



**Answer ALL questions in Section A and Section B.**

**SECTION A**

**Answer ALL questions in this section. Write your answers in the spaces provided.**

1. All of the products listed below belong to a manufacturing sector.

(a) Tick the **two** boxes below where the products belong to the **electrical and electronic** sector.

Product	Tick <b>two</b> boxes below
Microwave cooker	
Windscreen wiper blade	
GCSE certificate	
Pasta sauce	
Games console	
Metal curtain rail	

(2)

(b) Tick the **two** boxes below where the products belong to the **telecommunications** sector.

Product	Tick <b>two</b> boxes below
Table lamp	
Wrought iron fence	
Windsurfing sail	
Mobile phone	
Beach sandals	
Set top box	

(2)

Q1



(Total 4 marks)



2. The tables below show some components used in the manufacture of electrical and electronics, process control, computer, telecommunications products.

(a) Complete **Table 1** by naming the components.

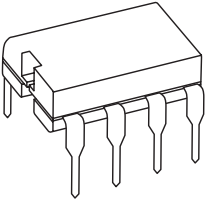
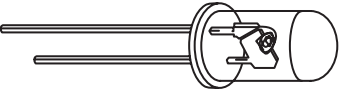
**Table 1**

Component	Component name	Use
		Used to control current flow in a circuit. Coloured bands identify the rating.
		A chemical storage device that is used to power electronic circuits.

(2)

(b) Complete **Table 2** by explaining the use of the components.

**Table 2**

Component	Component name	Use
	555 Integrated Circuit Chip	
	Light Emitting Diode LED	

(4)

(Total 6 marks)

Q2



3. Draw a straight line to link each term listed below to the correct key area.

Each key area can be used more than once.

**Term**

**Key area**

Acrylonitrile butadiene styrene (ABS)

(1)

Information and communications technology (ICT)

Embedded computers

(1)

Presentation software

(1)

Control technology

Semiconductor

(1)

Thermostat

(1)

Modern materials

Voice over internet protocol (VoIP)

(1)

(Total 6 marks)

Q3



4. Mass produced USB flash drives belong to the electrical and electronics, process control, computer, telecommunications sector.

(a) (i) Name **one** other product from this sector, apart from a USB flash drive, that utilises, in its manufacture, information and communications technology and a modern material.

.....  
(1)

(ii) Explain the purpose of the product.

.....  
.....  
.....  
(2)

(b) (i) Name **one** stage in the manufacture of the product you gave in 4(a)(i) where information and communications technology is used.

.....  
(1)

(ii) Explain **one** advantage to the **manufacturer** of using information and communications technology at this stage.

.....  
.....  
.....  
(2)

(c) (i) State **one** modern material used in the manufacture of the product you named in 4(a)(i).

.....  
(1)

(ii) Describe how this modern material improves the characteristics of the product.

.....  
.....  
.....  
.....  
(2)

(Total 9 marks)

Q4



5. Computer-aided design (CAD) and communications technology are used by manufacturers of electrical and electronics, process control, computer, telecommunications products.

(a) (i) Give **two** examples of **how** CAD is used by a manufacturer.

Example 1 .....

Example 2 ..... (2)

(ii) Using an example from 5(a)(i), explain **one** benefit to the **manufacturer** of using CAD.

.....

.....

..... (2)

(b) (i) Give **two** examples of a communications technology as used by a manufacturer.

Example 1 .....

Example 2 ..... (2)

(ii) Using an example from 5(b)(i), explain **one** benefit to the **manufacturer** of using communications technology.

.....

.....

..... (2)

(Total 8 marks)

Q5



6. (a) Smart materials are used in some electrical and electronics, process control, computer, telecommunications products.

Explain the term 'smart material'.

.....  
.....  
.....

(2)

- (b) Computer-aided manufacture (CAM) is used by manufacturers of electrical and electronics, process control, computer, telecommunications products.

Explain **three** benefits to a manufacturer of using CAM.

Benefit 1 .....

.....

(2)

Benefit 2 .....

.....

(2)

Benefit 3 .....

.....

(2)

(Total 8 marks)

Q6



7. (a) Control technology is an essential feature in electrical and electronics, process control, computer, telecommunications product manufacture.

Explain the impact of control technology on safety when manufacturing.

.....  
.....  
.....  
.....

(2)

- (b) Handling information and data is an essential feature of electrical and electronics, process control, computer, telecommunications manufacturers.

Explain how the use of information and data handling systems benefit the manufacturer, when marketing products.

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(2)

(Total 4 marks)

Q7

**TOTAL FOR SECTION A: 45 MARKS**





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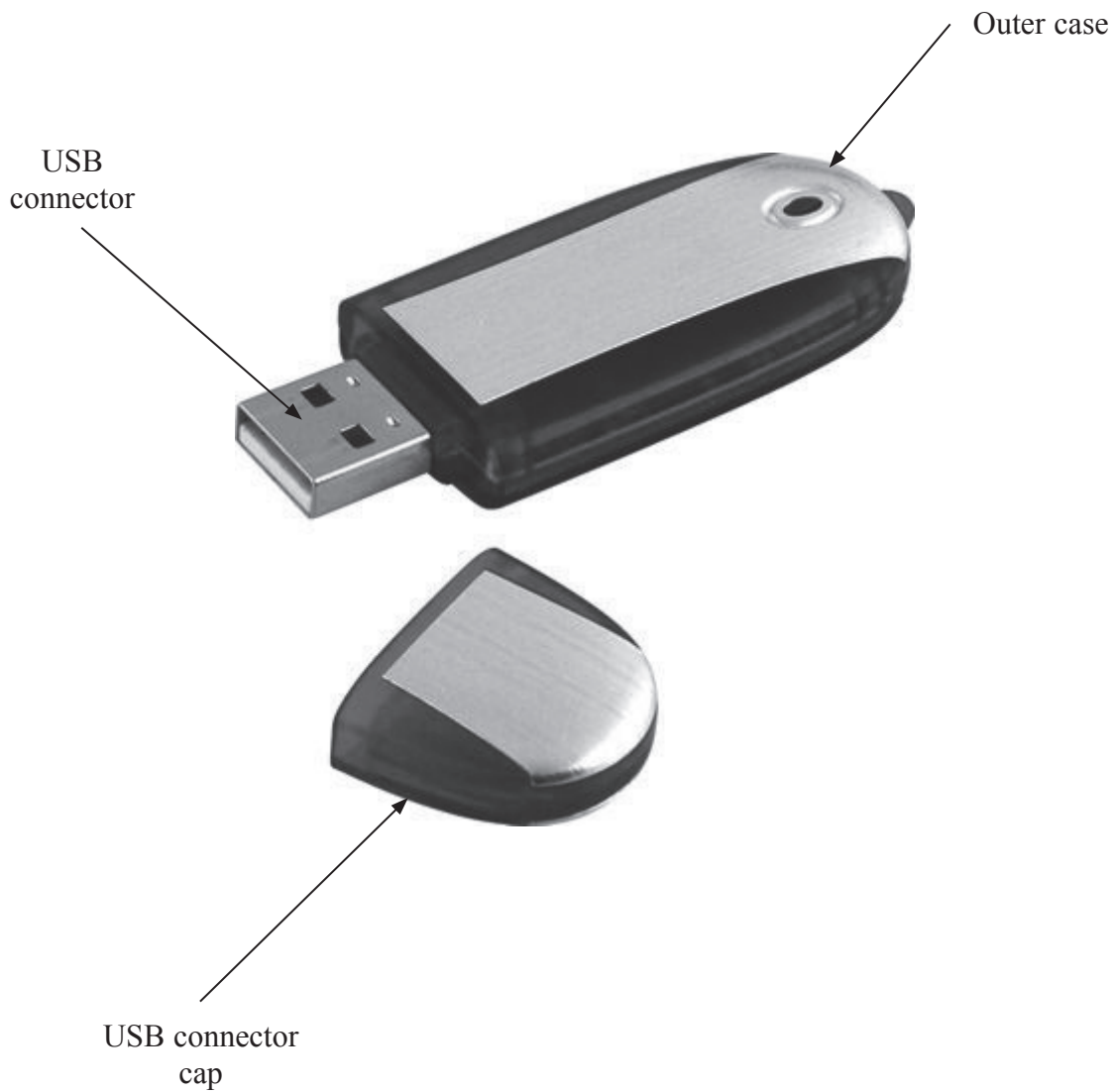
**TURN OVER FOR SECTION B**



## SECTION B

Answer ALL questions in this section with reference to the manufacture of mass produced USB flash drives. Write your answers in the spaces provided.

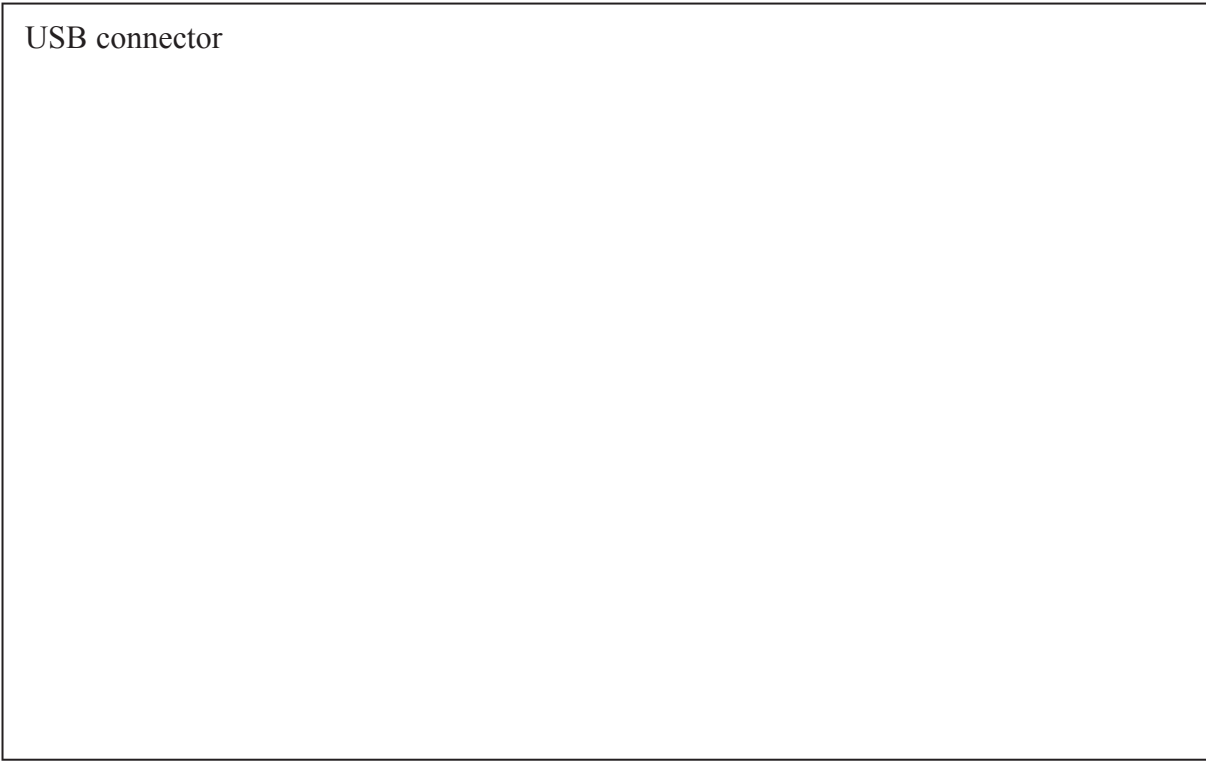
The diagram below shows a mass produced USB flash drive.



8. In the boxes below, describe, using notes and sketches:

(a) the function of the USB connector

USB connector



(3)

(b) the function of the USB connector cap.

USB connector cap



(3)

(Total 6 marks)

Q8



9. (a) The following table indicates some of the main stages in manufacturing mass produced USB flash drives.

(i) Complete the table below by giving the **two** missing stages in manufacturing mass produced USB flash drives.

(2)

Stages in manufacturing	
1	Design
2	Marketing
3	
4	
5	Production
6	Assembly and Finishing
7	Packaging and Dispatch

(ii) State the stage in manufacturing where the mass produced USB flash drives are delivered to **distributors**.

Stage .....

(1)

(b) Describe the following **two** stages in the manufacture of mass produced USB flash drives.

(i) Design .....

.....  
 .....  
 .....

(3)

(ii) Production .....

.....  
 .....  
 .....

(3)

(Total 9 marks)

Q9



10. (a) Name a specific material commonly used in the manufacture of the USB connector.

..... (1)

(b) Surface mount technology is a production process used in the construction of electronic circuits used in USB flash drives.

(i) State **three** processes, other than surface mount technology, used during the making of mass produced USB flash drives.

Process 1 .....

Process 2 .....

Process 3 ..... (3)

(ii) Explain why surface mount technology is a suitable process for constructing electronic circuits in a mass produced USB flash drive.

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.....  
.....  
.....  
..... (3)

(c) Explain how the use of modern materials has made mass produced USB flash drives appeal to the **consumer**.

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.....  
.....  
.....  
..... (3)

(Total 10 marks)

Q10

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11. (a) Describe **two** quality control procedures used at the production stage when manufacturing mass produced USB flash drives.

(i) Quality control procedure 1

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.....  
(2)

(ii) Quality control procedure 2

.....  
.....  
(2)

(b) Explain **one** benefit of applying each quality control procedure, described in 11(a), to the **manufacturer**.

(i) Benefit of procedure 1

.....  
.....  
(2)

(ii) Benefit of procedure 2

.....  
.....  
(2)

(c) Explain **one** benefit of applying each quality control procedure, described in 11(a), to the **distributor**.

(i) Benefit of procedure 1

.....  
.....  
(2)

(ii) Benefit of procedure 2

.....  
.....  
(2)

(Total 12 marks)

Q11



12. The utilisation of modern technology in the manufacture of mass produced USB flash drives has brought changes.

(a) (i) State **one** change the use of modern technology has had on the workforce.

.....  
(1)

(ii) Explain **two** different effects this change has had on the workforce.

Effect 1 .....

.....  
(2)

Effect 2 .....

.....  
(2)

(b) State **one** change the use of modern technology has had on the working environment.

.....  
(1)

(c) Explain **two** benefits the use of modern technology has had on the global environment.

Benefit 1 .....

.....  
(2)

Benefit 2 .....

.....  
(2)

(Total 10 marks)

Q12

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TURN OVER FOR QUESTIONS 13 AND 14



13. Modern materials are used in the manufacture of mass produced USB flash drives.

Explain how the use of modern materials has impacted on development and final product costs.

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(Total 4 marks)

Q13

14. Manufacturing mass produced USB flash drives uses energy. Modern manufacturing processes operate more efficiently than traditional processes.

Explain why the use of modern manufacturing processes may lead to **increased** energy consumption.

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.....

(Total 4 marks)

Q14

**TOTAL FOR SECTION B: 55 MARKS**  
**TOTAL FOR PAPER: 100 MARKS**

**END**

