Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2015

Engineering

Paper 1
Assessment Unit 3
assessing
Engineering Technology

ML

[GEE31]
TUESDAY 19 MAY, MORNING

TIME

1 hour, plus your additional time allowance.

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 part question.

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

Answer **all** questions

Examiner Only	
Marks	Remark

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.

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[2]

(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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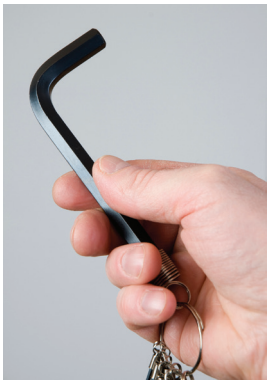
[2]

Examiner Only	
Marks	Remark

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

Question	Answer	
(a) Identify the joining process shown and give a practical example of where it could be used.  © Thinkstock	Joining process _____ Use _____ _____	[2]
(b) Name the tool shown below and state **one** use for it.  © Thinkstock	Name of item _____ Use _____ _____	[2]
(c) Identify the cutting tool shown below and give **one** safety precaution that should be observed when using this tool.  © Thinkstock	Name _____ Safety precaution _____ _____	[2]

Examiner Only	
Marks	Remark

Question	Answer
(d) Identify the joining process that uses the tool shown below and give a practical example of where it could be used.  © Thinkstock	Joining process _____ Use _____ _____ [2]
(e) Name the tool shown below and state **one** use for it in an Engineering room.  © Thinkstock	Tool _____ Use _____ _____ [2]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

3 ICT is used to organise and control production in engineering industries.

(a) What does the abbreviation ICT stand for?

_____

_____ [1]

(b) Give **one** advantage of using ICT in the workplace.

_____

_____ [1]

(c) Give **one** disadvantage of using ICT in the workplace.

_____

_____ [1]

(d) Describe, giving **two** examples, why the electronic transfer of data is useful for companies with separate sites.

_____

_____

_____

_____ [2]

(e) Methods of communication have evolved rapidly in recent years to include social networking. Outline **one** positive impact and **one** negative impact of social networking sites in the engineering sector.

Positive impact

_____

_____ [1]

Negative impact

_____

_____ [1]

Examiner Only	
Marks	Remark

4 New technology is used in and by engineering industries. It affects every product that we buy. Choose **two** products that you have studied from the engineering sector. For each product describe how it has been affected in different ways by the use of:

- Modern materials and
- Computer Integrated Manufacture

(a) Product one

_____

(i) Modern material

_____

_____ [1]

(ii) Computer Integrated Manufacture

_____

_____ [1]

(b) Product two

_____

(i) Modern material

_____

_____ [1]

(ii) Computer Integrated Manufacture

_____

_____ [1]

(c) Describe **two** difficulties a manufacturer might have when trying to implement modern materials and modern technology into a company's production line.

1. _____

_____ [2]

2. _____

_____ [2]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

5 **(a)** Welding can be hazardous. Give **two** personal safety precautions an engineer should follow when welding.

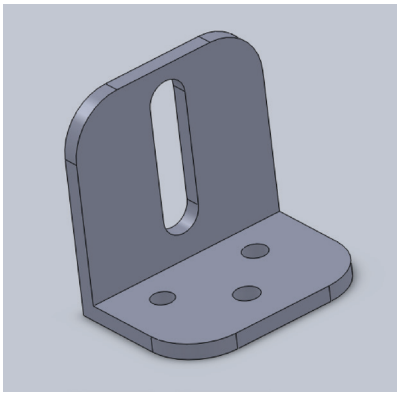
1. _____

_____ [2]

2. _____

_____ [2]

(b) The picture below shows a bracket which is used in the assembly of a tumble dryer. Galvanised low carbon steel has been chosen as the preferred material. Suggest a suitable alternative non-ferrous metal that could be used. Explain why you think low carbon steel has been chosen.



Source: Chief Examiner

Alternative non-ferrous metal

_____ [1]

Low carbon steel has been chosen because:

_____

_____ [2]

(c) The hole positions on the bracket are critical. Describe, giving **two** examples, how these could be checked quickly and accurately on a production line.

1. _____

_____ [2]

2. _____

_____ [2]

Examiner Only	
Marks	Remark

6 Bearings such as the one shown below are commonly used in machines and vehicles.

© *Thinkstock*

(a) Outline **two** reasons for using bearings in engineering systems.

1. _____

_____ [1]

2. _____

_____ [1]

(b) Name **two** lubricants used in machines and vehicles.

1. _____ [1]

2. _____ [1]

(c) Outline **two** reasons why lubrication is important in machining processes in the engineering sector.

1. _____

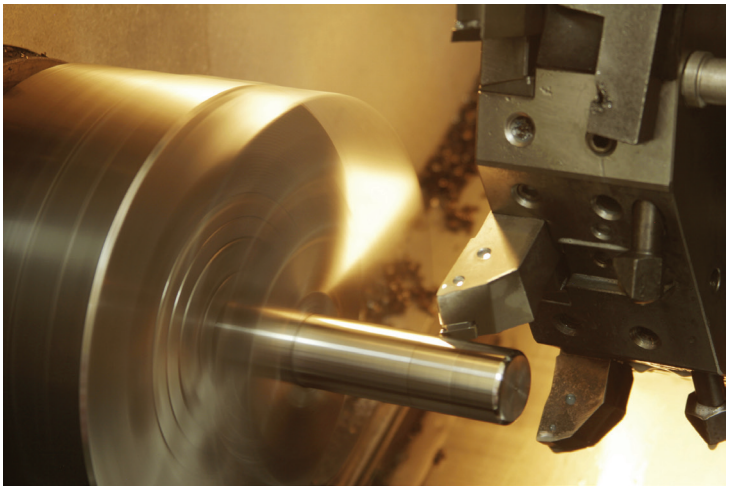
_____ [1]

2. _____

_____ [1]

Examiner Only	
Marks	Remark

7 CAM is used extensively throughout the engineering sector to manufacture products. The picture below shows a CNC lathe turning down a section of steel bar. This is one example of CAM.



© *Thinkstock*

(a) Outline **two** benefits for an engineering company of using CAM in their factory.

1. _____

_____ [1]

2. _____

_____ [1]

(b) Explain how the use of CAM in product manufacture can ensure fewer faults in the end product.

_____

_____

_____

_____ [2]

(c) Outline **two** ways in which CAM in industry has helped control manufacturing costs.

1. _____

_____ [1]

2. _____

_____ [1]

Examiner Only	
Marks	Remark

8 **(a)** Describe how the workforce has been affected with the introduction of new technologies. Give **one** example.

_____

_____ [2]

(b) Describe the potential benefit to the environment of using modern technologies when designing and manufacturing engineered products. Give **two** examples.

1. _____

_____ [2]

2. _____

_____ [2]

(c) Describe **two** cost factors that should be taken into account before introducing modern technologies into an engineering environment.

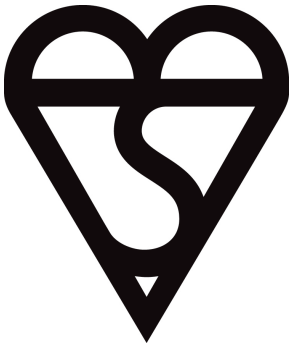
1. _____

_____ [2]

2. _____

_____ [2]

9 The BSI kitemark shown below is a registered certification mark owned and operated by BSI. It is one of the most recognised symbols of quality and safety, and offers true value to customers. It is recognised throughout the world as a mark of quality.



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(a) Describe **one** different quality control check that could be used for each of the engineering processes stated below.

(i) Turning of a steel rod

_____

_____

_____ [2]

(ii) Surface finishing after milling

_____

_____

_____ [2]

(iii) Soldering on a circuit board

_____

_____

_____ [2]

(b) Outline **one** reason why quality control should take place during the manufacturing process.

_____

_____ [2]

Examiner Only	
Marks	Remark

10 The introduction of new technology has brought a number of advantages and disadvantages to the engineering sector.

(a) Describe **two** ways the use of new technology has improved the design and development of products in the engineering sector.

1. _____

_____ [2]

2. _____

_____ [2]

(b) Discuss the implications of the introduction of new technologies on the assembly and dispatch of engineered products.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ [6]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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