

Wednesday 15 May 2013 – Afternoon

GCSE ENGINEERING

A622/02 Engineering Processes

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

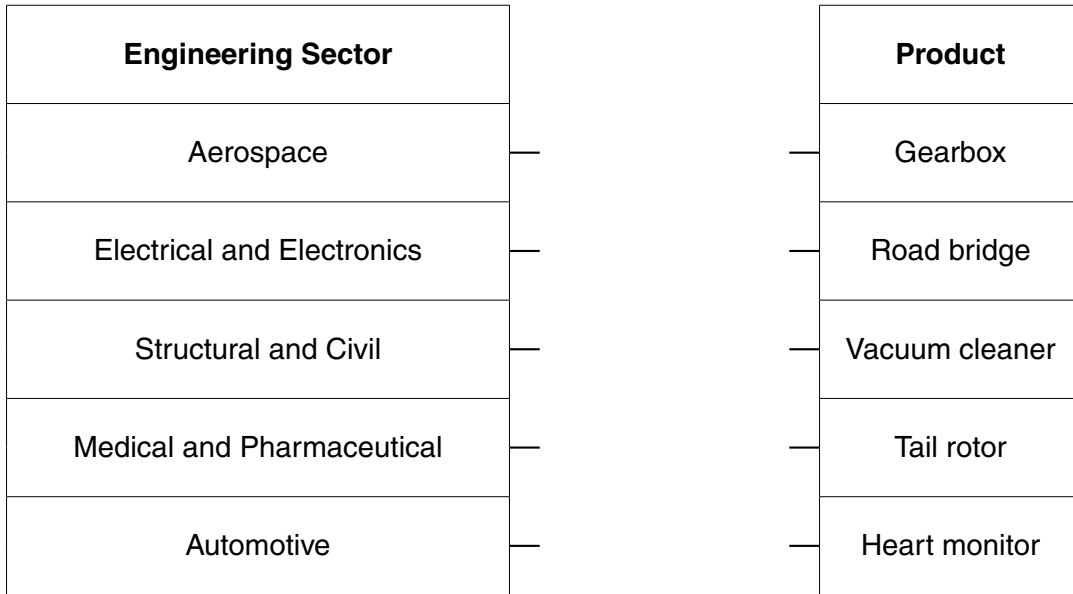
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting 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.



[5]

(b) Name **two** engineering sectors **different** to those shown above and give **one** example of a product made in each sector.

Sector 1

Product [2]

Sector 2

Product [2]

2 The list below gives different groups of engineering materials.

alloy
ceramic
composite
ferrous metal
non-ferrous metal
polymer

(a) Complete the table below by stating which group each of the given materials is from. One has been done for you.

Material	Material group
Tungsten carbide	ceramic
Brass	
Cast iron	
ABS	
Zinc	
Concrete	

[5]

(b) Explain what is meant by the term 'polymer'.

.....

.....

.....

..... [3]

3 Stages in designing an engineered product are shown below.

developing designs
generating design ideas
research

presenting design solution
client brief
developing design specification

(a) Complete the chart below by adding the missing stages in the correct order.

Design stage
Research
Presenting design solution

[4]

(b) Describe how modern technologies might be used when presenting a design solution to a client.

.....

.....

.....

..... [3]

4 (a) Complete the table below by giving:

- **one** example of each engineering process
- **one** tool or item of equipment used in the example

Engineering process	Example of engineering process	Tool or item of equipment used
Shaping and manipulation		
Joining and Assembly		
Surface Finishing		

[6]

(b) Give **two** safety precautions that should be taken when carrying out a material removal process.

1

2

[2]

5 (a) Give **three** factors that should be considered when selecting materials for engineered products.

1

2

3 [3]

(b) Choose **one** of the factors you have given in part (a) and explain why it is important.

.....

.....

.....

..... [3]

(c) Give **two** benefits of using plastics materials when making engineered products.

1

2 [2]

6 Describe how information, communication and digital technologies could be used during the following stages in the manufacture of an engineered product.

Use a different example for each stage.

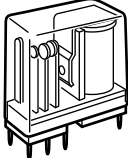
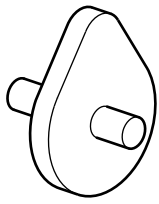
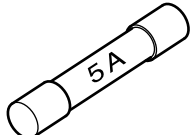
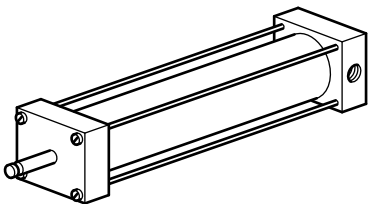
(i) Material supply and control
.....
.....
..... [3]

(ii) Packaging and dispatch
.....
.....
..... [3]

7 The list below gives different types of engineering components.

mechanical
electrical/electronic
pneumatic/hydraulic

(a) Complete the table below by giving the name of each component shown and indicate with a tick (✓), which type of component it is.
 The first one has been done for you.

Component	Name	Type of engineering component		
		Mechanical	Electrical/ electronic	Pneumatic/ hydraulic
	Relay		✓	
				
				
				

[6]

(b) Describe the function of **one** of the components from the table above.

Component

Function

.....

..... [2]

8* Discuss the effects on the workforce of introducing modern technologies when making engineered products.

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.....

..... [6]

END OF QUESTION PAPER

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