



Friday 23 May 2014 – 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.

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1 Engineering sectors produce different products.

(a) Complete the table below by giving **one** example of a product made in each of the engineering sectors given.

Engineering sector	Product
Computers, Communication and IT	
Automotive	
Structural and Civil	
Rail and Marine	

[4]

(b) Name **two** engineering sectors **different** to those shown above.

1

2

[2]

2 Fig. 1 shows a centre lathe.

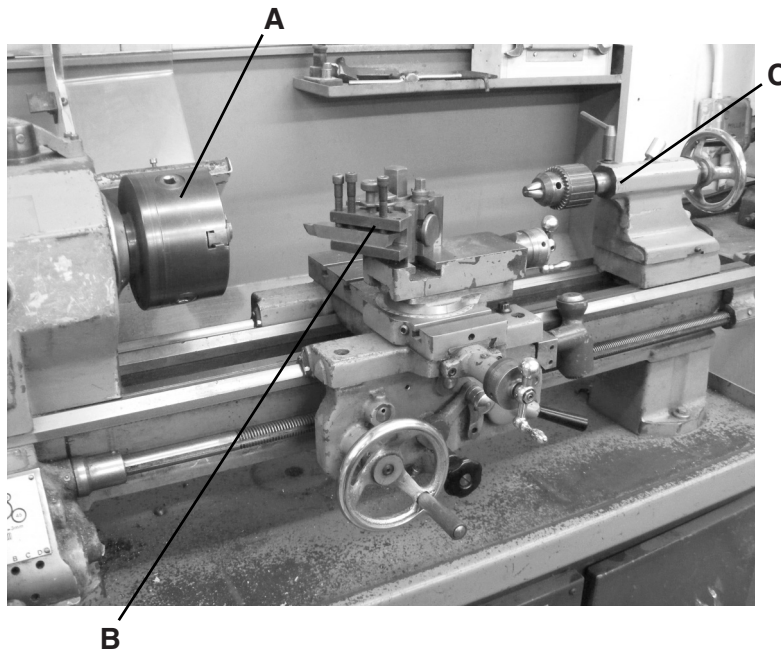


Fig. 1

(a) Using the list below, name the **three** parts of the centre lathe that have been labelled in Fig. 1.

- | | |
|------------------|------------------|
| Chuck | Leadscrew |
| Handwheel | Tailstock |
| Headstock | Toolpost |

A

B

C [3]

(b) Describe **two** safety precautions, other than using Personal Protective Equipment (PPE), that should be taken when operating a centre lathe.

1

..... [2]

2

..... [2]

(c) Name **two** tools that could be used to measure the diameter of a bar turned on a centre lathe.

1

2

[2]

- 3 (a) Complete the table below by naming **two** engineering materials for each material type. One has been done for you.

Material Type	Engineering material 1	Engineering material 2
Non-ferrous metal	Aluminium	Copper
Ferrous metal		
Alloy		
Polymer		

[6]

- (b) Explain, using **one** example, how a 'smart material' is used in an engineered product.

.....

.....

.....

..... [3]

4 The list below gives some stages in the manufacture of engineered products.

- Assembly and finishing
- Design
- Processing and production
- Production planning

(a) Describe what takes place in any **two** of these stages.

1 Name of manufacturing stage
Description
.....
.....
..... [2]

2 Name of manufacturing stage
Description
.....
.....
..... [2]

(b) Explain how information, communications and digital technologies can be used in the marketing stage of the manufacture of an engineered product.

.....
.....
.....
.....
..... [3]

5 (a) Describe, using **one** example, how modern technologies can be used in the manufacture of engineered products.

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..... [3]

(b) Explain, using **one** example, how modern technologies have helped improve working conditions in engineering companies.

.....
.....
.....
..... [3]

6 The list below gives different types of engineering processes.

- Material removal**
- Shaping and manipulation**
- Joining and assembly**
- Heat and chemical treatment**
- Surface finishing**

(a) Milling is one example of a material removal process.

Name **three** other material removal processes.

- 1
- 2
- 3

[3]

(b) Choose **one** of the processes you have named in part (a).

Process

Name **three** different tools or pieces of equipment that are used in the process.

- 1
- 2
- 3

[3]

(c) Choose **one** type of engineering process from the list, other than material removal, and give **two** specific examples of that type of process.

Type of engineering process

Process 1

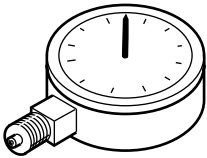

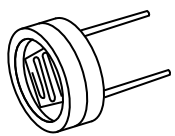
Process 2

[2]

7 A list of different types of engineering components is given below.

Mechanical
Electrical/electronic
Pneumatic/hydraulic

(a) Complete the table by giving the name of each of the engineering components shown and placing a tick (✓) to show which type of component it is.

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

[6]

(b) Choose **one** of the components from the table and explain, using **one** example, how it might be used.

Component

Example of use

.....

[3]

8* Discuss the advantages and disadvantages to a manufacturer of introducing modern technologies.

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END OF QUESTION PAPER

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