

Centre Number	
71	

Candidate	Number
-----------	--------

General Certificate of Secondary Education January 2014

Engineering

Paper 1

Assessment Unit 3

[GEE31]





TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper. Answer **all ten** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 80.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only		
Question Number	Marks	
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Total	
Marks	



1 (a) All the products below belong to a manufacturing sector.

Circle **two** products shown below that belong to the mechanical fabrication sector.

You **must** only circle **two** products. If you make a mistake you must clearly show which two products you have chosen.



© F1 collection/Thinkstock



© istockphoto/Thinkstock



© istockphoto/Thinkstock



© istockphoto/Thinkstock



© istockphoto/Thinkstock



© Design pics collection/Thinkstock

[2]

(b) All the products below belong to a manufacturing sector.

Examiner Only

Marks Remark

Circle **two** products shown below that belong to the engineering fabrication sector.

You **must** only circle **two** products. If you make a mistake you must clearly show which two products you have chosen.



© Stockbyte/Thinkstock



© istockphoto/Thinkstock



© istockphoto/Thinkstock



© istockphoto/Thinkstock



© istockphoto/Thinkstock



© Hemera collection/Thinkstock

[2]

2 Answer all parts of this question in the spaces provided.

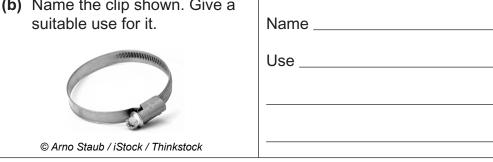
Examiner Only

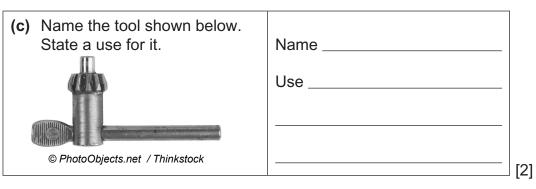
Marks Remark

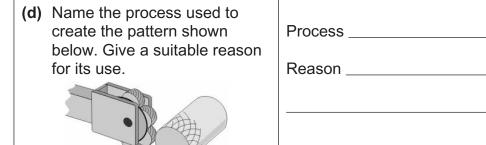
[2]

[2]

	Question	Answer
(a)	Name the nut shown below. State one advantage for its use.	Name
		Advantage
	© iStockphoto / Thinkstock	
(b)	Name the clip shown. Give a	Nama







(e) Name the filing technique shown. State one advantage for its use.

101 113 430.	

Filing technique_	
Advantage	

[2]

[2]

	nputer Aided Manufacture (CAM) is widely used throughout the ineering sector.		Examin Marks
a)	Outline two advantages of using CAM techniques in the production high volume products.	of	
	1		
	2		
b)	Give one example of a product manufactured by CAM and describe the CAM technique used in its manufacture.	e	
	Product		
	CAM technique	[1]	

(a)	Explain what is meant by the term smart material.		
,			
		_ [2]	
(b)	Give two examples of smart materials and for each example iden an appropriate use.	tify	
	Example		
		_ [1]	
	Use		
		_ [2]	
	Example		
		_ [1]	
	Use		
		_ [2]	

BLANK PAGE

(Questions continue overleaf)

5 The photographs below show two manually operated machines used in the manufacture of engineered products.

Examin	Examiner Only	
Marks	Remark	





Machine A

Machine B

(a)	Name each machine shown in the photographs above.	
	Machine A	
		[41
	Machine B	[1]
		[1]
(b)	Identify an example of a manufacturing procedure which could be carried out on each machine.	
	Machine A	
		[2]
	Machine B	
		[2]

Compare each machine shown opposite to its equivalent Cl machine. Outline one advantage for each machine. Both ar should be different.	NC nswers	Examiner C Marks Re
Machine A – Advantage		
	[2]	
Machine B – Advantage		
	[2]	

6 Robotics like the one shown below are used extensively throughout the engineering industry.

Examiner Only				
Marks	Remark			



© Comstock / Thinkstock

(a)		Identify one disadvantage of using robotics in the engineering industry.				
		[[2]			
(b)	Ide	ntify one advantage of using robotics in the engineering industry.				
		[[2]			
(c)		tline the advantages of using robotic control for each of the owing engineering applications.				
	(i)	Spray painting vehicle body parts.				
		[[2]			
	(ii)	Testing gas pipes.				
		[[2]			

(a)	Nar	me one example of communications technology.	
		[1]	
(b)		tline one example of how communications technology has had an eact on the manufacture of engineered products.	
		[2]	
(c)		ndling information and data is an essential feature in engineering npanies.	
	Ехр	plain the benefits information and data handling systems have on:	
	(i)	Production efficiency	
		[2]	
	(ii)	Marketing	
		[2]	

Explain any two of the following terms:		Examiner Marks R
Case hardeningAnnealing		
Work hardening		
Term:		
Explanation:		
	[2]	
Term:		
Explanation:		
	[2]	
) The point of the chisel shown is hardened and tempered.		
(i) Describe how tempering is carried out.		
	[2]	

	(ii)	Explain why it is important to temper the point of the chisel shown above.	Examiner Only Marks Remark
		[2]	
(c)	Des	scribe one safety precaution to be observed when heat treating the nt of the chisel.	
		[2]	

Read th	ne following paragraph and answer the questions that follow.	Examiner Only Marks Remark
from de verifiab consum through	ngineering sector, a measure of excellence or a state of being free fects, can be brought about by the adherence to measurable and le standards to achieve a uniformity of output. This helps satisfy her and user requirements. Quality control techniques used yout the manufacture of products and the use of automation, this to happen.	
(a) (i)	Explain the term quality control.	
		_
		-
	[2	
(ii)	Explain the term automation.	
		_
		-
	[2	
(b) (i)	Pick a product of your choice from the engineering sector and describe how an engineering company would carry out a quality control check.	
	Product	
	Quality Control check	-
		_
	[2	41

[2]	

	With reference to the engineering industry identify two examples of	
4)	how new technology has impacted on manufacturing efficiency.	
		_
		_
		[4]
)	Outline the impact modern technology has on the range and	
	availability of products throughout the engineering sector.	
	Range	
	Availability	[2]
	Availability	[2]
	Availability	_

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA will be happy to rectify any omissions of acknowledgement in future if notified.