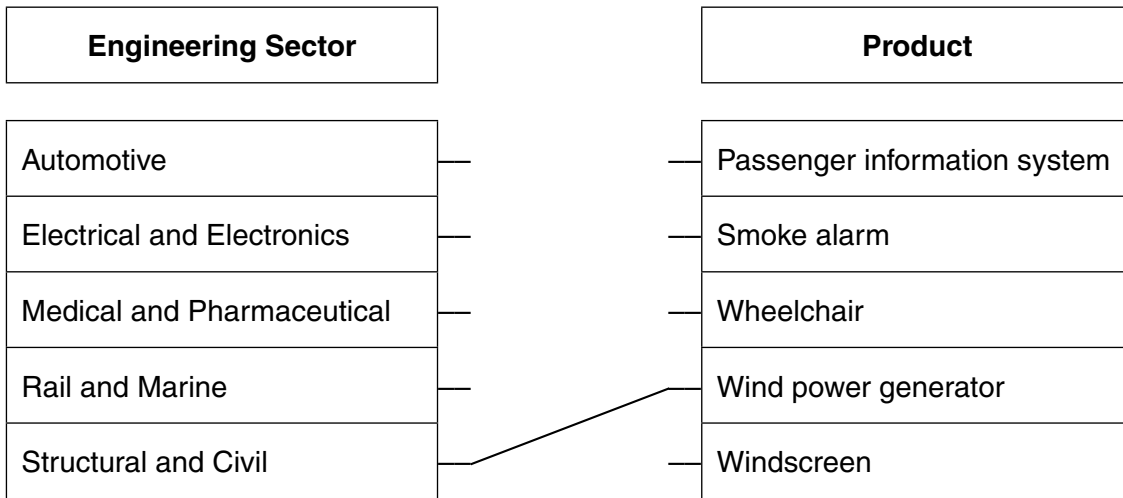
- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the 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 product listed. One has been done for you.



[4]

(b) Complete the table below to show **two** engineering sectors **different** from those shown above and, for each, a **different** product produced in that sector.

Engineering Sector	Product
[1]	[1]
[1]	[1]

[4]

2 (a) Tick [✓] in the boxes below **two** items of personal protective equipment (PPE) you should wear when operating a pillar drill.

- Goggles
- Safety helmet
- Gloves
- Apron

[2]

(b) Describe **two** safety precautions you should take when operating a pillar drill.

1 .....

.....

..... [2]

2 .....

.....

..... [2]

(c) Quality control checks are carried out when making engineered products.

(i) Name an engineering tool or item of equipment used to check that a machined **workpiece** is within tolerance.

..... [1]

(ii) Describe how it is used.

.....

.....

..... [2]

(iii) Describe **one** different quality check you could carry out when making an engineered product.

.....

.....

..... [2]

3 (a) A list of engineering materials is shown below.

- ABS (Acrylonitrile Butadiene Styrene)
- Brass
- Cast iron
- Porcelain
- GRP (glass reinforced plastic)
- Low carbon steel
- Nylon

Complete the sentences below using materials from the list.

(i) ..... is a polymer [1]

(ii) ..... is also a polymer [1]

(iii) ..... is a non-ferrous metal [1]

(iv) ..... is a ceramic [1]

(v) ..... is a composite [1]

(b) Name **two** engineering materials commonly supplied in sheet form.

1 ..... [1]

2 ..... [1]

(c) Describe **one** benefit to an engineering company of using sheet materials.

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

4 New technologies are used by engineering industries.

Describe how new technologies are used:

- when researching engineering products:
- for communication when designing engineered products,
- to ensure quality when making an engineered product.

(i) when researching engineering products

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

(ii) for communication when designing engineered products

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

(iii) to ensure quality when making an engineered product

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



6 Describe the function and a use of any **two** of the engineering components listed below.

- Cam
- Diode
- Double acting cylinder
- Rack and pinion gears

Component 1 .....

Function .....

.....

.....

Use .....

..... [3]

Component 2 .....

Function .....

.....

.....

Use .....

..... [3]

7 The table shows a comparison of six materials that could be used in an engineered product.

Material	Ease of storage	Easy to use	Safe to work with	Value for money	Readily available
<b>A</b>	2	6	5	6	9
<b>B</b>	5	6	5	5	4
<b>C</b>	8	2	1	2	3
<b>D</b>	2	9	1	2	2
<b>E</b>	3	8	6	3	5
<b>F</b>	9	5	3	9	2

10 = excellent 1 = very poor

(a) State which material is the easiest to use..... [1]

(b) Explain why material **A** would be the best choice for JIT (Just in Time production).

.....

.....

..... [2]

(c) An engineer has chosen material **D** to use in a product. Using the information in the table, explain the circumstances for choosing material **D**.

.....

.....

.....

..... [3]





**10**  
**BLANK PAGE**

**PLEASE DO NOT WRITE ON THIS PAGE**

11  
BLANK PAGE

PLEASE DO NOT WRITE ON THIS PAGE

**PLEASE DO NOT WRITE ON THIS PAGE**



**Copyright Information**

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations, is given to all schools that receive assessment material and is freely available to download from our public website ([www.ocr.org.uk](http://www.ocr.org.uk)) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.