

Thursday 24 January 2013 – Afternoon

GCSE ENGINEERING

A622/02 Engineering Processes

Candidates answer on the Question Paper.

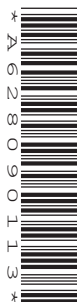
OCR supplied materials:

None

Other materials required:

None

Duration: 1 hour



Candidate forename						Candidate surname					
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. 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.

2

1 Engineering sectors produce different products.

(a) Complete the links below to identify which engineering sector makes the products listed.

Engineering Sector		Product
Automotive	—	Signalling system
Computers, Communication and IT	—	Varnish
Chemical and Process	—	Mobile telephone
Rail and Marine	—	Passenger airbag

[4]

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

Sector 1

Product [1]

Sector 2

Product [1]

(c) Name **two** engineering sectors **different** to those shown in part (a).

1

2

[2]

3

2 The list below gives different types of engineering processes.

material removal
 shaping and manipulation
 joining and assembly
 heat and chemical treatment
 surface finishing

- (a) Complete the table below by placing a tick (✓) to show the correct example for each of the engineering processes given.
 One has been done for you.

	Examples of engineering processes				
Engineering process	Case hardening	Milling	Chromium plating	Vacuum forming	Welding
Material removal		✓			
Shaping and manipulation					
Joining and assembly					
Heat and chemical treatment					
Surface finishing					

[4]

- (b) Name **two** items of personal protective equipment (PPE) that should be used when carrying out a heat and chemical treatment process.

1

2

[2]

3 The list below gives a number of engineering materials.

ABS
brass
cast iron
GRP

polystyrene
stainless steel
zinc

(a) Select a suitable material from the list above to complete the following statements.

- (i) is a composite [1]
- (ii) is a ferrous metal [1]
- (iii) is a non-ferrous metal [1]
- (iv) is a polymer [1]

(b) Give the meaning of the term 'non-ferrous'.

..... [1]

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

.....

.....

..... [3]

5

4 Fig. 1 shows a number of engineering components.

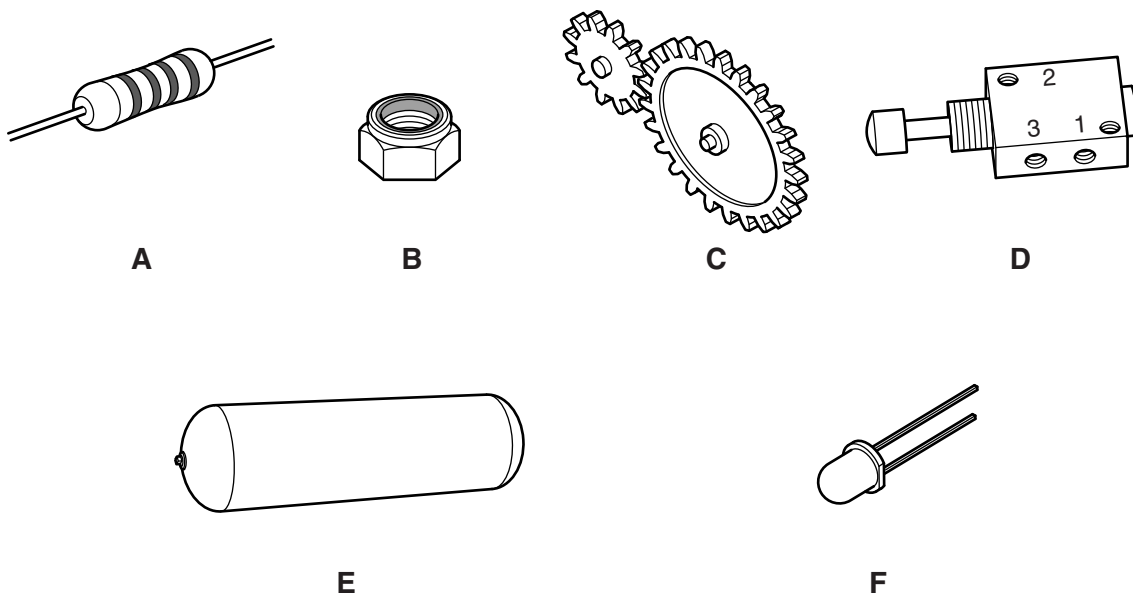


Fig. 1

- (a) Choose **two** components from Fig. 1 and, for each one, give the name of the component and a description of its function.

Component letter

Name of component

Description of function

..... [3]

Component letter

Name of component

Description of function

..... [3]

- (b) Describe **one** benefit of using 'pre-manufactured standard components' in engineered products.

.....

 [2]

6

5 Name **one** engineered product that you have studied or made.

Product

(a) (i) Give **two** processes used in making the product.

1

2

[2]

(ii) Name **two** tools or items of equipment used when making the product.

1

2

[2]

(b) Describe, in detail, **one** quality control check used when making the product.

.....

.....

.....

..... [3]

6 Stages in manufacturing an engineered product are shown below.

assembly and finishing
design
marketing
material supply and control

packaging and dispatch
processing and production
production planning

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

Stages in manufacturing
marketing
packaging and dispatch

[5]

(b) Explain how modern technologies can be used to monitor quality when manufacturing engineered products.

.....

.....

.....

..... [3]

- 7 (a) (i) Describe **one** benefit to the workforce of using modern technologies when making engineered products.

.....

.....

..... [2]

- (ii) Describe the potential benefits to the environment of using modern technologies when making engineered products.

.....

.....

.....

..... [3]

- (b) Describe **two** cost factors that should be considered before introducing modern technologies into an engineering company.

1

.....

..... [2]

2

.....

..... [2]

8* Discuss the importance of quality control when manufacturing engineered products.

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..... [6]

END OF QUESTION PAPER

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