



Rewarding Learning

General Certificate of Secondary Education  
January 2014

**Engineering**  
Paper 1  
Assessment Unit 3  
[GEE31]



THURSDAY 9 JANUARY, AFTERNOON

Centre Number

71	
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Candidate Number

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**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	
<b>Total Marks</b>	

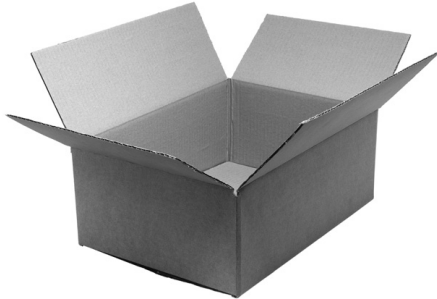




(b) All the products below belong to a manufacturing sector.

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.



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[2]


Examiner Only	
Marks	Remark

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

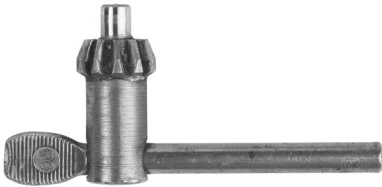
Examiner Only	
Marks	Remark

Question	Answer
<p>(a) Name the nut shown below. State one advantage for its use.</p>  <p>© iStockphoto / Thinkstock</p>	<p>Name _____</p> <p>Advantage _____</p> <p>_____</p> <p>_____</p>

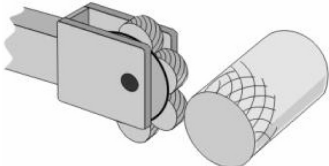
[2]

<p>(b) Name the clip shown. Give a suitable use for it.</p>  <p>© Arno Staub / iStock / Thinkstock</p>	<p>Name _____</p> <p>Use _____</p> <p>_____</p> <p>_____</p>
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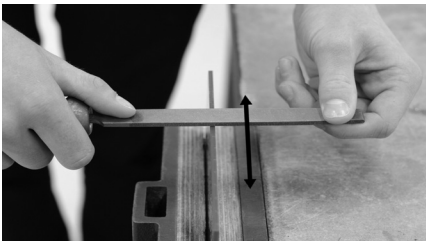
[2]

<p>(c) Name the tool shown below. State a use for it.</p>  <p>© PhotoObjects.net / Thinkstock</p>	<p>Name _____</p> <p>Use _____</p> <p>_____</p> <p>_____</p>
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[2]

<p>(d) Name the process used to create the pattern shown below. Give a suitable reason for its use.</p> 	<p>Process _____</p> <p>Reason _____</p> <p>_____</p>
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[2]

<p>(e) Name the filing technique shown. State one advantage for its use.</p> 	<p>Filing technique _____</p> <p>_____</p> <p>Advantage _____</p> <p>_____</p>
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[2]



4 Smart materials have become a very important category of materials for designers and manufacturers in the engineering sector.

(a) Explain what is meant by the term smart material.

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[2]

(b) Give **two** examples of smart materials and for **each** example identify an appropriate use.

Example

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[1]

Use

---

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[2]

Example

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[1]

Use

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[2]

Examiner Only	
Marks	Remark

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**(Questions continue overleaf)**





(c) Compare each machine shown opposite to its equivalent CNC machine. Outline **one** advantage for each machine. Both answers should be different.

Machine A – Advantage

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[2]

Machine B – Advantage

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[2]

Examiner Only	
Marks	Remark

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



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(a) Identify **one** disadvantage of using robotics in the engineering industry.

\_\_\_\_\_

\_\_\_\_\_ [2]

(b) Identify **one** advantage of using robotics in the engineering industry.

\_\_\_\_\_

\_\_\_\_\_ [2]

(c) Outline the advantages of using robotic control for **each** of the following engineering applications.

(i) Spray painting vehicle body parts.

\_\_\_\_\_

\_\_\_\_\_ [2]

(ii) Testing gas pipes.

\_\_\_\_\_

\_\_\_\_\_ [2]

Examiner Only	
Marks	Remark





(ii) Explain why it is important to temper the point of the chisel shown above.

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 [2]

(c) Describe **one** safety precaution to be observed when heat treating the point of the chisel.

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 [2]

Examiner Only	
Marks	Remark



(ii) Describe **one** advantage of quality control being carried out on an engineered product for the consumer.

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[2]

Examiner Only	
Marks	Remark











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